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Subject: Transport and Dose Calculations for Non-Nuclear Metals Contaminants		
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Purpose: The purpose of this calculation package is to provide documentation to the project files for calculations related to the transport and dose of nickel, molybdenum and vanadium. The calculations cover transport from the exit of UZ below the repository to the 18 km accessible environment (referred to hereafter as the Regulatory Compliance Point) and beyond to various locations in the Death Valley Region. Dose in terms of intakes to be compared with Oral Reference Dose (RfD) are also calculated. Uranium is also considered in the toxic metals but it is not analyzed in this calculation package (except for screening discussions). Uranium intake values are obtained during the radionuclide transport analysis (see calculation package for radionuclide transport and dose CalcPkg_Rad1_DHL_4-21-09).

Method: The following steps were performed as part of the calculations.

The analysis was carried out for two climate conditions and two pumping scenarios. The two climate conditions were (1) a present day climate existing from closure until 1 million years post-closure and, (2) a wetter climate equivalent to the post-10,000 yr climate in the TSPA. The results from the TSPA-LA model were supplied as a combined case which is a sum of the time histories of the nominal case and all disruptive scenarios analyzed by TSPA. The two pumping scenarios were (1) regional flow when pumping in the Amargosa Desert from closure time to 1 million years post-closure at a rate equivalent to the pumping rates for 2003 as recently published (DIRS 185968-Moreo and Justet 2008, Fig 3, pg. 5) and, (2) regional flow with no pumping from closure time to 1 million years post-closure.

TSPA does not analyze non-radiological materials so the first step is to estimate release rates for metals from the unsaturated zone (UZ) to the saturated zone (SZ) just below the repository.
Then estimates of transport of the metals from the exit of the UZ to the 18 km accessible environment are performed using SZ transport abstractions from TSPA.

For the no pumping scenario the regional flow modeling identified two flow pathways: (1) a flow path extending from the 18 km point or RMEI location (hereafter referred to as the Regulatory Compliance Point)in a south east direction then turning more westerly terminating at Death Valley. The results indicated the termination was the floor of Death Valley in a modeling unit referred to as “OBS-DV-MIDDL” in the middle basin (DIRS 173179-Belcher et al 2004, Table F-4) and (2) a minor path (2 particles out of 8024) extending from the Regulatory Compliance Point generally southward terminating at Alkali Flat (DIRS 186186-SNL 2009, Figure 11). For the 2003 pumping rate scenario one flow path was identified extending from the Regulatory Compliance Point directly southward to the site of the pumping (Amargosa Farms) (DIRS 186186-SNL 2009, Figure 13).

There is some uncertainty in the flow path modeling so that there is some possibility that the metals going to Death valley could discharge in the Furnace Creek springs area, mixed with the flowing water there. Transport of metals was therefore analyzed for the three paths:

- The Regulatory Compliance Point to the Death Valley Floor (no-pumping scenario)
- The Regulatory Compliance Point to the Furnace Creek Springs area (no-pumping scenario), and
- The Regulatory Compliance Point to the Amargosa Farms area (pumping scenario)

The analysis consisted of calculating the resulting metal fluxes (in grams/year) arriving at the locations based on the input fluxes at the Regulatory Compliance Point. Possible flow to Alkali Flat will be reported comparatively to the results found for the Death Valley Floor. The evaluations used specific discharges associated with the 2003

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pumping scenario for the path to the Amargosa Farms area and the no pumping scenario for the path to Death Valley. All evaluations were carried out for the two climate conditions

Inventories as a function of time were evaluated as quantities released at the unsaturated zone (UZ)-saturated zone (SZ) interface below the repository, quantities released to the groundwater system beyond the Regulatory Compliance Point, quantities collecting at the Amargosa Farms area, and quantities released into Death Valley.

Daily intakes to residents at Amargosa Farms were evaluated based on metal fluxes and pumping rates. Daily intakes at the Furnace Creek Springs areas were also evaluated based on metal fluxes and flow rates. The intakes were evaluated for both climates.

Assumptions: The following assumptions are part of the calculations:

1. The movement of the metals from one location to another can be described by a one-dimensional pipe flow with longitudinal dispersion and equilibrium sorption on solid matrix in the groundwater flow unit. This assumption is reasonable since only very small amounts of horizontal or vertical mixing have been observed in the region. The transverse dispersion coefficient is expected to be about 0.05 m while the vertical dispersion coefficient is expected to be 0.005 m. These compare to a longitudinal dispersion coefficient of 100 m (DIRS 184806-SNL 2008, pg. 4-13).
2. Sorption and flow properties along the flow paths are constant. This assumption is reasonable because the values of the flow properties are derived as an average from the regional modeling results and that average accurately characterizes the total travel time in the path. Only total travel time is used in the one-dimensional model. All regional flow modeling and related transport modeling assumes that steady-state is achieved for regional flow. Sorption properties used represent an average over the flow paths.
3. There is complete capture of metals arriving by the wells at Amargosa Farms. This is a conservative assumption as intakes would be reduced if some metals were not captured. While some contaminants could bypass the Amargosa Farms area, this assumption maximizes the potential impacts for this scenario.
4. All water used to irrigate fields at Amargosa Farms is recycled to the well. This is also a conservative assumption. Note that some water drawn up by the well is not used to irrigate fields and is not recycled.

Software/Models: The calculations were prepared using Microsoft Excel 2007

Calculations:

1.0 RELEASE RATES OF NON-RADIOLOGICAL CONTAMINANTS TO THE SATURATED ZONE

This section describes release rate estimates for non-radiological contaminants from the unsaturated zone below the repository to the saturated zone. The resultant release rates will be used as input to analysis of transport through the saturated zone to the accessible environment (a subject of the next section).

Contaminants of Concern

Chemically toxic materials that could present a human health risk would be present in materials disposed in the repository. These materials, referred to herein as non-radiological contaminants come from construction materials of the repository and waste packages and from the disposal materials within the waste package.
A screening study was carried out to determine which chemically toxic materials would have any potential for a significant impact on the environment. This study was detailed in the Yucca Mountain Repository Draft Environmental Impact Statement (DEIS) (DIRS 105155-DOE 1999) and is excerpted in the appendix to this paper.

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The conclusions of the study were that release of chromium and molybdenum required more detailed analysis. All other materials were estimated to not escape the repository in sufficient quantities to cause any significant impacts.

Since the study in the DEIS there have been a number of changes to the repository and waste package design. The changes of significance in consideration of non-radiological contaminants are the additions of large amounts of stainless steel and alloy-22 to the repository. These materials are sources of nickel and vanadium, two elements screened out in the DEIS. Since the screening in the DEIS was sensitive to inventory quantities, nickel and vanadium were added back to the list of non-radiological contaminants requiring further analysis. In the Repository Final EIS (FEIS) (DIRS 155970-DOE 2002) the list of materials subjected to further analysis was chromium, molybdenum, nickel, and vanadium.

Further screening in the Repository Supplemental EIS (SEIS) (DIRS 180751-DOE 2008) was carried out. Since the FEIS, new data shows that it is unlikely that the corrosion of chromium bearing materials would result in the very soluble (and toxic) valence (+6) of chromium but rather that the chromium would be in the very insoluble (and non-toxic) valence (+3). Based on this, chromium was removed from the list (DIRS 180751-DOE 2008, pg F-38). Since the total uranium can be estimated from the TSPA-LA results it is suggested that it be retained as a non-radiological contaminant as well as a radiological contaminant because uranium has a significant toxicity as a heavy metal. Furthermore, the analysis for SEIS3 will be carried out for one million years to evaluate the effect on impacts after a larger number of waste packages are postulated to have breeched. Therefore, the list of contaminants of concern for an extended time analysis in SEIS3 would be: nickel, molybdenum, uranium, and vanadium.

Inventory and location of Contaminants

Since the mechanism for releasing the contaminants is corrosion, inventories are expressed as total exposed surface area. The inventories of contaminants reported in the Repository SEIS are shown in Table 1. The inventories in the Repository SEIS did not include materials inside the waste package because essentially no packages fail before 10,000 years.

Table 1. Inventory of Contaminants from the Repository SEIS[a]

Alloy	Total surface area	Composition as weight percent		
	(square meters)	Molybdenum	Nickel	Vanadium
Stainless steel[a]	2,535,409	2.5	12	0
Alloy 22	641,426	14.5	57.2	0.35

a. DIRS 180751-DOE 2008, pg F-65

There is no vanadium internal to the waste packages as the corroding surface materials are assumed to be 316 stainless steel. Some of these materials are 304 stainless and other special stainless steel alloys but all are taken as 316 for simplicity. This has a very small effect on estimates that are already very conservative.

Release Rates of Non-Radiologic Materials

Bounding mass dissolution rates were calculated in the Repository SEIS for the external materials only. These bounding rates are very conservative because they assume full exposure of all surfaces to liquid water. The results are shown in Table 2.

Assuming no attenuating effects of transport from the surfaces through the unsaturated zone these mass dissolution rates represent the bounding release rate to the saturated zone from the repository due to materials outside of the waste packages. In the sections below release rates from materials internal to the waste package will be added to these external values to estimate a total bounding release rate as packages fail.

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Table 2. Bounding mass dissolution rates from surfaces external to the waste package[a].

Alloy	Total exposed surface area in repository (square meters)	General corrosion rate (meters per year)	Alloy release volume (cubic meters per year)	Alloy density (grams per cubic meter)	Bounding mass dissolution rate (grams per year)			
					Alloy	Molybdenum	Nickel	Vanadium
Alloy 22	641,426	3.57×10^{-8}	0.023	8,690,000	199,870	28,981	114,326	700
316NG	2,535,409	2.48×10^{-7}	0.629	7,980,000	5,017,676	125,442	602,121	0
Totals						154,423	716,447	700

a. Source: (DIRS 180751-DOE 2008, Table F-9)

Release Rates When There Are Package Failures

There is no vanadium internal to the waste packages as the corroding surface materials are assumed to be 316 stainless steel. Some of these materials are 304 stainless and other special stainless steel alloys but all are taken as 316 for simplicity. This has a very small effect on estimates that are already very conservative. Table 3 shows estimates of the area of stainless steel waste package internals derived from DOE 2001 (DIRS 181165) and its associated data files (DIRS 181798).

Table 3. Surface Area of Stainless Steel Internal Components in the Waste Package

	Number of Packages	Surface Area m^2
CSNF	8213	4210903
CDSP	3416	1360167
		5571070

The nominal and seismic scenario classes make up for nearly all package failures for the combined scenario case (without volcanic eruption). The volcanic eruption cases here are not considered because for NEPA EIS evaluations it is not necessary to include such low probability events. At 100,000 years postclosure, in the combined nominal and seismic cases, the estimated mean total co-disposal packages breeched is 35% or about 1,200 packages (DIRS 186814-DOE 2008, Figure 2.1-12c) and the estimated mean total commercial spent nuclear fuel packages breeched is 0.3% or about 25 packages (DIRS 186814-DOE 2008, Figure 2.1-12a). The values for release rate at 100,000 years are shown in Table 4.

Table 4. Bounding release rates of contaminants to the saturated zone for the combined case at 100,000 years after closure.

Alloy	Total exposed surface area in repository (square meters)	General corrosion rate (meters per year)	Alloy release volume (cubic meters per year)	Alloy density (grams per cubic meter)	Bounding mass release rate (grams per year)			
					Alloy	Molybdenum	Nickel	Vanadium
Alloy 22	641,426	3.57×10^{-8}	0.023	8,690,000	199,870	28,981	114,326	700

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316NG	3,024,100	2.48×10^{-7}	0.75	7,980,000	5,984,815	149,620	718,178	0
Totals						178,601	832,504	700

At one million years postclosure, the estimated mean total co-disposal packages breeched is 70% or about 2,390 packages (DIRS 186814-DOE 2008, Figure 2.1-12c) and the estimated mean total commercial spent nuclear fuel packages breeched is 59% or about 4,850 packages (DIRS 186814-DOE 2008, Figure 2.1-12a) for the nominal plus seismic scenario classes. The values for release rate are shown in Table 5.

Table 5. Bounding release rates of contaminants to the saturated zone for the combined case at one million years after closure.

Alloy	Total exposed surface area in repository (square meters)	General corrosion rate (meters per year)	Alloy release volume (cubic meters per year)	Alloy density (grams per cubic meter)	Bounding mass release rate (grams per year)			
					Alloy	Molybdenum	Nickel	Vanadium
Alloy 22	641,426	3.57×10^{-8}	0.023	8,690,000	199,870	28,981	114,326	700
316NG	5,971,959	2.48×10^{-7}	1.48	7,980,000	11,818,745	295,469	1,418,249	0
Totals						324,450	1,532,575	700

Conclusion

The values for the release rates given in Tables 4 and5 above are represented as input values to the SZ transport. This is done by using step functions to represent the inputs. The input curve will be represented by a step function at postclosure time =0 with magnitudes given by Table 4. This step function will have added to it another step function occurring at 500,000 years equal to the values in Table 5 minus the values in Table 4. This is a conservative result since the values at time =0 really do not occur until 100,000 years and the values applied at 500,000 years do not occur until one million years. These input functions will be processed using abstracted breakthrough curves from TSPA-LA. The result will give a time history of mass flux at the boundary of the accessible environment. The application of the breakthrough curves is the subject of the next section.

Inputs to Calculation of Release Rates from the UZ to SZ

Corrosion rates of Alloy 22 and Stainless Steel (DIRS 180751-DOE 2008, Table F-9)

Areas of Alloy-22 and Stainless Steel exposed (see references in text above)

2.0 SZ TRANSPORT OF NON-RADIOLOGICAL CONTAMINANTS FROM REPOSITORY TO THE REGULATORY COMPLIANCE POINT

Background

In the FEIS and Repository SEIS, release of non-radiological contaminants was analyzed. The analysis was a bounding analysis which assumed that the materials of concern would begin releasing on the day of repository closure and continue to release at a constant rate. The materials of concern are nickel, molybdenum, and vanadium. These materials originate in materials of construction of the waste packages, drip shields and other repository structures. All three are elements of Alloy 22; nickel and molybdenum are also elements of 316 stainless steel. The bounding analysis assumed that all of the surfaces external to the waste package would be corroding at a constant rate for 10,000 years; a period during which few if any waste packages would fail. The bounding analysis took no credit for any attenuating processes between the repository and the hypothetical well at the Regulatory Compliance Point.

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This section is concerned with the transport of these materials from the point where they enter the saturated zone under the repository to the Regulatory Compliance Point. The starting point for this analysis is the constant release of the materials during the one million-year postclosure period. Section 1.0 described how the release rates at the beginning of the SZ under the repository are calculated. The metals fluxes developed from those calculations are the basic input to the calculations in this section.

In the transport of these contaminants the key parameter of the contaminants is the sorption equilibrium constant. Since nothing is known about interactions of the non-nuclear contaminants with colloids, we will neglect any affects of colloids. This would be conservative if these materials did not attach to colloids and non-conservative if they did. There is currently no reason to consider such interaction. The partition coefficient (K_d) is a measure of the partitioning between the contaminant in solution and the contaminant adsorbed on the solid medium at equilibrium. The higher the value of the K_d, the more strongly the contaminant is adsorbed on the solid. The effect of equilibrium adsorption is to slow the effective velocity of travel of the contaminant. K_d will therefore be the central parameter for evaluating the transport through the SZ to the Regulatory Compliance Point.

Conceptual Model for Transport of Non-Radiological Materials in the SZ

All of the transport processes in the SZ that affect radionuclides could potentially affect how the non-radiological contaminants move. Processes that can be accounted for are based on available data and the state of knowledge concerning nickel, molybdenum, and vanadium. For example there are no known colloid processes for these materials.

In the TSPA-LA abstraction there are some radionuclides that transport only as solutes (no colloidal processes). The parameters governing transport of these radionuclides are the K_d for adsorption on the solid, the specific discharge, and structure of the aquifer system (fractures, matrix porosity etc). The SZ transport abstraction provides a set of standardized breakthrough curves developed from detailed modeling of the SZ transport of 12 groups of radionuclides (i.e., 12 standard breakthrough curves) (DIRS 183750-SNL 2008, Table 6-9(a)). Some of these groups contain radionuclides that transport in the solute mode. The transport of the metals can be simulated using standard breakthrough curves for radionuclides that transport in the solute mode with a matching K_d.

Transport Properties of the Non-Radiological Contaminants

Nickel

One paper described the K_d for nickel as averaging 100 ml/g for sand materials and up to 1000 for clay materials (DIRS 186119-Gilbert, et. al 1989, p172). Another paper reports values of nickel K_d on the order of 10 to 20 at neutral pH on sand (DIRS 186163-Seigel, et.al 1992, Fig. 5). Nickel was used as a non-radioactive surrogate in tests carried out in samples of local Yucca Mountain rock formations. Batch tests in samples of Calico Hills tuff showed a K_d = 34 ml/g and tests with samples of Topapah Springs tuff showed a K_d = 13 ml/g (DIRS 160828-ANL 2001, p 180)

Conclusion: use a K_d = 15 ml/g for volcanics and alluvium

Molybdenum

One study of molybdenum adsorption indicated that it does not sorb well when the pH is much greater than 3. At pH=3 it exhibits a K_d = 3-4 ml/gm in typical sediments (DIRS 186114-DOE 1993, p 4-19). A study of molybdenum sorption on pyrite and geothites showed a rapid decline in the amount of molybdenum adsorbed as pH became much higher than about 5 (DIRS 186164- XU et al 2006, p 1731). At pH 4 the adsorption isotherms fit a Langmuir curve quite well (DIRS 186164- XU et al 2006, p 1729). The conditions in the volcanic and alluvial aquifer would generally be inside the range of pH between 6 and 8. Another study showed K_d values on the order of 1.5 ml/g in a biosolid amended soil and 0.3 in non-amended soils (DIRS 186162-Carroll et. al., p. 780). In general the evidence

supports an assumption of no adsorption (K_d=0) for molybdenum in the environments encountered in the saturated zone in either the volcanic or alluvial zones.

Conclusion: K_d = 0 in all media

Vanadium

A study of vanadium adsorption on various materials gave the following K_d results between pH values of 6 and 8 (DIRS 186118-Mikkonen and Tummavuori 1994, p 364):

Coarse Sandy soil- 37 ml/g
Fine Sandy Soil – 34 ml/g
Kaolin – 29 ml/g

Another study investigated adsorption of vanadium on bentonite, kaolinite and vermiculite. The pH for the study was between 6 and 7. It was found that vanadium fit a Langmuir isotherm quite well. At low concentrations the apparent K_d was about 20 ml/g; at medium concentration it was about 8 ml/gm and leveled off at 6 ml/gm. The values were slightly lower for vermiculite and slightly higher for bentonite (DIRS 186167-Abd-Allah et.al. 2005, p 171).

Conclusion: Range of K_d is about 6 – 37ml/g. Use a conservative value of 8 ml/g for volcanics and alluvium

Application of TSPA-LA SZ Transport Abstractions

The values for the sorption coefficients developed above were used in the TSPA SZ transport model to generate abstracted breakthrough curves for transport of the metals through the SZ to the 18 km accessible environment. The abstracted curves represent the response of the SZ to a unit step function starting at time=0. The release rates at the UZ are described by two successive step functions (see Section 1.0 above). The fluxes at the 18 km point are developed by adding the responses of the two step functions. Sandia National Laboratories have performed the TSPA runs to generate the breakthrough curves. These curves are described in a report supporting these calculations (DIRS 186186-SNL 2009, Fig. 23). The resultant fluxes of the metals at18 km are calculated in spreadsheet “Metal Flux at 18 km.xls”.

Inputs for SZ Transport of Metals
Fluxes at entrance to the SZ from the UZ described in Section 1.0
Breakthrough curves (DIRS 186186-SNL 2009, Fig. 23)

3.0 CALCULATIONS OF METALS TRANSPORT BEYOND THE REGULATORY COMPLIANCE POINT

Background
In the Postclosure Groundwater SEIS, the transport of contaminants along flow paths is modeled using a one-dimensional transport model that incorporates adsorption of contaminants on the soil and longitudinal dispersion. This section describes the formulation of the model and how it is implemented using spreadsheets.

Model Formulation
The model is formulated as a one-dimensional “pipe” containing a porous or fractured solid with solution flowing through at constant velocity. The processes occurring in the pipe are longitudinal hydraulic dispersion and equilibrium adsorption of the dissolved species on the solid surfaces. All other properties of the solid and solute are constant throughout the pipe. The boundary conditions for this model are for a “step” function at the inlet of the pipe (i.e., the concentration at time =0 goes to a constant value and is maintained indefinitely) and zero concentration at a very long distance down the pipe (i.e. no discharge disturbance). The most useful solution for flow paths in the valley will be the solution for an inlet boundary condition that is any time function. This will be discussed later as an application of the step function solution.

Water with a dissolved contaminant is flowing in the direction x in a porous medium. The contaminant is assumed

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to reversibly adsorb on the soil particles or fracture surfaces according to a linear isotherm. The partition between the dissolved contaminant and that on the surface of the soil is given by:

$$C_s = K_d C_l$$

where C_l = concentration in the liquid $\left(\frac{g\ \text{solute}}{\text{ml liquid}}\right)$

C_s = concentration of solute on the solid $\left(\frac{g\ \text{solute}}{g\ \text{solid}}\right)$

K_d = partition coefficient $\left(\frac{\text{ml}}{g}\right)$

Expressing C_s in terms of volume of water is convenient, then

$$C_s = \frac{\rho K_d}{\epsilon} C_l = \frac{gm}{ml}$$

where ρ = bulk density of the solid (g/ml)
ϵ = porosity of the medium

The mass balance for this situation can be expressed as

$$D_L \frac{\partial^2 C_l}{\partial x} - v\frac{\partial C_l}{\partial x} = \frac{\partial C_l}{\partial t} + \frac{\partial C_s}{\partial t}$$

Or

$$D_L \frac{\partial^2 C_l}{\partial x} - v\frac{\partial C_l}{\partial x} = \frac{\partial C_l}{\partial t}\left(1 + \frac{\rho K_d}{\epsilon}\right) \qquad (1)$$

Where D_L = longitudinal dispersion coefficient (km^2/yr)
v = velocity in the x direction (km/yr)
t = time (yr)

The quantity $\left(1 + \frac{\rho K_d}{\epsilon}\right)$ is commonly known as the "retardation factor" and is a measure of the relative travel time of the contaminant with respect to the travel time of the groundwater.

The boundary conditions for Equation 1 are

$C_l = 0$ *for all* x *at* $t = 0$
$C_l = C_{lo}$ *at* $x = 0$ *for* $t > 0$
$C_l = 0$ *at* $x = \infty$ *for all* t

The first two of these conditions constitute a "step function". Third condition assumes a long pipe with no discharge disturbances.

Note that $x = 0$ at the beginning of the flow path (such as at 18 km from the repository for the first path into the alluvium) and t=0 when the step function starts into the path.

The exact solution to Equation 1 is (DIRS 186117-Lapidus and Amundsen 1952, equation 9-after some rearrangement)

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$$\frac{C_l}{C_{lo}} = \frac{1}{2}\left\{ erfc\left[\frac{1-\frac{t}{t_d}}{2\sqrt{\frac{D_L t}{vxt_d}}}\right] + e^{\frac{vx}{D_L}} erfc\left[\frac{1+\frac{t}{t_d}}{2\sqrt{\frac{D_L t}{vxt_d}}}\right]\right\} \qquad (2)$$

The second term in Equation 2 is numerically difficult to evaluate because it is a very large number multiplied by a very small number but fortunately it contributes an insignificant amount to the result for any reasonably long path length. Thus the approximate solution is normally applied as

$$\frac{C_l}{C_{lo}} = \frac{1}{2} erfc\left[\frac{1-\frac{t}{t_d}}{2\sqrt{\frac{D_L t}{vxt_d}}}\right] \qquad (3)$$

Where $t_d = \frac{x}{v}\left(1 + \frac{\rho K_d}{\theta}\right)$

Equation 3 is referred to as a "breakthrough" curve which is the response to imposing a step function of magnitude C_{lo} at x = 0.

The concentrations in Equation 2 can be transformed to fluxes (g/yr) by multiplying by the volumetric flow rate (which is a constant in this simplified analysis) so that

$$\frac{F}{F_o} = \frac{1}{2} erfc\left[\frac{1-\frac{t}{t_d}}{2\sqrt{\frac{D_L t}{vxt_d}}}\right] \qquad (4)$$

where F= mass flux at any time and x and F_o = mass flux at x = 0 for all time.

There is a numerical difficulty when $t > t_d$. This gives a negative argument for $erfc$. This problem is solved by reformulating Equation 4 recognizing that $erfc = 1 - erf$ so that

$$\frac{F}{F_o} = \frac{1}{2\left[1 - erf\left(\frac{1-\frac{t}{t_d}}{2\sqrt{\frac{D_L t}{vxt_d}}}\right)\right]} \qquad (5)$$

Then note that $erf(-z) = -erf(z)$ so that Equation 5becomes

$$\frac{F}{F_o} = \frac{1}{2}\left[1 + erf\left(\frac{\frac{t}{t_d}-1}{2\sqrt{\frac{D_L t}{vxt_d}}}\right)\right] \qquad (6)$$

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So that, when evaluating the function, Equation 5 is used for $t \leq t_d$ and Equation 6 is used for $t > t_d$.

Note that for very large time $F = F_o$ at x.

Implementation of the Model

Generally, the input to a flow path is not a simple step function but rather a function of time (often it is a breakthrough curve from a previous path). Equations 5 and 6 are commonly known as response functions meaning they describe the response of the flow path to a step input. TSPA-LA uses response functions in abstracted models for SZ transport (but these are developed for a much more complex transport system). An important principal for using response functions is that if the system is linear (as in the simple model here) then responses can be superimposed linearly. A simple application of this is to represent the input function as a series of step functions, use Equations 5 and 6 to calculate a function of time that represents the response to each step and then add all the step function responses together to obtain the overall response to the input function. This approach is equivalent to the convolution method used in TSPA to convert an input flux to and output flux by use of a breakthrough curve. This method is employed for analysis of flow paths beyond the Regulatory Compliance Point for the Postclosure Groundwater SEIS. Each pipe has an input flux versus time (from an upstream pipe or process) and an output flux versus time. To ensure conservatism, discrete steps were taken in such a way so that the stepped curve was generally higher and occurred sooner than the continuous flux curve being represented. This approach maximizes both the flux (during a period of rising flux) and the cumulative release. The approach described above is implemented in the "Metals" Excel workbooks (for example, "Metals at Am Farms 2003 Pumping Comb Case Pres Climate.xls") described below in the attachments to this calculation package.

Development of Flow Path Averaged Properties

The particle track modeling indicated that the particles actually flowed through several different water bearing units along each flow path. The length of the path attributed to each unit was evaluated from the particle track results and are presented in Tables 6 and 7 for the no-pumping and pumping scenarios.

Table 6. Average Flow Path Lengths and Expected Transport Model Parameter Values in Hydrogeologic Units (Non-pumping Case)

Hydrogeologic Unit Abbreviation[a]	Average % of Total Flow Path Length	Effective Porosity	Bulk Density (g/cm^3)	Np K_d (mL/g)	U K_d (mL/g)	Pu K_d (mL/g)	Am K_d (mL/g)
YACU	4.2	0.32	2.50	6.35	4.6	100.	5500.
OAA	1.8	0.18	1.91	6.35	4.6	100.	5500.
LA	0.4	0.01	2.77	-	-	-	-
LFU	6.0	0.08	2.44	8	3	100	70
Upper VSU	25.3	0.18	1.91	6.35	4.6	100.	5500.
CFPPA	0.2	0.001	1.84	1.30	6.78	104.2	5500.
Lower VSU	21.2	0.18	1.91	6.35	4.6	100.	5500.
LCA	40.4	0.01	2.77	100.5	15.0	260.	260.
XCU	0.5	0.0001	2.65	-	-	-	-

NOTE: Units that are less than 0.1% of the average total flow path length are not included in the table.
Source: (DIRS 186221-Arnold 2009, Table 1)
[a] Belcher et al. 2004 [DIRS 173179], Table E-1

Table 7. Average Flow Path Lengths and Expected Transport Model Parameter Values in Hydrogeologic Units (Pumping Case)

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Hydrogeologic Unit Abbreviation [a]	Average % of Total Flow Path Length	Effective Porosity [b]	Bulk Density (g/cm^3) [b]	Np K_d (mL/g)	U K_d (mL/g)	Pu K_d (mL/g)	Am K_d (mL/g)
YAA	5.0	0.18	1.91	6.35	4.6	100.	5500.
OAA	16.9	0.18	1.91	6.35	4.6	100.	5500.
LA	6.9	0.01	2.77	-	-	-	-
LFU	6.6	0.08	2.44	8	3	100	70
Upper VSU	54.6	0.18	1.91	6.35	4.6	100.	5500.
CFPPA	1.1	0.001	1.84	1.30	6.78	104.2	5500.
Lower VSU	8.9	0.18	1.91	6.35	4.6	100.	5500.

NOTE: Units that are less than 0.1% of the average total flow path length are not included in the table.
Source: (DIRS 186221-Arnold 2009, Table 1)
[a] Belcher et al. 2004 [DIRS 173179], Table E-1

A length weighted average of the properties was developed. The results are shown in Table 8. An example of how the porosity is developed is as follows: The flow paths for the no-pumping scenario generally passes through alluvial sediments and undifferentiated volcanic and sedimentary basin-fill unconsolidated deposits before traveling through the lower carbonate aquifer prior to discharge by either evapotranspiration in the floor of Death Valley or by spring discharge at the Furnace Creek springs. Of the approximately 60-kilometer total travel path length from the Regulatory Compliance Point to these points of ultimate discharge (assuming no pumping), about 40 percent of the travel distance is through the lower carbonate aquifer (generally that portion of flow beneath the Funeral Mountains) and the remainder is through the alluvial and other unconsolidated basin fill deposits (with minor amounts predicted to flow through Cenozoic lava flow units). Considering the average porosity of the lower carbonate aquifer is 0.01 and the average porosity of the alluvial and other basin fill deposits is 0.18, the distance-weighted average porosity along the total travel path length is (0.4 × 0.01) + (0.6 × 0.18) or 0.11. All other transport parameters presented in Table 3 received similar distance-weighted averaging. The K_d for molybdenum, nickel and vanadium appear in the table to be path independent. For molybdenum the assumption is justified because it is a zero K_d element. In the case of nickel and vanadium, they appear to have a similar K_d in a wide variety of media. As with radionuclides, even at the low end of their range these elements tend to give the same result and are fairly insensitive over a broad range.

Table 8. Transport properties of the flow paths.

Transport Property	No-Pumping Flow Path	Pumping Flow Path
Porosity(no units-fraction of solid volume occupied by voids)	0.11	0.16
Bulk Density (grams per milliliter)[a]	2.32	2.00
Dispersion Coefficient (meters)[b]	100	100
Specific Discharge present climate (meters per day)[c]	0.00046	0.0061
Specific Discharge wet climate (meters per day)[c]	0.0018	0.024
K_d for molybdenum[d]	0	0
K_d for nickel (milliliters per gram)[e]	15	15
K_d for vanadium (milliliters per gram)[f]	8	8

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a. Source: DIRS 186221-Arnold 2009, all.
b. Source: DIRS 184806-SNL 2008, p. 4-13.
c. Source: DIRS 186186-SNL 2009, pp. 36 and 38.
d. Source: DIRS 186114-DOE 1993, p. 180.
e. Source: DIRS 160828-BSC 2001, p. 180.
f. Source: DIRS 186118-Mikkonen and Tummavuori 1994, p. 364.

Data Inputs to Transport Calculations

- Mass fluxes at the 18 km point-Spreadsheet "Metal Flux at 18 km.xls"
- K_d factors for metals-values developed in Section 2.0
- Specific discharge for flow paths (DIRS 186186-SNL 2009, Section 4.3)
- Length of flow paths and location of endpoints (DIRS 186186-SNL 2009, Section 4.3)
- Porosity of the groundwater bearing media-see Table 8
- Longitudinal dispersion coefficient (DIRS 184806-SNL 2008,p. 4-13)
- Bulk density of the groundwater bearing media -see Table 8

3.0 CALCULATION OF DAILY INTAKES

At the end of each path the metal fluxes are converted to a daily intake. The approach is somewhat different in the pumped locations versus discharge locations because of how metals are distributed in water and soil that humans are exposed to.

Intakes at Amargosa Farms

The massive pumping withdrawal rates (on the order of 16,000 acre-ft per year) and spatial distribution of wells is such that there will be a very large region in the groundwater system where everything is pulled into the wells. Because of this large region it is reasonable to assume that all water pumped onto fields for irrigation that seeps back into the ground will be recycled into the well.

The effect of recycle on intake can be evaluated by running the Irrigation Recycle Model developed to evaluate possible recycle effects on radionuclide dose at the RMEI. But the Irrigation Recycle Model is a major computer program and it is not necessary to run this model for all the situations needed but to rather use an approximation. One bounding analytical solution for the recycle model was used to help validate the model. The analytical solution describes the equilibrium concentration of a non-decaying species in an open-system behavior with recycling. The solution accounts for two mechanisms of contaminant removal. The first mechanism is contaminant removal with the water used for other than irrigation purposes. The second mechanism is removal with the groundwater that is not recaptured by the well. The steady-state concentration in the groundwater is given by (DIRS 182130-SNL 2007, p. 7-1):

$$C_w = \frac{m}{Q(1 - F_r F_c)} \qquad (10)$$

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where $m =$ mass flux into the system, $F_i =$ the fraction of water use that is used for irrigation, $F_o =$ the fraction of irrigation water that is recycled, and Q= the pumping rate. At the Amargosa Farms location it will be conservatively assumed that $F_o = 1$. Therefore the water concentration will be given by:

$$C_w = \frac{m}{Q(1 - F_i)} \qquad (11)$$

Equation 11 is implemented in the "Metals" Excel Workbooks (for example "Metals at Am Farms 2003 Pumping Comb Case Pres Climate.xls") cited in the Attachments section of this calculation package. The water concentration is converted to daily intake as follows:

Daily intakes are compared to Oral Reference Dose limits set by EPA. The Oral Reference Dose is the dose in milligrams per kilogram of body weight per day. These are evaluated for a person weighing 70 kilograms who drinks 2 liters of water per day. Intakes are calculated in the same units to allow comparison. Therefore the intake is

$$Intake = \frac{C_w\left(2\frac{liters}{day}\right)}{70\ kilograms} \qquad (12)$$

Two columns of intakes are listed in the spreadsheets: the first is for $F_i = 0$ and the second, entitled "Recycle", is the intake resulting from water concentrations given by Equation 11 with $F_i > 0$.

The recycle fraction depends on the specific uses identified for the withdrawn water. For the TSPA-LA analyses, 85 percent was used for irrigation of alfalfa; 3 percent for commercial/industrial; 4 percent for individual/municipal; and 8 percent residual uncertainty. The average distribution of annual water withdrawals for purposes of irrigation over the 7-year period from 1997 to 2003 is about 86 percent (DIRS 185968-Moreo and Justet 2008, Figure 3, p. 5). The Irrigation Recycle Model identifies that residential or commercial water use that is classified as "indoor water use" could also contribute to recycling since it could be a constant water flow path (that is, via a septic leach field). Any outdoor water use that is not a constant overwatering, such as irrigation, would not have the motive force to carry the contaminants back to the water table and therefore is not included in the recycle fraction. The combination of recycle and recapture fractions for the recycle report equates to about 0.11 (0.96 × 0.12) with an annual withdrawal rate of 3,000 acre-feet.

Since the analysis described in this calculation package uses a recapture fraction of 1.0, a recycle fraction of 0.86 is used. This reflects the fraction of water used in irrigation. Although some of the commercial/ residential/industrial water use could contribute to recycling via leaching through septic fields (unlikely because the leach fields are shallow and water will be lost by evaporation), this contribution is more than offset by the higher-than-expected recapture fraction. Also note that it is known that some radionuclides will be lost to soil erosion as well as via uptake in crops that are hauled away, in exported milk and various other loss paths. This results in a combination of recycle and recapture fractions of 0.86 (compared with the 0.11 identified as the mean in the Irrigation Recycle Model) (DIRS 182130-SNL 2007, p. 6-39).

Intakes at Discharge Locations

At the Furnace Creek springs area daily intakes are calculated differently from the Amargosa Farms area. At the springs there is no pumping and no recycle. Instead, water flows from springs. In this case the concentration in the water is taken as the mass flux in g/yr divided by the volumetric flow rate of the spring . The resulting water concentrations are used in Equation 12 to calculate intakes. Intakes related to the Death Valley floor are considered in another calculation package (CalcPkg_Evap_DHL_4-22-09).

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Data Inputs to Intake Calculation

- Mass flux from the transport calculations (g/yr)
- Pumping Rate (L/yr) or Discharge Rate (L/yr). Pumping rates for intakes calculation were derived by taking the average of the Amargosa Desert pumping rates for 1994 through 2003(DIRS 185968-Moreo and Justet 2008, Figure 3, p. 5). Only that which is called "irrigation" was used since the other uses (such as mining) are likely at sites other than the Amargosa Farms. This "irrigation" number is not to be confused with the irrigation water that results from the fraction F_I in Equation 11. The value obtained was 16,828 acre-ft/yr.
- Fraction F_I. The non-irrigation use rates for 1994-2003 (DIRS 185968-Moreo and Justet 2008, Figure 3, p. 5) were averaged at 13.6 percent so the fraction F_C was set at 0.86.
- Flow rates from springs. The flow rates for the springs at Furnace Creek are given DIRS 173179 (Belcher 2004, p. 109 ,Table C-2) as 2294 acre-ft/yr.

4.0 INVENTORY CALCULATIONS

At each location the mass flux is used to develop an "inventory". This inventory is a measure of the total amount of material that has arrived at the specific location as a function of time. The inventory is assessed at the following points:

- Inventory released at the UZ-SZ interface under the repository
- Inventory released to the region beyond the Regulatory Compliance Point
- Inventory accumulated at the Amargosa Farms area
- Inventory released into Death Valley

The inventory is calculated as the integral of the flux versus time curve or, in other words, the cumulative flux. Inventories are presented in the "Metals Inventory" spreadsheets such as "Metals Inventory Amargosa Farms pumping pres climate.xls"

Mass balances based on these inventories are presented in the "Metals Mass Balance" files such as "Metals Mass Bal No Pumping Pres Climate.xls"

Data Inputs to Inventory Calculations

- Mass Fluxes from transport calculations
- Mass Fluxes from the assessments in Sections 1 and 2 above.

5. SOIL CONCENTRATIONS AT AMARGOSA FARMS

Background

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In the Amargosa Farms area where irrigated farming takes place, water containing contaminants is pumped out of wells and contaminants are introduced into the surface soil during the irrigation process. Some fraction of the contaminants will decay (if they are radionuclides), some fraction will be leached back into the aquifer, and some fraction will escape by soil erosion. A constant amount of contaminants will be retained in a surface soil region during a period of steady-state.

Model

In the formulation of the TSPA-LA Biosphere Model many modeling concepts were developed that are useful to obtain estimates of the fate of contaminants in a region where irrigation is taking place. The following is a discussion of these. There are several assumptions in this development. The same assumptions stated in the Biosphere Model Report are relevant to the analysis below (see DIRS 177399-SNL 2007, Section 6.3.1.4).

The overall balance of buildup and removal of contaminant in the soil where there is irrigation can be expressed as (DIRS 177399-SNL 2007, pg. 6-73):

$$\frac{dCs_{i,j}(t)}{dt} = Cw_i(t)IR_j(t) - (\lambda d_i + \lambda l_i + \lambda e_i)Cs_{i,j}(t) \qquad (13)$$

where:

$Cs_{i,j}(t)$ = soil concentration for contaminant i and crop j (g/m^2)
$Cw_i(t)$ = groundwater concentration contaminant i (g/m^3)
$IR_j(t)$ = irrigation rate for crop j (m/yr)
λd_i = radioactive decay constant for radionuclide i (yr^{-1})
λl_i = leach rate constant for contaminant i (yr^{-1})
λe_i = erosion rate constant for contaminant i (yr^{-1})

Let $\lambda_{eff} = \lambda d_i + \lambda l_i + \lambda e_i$

The solution to Equation 13 for $t = T_{irr}$ for constant Cw_i and IR_j is (DIRS 177399-SNL 2007, Eq. 6.4.1-3)

$$Cs_{i,j} = \frac{Cw_i IR_j}{\lambda_{eff}}\left(1 - e^{-\lambda_{eff} T_{irr}}\right) \qquad (14)$$

After a sufficient time at a constant irrigation rate and groundwater concentration the concentration of contaminant in the soil will be constant. For example 95% of equilibrium will be attained after an irrigation time of ln(20)/ λ_{eff} . This constant soil concentration would be given by

$$Cs_{i,j} = \frac{Cw_i IR_j}{\lambda_{eff}} \qquad (15)$$

Cw_i is calculated by Equation 11 above and IR_j is the irrigation rate.

The leaching and erosion occur in a surface soil region which is well-mixed to a depth d (DIRS 177399-SNL 2007, Eq. 6.4.1-28).

$$\lambda l_i = \frac{QW}{d\theta\left(1 + \frac{\rho K_d}{\theta}\right)} \qquad (16)$$

Where ρ = bulk soil density
θ = fraction of void space containing liquid

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OW = overwatering rate
K_{di} = soil-liquid partition coefficient for contaminant i

The erosion rate constant is given by (DIRS 177399-SNL2007, Eq. 6.4.1-31)

$$\lambda_{e_i} = \frac{ER}{d\rho} \qquad (17)$$

where ER = avg soil erosion rate (kg/m^2-yr).

Soil concentration is implemented by using Equations 16 and 17 for leaching and erosion constants and the radioactive decay constant in Equation 15. This is done in the "Metals At" Excel Workbooks (for example "Metals at Am Farms 2003 Pumping Comb Case Wet Climate").

<u>Data Inputs for Soil Concentration</u>

- Mass fluxes from transport calculations
- Bulk soil density = 1500 kg/m^3 (DIRS 179988-SNL 2007, p. 1)
- Soil erosion rate=0.2 kg/m^2/yr (DIRS 179988-SNL 2007, p. 2)
- Moisture content = 0.20 (DIRS 179988-SNL 2007, pg 3)
- Soil depth = 0.25 m (DIRS 177399-SNL 2007, Table 6.6-3,p. 6-182)
- Irrigation Rate (mean)=0.95 present day climate, 0.5 wet climate (DIRS 177399-SNL 2007, Table 6.6-3,p. 6-182)
- Overwatering rate = 0.079 m/yr ((DIRS 177399-SNL 2007, Table 6.6-3,p. 6-182)
- Partition Coefficient (K_d) for each contaminant: Since soil K_d will be higher than that of the aquifer the following values were used based on the literature:
    - Molybdenum, 0 mL/gm.(DIRS 186162-Carroll et. al., p. 780)
    - Nickel, 20 mL/gm. (DIRS 186119-Gilbert, et. al 1989, p172)
    - Vanadium, 8 mL/gm. (DIRS 186167-Abd-Allah et.al. 2005, p 171)
- Pumping rate. Pumping rates were derived by taking the average of the Amargosa Desert pumping rates for 1994 through 2003(DIRS 185968-Moreo and Justet 2008, Figure 3, p. 5). Only that which is called "irrigation" was used since the other uses (such as mining) are likely at sites other than the Amargosa Farms. This "irrigation" number is not to be confused with the irrigation water that results from the fraction F_i in Equation 11. The value obtained was 16,828 acre-ft/yr.

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- Fraction F_c. The non-irrigation use rates for 1994-2003 (DIRS 185968-Moreo and Justet 2008, Figure 3, p. 5) were averaged at 13.6 percent so the fraction F_i was set at 0.86.

Results/Conclusions:
Uranium values reported below were calculated as part of another work package (CalcPkg_Rad1_DHL_4-21-09.doc).

Daily Intakes

Table 9. Daily intakes of the nonradiological contaminants.

Scenario	Molybdenum	Nickel	Vanadium
The Amargosa Farms area, Pumping, Present Climate	3.00×10^{-3}	1.37×10^{-2}	6.04×10^{-6}
The Amargosa Farms area, Pumping, Wetter Climate	3.00×10^{-3}	1.37×10^{-2}	6.04×10^{-6}
Furnace Creek springs area, No-Pumping, Present Climate	2.99×10^{-3}	0.0	0.0
Furnace Creek springs area, No-Pumping, Wetter Climate	7.67×10^{-4}	0.0	0.0
Oral Reference Dose (mg/kg body-wt/day)	5.00×10^{-3}	2.00×10^{-2}	7.00×10^{-3}

Soil Concentrations at theAmargosa Farms area

Table 10. Soil concentrations of nonradiological contaminants at the Amargosa Farms area

	Soil concentration (grams per square meter)			
Time (yr)	Molybdenum	Nickel	Vanadium	Uranium
Present climate				
10,000	3.06E-03	0.00E+00	0.00E+00	0.00E+00
100,000	3.06E-03	1.80E-14	1.76E-05	1.16E-03
500,000	3.06E-03	2.48E+00	6.20E-04	5.27E-03
1,000,000	5.24E-03	5.05E+00	6.32E-04	1.33E-02
Wetter climate				
10,000	3.06E-03	0.00E+00	0.00E+00	5.26E-09
100,000	3.06E-03	2.01E+00	5.45E-04	6.13E-04
500,000	3.06E-03	2.81E+00	6.20E-04	2.84E-03
1,000,000	5.24E-03	5.05E+00	6.32E-04	7.77E-03

References/Attachments: Listed below are the materials referenced in and/or attached to this calculation package.

References

Note: some of these references are cited in the Attachment to this package

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Attachments

Documents

The following documents are attached to this calculation package

Revised Chemistry Studies Rev 1.doc

This document is an earlier calculation package supporting the information in the Appendix to this calculation package.

Files

1. Breakthrough Curves for Metals in the SZ

The tables in the following file are the breakthrough curves supplied by the Lead Laboratory for transport of molybdenum, nickel and vanadium from the exit of the UZ to the 19 km accessible environment.
Metals Breakthrough Curves at 18 km.doc

2. Files with 18 km Flux of Metals

This file contains the transport calculations from the UZ through the SZ to 18 km
Metal Flux at 18 Km.xls

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3. "Metals At" Files

These files contain the transport calculations for Mo, Ni and V from 18 km to the point of interest. They also do the Intake and soil concentration calculations. These files use the results of the "Metal Flux at 18 Km.xls" as input.
Metals at Am Farms 2003 Pumping Comb Case Pres Climate.xls
Metals at Am Farms 2003 Pumping Comb Case Wet Climate.xls
Metals at Furnace Creek No Pumping Comb Case Pres Climate.xls
Metals at Furnace Creek No Pumping Comb Case Wet Climate.xls

4. Uranium Intake Rollup Files

These files sum up the Intakes for all the uranium isotopes. They get the intakes from the files in list 3 above.
U Intake Comb Case Pres Climate.xls
U Intake Comb Case Wet Climate.xls

5. Summary file of Intakes and Soil Concentration

Metals Peak Intakes.xls

6. Inventory Files

These files roll up the inventory based on the fluxes in file group 3. Above
Metals Inventory Released at UZ-SZ.xls
Metals Inventory Beyond 18 km Comb Case.xls
Metals Inventory Amargosa Farms pumping pres climate,xls
Metals Inventory Amargosa Farms pumping wet climate.xls
Metals Inventory Death Valley no pumping pres climate.xls
Metals Inventory Death Valley no pumping wet climate.xls

7. Mass Balance Files

These files provide the mass balances based on the inventories in file group 6 above.

Metals Mass Bal No Pumping Pres Climate.xls
Metals Mass Bal No Pumping Wet Climate.xls
Metals Mass Bal Pumping Pres Climate.xls
Metals Mass Bal Pumping Wet Climate.xls

8. Soil Concentration Files

This file collects and totals the metals soil concentrations calculated in "Dose" files (for Uranium) which are in calcpkg_Rad1_DHL_4-21-09 and the "Metals at" files in File List 3 above.

Metals Soil Conc Am Farms.xls
U Soil Conc Am Farms.xls

9. Chemistry Study Files

The following text files are records of EQ3 and EQ6 runs performed to support the calculations in the attached document "Revised Chemistry Studies Rev 1.doc" above which documents the analysis described in the Appendix to this calculation package.

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Alloy-22 tuff.6o
j13_All-22.6o
j13_All-22.6p
j13solB.3o
j13solBa.3o
j13solCd.3o
j13solCu.3o
j13solMn.3o
j13solZn.3o

APPENDIX
SCREENING OF POTENTIALLY TOXIC SUBSTANCES-EXCERPT FROM THE DEIS

This screening study was described within the Yucca Mountain Repository Draft EIS (DEIS). The purpose of the study was to determine which of the materials should be considered for further analysis of transport in the volcanic and alluvial aquifers. While quantities of materials are now different than the quantitities in the DEIS these quantity differences affected only vanadium and molybdenum. This is because the changes in materials since the DEIS are limited to the ground control structures, package support structures and packages and none of the elements except for vanadium and molybdenum in these construction materials were screened out due to quantity in the DEIS study. In the FEIS the vanadium and molybdenum were reinstated as needing full transport analysis because the increased quantities of Alloy-22 and stainless steel in the SEIS proposed action. The following sections are excerpted from the DEIS.

Discussions regarding chromium oxidation states in this excerpt are outdated and have been overtaken by events of more recent research. The discussions are included for completeness but please note the updated research discussed in Section 1.0 above in the body of this calculation package.

Inventory of Materials

Table A-1 gives the inventory of materials in the repository at the time of the DEIS.

Table A-1. Inventory (kilograms)[a] of chemical materials placed in the repository .

			Inventory			
					High-level	
	Outside				radioactive	
Element	package	Carbon steel	Alloy-22	Internal	waste	Totals
Aluminum	0	0	0	1,205,000	0	1,205,000
Barium	0	0	0	0	19,000	19,000
Boron	0	0	0	223,000	0	223,000
Cadmium	0	0	0	0	43,000	43,000
Carbon	286,000	796,000	8,000	5,000	0	1,096,000
Chromium	0	0	9,670,000	3,903,000	0	13,573,000
Cobalt	0	0	1,357,000	27,000	0	1,384,000
Copper	1,135,000	0	0	3,000	0	1,139,000
Iron	91,482,000	320,089,000	2,171,000	9,000	0	413,751,000
Lead	0	0	0	0	2,000	2,000
Magnesium	0	0	0	12,000	0	12,000
Manganese	234,000	3,007,000	271,000	2,000	0	3,514,000

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Mercury	0	0	0	0	200	200
Molybdenum	0	0	5,934,000	302,000	0	6,236,000
Nickel	0	0	29,727,000	5,563,000	0	35,290,000
Phosphorus	37,000	114,000	11,000	0	0	161,000
Selenium	0	0	0	0	300	300
Silicon	361,000	943,000	43,000	7,000	0	1,354,000
Sulfur	46,000	114,000	11 ,000	0	0	170,000
Titanium	0	0	0	2,000	0	2,000
Tungsten	0	0	1,628,000	0	0	1,628,000
Uranium	0	0	0	70,000,000	0	70,000,000
Vanadium	0	0	190,000	0	0	190,000
Zinc	0	0	0	3,000	0	3,000

a. To convert kilograms to pounds, multiply by 2.2046

Solubility of Chemically Toxic Materials in the Repository

The release of chemically toxic materials to the accessible environment depends on the solubility of the materials in water and on equilibrium chemistry with the repository environment.

Maximum source concentrations for materials in the repository that are not a part of the waste package materials were calculated as solubilities of an element in repository water. This calculation would provide the maximum possible concentration of that element in water entering the unsaturated zone if it dissolved at a sufficiently high rate. The results are reported in Table A-2. The solubilities were obtained by modeling with the EQ3 code (DIRS 100836-Wolery 1992, all). The simulations were started with water from well J-13 near the Yucca Mountain site (DIRS 100814-Harrar et al. 1990, all). EQ3 calculates chemical equilibrium of a system so that by making successive runs with gradually increasing aqueous concentrations of an element, eventually a result will show the saturation of a mineral in that element. That concentration at which the first mineral saturates is said to be the "solubility." For example, the solubility of copper (from the bus bars left in the tunnels) would be obtained by increasing copper concentrations in successive runs of EQ3. At a concentration of 0.01811 milligram per liter, tenorite (CuO) would be saturated. This mineral would then be in equilibrium with dissolved copper existing in approximately equal molar parts as $CuOH^+$, $Cu(CO_3)aq$, and Cu^{++}. The aqueous concentration was then reported in Table 2 as a "solubility" of copper for the purposes of screening the potentially toxic chemicals.

The largest quantities of potentially toxic materials come from the construction materials of the waste packages themselves. The main source is the Alloy-22 material used in the corrosion-resistant layer. The possible maximum concentrations of these materials (chromium, nickel, molybdenum, manganese, and vanadium) were developed by examining the corrosion process. Corrosion was modeled in the EQ6 code (DIRS 100097-Wolery and Daveler 1992, all), starting with the same repository water as used in the solubility calculations described above. In the corrosion step, EQ6 was run in the titration mode (that is, a confined area in which essentially stagnant water reacts with iron from existing corrosion-allowance material fragments and Alloy-22). Oxygen is fixed at atmospheric fugacity (which is analogous to partial pressure adjusted for nonidealities). After a few hundred years, the chemistry of the resultant solution stays relatively constant for a long period. Following that, ionic strength eventually exceeds limits for EQ6. The chemistry during this "flat period" was used as the resultant solution, which contained very high quantities of dissolved chromium (as hexavalent chromium), nickel, and molybdenum, and small dissolved quantities of manganese and vanadium. The reaction of this solution with tuff was then modeled. The resultant solution showed that essentially all of the nickel and manganese were precipitated and that the original dissolved concentrations of chromium, molybdenum, and vanadium remained.

Two types of geochemical analyses were performed. The first was an analysis of the solution concentration obtained when J-13 water, adjusted for the presence of repository materials such as concrete (that is, the same water chemistry used for other process modeling work supporting the Total System Performance Assessment-Viability

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Assessment), reacts with a large mass of carbon steel and Alloy-22 for an extended period. The second was an analysis of the reaction of the solution from the first analysis with volcanic tuff. The resultant solution from the second analysis would represent a bounding value for the source term solution at the floor of the emplacement drift.

At each step of the reaction progress in which the titration mode of EQ6 was used, a small quantity of reactants (steel and Alloy-22) was added to the solution (starting as J-13 water). After each addition, the increment of reactant dissolves and all product phases would re-equilibrate with the aqueous solution. After a long time, this process would produce a bounding concentration for the solution. This would be the case if the water had a very long contact time with the metals and a very limited amount of water was used.

The composition of J-13 water was taken from earlier studies (DIRS 100222-CRWMS M&O 1997, page A-5). The carbon dioxide and oxygen levels are maintained at atmospheric conditions during the reaction. This process promotes the formation of the chromate (CrO4--) ion, which represents the hexavalent (and most toxic) state of chromium. The complete oxidation of chromium and the formation of chromate create a very low pH environment in the area immediately adjacent to the corrosion process. The result of a low pH level in the presence of sufficient oxygen would be dissolved chromium existing in the hexavalent state. Large amounts of soluble hexavalent molybdenum are also formed.

Table A-2. Source concentrations a (milligrams per liter)[b] of waterborne chemically toxic materials for screening purposes.

Element	Concentration	Aqueous species	Reference
Boron	6,400	B(OH)3aq	Solubility in repository water by EQ3[c] simulation
Chromium	300	$CrO4^{-}$	EQ6[d] simulation of Alloy 22 corrosion
Copper	0.018	$CuOH^{+}$, $Cu(CO_3)aq$, Cu^{++}	Solubility in repository water by EQ3[c]simulation
Manganese	4.40×10^{-11}	Mn^{++}	EQ6[d] simulation of Alloy 22 corrosion
Molybdenum	218	MoO_4^{--}	EQ6[d] simulation of Alloy 22 corrosion
Nickel	1.00×10^{-6}	Ni^{++}	EQ6[d] simulation of Alloy 22 corrosion
Uranium	0.6	$UO_2(OH)_2aq$	Derived from TRW (1997b), Figure C-3, page C-8e
Vanadium	4.8	VO_3OH^{--}, HVO_4^{--}	EQ6[d] simulation of Alloy 22 corrosion
Zinc	63	Zn^{++}	Solubility in repository water by EQ6[c] simulation

a. Concentration at the point where the chemical enters unsaturated zone water, controlled by solubility or local chemistry of dissolution and interaction with tuff. Note that these concentrations are not used for transport modeling but are used only for screening analysis purposes.
b. To convert milligrams per liter to pounds per cubic foot, multiply by 0.00000624.
c. EQ6 code, Version 7.2b (DIRS 100097-Wolery and Daveler 1992, all).
d. EQ3 code, Version 7.2b (DIRS 100836-Wolery 1992, all).
e. For ph=8 and $CO_2=10^{-3}$ atmospheric partial pressure.

Once the corrosion solution left the waste package, it would quickly encounter rock material. The second analysis evaluated the effect of rock on the solution. The analysis used the option for a "Fluid-Centered Flow-Through Open System" in EQ6. In this type of simulation the solution is permitted to react with solid materials (in this case, the tuff) for some specified interval (either time or reaction progress). The solution is then moved away from the solid reaction products that would be created and allowed to react with the same initial solids for a further interval. In this way, the model simulates reaction of the solution as it percolates through a rock.

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This analysis simulated the tuff rock with the elemental composition characteristics of volcanic tuff. Earlier waste package criticality studies used this formulation for tuff reactants (DIRS 100229-CRWMS M&O 1997, page 17).

The resultant solution from the simulated reaction of J-13 water with carbon steel and Alloy-22 has a very low pH and a high concentration of dissolved chromium, molybdenum, and nickel. The resulting pH 2.0 solution would have the elemental concentrations listed in the second column of Table A-3. When the solution from corrosion contacts the rock, it would be neutralized to a pH of 8. The availability of silica in the rock would promote the formation of silicates, which would precipitate most of the nickel and manganese but virtually none of the chromium, molybdenum, or vanadium. Some chromium would change to Cr_20_7-- (still hexavalent and very soluble). The molybdenum would behave in a very similar fashion and remain in solution as hexavalent species. The resultant solution would have the elemental concentrations listed in the third column of Table A-3.

The mechanism for mass loss of the Alloy-22 remains an issue at this time. There is no reliable evidence to support or refute the idea that the chromium that is carried away from Alloy-22 is dissolved hexavalent chromium. What is known fairly well is that trivalent chromium is the likely constituent (as Cr+3) of the passivation film and that it has a very low solubility. It is not known whether the film grows thick until it sloughs off or if the film oxidizes in place so that it loses hexavalent chromium into solution. It is also not known if the film would oxidize and dissolve if it did slough off. EQ6 simulates a process whereby the trivalent chromium oxidizes to hexavalent chromium by reaction with O_2. It is well known that if chromium is in solution, the predominant species will be hexavalent chromium, especially in oxidizing conditions. At the Eh for atmospheric oxygen, it is known that the ratio of hexavalent chromium to trivalent chromium would be very high such that whatever small amount of trivalent chromium is in equilibrium with the passivation film would be accompanied by a very large amount of hexavalent chromium at atmospheric conditions. This shown in a Pourbaix (Eh-pH equilibrium) diagram for chromium in which the field for Cr_2O_3 does not include atmospheric conditions. For the purpose of this analysis, DOE assumes hexavalent chromium is mobilized as a dissolved constituent, and its source term is represented by 0.22 times the bulk loss rate of Alloy-22. A parallel assumption has been made about hexavalent molybdenum, which is also present in meaningful quantities in the results of the corrosion simulation.

Table A-3. EQ6-modeled concentrations (milligrams per liter)[a] in solution from reaction of J-13 water with carbon steel and Alloy-22.

Element	After corrosion of Alloy-22	After reaction with tuff rock
Chromium	299	299
Manganese	32	4.40×10^{-11}
Molybdenum	218	218
Nickel	750	9.9×10^{-5}
Vanadium	4.8	4.8

a. To convert milligrams per liter to pounds per cubic foot, multiply by 0.00000624.

Well Concentration of Chemically Toxic Materials

After the materials would begin to be released from the repository, they would be transported through the unsaturated zone to the saturated zone and on to the accessible environment. The screening study assumed that the chemicals would flow to a well from which an individual received all of their drinking water. TableA-4 lists the concentrations for the chemically toxic materials.

The well concentrations listed in TableA-4 were based on a series of simple calculations. First, the release concentrations for each material were calculated. The release rate for the material in the carbon steel is based on a degradation rate of 0.025 millimeter (0.001 inch) per year (DIRS 100359-CRWMS M&O 1998, Figure 5-16) and a thickness of 100 millimeters (3.9 inches); thus, the annual fractional release rate for carbon steel is 0.00025. The

degradation rate for Alloy-22 is 0.000006 millimeter (0.00000024 inch) per year (DIRS 100359-CRWMS M&O 1998, Figure 5-28) and the material thickness is 20 millimeters (0.79 inch); the resulting annual fractional release rate is 0.0000003. The internal materials were assumed to be released at the same rate as the carbon steel (a conservative assumption). The release rate for the high-level radioactive waste was taken from earlier studies (DIRS 100358-CRWMS M&O 1998, Section 6.4). The annual fractional release rate for the high-level radioactive waste is 0.000054. The well concentrations in Table A-4 are very conservative concentration estimates that are not used directly for impact estimates. Instead, they are used to screen potentially toxic chemicals for more detailed analyses. These estimates were then compared to the Maximum Contaminant Levels for each material, if available (40 CFR 141.2). Some of the estimated concentrations were orders of magnitude below their respective Maximum Contaminant Levels. As a result of this screening study, barium, copper, lead, mercury, and selenium were eliminated from further detailed analysis. All the other chemically toxic materials, including boron, cadmium, chromium, manganese, molybdenum, nickel, uranium, vanadium, and zinc, were carried forward for further detailed analysis .

Table A-4. Concentrations (milligrams per liter) of waterborne chemically toxic materials for screening purposes. [b]

				Release concentration					Maximum
Element	Concentration limit	Non-package	Carbon steel	Alloy-22	Internal	HLW	Maximum	Well concentration	contaminant level[c]
Barium	0.00412	0	0	0	0	0.99	0.00412	1.5×10^{-5}	2.0
Boron	6,400	0	0	0	50	0	52	1.9×10^{-1}	NA[d]
Cadmium	23	0	0	0	0	2.2	2.2	7.7×10^{-3}	0.005
Chromium	300	0	0	2.7	940	0	300	1.1	0.1
Copper	0.018	0.018	0	0	0	0	0.018	6.4×10^{-5}	1.3
Lead	NA	0	0	0	0	0.09	0.09	3.2×10^{-4}	0.015
Manganese	4.4×10^{-11}	4.4×10^{-11}	707	0.077	0.44	0	4.4×10^{-11}	1.6×10^{-13}	NA
Mercury	NA	0	0	0	0	0.01	0.01	3.6×10^{-5}	0.002
Molybdenum	218	0	0	2.07	71	0	71	2.5×10^{-1}	NA
Nickel	1.0×10^{-6}	0	0	8.4	1,310	0	1.0×10^{-6}	3.5×10^{-9}	NA
Selenium	NA	0	0	0	0	0.014	0.014	4.9×10^{-5}	0.05
Uranium	0.0023	0	0	0	16,500	0	0.0023	8.2×10^{-6}	NA
Vanadium	4.8	0	0	0.054	0	0	0.054	1.9×10^{-4}	NA
Zinc	63	0	0	0	0.73	0	0.73	2.6×10^{-3}	NA

a. To convert grams per cubic meter to pounds per cubic foot, multiply by 0.00000624.
b. Note that these concentrations are not used for transport modeling but only for screening analysis purposes.
b. consideration based on the screening analysis.
c. Maximum contaminant levels are specified in 40 CFR 141.2.
d. NA = not available (no Maximum Contaminant Level established by the U.S. Environmental Protection Agency for this element).

For the chemicals in the nonpackaged materials, the degradation was assumed to be limited by the solubility of the chemical in water. The release concentration (in grams per cubic meter) was assumed to be equal to the elemental solubility for those chemicals with a nonzero inventory in the nonpackaged materials. For the remaining material categories, all part of the waste packages, the release concentration was calculated based on the per-package inventory and the release rate from a waste package.

The per-package inventory (in grams for each material category) was calculated by dividing the total inventory (in

grams) of the material type by the total number of waste packages in the repository (assumed to be 11,969). The release of material per cubic meter would be the fractional release rate divided by the rate of water flow past a waste package, based on an average 20-millimeter (0.79-inch) annual water flow rate through the repository. The release concentration is the per-package inventory in grams multiplied by the release per cubic meter.

To estimate the concentration in a well, two steps were performed. First, the maximum release concentration from the four material groups was selected. Then, two dilution factors were applied to the maximum release concentration. An unsaturated zone dilution factor was calculated as the ratio of the total cross-sectional area of all waste packages to the total surface area of the repository. Each of the 11,969 waste packages would have a cross-sectional area of 8.9 square meters (96 square feet), and the assumed repository surface area would be about 3 square kilometers (740 acres). This calculation resulted in an unsaturated zone dilution factor of 0.035. A dilution factor of 10 (DIRS 100353-CRWMS M&O 1998, Figure 3-3d) was applied to the saturated zone so the dilution factor, when combined for the unsaturated and saturated zones, would be 0.0035.

Health Effects Screening for Chemically Toxic Materials

The potential for human health impacts was estimated using a hazard index. The hazard index was determined by dividing the intake of a chemical by the *oral reference dose* for that chemical. A hazard index of 1.0 or above indicated the potential for human health impacts. Table A-5 lists the human health hazard indices.

Table A-5. Human health hazard indices for chemically toxic materials.

Element	Intake	Oral reference dose[a]		
	(milligram per kilogram per day)	(milligram per kilogram per day)	Hazard index	
Boron	0.0053	0.09	0.059	
Cadmium	0.00022	0.0005	0.44	
Chromium	0.030	0.005	6.1	
Manganese	4.5 x 10-15	0.14	3.2 x 10-14	
Molybdenum	0.0072	0.005	1.4	
Nickel	1.0 x 10-10	0.02	5.1 x 10-9	
Uranium	0.00000023	0.003	0.000078	
Vanadium	0.0000054	0.007	0.00078	
Zinc	0.000074	0.3	0.00025	

a. Source: (DIRS 148219-EPA 1999, all), (DIRS 148221-EPA 1999, all), (DIRS 148224-EPA 1999, all), (DIRS 148227-EPA 1999, all), (DIRS 148228-EPA 1999, all), (DIRS 148229-EPA 1999, all), (DIRS 148233-EPA 1999, all), (DIRS 102173-EPA 1994, all), (DIRS 103705- EPA 1997, all).

Intake was based on a 2-liter (O.53-gallon) daily consumption rate of drinking water, at the concentrations in the well, by a 70-kilogram (154-pound) adult. The oral reference doses were from the Integrated Risk Information System, with the exception of doses for uranium (DIRS 102173-EPA 1994, all) and vanadium (DIRS 103705-EPA 1997, all).

Conclusions

Of the proposed chemically toxic materials in the repository, only chromium and molybdenum have a hazard index above 1.0. Because the inventories of a given material category in the repository should no more than double under any of the inventory modules, all chemically toxic materials (except chromium and molybdenum) can be eliminated from detailed analyses. Uranium is retained because of its special chemical toxicity.

Calculation Package
EQ3/6 Studies Performed to Support Screening Studies Presented in the Yucca Mountain Repository DEIS

The attached document with its electronic attachments describes work that supported screening studies for non-radiological contaminants in the DEIS. These studies were not used to support the FEIS because they were not necessary when a 10,000-year limit was placed on the analysis period. This study is being brought forward as a calculation package to support the non-radiological contaminants screening study appendix to the SEIS-3.

The electronic attachments are supplied as a PKZIP file "Revised Chemistry EQ3,EQ6 Files.zip"

Note: in the screening study appendix for SEIS-3 Table 1-11, referred to in Section 4 of the attached study is presented as Table A-2.

Revised Chemistry Studies for Chemically Toxic Materials Long-Term Repository Performance for YMP EIS

D.H. Lester

February 9, 1999
Rev 1 November 5, 1999

This report documents additional chemistry studies performed to support screening analysis for the YMP EIS long-term performance analysis. The screening studies were performed to determine which non-radiological materials in the repository posed sufficient concern for groundwater contamination to warrant more detailed transport analyses. Note that the calculations described in this document were not used to determine the impacts in the EIS. After the screening analysis an additional transport analysis using the RIP TSPA was used to determine impacts of non-nuclear materials.

1. SCOPE OF THE CALCULATIONS

The studies described in this document include two sets of calculations:

1. The fate of corrosion products from the degradation of Alloy 22 in the CRM after partial failure of the CAM. This included studies of the chemistry of the solution resulting from corrosion and the solution resulting from reaction of the corrosion solution with tuff rock.

2. Equilibrium studies to determine solubilities of various elements in j13 water.

3. Separate hand calculation for the maximum uranium concentration.

Previous studies (documented in a separate calculation package) were performed for item 1 using the EQ6 code. After review of the work by various others it was determined that some minor changes in the calculations should be made. The principal changes were:

- Using a solution from the corrosion at a much shorter time to be more realistic and avoid overrunning the ionic strength limits for the code.
- Using a more realistic amount of alloy 22 and steel in relationship to the one liter of water basis of the code
- For the tuff reaction step, turning on the code feature which allows solids to be left behind as the water flows on. (In the code this is referred to as the “physically removed subsystem”)

While some significantly lower (factor of 6) concentrations were obtained for chromium(VI) it did not alter the conclusion that Cr should be further analyzed in a detailed transport study.

Previous drafts of the EIS used approximate handbook values for general solubilities. It was felt that it would be more appropriate and accurate to use EQ3 simulations to determine relevant solubilities of elements in j13 repository water.

2. THE EQ3/6 CODE PACKAGE

The calculations are performed using the EQ3/6 software package. Inputs to the model provide a description of the materials in the package (type and quantity), the chemistry of incoming water, reaction rates and various program control parameters. An integral part of the EQ3/6 software

package is a library of thermodynamic and speciation data (data0 files which are converted to binary data1 files). The output of the software package is several different types of files that describe the chemistry of the water and solid phases as a function of time. The main output file provides a detailed history printed at time intervals. A separate file called the "pickup file" was useful in these calculations. The pickup file describes the water chemistry in the system at each print interval and can be used to restart the calculation at that point in time or to convey the water chemistry to a new calculation. This latter purpose was used in the calculations described in this document. The pickup file is attached to a new run file to define the chemical state of the water at the beginning of the calculation.

The EQ3/6 software package originated in the mid-1970's at Northwestern University. Since 1978 Lawrence Livermore National Laboratory has been responsible for its maintenance. It has most recently been maintained under the sponsorship of the Civilian Radioactive Waste Management Program of the U.S. Department of Energy. The major components of the EQ3/6 package include: EQ3NR, a speciation-solubility code; EQ6, a reaction path code which models water/rock interaction or fluid mixing in either a pure reaction progress mode or a time mode; EQPT, a data file preprocessor; EQLIB, a supporting software library; and several (>5) supporting thermodynamic data files. The software deals with the concepts of the thermodynamic equilibrium, thermodynamic disequilibrium, and reaction kinetics. The supporting data files contain both standard state and activity coefficient-related data. Most of the data files support the use of the Davies or B-dot equations for the activity coefficients; two others support the use of Pitzer's equations. The temperature range of the thermodynamic data on the data files varies from 250°C only for some species to a full range of 0-3000°C for others. EQPT takes a formatted data file (a "data0" file) and writes an unformatted near-equivalent called a "datal" file, which is actually the form read by EQ3NR and EQ6. EQ3NR is useful for analyzing groundwater chemistry data, calculating solubility limits and determining whether certain reactions are in states of partial equilibrium or disequilibrium. EQ3NR is also required to initialize an EQ6 calculation.

EQ6 models the consequences of reacting an aqueous solution with a set of reactants that react irreversibly. It can also model fluid mixing and the consequences of changes in temperature. This code operates both in a pure reaction progress frame and in a time flame. In a time frame calculation, the user specifies rate laws for the progress of the irreversible reactions. Otherwise, only relative rates are specified. EQ3NR and EQ6 use a hybrid Newton-Raphson technique to make thermodynamic calculations. This is supported by a set of algorithms that create and optimize starting values. EQ6 uses an ODE (ordinary differential equation) integration algorithm to solve rate equations in time mode. The codes in the EQ3/6 package are written in FORTRAN77 and have been developed to run under the UNIX and Microsoft Windows™ operating systems on computers ranging from desktop PCs to supercomputers.

3. RESULTS

3.1 Corrosion of Alloy-22

As before, the objective of this analysis was to obtain information as to the quantity and species of key metals carried away from the Alloy-22 during degradation of the CRM in the presence of the CAM. The focus in the previous studies was Cr and Ni. This study broadened the scope to the other main constituents of Alloy-22: molybdenum, manganese and vanadium.

The computer runs were similar to before. First, an EQ6 simulation was run in the titration mode (static water in contact with reactants). The simulation was made of j13 water reacting with Alloy-22 and iron (representing carbon steel). The oxygen and carbon dioxide fugacity was set to atmospheric values. Thus the Cr was allowed to completely oxidize. This simulation most nearly mimics a crevice environment in the presence of Fe and promotes the development of very low pH levels. After about 600 years the chemistry of the water (documented in file "j13_All-22.6o") was found to be:

chromium (as CrO_4^{--})	300 mg/L
manganese (as Mn^{++})	32 mg/L
molybdenum (as MoO_4^{--})	218 mg/L
nickel (as Ni^{++})	750 mg/L
vanadium (as VO_3OH^{--} and HVO_4^{--})	4.8 mg/L
pH 2.0	

The next simulation was the reaction of this resultant water with tuff rock. This was done by starting with water chemistry from the pickup file of the first run (file "j13_All-22.6p" with suspended solids removed). This simulation was carried out in a flowing water mode in which water continually contacted new rock surface and left behind precipitated solids. (this is the flow through scenario in EQ6). After about 100 years of contact the solution becomes quite constant in composition. The chemistry of the solution (documented in file "Alloy-22_tuff.6o") is:

chromium (mostly as CrO_4^{--})	300 mg/L
manganese (as Mn^{++})	4.4×10^{-11} mg/L
molybdenum (as MoO_4^{--})	218 mg/L
nickel (as Ni^{++})	9.9×10^{-5} mg/L
vanadium (as VO_3OH^{--} and HVO_4^{--})	4.8 mg/L
pH 9.2	

The computer runs for these two analyses are documented in the attached computer output files. These runs were made with a modified data base in which a new mineral was included: $KFeCrO_4$. This mineral was included to allow the possible precipitation of Cr(VI) in this form. None of this mineral was formed in the simulation. The modified data base is documented in file data0.nuc.dhl.txt. All of these files have been entered electronically into the record accompanying this document. The output files are attached in hard copy.

IMPORTANT NOTE: In narrative imbedded in some of the computer files the reader may find reference to parametric studies using various values of fugacity etc. These notes refer to other separate Yucca Mountain Project studies from which water chemistry was taken (via the pickup file). These parametric studies are not part of the calculations documented herein. The calculations for this chemically toxic materials study were carried out at one set of conditions comparable with expected repository conditions.

3.2 Solubility Studies

There are several elements present in the repository which are either outside the package (such as Cu bus bars) or part of the waste package internals (such as cadmium in spend fuel). The solubility of these elements in j13 water was simulated to facilitate the screening analysis documented in section 3 of the long-term repository performance appendix.

In each case the solubility was found by running j13 water in EQ3 with increasing amounts of the element until the first mineral in that element became saturated. The aqueous concentration at that point was then considered to be the solubility. The results are as follows:

Element	Solubility mg/L	Dissolved Species	Saturated Mineral	EQ3 output file
barium	0.00412	Ba++	witherite	j13solBa.3o.txt
boron	6383.0	$B(OH)_3aq$	boric acid	j13solB.3o.txt
cadmium	23.0	CdCl+	otavite	j13solCd.3o.txt
copper	0.018	CuOH+, $Cu(CO_3)aq$, Cu++	tenorite	j13solCu.3o.txt
manganese	1×10^{-10}	Mn++	MnO_2	j13solMn.3o.txt
zinc	63.0	Zn++	smithsonite	j13solZn.3o.txt

The files listed in the table are provided in an accompanying electronic transmittal.

4. URANIUM CONCENTRATION STUDY

This separate calculation was done using results of previous EQ3 runs reported as part of the Yucca Mountain Project. The purpose is to estimate what the maximum likely concentration for uranium would be after dissolution of fuel materials in waste packages.

Actually, while a number for uranium is estimated, its small value is later ignored and it is allowed to survive screening as a matter of policy. This was because there is such a large bulk quantity of uranium in the repository.

To obtain a maximum concentration, it was assumed that the uranium would be at its solubility limit for the conditions of the repository near-field environment. A previous study[1] reported estimates of uranium solubility as a function of pH for various CO_2 fugacities. Information from that study was used as follows to estimate the concentration:

The Viability Assessment (VA), Vol. 3, Fig. 3-36, Pg 3-67 indicates that CO_2 partial pressures in the near-field would be about 10^{-3} atm. Similarly in VA, Vol 3, Fig. 3-37a, pg. 3-69 it is shown that the pH would be 8. Using these two values a solubility of uranium as $UO_2(OH)_2$ is read from figure C-3 of the previous study referred to above. The value read from the curve is 2×10^{-6} moles per kg water (which is essentially the same value in moles per liter).

The molecular weight of the soluble species is 304 (assuming all U-238) so that the concentration is then 6.08×10^{-4} gm/l or 0.6 mg/l. This value should be reported in Table I-11 of the current version (as being presently revised) of the Appendix I of the EIS. The table should indicate that the reported value is "derived from" the source and the conditions of pH=8 and CO_2 partial pressure of 10^{-3} atm should be stated in a note on the table.

[1] TRW (TRW Environmental Safety Systems Inc.), 1997c, *Degraded Mode Criticality Analysis of Immobilized Plutonium Waste Forms in a Geologic Repository*, A00000000-01717-5705-00014, Revision 01, Las Vegas, Nevada.

Molybdenum

time(years)	relative mass
0.	0.000000
40.	0.000000
50.	0.052000
60.	0.152000
70.	0.248000
80.	0.310000
90.	0.374000
100.	0.416000
110.	0.472000
120.	0.500000
130.	0.530000
140.	0.552000
150.	0.568000
160.	0.576000
170.	0.588000
180.	0.596000
190.	0.612000
200.	0.622000
210.	0.628000
220.	0.632000
230.	0.642000
240.	0.660000
250.	0.676000
260.	0.682000
270.	0.690000
280.	0.698000
290.	0.704000
300.	0.706000
310.	0.708000
330.	0.716000
340.	0.720000
360.	0.724000
370.	0.726000
380.	0.734000
390.	0.740000
400.	0.748000
410.	0.754000
430.	0.756000
440.	0.760000
450.	0.762000
460.	0.766000
470.	0.772000
480.	0.774000
500.	0.778000
510.	0.782000
530.	0.784000
570.	0.792000
610.	0.794000
620.	0.798000
630.	0.802000
640.	0.808000
660.	0.810000
670.	0.816000
680.	0.818000

time(years)	relative mass
690.	0.822000
700.	0.824000
710.	0.826000
720.	0.828000
730.	0.830000
750.	0.832000
760.	0.834000
770.	0.836000
790.	0.838000
800.	0.840000
810.	0.842000
860.	0.844000
880.	0.848000
910.	0.850000
950.	0.852000
970.	0.854000
1010.	0.856000
1020.	0.858000
1030.	0.860000
1060.	0.862000
1080.	0.864000
1110.	0.866000
1150.	0.868000
1180.	0.872000
1190.	0.874000
1310.	0.876000
1320.	0.880000
1350.	0.882000
1370.	0.884000
1420.	0.886000
1560.	0.888000
1720.	0.890000
1730.	0.892000
1800.	0.894000
1840.	0.896000
1890.	0.898000
2010.	0.900000
2200.	0.902000
2340.	0.904000
2400.	0.906000
2430.	0.908000
2520.	0.910000
2560.	0.912000
2590.	0.914000
2720.	0.916000
2730.	0.918000
2760.	0.920000
2870.	0.922000
2920.	0.924000
3200.	0.926000
3290.	0.928000
4940.	0.932000
5290.	0.934000
5460.	0.936000
5510.	0.938000
5630.	0.940000

time(years)	relative mass
5710.	0.942000
5790.	0.944000
6040.	0.946000
6130.	0.948000
6160.	0.950000
6280.	0.952000
8480.	0.954000
8610.	0.956000
11030.	0.958000
11060.	0.960000
11840.	0.962000
12420.	0.964000
14480.	0.966000
18590.	0.968000
27300.	0.970000
28870.	0.972000
30450.	0.974000
32340.	0.976000
33390.	0.978000
33790.	0.980000
34490.	0.982000
34600.	0.984000
45090.	0.986000
46410.	0.988000
49540.	0.990000
65490.	0.992000
72160.	0.994000
228180.	0.996000
1000000.	0.996000

Nickel

time(years)	relative mass
0.	0.000000
3160.	0.000000
3170.	0.002000
3350.	0.004000
3360.	0.006000
3390.	0.008000
3410.	0.010000
3420.	0.012000
3560.	0.014000
3590.	0.016000
3610.	0.018000
3640.	0.020000
3690.	0.022000
3710.	0.024000
3720.	0.026000
3770.	0.030000
3880.	0.034000
3900.	0.036000
3950.	0.038000

time(years)	relative mass
3960.	0.040000
4020.	0.042000
4030.	0.044000
4050.	0.048000
4080.	0.050000
4130.	0.052000
4140.	0.054000
4200.	0.056000
4230.	0.058000
4260.	0.060000
4310.	0.066000
4320.	0.070000
4330.	0.072000
4340.	0.074000
4360.	0.078000
4400.	0.084000
4420.	0.086000
4430.	0.088000
4470.	0.090000
4480.	0.092000
4490.	0.098000
4500.	0.100000
4510.	0.104000
4530.	0.106000
4550.	0.110000
4580.	0.112000
4590.	0.114000
4610.	0.116000
4620.	0.118000
4630.	0.120000
4640.	0.122000
4660.	0.124000
4700.	0.126000
4720.	0.128000
4740.	0.132000
4770.	0.134000
4790.	0.136000
4860.	0.140000
4880.	0.144000
4890.	0.146000
4900.	0.148000
4930.	0.150000
4940.	0.152000
4960.	0.154000
5020.	0.156000
5070.	0.158000
5100.	0.160000
5110.	0.162000
5130.	0.164000
5150.	0.168000
5180.	0.172000
5190.	0.174000
5200.	0.176000
5210.	0.178000
5220.	0.182000
5240.	0.186000

time(years)	relative mass
5260.	0.188000
5310.	0.192000
5360.	0.194000
5380.	0.196000
5410.	0.198000
5450.	0.200000
5500.	0.202000
5510.	0.204000
5540.	0.206000
5560.	0.210000
5580.	0.214000
5590.	0.218000
5600.	0.222000
5640.	0.224000
5680.	0.226000
5690.	0.228000
5700.	0.230000
5750.	0.232000
5820.	0.234000
5900.	0.236000
5920.	0.238000
6000.	0.240000
6020.	0.242000
6030.	0.244000
6050.	0.246000
6070.	0.248000
6100.	0.250000
6120.	0.252000
6130.	0.256000
6140.	0.258000
6150.	0.262000
6160.	0.264000
6170.	0.266000
6200.	0.268000
6210.	0.270000
6230.	0.272000
6240.	0.274000
6250.	0.276000
6340.	0.278000
6420.	0.280000
6430.	0.282000
6510.	0.284000
6520.	0.286000
6540.	0.288000
6560.	0.292000
6600.	0.294000
6630.	0.296000
6640.	0.298000
6670.	0.302000
6700.	0.304000
6770.	0.306000
6800.	0.308000
6810.	0.310000
6820.	0.312000
6870.	0.314000
6900.	0.316000

time(years)	relative mass
7040.	0.318000
7070.	0.322000
7080.	0.326000
7140.	0.328000
7150.	0.330000
7240.	0.332000
7370.	0.334000
7400.	0.336000
7470.	0.338000
7480.	0.340000
7560.	0.342000
7580.	0.344000
7600.	0.346000
7680.	0.348000
7710.	0.350000
7730.	0.352000
7740.	0.354000
7840.	0.356000
7850.	0.358000
7880.	0.360000
7920.	0.362000
8130.	0.364000
8210.	0.366000
8250.	0.368000
8380.	0.370000
8530.	0.372000
8570.	0.374000
8580.	0.376000
8600.	0.378000
8620.	0.380000
8660.	0.382000
8700.	0.384000
8790.	0.386000
8810.	0.390000
8850.	0.392000
8920.	0.394000
8990.	0.396000
9000.	0.398000
9010.	0.400000
9070.	0.402000
9210.	0.404000
9250.	0.406000
9290.	0.408000
9320.	0.412000
9360.	0.414000
9380.	0.416000
9460.	0.418000
9590.	0.420000
9630.	0.422000
9640.	0.424000
9750.	0.426000
9800.	0.428000
9850.	0.430000
9890.	0.432000
10070.	0.436000
10100.	0.438000

time(years)	relative mass
10270.	0.440000
10300.	0.444000
10390.	0.446000
10530.	0.448000
10620.	0.450000
10720.	0.452000
10770.	0.454000
10780.	0.456000
10860.	0.458000
10950.	0.460000
10990.	0.462000
11060.	0.464000
11100.	0.466000
11220.	0.468000
11270.	0.470000
11310.	0.472000
11620.	0.474000
11720.	0.476000
11740.	0.478000
11760.	0.482000
11850.	0.484000
11900.	0.486000
11960.	0.488000
12080.	0.490000
12170.	0.492000
12230.	0.494000
12250.	0.496000
12280.	0.498000
12440.	0.500000
12520.	0.502000
12550.	0.504000
12890.	0.506000
12910.	0.510000
12920.	0.512000
12940.	0.514000
12950.	0.516000
13100.	0.518000
13150.	0.520000
13360.	0.522000
13430.	0.524000
13440.	0.526000
13560.	0.528000
13570.	0.530000
13580.	0.532000
13630.	0.534000
13900.	0.536000
13930.	0.538000
13960.	0.540000
14060.	0.542000
14080.	0.544000
14100.	0.546000
14270.	0.548000
14380.	0.550000
14700.	0.554000
15090.	0.556000
15240.	0.558000

time(years)	relative mass
15330.	0.560000
15360.	0.562000
15450.	0.564000
15530.	0.568000
15670.	0.570000
15680.	0.572000
16020.	0.574000
16150.	0.576000
16180.	0.578000
16350.	0.580000
16470.	0.582000
16840.	0.584000
16990.	0.586000
17040.	0.588000
17150.	0.592000
17260.	0.594000
17460.	0.596000
18420.	0.598000
18600.	0.600000
18830.	0.602000
18900.	0.606000
19080.	0.608000
19700.	0.610000
19710.	0.612000
19720.	0.614000
20450.	0.616000
20930.	0.618000
21000.	0.620000
21100.	0.622000
21240.	0.624000
21250.	0.626000
21500.	0.628000
22140.	0.630000
22240.	0.632000
22310.	0.634000
23000.	0.636000
23090.	0.638000
23120.	0.640000
23330.	0.642000
23400.	0.644000
23420.	0.646000
23480.	0.648000
24290.	0.650000
24750.	0.652000
25190.	0.654000
25460.	0.656000
25470.	0.658000
25980.	0.660000
26370.	0.662000
26430.	0.664000
27110.	0.666000
27120.	0.668000
27700.	0.670000
27710.	0.672000
28110.	0.674000
28890.	0.676000

time(years)	relative mass
29480.	0.678000
30020.	0.680000
30400.	0.682000
30860.	0.684000
31170.	0.686000
32560.	0.688000
32640.	0.690000
33110.	0.692000
33680.	0.694000
33890.	0.696000
33910.	0.698000
34490.	0.700000
35190.	0.702000
35460.	0.704000
35590.	0.706000
36000.	0.708000
36070.	0.710000
36280.	0.712000
37100.	0.714000
37330.	0.716000
37490.	0.718000
38190.	0.720000
38210.	0.722000
38830.	0.724000
39300.	0.726000
40480.	0.728000
40660.	0.730000
41060.	0.732000
42190.	0.734000
43130.	0.736000
43520.	0.738000
45700.	0.740000
46140.	0.742000
46580.	0.744000
48500.	0.746000
48640.	0.748000
48770.	0.750000
49220.	0.752000
50230.	0.754000
50370.	0.756000
51270.	0.758000
51870.	0.760000
52980.	0.762000
54280.	0.764000
54670.	0.766000
55350.	0.768000
56260.	0.770000
56330.	0.772000
56800.	0.774000
57270.	0.776000
57660.	0.778000
60150.	0.780000
61780.	0.782000
61950.	0.784000
62160.	0.786000
62260.	0.788000

time(years)	relative mass
63240.	0.790000
66090.	0.792000
69150.	0.794000
69410.	0.796000
70060.	0.798000
70380.	0.800000
71810.	0.802000
72830.	0.804000
78340.	0.806000
80250.	0.808000
85400.	0.810000
89610.	0.812000
90180.	0.814000
90740.	0.816000
92010.	0.818000
98170.	0.820000
99150.	0.822000
101940.	0.824000
103430.	0.826000
106450.	0.828000
107450.	0.830000
109990.	0.832000
111720.	0.834000
114540.	0.836000
123070.	0.838000
127770.	0.840000
128310.	0.842000
148440.	0.844000
149180.	0.846000
153480.	0.848000
162170.	0.850000
167940.	0.852000
172580.	0.854000
172720.	0.856000
185700.	0.858000
187930.	0.860000
195810.	0.862000
198730.	0.864000
198820.	0.866000
199090.	0.868000
200850.	0.870000
200940.	0.872000
202990.	0.874000
219580.	0.876000
220820.	0.878000
231590.	0.880000
243260.	0.882000
253630.	0.884000
260190.	0.886000
268270.	0.888000
272900.	0.890000
292260.	0.892000
324270.	0.894000
328330.	0.896000
331820.	0.898000
331880.	0.900000

time(years)	relative mass
334500.	0.902000
336960.	0.904000
337610.	0.906000
350950.	0.908000
376140.	0.910000
376470.	0.912000
405870.	0.914000
436400.	0.916000
454810.	0.918000
457680.	0.920000
477270.	0.922000
515110.	0.924000
526310.	0.926000
535030.	0.928000
551610.	0.930000
568070.	0.932000
585100.	0.934000
600250.	0.936000
601550.	0.938000
668970.	0.940000
682660.	0.942000
760170.	0.944000
771460.	0.946000
811630.	0.948000
868280.	0.950000
893690.	0.952000
1000000.	0.952000

Vanadium

time(years)	relative mass
0.	0.000000
1530.	0.000000
1540.	0.002000
1640.	0.004000
1670.	0.006000
1730.	0.008000
1810.	0.010000
1840.	0.012000
1870.	0.014000
1880.	0.016000
1910.	0.020000
1940.	0.022000
2000.	0.026000
2040.	0.028000
2060.	0.030000
2100.	0.034000
2110.	0.038000
2130.	0.042000
2150.	0.044000
2160.	0.046000
2190.	0.048000

time(years)	relative mass
2200.	0.052000
2220.	0.054000
2250.	0.062000
2270.	0.064000
2280.	0.066000
2300.	0.068000
2310.	0.072000
2320.	0.074000
2330.	0.086000
2360.	0.090000
2370.	0.092000
2390.	0.094000
2400.	0.104000
2420.	0.106000
2450.	0.108000
2460.	0.110000
2470.	0.114000
2500.	0.116000
2510.	0.118000
2550.	0.120000
2560.	0.122000
2580.	0.126000
2590.	0.128000
2600.	0.130000
2610.	0.134000
2620.	0.140000
2670.	0.142000
2680.	0.146000
2690.	0.150000
2720.	0.152000
2750.	0.154000
2760.	0.158000
2770.	0.160000
2780.	0.164000
2800.	0.166000
2820.	0.168000
2890.	0.170000
2900.	0.172000
2910.	0.174000
2950.	0.176000
2960.	0.184000
2970.	0.188000
2980.	0.190000
2990.	0.194000
3000.	0.196000
3010.	0.200000
3030.	0.202000
3100.	0.204000
3110.	0.206000
3120.	0.208000
3140.	0.212000
3220.	0.214000
3230.	0.218000
3240.	0.224000
3280.	0.228000
3300.	0.232000

time(years)	relative mass
3310.	0.234000
3380.	0.236000
3410.	0.238000
3420.	0.242000
3430.	0.244000
3440.	0.246000
3460.	0.248000
3490.	0.252000
3620.	0.254000
3630.	0.256000
3650.	0.258000
3660.	0.260000
3670.	0.262000
3680.	0.264000
3690.	0.266000
3700.	0.270000
3730.	0.272000
3740.	0.274000
3760.	0.276000
3790.	0.278000
3810.	0.280000
3830.	0.282000
3900.	0.284000
3910.	0.286000
3920.	0.290000
3980.	0.294000
4010.	0.296000
4030.	0.298000
4040.	0.300000
4050.	0.302000
4100.	0.304000
4190.	0.308000
4240.	0.310000
4270.	0.312000
4310.	0.314000
4320.	0.316000
4420.	0.320000
4450.	0.322000
4460.	0.324000
4520.	0.328000
4580.	0.332000
4630.	0.334000
4670.	0.336000
4680.	0.338000
4710.	0.348000
4730.	0.350000
4750.	0.354000
4780.	0.356000
4820.	0.358000
4830.	0.360000
4890.	0.362000
4920.	0.364000
4950.	0.366000
4960.	0.368000
5040.	0.372000
5080.	0.376000

time(years)	relative mass
5090.	0.380000
5100.	0.384000
5160.	0.386000
5170.	0.388000
5210.	0.390000
5220.	0.392000
5240.	0.394000
5250.	0.396000
5260.	0.398000
5270.	0.400000
5280.	0.402000
5290.	0.404000
5340.	0.406000
5370.	0.408000
5380.	0.410000
5400.	0.412000
5420.	0.414000
5450.	0.418000
5480.	0.420000
5520.	0.422000
5550.	0.424000
5660.	0.426000
5670.	0.428000
5680.	0.430000
5710.	0.432000
5790.	0.434000
5850.	0.436000
5900.	0.440000
5940.	0.442000
5950.	0.444000
6000.	0.446000
6010.	0.448000
6030.	0.450000
6050.	0.454000
6080.	0.456000
6100.	0.458000
6160.	0.460000
6230.	0.462000
6270.	0.464000
6310.	0.466000
6350.	0.468000
6380.	0.470000
6400.	0.474000
6430.	0.476000
6470.	0.480000
6600.	0.482000
6640.	0.484000
6650.	0.486000
6700.	0.488000
6720.	0.492000
6750.	0.494000
6810.	0.496000
6930.	0.498000
6940.	0.500000
7050.	0.502000
7080.	0.504000

time(years)	relative mass
7160.	0.506000
7210.	0.508000
7250.	0.510000
7270.	0.512000
7320.	0.514000
7530.	0.516000
7560.	0.518000
7590.	0.520000
7650.	0.524000
7670.	0.526000
7680.	0.528000
7760.	0.530000
7890.	0.532000
7940.	0.536000
7970.	0.538000
8040.	0.542000
8180.	0.544000
8210.	0.546000
8280.	0.548000
8290.	0.550000
8320.	0.554000
8340.	0.556000
8370.	0.558000
8480.	0.560000
8520.	0.562000
8620.	0.564000
8740.	0.566000
8950.	0.568000
9000.	0.570000
9090.	0.572000
9260.	0.574000
9320.	0.576000
9430.	0.580000
9530.	0.582000
9720.	0.584000
9730.	0.586000
9750.	0.588000
9800.	0.590000
9810.	0.592000
10010.	0.594000
10300.	0.596000
10560.	0.598000
10630.	0.600000
10740.	0.602000
10820.	0.604000
10830.	0.608000
10970.	0.610000
11060.	0.612000
11110.	0.614000
11130.	0.616000
11270.	0.618000
11290.	0.620000
11310.	0.622000
11340.	0.624000
11610.	0.626000
11690.	0.628000

time(years)	relative mass
11990.	0.630000
12090.	0.632000
12180.	0.634000
12200.	0.636000
12230.	0.638000
12320.	0.640000
12400.	0.642000
12590.	0.644000
12900.	0.646000
12930.	0.648000
13210.	0.650000
13570.	0.652000
13610.	0.654000
13790.	0.656000
13830.	0.658000
14540.	0.660000
14640.	0.662000
15050.	0.664000
15060.	0.666000
15100.	0.668000
15180.	0.670000
15190.	0.672000
15450.	0.674000
15460.	0.676000
15490.	0.678000
15590.	0.680000
16390.	0.682000
16570.	0.684000
16790.	0.686000
16870.	0.688000
17240.	0.690000
17520.	0.692000
17610.	0.694000
17620.	0.696000
17660.	0.698000
18470.	0.700000
18670.	0.702000
19340.	0.704000
19500.	0.706000
19590.	0.708000
19830.	0.710000
19850.	0.712000
20350.	0.714000
20590.	0.716000
20610.	0.718000
20670.	0.720000
20790.	0.722000
20860.	0.724000
20930.	0.726000
21110.	0.728000
21190.	0.730000
21300.	0.732000
21680.	0.734000
21850.	0.736000
22380.	0.738000
22920.	0.740000

time(years)	relative mass
22990.	0.742000
23220.	0.744000
24270.	0.746000
25110.	0.748000
25180.	0.750000
25890.	0.752000
26010.	0.754000
26400.	0.756000
26930.	0.758000
27030.	0.760000
28250.	0.762000
31410.	0.764000
32190.	0.766000
32810.	0.768000
33310.	0.770000
34300.	0.772000
34520.	0.774000
35220.	0.776000
35770.	0.778000
37190.	0.780000
37700.	0.782000
38730.	0.784000
39090.	0.786000
41400.	0.788000
42610.	0.790000
44050.	0.794000
45220.	0.796000
52290.	0.798000
52880.	0.800000
52910.	0.802000
57250.	0.804000
57260.	0.806000
61450.	0.808000
62600.	0.810000
63230.	0.812000
63610.	0.814000
64370.	0.816000
65070.	0.818000
67880.	0.820000
69210.	0.822000
69550.	0.824000
70610.	0.826000
70930.	0.828000
71020.	0.830000
71420.	0.832000
71500.	0.834000
71700.	0.836000
74310.	0.838000
77010.	0.840000
80740.	0.842000
87520.	0.844000
88260.	0.846000
92460.	0.848000
95350.	0.850000
97390.	0.852000
97810.	0.854000

time(years)	relative mass
99270.	0.856000
101360.	0.858000
102190.	0.860000
104200.	0.862000
106310.	0.864000
107640.	0.866000
108650.	0.868000
109030.	0.870000
112080.	0.872000
121790.	0.874000
121850.	0.876000
127410.	0.878000
132550.	0.880000
135530.	0.882000
136230.	0.884000
145950.	0.886000
152200.	0.888000
152580.	0.890000
167360.	0.892000
172440.	0.894000
178130.	0.896000
182510.	0.898000
183930.	0.900000
192080.	0.902000
200340.	0.904000
203060.	0.906000
205380.	0.908000
207070.	0.910000
215630.	0.912000
230900.	0.914000
241750.	0.916000
242900.	0.918000
250910.	0.920000
274360.	0.922000
296340.	0.924000
302660.	0.926000
327790.	0.928000
336530.	0.930000
337890.	0.932000
345910.	0.934000
374340.	0.936000
422060.	0.938000
503020.	0.940000
634210.	0.942000
666500.	0.944000
679120.	0.946000
681690.	0.948000
757330.	0.950000
803210.	0.952000
944370.	0.954000
966470.	0.956000
1000000.	0.956000

Molybdenum Breakthrough Curve at 18 km
Nominal Case

			Curve 1	Curve 2	Total
		Multiplier	154423	148842	
Time (yrs)	Relative mass		g/yr	g/yr	g/yr
6.00E+01	0.152		23472.3		23472.3
7.00E+01	0.248		38296.9		38296.9
8.00E+01	0.31		47871.13		47871.13
1.00E+02	0.416		64239.97		64239.97
1.20E+02	0.5		77211.5		77211.5
1.40E+02	0.552		85241.5		85241.5
1.90E+02	0.612		94506.88		94506.88
2.40E+02	0.66		101919.2		101919.2
2.90E+02	0.704		108713.8		108713.8
3.60E+02	0.724		111802.3		111802.3
4.00E+02	0.748		115508.4		115508.4
4.80E+02	0.774		119523.4		119523.4
6.30E+02	0.802		123847.2		123847.2
7.00E+02	0.824		127244.6		127244.6
9.10E+02	0.85		131259.6		131259.6
1.19E+03	0.874		134965.7		134965.7
2.76E+03	0.92		142069.2		142069.2
5.63E+03	0.94		145157.6		145157.6
5.00E+05	0.996		153805.3	22623.98	176429.3
1.00E+06	0.996		153805.3	148246.6	302051.9

Nickel Breakthrough Curve at 18 km
Combined Case

			Curve 1	Curve 2	Total
		Multiplier	832504	700071	
Time (yrs)	Relative Mass		g/yr	g/yr	g/yr
4500	0.100		83250		83250
5450	0.200		166501		166501
6670	0.302		251416		251416
9010	0.400		333002		333002
12440	0.500		416252		416252
14700	0.554		461207		461207
18600	0.600		499502		499502
24290	0.650		541128		541128
34490	0.700		582753		582753
38830	0.724		602733		602733
48770	0.750		624378		624378
56800	0.774		644358		644358
70380	0.800		666003		666003
101940	0.824		685983		685983
162170	0.850		707628		707628
202990	0.874		727608		727608
331880	0.900		749254		749254
504500	0.924		769234	70007	839241
668970	0.940		782554	595060	1377614
1000000	0.952		792544	646866	1439409

Molybdenum Breakthrough Curve at 18 km
Combined Case

			Curve 1	Curve 2	Total
		Multiplier	178601	145849	
Time (yrs)	Relative mass		g/yr	g/yr	g/yr
6.00E+01	0.152		27147.35		27147.35
7.00E+01	0.248		44293.05		44293.05
8.00E+01	0.31		55366.31		55366.31
1.00E+02	0.416		74298.02		74298.02
1.20E+02	0.5		89300.5		89300.5
1.40E+02	0.552		98587.75		98587.75
1.90E+02	0.612		109303.8		109303.8
2.40E+02	0.66		117876.7		117876.7
2.90E+02	0.704		125735.1		125735.1
3.60E+02	0.724		129307.1		129307.1
4.00E+02	0.748		133593.5		133593.5
4.80E+02	0.774		138237.2		138237.2
6.30E+02	0.802		143238		143238
7.00E+02	0.824		147167.2		147167.2
9.10E+02	0.85		151810.9		151810.9
1.19E+03	0.874		156097.3		156097.3
2.01E+03	0.9		160740.9		160740.9
2.76E+03	0.92		164312.9		164312.9
5.00E+05	0.996		177886.6	22169.05	200055.6
1.00E+06	0.996		177886.6	145265.6	323152.2

Vanadium Breakthrough Curve at 18 km
Nominal Case

			Total
		Multiplier	700
Time (yrs)	Relative mass		g/yr
2400	0.104		72.8
3010	0.2		140
4040	0.3		210
5270	0.4		280
6940	0.5		350
8290	0.55		385
10630	0.6		420
13210	0.65		455
18470	0.7		490
20860	0.724		506.8
25180	0.75		525
34520	0.774		541.8
52880	0.8		560
69550	0.824		576.8
95350	0.85		595
121790	0.874		611.8
183930	0.9		630
250910	0.92		644
503020	0.94		658
1000000	0.956		669.2

Nickel Breakthrough Curve at 18 km
Nominal Case

			Curve 1	Curve 2	Total
		Multiplier	716447	714444	
Time (yrs)	Relative Mass		g/yr	g/yr	g/yr
4500	0.1		71644.7		71644.7
5450	0.2		143289.4		143289.4
6670	0.302		216367		216367
9010	0.4		286578.8		286578.8
12440	0.5		358223.5		358223.5
14700	0.554		396911.6		396911.6
18600	0.6		429868.2		429868.2
24290	0.65		465690.6		465690.6
34490	0.7		501512.9		501512.9
38830	0.724		518707.6		518707.6
48770	0.75		537335.3		537335.3
56800	0.774		554530		554530
70380	0.8		573157.6		573157.6
101940	0.824		590352.3		590352.3
164000	0.85		608980		608980
202990	0.874		626174.7		626174.7
331880	0.9		644802.3		644802.3
504500	0.924		661997	71444.4	733441.4
668970	0.94		673460.2	607277.4	1280738
1000000	0.952		682057.5	660146.3	1342204

Vanadium Breakthrough Curve at 18 km
Combined Case

		Total	
		Multiplier	700
Time (yrs)	Relative mass	g/yr	
2400	0.104		73
3010	0.200		140
4040	0.300		210
5270	0.400		280
6940	0.500		350
8290	0.550		385
10630	0.600		420
13210	0.650		455
18470	0.700		490
20860	0.724		507
25180	0.750		525
34520	0.774		542
52880	0.800		560
69550	0.824		577
95350	0.850		595
121790	0.874		612
183930	0.900		630
250910	0.920		644
503020	0.940		658
1000000	0.956		669

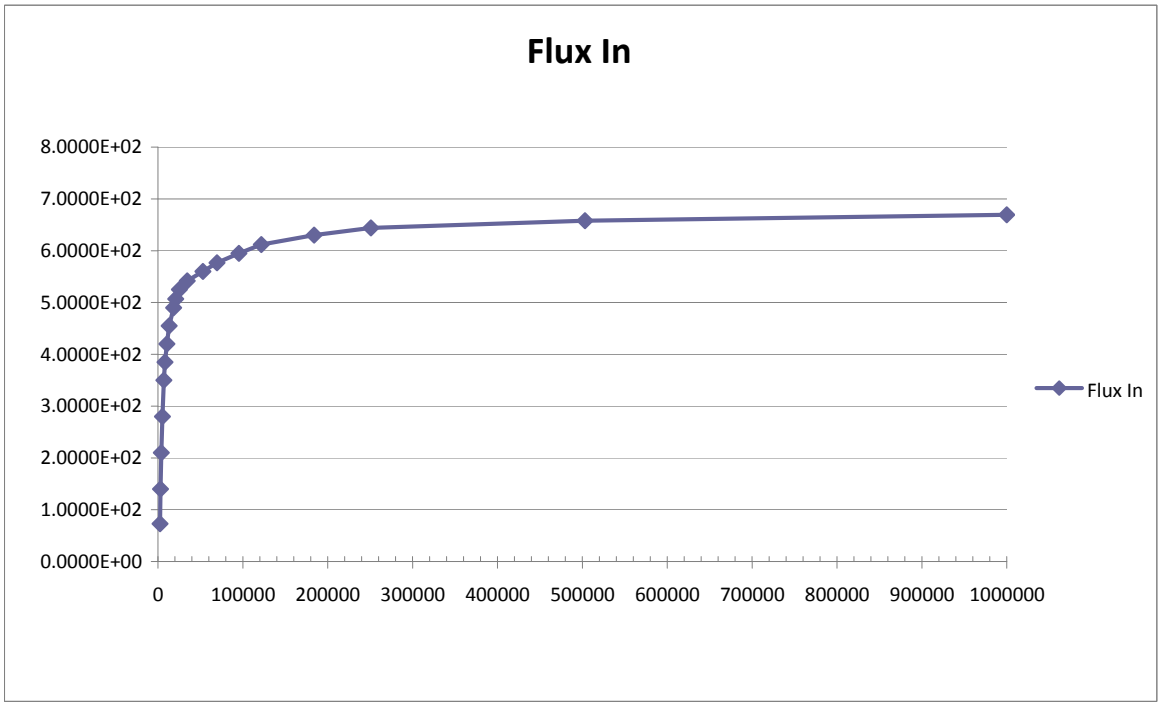
Combined TSPA Case, 2003 Pumping Rates, Present Climate
Non-Radiologic Metals Transport from 18 km to Amargosa Farms

Pump Rate=	16828	acre-ft/yr	2.07E+10	liters/yr
specific discharge (m/day)=			6.13E-03	
path length (km)	1.6000E+01			
Recycle Fraction	0.864			

Combined TSPA Case, 2003 Pumping Rates, Present Climate
Non-Radiologic Metals Transport from 18 km to Amargosa Farms
Contaminant: Vanadium
Oral Ref dose =7E-03 mg/kg body wt./day
Pump Rate= 16828 acre-ft/yr 20748924000 liters/yr

Input Curve

Time (yr)	Flux In	Del R
2400	7.2800E+01	
3010	1.4000E+02	6.7200E+01
4040	2.1000E+02	7.0000E+01
5270	2.8000E+02	7.0000E+01
6940	3.5000E+02	7.0000E+01
8290	3.8500E+02	3.5000E+01
10630	4.2000E+02	3.5000E+01
13210	4.5500E+02	3.5000E+01
18470	4.9000E+02	3.5000E+01
20860	5.0680E+02	1.6800E+01
25180	5.2500E+02	1.8200E+01
34520	5.4180E+02	1.6800E+01
52880	5.6000E+02	1.8200E+01
69550	5.7680E+02	1.6800E+01
95350	5.9500E+02	1.8200E+01
121790	6.1180E+02	1.6800E+01
183930	6.3000E+02	1.8200E+01
250910	6.4400E+02	1.4000E+01
503020	6.5800E+02	1.4000E+01
1000000	6.6920E+02	1.1200E+01



Output Curve

6.13E-03		specific discharge (m/day)
1.3984E-02	v	groundwater velocity (km/yr)
1.6000E+01	L	path length (km)
1.0000E-01	D	Dispersion Coefficient (km)
1.3984E-03	Disp	Dispersivity (sq km/yr)
1.0100E+02	K	Retardation Factor (no units)
1.1556E+05	td	arrival time of the mid-point =TL (yr)
8.0000E+00	Kd	distribution coefficient =Kd (mL/gm)
1.6000E-01	ε	porosity
2.0000E+00	ρ	bulk density of solid (gm/mL)
0.0000E+00	λ	decay constant (1/yr)
NA	t1/2	halflife (yr)

Note: When λ is set to zero this is either a stable contaminant or a member of a decay chain. Decay and growth of radionuclides in decay chain members is adjusted in a separate work sheet.

Composite Curves

Time (yrs)	Arg 1	Curve 1	Arg 2	Curve 2	Arg 3	Curve 3	Arg 4	Curve 4	Arg 5	Curve 5	Arg 6	Curve 6
250	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
2000	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
4000	5.3005E+01	0.0000E+00	6.7745E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
6000	3.4717E+01	0.0000E+00	3.8301E+01	0.0000E+00	4.7739E+01	0.0000E+00	7.9072E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
8000	2.7338E+01	0.0000E+00	2.9121E+01	0.0000E+00	3.2995E+01	0.0000E+00	4.0176E+01	0.0000E+00	6.5430E+01	0.0000E+00	0.0000E+00	0.0000E+00
10000	2.3040E+01	0.0000E+00	2.4160E+01	0.0000E+00	2.6413E+01	0.0000E+00	2.9981E+01	0.0000E+00	3.7837E+01	0.0000E+00	5.1223E+01	0.0000E+00
12000	2.0120E+01	0.0000E+00	2.0911E+01	0.0000E+00	2.2438E+01	0.0000E+00	2.4681E+01	0.0000E+00	2.8901E+01	0.0000E+00	3.4165E+01	0.0000E+00
14000	1.7958E+01	0.0000E+00	1.8558E+01	0.0000E+00	1.9686E+01	0.0000E+00	2.1272E+01	0.0000E+00	2.4024E+01	0.0000E+00	2.7046E+01	0.0000E+00
16000	1.6266E+01	0.0000E+00	1.6743E+01	0.0000E+00	1.7625E+01	0.0000E+00	1.8828E+01	0.0000E+00	2.0817E+01	0.0000E+00	2.2852E+01	0.0000E+00
18000	1.4890E+01	0.0000E+00	1.5282E+01	0.0000E+00	1.5998E+01	0.0000E+00	1.6956E+01	0.0000E+00	1.8487E+01	0.0000E+00	1.9985E+01	0.0000E+00
20000	1.3738E+01	0.0000E+00	1.4069E+01	0.0000E+00	1.4668E+01	0.0000E+00	1.5457E+01	0.0000E+00	1.6687E+01	0.0000E+00	1.7855E+01	0.0000E+00
22000	1.2752E+01	0.0000E+00	1.3038E+01	0.0000E+00	1.3549E+01	0.0000E+00	1.4216E+01	0.0000E+00	1.5236E+01	0.0000E+00	1.6183E+01	0.0000E+00
24000	1.1894E+01	0.0000E+00	1.2144E+01	0.0000E+00	1.2589E+01	0.0000E+00	1.3163E+01	0.0000E+00	1.4031E+01	0.0000E+00	1.4821E+01	0.0000E+00
26000	1.1137E+01	0.0000E+00	1.1359E+01	0.0000E+00	1.1751E+01	0.0000E+00	1.2254E+01	0.0000E+00	1.3004E+01	0.0000E+00	1.3680E+01	0.0000E+00
28000	1.0461E+01	0.0000E+00	1.0659E+01	0.0000E+00	1.1010E+01	0.0000E+00	1.1456E+01	0.0000E+00	1.2115E+01	0.0000E+00	1.2702E+01	0.0000E+00
30000	9.8505E+00	0.0000E+00	1.0030E+01	0.0000E+00	1.0346E+01	0.0000E+00	1.0746E+01	0.0000E+00	1.1333E+01	0.0000E+00	1.1850E+01	0.0000E+00
32000	9.2956E+00	0.0000E+00	9.4595E+00	0.0000E+00	9.7468E+00	0.0000E+00	1.0109E+01	0.0000E+00	1.0636E+01	0.0000E+00	1.1098E+01	0.0000E+00
34000	8.7873E+00	0.0000E+00	8.9378E+00	0.0000E+00	9.2009E+00	0.0000E+00	9.5308E+00	0.0000E+00	1.0009E+01	0.0000E+00	1.0425E+01	0.0000E+00
36000	8.3188E+00	0.0000E+00	8.4578E+00	0.0000E+00	8.7002E+00	0.0000E+00	9.0032E+00	0.0000E+00	9.4405E+00	0.0000E+00	9.8186E+00	0.0000E+00
38000	7.8845E+00	0.0000E+00	8.0136E+00	0.0000E+00	8.2382E+00	0.0000E+00	8.5181E+00	0.0000E+00	8.9204E+00	0.0000E+00	9.2665E+00	0.0000E+00
40000	7.4801E+00	0.0000E+00	7.6005E+00	0.0000E+00	7.8096E+00	0.0000E+00	8.0695E+00	0.0000E+00	8.4417E+00	0.0000E+00	8.7606E+00	0.0000E+00
42000	7.1017E+00	0.0000E+00	7.2145E+00	0.0000E+00	7.4101E+00	0.0000E+00	7.6526E+00	0.0000E+00	7.9986E+00	0.0000E+00	8.2940E+00	0.0000E+00
44000	6.7465E+00	0.0000E+00	6.8525E+00	0.0000E+00	7.0362E+00	0.0000E+00	7.2633E+00	0.0000E+00	7.5865E+00	0.0000E+00	7.8615E+00	0.0000E+00
46000	6.4117E+00	0.0000E+00	6.5118E+00	0.0000E+00	6.6848E+00	0.0000E+00	6.8984E+00	0.0000E+00	7.2015E+00	0.0000E+00	7.4586E+00	0.0000E+00
48000	6.0953E+00	0.0000E+00	6.1900E+00	0.0000E+00	6.3535E+00	0.0000E+00	6.5550E+00	0.0000E+00	6.8403E+00	0.0000E+00	7.0816E+00	0.0000E+00
50000	5.7953E+00	7.4607E-15	5.8852E+00	3.8858E-15	6.0401E+00	0.0000E+00	6.2308E+00	0.0000E+00	6.5002E+00	0.0000E+00	6.7276E+00	0.0000E+00
52000	5.5102E+00	2.2009E-13	5.5957E+00	8.9373E-14	5.7429E+00	1.5543E-14	5.9239E+00	0.0000E+00	6.1790E+00	0.0000E+00	6.3939E+00	0.0000E+00
54000	5.2385E+00	4.2936E-12	5.3200E+00	1.8652E-12	5.4603E+00	4.0024E-13	5.6325E+00	5.8287E-14	5.8748E+00	1.9429E-15	6.0784E+00	0.0000E+00
56000	4.9792E+00	6.3860E-11	5.0570E+00	2.9990E-11	5.1910E+00	7.4102E-12	5.3551E+00	1.2745E-12	5.5858E+00	4.8572E-14	5.7793E+00	5.8287E-15
58000	4.7310E+00	7.4670E-10	4.8055E+00	3.7630E-10	4.9337E+00	1.0533E-10	5.0906E+00	2.1209E-11	5.3106E+00	1.0317E-12	5.4949E+00	1.3600E-13
60000	4.4931E+00	7.0409E-09	4.5646E+00	3.7797E-09	4.6874E+00	1.1827E-09	4.8376E+00	2.7442E-10	5.0480E+00	1.6450E-11	5.2240E+00	2.6132E-12
62000	4.2646E+00	5.4717E-08	4.3334E+00	3.1091E-08	4.4513E+00	1.0754E-08	4.5954E+00	2.8334E-09	4.7969E+00	2.0471E-10	4.9652E+00	3.8306E-11
64000	4.0449E+00	3.5716E-07	4.1110E+00	2.1363E-07	4.2245E+00	8.0885E-08	4.3629E+00	2.3892E-08	4.5563E+00	2.0411E-09	4.7176E+00	4.4236E-10
66000	3.8333E+00	1.9909E-06	3.8970E+00	1.2476E-06	4.0062E+00	5.1259E-07	4.1395E+00	1.6788E-07	4.3254E+00	1.6679E-08	4.4803E+00	4.1248E-09
68000	3.6291E+00	9.6168E-06	3.6906E+00	6.2862E-06	3.7960E+00	2.7817E-06	3.9244E+00	1.0004E-06	4.1034E+00	1.1392E-07	4.2523E+00	3.1734E-08
70000	3.4319E+00	4.0774E-05	3.4913E+00	2.7699E-05	3.5931E+00	1.3113E-05	3.7170E+00	5.1345E-06	3.8896E+00	6.6170E-07	4.0331E+00	2.0527E-07
72000	3.2412E+00	1.5348E-04	3.2987E+00	1.0800E-04	3.3971E+00	5.4376E-05	3.5168E+00	2.3006E-05	3.6835E+00	3.3178E-06	3.8218E+00	1.1348E-06
74000	3.0565E+00	5.1815E-04	3.1122E+00	3.7652E-04	3.2075E+00	2.0057E-04	3.3234E+00	9.1079E-05	3.4845E+00	1.4554E-05	3.6181E+00	5.4407E-06
76000	2.8776E+00	1.5832E-03	2.9316E+00	1.1849E-03	3.0239E+00	6.6465E-04	3.1361E+00	3.2202E-04	3.2921E+00	5.6514E-05	3.4212E+00	2.2911E-05
78000	2.7039E+00	4.4135E-03	2.7563E+00	3.3942E-03	2.8459E+00	1.9964E-03	2.9547E+00	1.0265E-03	3.1058E+00	1.9630E-04	3.2309E+00	8.5705E-05
80000	2.5353E+00	1.1308E-02	2.5862E+00	8.9168E-03	2.6732E+00	5.4788E-03	2.7788E+00	2.9752E-03	2.9253E+00	6.1563E-04	3.0465E+00	2.8769E-04
82000	2.3713E+00	2.6806E-02	2.4208E+00	2.1630E-02	2.5054E+00	1.3836E-02	2.6080E+00	7.9013E-03	2.7503E+00	1.7579E-03	2.8679E+00	8.7442E-04
84000	2.2118E+00	5.9138E-02	2.2600E+00	4.8747E-02	2.3423E+00	3.2363E-02	2.4421E+00	1.9359E-02	2.5803E+00	4.6049E-03	2.6945E+00	2.4260E-03
86000	2.0565E+00	1.2208E-01	2.1035E+00	1.0264E-01	2.1836E+00	7.0522E-02	2.2807E+00	4.4035E-02	2.4151E+00	1.1141E-02	2.5261E+00	6.1883E-03
88000	1.9052E+00	2.3700E-01	1.9509E+00	2.0291E-01	2.0290E+00	1.4393E-01	2.1236E+00	9.3510E-02	2.2545E+00	2.5045E-02	2.3624E+00	1.4609E-02
90000	1.7576E+00	4.3458E-01	1.8022E+00	3.7844E-01	1.8783E+00	2.7647E-01	1.9705E+00	1.8634E-01	2.0980E+00	5.2612E-02	2.2032E+00	3.2108E-02
92000	1.6135E+00	7.5587E-01	1.6571E+00	6.6864E-01	1.7314E+00	5.0201E-01	1.8213E+00	3.5009E-01	1.9457E+00	1.0379E-01	2.0481E+00	6.6051E-02
94000	1.4729E+00	1.2517E+00	1.5154E+00	1.1236E+00	1.5880E+00	8.6524E-01	1.6758E+00	6.2277E-01	1.7971E+00	1.9320E-01	1.8970E+00	1.2781E-01
96000	1.3354E+00	1.9806E+00	1.3770E+00	1.8020E+00	1.4479E+00	1.4208E+00	1.5337E+00	1.0531E+00	1.6521E+00	3.4073E-01	1.7496E+00	2.3365E-01
98000	1.2010E+00	3.0041E+00	1.2417E+00	2.7677E+00	1.3110E+00	2.2305E+00	1.3948E+00	1.6989E+00	1.5105E+00	5.7158E-01	1.6057E+00	4.0526E-01
100000	1.0696E+00	4.3808E+00	1.1094E+00	4.0836E+00	1.1772E+00	3.3585E+00	1.2591E+00	2.6237E+00	1.3722E+00	9.1529E-01	1.4652E+00	6.6938E-01
102000	9.4088E-01	6.1596E+00	9.7984E-01	5.8043E+00	1.0462E+00	4.8647E+00	1.1264E+00	3.8907E+00	1.2370E+00	1.4038E+00	1.3280E+00	1.0566E+00

Time (yrs)	Arg 1	Curve 1	Arg 2	Curve 2	Arg 3	Curve 3	Arg 4	Curve 4	Arg 5	Curve 5	Arg 6	Curve 6
104000	8.1483E-01	8.3724E+00	8.5300E-01	7.9692E+00	9.1800E-01	6.7971E+00	9.9653E-01	5.5561E+00	1.1048E+00	2.0683E+00	1.1937E+00	1.5990E+00
106000	6.9132E-01	1.1029E+01	7.2873E-01	1.0596E+01	7.9242E-01	9.1853E+00	8.6934E-01	7.6618E+00	9.7536E-01	2.9362E+00	1.0624E+00	2.3270E+00
108000	5.7024E-01	1.4112E+01	6.0692E-01	1.3675E+01	6.6935E-01	1.2034E+01	7.4475E-01	1.0228E+01	8.4861E-01	4.0267E+00	9.3388E-01	3.2655E+00
110000	4.5148E-01	1.7578E+01	4.8746E-01	1.7171E+01	5.4870E-01	1.5322E+01	6.2262E-01	1.3250E+01	7.2443E-01	5.3480E+00	8.0797E-01	4.4307E+00
112000	3.3495E-01	2.1360E+01	3.7026E-01	2.1019E+01	4.3034E-01	1.8998E+01	5.0286E-01	1.6695E+01	6.0270E-01	6.8954E+00	6.8460E-01	5.8268E+00
114000	2.2055E-01	2.5372E+01	2.5522E-01	2.5135E+01	3.1420E-01	2.2988E+01	3.8537E-01	2.0501E+01	4.8332E-01	8.6498E+00	5.6365E-01	7.4442E+00
116000	1.0820E-01	2.9514E+01	1.4225E-01	2.9420E+01	2.0018E-01	2.7199E+01	2.7005E-01	2.4588E+01	3.6620E-01	1.0579E+01	4.4501E-01	9.2596E+00
118000	-2.1820E-03	3.3683E+01	3.1280E-02	3.3765E+01	8.8187E-02	3.1526E+01	1.5682E-01	2.8857E+01	2.5123E-01	1.2641E+01	3.2860E-01	1.1237E+01
120000	-1.1067E-01	3.7779E+01	-7.7777E-02	3.8065E+01	-2.1847E-02	3.5863E+01	4.5596E-02	3.3200E+01	1.3834E-01	1.4786E+01	2.1432E-01	1.3332E+01
122000	-2.1733E-01	4.1712E+01	-1.8499E-01	4.2223E+01	-1.3000E-01	4.0105E+01	-6.3705E-02	3.7513E+01	2.7431E-02	1.6958E+01	1.0208E-01	1.5491E+01
124000	-3.2225E-01	4.5407E+01	-2.9043E-01	4.6156E+01	-2.3635E-01	4.4163E+01	-1.7115E-01	4.1694E+01	-8.1560E-02	1.9107E+01	-8.1973E-03	1.7662E+01
126000	-4.2547E-01	4.8808E+01	-3.9416E-01	4.9797E+01	-3.4095E-01	4.7961E+01	-2.7682E-01	4.5660E+01	-1.8871E-01	2.1183E+01	-1.1658E-01	1.9792E+01
128000	-5.2706E-01	5.1877E+01	-4.9624E-01	5.3102E+01	-4.4387E-01	5.1444E+01	-3.8077E-01	4.9342E+01	-2.9409E-01	2.3144E+01	-2.2315E-01	2.1834E+01
130000	-6.2708E-01	5.4594E+01	-5.9674E-01	5.6045E+01	-5.4518E-01	5.4575E+01	-4.8306E-01	5.2692E+01	-3.9776E-01	2.4959E+01	-3.2797E-01	2.3751E+01
132000	-7.2558E-01	5.6958E+01	-6.9570E-01	5.8619E+01	-6.4492E-01	5.7339E+01	-5.8376E-01	5.5683E+01	-4.9979E-01	2.6605E+01	-4.3110E-01	2.5514E+01
134000	-8.2262E-01	5.8979E+01	-7.9318E-01	6.0831E+01	-7.4316E-01	5.9736E+01	-6.8292E-01	5.8305E+01	-6.0023E-01	2.8071E+01	-5.3260E-01	2.7102E+01
136000	-9.1824E-01	6.0679E+01	-8.8922E-01	6.2701E+01	-8.3993E-01	6.1779E+01	-7.8059E-01	6.0563E+01	-6.9913E-01	2.9351E+01	-6.3254E-01	2.8507E+01
138000	-1.0125E+00	6.2087E+01	-9.8389E-01	6.4257E+01	-9.3531E-01	6.3493E+01	-8.7682E-01	6.2476E+01	-7.9656E-01	3.0451E+01	-7.3096E-01	2.9728E+01
140000	-1.1054E+00	6.3236E+01	-1.0772E+00	6.5532E+01	-1.0293E+00	6.4908E+01	-9.7166E-01	6.4071E+01	-8.9256E-01	3.1380E+01	-8.2792E-01	3.0771E+01
142000	-1.1971E+00	6.4160E+01	-1.1692E+00	6.6562E+01	-1.1220E+00	6.6060E+01	-1.0652E+00	6.5381E+01	-9.8718E-01	3.2153E+01	-9.2346E-01	3.1648E+01
144000	-1.2875E+00	6.4893E+01	-1.2600E+00	6.7383E+01	-1.2134E+00	6.6985E+01	-1.1573E+00	6.6441E+01	-1.0805E+00	3.2786E+01	-1.0176E+00	3.2373E+01
146000	-1.3767E+00	6.5468E+01	-1.3496E+00	6.8029E+01	-1.3036E+00	6.7716E+01	-1.2483E+00	6.7287E+01	-1.1724E+00	3.3297E+01	-1.1105E+00	3.2965E+01
148000	-1.4647E+00	6.5912E+01	-1.4380E+00	6.8530E+01	-1.3926E+00	6.8288E+01	-1.3380E+00	6.7954E+01	-1.2632E+00	3.3704E+01	-1.2021E+00	3.3440E+01
150000	-1.5516E+00	6.6252E+01	-1.5252E+00	6.8915E+01	-1.4804E+00	6.8730E+01	-1.4265E+00	6.8472E+01	-1.3527E+00	3.4024E+01	-1.2924E+00	3.3817E+01
152000	-1.6374E+00	6.6509E+01	-1.6113E+00	6.9206E+01	-1.5671E+00	6.9066E+01	-1.5139E+00	6.8870E+01	-1.4410E+00	3.4273E+01	-1.3815E+00	3.4112E+01
154000	-1.7221E+00	6.6700E+01	-1.6964E+00	6.9425E+01	-1.6527E+00	6.9320E+01	-1.6002E+00	6.9173E+01	-1.5282E+00	3.4463E+01	-1.4695E+00	3.4340E+01
156000	-1.8058E+00	6.6842E+01	-1.7804E+00	6.9587E+01	-1.7372E+00	6.9509E+01	-1.6854E+00	6.9400E+01	-1.6143E+00	3.4607E+01	-1.5563E+00	3.4515E+01
158000	-1.8885E+00	6.6946E+01	-1.8634E+00	6.9706E+01	-1.8208E+00	6.9649E+01	-1.7695E+00	6.9568E+01	-1.6993E+00	3.4716E+01	-1.6421E+00	3.4646E+01
160000	-1.9702E+00	6.7021E+01	-1.9454E+00	6.9792E+01	-1.9033E+00	6.9751E+01	-1.8526E+00	6.9692E+01	-1.7833E+00	3.4796E+01	-1.7267E+00	3.4744E+01
162000	-2.0510E+00	6.7075E+01	-2.0264E+00	6.9854E+01	-1.9848E+00	6.9825E+01	-1.9348E+00	6.9782E+01	-1.8663E+00	3.4855E+01	-1.8104E+00	3.4817E+01
164000	-2.1308E+00	6.7113E+01	-2.1065E+00	6.9899E+01	-2.0654E+00	6.9878E+01	-2.0159E+00	6.9847E+01	-1.9482E+00	3.4897E+01	-1.8930E+00	3.4870E+01
166000	-2.2097E+00	6.7140E+01	-2.1857E+00	6.9930E+01	-2.1451E+00	6.9915E+01	-2.0962E+00	6.9894E+01	-2.0292E+00	3.4928E+01	-1.9747E+00	3.4908E+01
168000	-2.2878E+00	6.7159E+01	-2.2641E+00	6.9952E+01	-2.2238E+00	6.9942E+01	-2.1755E+00	6.9927E+01	-2.1093E+00	3.4950E+01	-2.0554E+00	3.4936E+01
170000	-2.3650E+00	6.7172E+01	-2.3415E+00	6.9968E+01	-2.3017E+00	6.9960E+01	-2.2539E+00	6.9950E+01	-2.1885E+00	3.4966E+01	-2.1351E+00	3.4956E+01
172000	-2.4413E+00	6.7181E+01	-2.4181E+00	6.9978E+01	-2.3788E+00	6.9973E+01	-2.3315E+00	6.9966E+01	-2.2668E+00	3.4976E+01	-2.2140E+00	3.4970E+01
174000	-2.5169E+00	6.7188E+01	-2.4939E+00	6.9985E+01	-2.4550E+00	6.9982E+01	-2.4082E+00	6.9977E+01	-2.3442E+00	3.4984E+01	-2.2920E+00	3.4979E+01
176000	-2.5917E+00	6.7192E+01	-2.5689E+00	6.9990E+01	-2.5304E+00	6.9988E+01	-2.4841E+00	6.9984E+01	-2.4208E+00	3.4989E+01	-2.3692E+00	3.4986E+01
178000	-2.6657E+00	6.7195E+01	-2.6432E+00	6.9994E+01	-2.6050E+00	6.9992E+01	-2.5592E+00	6.9990E+01	-2.4966E+00	3.4993E+01	-2.4455E+00	3.4990E+01
180000	-2.7389E+00	6.7196E+01	-2.7166E+00	6.9996E+01	-2.6789E+00	6.9995E+01	-2.6336E+00	6.9993E+01	-2.5715E+00	3.4995E+01	-2.5210E+00	3.4994E+01
182000	-2.8114E+00	6.7198E+01	-2.7894E+00	6.9997E+01	-2.7520E+00	6.9997E+01	-2.7071E+00	6.9995E+01	-2.6457E+00	3.4997E+01	-2.5957E+00	3.4996E+01
184000	-2.8832E+00	6.7198E+01	-2.8614E+00	6.9998E+01	-2.8244E+00	6.9998E+01	-2.7800E+00	6.9997E+01	-2.7192E+00	3.4998E+01	-2.6697E+00	3.4997E+01
186000	-2.9543E+00	6.7199E+01	-2.9327E+00	6.9999E+01	-2.8960E+00	6.9999E+01	-2.8521E+00	6.9998E+01	-2.7919E+00	3.4999E+01	-2.7429E+00	3.4998E+01
188000	-3.0247E+00	6.7199E+01	-3.0033E+00	6.9999E+01	-2.9670E+00	6.9999E+01	-2.9234E+00	6.9999E+01	-2.8639E+00	3.4999E+01	-2.8154E+00	3.4999E+01
190000	-3.0944E+00	6.7200E+01	-3.0732E+00	7.0000E+01	-3.0373E+00	6.9999E+01	-2.9942E+00	6.9999E+01	-2.9352E+00	3.4999E+01	-2.8871E+00	3.4999E+01
192000	-3.1635E+00	6.7200E+01	-3.1425E+00	7.0000E+01	-3.1069E+00	7.0000E+01	-3.0642E+00	6.9999E+01	-3.0058E+00	3.5000E+01	-2.9582E+00	3.4999E+01
194000	-3.2320E+00	6.7200E+01	-3.2112E+00	7.0000E+01	-3.1759E+00	7.0000E+01	-3.1336E+00	7.0000E+01	-3.0757E+00	3.5000E+01	-3.0286E+00	3.5000E+01
196000	-3.2998E+00	6.7200E+01	-3.2792E+00	7.0000E+01	-3.2442E+00	7.0000E+01	-3.2023E+00	7.0000E+01	-3.1449E+00	3.5000E+01	-3.0983E+00	3.5000E+01
198000	-3.3670E+00	6.7200E+01	-3.3466E+00	7.0000E+01	-3.3120E+00	7.0000E+01	-3.2704E+00	7.0000E+01	-3.2136E+00	3.5000E+01	-3.1673E+00	3.5000E+01
200000	-3.4337E+00	6.7200E+01	-3.4134E+00	7.0000E+01	-3.3791E+00	7.0000E+01	-3.3379E+00	7.0000E+01	-3.2816E+00	3.5000E+01	-3.2357E+00	3.5000E+01
202000	-3.4997E+00	6.7200E+01	-3.4796E+00	7.0000E+01	-3.4456E+00	7.0000E+01	-3.4048E+00	7.0000E+01	-3.3489E+00	3.5000E+01	-3.3035E+00	3.5000E+01
204000	-3.5652E+00	6.7200E+01	-3.5453E+00	7.0000E+01	-3.5115E+00	7.0000E+01	-3.4710E+00	7.0000E+01	-3.4157E+00	3.5000E+01	-3.3707E+00	3.5000E+01
206000	-3.6301E+00	6.7200E+01	-3.6103E+00	7.0000E+01	-3.5769E+00	7.0000E+01	-3.5368E+00	7.0000E+01	-3.4819E+00	3.5000E+01	-3.4373E+00	3.5000E+01

Time (yrs)	Arg 1	Curve 1	Arg 2	Curve 2	Arg 3	Curve 3	Arg 4	Curve 4	Arg 5	Curve 5	Arg 6	Curve 6
208000	-3.6944E+00	6.7200E+01	-3.6749E+00	7.0000E+01	-3.6417E+00	7.0000E+01	-3.6019E+00	7.0000E+01	-3.5476E+00	3.5000E+01	-3.5033E+00	3.5000E+01
210000	-3.7583E+00	6.7200E+01	-3.7389E+00	7.0000E+01	-3.7060E+00	7.0000E+01	-3.6665E+00	7.0000E+01	-3.6126E+00	3.5000E+01	-3.5688E+00	3.5000E+01
212000	-3.8216E+00	6.7200E+01	-3.8023E+00	7.0000E+01	-3.7697E+00	7.0000E+01	-3.7306E+00	7.0000E+01	-3.6771E+00	3.5000E+01	-3.6336E+00	3.5000E+01
214000	-3.8844E+00	6.7200E+01	-3.8653E+00	7.0000E+01	-3.8329E+00	7.0000E+01	-3.7941E+00	7.0000E+01	-3.7411E+00	3.5000E+01	-3.6980E+00	3.5000E+01
216000	-3.9466E+00	6.7200E+01	-3.9277E+00	7.0000E+01	-3.8956E+00	7.0000E+01	-3.8571E+00	7.0000E+01	-3.8045E+00	3.5000E+01	-3.7618E+00	3.5000E+01
218000	-4.0084E+00	6.7200E+01	-3.9896E+00	7.0000E+01	-3.9578E+00	7.0000E+01	-3.9196E+00	7.0000E+01	-3.8675E+00	3.5000E+01	-3.8250E+00	3.5000E+01
220000	-4.0697E+00	6.7200E+01	-4.0511E+00	7.0000E+01	-4.0195E+00	7.0000E+01	-3.9816E+00	7.0000E+01	-3.9299E+00	3.5000E+01	-3.8878E+00	3.5000E+01
222000	-4.1306E+00	6.7200E+01	-4.1121E+00	7.0000E+01	-4.0807E+00	7.0000E+01	-4.0431E+00	7.0000E+01	-3.9918E+00	3.5000E+01	-3.9501E+00	3.5000E+01
224000	-4.1909E+00	6.7200E+01	-4.1726E+00	7.0000E+01	-4.1415E+00	7.0000E+01	-4.1042E+00	7.0000E+01	-4.0532E+00	3.5000E+01	-4.0118E+00	3.5000E+01
226000	-4.2508E+00	6.7200E+01	-4.2326E+00	7.0000E+01	-4.2017E+00	7.0000E+01	-4.1647E+00	7.0000E+01	-4.1142E+00	3.5000E+01	-4.0731E+00	3.5000E+01
228000	-4.3103E+00	6.7200E+01	-4.2922E+00	7.0000E+01	-4.2616E+00	7.0000E+01	-4.2248E+00	7.0000E+01	-4.1747E+00	3.5000E+01	-4.1339E+00	3.5000E+01
230000	-4.3693E+00	6.7200E+01	-4.3514E+00	7.0000E+01	-4.3209E+00	7.0000E+01	-4.2845E+00	7.0000E+01	-4.2347E+00	3.5000E+01	-4.1942E+00	3.5000E+01
232000	-4.4279E+00	6.7200E+01	-4.4101E+00	7.0000E+01	-4.3799E+00	7.0000E+01	-4.3437E+00	7.0000E+01	-4.2943E+00	3.5000E+01	-4.2541E+00	3.5000E+01
234000	-4.4860E+00	6.7200E+01	-4.4684E+00	7.0000E+01	-4.4384E+00	7.0000E+01	-4.4025E+00	7.0000E+01	-4.3534E+00	3.5000E+01	-4.3135E+00	3.5000E+01
236000	-4.5438E+00	6.7200E+01	-4.5262E+00	7.0000E+01	-4.4965E+00	7.0000E+01	-4.4608E+00	7.0000E+01	-4.4121E+00	3.5000E+01	-4.3725E+00	3.5000E+01
238000	-4.6011E+00	6.7200E+01	-4.5837E+00	7.0000E+01	-4.5541E+00	7.0000E+01	-4.5187E+00	7.0000E+01	-4.4704E+00	3.5000E+01	-4.4311E+00	3.5000E+01
240000	-4.6581E+00	6.7200E+01	-4.6407E+00	7.0000E+01	-4.6114E+00	7.0000E+01	-4.5762E+00	7.0000E+01	-4.5282E+00	3.5000E+01	-4.4892E+00	3.5000E+01
242000	-4.7146E+00	6.7200E+01	-4.6974E+00	7.0000E+01	-4.6683E+00	7.0000E+01	-4.6333E+00	7.0000E+01	-4.5857E+00	3.5000E+01	-4.5470E+00	3.5000E+01
244000	-4.7707E+00	6.7200E+01	-4.7537E+00	7.0000E+01	-4.7247E+00	7.0000E+01	-4.6900E+00	7.0000E+01	-4.6427E+00	3.5000E+01	-4.6043E+00	3.5000E+01
246000	-4.8265E+00	6.7200E+01	-4.8095E+00	7.0000E+01	-4.7808E+00	7.0000E+01	-4.7464E+00	7.0000E+01	-4.6994E+00	3.5000E+01	-4.6612E+00	3.5000E+01
248000	-4.8819E+00	6.7200E+01	-4.8650E+00	7.0000E+01	-4.8365E+00	7.0000E+01	-4.8023E+00	7.0000E+01	-4.7556E+00	3.5000E+01	-4.7177E+00	3.5000E+01
250000	-4.9369E+00	6.7200E+01	-4.9202E+00	7.0000E+01	-4.8918E+00	7.0000E+01	-4.8578E+00	7.0000E+01	-4.8115E+00	3.5000E+01	-4.7738E+00	3.5000E+01
252000	-4.9916E+00	6.7200E+01	-4.9749E+00	7.0000E+01	-4.9468E+00	7.0000E+01	-4.9130E+00	7.0000E+01	-4.8670E+00	3.5000E+01	-4.8296E+00	3.5000E+01
254000	-5.0459E+00	6.7200E+01	-5.0294E+00	7.0000E+01	-5.0014E+00	7.0000E+01	-4.9678E+00	7.0000E+01	-4.9221E+00	3.5000E+01	-4.8849E+00	3.5000E+01
256000	-5.0998E+00	6.7200E+01	-5.0834E+00	7.0000E+01	-5.0556E+00	7.0000E+01	-5.0223E+00	7.0000E+01	-4.9769E+00	3.5000E+01	-4.9399E+00	3.5000E+01
258000	-5.1534E+00	6.7200E+01	-5.1371E+00	7.0000E+01	-5.1095E+00	7.0000E+01	-5.0764E+00	7.0000E+01	-5.0313E+00	3.5000E+01	-4.9946E+00	3.5000E+01
260000	-5.2067E+00	6.7200E+01	-5.1905E+00	7.0000E+01	-5.1631E+00	7.0000E+01	-5.1302E+00	7.0000E+01	-5.0853E+00	3.5000E+01	-5.0489E+00	3.5000E+01
262000	-5.2596E+00	6.7200E+01	-5.2435E+00	7.0000E+01	-5.2163E+00	7.0000E+01	-5.1836E+00	7.0000E+01	-5.1390E+00	3.5000E+01	-5.1028E+00	3.5000E+01
264000	-5.3123E+00	6.7200E+01	-5.2962E+00	7.0000E+01	-5.2691E+00	7.0000E+01	-5.2367E+00	7.0000E+01	-5.1924E+00	3.5000E+01	-5.1564E+00	3.5000E+01
266000	-5.3645E+00	6.7200E+01	-5.3486E+00	7.0000E+01	-5.3217E+00	7.0000E+01	-5.2894E+00	7.0000E+01	-5.2454E+00	3.5000E+01	-5.2096E+00	3.5000E+01
268000	-5.4165E+00	6.7200E+01	-5.4007E+00	7.0000E+01	-5.3739E+00	7.0000E+01	-5.3418E+00	7.0000E+01	-5.2981E+00	3.5000E+01	-5.2625E+00	3.5000E+01
270000	-5.4682E+00	6.7200E+01	-5.4524E+00	7.0000E+01	-5.4258E+00	7.0000E+01	-5.3939E+00	7.0000E+01	-5.3504E+00	3.5000E+01	-5.3151E+00	3.5000E+01
272000	-5.5195E+00	6.7200E+01	-5.5039E+00	7.0000E+01	-5.4774E+00	7.0000E+01	-5.4457E+00	7.0000E+01	-5.4025E+00	3.5000E+01	-5.3674E+00	3.5000E+01
274000	-5.5705E+00	6.7200E+01	-5.5550E+00	7.0000E+01	-5.5287E+00	7.0000E+01	-5.4972E+00	7.0000E+01	-5.4542E+00	3.5000E+01	-5.4193E+00	3.5000E+01
276000	-5.6213E+00	6.7200E+01	-5.6058E+00	7.0000E+01	-5.5797E+00	7.0000E+01	-5.5484E+00	7.0000E+01	-5.5057E+00	3.5000E+01	-5.4710E+00	3.5000E+01
278000	-5.6717E+00	6.7200E+01	-5.6564E+00	7.0000E+01	-5.6304E+00	7.0000E+01	-5.5992E+00	7.0000E+01	-5.5568E+00	3.5000E+01	-5.5223E+00	3.5000E+01
280000	-5.7219E+00	6.7200E+01	-5.7066E+00	7.0000E+01	-5.6808E+00	7.0000E+01	-5.6498E+00	7.0000E+01	-5.6076E+00	3.5000E+01	-5.5733E+00	3.5000E+01
282000	-5.7717E+00	6.7200E+01	-5.7566E+00	7.0000E+01	-5.7309E+00	7.0000E+01	-5.7001E+00	7.0000E+01	-5.6581E+00	3.5000E+01	-5.6241E+00	3.5000E+01
284000	-5.8213E+00	6.7200E+01	-5.8062E+00	7.0000E+01	-5.7807E+00	7.0000E+01	-5.7501E+00	7.0000E+01	-5.7084E+00	3.5000E+01	-5.6745E+00	3.5000E+01
286000	-5.8706E+00	6.7200E+01	-5.8556E+00	7.0000E+01	-5.8302E+00	7.0000E+01	-5.7998E+00	7.0000E+01	-5.7583E+00	3.5000E+01	-5.7246E+00	3.5000E+01
288000	-5.9197E+00	6.7200E+01	-5.9047E+00	7.0000E+01	-5.8795E+00	7.0000E+01	-5.8492E+00	7.0000E+01	-5.8080E+00	3.5000E+01	-5.7745E+00	3.5000E+01
290000	-5.9684E+00	6.7200E+01	-5.9536E+00	7.0000E+01	-5.9285E+00	7.0000E+01	-5.8984E+00	7.0000E+01	-5.8574E+00	3.5000E+01	-5.8240E+00	3.5000E+01
292000	-6.0169E+00	6.7200E+01	-6.0022E+00	7.0000E+01	-5.9772E+00	7.0000E+01	-5.9473E+00	7.0000E+01	-5.9065E+00	3.5000E+01	-5.8733E+00	3.5000E+01
294000	-6.0652E+00	6.7200E+01	-6.0505E+00	7.0000E+01	-6.0256E+00	7.0000E+01	-5.9959E+00	7.0000E+01	-5.9553E+00	3.5000E+01	-5.9224E+00	3.5000E+01
296000	-6.1132E+00	6.7200E+01	-6.0985E+00	7.0000E+01	-6.0738E+00	7.0000E+01	-6.0442E+00	7.0000E+01	-6.0039E+00	3.5000E+01	-5.9711E+00	3.5000E+01
298000	-6.1609E+00	6.7200E+01	-6.1463E+00	7.0000E+01	-6.1218E+00	7.0000E+01	-6.0923E+00	7.0000E+01	-6.0522E+00	3.5000E+01	-6.0196E+00	3.5000E+01
300000	-6.2083E+00	6.7200E+01	-6.1939E+00	7.0000E+01	-6.1694E+00	7.0000E+01	-6.1401E+00	7.0000E+01	-6.1002E+00	3.5000E+01	-6.0678E+00	3.5000E+01
302000	-6.2556E+00	6.7200E+01	-6.2412E+00	7.0000E+01	-6.2169E+00	7.0000E+01	-6.1877E+00	7.0000E+01	-6.1480E+00	3.5000E+01	-6.1158E+00	3.5000E+01
304000	-6.3026E+00	6.7200E+01	-6.2882E+00	7.0000E+01	-6.2640E+00	7.0000E+01	-6.2351E+00	7.0000E+01	-6.1956E+00	3.5000E+01	-6.1635E+00	3.5000E+01
306000	-6.3493E+00	6.7200E+01	-6.3351E+00	7.0000E+01	-6.3110E+00	7.0000E+01	-6.2821E+00	7.0000E+01	-6.2428E+00	3.5000E+01	-6.2110E+00	3.5000E+01
308000	-6.3958E+00	6.7200E+01	-6.3816E+00	7.0000E+01	-6.3577E+00	7.0000E+01	-6.3290E+00	7.0000E+01	-6.2899E+00	3.5000E+01	-6.2582E+00	3.5000E+01
310000	-6.4421E+00	6.7200E+01	-6.4280E+00	7.0000E+01	-6.4041E+00	7.0000E+01	-6.3756E+00	7.0000E+01	-6.3367E+00	3.5000E+01	-6.3051E+00	3.5000E+01

Time (yrs)	Arg 1	Curve 1	Arg 2	Curve 2	Arg 3	Curve 3	Arg 4	Curve 4	Arg 5	Curve 5	Arg 6	Curve 6
312000	-6.4881E+00	6.7200E+01	-6.4741E+00	7.0000E+01	-6.4504E+00	7.0000E+01	-6.4220E+00	7.0000E+01	-6.3833E+00	3.5000E+01	-6.3519E+00	3.5000E+01
314000	-6.5339E+00	6.7200E+01	-6.5199E+00	7.0000E+01	-6.4963E+00	7.0000E+01	-6.4681E+00	7.0000E+01	-6.4296E+00	3.5000E+01	-6.3983E+00	3.5000E+01
316000	-6.5795E+00	6.7200E+01	-6.5656E+00	7.0000E+01	-6.5421E+00	7.0000E+01	-6.5140E+00	7.0000E+01	-6.4757E+00	3.5000E+01	-6.4446E+00	3.5000E+01
318000	-6.6248E+00	6.7200E+01	-6.6110E+00	7.0000E+01	-6.5876E+00	7.0000E+01	-6.5597E+00	7.0000E+01	-6.5215E+00	3.5000E+01	-6.4906E+00	3.5000E+01
320000	-6.6700E+00	6.7200E+01	-6.6562E+00	7.0000E+01	-6.6330E+00	7.0000E+01	-6.6051E+00	7.0000E+01	-6.5672E+00	3.5000E+01	-6.5364E+00	3.5000E+01
322000	-6.7149E+00	6.7200E+01	-6.7012E+00	7.0000E+01	-6.6781E+00	7.0000E+01	-6.6503E+00	7.0000E+01	-6.6126E+00	3.5000E+01	-6.5820E+00	3.5000E+01
324000	-6.7596E+00	6.7200E+01	-6.7460E+00	7.0000E+01	-6.7229E+00	7.0000E+01	-6.6954E+00	7.0000E+01	-6.6578E+00	3.5000E+01	-6.6273E+00	3.5000E+01
326000	-6.8041E+00	6.7200E+01	-6.7905E+00	7.0000E+01	-6.7676E+00	7.0000E+01	-6.7402E+00	7.0000E+01	-6.7028E+00	3.5000E+01	-6.6724E+00	3.5000E+01
328000	-6.8483E+00	6.7200E+01	-6.8349E+00	7.0000E+01	-6.8120E+00	7.0000E+01	-6.7847E+00	7.0000E+01	-6.7475E+00	3.5000E+01	-6.7173E+00	3.5000E+01
330000	-6.8924E+00	6.7200E+01	-6.8790E+00	7.0000E+01	-6.8563E+00	7.0000E+01	-6.8291E+00	7.0000E+01	-6.7921E+00	3.5000E+01	-6.7620E+00	3.5000E+01
332000	-6.9363E+00	6.7200E+01	-6.9229E+00	7.0000E+01	-6.9003E+00	7.0000E+01	-6.8733E+00	7.0000E+01	-6.8364E+00	3.5000E+01	-6.8065E+00	3.5000E+01
334000	-6.9800E+00	6.7200E+01	-6.9667E+00	7.0000E+01	-6.9442E+00	7.0000E+01	-6.9172E+00	7.0000E+01	-6.8805E+00	3.5000E+01	-6.8508E+00	3.5000E+01
336000	-7.0234E+00	6.7200E+01	-7.0102E+00	7.0000E+01	-6.9878E+00	7.0000E+01	-6.9610E+00	7.0000E+01	-6.9245E+00	3.5000E+01	-6.8948E+00	3.5000E+01
338000	-7.0667E+00	6.7200E+01	-7.0535E+00	7.0000E+01	-7.0312E+00	7.0000E+01	-7.0045E+00	7.0000E+01	-6.9682E+00	3.5000E+01	-6.9387E+00	3.5000E+01
340000	-7.1098E+00	6.7200E+01	-7.0967E+00	7.0000E+01	-7.0745E+00	7.0000E+01	-7.0479E+00	7.0000E+01	-7.0117E+00	3.5000E+01	-6.9824E+00	3.5000E+01
342000	-7.1527E+00	6.7200E+01	-7.1396E+00	7.0000E+01	-7.1175E+00	7.0000E+01	-7.0911E+00	7.0000E+01	-7.0550E+00	3.5000E+01	-7.0258E+00	3.5000E+01
344000	-7.1954E+00	6.7200E+01	-7.1824E+00	7.0000E+01	-7.1604E+00	7.0000E+01	-7.1340E+00	7.0000E+01	-7.0982E+00	3.5000E+01	-7.0691E+00	3.5000E+01
346000	-7.2379E+00	6.7200E+01	-7.2249E+00	7.0000E+01	-7.2030E+00	7.0000E+01	-7.1768E+00	7.0000E+01	-7.1411E+00	3.5000E+01	-7.1121E+00	3.5000E+01
348000	-7.2802E+00	6.7200E+01	-7.2673E+00	7.0000E+01	-7.2455E+00	7.0000E+01	-7.2194E+00	7.0000E+01	-7.1838E+00	3.5000E+01	-7.1550E+00	3.5000E+01
350000	-7.3223E+00	6.7200E+01	-7.3095E+00	7.0000E+01	-7.2878E+00	7.0000E+01	-7.2618E+00	7.0000E+01	-7.2264E+00	3.5000E+01	-7.1977E+00	3.5000E+01
352000	-7.3643E+00	6.7200E+01	-7.3515E+00	7.0000E+01	-7.3299E+00	7.0000E+01	-7.3040E+00	7.0000E+01	-7.2688E+00	3.5000E+01	-7.2402E+00	3.5000E+01
354000	-7.4061E+00	6.7200E+01	-7.3933E+00	7.0000E+01	-7.3718E+00	7.0000E+01	-7.3460E+00	7.0000E+01	-7.3110E+00	3.5000E+01	-7.2825E+00	3.5000E+01
356000	-7.4477E+00	6.7200E+01	-7.4350E+00	7.0000E+01	-7.4136E+00	7.0000E+01	-7.3879E+00	7.0000E+01	-7.3530E+00	3.5000E+01	-7.3246E+00	3.5000E+01
358000	-7.4891E+00	6.7200E+01	-7.4765E+00	7.0000E+01	-7.4551E+00	7.0000E+01	-7.4296E+00	7.0000E+01	-7.3948E+00	3.5000E+01	-7.3666E+00	3.5000E+01
360000	-7.5303E+00	6.7200E+01	-7.5178E+00	7.0000E+01	-7.4965E+00	7.0000E+01	-7.4711E+00	7.0000E+01	-7.4364E+00	3.5000E+01	-7.4083E+00	3.5000E+01
362000	-7.5714E+00	6.7200E+01	-7.5589E+00	7.0000E+01	-7.5377E+00	7.0000E+01	-7.5124E+00	7.0000E+01	-7.4779E+00	3.5000E+01	-7.4499E+00	3.5000E+01
364000	-7.6123E+00	6.7200E+01	-7.5999E+00	7.0000E+01	-7.5788E+00	7.0000E+01	-7.5536E+00	7.0000E+01	-7.5192E+00	3.5000E+01	-7.4914E+00	3.5000E+01
366000	-7.6531E+00	6.7200E+01	-7.6407E+00	7.0000E+01	-7.6197E+00	7.0000E+01	-7.5945E+00	7.0000E+01	-7.5603E+00	3.5000E+01	-7.5326E+00	3.5000E+01
368000	-7.6936E+00	6.7200E+01	-7.6813E+00	7.0000E+01	-7.6604E+00	7.0000E+01	-7.6354E+00	7.0000E+01	-7.6013E+00	3.5000E+01	-7.5737E+00	3.5000E+01
370000	-7.7341E+00	6.7200E+01	-7.7218E+00	7.0000E+01	-7.7009E+00	7.0000E+01	-7.6760E+00	7.0000E+01	-7.6421E+00	3.5000E+01	-7.6146E+00	3.5000E+01
372000	-7.7743E+00	6.7200E+01	-7.7621E+00	7.0000E+01	-7.7413E+00	7.0000E+01	-7.7165E+00	7.0000E+01	-7.6827E+00	3.5000E+01	-7.6553E+00	3.5000E+01
374000	-7.8144E+00	6.7200E+01	-7.8022E+00	7.0000E+01	-7.7815E+00	7.0000E+01	-7.7568E+00	7.0000E+01	-7.7232E+00	3.5000E+01	-7.6959E+00	3.5000E+01
376000	-7.8543E+00	6.7200E+01	-7.8422E+00	7.0000E+01	-7.8216E+00	7.0000E+01	-7.7970E+00	7.0000E+01	-7.7635E+00	3.5000E+01	-7.7363E+00	3.5000E+01
378000	-7.8941E+00	6.7200E+01	-7.8820E+00	7.0000E+01	-7.8615E+00	7.0000E+01	-7.8370E+00	7.0000E+01	-7.8036E+00	3.5000E+01	-7.7765E+00	3.5000E+01
380000	-7.9337E+00	6.7200E+01	-7.9217E+00	7.0000E+01	-7.9013E+00	7.0000E+01	-7.8768E+00	7.0000E+01	-7.8436E+00	3.5000E+01	-7.8166E+00	3.5000E+01
382000	-7.9732E+00	6.7200E+01	-7.9612E+00	7.0000E+01	-7.9408E+00	7.0000E+01	-7.9165E+00	7.0000E+01	-7.8834E+00	3.5000E+01	-7.8565E+00	3.5000E+01
384000	-8.0125E+00	6.7200E+01	-8.0005E+00	7.0000E+01	-7.9803E+00	7.0000E+01	-7.9560E+00	7.0000E+01	-7.9230E+00	3.5000E+01	-7.8963E+00	3.5000E+01
386000	-8.0517E+00	6.7200E+01	-8.0397E+00	7.0000E+01	-8.0196E+00	7.0000E+01	-7.9954E+00	7.0000E+01	-7.9626E+00	3.5000E+01	-7.9359E+00	3.5000E+01
388000	-8.0907E+00	6.7200E+01	-8.0788E+00	7.0000E+01	-8.0587E+00	7.0000E+01	-8.0347E+00	7.0000E+01	-8.0019E+00	3.5000E+01	-7.9754E+00	3.5000E+01
390000	-8.1296E+00	6.7200E+01	-8.1177E+00	7.0000E+01	-8.0977E+00	7.0000E+01	-8.0737E+00	7.0000E+01	-8.0411E+00	3.5000E+01	-8.0147E+00	3.5000E+01
392000	-8.1683E+00	6.7200E+01	-8.1565E+00	7.0000E+01	-8.1365E+00	7.0000E+01	-8.1127E+00	7.0000E+01	-8.0802E+00	3.5000E+01	-8.0538E+00	3.5000E+01
394000	-8.2068E+00	6.7200E+01	-8.1951E+00	7.0000E+01	-8.1752E+00	7.0000E+01	-8.1514E+00	7.0000E+01	-8.1191E+00	3.5000E+01	-8.0928E+00	3.5000E+01
396000	-8.2453E+00	6.7200E+01	-8.2336E+00	7.0000E+01	-8.2138E+00	7.0000E+01	-8.1901E+00	7.0000E+01	-8.1578E+00	3.5000E+01	-8.1317E+00	3.5000E+01
398000	-8.2836E+00	6.7200E+01	-8.2719E+00	7.0000E+01	-8.2522E+00	7.0000E+01	-8.2286E+00	7.0000E+01	-8.1964E+00	3.5000E+01	-8.1704E+00	3.5000E+01
400000	-8.3217E+00	6.7200E+01	-8.3101E+00	7.0000E+01	-8.2905E+00	7.0000E+01	-8.2669E+00	7.0000E+01	-8.2349E+00	3.5000E+01	-8.2090E+00	3.5000E+01
402000	-8.3597E+00	6.7200E+01	-8.3482E+00	7.0000E+01	-8.3286E+00	7.0000E+01	-8.3051E+00	7.0000E+01	-8.2732E+00	3.5000E+01	-8.2474E+00	3.5000E+01
404000	-8.3976E+00	6.7200E+01	-8.3861E+00	7.0000E+01	-8.3666E+00	7.0000E+01	-8.3432E+00	7.0000E+01	-8.3114E+00	3.5000E+01	-8.2857E+00	3.5000E+01
406000	-8.4353E+00	6.7200E+01	-8.4239E+00	7.0000E+01	-8.4044E+00	7.0000E+01	-8.3812E+00	7.0000E+01	-8.3495E+00	3.5000E+01	-8.3238E+00	3.5000E+01
408000	-8.4730E+00	6.7200E+01	-8.4615E+00	7.0000E+01	-8.4421E+00	7.0000E+01	-8.4189E+00	7.0000E+01	-8.3874E+00	3.5000E+01	-8.3618E+00	3.5000E+01
410000	-8.5104E+00	6.7200E+01	-8.4990E+00	7.0000E+01	-8.4797E+00	7.0000E+01	-8.4566E+00	7.0000E+01	-8.4252E+00	3.5000E+01	-8.3997E+00	3.5000E+01
412000	-8.5478E+00	6.7200E+01	-8.5364E+00	7.0000E+01	-8.5172E+00	7.0000E+01	-8.4941E+00	7.0000E+01	-8.4628E+00	3.5000E+01	-8.4374E+00	3.5000E+01
414000	-8.5850E+00	6.7200E+01	-8.5736E+00	7.0000E+01	-8.5545E+00	7.0000E+01	-8.5315E+00	7.0000E+01	-8.5003E+00	3.5000E+01	-8.4750E+00	3.5000E+01

Time (yrs)	Arg 1	Curve 1	Arg 2	Curve 2	Arg 3	Curve 3	Arg 4	Curve 4	Arg 5	Curve 5	Arg 6	Curve 6
416000	-8.6220E+00	6.7200E+01	-8.6107E+00	7.0000E+01	-8.5916E+00	7.0000E+01	-8.5688E+00	7.0000E+01	-8.5377E+00	3.5000E+01	-8.5125E+00	3.5000E+01
418000	-8.6590E+00	6.7200E+01	-8.6477E+00	7.0000E+01	-8.6287E+00	7.0000E+01	-8.6059E+00	7.0000E+01	-8.5749E+00	3.5000E+01	-8.5498E+00	3.5000E+01
420000	-8.6958E+00	6.7200E+01	-8.6846E+00	7.0000E+01	-8.6656E+00	7.0000E+01	-8.6429E+00	7.0000E+01	-8.6120E+00	3.5000E+01	-8.5870E+00	3.5000E+01
422000	-8.7325E+00	6.7200E+01	-8.7213E+00	7.0000E+01	-8.7024E+00	7.0000E+01	-8.6798E+00	7.0000E+01	-8.6490E+00	3.5000E+01	-8.6241E+00	3.5000E+01
424000	-8.7691E+00	6.7200E+01	-8.7579E+00	7.0000E+01	-8.7391E+00	7.0000E+01	-8.7166E+00	7.0000E+01	-8.6859E+00	3.5000E+01	-8.6610E+00	3.5000E+01
426000	-8.8055E+00	6.7200E+01	-8.7944E+00	7.0000E+01	-8.7756E+00	7.0000E+01	-8.7532E+00	7.0000E+01	-8.7226E+00	3.5000E+01	-8.6978E+00	3.5000E+01
428000	-8.8418E+00	6.7200E+01	-8.8308E+00	7.0000E+01	-8.8121E+00	7.0000E+01	-8.7897E+00	7.0000E+01	-8.7592E+00	3.5000E+01	-8.7345E+00	3.5000E+01
430000	-8.8780E+00	6.7200E+01	-8.8670E+00	7.0000E+01	-8.8484E+00	7.0000E+01	-8.8261E+00	7.0000E+01	-8.7957E+00	3.5000E+01	-8.7711E+00	3.5000E+01
432000	-8.9141E+00	6.7200E+01	-8.9031E+00	7.0000E+01	-8.8845E+00	7.0000E+01	-8.8623E+00	7.0000E+01	-8.8320E+00	3.5000E+01	-8.8075E+00	3.5000E+01
434000	-8.9501E+00	6.7200E+01	-8.9391E+00	7.0000E+01	-8.9206E+00	7.0000E+01	-8.8984E+00	7.0000E+01	-8.8683E+00	3.5000E+01	-8.8438E+00	3.5000E+01
436000	-8.9859E+00	6.7200E+01	-8.9750E+00	7.0000E+01	-8.9565E+00	7.0000E+01	-8.9345E+00	7.0000E+01	-8.9044E+00	3.5000E+01	-8.8800E+00	3.5000E+01
438000	-9.0217E+00	6.7200E+01	-9.0108E+00	7.0000E+01	-8.9924E+00	7.0000E+01	-8.9704E+00	7.0000E+01	-8.9404E+00	3.5000E+01	-8.9161E+00	3.5000E+01
440000	-9.0573E+00	6.7200E+01	-9.0464E+00	7.0000E+01	-9.0281E+00	7.0000E+01	-9.0061E+00	7.0000E+01	-8.9763E+00	3.5000E+01	-8.9521E+00	3.5000E+01
442000	-9.0928E+00	6.7200E+01	-9.0819E+00	7.0000E+01	-9.0637E+00	7.0000E+01	-9.0418E+00	7.0000E+01	-9.0120E+00	3.5000E+01	-8.9879E+00	3.5000E+01
444000	-9.1281E+00	6.7200E+01	-9.1174E+00	7.0000E+01	-9.0991E+00	7.0000E+01	-9.0773E+00	7.0000E+01	-9.0477E+00	3.5000E+01	-9.0236E+00	3.5000E+01
446000	-9.1634E+00	6.7200E+01	-9.1527E+00	7.0000E+01	-9.1345E+00	7.0000E+01	-9.1128E+00	7.0000E+01	-9.0832E+00	3.5000E+01	-9.0592E+00	3.5000E+01
448000	-9.1986E+00	6.7200E+01	-9.1878E+00	7.0000E+01	-9.1697E+00	7.0000E+01	-9.1481E+00	7.0000E+01	-9.1186E+00	3.5000E+01	-9.0947E+00	3.5000E+01
450000	-9.2336E+00	6.7200E+01	-9.2229E+00	7.0000E+01	-9.2049E+00	7.0000E+01	-9.1833E+00	7.0000E+01	-9.1539E+00	3.5000E+01	-9.1301E+00	3.5000E+01
452000	-9.2685E+00	6.7200E+01	-9.2579E+00	7.0000E+01	-9.2399E+00	7.0000E+01	-9.2184E+00	7.0000E+01	-9.1891E+00	3.5000E+01	-9.1653E+00	3.5000E+01
454000	-9.3034E+00	6.7200E+01	-9.2928E+00	7.0000E+01	-9.2748E+00	7.0000E+01	-9.2534E+00	7.0000E+01	-9.2242E+00	3.5000E+01	-9.2005E+00	3.5000E+01
456000	-9.3381E+00	6.7200E+01	-9.3275E+00	7.0000E+01	-9.3096E+00	7.0000E+01	-9.2882E+00	7.0000E+01	-9.2591E+00	3.5000E+01	-9.2355E+00	3.5000E+01
458000	-9.3727E+00	6.7200E+01	-9.3621E+00	7.0000E+01	-9.3443E+00	7.0000E+01	-9.3230E+00	7.0000E+01	-9.2940E+00	3.5000E+01	-9.2705E+00	3.5000E+01
460000	-9.4072E+00	6.7200E+01	-9.3967E+00	7.0000E+01	-9.3789E+00	7.0000E+01	-9.3576E+00	7.0000E+01	-9.3287E+00	3.5000E+01	-9.3053E+00	3.5000E+01
462000	-9.4416E+00	6.7200E+01	-9.4311E+00	7.0000E+01	-9.4134E+00	7.0000E+01	-9.3922E+00	7.0000E+01	-9.3634E+00	3.5000E+01	-9.3400E+00	3.5000E+01
464000	-9.4759E+00	6.7200E+01	-9.4654E+00	7.0000E+01	-9.4478E+00	7.0000E+01	-9.4266E+00	7.0000E+01	-9.3979E+00	3.5000E+01	-9.3746E+00	3.5000E+01
466000	-9.5101E+00	6.7200E+01	-9.4996E+00	7.0000E+01	-9.4820E+00	7.0000E+01	-9.4610E+00	7.0000E+01	-9.4323E+00	3.5000E+01	-9.4091E+00	3.5000E+01
468000	-9.5441E+00	6.7200E+01	-9.5338E+00	7.0000E+01	-9.5162E+00	7.0000E+01	-9.4952E+00	7.0000E+01	-9.4666E+00	3.5000E+01	-9.4435E+00	3.5000E+01
470000	-9.5781E+00	6.7200E+01	-9.5678E+00	7.0000E+01	-9.5503E+00	7.0000E+01	-9.5293E+00	7.0000E+01	-9.5008E+00	3.5000E+01	-9.4778E+00	3.5000E+01
472000	-9.6120E+00	6.7200E+01	-9.6017E+00	7.0000E+01	-9.5842E+00	7.0000E+01	-9.5634E+00	7.0000E+01	-9.5350E+00	3.5000E+01	-9.5119E+00	3.5000E+01
474000	-9.6458E+00	6.7200E+01	-9.6355E+00	7.0000E+01	-9.6181E+00	7.0000E+01	-9.5973E+00	7.0000E+01	-9.5690E+00	3.5000E+01	-9.5460E+00	3.5000E+01
476000	-9.6795E+00	6.7200E+01	-9.6692E+00	7.0000E+01	-9.6519E+00	7.0000E+01	-9.6311E+00	7.0000E+01	-9.6029E+00	3.5000E+01	-9.5800E+00	3.5000E+01
478000	-9.7131E+00	6.7200E+01	-9.7028E+00	7.0000E+01	-9.6855E+00	7.0000E+01	-9.6648E+00	7.0000E+01	-9.6367E+00	3.5000E+01	-9.6139E+00	3.5000E+01
480000	-9.7465E+00	6.7200E+01	-9.7363E+00	7.0000E+01	-9.7191E+00	7.0000E+01	-9.6985E+00	7.0000E+01	-9.6704E+00	3.5000E+01	-9.6476E+00	3.5000E+01
482000	-9.7799E+00	6.7200E+01	-9.7697E+00	7.0000E+01	-9.7526E+00	7.0000E+01	-9.7320E+00	7.0000E+01	-9.7040E+00	3.5000E+01	-9.6813E+00	3.5000E+01
484000	-9.8132E+00	6.7200E+01	-9.8031E+00	7.0000E+01	-9.7859E+00	7.0000E+01	-9.7654E+00	7.0000E+01	-9.7375E+00	3.5000E+01	-9.7149E+00	3.5000E+01
486000	-9.8464E+00	6.7200E+01	-9.8363E+00	7.0000E+01	-9.8192E+00	7.0000E+01	-9.7987E+00	7.0000E+01	-9.7709E+00	3.5000E+01	-9.7484E+00	3.5000E+01
488000	-9.8795E+00	6.7200E+01	-9.8694E+00	7.0000E+01	-9.8524E+00	7.0000E+01	-9.8320E+00	7.0000E+01	-9.8042E+00	3.5000E+01	-9.7818E+00	3.5000E+01
490000	-9.9125E+00	6.7200E+01	-9.9025E+00	7.0000E+01	-9.8855E+00	7.0000E+01	-9.8651E+00	7.0000E+01	-9.8375E+00	3.5000E+01	-9.8150E+00	3.5000E+01
492000	-9.9454E+00	6.7200E+01	-9.9354E+00	7.0000E+01	-9.9184E+00	7.0000E+01	-9.8982E+00	7.0000E+01	-9.8706E+00	3.5000E+01	-9.8482E+00	3.5000E+01
494000	-9.9782E+00	6.7200E+01	-9.9682E+00	7.0000E+01	-9.9513E+00	7.0000E+01	-9.9311E+00	7.0000E+01	-9.9036E+00	3.5000E+01	-9.8813E+00	3.5000E+01
496000	-1.0011E+01	6.7200E+01	-1.0001E+01	7.0000E+01	-9.9841E+00	7.0000E+01	-9.9640E+00	7.0000E+01	-9.9365E+00	3.5000E+01	-9.9143E+00	3.5000E+01
498000	-1.0044E+01	6.7200E+01	-1.0034E+01	7.0000E+01	-1.0017E+01	7.0000E+01	-9.9967E+00	7.0000E+01	-9.9694E+00	3.5000E+01	-9.9472E+00	3.5000E+01
500000	-1.0076E+01	6.7200E+01	-1.0066E+01	7.0000E+01	-1.0049E+01	7.0000E+01	-1.0029E+01	7.0000E+01	-1.0002E+01	3.5000E+01	-9.9800E+00	3.5000E+01
502000	-1.0109E+01	6.7200E+01	-1.0099E+01	7.0000E+01	-1.0082E+01	7.0000E+01	-1.0062E+01	7.0000E+01	-1.0035E+01	3.5000E+01	-1.0013E+01	3.5000E+01
504000	-1.0141E+01	6.7200E+01	-1.0131E+01	7.0000E+01	-1.0114E+01	7.0000E+01	-1.0094E+01	7.0000E+01	-1.0067E+01	3.5000E+01	-1.0045E+01	3.5000E+01
506000	-1.0173E+01	6.7200E+01	-1.0163E+01	7.0000E+01	-1.0147E+01	7.0000E+01	-1.0127E+01	7.0000E+01	-1.0100E+01	3.5000E+01	-1.0078E+01	3.5000E+01
508000	-1.0205E+01	6.7200E+01	-1.0196E+01	7.0000E+01	-1.0179E+01	7.0000E+01	-1.0159E+01	7.0000E+01	-1.0132E+01	3.5000E+01	-1.0110E+01	3.5000E+01
510000	-1.0238E+01	6.7200E+01	-1.0228E+01	7.0000E+01	-1.0211E+01	7.0000E+01	-1.0191E+01	7.0000E+01	-1.0165E+01	3.5000E+01	-1.0143E+01	3.5000E+01
512000	-1.0270E+01	6.7200E+01	-1.0260E+01	7.0000E+01	-1.0243E+01	7.0000E+01	-1.0224E+01	7.0000E+01	-1.0197E+01	3.5000E+01	-1.0175E+01	3.5000E+01
514000	-1.0301E+01	6.7200E+01	-1.0292E+01	7.0000E+01	-1.0275E+01	7.0000E+01	-1.0256E+01	7.0000E+01	-1.0229E+01	3.5000E+01	-1.0207E+01	3.5000E+01
516000	-1.0333E+01	6.7200E+01	-1.0324E+01	7.0000E+01	-1.0307E+01	7.0000E+01	-1.0288E+01	7.0000E+01	-1.0261E+01	3.5000E+01	-1.0239E+01	3.5000E+01
518000	-1.0365E+01	6.7200E+01	-1.0355E+01	7.0000E+01	-1.0339E+01	7.0000E+01	-1.0319E+01	7.0000E+01	-1.0293E+01	3.5000E+01	-1.0271E+01	3.5000E+01

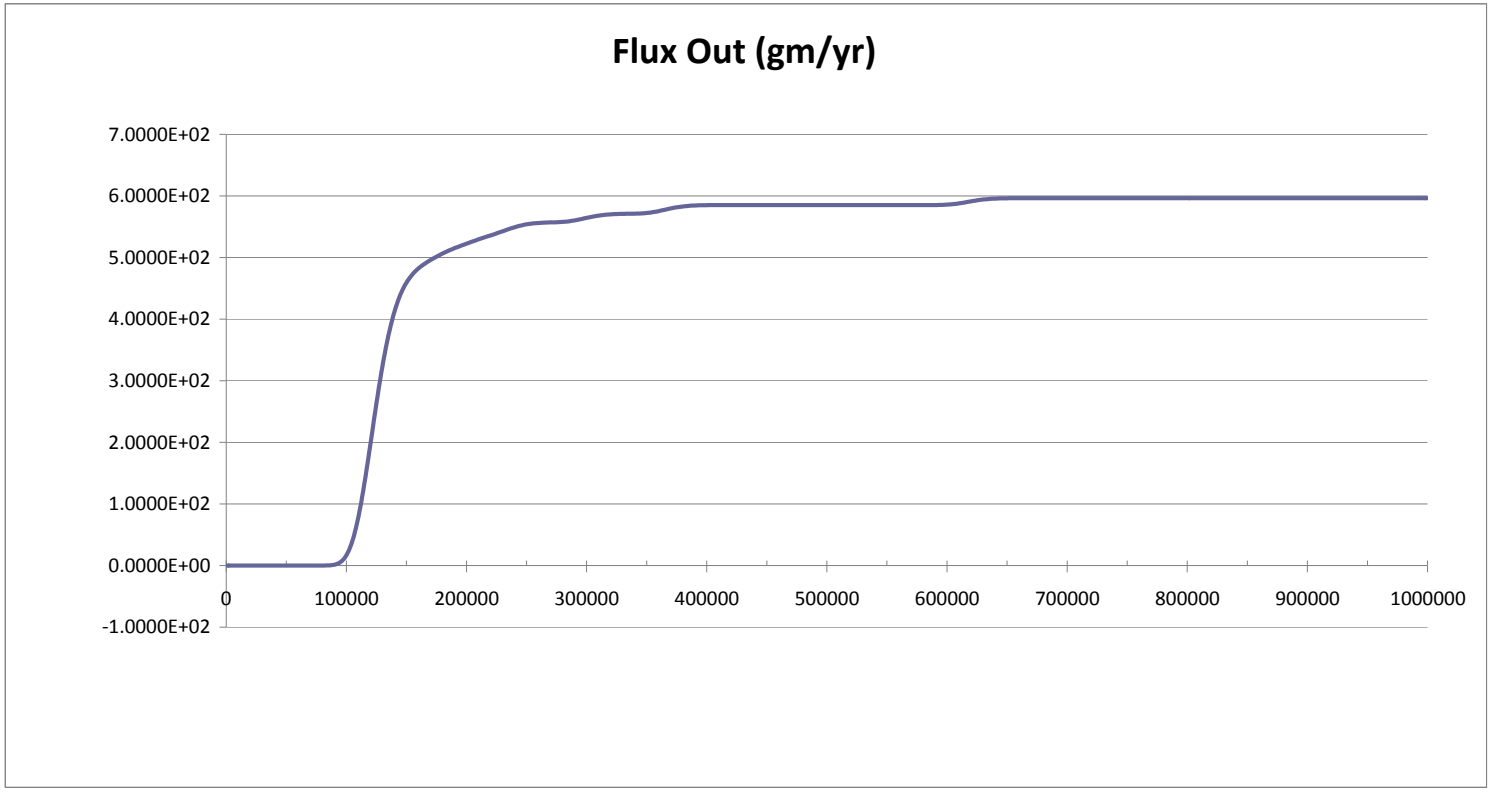
Time (yrs)	Arg 1	Curve 1	Arg 2	Curve 2	Arg 3	Curve 3	Arg 4	Curve 4	Arg 5	Curve 5	Arg 6	Curve 6
520000	-1.0397E+01	6.7200E+01	-1.0387E+01	7.0000E+01	-1.0371E+01	7.0000E+01	-1.0351E+01	7.0000E+01	-1.0325E+01	3.5000E+01	-1.0303E+01	3.5000E+01
522000	-1.0428E+01	6.7200E+01	-1.0419E+01	7.0000E+01	-1.0402E+01	7.0000E+01	-1.0383E+01	7.0000E+01	-1.0357E+01	3.5000E+01	-1.0335E+01	3.5000E+01
524000	-1.0460E+01	6.7200E+01	-1.0450E+01	7.0000E+01	-1.0434E+01	7.0000E+01	-1.0415E+01	7.0000E+01	-1.0388E+01	3.5000E+01	-1.0367E+01	3.5000E+01
526000	-1.0491E+01	6.7200E+01	-1.0482E+01	7.0000E+01	-1.0466E+01	7.0000E+01	-1.0446E+01	7.0000E+01	-1.0420E+01	3.5000E+01	-1.0398E+01	3.5000E+01
528000	-1.0523E+01	6.7200E+01	-1.0513E+01	7.0000E+01	-1.0497E+01	7.0000E+01	-1.0478E+01	7.0000E+01	-1.0451E+01	3.5000E+01	-1.0430E+01	3.5000E+01
530000	-1.0554E+01	6.7200E+01	-1.0544E+01	7.0000E+01	-1.0528E+01	7.0000E+01	-1.0509E+01	7.0000E+01	-1.0483E+01	3.5000E+01	-1.0462E+01	3.5000E+01
532000	-1.0585E+01	6.7200E+01	-1.0576E+01	7.0000E+01	-1.0560E+01	7.0000E+01	-1.0540E+01	7.0000E+01	-1.0514E+01	3.5000E+01	-1.0493E+01	3.5000E+01
534000	-1.0616E+01	6.7200E+01	-1.0607E+01	7.0000E+01	-1.0591E+01	7.0000E+01	-1.0572E+01	7.0000E+01	-1.0545E+01	3.5000E+01	-1.0524E+01	3.5000E+01
536000	-1.0647E+01	6.7200E+01	-1.0638E+01	7.0000E+01	-1.0622E+01	7.0000E+01	-1.0603E+01	7.0000E+01	-1.0577E+01	3.5000E+01	-1.0556E+01	3.5000E+01
538000	-1.0678E+01	6.7200E+01	-1.0669E+01	7.0000E+01	-1.0653E+01	7.0000E+01	-1.0634E+01	7.0000E+01	-1.0608E+01	3.5000E+01	-1.0587E+01	3.5000E+01
540000	-1.0709E+01	6.7200E+01	-1.0700E+01	7.0000E+01	-1.0684E+01	7.0000E+01	-1.0665E+01	7.0000E+01	-1.0639E+01	3.5000E+01	-1.0618E+01	3.5000E+01
542000	-1.0740E+01	6.7200E+01	-1.0730E+01	7.0000E+01	-1.0715E+01	7.0000E+01	-1.0696E+01	7.0000E+01	-1.0670E+01	3.5000E+01	-1.0649E+01	3.5000E+01
544000	-1.0771E+01	6.7200E+01	-1.0761E+01	7.0000E+01	-1.0745E+01	7.0000E+01	-1.0726E+01	7.0000E+01	-1.0701E+01	3.5000E+01	-1.0680E+01	3.5000E+01
546000	-1.0801E+01	6.7200E+01	-1.0792E+01	7.0000E+01	-1.0776E+01	7.0000E+01	-1.0757E+01	7.0000E+01	-1.0732E+01	3.5000E+01	-1.0711E+01	3.5000E+01
548000	-1.0832E+01	6.7200E+01	-1.0822E+01	7.0000E+01	-1.0807E+01	7.0000E+01	-1.0788E+01	7.0000E+01	-1.0762E+01	3.5000E+01	-1.0742E+01	3.5000E+01
550000	-1.0862E+01	6.7200E+01	-1.0853E+01	7.0000E+01	-1.0837E+01	7.0000E+01	-1.0818E+01	7.0000E+01	-1.0793E+01	3.5000E+01	-1.0772E+01	3.5000E+01
552000	-1.0893E+01	6.7200E+01	-1.0883E+01	7.0000E+01	-1.0868E+01	7.0000E+01	-1.0849E+01	7.0000E+01	-1.0823E+01	3.5000E+01	-1.0803E+01	3.5000E+01
554000	-1.0923E+01	6.7200E+01	-1.0914E+01	7.0000E+01	-1.0898E+01	7.0000E+01	-1.0879E+01	7.0000E+01	-1.0854E+01	3.5000E+01	-1.0833E+01	3.5000E+01
556000	-1.0953E+01	6.7200E+01	-1.0944E+01	7.0000E+01	-1.0928E+01	7.0000E+01	-1.0910E+01	7.0000E+01	-1.0884E+01	3.5000E+01	-1.0864E+01	3.5000E+01
558000	-1.0983E+01	6.7200E+01	-1.0974E+01	7.0000E+01	-1.0959E+01	7.0000E+01	-1.0940E+01	7.0000E+01	-1.0915E+01	3.5000E+01	-1.0894E+01	3.5000E+01
560000	-1.1014E+01	6.7200E+01	-1.1004E+01	7.0000E+01	-1.0989E+01	7.0000E+01	-1.0970E+01	7.0000E+01	-1.0945E+01	3.5000E+01	-1.0925E+01	3.5000E+01
562000	-1.1044E+01	6.7200E+01	-1.1034E+01	7.0000E+01	-1.1019E+01	7.0000E+01	-1.1000E+01	7.0000E+01	-1.0975E+01	3.5000E+01	-1.0955E+01	3.5000E+01
564000	-1.1074E+01	6.7200E+01	-1.1064E+01	7.0000E+01	-1.1049E+01	7.0000E+01	-1.1031E+01	7.0000E+01	-1.1005E+01	3.5000E+01	-1.0985E+01	3.5000E+01
566000	-1.1103E+01	6.7200E+01	-1.1094E+01	7.0000E+01	-1.1079E+01	7.0000E+01	-1.1061E+01	7.0000E+01	-1.1035E+01	3.5000E+01	-1.1015E+01	3.5000E+01
568000	-1.1133E+01	6.7200E+01	-1.1124E+01	7.0000E+01	-1.1109E+01	7.0000E+01	-1.1090E+01	7.0000E+01	-1.1065E+01	3.5000E+01	-1.1045E+01	3.5000E+01
570000	-1.1163E+01	6.7200E+01	-1.1154E+01	7.0000E+01	-1.1139E+01	7.0000E+01	-1.1120E+01	7.0000E+01	-1.1095E+01	3.5000E+01	-1.1075E+01	3.5000E+01
572000	-1.1193E+01	6.7200E+01	-1.1184E+01	7.0000E+01	-1.1168E+01	7.0000E+01	-1.1150E+01	7.0000E+01	-1.1125E+01	3.5000E+01	-1.1105E+01	3.5000E+01
574000	-1.1222E+01	6.7200E+01	-1.1213E+01	7.0000E+01	-1.1198E+01	7.0000E+01	-1.1180E+01	7.0000E+01	-1.1155E+01	3.5000E+01	-1.1135E+01	3.5000E+01
576000	-1.1252E+01	6.7200E+01	-1.1243E+01	7.0000E+01	-1.1228E+01	7.0000E+01	-1.1209E+01	7.0000E+01	-1.1185E+01	3.5000E+01	-1.1165E+01	3.5000E+01
578000	-1.1281E+01	6.7200E+01	-1.1272E+01	7.0000E+01	-1.1257E+01	7.0000E+01	-1.1239E+01	7.0000E+01	-1.1214E+01	3.5000E+01	-1.1194E+01	3.5000E+01
580000	-1.1311E+01	6.7200E+01	-1.1302E+01	7.0000E+01	-1.1287E+01	7.0000E+01	-1.1269E+01	7.0000E+01	-1.1244E+01	3.5000E+01	-1.1224E+01	3.5000E+01
582000	-1.1340E+01	6.7200E+01	-1.1331E+01	7.0000E+01	-1.1316E+01	7.0000E+01	-1.1298E+01	7.0000E+01	-1.1273E+01	3.5000E+01	-1.1253E+01	3.5000E+01
584000	-1.1369E+01	6.7200E+01	-1.1360E+01	7.0000E+01	-1.1345E+01	7.0000E+01	-1.1327E+01	7.0000E+01	-1.1303E+01	3.5000E+01	-1.1283E+01	3.5000E+01
586000	-1.1399E+01	6.7200E+01	-1.1390E+01	7.0000E+01	-1.1375E+01	7.0000E+01	-1.1357E+01	7.0000E+01	-1.1332E+01	3.5000E+01	-1.1312E+01	3.5000E+01
588000	-1.1428E+01	6.7200E+01	-1.1419E+01	7.0000E+01	-1.1404E+01	7.0000E+01	-1.1386E+01	7.0000E+01	-1.1361E+01	3.5000E+01	-1.1342E+01	3.5000E+01
590000	-1.1457E+01	6.7200E+01	-1.1448E+01	7.0000E+01	-1.1433E+01	7.0000E+01	-1.1415E+01	7.0000E+01	-1.1391E+01	3.5000E+01	-1.1371E+01	3.5000E+01
592000	-1.1486E+01	6.7200E+01	-1.1477E+01	7.0000E+01	-1.1462E+01	7.0000E+01	-1.1444E+01	7.0000E+01	-1.1420E+01	3.5000E+01	-1.1400E+01	3.5000E+01
594000	-1.1515E+01	6.7200E+01	-1.1506E+01	7.0000E+01	-1.1491E+01	7.0000E+01	-1.1473E+01	7.0000E+01	-1.1449E+01	3.5000E+01	-1.1429E+01	3.5000E+01
596000	-1.1544E+01	6.7200E+01	-1.1535E+01	7.0000E+01	-1.1520E+01	7.0000E+01	-1.1502E+01	7.0000E+01	-1.1478E+01	3.5000E+01	-1.1458E+01	3.5000E+01
598000	-1.1572E+01	6.7200E+01	-1.1564E+01	7.0000E+01	-1.1549E+01	7.0000E+01	-1.1531E+01	7.0000E+01	-1.1507E+01	3.5000E+01	-1.1487E+01	3.5000E+01
600000	-1.1601E+01	6.7200E+01	-1.1592E+01	7.0000E+01	-1.1578E+01	7.0000E+01	-1.1560E+01	7.0000E+01	-1.1536E+01	3.5000E+01	-1.1516E+01	3.5000E+01
602000	-1.1630E+01	6.7200E+01	-1.1621E+01	7.0000E+01	-1.1606E+01	7.0000E+01	-1.1589E+01	7.0000E+01	-1.1565E+01	3.5000E+01	-1.1545E+01	3.5000E+01
604000	-1.1659E+01	6.7200E+01	-1.1650E+01	7.0000E+01	-1.1635E+01	7.0000E+01	-1.1617E+01	7.0000E+01	-1.1593E+01	3.5000E+01	-1.1574E+01	3.5000E+01
606000	-1.1687E+01	6.7200E+01	-1.1678E+01	7.0000E+01	-1.1664E+01	7.0000E+01	-1.1646E+01	7.0000E+01	-1.1622E+01	3.5000E+01	-1.1603E+01	3.5000E+01
608000	-1.1716E+01	6.7200E+01	-1.1707E+01	7.0000E+01	-1.1692E+01	7.0000E+01	-1.1675E+01	7.0000E+01	-1.1651E+01	3.5000E+01	-1.1631E+01	3.5000E+01
610000	-1.1744E+01	6.7200E+01	-1.1735E+01	7.0000E+01	-1.1721E+01	7.0000E+01	-1.1703E+01	7.0000E+01	-1.1679E+01	3.5000E+01	-1.1660E+01	3.5000E+01
612000	-1.1772E+01	6.7200E+01	-1.1764E+01	7.0000E+01	-1.1749E+01	7.0000E+01	-1.1732E+01	7.0000E+01	-1.1708E+01	3.5000E+01	-1.1689E+01	3.5000E+01
614000	-1.1801E+01	6.7200E+01	-1.1792E+01	7.0000E+01	-1.1778E+01	7.0000E+01	-1.1760E+01	7.0000E+01	-1.1736E+01	3.5000E+01	-1.1717E+01	3.5000E+01
616000	-1.1829E+01	6.7200E+01	-1.1820E+01	7.0000E+01	-1.1806E+01	7.0000E+01	-1.1788E+01	7.0000E+01	-1.1765E+01	3.5000E+01	-1.1746E+01	3.5000E+01
618000	-1.1857E+01	6.7200E+01	-1.1849E+01	7.0000E+01	-1.1834E+01	7.0000E+01	-1.1817E+01	7.0000E+01	-1.1793E+01	3.5000E+01	-1.1774E+01	3.5000E+01
620000	-1.1885E+01	6.7200E+01	-1.1877E+01	7.0000E+01	-1.1862E+01	7.0000E+01	-1.1845E+01	7.0000E+01	-1.1821E+01	3.5000E+01	-1.1802E+01	3.5000E+01
622000	-1.1913E+01	6.7200E+01	-1.1905E+01	7.0000E+01	-1.1890E+01	7.0000E+01	-1.1873E+01	7.0000E+01	-1.1850E+01	3.5000E+01	-1.1831E+01	3.5000E+01

Time (yrs)	Arg 1	Curve 1	Arg 2	Curve 2	Arg 3	Curve 3	Arg 4	Curve 4	Arg 5	Curve 5	Arg 6	Curve 6
624000	-1.1941E+01	6.7200E+01	-1.1933E+01	7.0000E+01	-1.1918E+01	7.0000E+01	-1.1901E+01	7.0000E+01	-1.1878E+01	3.5000E+01	-1.1859E+01	3.5000E+01
626000	-1.1969E+01	6.7200E+01	-1.1961E+01	7.0000E+01	-1.1946E+01	7.0000E+01	-1.1929E+01	7.0000E+01	-1.1906E+01	3.5000E+01	-1.1887E+01	3.5000E+01
628000	-1.1997E+01	6.7200E+01	-1.1989E+01	7.0000E+01	-1.1974E+01	7.0000E+01	-1.1957E+01	7.0000E+01	-1.1934E+01	3.5000E+01	-1.1915E+01	3.5000E+01
630000	-1.2025E+01	6.7200E+01	-1.2017E+01	7.0000E+01	-1.2002E+01	7.0000E+01	-1.1985E+01	7.0000E+01	-1.1962E+01	3.5000E+01	-1.1943E+01	3.5000E+01
632000	-1.2053E+01	6.7200E+01	-1.2044E+01	7.0000E+01	-1.2030E+01	7.0000E+01	-1.2013E+01	7.0000E+01	-1.1990E+01	3.5000E+01	-1.1971E+01	3.5000E+01
634000	-1.2081E+01	6.7200E+01	-1.2072E+01	7.0000E+01	-1.2058E+01	7.0000E+01	-1.2041E+01	7.0000E+01	-1.2018E+01	3.5000E+01	-1.1999E+01	3.5000E+01
636000	-1.2108E+01	6.7200E+01	-1.2100E+01	7.0000E+01	-1.2086E+01	7.0000E+01	-1.2069E+01	7.0000E+01	-1.2045E+01	3.5000E+01	-1.2027E+01	3.5000E+01
638000	-1.2136E+01	6.7200E+01	-1.2127E+01	7.0000E+01	-1.2113E+01	7.0000E+01	-1.2096E+01	7.0000E+01	-1.2073E+01	3.5000E+01	-1.2054E+01	3.5000E+01
640000	-1.2163E+01	6.7200E+01	-1.2155E+01	7.0000E+01	-1.2141E+01	7.0000E+01	-1.2124E+01	7.0000E+01	-1.2101E+01	3.5000E+01	-1.2082E+01	3.5000E+01
642000	-1.2191E+01	6.7200E+01	-1.2183E+01	7.0000E+01	-1.2168E+01	7.0000E+01	-1.2151E+01	7.0000E+01	-1.2128E+01	3.5000E+01	-1.2110E+01	3.5000E+01
644000	-1.2218E+01	6.7200E+01	-1.2210E+01	7.0000E+01	-1.2196E+01	7.0000E+01	-1.2179E+01	7.0000E+01	-1.2156E+01	3.5000E+01	-1.2137E+01	3.5000E+01
646000	-1.2246E+01	6.7200E+01	-1.2237E+01	7.0000E+01	-1.2223E+01	7.0000E+01	-1.2206E+01	7.0000E+01	-1.2183E+01	3.5000E+01	-1.2165E+01	3.5000E+01
648000	-1.2273E+01	6.7200E+01	-1.2265E+01	7.0000E+01	-1.2251E+01	7.0000E+01	-1.2234E+01	7.0000E+01	-1.2211E+01	3.5000E+01	-1.2192E+01	3.5000E+01
650000	-1.2300E+01	6.7200E+01	-1.2292E+01	7.0000E+01	-1.2278E+01	7.0000E+01	-1.2261E+01	7.0000E+01	-1.2238E+01	3.5000E+01	-1.2220E+01	3.5000E+01
652000	-1.2328E+01	6.7200E+01	-1.2319E+01	7.0000E+01	-1.2305E+01	7.0000E+01	-1.2288E+01	7.0000E+01	-1.2266E+01	3.5000E+01	-1.2247E+01	3.5000E+01
654000	-1.2355E+01	6.7200E+01	-1.2346E+01	7.0000E+01	-1.2332E+01	7.0000E+01	-1.2316E+01	7.0000E+01	-1.2293E+01	3.5000E+01	-1.2275E+01	3.5000E+01
656000	-1.2382E+01	6.7200E+01	-1.2374E+01	7.0000E+01	-1.2360E+01	7.0000E+01	-1.2343E+01	7.0000E+01	-1.2320E+01	3.5000E+01	-1.2302E+01	3.5000E+01
658000	-1.2409E+01	6.7200E+01	-1.2401E+01	7.0000E+01	-1.2387E+01	7.0000E+01	-1.2370E+01	7.0000E+01	-1.2347E+01	3.5000E+01	-1.2329E+01	3.5000E+01
660000	-1.2436E+01	6.7200E+01	-1.2428E+01	7.0000E+01	-1.2414E+01	7.0000E+01	-1.2397E+01	7.0000E+01	-1.2375E+01	3.5000E+01	-1.2356E+01	3.5000E+01
662000	-1.2463E+01	6.7200E+01	-1.2455E+01	7.0000E+01	-1.2441E+01	7.0000E+01	-1.2424E+01	7.0000E+01	-1.2402E+01	3.5000E+01	-1.2383E+01	3.5000E+01
664000	-1.2490E+01	6.7200E+01	-1.2482E+01	7.0000E+01	-1.2468E+01	7.0000E+01	-1.2451E+01	7.0000E+01	-1.2429E+01	3.5000E+01	-1.2410E+01	3.5000E+01
666000	-1.2517E+01	6.7200E+01	-1.2508E+01	7.0000E+01	-1.2495E+01	7.0000E+01	-1.2478E+01	7.0000E+01	-1.2456E+01	3.5000E+01	-1.2437E+01	3.5000E+01
668000	-1.2543E+01	6.7200E+01	-1.2535E+01	7.0000E+01	-1.2521E+01	7.0000E+01	-1.2505E+01	7.0000E+01	-1.2482E+01	3.5000E+01	-1.2464E+01	3.5000E+01
670000	-1.2570E+01	6.7200E+01	-1.2562E+01	7.0000E+01	-1.2548E+01	7.0000E+01	-1.2532E+01	7.0000E+01	-1.2509E+01	3.5000E+01	-1.2491E+01	3.5000E+01
672000	-1.2597E+01	6.7200E+01	-1.2589E+01	7.0000E+01	-1.2575E+01	7.0000E+01	-1.2558E+01	7.0000E+01	-1.2536E+01	3.5000E+01	-1.2518E+01	3.5000E+01
674000	-1.2623E+01	6.7200E+01	-1.2615E+01	7.0000E+01	-1.2602E+01	7.0000E+01	-1.2585E+01	7.0000E+01	-1.2563E+01	3.5000E+01	-1.2545E+01	3.5000E+01
676000	-1.2650E+01	6.7200E+01	-1.2642E+01	7.0000E+01	-1.2628E+01	7.0000E+01	-1.2612E+01	7.0000E+01	-1.2590E+01	3.5000E+01	-1.2572E+01	3.5000E+01
678000	-1.2677E+01	6.7200E+01	-1.2668E+01	7.0000E+01	-1.2655E+01	7.0000E+01	-1.2638E+01	7.0000E+01	-1.2616E+01	3.5000E+01	-1.2598E+01	3.5000E+01
680000	-1.2703E+01	6.7200E+01	-1.2695E+01	7.0000E+01	-1.2681E+01	7.0000E+01	-1.2665E+01	7.0000E+01	-1.2643E+01	3.5000E+01	-1.2625E+01	3.5000E+01
682000	-1.2729E+01	6.7200E+01	-1.2721E+01	7.0000E+01	-1.2708E+01	7.0000E+01	-1.2691E+01	7.0000E+01	-1.2669E+01	3.5000E+01	-1.2651E+01	3.5000E+01
684000	-1.2756E+01	6.7200E+01	-1.2748E+01	7.0000E+01	-1.2734E+01	7.0000E+01	-1.2718E+01	7.0000E+01	-1.2696E+01	3.5000E+01	-1.2678E+01	3.5000E+01
686000	-1.2782E+01	6.7200E+01	-1.2774E+01	7.0000E+01	-1.2761E+01	7.0000E+01	-1.2744E+01	7.0000E+01	-1.2722E+01	3.5000E+01	-1.2704E+01	3.5000E+01
688000	-1.2808E+01	6.7200E+01	-1.2800E+01	7.0000E+01	-1.2787E+01	7.0000E+01	-1.2771E+01	7.0000E+01	-1.2749E+01	3.5000E+01	-1.2731E+01	3.5000E+01
690000	-1.2835E+01	6.7200E+01	-1.2827E+01	7.0000E+01	-1.2813E+01	7.0000E+01	-1.2797E+01	7.0000E+01	-1.2775E+01	3.5000E+01	-1.2757E+01	3.5000E+01
692000	-1.2861E+01	6.7200E+01	-1.2853E+01	7.0000E+01	-1.2839E+01	7.0000E+01	-1.2823E+01	7.0000E+01	-1.2801E+01	3.5000E+01	-1.2784E+01	3.5000E+01
694000	-1.2887E+01	6.7200E+01	-1.2879E+01	7.0000E+01	-1.2866E+01	7.0000E+01	-1.2849E+01	7.0000E+01	-1.2828E+01	3.5000E+01	-1.2810E+01	3.5000E+01
696000	-1.2913E+01	6.7200E+01	-1.2905E+01	7.0000E+01	-1.2892E+01	7.0000E+01	-1.2876E+01	7.0000E+01	-1.2854E+01	3.5000E+01	-1.2836E+01	3.5000E+01
698000	-1.2939E+01	6.7200E+01	-1.2931E+01	7.0000E+01	-1.2918E+01	7.0000E+01	-1.2902E+01	7.0000E+01	-1.2880E+01	3.5000E+01	-1.2862E+01	3.5000E+01
700000	-1.2965E+01	6.7200E+01	-1.2957E+01	7.0000E+01	-1.2944E+01	7.0000E+01	-1.2928E+01	7.0000E+01	-1.2906E+01	3.5000E+01	-1.2888E+01	3.5000E+01
702000	-1.2991E+01	6.7200E+01	-1.2983E+01	7.0000E+01	-1.2970E+01	7.0000E+01	-1.2954E+01	7.0000E+01	-1.2932E+01	3.5000E+01	-1.2914E+01	3.5000E+01
704000	-1.3017E+01	6.7200E+01	-1.3009E+01	7.0000E+01	-1.2996E+01	7.0000E+01	-1.2980E+01	7.0000E+01	-1.2958E+01	3.5000E+01	-1.2941E+01	3.5000E+01
706000	-1.3043E+01	6.7200E+01	-1.3035E+01	7.0000E+01	-1.3022E+01	7.0000E+01	-1.3006E+01	7.0000E+01	-1.2984E+01	3.5000E+01	-1.2967E+01	3.5000E+01
708000	-1.3069E+01	6.7200E+01	-1.3061E+01	7.0000E+01	-1.3047E+01	7.0000E+01	-1.3032E+01	7.0000E+01	-1.3010E+01	3.5000E+01	-1.2992E+01	3.5000E+01
710000	-1.3094E+01	6.7200E+01	-1.3086E+01	7.0000E+01	-1.3073E+01	7.0000E+01	-1.3057E+01	7.0000E+01	-1.3036E+01	3.5000E+01	-1.3018E+01	3.5000E+01
712000	-1.3120E+01	6.7200E+01	-1.3112E+01	7.0000E+01	-1.3099E+01	7.0000E+01	-1.3083E+01	7.0000E+01	-1.3062E+01	3.5000E+01	-1.3044E+01	3.5000E+01
714000	-1.3146E+01	6.7200E+01	-1.3138E+01	7.0000E+01	-1.3125E+01	7.0000E+01	-1.3109E+01	7.0000E+01	-1.3087E+01	3.5000E+01	-1.3070E+01	3.5000E+01
716000	-1.3171E+01	6.7200E+01	-1.3163E+01	7.0000E+01	-1.3150E+01	7.0000E+01	-1.3135E+01	7.0000E+01	-1.3113E+01	3.5000E+01	-1.3096E+01	3.5000E+01
718000	-1.3197E+01	6.7200E+01	-1.3189E+01	7.0000E+01	-1.3176E+01	7.0000E+01	-1.3160E+01	7.0000E+01	-1.3139E+01	3.5000E+01	-1.3121E+01	3.5000E+01
720000	-1.3222E+01	6.7200E+01	-1.3215E+01	7.0000E+01	-1.3201E+01	7.0000E+01	-1.3186E+01	7.0000E+01	-1.3164E+01	3.5000E+01	-1.3147E+01	3.5000E+01
722000	-1.3248E+01	6.7200E+01	-1.3240E+01	7.0000E+01	-1.3227E+01	7.0000E+01	-1.3211E+01	7.0000E+01	-1.3190E+01	3.5000E+01	-1.3173E+01	3.5000E+01
724000	-1.3273E+01	6.7200E+01	-1.3266E+01	7.0000E+01	-1.3252E+01	7.0000E+01	-1.3237E+01	7.0000E+01	-1.3216E+01	3.5000E+01	-1.3198E+01	3.5000E+01
726000	-1.3299E+01	6.7200E+01	-1.3291E+01	7.0000E+01	-1.3278E+01	7.0000E+01	-1.3262E+01	7.0000E+01	-1.3241E+01	3.5000E+01	-1.3224E+01	3.5000E+01

Time (yrs)	Arg 1	Curve 1	Arg 2	Curve 2	Arg 3	Curve 3	Arg 4	Curve 4	Arg 5	Curve 5	Arg 6	Curve 6
728000	-1.3324E+01	6.7200E+01	-1.3316E+01	7.0000E+01	-1.3303E+01	7.0000E+01	-1.3288E+01	7.0000E+01	-1.3266E+01	3.5000E+01	-1.3249E+01	3.5000E+01
730000	-1.3349E+01	6.7200E+01	-1.3342E+01	7.0000E+01	-1.3329E+01	7.0000E+01	-1.3313E+01	7.0000E+01	-1.3292E+01	3.5000E+01	-1.3275E+01	3.5000E+01
732000	-1.3375E+01	6.7200E+01	-1.3367E+01	7.0000E+01	-1.3354E+01	7.0000E+01	-1.3338E+01	7.0000E+01	-1.3317E+01	3.5000E+01	-1.3300E+01	3.5000E+01
734000	-1.3400E+01	6.7200E+01	-1.3392E+01	7.0000E+01	-1.3379E+01	7.0000E+01	-1.3364E+01	7.0000E+01	-1.3343E+01	3.5000E+01	-1.3325E+01	3.5000E+01
736000	-1.3425E+01	6.7200E+01	-1.3417E+01	7.0000E+01	-1.3404E+01	7.0000E+01	-1.3389E+01	7.0000E+01	-1.3368E+01	3.5000E+01	-1.3351E+01	3.5000E+01
738000	-1.3450E+01	6.7200E+01	-1.3442E+01	7.0000E+01	-1.3429E+01	7.0000E+01	-1.3414E+01	7.0000E+01	-1.3393E+01	3.5000E+01	-1.3376E+01	3.5000E+01
740000	-1.3475E+01	6.7200E+01	-1.3468E+01	7.0000E+01	-1.3455E+01	7.0000E+01	-1.3439E+01	7.0000E+01	-1.3418E+01	3.5000E+01	-1.3401E+01	3.5000E+01
742000	-1.3500E+01	6.7200E+01	-1.3493E+01	7.0000E+01	-1.3480E+01	7.0000E+01	-1.3464E+01	7.0000E+01	-1.3443E+01	3.5000E+01	-1.3426E+01	3.5000E+01
744000	-1.3525E+01	6.7200E+01	-1.3518E+01	7.0000E+01	-1.3505E+01	7.0000E+01	-1.3489E+01	7.0000E+01	-1.3468E+01	3.5000E+01	-1.3451E+01	3.5000E+01
746000	-1.3550E+01	6.7200E+01	-1.3543E+01	7.0000E+01	-1.3530E+01	7.0000E+01	-1.3514E+01	7.0000E+01	-1.3493E+01	3.5000E+01	-1.3477E+01	3.5000E+01
748000	-1.3575E+01	6.7200E+01	-1.3567E+01	7.0000E+01	-1.3555E+01	7.0000E+01	-1.3539E+01	7.0000E+01	-1.3518E+01	3.5000E+01	-1.3502E+01	3.5000E+01
750000	-1.3600E+01	6.7200E+01	-1.3592E+01	7.0000E+01	-1.3580E+01	7.0000E+01	-1.3564E+01	7.0000E+01	-1.3543E+01	3.5000E+01	-1.3527E+01	3.5000E+01
752000	-1.3625E+01	6.7200E+01	-1.3617E+01	7.0000E+01	-1.3604E+01	7.0000E+01	-1.3589E+01	7.0000E+01	-1.3568E+01	3.5000E+01	-1.3552E+01	3.5000E+01
754000	-1.3650E+01	6.7200E+01	-1.3642E+01	7.0000E+01	-1.3629E+01	7.0000E+01	-1.3614E+01	7.0000E+01	-1.3593E+01	3.5000E+01	-1.3576E+01	3.5000E+01
756000	-1.3674E+01	6.7200E+01	-1.3667E+01	7.0000E+01	-1.3654E+01	7.0000E+01	-1.3639E+01	7.0000E+01	-1.3618E+01	3.5000E+01	-1.3601E+01	3.5000E+01
758000	-1.3699E+01	6.7200E+01	-1.3691E+01	7.0000E+01	-1.3679E+01	7.0000E+01	-1.3663E+01	7.0000E+01	-1.3643E+01	3.5000E+01	-1.3626E+01	3.5000E+01
760000	-1.3724E+01	6.7200E+01	-1.3716E+01	7.0000E+01	-1.3703E+01	7.0000E+01	-1.3688E+01	7.0000E+01	-1.3668E+01	3.5000E+01	-1.3651E+01	3.5000E+01
762000	-1.3748E+01	6.7200E+01	-1.3741E+01	7.0000E+01	-1.3728E+01	7.0000E+01	-1.3713E+01	7.0000E+01	-1.3692E+01	3.5000E+01	-1.3676E+01	3.5000E+01
764000	-1.3773E+01	6.7200E+01	-1.3765E+01	7.0000E+01	-1.3753E+01	7.0000E+01	-1.3738E+01	7.0000E+01	-1.3717E+01	3.5000E+01	-1.3700E+01	3.5000E+01
766000	-1.3797E+01	6.7200E+01	-1.3790E+01	7.0000E+01	-1.3777E+01	7.0000E+01	-1.3762E+01	7.0000E+01	-1.3742E+01	3.5000E+01	-1.3725E+01	3.5000E+01
768000	-1.3822E+01	6.7200E+01	-1.3814E+01	7.0000E+01	-1.3802E+01	7.0000E+01	-1.3787E+01	7.0000E+01	-1.3766E+01	3.5000E+01	-1.3750E+01	3.5000E+01
770000	-1.3846E+01	6.7200E+01	-1.3839E+01	7.0000E+01	-1.3826E+01	7.0000E+01	-1.3811E+01	7.0000E+01	-1.3791E+01	3.5000E+01	-1.3774E+01	3.5000E+01
772000	-1.3871E+01	6.7200E+01	-1.3863E+01	7.0000E+01	-1.3851E+01	7.0000E+01	-1.3836E+01	7.0000E+01	-1.3815E+01	3.5000E+01	-1.3799E+01	3.5000E+01
774000	-1.3895E+01	6.7200E+01	-1.3888E+01	7.0000E+01	-1.3875E+01	7.0000E+01	-1.3860E+01	7.0000E+01	-1.3840E+01	3.5000E+01	-1.3823E+01	3.5000E+01
776000	-1.3919E+01	6.7200E+01	-1.3912E+01	7.0000E+01	-1.3899E+01	7.0000E+01	-1.3884E+01	7.0000E+01	-1.3864E+01	3.5000E+01	-1.3848E+01	3.5000E+01
778000	-1.3944E+01	6.7200E+01	-1.3936E+01	7.0000E+01	-1.3924E+01	7.0000E+01	-1.3909E+01	7.0000E+01	-1.3888E+01	3.5000E+01	-1.3872E+01	3.5000E+01
780000	-1.3968E+01	6.7200E+01	-1.3961E+01	7.0000E+01	-1.3948E+01	7.0000E+01	-1.3933E+01	7.0000E+01	-1.3913E+01	3.5000E+01	-1.3896E+01	3.5000E+01
782000	-1.3992E+01	6.7200E+01	-1.3985E+01	7.0000E+01	-1.3972E+01	7.0000E+01	-1.3957E+01	7.0000E+01	-1.3937E+01	3.5000E+01	-1.3921E+01	3.5000E+01
784000	-1.4016E+01	6.7200E+01	-1.4009E+01	7.0000E+01	-1.3996E+01	7.0000E+01	-1.3982E+01	7.0000E+01	-1.3961E+01	3.5000E+01	-1.3945E+01	3.5000E+01
786000	-1.4040E+01	6.7200E+01	-1.4033E+01	7.0000E+01	-1.4021E+01	7.0000E+01	-1.4006E+01	7.0000E+01	-1.3986E+01	3.5000E+01	-1.3969E+01	3.5000E+01
788000	-1.4065E+01	6.7200E+01	-1.4057E+01	7.0000E+01	-1.4045E+01	7.0000E+01	-1.4030E+01	7.0000E+01	-1.4010E+01	3.5000E+01	-1.3993E+01	3.5000E+01
790000	-1.4089E+01	6.7200E+01	-1.4081E+01	7.0000E+01	-1.4069E+01	7.0000E+01	-1.4054E+01	7.0000E+01	-1.4034E+01	3.5000E+01	-1.4018E+01	3.5000E+01
792000	-1.4113E+01	6.7200E+01	-1.4105E+01	7.0000E+01	-1.4093E+01	7.0000E+01	-1.4078E+01	7.0000E+01	-1.4058E+01	3.5000E+01	-1.4042E+01	3.5000E+01
794000	-1.4137E+01	6.7200E+01	-1.4129E+01	7.0000E+01	-1.4117E+01	7.0000E+01	-1.4102E+01	7.0000E+01	-1.4082E+01	3.5000E+01	-1.4066E+01	3.5000E+01
796000	-1.4161E+01	6.7200E+01	-1.4153E+01	7.0000E+01	-1.4141E+01	7.0000E+01	-1.4126E+01	7.0000E+01	-1.4106E+01	3.5000E+01	-1.4090E+01	3.5000E+01
798000	-1.4184E+01	6.7200E+01	-1.4177E+01	7.0000E+01	-1.4165E+01	7.0000E+01	-1.4150E+01	7.0000E+01	-1.4130E+01	3.5000E+01	-1.4114E+01	3.5000E+01
800000	-1.4208E+01	6.7200E+01	-1.4201E+01	7.0000E+01	-1.4189E+01	7.0000E+01	-1.4174E+01	7.0000E+01	-1.4154E+01	3.5000E+01	-1.4138E+01	3.5000E+01
802000	-1.4232E+01	6.7200E+01	-1.4225E+01	7.0000E+01	-1.4213E+01	7.0000E+01	-1.4198E+01	7.0000E+01	-1.4178E+01	3.5000E+01	-1.4162E+01	3.5000E+01
804000	-1.4256E+01	6.7200E+01	-1.4249E+01	7.0000E+01	-1.4236E+01	7.0000E+01	-1.4222E+01	7.0000E+01	-1.4202E+01	3.5000E+01	-1.4186E+01	3.5000E+01
806000	-1.4280E+01	6.7200E+01	-1.4272E+01	7.0000E+01	-1.4260E+01	7.0000E+01	-1.4246E+01	7.0000E+01	-1.4226E+01	3.5000E+01	-1.4210E+01	3.5000E+01
808000	-1.4303E+01	6.7200E+01	-1.4296E+01	7.0000E+01	-1.4284E+01	7.0000E+01	-1.4269E+01	7.0000E+01	-1.4250E+01	3.5000E+01	-1.4233E+01	3.5000E+01
810000	-1.4327E+01	6.7200E+01	-1.4320E+01	7.0000E+01	-1.4308E+01	7.0000E+01	-1.4293E+01	7.0000E+01	-1.4273E+01	3.5000E+01	-1.4257E+01	3.5000E+01
812000	-1.4351E+01	6.7200E+01	-1.4344E+01	7.0000E+01	-1.4331E+01	7.0000E+01	-1.4317E+01	7.0000E+01	-1.4297E+01	3.5000E+01	-1.4281E+01	3.5000E+01
814000	-1.4374E+01	6.7200E+01	-1.4367E+01	7.0000E+01	-1.4355E+01	7.0000E+01	-1.4340E+01	7.0000E+01	-1.4321E+01	3.5000E+01	-1.4305E+01	3.5000E+01
816000	-1.4398E+01	6.7200E+01	-1.4391E+01	7.0000E+01	-1.4379E+01	7.0000E+01	-1.4364E+01	7.0000E+01	-1.4344E+01	3.5000E+01	-1.4328E+01	3.5000E+01
818000	-1.4421E+01	6.7200E+01	-1.4414E+01	7.0000E+01	-1.4402E+01	7.0000E+01	-1.4388E+01	7.0000E+01	-1.4368E+01	3.5000E+01	-1.4352E+01	3.5000E+01
820000	-1.4445E+01	6.7200E+01	-1.4438E+01	7.0000E+01	-1.4426E+01	7.0000E+01	-1.4411E+01	7.0000E+01	-1.4392E+01	3.5000E+01	-1.4376E+01	3.5000E+01
822000	-1.4468E+01	6.7200E+01	-1.4461E+01	7.0000E+01	-1.4449E+01	7.0000E+01	-1.4435E+01	7.0000E+01	-1.4415E+01	3.5000E+01	-1.4399E+01	3.5000E+01
824000	-1.4492E+01	6.7200E+01	-1.4485E+01	7.0000E+01	-1.4473E+01	7.0000E+01	-1.4458E+01	7.0000E+01	-1.4439E+01	3.5000E+01	-1.4423E+01	3.5000E+01
826000	-1.4515E+01	6.7200E+01	-1.4508E+01	7.0000E+01	-1.4496E+01	7.0000E+01	-1.4482E+01	7.0000E+01	-1.4462E+01	3.5000E+01	-1.4446E+01	3.5000E+01
828000	-1.4539E+01	6.7200E+01	-1.4532E+01	7.0000E+01	-1.4519E+01	7.0000E+01	-1.4505E+01	7.0000E+01	-1.4486E+01	3.5000E+01	-1.4470E+01	3.5000E+01
830000	-1.4562E+01	6.7200E+01	-1.4555E+01	7.0000E+01	-1.4543E+01	7.0000E+01	-1.4528E+01	7.0000E+01	-1.4509E+01	3.5000E+01	-1.4493E+01	3.5000E+01

Time (yrs)	Arg 1	Curve 1	Arg 2	Curve 2	Arg 3	Curve 3	Arg 4	Curve 4	Arg 5	Curve 5	Arg 6	Curve 6
832000	-1.4585E+01	6.7200E+01	-1.4578E+01	7.0000E+01	-1.4566E+01	7.0000E+01	-1.4552E+01	7.0000E+01	-1.4532E+01	3.5000E+01	-1.4517E+01	3.5000E+01
834000	-1.4609E+01	6.7200E+01	-1.4601E+01	7.0000E+01	-1.4589E+01	7.0000E+01	-1.4575E+01	7.0000E+01	-1.4556E+01	3.5000E+01	-1.4540E+01	3.5000E+01
836000	-1.4632E+01	6.7200E+01	-1.4625E+01	7.0000E+01	-1.4613E+01	7.0000E+01	-1.4598E+01	7.0000E+01	-1.4579E+01	3.5000E+01	-1.4563E+01	3.5000E+01
838000	-1.4655E+01	6.7200E+01	-1.4648E+01	7.0000E+01	-1.4636E+01	7.0000E+01	-1.4622E+01	7.0000E+01	-1.4602E+01	3.5000E+01	-1.4587E+01	3.5000E+01
840000	-1.4678E+01	6.7200E+01	-1.4671E+01	7.0000E+01	-1.4659E+01	7.0000E+01	-1.4645E+01	7.0000E+01	-1.4625E+01	3.5000E+01	-1.4610E+01	3.5000E+01
842000	-1.4701E+01	6.7200E+01	-1.4694E+01	7.0000E+01	-1.4682E+01	7.0000E+01	-1.4668E+01	7.0000E+01	-1.4649E+01	3.5000E+01	-1.4633E+01	3.5000E+01
844000	-1.4724E+01	6.7200E+01	-1.4717E+01	7.0000E+01	-1.4705E+01	7.0000E+01	-1.4691E+01	7.0000E+01	-1.4672E+01	3.5000E+01	-1.4656E+01	3.5000E+01
846000	-1.4747E+01	6.7200E+01	-1.4740E+01	7.0000E+01	-1.4728E+01	7.0000E+01	-1.4714E+01	7.0000E+01	-1.4695E+01	3.5000E+01	-1.4679E+01	3.5000E+01
848000	-1.4770E+01	6.7200E+01	-1.4763E+01	7.0000E+01	-1.4751E+01	7.0000E+01	-1.4737E+01	7.0000E+01	-1.4718E+01	3.5000E+01	-1.4702E+01	3.5000E+01
850000	-1.4793E+01	6.7200E+01	-1.4786E+01	7.0000E+01	-1.4774E+01	7.0000E+01	-1.4760E+01	7.0000E+01	-1.4741E+01	3.5000E+01	-1.4726E+01	3.5000E+01
852000	-1.4816E+01	6.7200E+01	-1.4809E+01	7.0000E+01	-1.4797E+01	7.0000E+01	-1.4783E+01	7.0000E+01	-1.4764E+01	3.5000E+01	-1.4749E+01	3.5000E+01
854000	-1.4839E+01	6.7200E+01	-1.4832E+01	7.0000E+01	-1.4820E+01	7.0000E+01	-1.4806E+01	7.0000E+01	-1.4787E+01	3.5000E+01	-1.4772E+01	3.5000E+01
856000	-1.4862E+01	6.7200E+01	-1.4855E+01	7.0000E+01	-1.4843E+01	7.0000E+01	-1.4829E+01	7.0000E+01	-1.4810E+01	3.5000E+01	-1.4795E+01	3.5000E+01
858000	-1.4885E+01	6.7200E+01	-1.4878E+01	7.0000E+01	-1.4866E+01	7.0000E+01	-1.4852E+01	7.0000E+01	-1.4833E+01	3.5000E+01	-1.4818E+01	3.5000E+01
860000	-1.4908E+01	6.7200E+01	-1.4901E+01	7.0000E+01	-1.4889E+01	7.0000E+01	-1.4875E+01	7.0000E+01	-1.4856E+01	3.5000E+01	-1.4840E+01	3.5000E+01
862000	-1.4930E+01	6.7200E+01	-1.4924E+01	7.0000E+01	-1.4912E+01	7.0000E+01	-1.4898E+01	7.0000E+01	-1.4879E+01	3.5000E+01	-1.4863E+01	3.5000E+01
864000	-1.4953E+01	6.7200E+01	-1.4946E+01	7.0000E+01	-1.4935E+01	7.0000E+01	-1.4921E+01	7.0000E+01	-1.4902E+01	3.5000E+01	-1.4886E+01	3.5000E+01
866000	-1.4976E+01	6.7200E+01	-1.4969E+01	7.0000E+01	-1.4957E+01	7.0000E+01	-1.4943E+01	7.0000E+01	-1.4924E+01	3.5000E+01	-1.4909E+01	3.5000E+01
868000	-1.4999E+01	6.7200E+01	-1.4992E+01	7.0000E+01	-1.4980E+01	7.0000E+01	-1.4966E+01	7.0000E+01	-1.4947E+01	3.5000E+01	-1.4932E+01	3.5000E+01
870000	-1.5021E+01	6.7200E+01	-1.5014E+01	7.0000E+01	-1.5003E+01	7.0000E+01	-1.4989E+01	7.0000E+01	-1.4970E+01	3.5000E+01	-1.4954E+01	3.5000E+01
872000	-1.5044E+01	6.7200E+01	-1.5037E+01	7.0000E+01	-1.5025E+01	7.0000E+01	-1.5011E+01	7.0000E+01	-1.4993E+01	3.5000E+01	-1.4977E+01	3.5000E+01
874000	-1.5066E+01	6.7200E+01	-1.5060E+01	7.0000E+01	-1.5048E+01	7.0000E+01	-1.5034E+01	7.0000E+01	-1.5015E+01	3.5000E+01	-1.5000E+01	3.5000E+01
876000	-1.5089E+01	6.7200E+01	-1.5082E+01	7.0000E+01	-1.5071E+01	7.0000E+01	-1.5057E+01	7.0000E+01	-1.5038E+01	3.5000E+01	-1.5023E+01	3.5000E+01
878000	-1.5112E+01	6.7200E+01	-1.5105E+01	7.0000E+01	-1.5093E+01	7.0000E+01	-1.5079E+01	7.0000E+01	-1.5060E+01	3.5000E+01	-1.5045E+01	3.5000E+01
880000	-1.5134E+01	6.7200E+01	-1.5127E+01	7.0000E+01	-1.5116E+01	7.0000E+01	-1.5102E+01	7.0000E+01	-1.5083E+01	3.5000E+01	-1.5068E+01	3.5000E+01
882000	-1.5157E+01	6.7200E+01	-1.5150E+01	7.0000E+01	-1.5138E+01	7.0000E+01	-1.5124E+01	7.0000E+01	-1.5105E+01	3.5000E+01	-1.5090E+01	3.5000E+01
884000	-1.5179E+01	6.7200E+01	-1.5172E+01	7.0000E+01	-1.5161E+01	7.0000E+01	-1.5147E+01	7.0000E+01	-1.5128E+01	3.5000E+01	-1.5113E+01	3.5000E+01
886000	-1.5201E+01	6.7200E+01	-1.5195E+01	7.0000E+01	-1.5183E+01	7.0000E+01	-1.5169E+01	7.0000E+01	-1.5150E+01	3.5000E+01	-1.5135E+01	3.5000E+01
888000	-1.5224E+01	6.7200E+01	-1.5217E+01	7.0000E+01	-1.5205E+01	7.0000E+01	-1.5192E+01	7.0000E+01	-1.5173E+01	3.5000E+01	-1.5158E+01	3.5000E+01
890000	-1.5246E+01	6.7200E+01	-1.5239E+01	7.0000E+01	-1.5228E+01	7.0000E+01	-1.5214E+01	7.0000E+01	-1.5195E+01	3.5000E+01	-1.5180E+01	3.5000E+01
892000	-1.5268E+01	6.7200E+01	-1.5262E+01	7.0000E+01	-1.5250E+01	7.0000E+01	-1.5236E+01	7.0000E+01	-1.5218E+01	3.5000E+01	-1.5203E+01	3.5000E+01
894000	-1.5291E+01	6.7200E+01	-1.5284E+01	7.0000E+01	-1.5272E+01	7.0000E+01	-1.5259E+01	7.0000E+01	-1.5240E+01	3.5000E+01	-1.5225E+01	3.5000E+01
896000	-1.5313E+01	6.7200E+01	-1.5306E+01	7.0000E+01	-1.5295E+01	7.0000E+01	-1.5281E+01	7.0000E+01	-1.5262E+01	3.5000E+01	-1.5247E+01	3.5000E+01
898000	-1.5335E+01	6.7200E+01	-1.5328E+01	7.0000E+01	-1.5317E+01	7.0000E+01	-1.5303E+01	7.0000E+01	-1.5285E+01	3.5000E+01	-1.5270E+01	3.5000E+01
900000	-1.5357E+01	6.7200E+01	-1.5350E+01	7.0000E+01	-1.5339E+01	7.0000E+01	-1.5325E+01	7.0000E+01	-1.5307E+01	3.5000E+01	-1.5292E+01	3.5000E+01
902000	-1.5379E+01	6.7200E+01	-1.5373E+01	7.0000E+01	-1.5361E+01	7.0000E+01	-1.5348E+01	7.0000E+01	-1.5329E+01	3.5000E+01	-1.5314E+01	3.5000E+01
904000	-1.5402E+01	6.7200E+01	-1.5395E+01	7.0000E+01	-1.5383E+01	7.0000E+01	-1.5370E+01	7.0000E+01	-1.5351E+01	3.5000E+01	-1.5336E+01	3.5000E+01
906000	-1.5424E+01	6.7200E+01	-1.5417E+01	7.0000E+01	-1.5405E+01	7.0000E+01	-1.5392E+01	7.0000E+01	-1.5373E+01	3.5000E+01	-1.5358E+01	3.5000E+01
908000	-1.5446E+01	6.7200E+01	-1.5439E+01	7.0000E+01	-1.5428E+01	7.0000E+01	-1.5414E+01	7.0000E+01	-1.5396E+01	3.5000E+01	-1.5381E+01	3.5000E+01
910000	-1.5468E+01	6.7200E+01	-1.5461E+01	7.0000E+01	-1.5450E+01	7.0000E+01	-1.5436E+01	7.0000E+01	-1.5418E+01	3.5000E+01	-1.5403E+01	3.5000E+01
912000	-1.5490E+01	6.7200E+01	-1.5483E+01	7.0000E+01	-1.5472E+01	7.0000E+01	-1.5458E+01	7.0000E+01	-1.5440E+01	3.5000E+01	-1.5425E+01	3.5000E+01
914000	-1.5512E+01	6.7200E+01	-1.5505E+01	7.0000E+01	-1.5494E+01	7.0000E+01	-1.5480E+01	7.0000E+01	-1.5462E+01	3.5000E+01	-1.5447E+01	3.5000E+01
916000	-1.5534E+01	6.7200E+01	-1.5527E+01	7.0000E+01	-1.5516E+01	7.0000E+01	-1.5502E+01	7.0000E+01	-1.5484E+01	3.5000E+01	-1.5469E+01	3.5000E+01
918000	-1.5556E+01	6.7200E+01	-1.5549E+01	7.0000E+01	-1.5538E+01	7.0000E+01	-1.5524E+01	7.0000E+01	-1.5506E+01	3.5000E+01	-1.5491E+01	3.5000E+01
920000	-1.5577E+01	6.7200E+01	-1.5571E+01	7.0000E+01	-1.5559E+01	7.0000E+01	-1.5546E+01	7.0000E+01	-1.5528E+01	3.5000E+01	-1.5513E+01	3.5000E+01
922000	-1.5599E+01	6.7200E+01	-1.5593E+01	7.0000E+01	-1.5581E+01	7.0000E+01	-1.5568E+01	7.0000E+01	-1.5550E+01	3.5000E+01	-1.5535E+01	3.5000E+01
924000	-1.5621E+01	6.7200E+01	-1.5614E+01	7.0000E+01	-1.5603E+01	7.0000E+01	-1.5590E+01	7.0000E+01	-1.5572E+01	3.5000E+01	-1.5557E+01	3.5000E+01
926000	-1.5643E+01	6.7200E+01	-1.5636E+01	7.0000E+01	-1.5625E+01	7.0000E+01	-1.5612E+01	7.0000E+01	-1.5593E+01	3.5000E+01	-1.5579E+01	3.5000E+01
928000	-1.5665E+01	6.7200E+01	-1.5658E+01	7.0000E+01	-1.5647E+01	7.0000E+01	-1.5633E+01	7.0000E+01	-1.5615E+01	3.5000E+01	-1.5600E+01	3.5000E+01
930000	-1.5686E+01	6.7200E+01	-1.5680E+01	7.0000E+01	-1.5669E+01	7.0000E+01	-1.5655E+01	7.0000E+01	-1.5637E+01	3.5000E+01	-1.5622E+01	3.5000E+01
932000	-1.5708E+01	6.7200E+01	-1.5701E+01	7.0000E+01	-1.5690E+01	7.0000E+01	-1.5677E+01	7.0000E+01	-1.5659E+01	3.5000E+01	-1.5644E+01	3.5000E+01
934000	-1.5730E+01	6.7200E+01	-1.5723E+01	7.0000E+01	-1.5712E+01	7.0000E+01	-1.5699E+01	7.0000E+01	-1.5681E+01	3.5000E+01	-1.5666E+01	3.5000E+01

Time (yrs)	Arg 1	Curve 1	Arg 2	Curve 2	Arg 3	Curve 3	Arg 4	Curve 4	Arg 5	Curve 5	Arg 6	Curve 6
936000	-1.5751E+01	6.7200E+01	-1.5745E+01	7.0000E+01	-1.5734E+01	7.0000E+01	-1.5720E+01	7.0000E+01	-1.5702E+01	3.5000E+01	-1.5688E+01	3.5000E+01
938000	-1.5773E+01	6.7200E+01	-1.5766E+01	7.0000E+01	-1.5755E+01	7.0000E+01	-1.5742E+01	7.0000E+01	-1.5724E+01	3.5000E+01	-1.5709E+01	3.5000E+01
940000	-1.5795E+01	6.7200E+01	-1.5788E+01	7.0000E+01	-1.5777E+01	7.0000E+01	-1.5764E+01	7.0000E+01	-1.5746E+01	3.5000E+01	-1.5731E+01	3.5000E+01
942000	-1.5816E+01	6.7200E+01	-1.5810E+01	7.0000E+01	-1.5799E+01	7.0000E+01	-1.5785E+01	7.0000E+01	-1.5767E+01	3.5000E+01	-1.5753E+01	3.5000E+01
944000	-1.5838E+01	6.7200E+01	-1.5831E+01	7.0000E+01	-1.5820E+01	7.0000E+01	-1.5807E+01	7.0000E+01	-1.5789E+01	3.5000E+01	-1.5774E+01	3.5000E+01
946000	-1.5859E+01	6.7200E+01	-1.5853E+01	7.0000E+01	-1.5842E+01	7.0000E+01	-1.5828E+01	7.0000E+01	-1.5810E+01	3.5000E+01	-1.5796E+01	3.5000E+01
948000	-1.5881E+01	6.7200E+01	-1.5874E+01	7.0000E+01	-1.5863E+01	7.0000E+01	-1.5850E+01	7.0000E+01	-1.5832E+01	3.5000E+01	-1.5817E+01	3.5000E+01
950000	-1.5902E+01	6.7200E+01	-1.5896E+01	7.0000E+01	-1.5885E+01	7.0000E+01	-1.5871E+01	7.0000E+01	-1.5853E+01	3.5000E+01	-1.5839E+01	3.5000E+01
952000	-1.5924E+01	6.7200E+01	-1.5917E+01	7.0000E+01	-1.5906E+01	7.0000E+01	-1.5893E+01	7.0000E+01	-1.5875E+01	3.5000E+01	-1.5860E+01	3.5000E+01
954000	-1.5945E+01	6.7200E+01	-1.5939E+01	7.0000E+01	-1.5927E+01	7.0000E+01	-1.5914E+01	7.0000E+01	-1.5896E+01	3.5000E+01	-1.5882E+01	3.5000E+01
956000	-1.5966E+01	6.7200E+01	-1.5960E+01	7.0000E+01	-1.5949E+01	7.0000E+01	-1.5936E+01	7.0000E+01	-1.5918E+01	3.5000E+01	-1.5903E+01	3.5000E+01
958000	-1.5988E+01	6.7200E+01	-1.5981E+01	7.0000E+01	-1.5970E+01	7.0000E+01	-1.5957E+01	7.0000E+01	-1.5939E+01	3.5000E+01	-1.5925E+01	3.5000E+01
960000	-1.6009E+01	6.7200E+01	-1.6003E+01	7.0000E+01	-1.5992E+01	7.0000E+01	-1.5978E+01	7.0000E+01	-1.5961E+01	3.5000E+01	-1.5946E+01	3.5000E+01
962000	-1.6030E+01	6.7200E+01	-1.6024E+01	7.0000E+01	-1.6013E+01	7.0000E+01	-1.6000E+01	7.0000E+01	-1.5982E+01	3.5000E+01	-1.5968E+01	3.5000E+01
964000	-1.6052E+01	6.7200E+01	-1.6045E+01	7.0000E+01	-1.6034E+01	7.0000E+01	-1.6021E+01	7.0000E+01	-1.6003E+01	3.5000E+01	-1.5989E+01	3.5000E+01
966000	-1.6073E+01	6.7200E+01	-1.6066E+01	7.0000E+01	-1.6055E+01	7.0000E+01	-1.6042E+01	7.0000E+01	-1.6025E+01	3.5000E+01	-1.6010E+01	3.5000E+01
968000	-1.6094E+01	6.7200E+01	-1.6088E+01	7.0000E+01	-1.6077E+01	7.0000E+01	-1.6064E+01	7.0000E+01	-1.6046E+01	3.5000E+01	-1.6032E+01	3.5000E+01
970000	-1.6115E+01	6.7200E+01	-1.6109E+01	7.0000E+01	-1.6098E+01	7.0000E+01	-1.6085E+01	7.0000E+01	-1.6067E+01	3.5000E+01	-1.6053E+01	3.5000E+01
972000	-1.6136E+01	6.7200E+01	-1.6130E+01	7.0000E+01	-1.6119E+01	7.0000E+01	-1.6106E+01	7.0000E+01	-1.6088E+01	3.5000E+01	-1.6074E+01	3.5000E+01
974000	-1.6158E+01	6.7200E+01	-1.6151E+01	7.0000E+01	-1.6140E+01	7.0000E+01	-1.6127E+01	7.0000E+01	-1.6110E+01	3.5000E+01	-1.6095E+01	3.5000E+01
976000	-1.6179E+01	6.7200E+01	-1.6172E+01	7.0000E+01	-1.6161E+01	7.0000E+01	-1.6148E+01	7.0000E+01	-1.6131E+01	3.5000E+01	-1.6116E+01	3.5000E+01
978000	-1.6200E+01	6.7200E+01	-1.6193E+01	7.0000E+01	-1.6182E+01	7.0000E+01	-1.6170E+01	7.0000E+01	-1.6152E+01	3.5000E+01	-1.6138E+01	3.5000E+01
980000	-1.6221E+01	6.7200E+01	-1.6214E+01	7.0000E+01	-1.6204E+01	7.0000E+01	-1.6191E+01	7.0000E+01	-1.6173E+01	3.5000E+01	-1.6159E+01	3.5000E+01
982000	-1.6242E+01	6.7200E+01	-1.6235E+01	7.0000E+01	-1.6225E+01	7.0000E+01	-1.6212E+01	7.0000E+01	-1.6194E+01	3.5000E+01	-1.6180E+01	3.5000E+01
984000	-1.6263E+01	6.7200E+01	-1.6256E+01	7.0000E+01	-1.6246E+01	7.0000E+01	-1.6233E+01	7.0000E+01	-1.6215E+01	3.5000E+01	-1.6201E+01	3.5000E+01
986000	-1.6284E+01	6.7200E+01	-1.6277E+01	7.0000E+01	-1.6267E+01	7.0000E+01	-1.6254E+01	7.0000E+01	-1.6236E+01	3.5000E+01	-1.6222E+01	3.5000E+01
988000	-1.6305E+01	6.7200E+01	-1.6298E+01	7.0000E+01	-1.6288E+01	7.0000E+01	-1.6275E+01	7.0000E+01	-1.6257E+01	3.5000E+01	-1.6243E+01	3.5000E+01
990000	-1.6326E+01	6.7200E+01	-1.6319E+01	7.0000E+01	-1.6309E+01	7.0000E+01	-1.6296E+01	7.0000E+01	-1.6278E+01	3.5000E+01	-1.6264E+01	3.5000E+01
992000	-1.6347E+01	6.7200E+01	-1.6340E+01	7.0000E+01	-1.6329E+01	7.0000E+01	-1.6317E+01	7.0000E+01	-1.6299E+01	3.5000E+01	-1.6285E+01	3.5000E+01
994000	-1.6367E+01	6.7200E+01	-1.6361E+01	7.0000E+01	-1.6350E+01	7.0000E+01	-1.6338E+01	7.0000E+01	-1.6320E+01	3.5000E+01	-1.6306E+01	3.5000E+01
996000	-1.6388E+01	6.7200E+01	-1.6382E+01	7.0000E+01	-1.6371E+01	7.0000E+01	-1.6358E+01	7.0000E+01	-1.6341E+01	3.5000E+01	-1.6327E+01	3.5000E+01
998000	-1.6409E+01	6.7200E+01	-1.6403E+01	7.0000E+01	-1.6392E+01	7.0000E+01	-1.6379E+01	7.0000E+01	-1.6362E+01	3.5000E+01	-1.6348E+01	3.5000E+01
1000000	-1.6430E+01	6.7200E+01	-1.6424E+01	7.0000E+01	-1.6413E+01	7.0000E+01	-1.6400E+01	7.0000E+01	-1.6383E+01	3.5000E+01	-1.6369E+01	3.5000E+01


Flux Out (gm/yr)
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5.0000E+02
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0.0000E+00
-1.0000E+02
0
100000
200000
300000
400000
500000
600000
700000
800000
900000
1000000

Arg 7	Curve 7	Arg 8	Curve 8	Arg 9	Curve 9	Arg 10	Curve 10	Arg 11	Curve 11	Arg 12	Curve 12	Arg 13
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
5.7398E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
3.5956E+01	0.0000E+00	7.5970E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
2.7976E+01	0.0000E+00	3.9721E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
2.3447E+01	0.0000E+00	2.9777E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
2.0410E+01	0.0000E+00	2.4558E+01	0.0000E+00	5.4238E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.8179E+01	0.0000E+00	2.1188E+01	0.0000E+00	3.5081E+01	0.0000E+00	6.3049E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6443E+01	0.0000E+00	1.8765E+01	0.0000E+00	2.7528E+01	0.0000E+00	3.7325E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.5035E+01	0.0000E+00	1.6907E+01	0.0000E+00	2.3162E+01	0.0000E+00	2.8654E+01	0.0000E+00	7.4548E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.3861E+01	0.0000E+00	1.5416E+01	0.0000E+00	2.0207E+01	0.0000E+00	2.3872E+01	0.0000E+00	3.9498E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.2859E+01	0.0000E+00	1.4182E+01	0.0000E+00	1.8025E+01	0.0000E+00	2.0710E+01	0.0000E+00	2.9676E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.1988E+01	0.0000E+00	1.3134E+01	0.0000E+00	1.6319E+01	0.0000E+00	1.8406E+01	0.0000E+00	2.4498E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.1220E+01	0.0000E+00	1.2228E+01	0.0000E+00	1.4934E+01	0.0000E+00	1.6623E+01	0.0000E+00	2.1146E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.0535E+01	0.0000E+00	1.1433E+01	0.0000E+00	1.3775E+01	0.0000E+00	1.5184E+01	0.0000E+00	1.8734E+01	0.0000E+00	5.5170E+01	0.0000E+00	0.0000E+00
9.9176E+00	0.0000E+00	1.0726E+01	0.0000E+00	1.2784E+01	0.0000E+00	1.3986E+01	0.0000E+00	1.6882E+01	0.0000E+00	3.5348E+01	0.0000E+00	0.0000E+00
9.3569E+00	0.0000E+00	1.0090E+01	0.0000E+00	1.1923E+01	0.0000E+00	1.2966E+01	0.0000E+00	1.5396E+01	0.0000E+00	2.7666E+01	0.0000E+00	0.0000E+00
8.8436E+00	0.0000E+00	9.5143E+00	0.0000E+00	1.1162E+01	0.0000E+00	1.2082E+01	0.0000E+00	1.4165E+01	0.0000E+00	2.3250E+01	0.0000E+00	0.0000E+00
8.3708E+00	0.0000E+00	8.9880E+00	0.0000E+00	1.0483E+01	0.0000E+00	1.1303E+01	0.0000E+00	1.3120E+01	0.0000E+00	2.0270E+01	0.0000E+00	0.0000E+00
7.9329E+00	0.0000E+00	8.5041E+00	0.0000E+00	9.8708E+00	0.0000E+00	1.0610E+01	0.0000E+00	1.2216E+01	0.0000E+00	1.8073E+01	0.0000E+00	0.0000E+00
7.5252E+00	0.0000E+00	8.0566E+00	0.0000E+00	9.3142E+00	0.0000E+00	9.9856E+00	0.0000E+00	1.1422E+01	0.0000E+00	1.6358E+01	0.0000E+00	0.0000E+00
7.1440E+00	0.0000E+00	7.6405E+00	0.0000E+00	8.8044E+00	0.0000E+00	9.4188E+00	0.0000E+00	1.0716E+01	0.0000E+00	1.4965E+01	0.0000E+00	0.0000E+00
6.7862E+00	0.0000E+00	7.2520E+00	0.0000E+00	8.3346E+00	0.0000E+00	8.9005E+00	0.0000E+00	1.0081E+01	0.0000E+00	1.3802E+01	0.0000E+00	0.0000E+00
6.4492E+00	0.0000E+00	6.8877E+00	0.0000E+00	7.8992E+00	0.0000E+00	8.4233E+00	0.0000E+00	9.5060E+00	0.0000E+00	1.2808E+01	0.0000E+00	6.3620E+01
6.1308E+00	0.0000E+00	6.5450E+00	0.0000E+00	7.4937E+00	0.0000E+00	7.9816E+00	0.0000E+00	8.9805E+00	0.0000E+00	1.1943E+01	0.0000E+00	3.7452E+01
5.8290E+00	3.8858E-15	6.2214E+00	0.0000E+00	7.1146E+00	0.0000E+00	7.5706E+00	0.0000E+00	8.4971E+00	0.0000E+00	1.1180E+01	0.0000E+00	2.8716E+01
5.5423E+00	7.9659E-14	5.9149E+00	1.9429E-15	6.7585E+00	0.0000E+00	7.1866E+00	0.0000E+00	8.0501E+00	0.0000E+00	1.0499E+01	0.0000E+00	2.3910E+01
5.2691E+00	1.6126E-12	5.6240E+00	3.1086E-14	6.4231E+00	0.0000E+00	6.8263E+00	0.0000E+00	7.6345E+00	0.0000E+00	9.8854E+00	0.0000E+00	2.0736E+01
5.0084E+00	2.4696E-11	5.3470E+00	6.9555E-13	6.1061E+00	0.0000E+00	6.4870E+00	0.0000E+00	7.2464E+00	0.0000E+00	9.3275E+00	0.0000E+00	1.8426E+01
4.7590E+00	2.9647E-10	5.0828E+00	1.1492E-11	5.8055E+00	1.8652E-15	6.1665E+00	0.0000E+00	6.8825E+00	0.0000E+00	8.8166E+00	0.0000E+00	1.6639E+01
4.5199E+00	2.8622E-09	4.8302E+00	1.4763E-10	5.5199E+00	4.9427E-14	5.8629E+00	1.0103E-15	6.5400E+00	0.0000E+00	8.3459E+00	0.0000E+00	1.5197E+01
4.2904E+00	2.2720E-08	4.5882E+00	1.5146E-09	5.2478E+00	9.7269E-13	5.5745E+00	2.9299E-14	6.2166E+00	0.0000E+00	7.9097E+00	0.0000E+00	1.3997E+01
4.0698E+00	1.5117E-07	4.3561E+00	1.2698E-08	4.9880E+00	1.4587E-11	5.2999E+00	6.0214E-13	5.9105E+00	9.3259E-16	7.5035E+00	0.0000E+00	1.2976E+01
3.8572E+00	8.5747E-07	4.1329E+00	8.8763E-08	4.7395E+00	1.7193E-10	5.0378E+00	9.5049E-12	5.6197E+00	1.5854E-14	7.1237E+00	0.0000E+00	1.2090E+01
3.6522E+00	4.2078E-06	3.9180E+00	5.2648E-07	4.5012E+00	1.6328E-09	4.7871E+00	1.1719E-10	5.3430E+00	3.4879E-13	6.7672E+00	0.0000E+00	1.1311E+01
3.4542E+00	1.8099E-05	3.7109E+00	2.6905E-06	4.2725E+00	1.2771E-08	4.5469E+00	1.1587E-09	5.0789E+00	5.7419E-12	6.4313E+00	0.0000E+00	1.0616E+01
3.2628E+00	6.9029E-05	3.5109E+00	1.2009E-05	4.0525E+00	8.3846E-08	4.3164E+00	9.3972E-09	4.8265E+00	7.3498E-11	6.1138E+00	0.0000E+00	9.9915E+00
3.0775E+00	2.3587E-04	3.3177E+00	4.7374E-05	3.8405E+00	4.6985E-07	4.0947E+00	6.3751E-08	4.5847E+00	7.5163E-10	5.8129E+00	2.0206E-15	9.4242E+00
2.8979E+00	7.2868E-04	3.1306E+00	1.6695E-04	3.6361E+00	2.2804E-06	3.8813E+00	3.6801E-07	4.3527E+00	6.2836E-09	5.5269E+00	4.9505E-14	8.9054E+00
2.7236E+00	2.0521E-03	2.9494E+00	5.3059E-04	3.4387E+00	9.7109E-06	3.6754E+00	1.8349E-06	4.1296E+00	4.3811E-08	5.2545E+00	9.8100E-13	8.4279E+00
2.5544E+00	5.3074E-03	2.7736E+00	1.5337E-03	3.2477E+00	3.6700E-05	3.4767E+00	8.0082E-06	3.9149E+00	2.5924E-07	4.9944E+00	1.4813E-11	7.9859E+00
2.3899E+00	1.2690E-02	2.6030E+00	4.0629E-03	3.0629E+00	1.2435E-04	3.2845E+00	3.0952E-05	3.7079E+00	1.3220E-06	4.7456E+00	1.7559E-10	7.5746E+00
2.2299E+00	2.8220E-02	2.4372E+00	9.9317E-03	2.8837E+00	3.8123E-04	3.0985E+00	1.0705E-04	3.5080E+00	5.8892E-06	4.5071E+00	1.6762E-09	7.1903E+00
2.0742E+00	5.8689E-02	2.2759E+00	2.2542E-02	2.7099E+00	1.0661E-03	2.9182E+00	3.3444E-04	3.3148E+00	2.3192E-05	4.2781E+00	1.3171E-08	6.8298E+00
1.9224E+00	1.1471E-01	2.1189E+00	4.7775E-02	2.5411E+00	2.7392E-03	2.7434E+00	9.5156E-04	3.1278E+00	8.1599E-05	4.0579E+00	8.6832E-08	6.4903E+00
1.7744E+00	2.1168E-01	1.9660E+00	9.5028E-02	2.3770E+00	6.5102E-03	2.5736E+00	2.4844E-03	2.9467E+00	2.5895E-04	3.8457E+00	4.8842E-07	6.1697E+00
1.6299E+00	3.7035E-01	1.8169E+00	1.7823E-01	2.2173E+00	1.4397E-02	2.4086E+00	5.9921E-03	2.7710E+00	7.4748E-04	3.6411E+00	2.3787E-06	5.8659E+00
1.4889E+00	6.1667E-01	1.6715E+00	3.1656E-01	2.0619E+00	2.9788E-02	2.2481E+00	1.3433E-02	2.6005E+00	1.9777E-03	3.4435E+00	1.0161E-05	5.5773E+00

Arg 7	Curve 7	Arg 8	Curve 8	Arg 9	Curve 9	Arg 10	Curve 10	Arg 11	Curve 11	Arg 12	Curve 12	Arg 13
1.3511E+00	9.8071E-01	1.5294E+00	5.3451E-01	1.9104E+00	5.7946E-02	2.0919E+00	2.8145E-02	2.4347E+00	4.8288E-03	3.2524E+00	3.8511E-05	5.3026E+00
1.2164E+00	1.4945E+00	1.3907E+00	8.6115E-01	1.7627E+00	1.0646E-01	1.9396E+00	5.5391E-02	2.2735E+00	1.0948E-02	3.0674E+00	1.3083E-04	5.0404E+00
1.0845E+00	2.1890E+00	1.2551E+00	1.3282E+00	1.6185E+00	1.8550E-01	1.7912E+00	1.0287E-01	2.1166E+00	2.3180E-02	2.8881E+00	4.0205E-04	4.7896E+00
9.5554E-01	3.0903E+00	1.1225E+00	1.9673E+00	1.4777E+00	3.0770E-01	1.6464E+00	1.8105E-01	1.9637E+00	4.6065E-02	2.7142E+00	1.1268E-03	4.5493E+00
8.2920E-01	4.2163E+00	9.9267E-01	2.8064E+00	1.3402E+00	4.8762E-01	1.5049E+00	3.0314E-01	1.8147E+00	8.6325E-02	2.5452E+00	2.9011E-03	4.3186E+00
7.0540E-01	5.5734E+00	8.6557E-01	3.8660E+00	1.2057E+00	7.4065E-01	1.3668E+00	4.8455E-01	1.6693E+00	1.5320E-01	2.3810E+00	6.9080E-03	4.0969E+00
5.8405E-01	7.1544E+00	7.4105E-01	5.1562E+00	1.0741E+00	1.0815E+00	1.2317E+00	7.4192E-01	1.5273E+00	2.5850E-01	2.2213E+00	1.5303E-02	3.8833E+00
4.6502E-01	8.9384E+00	6.1899E-01	6.6738E+00	9.4534E-01	1.5225E+00	1.0996E+00	1.0915E+00	1.3887E+00	4.1618E-01	2.0657E+00	3.1714E-02	3.6774E+00
3.4824E-01	1.0892E+01	4.9931E-01	8.4019E+00	8.1920E-01	2.0719E+00	9.7024E-01	1.5472E+00	1.2531E+00	6.4149E-01	1.9141E+00	6.1784E-02	3.4786E+00
2.3360E-01	1.2970E+01	3.8188E-01	1.0310E+01	6.9561E-01	2.7321E+00	8.4359E-01	2.1190E+00	1.1205E+00	9.4960E-01	1.7663E+00	1.1367E-01	3.2864E+00
1.2102E-01	1.5122E+01	2.6663E-01	1.2357E+01	5.7444E-01	3.4992E+00	7.1951E-01	2.8109E+00	9.9075E-01	1.3539E+00	1.6221E+00	1.9831E-01	3.1003E+00
1.0414E-02	1.7294E+01	1.5346E-01	1.4493E+01	4.5560E-01	4.3627E+00	5.9788E-01	3.6201E+00	8.6368E-01	1.8642E+00	1.4812E+00	3.2934E-01	2.9200E+00
-9.8287E-02	1.9435E+01	4.2290E-02	1.6665E+01	3.3899E-01	5.3059E+00	4.7860E-01	4.5364E+00	7.3920E-01	2.4851E+00	1.3436E+00	5.2249E-01	2.7451E+00
-2.0516E-01	2.1495E+01	-6.6955E-02	1.8820E+01	2.2452E-01	6.3072E+00	3.6156E-01	5.5431E+00	6.1718E-01	3.2152E+00	1.2090E+00	7.9442E-01	2.5753E+00
-3.1027E-01	2.3436E+01	-1.7435E-01	2.0908E+01	1.1210E-01	7.3419E+00	2.4668E-01	6.6175E+00	4.9753E-01	4.0461E+00	1.0774E+00	1.1611E+00	2.4103E+00
-4.1368E-01	2.5226E+01	-2.7996E-01	2.2887E+01	1.6489E-03	8.3844E+00	1.3386E-01	7.7336E+00	3.8014E-01	4.9632E+00	9.4852E-01	1.6361E+00	2.2497E+00
-5.1546E-01	2.6845E+01	-3.8386E-01	2.4724E+01	-1.0690E-01	9.4094E+00	2.3035E-02	8.8635E+00	2.6492E-01	5.9466E+00	8.2232E-01	2.2282E+00	2.0934E+00
-6.1566E-01	2.8281E+01	-4.8611E-01	2.6394E+01	-2.1363E-01	1.0394E+01	-8.5881E-02	9.9797E+00	1.5178E-01	6.9724E+00	6.9867E-01	2.9404E+00	1.9411E+00
-7.1433E-01	2.9533E+01	-5.8676E-01	2.7884E+01	-3.1860E-01	1.1321E+01	-1.9296E-01	1.1057E+01	4.0637E-02	8.0150E+00	5.7744E-01	3.7687E+00	1.7927E+00
-8.1153E-01	3.0606E+01	-6.8587E-01	2.9189E+01	-4.2188E-01	1.2174E+01	-2.9827E-01	1.2074E+01	-6.8580E-02	9.0490E+00	4.5854E-01	4.7018E+00	1.6478E+00
-9.0731E-01	3.1510E+01	-7.8349E-01	3.0313E+01	-5.2353E-01	1.2944E+01	-4.0187E-01	1.3015E+01	-1.7595E-01	1.0051E+01	3.4188E-01	5.7216E+00	1.5063E+00
-1.0017E+00	3.2260E+01	-8.7968E-01	3.1264E+01	-6.2360E-01	1.3626E+01	-5.0383E-01	1.3867E+01	-2.8153E-01	1.1000E+01	2.2735E-01	6.8051E+00	1.3681E+00
-1.0948E+00	3.2873E+01	-9.7448E-01	3.2057E+01	-7.2216E-01	1.4220E+01	-6.0421E-01	1.4625E+01	-3.8541E-01	1.1880E+01	1.1488E-01	7.9255E+00	1.2330E+00
-1.1866E+00	3.3367E+01	-1.0679E+00	3.2708E+01	-8.1925E-01	1.4728E+01	-7.0306E-01	1.5287E+01	-4.8763E-01	1.2680E+01	4.3867E-03	9.0550E+00	1.1009E+00
-1.2771E+00	3.3759E+01	-1.1601E+00	3.3235E+01	-9.1492E-01	1.5156E+01	-8.0043E-01	1.5855E+01	-5.8826E-01	1.3394E+01	-1.0421E-01	1.0166E+01	9.7152E-01
-1.3665E+00	3.4067E+01	-1.2510E+00	3.3655E+01	-1.0092E+00	1.5511E+01	-8.9637E-01	1.6335E+01	-6.8734E-01	1.4019E+01	-2.1098E-01	1.1235E+01	8.4485E-01
-1.4546E+00	3.4306E+01	-1.3407E+00	3.3986E+01	-1.1022E+00	1.5800E+01	-9.9093E-01	1.6734E+01	-7.8495E-01	1.4558E+01	-3.1600E-01	1.2240E+01	7.2074E-01
-1.5416E+00	3.4488E+01	-1.4292E+00	3.4243E+01	-1.1939E+00	1.6033E+01	-1.0842E+00	1.7061E+01	-8.8111E-01	1.5013E+01	-4.1932E-01	1.3166E+01	5.9909E-01
-1.6276E+00	3.4626E+01	-1.5165E+00	3.4440E+01	-1.2843E+00	1.6218E+01	-1.1761E+00	1.7324E+01	-9.7589E-01	1.5393E+01	-5.2101E-01	1.4003E+01	4.7978E-01
-1.7124E+00	3.4730E+01	-1.6028E+00	3.4590E+01	-1.3736E+00	1.6363E+01	-1.2668E+00	1.7534E+01	-1.0693E+00	1.5704E+01	-6.2112E-01	1.4744E+01	3.6272E-01
-1.7962E+00	3.4806E+01	-1.6879E+00	3.4703E+01	-1.4616E+00	1.6475E+01	-1.3562E+00	1.7699E+01	-1.1615E+00	1.5956E+01	-7.1971E-01	1.5390E+01	2.4781E-01
-1.8790E+00	3.4862E+01	-1.7720E+00	3.4786E+01	-1.5486E+00	1.6560E+01	-1.4445E+00	1.7826E+01	-1.2523E+00	1.6157E+01	-8.1684E-01	1.5943E+01	1.3498E-01
-1.9608E+00	3.4903E+01	-1.8551E+00	3.4848E+01	-1.6344E+00	1.6625E+01	-1.5317E+00	1.7924E+01	-1.3420E+00	1.6315E+01	-9.1254E-01	1.6409E+01	2.4134E-02
-2.0417E+00	3.4932E+01	-1.9372E+00	3.4892E+01	-1.7192E+00	1.6674E+01	-1.6177E+00	1.7998E+01	-1.4305E+00	1.6438E+01	-1.0069E+00	1.6794E+01	-8.4801E-02
-2.1216E+00	3.4953E+01	-2.0184E+00	3.4925E+01	-1.8029E+00	1.6709E+01	-1.7027E+00	1.8054E+01	-1.5178E+00	1.6533E+01	-1.0999E+00	1.7109E+01	-1.9190E-01
-2.2007E+00	3.4968E+01	-2.0986E+00	3.4948E+01	-1.8856E+00	1.6736E+01	-1.7866E+00	1.8095E+01	-1.6040E+00	1.6604E+01	-1.1916E+00	1.7363E+01	-2.9722E-01
-2.2788E+00	3.4978E+01	-2.1779E+00	3.4964E+01	-1.9674E+00	1.6755E+01	-1.8696E+00	1.8125E+01	-1.6892E+00	1.6658E+01	-1.2821E+00	1.7565E+01	-4.0084E-01
-2.3561E+00	3.4985E+01	-2.2563E+00	3.4975E+01	-2.0481E+00	1.6768E+01	-1.9515E+00	1.8147E+01	-1.7733E+00	1.6698E+01	-1.3713E+00	1.7723E+01	-5.0282E-01
-2.4326E+00	3.4990E+01	-2.3338E+00	3.4983E+01	-2.1280E+00	1.6778E+01	-2.0325E+00	1.8163E+01	-1.8564E+00	1.6727E+01	-1.4594E+00	1.7845E+01	-6.0322E-01
-2.5082E+00	3.4993E+01	-2.4105E+00	3.4989E+01	-2.2070E+00	1.6785E+01	-2.1125E+00	1.8174E+01	-1.9384E+00	1.6749E+01	-1.5464E+00	1.7938E+01	-7.0208E-01
-2.5831E+00	3.4995E+01	-2.4864E+00	3.4992E+01	-2.2851E+00	1.6790E+01	-2.1916E+00	1.8182E+01	-2.0196E+00	1.6764E+01	-1.6323E+00	1.8009E+01	-7.9946E-01
-2.6572E+00	3.4997E+01	-2.5615E+00	3.4995E+01	-2.3623E+00	1.6793E+01	-2.2699E+00	1.8188E+01	-2.0998E+00	1.6775E+01	-1.7171E+00	1.8062E+01	-8.9542E-01
-2.7305E+00	3.4998E+01	-2.6358E+00	3.4997E+01	-2.4387E+00	1.6795E+01	-2.3473E+00	1.8192E+01	-2.1790E+00	1.6783E+01	-1.8008E+00	1.8101E+01	-9.8999E-01
-2.8031E+00	3.4999E+01	-2.7093E+00	3.4998E+01	-2.5143E+00	1.6797E+01	-2.4238E+00	1.8194E+01	-2.2574E+00	1.6788E+01	-1.8836E+00	1.8130E+01	-1.0832E+00
-2.8750E+00	3.4999E+01	-2.7821E+00	3.4999E+01	-2.5891E+00	1.6798E+01	-2.4996E+00	1.8196E+01	-2.3350E+00	1.6792E+01	-1.9653E+00	1.8150E+01	-1.1752E+00
-2.9461E+00	3.4999E+01	-2.8542E+00	3.4999E+01	-2.6631E+00	1.6799E+01	-2.5745E+00	1.8198E+01	-2.4116E+00	1.6795E+01	-2.0461E+00	1.8165E+01	-1.2659E+00
-3.0166E+00	3.5000E+01	-2.9256E+00	3.4999E+01	-2.7363E+00	1.6799E+01	-2.6487E+00	1.8198E+01	-2.4875E+00	1.6796E+01	-2.1260E+00	1.8176E+01	-1.3554E+00
-3.0865E+00	3.5000E+01	-2.9963E+00	3.5000E+01	-2.8089E+00	1.6799E+01	-2.7221E+00	1.8199E+01	-2.5626E+00	1.6798E+01	-2.2050E+00	1.8183E+01	-1.4437E+00
-3.1556E+00	3.5000E+01	-3.0663E+00	3.5000E+01	-2.8807E+00	1.6800E+01	-2.7948E+00	1.8199E+01	-2.6369E+00	1.6798E+01	-2.2831E+00	1.8189E+01	-1.5308E+00
-3.2241E+00	3.5000E+01	-3.1356E+00	3.5000E+01	-2.9518E+00	1.6800E+01	-2.8667E+00	1.8200E+01	-2.7104E+00	1.6799E+01	-2.3604E+00	1.8192E+01	-1.6169E+00
-3.2920E+00	3.5000E+01	-3.2043E+00	3.5000E+01	-3.0222E+00	1.6800E+01	-2.9380E+00	1.8200E+01	-2.7832E+00	1.6799E+01	-2.4368E+00	1.8195E+01	-1.7019E+00
-3.3593E+00	3.5000E+01	-3.2724E+00	3.5000E+01	-3.0920E+00	1.6800E+01	-3.0086E+00	1.8200E+01	-2.8553E+00	1.6800E+01	-2.5124E+00	1.8197E+01	-1.7858E+00

Arg 7	Curve 7	Arg 8	Curve 8	Arg 9	Curve 9	Arg 10	Curve 10	Arg 11	Curve 11	Arg 12	Curve 12	Arg 13
-3.4260E+00	3.5000E+01	-3.3399E+00	3.5000E+01	-3.1611E+00	1.6800E+01	-3.0785E+00	1.8200E+01	-2.9266E+00	1.6800E+01	-2.5872E+00	1.8198E+01	-1.8687E+00
-3.4921E+00	3.5000E+01	-3.4068E+00	3.5000E+01	-3.2296E+00	1.6800E+01	-3.1477E+00	1.8200E+01	-2.9973E+00	1.6800E+01	-2.6612E+00	1.8198E+01	-1.9507E+00
-3.5577E+00	3.5000E+01	-3.4730E+00	3.5000E+01	-3.2975E+00	1.6800E+01	-3.2163E+00	1.8200E+01	-3.0673E+00	1.6800E+01	-2.7345E+00	1.8199E+01	-2.0317E+00
-3.6226E+00	3.5000E+01	-3.5387E+00	3.5000E+01	-3.3647E+00	1.6800E+01	-3.2843E+00	1.8200E+01	-3.1367E+00	1.6800E+01	-2.8071E+00	1.8199E+01	-2.1117E+00
-3.6871E+00	3.5000E+01	-3.6039E+00	3.5000E+01	-3.4313E+00	1.6800E+01	-3.3516E+00	1.8200E+01	-3.2054E+00	1.6800E+01	-2.8789E+00	1.8200E+01	-2.1909E+00
-3.7510E+00	3.5000E+01	-3.6684E+00	3.5000E+01	-3.4974E+00	1.6800E+01	-3.4184E+00	1.8200E+01	-3.2734E+00	1.6800E+01	-2.9500E+00	1.8200E+01	-2.2691E+00
-3.8143E+00	3.5000E+01	-3.7325E+00	3.5000E+01	-3.5629E+00	1.6800E+01	-3.4846E+00	1.8200E+01	-3.3409E+00	1.6800E+01	-3.0205E+00	1.8200E+01	-2.3465E+00
-3.8772E+00	3.5000E+01	-3.7960E+00	3.5000E+01	-3.6278E+00	1.6800E+01	-3.5502E+00	1.8200E+01	-3.4077E+00	1.6800E+01	-3.0903E+00	1.8200E+01	-2.4231E+00
-3.9395E+00	3.5000E+01	-3.8590E+00	3.5000E+01	-3.6922E+00	1.6800E+01	-3.6152E+00	1.8200E+01	-3.4740E+00	1.6800E+01	-3.1594E+00	1.8200E+01	-2.4988E+00
-4.0014E+00	3.5000E+01	-3.9215E+00	3.5000E+01	-3.7560E+00	1.6800E+01	-3.6797E+00	1.8200E+01	-3.5397E+00	1.6800E+01	-3.2279E+00	1.8200E+01	-2.5738E+00
-4.0627E+00	3.5000E+01	-3.9835E+00	3.5000E+01	-3.8194E+00	1.6800E+01	-3.7436E+00	1.8200E+01	-3.6048E+00	1.6800E+01	-3.2958E+00	1.8200E+01	-2.6480E+00
-4.1236E+00	3.5000E+01	-4.0450E+00	3.5000E+01	-3.8822E+00	1.6800E+01	-3.8071E+00	1.8200E+01	-3.6694E+00	1.6800E+01	-3.3630E+00	1.8200E+01	-2.7214E+00
-4.1840E+00	3.5000E+01	-4.1060E+00	3.5000E+01	-3.9445E+00	1.6800E+01	-3.8700E+00	1.8200E+01	-3.7334E+00	1.6800E+01	-3.4297E+00	1.8200E+01	-2.7941E+00
-4.2440E+00	3.5000E+01	-4.1665E+00	3.5000E+01	-4.0063E+00	1.6800E+01	-3.9324E+00	1.8200E+01	-3.7969E+00	1.6800E+01	-3.4958E+00	1.8200E+01	-2.8660E+00
-4.3035E+00	3.5000E+01	-4.2266E+00	3.5000E+01	-4.0676E+00	1.6800E+01	-3.9943E+00	1.8200E+01	-3.8599E+00	1.6800E+01	-3.5613E+00	1.8200E+01	-2.9373E+00
-4.3625E+00	3.5000E+01	-4.2863E+00	3.5000E+01	-4.1284E+00	1.6800E+01	-4.0557E+00	1.8200E+01	-3.9224E+00	1.6800E+01	-3.6262E+00	1.8200E+01	-3.0079E+00
-4.4212E+00	3.5000E+01	-4.3455E+00	3.5000E+01	-4.1888E+00	1.6800E+01	-4.1166E+00	1.8200E+01	-3.9844E+00	1.6800E+01	-3.6906E+00	1.8200E+01	-3.0778E+00
-4.4794E+00	3.5000E+01	-4.4042E+00	3.5000E+01	-4.2487E+00	1.6800E+01	-4.1771E+00	1.8200E+01	-4.0459E+00	1.6800E+01	-3.7545E+00	1.8200E+01	-3.1470E+00
-4.5372E+00	3.5000E+01	-4.4625E+00	3.5000E+01	-4.3082E+00	1.6800E+01	-4.2371E+00	1.8200E+01	-4.1069E+00	1.6800E+01	-3.8178E+00	1.8200E+01	-3.2156E+00
-4.5946E+00	3.5000E+01	-4.5205E+00	3.5000E+01	-4.3672E+00	1.6800E+01	-4.2967E+00	1.8200E+01	-4.1674E+00	1.6800E+01	-3.8806E+00	1.8200E+01	-3.2836E+00
-4.6515E+00	3.5000E+01	-4.5780E+00	3.5000E+01	-4.4258E+00	1.6800E+01	-4.3558E+00	1.8200E+01	-4.2275E+00	1.6800E+01	-3.9429E+00	1.8200E+01	-3.3510E+00
-4.7081E+00	3.5000E+01	-4.6350E+00	3.5000E+01	-4.4840E+00	1.6800E+01	-4.4145E+00	1.8200E+01	-4.2872E+00	1.6800E+01	-4.0047E+00	1.8200E+01	-3.4177E+00
-4.7643E+00	3.5000E+01	-4.6917E+00	3.5000E+01	-4.5418E+00	1.6800E+01	-4.4727E+00	1.8200E+01	-4.3463E+00	1.6800E+01	-4.0661E+00	1.8200E+01	-3.4839E+00
-4.8201E+00	3.5000E+01	-4.7480E+00	3.5000E+01	-4.5991E+00	1.6800E+01	-4.5305E+00	1.8200E+01	-4.4051E+00	1.6800E+01	-4.1269E+00	1.8200E+01	-3.5495E+00
-4.8755E+00	3.5000E+01	-4.8040E+00	3.5000E+01	-4.6561E+00	1.6800E+01	-4.5880E+00	1.8200E+01	-4.4634E+00	1.6800E+01	-4.1873E+00	1.8200E+01	-3.6146E+00
-4.9306E+00	3.5000E+01	-4.8595E+00	3.5000E+01	-4.7126E+00	1.6800E+01	-4.6450E+00	1.8200E+01	-4.5213E+00	1.6800E+01	-4.2473E+00	1.8200E+01	-3.6790E+00
-4.9853E+00	3.5000E+01	-4.9147E+00	3.5000E+01	-4.7688E+00	1.6800E+01	-4.7016E+00	1.8200E+01	-4.5788E+00	1.6800E+01	-4.3067E+00	1.8200E+01	-3.7430E+00
-5.0397E+00	3.5000E+01	-4.9695E+00	3.5000E+01	-4.8246E+00	1.6800E+01	-4.7579E+00	1.8200E+01	-4.6359E+00	1.6800E+01	-4.3658E+00	1.8200E+01	-3.8064E+00
-5.0936E+00	3.5000E+01	-5.0239E+00	3.5000E+01	-4.8800E+00	1.6800E+01	-4.8137E+00	1.8200E+01	-4.6926E+00	1.6800E+01	-4.4244E+00	1.8200E+01	-3.8693E+00
-5.1473E+00	3.5000E+01	-5.0780E+00	3.5000E+01	-4.9350E+00	1.6800E+01	-4.8692E+00	1.8200E+01	-4.7489E+00	1.6800E+01	-4.4826E+00	1.8200E+01	-3.9317E+00
-5.2006E+00	3.5000E+01	-5.1318E+00	3.5000E+01	-4.9897E+00	1.6800E+01	-4.9243E+00	1.8200E+01	-4.8048E+00	1.6800E+01	-4.5403E+00	1.8200E+01	-3.9936E+00
-5.2536E+00	3.5000E+01	-5.1852E+00	3.5000E+01	-5.0440E+00	1.6800E+01	-4.9790E+00	1.8200E+01	-4.8603E+00	1.6800E+01	-4.5977E+00	1.8200E+01	-4.0551E+00
-5.3062E+00	3.5000E+01	-5.2382E+00	3.5000E+01	-5.0980E+00	1.6800E+01	-5.0334E+00	1.8200E+01	-4.9155E+00	1.6800E+01	-4.6546E+00	1.8200E+01	-4.1160E+00
-5.3585E+00	3.5000E+01	-5.2910E+00	3.5000E+01	-5.1516E+00	1.6800E+01	-5.0875E+00	1.8200E+01	-4.9703E+00	1.6800E+01	-4.7112E+00	1.8200E+01	-4.1765E+00
-5.4105E+00	3.5000E+01	-5.3434E+00	3.5000E+01	-5.2049E+00	1.6800E+01	-5.1411E+00	1.8200E+01	-5.0247E+00	1.6800E+01	-4.7674E+00	1.8200E+01	-4.2365E+00
-5.4622E+00	3.5000E+01	-5.3955E+00	3.5000E+01	-5.2578E+00	1.6800E+01	-5.1945E+00	1.8200E+01	-5.0788E+00	1.6800E+01	-4.8232E+00	1.8200E+01	-4.2961E+00
-5.5136E+00	3.5000E+01	-5.4473E+00	3.5000E+01	-5.3104E+00	1.6800E+01	-5.2475E+00	1.8200E+01	-5.1326E+00	1.6800E+01	-4.8786E+00	1.8200E+01	-4.3552E+00
-5.5647E+00	3.5000E+01	-5.4987E+00	3.5000E+01	-5.3627E+00	1.6800E+01	-5.3002E+00	1.8200E+01	-5.1860E+00	1.6800E+01	-4.9336E+00	1.8200E+01	-4.4139E+00
-5.6155E+00	3.5000E+01	-5.5499E+00	3.5000E+01	-5.4147E+00	1.6800E+01	-5.3525E+00	1.8200E+01	-5.2390E+00	1.6800E+01	-4.9883E+00	1.8200E+01	-4.4721E+00
-5.6659E+00	3.5000E+01	-5.6008E+00	3.5000E+01	-5.4663E+00	1.6800E+01	-5.4046E+00	1.8200E+01	-5.2918E+00	1.6800E+01	-5.0426E+00	1.8200E+01	-4.5300E+00
-5.7161E+00	3.5000E+01	-5.6513E+00	3.5000E+01	-5.5177E+00	1.6800E+01	-5.4563E+00	1.8200E+01	-5.3442E+00	1.6800E+01	-5.0966E+00	1.8200E+01	-4.5874E+00
-5.7660E+00	3.5000E+01	-5.7016E+00	3.5000E+01	-5.5688E+00	1.6800E+01	-5.5077E+00	1.8200E+01	-5.3963E+00	1.6800E+01	-5.1502E+00	1.8200E+01	-4.6444E+00
-5.8156E+00	3.5000E+01	-5.7516E+00	3.5000E+01	-5.6195E+00	1.6800E+01	-5.5588E+00	1.8200E+01	-5.4480E+00	1.6800E+01	-5.2035E+00	1.8200E+01	-4.7011E+00
-5.8650E+00	3.5000E+01	-5.8013E+00	3.5000E+01	-5.6700E+00	1.6800E+01	-5.6096E+00	1.8200E+01	-5.4995E+00	1.6800E+01	-5.2565E+00	1.8200E+01	-4.7573E+00
-5.9140E+00	3.5000E+01	-5.8507E+00	3.5000E+01	-5.7201E+00	1.6800E+01	-5.6601E+00	1.8200E+01	-5.5507E+00	1.6800E+01	-5.3091E+00	1.8200E+01	-4.8132E+00
-5.9628E+00	3.5000E+01	-5.8998E+00	3.5000E+01	-5.7700E+00	1.6800E+01	-5.7104E+00	1.8200E+01	-5.6015E+00	1.6800E+01	-5.3614E+00	1.8200E+01	-4.8686E+00
-6.0114E+00	3.5000E+01	-5.9487E+00	3.5000E+01	-5.8196E+00	1.6800E+01	-5.7603E+00	1.8200E+01	-5.6521E+00	1.6800E+01	-5.4134E+00	1.8200E+01	-4.9237E+00
-6.0596E+00	3.5000E+01	-5.9973E+00	3.5000E+01	-5.8689E+00	1.6800E+01	-5.8099E+00	1.8200E+01	-5.7023E+00	1.6800E+01	-5.4651E+00	1.8200E+01	-4.9785E+00
-6.1076E+00	3.5000E+01	-6.0457E+00	3.5000E+01	-5.9180E+00	1.6800E+01	-5.8593E+00	1.8200E+01	-5.7523E+00	1.6800E+01	-5.5164E+00	1.8200E+01	-5.0329E+00
-6.1554E+00	3.5000E+01	-6.0938E+00	3.5000E+01	-5.9667E+00	1.6800E+01	-5.9084E+00	1.8200E+01	-5.8020E+00	1.6800E+01	-5.5675E+00	1.8200E+01	-5.0869E+00
-6.2029E+00	3.5000E+01	-6.1416E+00	3.5000E+01	-6.0152E+00	1.6800E+01	-5.9572E+00	1.8200E+01	-5.8514E+00	1.6800E+01	-5.6182E+00	1.8200E+01	-5.1406E+00
-6.2502E+00	3.5000E+01	-6.1892E+00	3.5000E+01	-6.0635E+00	1.6800E+01	-6.0058E+00	1.8200E+01	-5.9006E+00	1.6800E+01	-5.6687E+00	1.8200E+01	-5.1940E+00

Arg 7	Curve 7	Arg 8	Curve 8	Arg 9	Curve 9	Arg 10	Curve 10	Arg 11	Curve 11	Arg 12	Curve 12	Arg 13
-6.2972E+00	3.5000E+01	-6.2365E+00	3.5000E+01	-6.1115E+00	1.6800E+01	-6.0541E+00	1.8200E+01	-5.9495E+00	1.6800E+01	-5.7189E+00	1.8200E+01	-5.2470E+00
-6.3439E+00	3.5000E+01	-6.2836E+00	3.5000E+01	-6.1592E+00	1.6800E+01	-6.1021E+00	1.8200E+01	-5.9981E+00	1.6800E+01	-5.7688E+00	1.8200E+01	-5.2997E+00
-6.3905E+00	3.5000E+01	-6.3304E+00	3.5000E+01	-6.2067E+00	1.6800E+01	-6.1499E+00	1.8200E+01	-6.0464E+00	1.6800E+01	-5.8184E+00	1.8200E+01	-5.3520E+00
-6.4367E+00	3.5000E+01	-6.3770E+00	3.5000E+01	-6.2539E+00	1.6800E+01	-6.1975E+00	1.8200E+01	-6.0945E+00	1.6800E+01	-5.8677E+00	1.8200E+01	-5.4041E+00
-6.4828E+00	3.5000E+01	-6.4233E+00	3.5000E+01	-6.3009E+00	1.6800E+01	-6.2447E+00	1.8200E+01	-6.1423E+00	1.6800E+01	-5.9167E+00	1.8200E+01	-5.4558E+00
-6.5286E+00	3.5000E+01	-6.4695E+00	3.5000E+01	-6.3477E+00	1.6800E+01	-6.2918E+00	1.8200E+01	-6.1899E+00	1.6800E+01	-5.9655E+00	1.8200E+01	-5.5072E+00
-6.5742E+00	3.5000E+01	-6.5154E+00	3.5000E+01	-6.3942E+00	1.6800E+01	-6.3386E+00	1.8200E+01	-6.2372E+00	1.6800E+01	-6.0140E+00	1.8200E+01	-5.5583E+00
-6.6196E+00	3.5000E+01	-6.5610E+00	3.5000E+01	-6.4404E+00	1.6800E+01	-6.3851E+00	1.8200E+01	-6.2843E+00	1.6800E+01	-6.0623E+00	1.8200E+01	-5.6091E+00
-6.6648E+00	3.5000E+01	-6.6065E+00	3.5000E+01	-6.4865E+00	1.6800E+01	-6.4314E+00	1.8200E+01	-6.3311E+00	1.6800E+01	-6.1103E+00	1.8200E+01	-5.6596E+00
-6.7097E+00	3.5000E+01	-6.6517E+00	3.5000E+01	-6.5323E+00	1.6800E+01	-6.4775E+00	1.8200E+01	-6.3777E+00	1.6800E+01	-6.1580E+00	1.8200E+01	-5.7099E+00
-6.7544E+00	3.5000E+01	-6.6967E+00	3.5000E+01	-6.5779E+00	1.6800E+01	-6.5234E+00	1.8200E+01	-6.4240E+00	1.6800E+01	-6.2055E+00	1.8200E+01	-5.7598E+00
-6.7990E+00	3.5000E+01	-6.7415E+00	3.5000E+01	-6.6232E+00	1.6800E+01	-6.5690E+00	1.8200E+01	-6.4702E+00	1.6800E+01	-6.2527E+00	1.8200E+01	-5.8095E+00
-6.8433E+00	3.5000E+01	-6.7861E+00	3.5000E+01	-6.6684E+00	1.6800E+01	-6.6144E+00	1.8200E+01	-6.5161E+00	1.6800E+01	-6.2997E+00	1.8200E+01	-5.8588E+00
-6.8874E+00	3.5000E+01	-6.8304E+00	3.5000E+01	-6.7133E+00	1.6800E+01	-6.6596E+00	1.8200E+01	-6.5617E+00	1.6800E+01	-6.3465E+00	1.8200E+01	-5.9079E+00
-6.9313E+00	3.5000E+01	-6.8746E+00	3.5000E+01	-6.7580E+00	1.6800E+01	-6.7046E+00	1.8200E+01	-6.6072E+00	1.6800E+01	-6.3930E+00	1.8200E+01	-5.9568E+00
-6.9749E+00	3.5000E+01	-6.9185E+00	3.5000E+01	-6.8025E+00	1.6800E+01	-6.7493E+00	1.8200E+01	-6.6524E+00	1.6800E+01	-6.4393E+00	1.8200E+01	-6.0053E+00
-7.0184E+00	3.5000E+01	-6.9623E+00	3.5000E+01	-6.8468E+00	1.6800E+01	-6.7938E+00	1.8200E+01	-6.6974E+00	1.6800E+01	-6.4853E+00	1.8200E+01	-6.0536E+00
-7.0617E+00	3.5000E+01	-7.0058E+00	3.5000E+01	-6.8909E+00	1.6800E+01	-6.8382E+00	1.8200E+01	-6.7422E+00	1.6800E+01	-6.5311E+00	1.8200E+01	-6.1017E+00
-7.1048E+00	3.5000E+01	-7.0492E+00	3.5000E+01	-6.9348E+00	1.6800E+01	-6.8823E+00	1.8200E+01	-6.7867E+00	1.6800E+01	-6.5767E+00	1.8200E+01	-6.1494E+00
-7.1477E+00	3.5000E+01	-7.0924E+00	3.5000E+01	-6.9784E+00	1.6800E+01	-6.9262E+00	1.8200E+01	-6.8311E+00	1.6800E+01	-6.6221E+00	1.8200E+01	-6.1970E+00
-7.1905E+00	3.5000E+01	-7.1353E+00	3.5000E+01	-7.0219E+00	1.6800E+01	-6.9699E+00	1.8200E+01	-6.8753E+00	1.6800E+01	-6.6673E+00	1.8200E+01	-6.2443E+00
-7.2330E+00	3.5000E+01	-7.1781E+00	3.5000E+01	-7.0652E+00	1.6800E+01	-7.0134E+00	1.8200E+01	-6.9192E+00	1.6800E+01	-6.7122E+00	1.8200E+01	-6.2913E+00
-7.2753E+00	3.5000E+01	-7.2207E+00	3.5000E+01	-7.1083E+00	1.6800E+01	-7.0568E+00	1.8200E+01	-6.9629E+00	1.6800E+01	-6.7569E+00	1.8200E+01	-6.3381E+00
-7.3175E+00	3.5000E+01	-7.2631E+00	3.5000E+01	-7.1512E+00	1.6800E+01	-7.0999E+00	1.8200E+01	-7.0065E+00	1.6800E+01	-6.8014E+00	1.8200E+01	-6.3846E+00
-7.3595E+00	3.5000E+01	-7.3053E+00	3.5000E+01	-7.1939E+00	1.6800E+01	-7.1428E+00	1.8200E+01	-7.0498E+00	1.6800E+01	-6.8457E+00	1.8200E+01	-6.4310E+00
-7.4013E+00	3.5000E+01	-7.3473E+00	3.5000E+01	-7.2364E+00	1.6800E+01	-7.1856E+00	1.8200E+01	-7.0930E+00	1.6800E+01	-6.8898E+00	1.8200E+01	-6.4771E+00
-7.4429E+00	3.5000E+01	-7.3892E+00	3.5000E+01	-7.2787E+00	1.6800E+01	-7.2281E+00	1.8200E+01	-7.1360E+00	1.6800E+01	-6.9337E+00	1.8200E+01	-6.5229E+00
-7.4843E+00	3.5000E+01	-7.4308E+00	3.5000E+01	-7.3208E+00	1.6800E+01	-7.2705E+00	1.8200E+01	-7.1787E+00	1.6800E+01	-6.9773E+00	1.8200E+01	-6.5685E+00
-7.5256E+00	3.5000E+01	-7.4723E+00	3.5000E+01	-7.3628E+00	1.6800E+01	-7.3126E+00	1.8200E+01	-7.2213E+00	1.6800E+01	-7.0208E+00	1.8200E+01	-6.6140E+00
-7.5667E+00	3.5000E+01	-7.5136E+00	3.5000E+01	-7.4046E+00	1.6800E+01	-7.3546E+00	1.8200E+01	-7.2637E+00	1.6800E+01	-7.0641E+00	1.8200E+01	-6.6591E+00
-7.6076E+00	3.5000E+01	-7.5548E+00	3.5000E+01	-7.4462E+00	1.6800E+01	-7.3965E+00	1.8200E+01	-7.3059E+00	1.6800E+01	-7.1072E+00	1.8200E+01	-6.7041E+00
-7.6484E+00	3.5000E+01	-7.5958E+00	3.5000E+01	-7.4876E+00	1.6800E+01	-7.4381E+00	1.8200E+01	-7.3479E+00	1.6800E+01	-7.1501E+00	1.8200E+01	-6.7489E+00
-7.6890E+00	3.5000E+01	-7.6366E+00	3.5000E+01	-7.5289E+00	1.6800E+01	-7.4796E+00	1.8200E+01	-7.3898E+00	1.6800E+01	-7.1928E+00	1.8200E+01	-6.7934E+00
-7.7294E+00	3.5000E+01	-7.6772E+00	3.5000E+01	-7.5700E+00	1.6800E+01	-7.5209E+00	1.8200E+01	-7.4315E+00	1.6800E+01	-7.2353E+00	1.8200E+01	-6.8377E+00
-7.7697E+00	3.5000E+01	-7.7177E+00	3.5000E+01	-7.6109E+00	1.6800E+01	-7.5620E+00	1.8200E+01	-7.4729E+00	1.6800E+01	-7.2776E+00	1.8200E+01	-6.8819E+00
-7.8098E+00	3.5000E+01	-7.7580E+00	3.5000E+01	-7.6516E+00	1.6800E+01	-7.6029E+00	1.8200E+01	-7.5143E+00	1.6800E+01	-7.3198E+00	1.8200E+01	-6.9258E+00
-7.8498E+00	3.5000E+01	-7.7982E+00	3.5000E+01	-7.6922E+00	1.6800E+01	-7.6437E+00	1.8200E+01	-7.5554E+00	1.6800E+01	-7.3618E+00	1.8200E+01	-6.9695E+00
-7.8895E+00	3.5000E+01	-7.8382E+00	3.5000E+01	-7.7326E+00	1.6800E+01	-7.6843E+00	1.8200E+01	-7.5964E+00	1.6800E+01	-7.4036E+00	1.8200E+01	-7.0130E+00
-7.9292E+00	3.5000E+01	-7.8780E+00	3.5000E+01	-7.7729E+00	1.6800E+01	-7.7248E+00	1.8200E+01	-7.6372E+00	1.6800E+01	-7.4452E+00	1.8200E+01	-7.0563E+00
-7.9687E+00	3.5000E+01	-7.9177E+00	3.5000E+01	-7.8130E+00	1.6800E+01	-7.7651E+00	1.8200E+01	-7.6778E+00	1.6800E+01	-7.4866E+00	1.8200E+01	-7.0995E+00
-8.0080E+00	3.5000E+01	-7.9572E+00	3.5000E+01	-7.8529E+00	1.6800E+01	-7.8052E+00	1.8200E+01	-7.7183E+00	1.6800E+01	-7.5279E+00	1.8200E+01	-7.1424E+00
-8.0472E+00	3.5000E+01	-7.9966E+00	3.5000E+01	-7.8927E+00	1.6800E+01	-7.8452E+00	1.8200E+01	-7.7586E+00	1.6800E+01	-7.5690E+00	1.8200E+01	-7.1851E+00
-8.0862E+00	3.5000E+01	-8.0358E+00	3.5000E+01	-7.9323E+00	1.6800E+01	-7.8850E+00	1.8200E+01	-7.7988E+00	1.6800E+01	-7.6099E+00	1.8200E+01	-7.2277E+00
-8.1251E+00	3.5000E+01	-8.0749E+00	3.5000E+01	-7.9718E+00	1.6800E+01	-7.9246E+00	1.8200E+01	-7.8388E+00	1.6800E+01	-7.6506E+00	1.8200E+01	-7.2700E+00
-8.1638E+00	3.5000E+01	-8.1138E+00	3.5000E+01	-8.0111E+00	1.6800E+01	-7.9641E+00	1.8200E+01	-7.8786E+00	1.6800E+01	-7.6912E+00	1.8200E+01	-7.3122E+00
-8.2024E+00	3.5000E+01	-8.1526E+00	3.5000E+01	-8.0503E+00	1.6800E+01	-8.0035E+00	1.8200E+01	-7.9183E+00	1.6800E+01	-7.7316E+00	1.8200E+01	-7.3542E+00
-8.2409E+00	3.5000E+01	-8.1912E+00	3.5000E+01	-8.0893E+00	1.6800E+01	-8.0427E+00	1.8200E+01	-7.9578E+00	1.6800E+01	-7.7719E+00	1.8200E+01	-7.3960E+00
-8.2792E+00	3.5000E+01	-8.2297E+00	3.5000E+01	-8.1282E+00	1.6800E+01	-8.0817E+00	1.8200E+01	-7.9972E+00	1.6800E+01	-7.8120E+00	1.8200E+01	-7.4377E+00
-8.3173E+00	3.5000E+01	-8.2681E+00	3.5000E+01	-8.1669E+00	1.6800E+01	-8.1206E+00	1.8200E+01	-8.0364E+00	1.6800E+01	-7.8519E+00	1.8200E+01	-7.4792E+00
-8.3554E+00	3.5000E+01	-8.3063E+00	3.5000E+01	-8.2055E+00	1.6800E+01	-8.1594E+00	1.8200E+01	-8.0755E+00	1.6800E+01	-7.8917E+00	1.8200E+01	-7.5204E+00
-8.3933E+00	3.5000E+01	-8.3444E+00	3.5000E+01	-8.2439E+00	1.6800E+01	-8.1980E+00	1.8200E+01	-8.1144E+00	1.6800E+01	-7.9314E+00	1.8200E+01	-7.5616E+00
-8.4310E+00	3.5000E+01	-8.3823E+00	3.5000E+01	-8.2822E+00	1.6800E+01	-8.2365E+00	1.8200E+01	-8.1532E+00	1.6800E+01	-7.9708E+00	1.8200E+01	-7.6025E+00

Arg 7	Curve 7	Arg 8	Curve 8	Arg 9	Curve 9	Arg 10	Curve 10	Arg 11	Curve 11	Arg 12	Curve 12	Arg 13
-8.4686E+00	3.5000E+01	-8.4201E+00	3.5000E+01	-8.3204E+00	1.6800E+01	-8.2748E+00	1.8200E+01	-8.1918E+00	1.6800E+01	-8.0102E+00	1.8200E+01	-7.6433E+00
-8.5061E+00	3.5000E+01	-8.4577E+00	3.5000E+01	-8.3584E+00	1.6800E+01	-8.3130E+00	1.8200E+01	-8.2303E+00	1.6800E+01	-8.0493E+00	1.8200E+01	-7.6839E+00
-8.5435E+00	3.5000E+01	-8.4953E+00	3.5000E+01	-8.3963E+00	1.6800E+01	-8.3510E+00	1.8200E+01	-8.2687E+00	1.6800E+01	-8.0883E+00	1.8200E+01	-7.7244E+00
-8.5807E+00	3.5000E+01	-8.5327E+00	3.5000E+01	-8.4340E+00	1.6800E+01	-8.3889E+00	1.8200E+01	-8.3069E+00	1.6800E+01	-8.1272E+00	1.8200E+01	-7.7647E+00
-8.6178E+00	3.5000E+01	-8.5699E+00	3.5000E+01	-8.4716E+00	1.6800E+01	-8.4267E+00	1.8200E+01	-8.3449E+00	1.6800E+01	-8.1660E+00	1.8200E+01	-7.8048E+00
-8.6547E+00	3.5000E+01	-8.6070E+00	3.5000E+01	-8.5091E+00	1.6800E+01	-8.4643E+00	1.8200E+01	-8.3829E+00	1.6800E+01	-8.2045E+00	1.8200E+01	-7.8448E+00
-8.6916E+00	3.5000E+01	-8.6440E+00	3.5000E+01	-8.5465E+00	1.6800E+01	-8.5018E+00	1.8200E+01	-8.4206E+00	1.6800E+01	-8.2430E+00	1.8200E+01	-7.8846E+00
-8.7283E+00	3.5000E+01	-8.6809E+00	3.5000E+01	-8.5837E+00	1.6800E+01	-8.5392E+00	1.8200E+01	-8.4583E+00	1.6800E+01	-8.2813E+00	1.8200E+01	-7.9242E+00
-8.7649E+00	3.5000E+01	-8.7177E+00	3.5000E+01	-8.6207E+00	1.6800E+01	-8.5764E+00	1.8200E+01	-8.4958E+00	1.6800E+01	-8.3194E+00	1.8200E+01	-7.9637E+00
-8.8013E+00	3.5000E+01	-8.7543E+00	3.5000E+01	-8.6577E+00	1.6800E+01	-8.6135E+00	1.8200E+01	-8.5332E+00	1.6800E+01	-8.3575E+00	1.8200E+01	-8.0031E+00
-8.8377E+00	3.5000E+01	-8.7908E+00	3.5000E+01	-8.6945E+00	1.6800E+01	-8.6505E+00	1.8200E+01	-8.5705E+00	1.6800E+01	-8.3953E+00	1.8200E+01	-8.0423E+00
-8.8739E+00	3.5000E+01	-8.8271E+00	3.5000E+01	-8.7312E+00	1.6800E+01	-8.6874E+00	1.8200E+01	-8.6076E+00	1.6800E+01	-8.4331E+00	1.8200E+01	-8.0813E+00
-8.9100E+00	3.5000E+01	-8.8634E+00	3.5000E+01	-8.7678E+00	1.6800E+01	-8.7241E+00	1.8200E+01	-8.6446E+00	1.6800E+01	-8.4707E+00	1.8200E+01	-8.1202E+00
-8.9460E+00	3.5000E+01	-8.8995E+00	3.5000E+01	-8.8042E+00	1.6800E+01	-8.7607E+00	1.8200E+01	-8.6815E+00	1.6800E+01	-8.5082E+00	1.8200E+01	-8.1590E+00
-8.9818E+00	3.5000E+01	-8.9355E+00	3.5000E+01	-8.8406E+00	1.6800E+01	-8.7971E+00	1.8200E+01	-8.7182E+00	1.6800E+01	-8.5455E+00	1.8200E+01	-8.1976E+00
-9.0176E+00	3.5000E+01	-8.9714E+00	3.5000E+01	-8.8768E+00	1.6800E+01	-8.8335E+00	1.8200E+01	-8.7548E+00	1.6800E+01	-8.5827E+00	1.8200E+01	-8.2361E+00
-9.0532E+00	3.5000E+01	-9.0072E+00	3.5000E+01	-8.9129E+00	1.6800E+01	-8.8697E+00	1.8200E+01	-8.7913E+00	1.6800E+01	-8.6198E+00	1.8200E+01	-8.2744E+00
-9.0887E+00	3.5000E+01	-9.0429E+00	3.5000E+01	-8.9488E+00	1.6800E+01	-8.9058E+00	1.8200E+01	-8.8277E+00	1.6800E+01	-8.6568E+00	1.8200E+01	-8.3126E+00
-9.1241E+00	3.5000E+01	-9.0784E+00	3.5000E+01	-8.9847E+00	1.6800E+01	-8.9418E+00	1.8200E+01	-8.8639E+00	1.6800E+01	-8.6936E+00	1.8200E+01	-8.3506E+00
-9.1594E+00	3.5000E+01	-9.1138E+00	3.5000E+01	-9.0204E+00	1.6800E+01	-8.9777E+00	1.8200E+01	-8.9001E+00	1.6800E+01	-8.7303E+00	1.8200E+01	-8.3885E+00
-9.1945E+00	3.5000E+01	-9.1491E+00	3.5000E+01	-9.0560E+00	1.6800E+01	-9.0134E+00	1.8200E+01	-8.9361E+00	1.6800E+01	-8.7669E+00	1.8200E+01	-8.4263E+00
-9.2296E+00	3.5000E+01	-9.1843E+00	3.5000E+01	-9.0915E+00	1.6800E+01	-9.0491E+00	1.8200E+01	-8.9720E+00	1.6800E+01	-8.8033E+00	1.8200E+01	-8.4639E+00
-9.2645E+00	3.5000E+01	-9.2194E+00	3.5000E+01	-9.1269E+00	1.6800E+01	-9.0846E+00	1.8200E+01	-9.0077E+00	1.6800E+01	-8.8397E+00	1.8200E+01	-8.5014E+00
-9.2994E+00	3.5000E+01	-9.2544E+00	3.5000E+01	-9.1622E+00	1.6800E+01	-9.1200E+00	1.8200E+01	-9.0434E+00	1.6800E+01	-8.8759E+00	1.8200E+01	-8.5388E+00
-9.3341E+00	3.5000E+01	-9.2893E+00	3.5000E+01	-9.1973E+00	1.6800E+01	-9.1553E+00	1.8200E+01	-9.0789E+00	1.6800E+01	-8.9120E+00	1.8200E+01	-8.5760E+00
-9.3687E+00	3.5000E+01	-9.3240E+00	3.5000E+01	-9.2324E+00	1.6800E+01	-9.1905E+00	1.8200E+01	-9.1144E+00	1.6800E+01	-8.9479E+00	1.8200E+01	-8.6132E+00
-9.4032E+00	3.5000E+01	-9.3587E+00	3.5000E+01	-9.2673E+00	1.6800E+01	-9.2256E+00	1.8200E+01	-9.1497E+00	1.6800E+01	-8.9838E+00	1.8200E+01	-8.6501E+00
-9.4376E+00	3.5000E+01	-9.3932E+00	3.5000E+01	-9.3021E+00	1.6800E+01	-9.2605E+00	1.8200E+01	-9.1849E+00	1.6800E+01	-9.0195E+00	1.8200E+01	-8.6870E+00
-9.4719E+00	3.5000E+01	-9.4277E+00	3.5000E+01	-9.3369E+00	1.6800E+01	-9.2954E+00	1.8200E+01	-9.2199E+00	1.6800E+01	-9.0551E+00	1.8200E+01	-8.7237E+00
-9.5061E+00	3.5000E+01	-9.4620E+00	3.5000E+01	-9.3715E+00	1.6800E+01	-9.3301E+00	1.8200E+01	-9.2549E+00	1.6800E+01	-9.0906E+00	1.8200E+01	-8.7603E+00
-9.5402E+00	3.5000E+01	-9.4962E+00	3.5000E+01	-9.4060E+00	1.6800E+01	-9.3647E+00	1.8200E+01	-9.2898E+00	1.6800E+01	-9.1260E+00	1.8200E+01	-8.7968E+00
-9.5742E+00	3.5000E+01	-9.5304E+00	3.5000E+01	-9.4404E+00	1.6800E+01	-9.3993E+00	1.8200E+01	-9.3245E+00	1.6800E+01	-9.1613E+00	1.8200E+01	-8.8331E+00
-9.6081E+00	3.5000E+01	-9.5644E+00	3.5000E+01	-9.4747E+00	1.6800E+01	-9.4337E+00	1.8200E+01	-9.3592E+00	1.6800E+01	-9.1965E+00	1.8200E+01	-8.8694E+00
-9.6419E+00	3.5000E+01	-9.5983E+00	3.5000E+01	-9.5089E+00	1.6800E+01	-9.4680E+00	1.8200E+01	-9.3937E+00	1.6800E+01	-9.2315E+00	1.8200E+01	-8.9055E+00
-9.6756E+00	3.5000E+01	-9.6321E+00	3.5000E+01	-9.5430E+00	1.6800E+01	-9.5022E+00	1.8200E+01	-9.4282E+00	1.6800E+01	-9.2664E+00	1.8200E+01	-8.9415E+00
-9.7092E+00	3.5000E+01	-9.6658E+00	3.5000E+01	-9.5769E+00	1.6800E+01	-9.5363E+00	1.8200E+01	-9.4625E+00	1.6800E+01	-9.3013E+00	1.8200E+01	-8.9773E+00
-9.7427E+00	3.5000E+01	-9.6995E+00	3.5000E+01	-9.6108E+00	1.6800E+01	-9.5703E+00	1.8200E+01	-9.4967E+00	1.6800E+01	-9.3360E+00	1.8200E+01	-9.0131E+00
-9.7761E+00	3.5000E+01	-9.7330E+00	3.5000E+01	-9.6446E+00	1.6800E+01	-9.6042E+00	1.8200E+01	-9.5309E+00	1.6800E+01	-9.3706E+00	1.8200E+01	-9.0487E+00
-9.8094E+00	3.5000E+01	-9.7664E+00	3.5000E+01	-9.6783E+00	1.6800E+01	-9.6380E+00	1.8200E+01	-9.5649E+00	1.6800E+01	-9.4051E+00	1.8200E+01	-9.0842E+00
-9.8426E+00	3.5000E+01	-9.7997E+00	3.5000E+01	-9.7119E+00	1.6800E+01	-9.6717E+00	1.8200E+01	-9.5988E+00	1.6800E+01	-9.4395E+00	1.8200E+01	-9.1197E+00
-9.8757E+00	3.5000E+01	-9.8330E+00	3.5000E+01	-9.7454E+00	1.6800E+01	-9.7053E+00	1.8200E+01	-9.6326E+00	1.6800E+01	-9.4738E+00	1.8200E+01	-9.1550E+00
-9.9087E+00	3.5000E+01	-9.8661E+00	3.5000E+01	-9.7788E+00	1.6800E+01	-9.7388E+00	1.8200E+01	-9.6663E+00	1.6800E+01	-9.5080E+00	1.8200E+01	-9.1901E+00
-9.9416E+00	3.5000E+01	-9.8992E+00	3.5000E+01	-9.8120E+00	1.6800E+01	-9.7723E+00	1.8200E+01	-9.7000E+00	1.6800E+01	-9.5421E+00	1.8200E+01	-9.2252E+00
-9.9745E+00	3.5000E+01	-9.9321E+00	3.5000E+01	-9.8452E+00	1.6800E+01	-9.8056E+00	1.8200E+01	-9.7335E+00	1.6800E+01	-9.5761E+00	1.8200E+01	-9.2602E+00
-1.0007E+01	3.5000E+01	-9.9650E+00	3.5000E+01	-9.8783E+00	1.6800E+01	-9.8388E+00	1.8200E+01	-9.7669E+00	1.6800E+01	-9.6100E+00	1.8200E+01	-9.2950E+00
-1.0040E+01	3.5000E+01	-9.9977E+00	3.5000E+01	-9.9114E+00	1.6800E+01	-9.8719E+00	1.8200E+01	-9.8002E+00	1.6800E+01	-9.6438E+00	1.8200E+01	-9.3298E+00
-1.0072E+01	3.5000E+01	-1.0030E+01	3.5000E+01	-9.9443E+00	1.6800E+01	-9.9049E+00	1.8200E+01	-9.8335E+00	1.6800E+01	-9.6775E+00	1.8200E+01	-9.3644E+00
-1.0105E+01	3.5000E+01	-1.0063E+01	3.5000E+01	-9.9771E+00	1.6800E+01	-9.9379E+00	1.8200E+01	-9.8666E+00	1.6800E+01	-9.7110E+00	1.8200E+01	-9.3989E+00
-1.0137E+01	3.5000E+01	-1.0095E+01	3.5000E+01	-1.0010E+01	1.6800E+01	-9.9707E+00	1.8200E+01	-9.8996E+00	1.6800E+01	-9.7445E+00	1.8200E+01	-9.4333E+00
-1.0170E+01	3.5000E+01	-1.0128E+01	3.5000E+01	-1.0042E+01	1.6800E+01	-1.0003E+01	1.8200E+01	-9.9326E+00	1.6800E+01	-9.7779E+00	1.8200E+01	-9.4677E+00
-1.0202E+01	3.5000E+01	-1.0160E+01	3.5000E+01	-1.0075E+01	1.6800E+01	-1.0036E+01	1.8200E+01	-9.9655E+00	1.6800E+01	-9.8112E+00	1.8200E+01	-9.5019E+00
-1.0234E+01	3.5000E+01	-1.0192E+01	3.5000E+01	-1.0107E+01	1.6800E+01	-1.0069E+01	1.8200E+01	-9.9982E+00	1.6800E+01	-9.8444E+00	1.8200E+01	-9.5360E+00

Arg 7	Curve 7	Arg 8	Curve 8	Arg 9	Curve 9	Arg 10	Curve 10	Arg 11	Curve 11	Arg 12	Curve 12	Arg 13
-1.0266E+01	3.5000E+01	-1.0225E+01	3.5000E+01	-1.0140E+01	1.6800E+01	-1.0101E+01	1.8200E+01	-1.0031E+01	1.6800E+01	-9.8775E+00	1.8200E+01	-9.5700E+00
-1.0298E+01	3.5000E+01	-1.0257E+01	3.5000E+01	-1.0172E+01	1.6800E+01	-1.0134E+01	1.8200E+01	-1.0063E+01	1.6800E+01	-9.9105E+00	1.8200E+01	-9.6039E+00
-1.0330E+01	3.5000E+01	-1.0289E+01	3.5000E+01	-1.0204E+01	1.6800E+01	-1.0166E+01	1.8200E+01	-1.0096E+01	1.6800E+01	-9.9434E+00	1.8200E+01	-9.6377E+00
-1.0361E+01	3.5000E+01	-1.0320E+01	3.5000E+01	-1.0236E+01	1.6800E+01	-1.0198E+01	1.8200E+01	-1.0128E+01	1.6800E+01	-9.9763E+00	1.8200E+01	-9.6714E+00
-1.0393E+01	3.5000E+01	-1.0352E+01	3.5000E+01	-1.0268E+01	1.6800E+01	-1.0230E+01	1.8200E+01	-1.0161E+01	1.6800E+01	-1.0009E+01	1.8200E+01	-9.7050E+00
-1.0425E+01	3.5000E+01	-1.0384E+01	3.5000E+01	-1.0300E+01	1.6800E+01	-1.0262E+01	1.8200E+01	-1.0193E+01	1.6800E+01	-1.0042E+01	1.8200E+01	-9.7385E+00
-1.0456E+01	3.5000E+01	-1.0416E+01	3.5000E+01	-1.0332E+01	1.6800E+01	-1.0294E+01	1.8200E+01	-1.0225E+01	1.6800E+01	-1.0074E+01	1.8200E+01	-9.7719E+00
-1.0488E+01	3.5000E+01	-1.0447E+01	3.5000E+01	-1.0364E+01	1.6800E+01	-1.0326E+01	1.8200E+01	-1.0257E+01	1.6800E+01	-1.0107E+01	1.8200E+01	-9.8052E+00
-1.0519E+01	3.5000E+01	-1.0479E+01	3.5000E+01	-1.0396E+01	1.6800E+01	-1.0358E+01	1.8200E+01	-1.0289E+01	1.6800E+01	-1.0139E+01	1.8200E+01	-9.8384E+00
-1.0550E+01	3.5000E+01	-1.0510E+01	3.5000E+01	-1.0427E+01	1.6800E+01	-1.0389E+01	1.8200E+01	-1.0321E+01	1.6800E+01	-1.0171E+01	1.8200E+01	-9.8716E+00
-1.0581E+01	3.5000E+01	-1.0541E+01	3.5000E+01	-1.0459E+01	1.6800E+01	-1.0421E+01	1.8200E+01	-1.0353E+01	1.6800E+01	-1.0204E+01	1.8200E+01	-9.9046E+00
-1.0613E+01	3.5000E+01	-1.0572E+01	3.5000E+01	-1.0490E+01	1.6800E+01	-1.0453E+01	1.8200E+01	-1.0384E+01	1.6800E+01	-1.0236E+01	1.8200E+01	-9.9375E+00
-1.0644E+01	3.5000E+01	-1.0604E+01	3.5000E+01	-1.0522E+01	1.6800E+01	-1.0484E+01	1.8200E+01	-1.0416E+01	1.6800E+01	-1.0268E+01	1.8200E+01	-9.9704E+00
-1.0675E+01	3.5000E+01	-1.0635E+01	3.5000E+01	-1.0553E+01	1.6800E+01	-1.0515E+01	1.8200E+01	-1.0448E+01	1.6800E+01	-1.0300E+01	1.8200E+01	-1.0003E+01
-1.0705E+01	3.5000E+01	-1.0666E+01	3.5000E+01	-1.0584E+01	1.6800E+01	-1.0547E+01	1.8200E+01	-1.0479E+01	1.6800E+01	-1.0331E+01	1.8200E+01	-1.0036E+01
-1.0736E+01	3.5000E+01	-1.0697E+01	3.5000E+01	-1.0615E+01	1.6800E+01	-1.0578E+01	1.8200E+01	-1.0510E+01	1.6800E+01	-1.0363E+01	1.8200E+01	-1.0068E+01
-1.0767E+01	3.5000E+01	-1.0727E+01	3.5000E+01	-1.0646E+01	1.6800E+01	-1.0609E+01	1.8200E+01	-1.0542E+01	1.6800E+01	-1.0395E+01	1.8200E+01	-1.0101E+01
-1.0798E+01	3.5000E+01	-1.0758E+01	3.5000E+01	-1.0677E+01	1.6800E+01	-1.0640E+01	1.8200E+01	-1.0573E+01	1.6800E+01	-1.0426E+01	1.8200E+01	-1.0133E+01
-1.0828E+01	3.5000E+01	-1.0789E+01	3.5000E+01	-1.0708E+01	1.6800E+01	-1.0671E+01	1.8200E+01	-1.0604E+01	1.6800E+01	-1.0458E+01	1.8200E+01	-1.0166E+01
-1.0859E+01	3.5000E+01	-1.0819E+01	3.5000E+01	-1.0739E+01	1.6800E+01	-1.0702E+01	1.8200E+01	-1.0635E+01	1.6800E+01	-1.0489E+01	1.8200E+01	-1.0198E+01
-1.0889E+01	3.5000E+01	-1.0850E+01	3.5000E+01	-1.0769E+01	1.6800E+01	-1.0733E+01	1.8200E+01	-1.0666E+01	1.6800E+01	-1.0521E+01	1.8200E+01	-1.0230E+01
-1.0919E+01	3.5000E+01	-1.0880E+01	3.5000E+01	-1.0800E+01	1.6800E+01	-1.0763E+01	1.8200E+01	-1.0697E+01	1.6800E+01	-1.0552E+01	1.8200E+01	-1.0262E+01
-1.0950E+01	3.5000E+01	-1.0911E+01	3.5000E+01	-1.0831E+01	1.6800E+01	-1.0794E+01	1.8200E+01	-1.0728E+01	1.6800E+01	-1.0583E+01	1.8200E+01	-1.0294E+01
-1.0980E+01	3.5000E+01	-1.0941E+01	3.5000E+01	-1.0861E+01	1.6800E+01	-1.0825E+01	1.8200E+01	-1.0759E+01	1.6800E+01	-1.0614E+01	1.8200E+01	-1.0326E+01
-1.1010E+01	3.5000E+01	-1.0971E+01	3.5000E+01	-1.0892E+01	1.6800E+01	-1.0855E+01	1.8200E+01	-1.0789E+01	1.6800E+01	-1.0645E+01	1.8200E+01	-1.0357E+01
-1.1040E+01	3.5000E+01	-1.1001E+01	3.5000E+01	-1.0922E+01	1.6800E+01	-1.0886E+01	1.8200E+01	-1.0820E+01	1.6800E+01	-1.0676E+01	1.8200E+01	-1.0389E+01
-1.1070E+01	3.5000E+01	-1.1031E+01	3.5000E+01	-1.0952E+01	1.6800E+01	-1.0916E+01	1.8200E+01	-1.0850E+01	1.6800E+01	-1.0707E+01	1.8200E+01	-1.0421E+01
-1.1100E+01	3.5000E+01	-1.1061E+01	3.5000E+01	-1.0982E+01	1.6800E+01	-1.0946E+01	1.8200E+01	-1.0881E+01	1.6800E+01	-1.0738E+01	1.8200E+01	-1.0452E+01
-1.1130E+01	3.5000E+01	-1.1091E+01	3.5000E+01	-1.1012E+01	1.6800E+01	-1.0976E+01	1.8200E+01	-1.0911E+01	1.6800E+01	-1.0769E+01	1.8200E+01	-1.0484E+01
-1.1160E+01	3.5000E+01	-1.1121E+01	3.5000E+01	-1.1043E+01	1.6800E+01	-1.1007E+01	1.8200E+01	-1.0941E+01	1.6800E+01	-1.0799E+01	1.8200E+01	-1.0515E+01
-1.1189E+01	3.5000E+01	-1.1151E+01	3.5000E+01	-1.1072E+01	1.6800E+01	-1.1037E+01	1.8200E+01	-1.0972E+01	1.6800E+01	-1.0830E+01	1.8200E+01	-1.0546E+01
-1.1219E+01	3.5000E+01	-1.1181E+01	3.5000E+01	-1.1102E+01	1.6800E+01	-1.1067E+01	1.8200E+01	-1.1002E+01	1.6800E+01	-1.0860E+01	1.8200E+01	-1.0578E+01
-1.1248E+01	3.5000E+01	-1.1210E+01	3.5000E+01	-1.1132E+01	1.6800E+01	-1.1097E+01	1.8200E+01	-1.1032E+01	1.6800E+01	-1.0891E+01	1.8200E+01	-1.0609E+01
-1.1278E+01	3.5000E+01	-1.1240E+01	3.5000E+01	-1.1162E+01	1.6800E+01	-1.1126E+01	1.8200E+01	-1.1062E+01	1.6800E+01	-1.0921E+01	1.8200E+01	-1.0640E+01
-1.1307E+01	3.5000E+01	-1.1269E+01	3.5000E+01	-1.1192E+01	1.6800E+01	-1.1156E+01	1.8200E+01	-1.1092E+01	1.6800E+01	-1.0951E+01	1.8200E+01	-1.0671E+01
-1.1337E+01	3.5000E+01	-1.1299E+01	3.5000E+01	-1.1221E+01	1.6800E+01	-1.1186E+01	1.8200E+01	-1.1122E+01	1.6800E+01	-1.0982E+01	1.8200E+01	-1.0702E+01
-1.1366E+01	3.5000E+01	-1.1328E+01	3.5000E+01	-1.1251E+01	1.6800E+01	-1.1216E+01	1.8200E+01	-1.1151E+01	1.6800E+01	-1.1012E+01	1.8200E+01	-1.0732E+01
-1.1395E+01	3.5000E+01	-1.1358E+01	3.5000E+01	-1.1280E+01	1.6800E+01	-1.1245E+01	1.8200E+01	-1.1181E+01	1.6800E+01	-1.1042E+01	1.8200E+01	-1.0763E+01
-1.1424E+01	3.5000E+01	-1.1387E+01	3.5000E+01	-1.1310E+01	1.6800E+01	-1.1275E+01	1.8200E+01	-1.1211E+01	1.6800E+01	-1.1072E+01	1.8200E+01	-1.0794E+01
-1.1453E+01	3.5000E+01	-1.1416E+01	3.5000E+01	-1.1339E+01	1.6800E+01	-1.1304E+01	1.8200E+01	-1.1240E+01	1.6800E+01	-1.1102E+01	1.8200E+01	-1.0824E+01
-1.1482E+01	3.5000E+01	-1.1445E+01	3.5000E+01	-1.1368E+01	1.6800E+01	-1.1333E+01	1.8200E+01	-1.1270E+01	1.6800E+01	-1.1131E+01	1.8200E+01	-1.0855E+01
-1.1511E+01	3.5000E+01	-1.1474E+01	3.5000E+01	-1.1398E+01	1.6800E+01	-1.1363E+01	1.8200E+01	-1.1299E+01	1.6800E+01	-1.1161E+01	1.8200E+01	-1.0885E+01
-1.1540E+01	3.5000E+01	-1.1503E+01	3.5000E+01	-1.1427E+01	1.6800E+01	-1.1392E+01	1.8200E+01	-1.1329E+01	1.6800E+01	-1.1191E+01	1.8200E+01	-1.0916E+01
-1.1569E+01	3.5000E+01	-1.1532E+01	3.5000E+01	-1.1456E+01	1.6800E+01	-1.1421E+01	1.8200E+01	-1.1358E+01	1.6800E+01	-1.1221E+01	1.8200E+01	-1.0946E+01
-1.1598E+01	3.5000E+01	-1.1561E+01	3.5000E+01	-1.1485E+01	1.6800E+01	-1.1450E+01	1.8200E+01	-1.1387E+01	1.6800E+01	-1.1250E+01	1.8200E+01	-1.0976E+01
-1.1627E+01	3.5000E+01	-1.1590E+01	3.5000E+01	-1.1514E+01	1.6800E+01	-1.1479E+01	1.8200E+01	-1.1416E+01	1.6800E+01	-1.1280E+01	1.8200E+01	-1.1006E+01
-1.1655E+01	3.5000E+01	-1.1618E+01	3.5000E+01	-1.1543E+01	1.6800E+01	-1.1508E+01	1.8200E+01	-1.1445E+01	1.6800E+01	-1.1309E+01	1.8200E+01	-1.1036E+01
-1.1684E+01	3.5000E+01	-1.1647E+01	3.5000E+01	-1.1571E+01	1.6800E+01	-1.1537E+01	1.8200E+01	-1.1475E+01	1.6800E+01	-1.1338E+01	1.8200E+01	-1.1066E+01
-1.1712E+01	3.5000E+01	-1.1676E+01	3.5000E+01	-1.1600E+01	1.6800E+01	-1.1566E+01	1.8200E+01	-1.1503E+01	1.6800E+01	-1.1368E+01	1.8200E+01	-1.1096E+01
-1.1741E+01	3.5000E+01	-1.1704E+01	3.5000E+01	-1.1629E+01	1.6800E+01	-1.1595E+01	1.8200E+01	-1.1532E+01	1.6800E+01	-1.1397E+01	1.8200E+01	-1.1126E+01
-1.1769E+01	3.5000E+01	-1.1733E+01	3.5000E+01	-1.1658E+01	1.6800E+01	-1.1623E+01	1.8200E+01	-1.1561E+01	1.6800E+01	-1.1426E+01	1.8200E+01	-1.1156E+01
-1.1797E+01	3.5000E+01	-1.1761E+01	3.5000E+01	-1.1686E+01	1.6800E+01	-1.1652E+01	1.8200E+01	-1.1590E+01	1.6800E+01	-1.1455E+01	1.8200E+01	-1.1186E+01

Arg 7	Curve 7	Arg 8	Curve 8	Arg 9	Curve 9	Arg 10	Curve 10	Arg 11	Curve 11	Arg 12	Curve 12	Arg 13
-1.1826E+01	3.5000E+01	-1.1789E+01	3.5000E+01	-1.1715E+01	1.6800E+01	-1.1681E+01	1.8200E+01	-1.1619E+01	1.6800E+01	-1.1484E+01	1.8200E+01	-1.1215E+01
-1.1854E+01	3.5000E+01	-1.1818E+01	3.5000E+01	-1.1743E+01	1.6800E+01	-1.1709E+01	1.8200E+01	-1.1647E+01	1.6800E+01	-1.1513E+01	1.8200E+01	-1.1245E+01
-1.1882E+01	3.5000E+01	-1.1846E+01	3.5000E+01	-1.1771E+01	1.6800E+01	-1.1738E+01	1.8200E+01	-1.1676E+01	1.6800E+01	-1.1542E+01	1.8200E+01	-1.1274E+01
-1.1910E+01	3.5000E+01	-1.1874E+01	3.5000E+01	-1.1800E+01	1.6800E+01	-1.1766E+01	1.8200E+01	-1.1704E+01	1.6800E+01	-1.1571E+01	1.8200E+01	-1.1304E+01
-1.1938E+01	3.5000E+01	-1.1902E+01	3.5000E+01	-1.1828E+01	1.6800E+01	-1.1794E+01	1.8200E+01	-1.1733E+01	1.6800E+01	-1.1599E+01	1.8200E+01	-1.1333E+01
-1.1966E+01	3.5000E+01	-1.1930E+01	3.5000E+01	-1.1856E+01	1.6800E+01	-1.1822E+01	1.8200E+01	-1.1761E+01	1.6800E+01	-1.1628E+01	1.8200E+01	-1.1362E+01
-1.1994E+01	3.5000E+01	-1.1958E+01	3.5000E+01	-1.1884E+01	1.6800E+01	-1.1851E+01	1.8200E+01	-1.1790E+01	1.6800E+01	-1.1657E+01	1.8200E+01	-1.1392E+01
-1.2022E+01	3.5000E+01	-1.1986E+01	3.5000E+01	-1.1912E+01	1.6800E+01	-1.1879E+01	1.8200E+01	-1.1818E+01	1.6800E+01	-1.1685E+01	1.8200E+01	-1.1421E+01
-1.2050E+01	3.5000E+01	-1.2014E+01	3.5000E+01	-1.1940E+01	1.6800E+01	-1.1907E+01	1.8200E+01	-1.1846E+01	1.6800E+01	-1.1714E+01	1.8200E+01	-1.1450E+01
-1.2077E+01	3.5000E+01	-1.2042E+01	3.5000E+01	-1.1968E+01	1.6800E+01	-1.1935E+01	1.8200E+01	-1.1874E+01	1.6800E+01	-1.1742E+01	1.8200E+01	-1.1479E+01
-1.2105E+01	3.5000E+01	-1.2069E+01	3.5000E+01	-1.1996E+01	1.6800E+01	-1.1963E+01	1.8200E+01	-1.1902E+01	1.6800E+01	-1.1771E+01	1.8200E+01	-1.1508E+01
-1.2133E+01	3.5000E+01	-1.2097E+01	3.5000E+01	-1.2024E+01	1.6800E+01	-1.1991E+01	1.8200E+01	-1.1930E+01	1.6800E+01	-1.1799E+01	1.8200E+01	-1.1537E+01
-1.2160E+01	3.5000E+01	-1.2125E+01	3.5000E+01	-1.2052E+01	1.6800E+01	-1.2019E+01	1.8200E+01	-1.1958E+01	1.6800E+01	-1.1827E+01	1.8200E+01	-1.1566E+01
-1.2188E+01	3.5000E+01	-1.2152E+01	3.5000E+01	-1.2080E+01	1.6800E+01	-1.2046E+01	1.8200E+01	-1.1986E+01	1.6800E+01	-1.1855E+01	1.8200E+01	-1.1594E+01
-1.2215E+01	3.5000E+01	-1.2180E+01	3.5000E+01	-1.2107E+01	1.6800E+01	-1.2074E+01	1.8200E+01	-1.2014E+01	1.6800E+01	-1.1884E+01	1.8200E+01	-1.1623E+01
-1.2243E+01	3.5000E+01	-1.2207E+01	3.5000E+01	-1.2135E+01	1.6800E+01	-1.2102E+01	1.8200E+01	-1.2042E+01	1.6800E+01	-1.1912E+01	1.8200E+01	-1.1652E+01
-1.2270E+01	3.5000E+01	-1.2235E+01	3.5000E+01	-1.2162E+01	1.6800E+01	-1.2130E+01	1.8200E+01	-1.2070E+01	1.6800E+01	-1.1940E+01	1.8200E+01	-1.1680E+01
-1.2297E+01	3.5000E+01	-1.2262E+01	3.5000E+01	-1.2190E+01	1.6800E+01	-1.2157E+01	1.8200E+01	-1.2097E+01	1.6800E+01	-1.1968E+01	1.8200E+01	-1.1709E+01
-1.2324E+01	3.5000E+01	-1.2289E+01	3.5000E+01	-1.2217E+01	1.6800E+01	-1.2185E+01	1.8200E+01	-1.2125E+01	1.6800E+01	-1.1996E+01	1.8200E+01	-1.1737E+01
-1.2352E+01	3.5000E+01	-1.2317E+01	3.5000E+01	-1.2245E+01	1.6800E+01	-1.2212E+01	1.8200E+01	-1.2153E+01	1.6800E+01	-1.2023E+01	1.8200E+01	-1.1766E+01
-1.2379E+01	3.5000E+01	-1.2344E+01	3.5000E+01	-1.2272E+01	1.6800E+01	-1.2239E+01	1.8200E+01	-1.2180E+01	1.6800E+01	-1.2051E+01	1.8200E+01	-1.1794E+01
-1.2406E+01	3.5000E+01	-1.2371E+01	3.5000E+01	-1.2299E+01	1.6800E+01	-1.2267E+01	1.8200E+01	-1.2208E+01	1.6800E+01	-1.2079E+01	1.8200E+01	-1.1822E+01
-1.2433E+01	3.5000E+01	-1.2398E+01	3.5000E+01	-1.2327E+01	1.6800E+01	-1.2294E+01	1.8200E+01	-1.2235E+01	1.6800E+01	-1.2107E+01	1.8200E+01	-1.1850E+01
-1.2460E+01	3.5000E+01	-1.2425E+01	3.5000E+01	-1.2354E+01	1.6800E+01	-1.2321E+01	1.8200E+01	-1.2262E+01	1.6800E+01	-1.2134E+01	1.8200E+01	-1.1879E+01
-1.2487E+01	3.5000E+01	-1.2452E+01	3.5000E+01	-1.2381E+01	1.6800E+01	-1.2348E+01	1.8200E+01	-1.2290E+01	1.6800E+01	-1.2162E+01	1.8200E+01	-1.1907E+01
-1.2513E+01	3.5000E+01	-1.2479E+01	3.5000E+01	-1.2408E+01	1.6800E+01	-1.2376E+01	1.8200E+01	-1.2317E+01	1.6800E+01	-1.2189E+01	1.8200E+01	-1.1935E+01
-1.2540E+01	3.5000E+01	-1.2506E+01	3.5000E+01	-1.2435E+01	1.6800E+01	-1.2403E+01	1.8200E+01	-1.2344E+01	1.6800E+01	-1.2217E+01	1.8200E+01	-1.1963E+01
-1.2567E+01	3.5000E+01	-1.2533E+01	3.5000E+01	-1.2462E+01	1.6800E+01	-1.2430E+01	1.8200E+01	-1.2371E+01	1.6800E+01	-1.2244E+01	1.8200E+01	-1.1991E+01
-1.2594E+01	3.5000E+01	-1.2559E+01	3.5000E+01	-1.2489E+01	1.6800E+01	-1.2457E+01	1.8200E+01	-1.2398E+01	1.6800E+01	-1.2271E+01	1.8200E+01	-1.2018E+01
-1.2620E+01	3.5000E+01	-1.2586E+01	3.5000E+01	-1.2516E+01	1.6800E+01	-1.2484E+01	1.8200E+01	-1.2425E+01	1.6800E+01	-1.2299E+01	1.8200E+01	-1.2046E+01
-1.2647E+01	3.5000E+01	-1.2613E+01	3.5000E+01	-1.2542E+01	1.6800E+01	-1.2510E+01	1.8200E+01	-1.2452E+01	1.6800E+01	-1.2326E+01	1.8200E+01	-1.2074E+01
-1.2673E+01	3.5000E+01	-1.2639E+01	3.5000E+01	-1.2569E+01	1.6800E+01	-1.2537E+01	1.8200E+01	-1.2479E+01	1.6800E+01	-1.2353E+01	1.8200E+01	-1.2102E+01
-1.2700E+01	3.5000E+01	-1.2666E+01	3.5000E+01	-1.2596E+01	1.6800E+01	-1.2564E+01	1.8200E+01	-1.2506E+01	1.6800E+01	-1.2380E+01	1.8200E+01	-1.2129E+01
-1.2726E+01	3.5000E+01	-1.2692E+01	3.5000E+01	-1.2622E+01	1.6800E+01	-1.2591E+01	1.8200E+01	-1.2533E+01	1.6800E+01	-1.2407E+01	1.8200E+01	-1.2157E+01
-1.2753E+01	3.5000E+01	-1.2719E+01	3.5000E+01	-1.2649E+01	1.6800E+01	-1.2617E+01	1.8200E+01	-1.2560E+01	1.6800E+01	-1.2434E+01	1.8200E+01	-1.2184E+01
-1.2779E+01	3.5000E+01	-1.2745E+01	3.5000E+01	-1.2676E+01	1.6800E+01	-1.2644E+01	1.8200E+01	-1.2586E+01	1.6800E+01	-1.2461E+01	1.8200E+01	-1.2212E+01
-1.2805E+01	3.5000E+01	-1.2771E+01	3.5000E+01	-1.2702E+01	1.6800E+01	-1.2670E+01	1.8200E+01	-1.2613E+01	1.6800E+01	-1.2488E+01	1.8200E+01	-1.2239E+01
-1.2832E+01	3.5000E+01	-1.2798E+01	3.5000E+01	-1.2729E+01	1.6800E+01	-1.2697E+01	1.8200E+01	-1.2640E+01	1.6800E+01	-1.2515E+01	1.8200E+01	-1.2267E+01
-1.2858E+01	3.5000E+01	-1.2824E+01	3.5000E+01	-1.2755E+01	1.6800E+01	-1.2723E+01	1.8200E+01	-1.2666E+01	1.6800E+01	-1.2542E+01	1.8200E+01	-1.2294E+01
-1.2884E+01	3.5000E+01	-1.2850E+01	3.5000E+01	-1.2781E+01	1.6800E+01	-1.2750E+01	1.8200E+01	-1.2693E+01	1.6800E+01	-1.2568E+01	1.8200E+01	-1.2321E+01
-1.2910E+01	3.5000E+01	-1.2876E+01	3.5000E+01	-1.2808E+01	1.6800E+01	-1.2776E+01	1.8200E+01	-1.2719E+01	1.6800E+01	-1.2595E+01	1.8200E+01	-1.2348E+01
-1.2936E+01	3.5000E+01	-1.2903E+01	3.5000E+01	-1.2834E+01	1.6800E+01	-1.2802E+01	1.8200E+01	-1.2746E+01	1.6800E+01	-1.2622E+01	1.8200E+01	-1.2375E+01
-1.2962E+01	3.5000E+01	-1.2929E+01	3.5000E+01	-1.2860E+01	1.6800E+01	-1.2829E+01	1.8200E+01	-1.2772E+01	1.6800E+01	-1.2648E+01	1.8200E+01	-1.2402E+01
-1.2988E+01	3.5000E+01	-1.2955E+01	3.5000E+01	-1.2886E+01	1.6800E+01	-1.2855E+01	1.8200E+01	-1.2798E+01	1.6800E+01	-1.2675E+01	1.8200E+01	-1.2429E+01
-1.3014E+01	3.5000E+01	-1.2981E+01	3.5000E+01	-1.2912E+01	1.6800E+01	-1.2881E+01	1.8200E+01	-1.2824E+01	1.6800E+01	-1.2701E+01	1.8200E+01	-1.2456E+01
-1.3040E+01	3.5000E+01	-1.3006E+01	3.5000E+01	-1.2938E+01	1.6800E+01	-1.2907E+01	1.8200E+01	-1.2851E+01	1.6800E+01	-1.2728E+01	1.8200E+01	-1.2483E+01
-1.3066E+01	3.5000E+01	-1.3032E+01	3.5000E+01	-1.2964E+01	1.6800E+01	-1.2933E+01	1.8200E+01	-1.2877E+01	1.6800E+01	-1.2754E+01	1.8200E+01	-1.2510E+01
-1.3091E+01	3.5000E+01	-1.3058E+01	3.5000E+01	-1.2990E+01	1.6800E+01	-1.2959E+01	1.8200E+01	-1.2903E+01	1.6800E+01	-1.2781E+01	1.8200E+01	-1.2537E+01
-1.3117E+01	3.5000E+01	-1.3084E+01	3.5000E+01	-1.3016E+01	1.6800E+01	-1.2985E+01	1.8200E+01	-1.2929E+01	1.6800E+01	-1.2807E+01	1.8200E+01	-1.2564E+01
-1.3143E+01	3.5000E+01	-1.3110E+01	3.5000E+01	-1.3042E+01	1.6800E+01	-1.3011E+01	1.8200E+01	-1.2955E+01	1.6800E+01	-1.2833E+01	1.8200E+01	-1.2590E+01
-1.3168E+01	3.5000E+01	-1.3135E+01	3.5000E+01	-1.3068E+01	1.6800E+01	-1.3037E+01	1.8200E+01	-1.2981E+01	1.6800E+01	-1.2859E+01	1.8200E+01	-1.2617E+01
-1.3194E+01	3.5000E+01	-1.3161E+01	3.5000E+01	-1.3093E+01	1.6800E+01	-1.3063E+01	1.8200E+01	-1.3007E+01	1.6800E+01	-1.2885E+01	1.8200E+01	-1.2644E+01

Arg 7	Curve 7	Arg 8	Curve 8	Arg 9	Curve 9	Arg 10	Curve 10	Arg 11	Curve 11	Arg 12	Curve 12	Arg 13
-1.3219E+01	3.5000E+01	-1.3187E+01	3.5000E+01	-1.3119E+01	1.6800E+01	-1.3088E+01	1.8200E+01	-1.3033E+01	1.6800E+01	-1.2911E+01	1.8200E+01	-1.2670E+01
-1.3245E+01	3.5000E+01	-1.3212E+01	3.5000E+01	-1.3145E+01	1.6800E+01	-1.3114E+01	1.8200E+01	-1.3059E+01	1.6800E+01	-1.2938E+01	1.8200E+01	-1.2697E+01
-1.3270E+01	3.5000E+01	-1.3238E+01	3.5000E+01	-1.3170E+01	1.6800E+01	-1.3140E+01	1.8200E+01	-1.3084E+01	1.6800E+01	-1.2964E+01	1.8200E+01	-1.2723E+01
-1.3296E+01	3.5000E+01	-1.3263E+01	3.5000E+01	-1.3196E+01	1.6800E+01	-1.3165E+01	1.8200E+01	-1.3110E+01	1.6800E+01	-1.2989E+01	1.8200E+01	-1.2749E+01
-1.3321E+01	3.5000E+01	-1.3288E+01	3.5000E+01	-1.3221E+01	1.6800E+01	-1.3191E+01	1.8200E+01	-1.3136E+01	1.6800E+01	-1.3015E+01	1.8200E+01	-1.2776E+01
-1.3346E+01	3.5000E+01	-1.3314E+01	3.5000E+01	-1.3247E+01	1.6800E+01	-1.3217E+01	1.8200E+01	-1.3161E+01	1.6800E+01	-1.3041E+01	1.8200E+01	-1.2802E+01
-1.3372E+01	3.5000E+01	-1.3339E+01	3.5000E+01	-1.3272E+01	1.6800E+01	-1.3242E+01	1.8200E+01	-1.3187E+01	1.6800E+01	-1.3067E+01	1.8200E+01	-1.2828E+01
-1.3397E+01	3.5000E+01	-1.3364E+01	3.5000E+01	-1.3298E+01	1.6800E+01	-1.3267E+01	1.8200E+01	-1.3212E+01	1.6800E+01	-1.3093E+01	1.8200E+01	-1.2855E+01
-1.3422E+01	3.5000E+01	-1.3390E+01	3.5000E+01	-1.3323E+01	1.6800E+01	-1.3293E+01	1.8200E+01	-1.3238E+01	1.6800E+01	-1.3118E+01	1.8200E+01	-1.2881E+01
-1.3447E+01	3.5000E+01	-1.3415E+01	3.5000E+01	-1.3348E+01	1.6800E+01	-1.3318E+01	1.8200E+01	-1.3263E+01	1.6800E+01	-1.3144E+01	1.8200E+01	-1.2907E+01
-1.3472E+01	3.5000E+01	-1.3440E+01	3.5000E+01	-1.3374E+01	1.6800E+01	-1.3344E+01	1.8200E+01	-1.3289E+01	1.6800E+01	-1.3170E+01	1.8200E+01	-1.2933E+01
-1.3497E+01	3.5000E+01	-1.3465E+01	3.5000E+01	-1.3399E+01	1.6800E+01	-1.3369E+01	1.8200E+01	-1.3314E+01	1.6800E+01	-1.3195E+01	1.8200E+01	-1.2959E+01
-1.3522E+01	3.5000E+01	-1.3490E+01	3.5000E+01	-1.3424E+01	1.6800E+01	-1.3394E+01	1.8200E+01	-1.3339E+01	1.6800E+01	-1.3221E+01	1.8200E+01	-1.2985E+01
-1.3547E+01	3.5000E+01	-1.3515E+01	3.5000E+01	-1.3449E+01	1.6800E+01	-1.3419E+01	1.8200E+01	-1.3365E+01	1.6800E+01	-1.3246E+01	1.8200E+01	-1.3011E+01
-1.3572E+01	3.5000E+01	-1.3540E+01	3.5000E+01	-1.3474E+01	1.6800E+01	-1.3444E+01	1.8200E+01	-1.3390E+01	1.6800E+01	-1.3272E+01	1.8200E+01	-1.3037E+01
-1.3597E+01	3.5000E+01	-1.3565E+01	3.5000E+01	-1.3499E+01	1.6800E+01	-1.3469E+01	1.8200E+01	-1.3415E+01	1.6800E+01	-1.3297E+01	1.8200E+01	-1.3062E+01
-1.3622E+01	3.5000E+01	-1.3590E+01	3.5000E+01	-1.3524E+01	1.6800E+01	-1.3494E+01	1.8200E+01	-1.3440E+01	1.6800E+01	-1.3323E+01	1.8200E+01	-1.3088E+01
-1.3647E+01	3.5000E+01	-1.3615E+01	3.5000E+01	-1.3549E+01	1.6800E+01	-1.3519E+01	1.8200E+01	-1.3465E+01	1.6800E+01	-1.3348E+01	1.8200E+01	-1.3114E+01
-1.3671E+01	3.5000E+01	-1.3639E+01	3.5000E+01	-1.3574E+01	1.6800E+01	-1.3544E+01	1.8200E+01	-1.3490E+01	1.6800E+01	-1.3373E+01	1.8200E+01	-1.3140E+01
-1.3696E+01	3.5000E+01	-1.3664E+01	3.5000E+01	-1.3599E+01	1.6800E+01	-1.3569E+01	1.8200E+01	-1.3515E+01	1.6800E+01	-1.3398E+01	1.8200E+01	-1.3165E+01
-1.3721E+01	3.5000E+01	-1.3689E+01	3.5000E+01	-1.3624E+01	1.6800E+01	-1.3594E+01	1.8200E+01	-1.3540E+01	1.6800E+01	-1.3423E+01	1.8200E+01	-1.3191E+01
-1.3745E+01	3.5000E+01	-1.3714E+01	3.5000E+01	-1.3649E+01	1.6800E+01	-1.3619E+01	1.8200E+01	-1.3565E+01	1.6800E+01	-1.3449E+01	1.8200E+01	-1.3216E+01
-1.3770E+01	3.5000E+01	-1.3738E+01	3.5000E+01	-1.3673E+01	1.6800E+01	-1.3644E+01	1.8200E+01	-1.3590E+01	1.6800E+01	-1.3474E+01	1.8200E+01	-1.3242E+01
-1.3795E+01	3.5000E+01	-1.3763E+01	3.5000E+01	-1.3698E+01	1.6800E+01	-1.3669E+01	1.8200E+01	-1.3615E+01	1.6800E+01	-1.3499E+01	1.8200E+01	-1.3267E+01
-1.3819E+01	3.5000E+01	-1.3787E+01	3.5000E+01	-1.3723E+01	1.6800E+01	-1.3693E+01	1.8200E+01	-1.3640E+01	1.6800E+01	-1.3524E+01	1.8200E+01	-1.3293E+01
-1.3843E+01	3.5000E+01	-1.3812E+01	3.5000E+01	-1.3747E+01	1.6800E+01	-1.3718E+01	1.8200E+01	-1.3665E+01	1.6800E+01	-1.3549E+01	1.8200E+01	-1.3318E+01
-1.3868E+01	3.5000E+01	-1.3836E+01	3.5000E+01	-1.3772E+01	1.6800E+01	-1.3743E+01	1.8200E+01	-1.3689E+01	1.6800E+01	-1.3574E+01	1.8200E+01	-1.3343E+01
-1.3892E+01	3.5000E+01	-1.3861E+01	3.5000E+01	-1.3796E+01	1.6800E+01	-1.3767E+01	1.8200E+01	-1.3714E+01	1.6800E+01	-1.3598E+01	1.8200E+01	-1.3369E+01
-1.3917E+01	3.5000E+01	-1.3885E+01	3.5000E+01	-1.3821E+01	1.6800E+01	-1.3792E+01	1.8200E+01	-1.3739E+01	1.6800E+01	-1.3623E+01	1.8200E+01	-1.3394E+01
-1.3941E+01	3.5000E+01	-1.3910E+01	3.5000E+01	-1.3845E+01	1.6800E+01	-1.3816E+01	1.8200E+01	-1.3763E+01	1.6800E+01	-1.3648E+01	1.8200E+01	-1.3419E+01
-1.3965E+01	3.5000E+01	-1.3934E+01	3.5000E+01	-1.3870E+01	1.6800E+01	-1.3841E+01	1.8200E+01	-1.3788E+01	1.6800E+01	-1.3673E+01	1.8200E+01	-1.3444E+01
-1.3989E+01	3.5000E+01	-1.3958E+01	3.5000E+01	-1.3894E+01	1.6800E+01	-1.3865E+01	1.8200E+01	-1.3812E+01	1.6800E+01	-1.3697E+01	1.8200E+01	-1.3469E+01
-1.4014E+01	3.5000E+01	-1.3982E+01	3.5000E+01	-1.3919E+01	1.6800E+01	-1.3889E+01	1.8200E+01	-1.3837E+01	1.6800E+01	-1.3722E+01	1.8200E+01	-1.3494E+01
-1.4038E+01	3.5000E+01	-1.4007E+01	3.5000E+01	-1.3943E+01	1.6800E+01	-1.3914E+01	1.8200E+01	-1.3861E+01	1.6800E+01	-1.3747E+01	1.8200E+01	-1.3519E+01
-1.4062E+01	3.5000E+01	-1.4031E+01	3.5000E+01	-1.3967E+01	1.6800E+01	-1.3938E+01	1.8200E+01	-1.3886E+01	1.6800E+01	-1.3771E+01	1.8200E+01	-1.3544E+01
-1.4086E+01	3.5000E+01	-1.4055E+01	3.5000E+01	-1.3991E+01	1.6800E+01	-1.3962E+01	1.8200E+01	-1.3910E+01	1.6800E+01	-1.3796E+01	1.8200E+01	-1.3569E+01
-1.4110E+01	3.5000E+01	-1.4079E+01	3.5000E+01	-1.4015E+01	1.6800E+01	-1.3987E+01	1.8200E+01	-1.3934E+01	1.6800E+01	-1.3820E+01	1.8200E+01	-1.3594E+01
-1.4134E+01	3.5000E+01	-1.4103E+01	3.5000E+01	-1.4040E+01	1.6800E+01	-1.4011E+01	1.8200E+01	-1.3958E+01	1.6800E+01	-1.3845E+01	1.8200E+01	-1.3619E+01
-1.4158E+01	3.5000E+01	-1.4127E+01	3.5000E+01	-1.4064E+01	1.6800E+01	-1.4035E+01	1.8200E+01	-1.3983E+01	1.6800E+01	-1.3869E+01	1.8200E+01	-1.3644E+01
-1.4182E+01	3.5000E+01	-1.4151E+01	3.5000E+01	-1.4088E+01	1.6800E+01	-1.4059E+01	1.8200E+01	-1.4007E+01	1.6800E+01	-1.3894E+01	1.8200E+01	-1.3668E+01
-1.4206E+01	3.5000E+01	-1.4175E+01	3.5000E+01	-1.4112E+01	1.6800E+01	-1.4083E+01	1.8200E+01	-1.4031E+01	1.6800E+01	-1.3918E+01	1.8200E+01	-1.3693E+01
-1.4229E+01	3.5000E+01	-1.4199E+01	3.5000E+01	-1.4136E+01	1.6800E+01	-1.4107E+01	1.8200E+01	-1.4055E+01	1.6800E+01	-1.3942E+01	1.8200E+01	-1.3718E+01
-1.4253E+01	3.5000E+01	-1.4223E+01	3.5000E+01	-1.4160E+01	1.6800E+01	-1.4131E+01	1.8200E+01	-1.4079E+01	1.6800E+01	-1.3966E+01	1.8200E+01	-1.3742E+01
-1.4277E+01	3.5000E+01	-1.4246E+01	3.5000E+01	-1.4184E+01	1.6800E+01	-1.4155E+01	1.8200E+01	-1.4103E+01	1.6800E+01	-1.3991E+01	1.8200E+01	-1.3767E+01
-1.4301E+01	3.5000E+01	-1.4270E+01	3.5000E+01	-1.4208E+01	1.6800E+01	-1.4179E+01	1.8200E+01	-1.4127E+01	1.6800E+01	-1.4015E+01	1.8200E+01	-1.3791E+01
-1.4324E+01	3.5000E+01	-1.4294E+01	3.5000E+01	-1.4231E+01	1.6800E+01	-1.4203E+01	1.8200E+01	-1.4151E+01	1.6800E+01	-1.4039E+01	1.8200E+01	-1.3816E+01
-1.4348E+01	3.5000E+01	-1.4318E+01	3.5000E+01	-1.4255E+01	1.6800E+01	-1.4227E+01	1.8200E+01	-1.4175E+01	1.6800E+01	-1.4063E+01	1.8200E+01	-1.3840E+01
-1.4372E+01	3.5000E+01	-1.4341E+01	3.5000E+01	-1.4279E+01	1.6800E+01	-1.4250E+01	1.8200E+01	-1.4199E+01	1.6800E+01	-1.4087E+01	1.8200E+01	-1.3865E+01
-1.4395E+01	3.5000E+01	-1.4365E+01	3.5000E+01	-1.4303E+01	1.6800E+01	-1.4274E+01	1.8200E+01	-1.4223E+01	1.6800E+01	-1.4111E+01	1.8200E+01	-1.3889E+01
-1.4419E+01	3.5000E+01	-1.4388E+01	3.5000E+01	-1.4326E+01	1.6800E+01	-1.4298E+01	1.8200E+01	-1.4247E+01	1.6800E+01	-1.4135E+01	1.8200E+01	-1.3914E+01
-1.4442E+01	3.5000E+01	-1.4412E+01	3.5000E+01	-1.4350E+01	1.6800E+01	-1.4322E+01	1.8200E+01	-1.4270E+01	1.6800E+01	-1.4159E+01	1.8200E+01	-1.3938E+01
-1.4466E+01	3.5000E+01	-1.4435E+01	3.5000E+01	-1.4374E+01	1.6800E+01	-1.4345E+01	1.8200E+01	-1.4294E+01	1.6800E+01	-1.4183E+01	1.8200E+01	-1.3962E+01

Arg 7	Curve 7	Arg 8	Curve 8	Arg 9	Curve 9	Arg 10	Curve 10	Arg 11	Curve 11	Arg 12	Curve 12	Arg 13
-1.4489E+01	3.5000E+01	-1.4459E+01	3.5000E+01	-1.4397E+01	1.6800E+01	-1.4369E+01	1.8200E+01	-1.4318E+01	1.6800E+01	-1.4207E+01	1.8200E+01	-1.3986E+01
-1.4513E+01	3.5000E+01	-1.4482E+01	3.5000E+01	-1.4421E+01	1.6800E+01	-1.4393E+01	1.8200E+01	-1.4342E+01	1.6800E+01	-1.4231E+01	1.8200E+01	-1.4011E+01
-1.4536E+01	3.5000E+01	-1.4506E+01	3.5000E+01	-1.4444E+01	1.6800E+01	-1.4416E+01	1.8200E+01	-1.4365E+01	1.6800E+01	-1.4255E+01	1.8200E+01	-1.4035E+01
-1.4559E+01	3.5000E+01	-1.4529E+01	3.5000E+01	-1.4468E+01	1.6800E+01	-1.4440E+01	1.8200E+01	-1.4389E+01	1.6800E+01	-1.4278E+01	1.8200E+01	-1.4059E+01
-1.4583E+01	3.5000E+01	-1.4553E+01	3.5000E+01	-1.4491E+01	1.6800E+01	-1.4463E+01	1.8200E+01	-1.4412E+01	1.6800E+01	-1.4302E+01	1.8200E+01	-1.4083E+01
-1.4606E+01	3.5000E+01	-1.4576E+01	3.5000E+01	-1.4514E+01	1.6800E+01	-1.4487E+01	1.8200E+01	-1.4436E+01	1.6800E+01	-1.4326E+01	1.8200E+01	-1.4107E+01
-1.4629E+01	3.5000E+01	-1.4599E+01	3.5000E+01	-1.4538E+01	1.6800E+01	-1.4510E+01	1.8200E+01	-1.4459E+01	1.6800E+01	-1.4349E+01	1.8200E+01	-1.4131E+01
-1.4652E+01	3.5000E+01	-1.4622E+01	3.5000E+01	-1.4561E+01	1.6800E+01	-1.4533E+01	1.8200E+01	-1.4483E+01	1.6800E+01	-1.4373E+01	1.8200E+01	-1.4155E+01
-1.4675E+01	3.5000E+01	-1.4646E+01	3.5000E+01	-1.4584E+01	1.6800E+01	-1.4557E+01	1.8200E+01	-1.4506E+01	1.6800E+01	-1.4397E+01	1.8200E+01	-1.4179E+01
-1.4699E+01	3.5000E+01	-1.4669E+01	3.5000E+01	-1.4608E+01	1.6800E+01	-1.4580E+01	1.8200E+01	-1.4530E+01	1.6800E+01	-1.4420E+01	1.8200E+01	-1.4203E+01
-1.4722E+01	3.5000E+01	-1.4692E+01	3.5000E+01	-1.4631E+01	1.6800E+01	-1.4603E+01	1.8200E+01	-1.4553E+01	1.6800E+01	-1.4444E+01	1.8200E+01	-1.4226E+01
-1.4745E+01	3.5000E+01	-1.4715E+01	3.5000E+01	-1.4654E+01	1.6800E+01	-1.4626E+01	1.8200E+01	-1.4576E+01	1.6800E+01	-1.4467E+01	1.8200E+01	-1.4250E+01
-1.4768E+01	3.5000E+01	-1.4738E+01	3.5000E+01	-1.4677E+01	1.6800E+01	-1.4650E+01	1.8200E+01	-1.4599E+01	1.6800E+01	-1.4490E+01	1.8200E+01	-1.4274E+01
-1.4791E+01	3.5000E+01	-1.4761E+01	3.5000E+01	-1.4700E+01	1.6800E+01	-1.4673E+01	1.8200E+01	-1.4623E+01	1.6800E+01	-1.4514E+01	1.8200E+01	-1.4298E+01
-1.4814E+01	3.5000E+01	-1.4784E+01	3.5000E+01	-1.4723E+01	1.6800E+01	-1.4696E+01	1.8200E+01	-1.4646E+01	1.6800E+01	-1.4537E+01	1.8200E+01	-1.4321E+01
-1.4837E+01	3.5000E+01	-1.4807E+01	3.5000E+01	-1.4747E+01	1.6800E+01	-1.4719E+01	1.8200E+01	-1.4669E+01	1.6800E+01	-1.4561E+01	1.8200E+01	-1.4345E+01
-1.4859E+01	3.5000E+01	-1.4830E+01	3.5000E+01	-1.4770E+01	1.6800E+01	-1.4742E+01	1.8200E+01	-1.4692E+01	1.6800E+01	-1.4584E+01	1.8200E+01	-1.4369E+01
-1.4882E+01	3.5000E+01	-1.4853E+01	3.5000E+01	-1.4793E+01	1.6800E+01	-1.4765E+01	1.8200E+01	-1.4715E+01	1.6800E+01	-1.4607E+01	1.8200E+01	-1.4392E+01
-1.4905E+01	3.5000E+01	-1.4876E+01	3.5000E+01	-1.4815E+01	1.6800E+01	-1.4788E+01	1.8200E+01	-1.4738E+01	1.6800E+01	-1.4630E+01	1.8200E+01	-1.4416E+01
-1.4928E+01	3.5000E+01	-1.4898E+01	3.5000E+01	-1.4838E+01	1.6800E+01	-1.4811E+01	1.8200E+01	-1.4761E+01	1.6800E+01	-1.4654E+01	1.8200E+01	-1.4439E+01
-1.4951E+01	3.5000E+01	-1.4921E+01	3.5000E+01	-1.4861E+01	1.6800E+01	-1.4834E+01	1.8200E+01	-1.4784E+01	1.6800E+01	-1.4677E+01	1.8200E+01	-1.4463E+01
-1.4973E+01	3.5000E+01	-1.4944E+01	3.5000E+01	-1.4884E+01	1.6800E+01	-1.4857E+01	1.8200E+01	-1.4807E+01	1.6800E+01	-1.4700E+01	1.8200E+01	-1.4486E+01
-1.4996E+01	3.5000E+01	-1.4967E+01	3.5000E+01	-1.4907E+01	1.6800E+01	-1.4880E+01	1.8200E+01	-1.4830E+01	1.6800E+01	-1.4723E+01	1.8200E+01	-1.4510E+01
-1.5019E+01	3.5000E+01	-1.4989E+01	3.5000E+01	-1.4930E+01	1.6800E+01	-1.4902E+01	1.8200E+01	-1.4853E+01	1.6800E+01	-1.4746E+01	1.8200E+01	-1.4533E+01
-1.5041E+01	3.5000E+01	-1.5012E+01	3.5000E+01	-1.4952E+01	1.6800E+01	-1.4925E+01	1.8200E+01	-1.4876E+01	1.6800E+01	-1.4769E+01	1.8200E+01	-1.4556E+01
-1.5064E+01	3.5000E+01	-1.5035E+01	3.5000E+01	-1.4975E+01	1.6800E+01	-1.4948E+01	1.8200E+01	-1.4899E+01	1.6800E+01	-1.4792E+01	1.8200E+01	-1.4580E+01
-1.5086E+01	3.5000E+01	-1.5057E+01	3.5000E+01	-1.4998E+01	1.6800E+01	-1.4971E+01	1.8200E+01	-1.4922E+01	1.6800E+01	-1.4815E+01	1.8200E+01	-1.4603E+01
-1.5109E+01	3.5000E+01	-1.5080E+01	3.5000E+01	-1.5020E+01	1.6800E+01	-1.4993E+01	1.8200E+01	-1.4944E+01	1.6800E+01	-1.4838E+01	1.8200E+01	-1.4626E+01
-1.5131E+01	3.5000E+01	-1.5102E+01	3.5000E+01	-1.5043E+01	1.6800E+01	-1.5016E+01	1.8200E+01	-1.4967E+01	1.6800E+01	-1.4861E+01	1.8200E+01	-1.4649E+01
-1.5154E+01	3.5000E+01	-1.5125E+01	3.5000E+01	-1.5066E+01	1.6800E+01	-1.5039E+01	1.8200E+01	-1.4990E+01	1.6800E+01	-1.4884E+01	1.8200E+01	-1.4673E+01
-1.5176E+01	3.5000E+01	-1.5147E+01	3.5000E+01	-1.5088E+01	1.6800E+01	-1.5061E+01	1.8200E+01	-1.5012E+01	1.6800E+01	-1.4906E+01	1.8200E+01	-1.4696E+01
-1.5199E+01	3.5000E+01	-1.5170E+01	3.5000E+01	-1.5111E+01	1.6800E+01	-1.5084E+01	1.8200E+01	-1.5035E+01	1.6800E+01	-1.4929E+01	1.8200E+01	-1.4719E+01
-1.5221E+01	3.5000E+01	-1.5192E+01	3.5000E+01	-1.5133E+01	1.6800E+01	-1.5106E+01	1.8200E+01	-1.5058E+01	1.6800E+01	-1.4952E+01	1.8200E+01	-1.4742E+01
-1.5243E+01	3.5000E+01	-1.5215E+01	3.5000E+01	-1.5156E+01	1.6800E+01	-1.5129E+01	1.8200E+01	-1.5080E+01	1.6800E+01	-1.4975E+01	1.8200E+01	-1.4765E+01
-1.5266E+01	3.5000E+01	-1.5237E+01	3.5000E+01	-1.5178E+01	1.6800E+01	-1.5151E+01	1.8200E+01	-1.5103E+01	1.6800E+01	-1.4997E+01	1.8200E+01	-1.4788E+01
-1.5288E+01	3.5000E+01	-1.5259E+01	3.5000E+01	-1.5201E+01	1.6800E+01	-1.5174E+01	1.8200E+01	-1.5125E+01	1.6800E+01	-1.5020E+01	1.8200E+01	-1.4811E+01
-1.5310E+01	3.5000E+01	-1.5282E+01	3.5000E+01	-1.5223E+01	1.6800E+01	-1.5196E+01	1.8200E+01	-1.5148E+01	1.6800E+01	-1.5043E+01	1.8200E+01	-1.4834E+01
-1.5333E+01	3.5000E+01	-1.5304E+01	3.5000E+01	-1.5245E+01	1.6800E+01	-1.5219E+01	1.8200E+01	-1.5170E+01	1.6800E+01	-1.5065E+01	1.8200E+01	-1.4857E+01
-1.5355E+01	3.5000E+01	-1.5326E+01	3.5000E+01	-1.5268E+01	1.6800E+01	-1.5241E+01	1.8200E+01	-1.5193E+01	1.6800E+01	-1.5088E+01	1.8200E+01	-1.4879E+01
-1.5377E+01	3.5000E+01	-1.5348E+01	3.5000E+01	-1.5290E+01	1.6800E+01	-1.5263E+01	1.8200E+01	-1.5215E+01	1.6800E+01	-1.5110E+01	1.8200E+01	-1.4902E+01
-1.5399E+01	3.5000E+01	-1.5370E+01	3.5000E+01	-1.5312E+01	1.6800E+01	-1.5285E+01	1.8200E+01	-1.5237E+01	1.6800E+01	-1.5133E+01	1.8200E+01	-1.4925E+01
-1.5421E+01	3.5000E+01	-1.5393E+01	3.5000E+01	-1.5334E+01	1.6800E+01	-1.5308E+01	1.8200E+01	-1.5260E+01	1.6800E+01	-1.5155E+01	1.8200E+01	-1.4948E+01
-1.5443E+01	3.5000E+01	-1.5415E+01	3.5000E+01	-1.5356E+01	1.6800E+01	-1.5330E+01	1.8200E+01	-1.5282E+01	1.6800E+01	-1.5178E+01	1.8200E+01	-1.4971E+01
-1.5465E+01	3.5000E+01	-1.5437E+01	3.5000E+01	-1.5379E+01	1.6800E+01	-1.5352E+01	1.8200E+01	-1.5304E+01	1.6800E+01	-1.5200E+01	1.8200E+01	-1.4993E+01
-1.5487E+01	3.5000E+01	-1.5459E+01	3.5000E+01	-1.5401E+01	1.6800E+01	-1.5374E+01	1.8200E+01	-1.5326E+01	1.6800E+01	-1.5222E+01	1.8200E+01	-1.5016E+01
-1.5509E+01	3.5000E+01	-1.5481E+01	3.5000E+01	-1.5423E+01	1.6800E+01	-1.5396E+01	1.8200E+01	-1.5349E+01	1.6800E+01	-1.5245E+01	1.8200E+01	-1.5038E+01
-1.5531E+01	3.5000E+01	-1.5503E+01	3.5000E+01	-1.5445E+01	1.6800E+01	-1.5419E+01	1.8200E+01	-1.5371E+01	1.6800E+01	-1.5267E+01	1.8200E+01	-1.5061E+01
-1.5553E+01	3.5000E+01	-1.5525E+01	3.5000E+01	-1.5467E+01	1.6800E+01	-1.5441E+01	1.8200E+01	-1.5393E+01	1.6800E+01	-1.5289E+01	1.8200E+01	-1.5084E+01
-1.5575E+01	3.5000E+01	-1.5547E+01	3.5000E+01	-1.5489E+01	1.6800E+01	-1.5463E+01	1.8200E+01	-1.5415E+01	1.6800E+01	-1.5312E+01	1.8200E+01	-1.5106E+01
-1.5597E+01	3.5000E+01	-1.5569E+01	3.5000E+01	-1.5511E+01	1.6800E+01	-1.5485E+01	1.8200E+01	-1.5437E+01	1.6800E+01	-1.5334E+01	1.8200E+01	-1.5129E+01
-1.5619E+01	3.5000E+01	-1.5590E+01	3.5000E+01	-1.5533E+01	1.6800E+01	-1.5507E+01	1.8200E+01	-1.5459E+01	1.6800E+01	-1.5356E+01	1.8200E+01	-1.5151E+01
-1.5640E+01	3.5000E+01	-1.5612E+01	3.5000E+01	-1.5555E+01	1.6800E+01	-1.5529E+01	1.8200E+01	-1.5481E+01	1.6800E+01	-1.5378E+01	1.8200E+01	-1.5174E+01

Arg 7	Curve 7	Arg 8	Curve 8	Arg 9	Curve 9	Arg 10	Curve 10	Arg 11	Curve 11	Arg 12	Curve 12	Arg 13
-1.5662E+01	3.5000E+01	-1.5634E+01	3.5000E+01	-1.5577E+01	1.6800E+01	-1.5550E+01	1.8200E+01	-1.5503E+01	1.6800E+01	-1.5400E+01	1.8200E+01	-1.5196E+01
-1.5684E+01	3.5000E+01	-1.5656E+01	3.5000E+01	-1.5598E+01	1.6800E+01	-1.5572E+01	1.8200E+01	-1.5525E+01	1.6800E+01	-1.5422E+01	1.8200E+01	-1.5218E+01
-1.5706E+01	3.5000E+01	-1.5678E+01	3.5000E+01	-1.5620E+01	1.6800E+01	-1.5594E+01	1.8200E+01	-1.5547E+01	1.6800E+01	-1.5444E+01	1.8200E+01	-1.5241E+01
-1.5727E+01	3.5000E+01	-1.5699E+01	3.5000E+01	-1.5642E+01	1.6800E+01	-1.5616E+01	1.8200E+01	-1.5569E+01	1.6800E+01	-1.5466E+01	1.8200E+01	-1.5263E+01
-1.5749E+01	3.5000E+01	-1.5721E+01	3.5000E+01	-1.5664E+01	1.6800E+01	-1.5638E+01	1.8200E+01	-1.5591E+01	1.6800E+01	-1.5488E+01	1.8200E+01	-1.5285E+01
-1.5771E+01	3.5000E+01	-1.5743E+01	3.5000E+01	-1.5686E+01	1.6800E+01	-1.5660E+01	1.8200E+01	-1.5613E+01	1.6800E+01	-1.5510E+01	1.8200E+01	-1.5308E+01
-1.5792E+01	3.5000E+01	-1.5764E+01	3.5000E+01	-1.5707E+01	1.6800E+01	-1.5681E+01	1.8200E+01	-1.5634E+01	1.6800E+01	-1.5532E+01	1.8200E+01	-1.5330E+01
-1.5814E+01	3.5000E+01	-1.5786E+01	3.5000E+01	-1.5729E+01	1.6800E+01	-1.5703E+01	1.8200E+01	-1.5656E+01	1.6800E+01	-1.5554E+01	1.8200E+01	-1.5352E+01
-1.5835E+01	3.5000E+01	-1.5807E+01	3.5000E+01	-1.5751E+01	1.6800E+01	-1.5725E+01	1.8200E+01	-1.5678E+01	1.6800E+01	-1.5576E+01	1.8200E+01	-1.5374E+01
-1.5857E+01	3.5000E+01	-1.5829E+01	3.5000E+01	-1.5772E+01	1.6800E+01	-1.5746E+01	1.8200E+01	-1.5700E+01	1.6800E+01	-1.5598E+01	1.8200E+01	-1.5396E+01
-1.5878E+01	3.5000E+01	-1.5851E+01	3.5000E+01	-1.5794E+01	1.6800E+01	-1.5768E+01	1.8200E+01	-1.5721E+01	1.6800E+01	-1.5620E+01	1.8200E+01	-1.5418E+01
-1.5900E+01	3.5000E+01	-1.5872E+01	3.5000E+01	-1.5815E+01	1.6800E+01	-1.5790E+01	1.8200E+01	-1.5743E+01	1.6800E+01	-1.5642E+01	1.8200E+01	-1.5440E+01
-1.5921E+01	3.5000E+01	-1.5894E+01	3.5000E+01	-1.5837E+01	1.6800E+01	-1.5811E+01	1.8200E+01	-1.5765E+01	1.6800E+01	-1.5663E+01	1.8200E+01	-1.5462E+01
-1.5943E+01	3.5000E+01	-1.5915E+01	3.5000E+01	-1.5859E+01	1.6800E+01	-1.5833E+01	1.8200E+01	-1.5786E+01	1.6800E+01	-1.5685E+01	1.8200E+01	-1.5484E+01
-1.5964E+01	3.5000E+01	-1.5936E+01	3.5000E+01	-1.5880E+01	1.6800E+01	-1.5854E+01	1.8200E+01	-1.5808E+01	1.6800E+01	-1.5707E+01	1.8200E+01	-1.5506E+01
-1.5985E+01	3.5000E+01	-1.5958E+01	3.5000E+01	-1.5901E+01	1.6800E+01	-1.5876E+01	1.8200E+01	-1.5829E+01	1.6800E+01	-1.5728E+01	1.8200E+01	-1.5528E+01
-1.6007E+01	3.5000E+01	-1.5979E+01	3.5000E+01	-1.5923E+01	1.6800E+01	-1.5897E+01	1.8200E+01	-1.5851E+01	1.6800E+01	-1.5750E+01	1.8200E+01	-1.5550E+01
-1.6028E+01	3.5000E+01	-1.6000E+01	3.5000E+01	-1.5944E+01	1.6800E+01	-1.5919E+01	1.8200E+01	-1.5872E+01	1.6800E+01	-1.5772E+01	1.8200E+01	-1.5572E+01
-1.6049E+01	3.5000E+01	-1.6022E+01	3.5000E+01	-1.5966E+01	1.6800E+01	-1.5940E+01	1.8200E+01	-1.5894E+01	1.6800E+01	-1.5793E+01	1.8200E+01	-1.5594E+01
-1.6070E+01	3.5000E+01	-1.6043E+01	3.5000E+01	-1.5987E+01	1.6800E+01	-1.5962E+01	1.8200E+01	-1.5915E+01	1.6800E+01	-1.5815E+01	1.8200E+01	-1.5616E+01
-1.6092E+01	3.5000E+01	-1.6064E+01	3.5000E+01	-1.6008E+01	1.6800E+01	-1.5983E+01	1.8200E+01	-1.5937E+01	1.6800E+01	-1.5836E+01	1.8200E+01	-1.5638E+01
-1.6113E+01	3.5000E+01	-1.6086E+01	3.5000E+01	-1.6030E+01	1.6800E+01	-1.6004E+01	1.8200E+01	-1.5958E+01	1.6800E+01	-1.5858E+01	1.8200E+01	-1.5659E+01
-1.6134E+01	3.5000E+01	-1.6107E+01	3.5000E+01	-1.6051E+01	1.6800E+01	-1.6025E+01	1.8200E+01	-1.5979E+01	1.6800E+01	-1.5879E+01	1.8200E+01	-1.5681E+01
-1.6155E+01	3.5000E+01	-1.6128E+01	3.5000E+01	-1.6072E+01	1.6800E+01	-1.6047E+01	1.8200E+01	-1.6001E+01	1.6800E+01	-1.5901E+01	1.8200E+01	-1.5703E+01
-1.6176E+01	3.5000E+01	-1.6149E+01	3.5000E+01	-1.6093E+01	1.6800E+01	-1.6068E+01	1.8200E+01	-1.6022E+01	1.6800E+01	-1.5922E+01	1.8200E+01	-1.5725E+01
-1.6197E+01	3.5000E+01	-1.6170E+01	3.5000E+01	-1.6115E+01	1.6800E+01	-1.6089E+01	1.8200E+01	-1.6043E+01	1.6800E+01	-1.5944E+01	1.8200E+01	-1.5746E+01
-1.6218E+01	3.5000E+01	-1.6191E+01	3.5000E+01	-1.6136E+01	1.6800E+01	-1.6110E+01	1.8200E+01	-1.6065E+01	1.6800E+01	-1.5965E+01	1.8200E+01	-1.5768E+01
-1.6239E+01	3.5000E+01	-1.6212E+01	3.5000E+01	-1.6157E+01	1.6800E+01	-1.6132E+01	1.8200E+01	-1.6086E+01	1.6800E+01	-1.5986E+01	1.8200E+01	-1.5789E+01
-1.6260E+01	3.5000E+01	-1.6233E+01	3.5000E+01	-1.6178E+01	1.6800E+01	-1.6153E+01	1.8200E+01	-1.6107E+01	1.6800E+01	-1.6008E+01	1.8200E+01	-1.5811E+01
-1.6281E+01	3.5000E+01	-1.6254E+01	3.5000E+01	-1.6199E+01	1.6800E+01	-1.6174E+01	1.8200E+01	-1.6128E+01	1.6800E+01	-1.6029E+01	1.8200E+01	-1.5833E+01
-1.6302E+01	3.5000E+01	-1.6275E+01	3.5000E+01	-1.6220E+01	1.6800E+01	-1.6195E+01	1.8200E+01	-1.6149E+01	1.6800E+01	-1.6050E+01	1.8200E+01	-1.5854E+01
-1.6323E+01	3.5000E+01	-1.6296E+01	3.5000E+01	-1.6241E+01	1.6800E+01	-1.6216E+01	1.8200E+01	-1.6170E+01	1.6800E+01	-1.6072E+01	1.8200E+01	-1.5876E+01
-1.6344E+01	3.5000E+01	-1.6317E+01	3.5000E+01	-1.6262E+01	1.6800E+01	-1.6237E+01	1.8200E+01	-1.6192E+01	1.6800E+01	-1.6093E+01	1.8200E+01	-1.5897E+01

Curve 13	Arg 14	Curve 14	Arg 15	Curve 15	Arg 16	Curve 16	Arg 17	Curve 17	Arg 18	Curve 18	Arg 19	Curve 19
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00

Curve 13	Arg 14	Curve 14	Arg 15	Curve 15	Arg 16	Curve 16	Arg 17	Curve 17	Arg 18	Curve 18	Arg 19	Curve 19
5.3997E-13	8.1303E+00	0.0000E+00	2.1386E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
8.5462E-12	7.7092E+00	0.0000E+00	1.8913E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.0561E-10	7.3163E+00	0.0000E+00	1.7023E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.0464E-09	6.9481E+00	0.0000E+00	1.5511E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
8.5024E-09	6.6018E+00	0.0000E+00	1.4261E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
5.7779E-08	6.2751E+00	0.0000E+00	1.3202E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
3.3405E-07	5.9659E+00	0.0000E+00	1.2288E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6679E-06	5.6724E+00	9.0927E-15	1.1486E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
7.2886E-06	5.3932E+00	2.1823E-13	1.0773E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
2.8203E-05	5.1269E+00	3.7785E-12	1.0133E+01	0.0000E+00	1.4809E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
9.7651E-05	4.8724E+00	5.0568E-11	9.5529E+00	0.0000E+00	4.4859E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
3.0536E-04	4.6287E+00	5.3807E-10	9.0234E+00	0.0000E+00	3.1928E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
8.6960E-04	4.3949E+00	4.6617E-09	8.5367E+00	0.0000E+00	2.5817E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
2.2723E-03	4.1702E+00	3.3566E-08	8.0868E+00	0.0000E+00	2.2042E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
5.4847E-03	3.9540E+00	2.0450E-07	7.6687E+00	0.0000E+00	1.9398E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.2304E-02	3.7456E+00	1.0708E-06	7.2784E+00	0.0000E+00	1.7401E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
2.5797E-02	3.5445E+00	4.8862E-06	6.9125E+00	0.0000E+00	1.5818E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
5.0801E-02	3.3501E+00	1.9669E-05	6.5683E+00	0.0000E+00	1.4518E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
9.4400E-02	3.1620E+00	7.0610E-05	6.2434E+00	0.0000E+00	1.3422E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6623E-01	2.9798E+00	2.2824E-04	5.9359E+00	0.0000E+00	1.2479E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
2.7844E-01	2.8031E+00	6.7010E-04	5.6439E+00	1.2124E-14	1.1654E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
4.4528E-01	2.6316E+00	1.8008E-03	5.3660E+00	2.7138E-13	1.0923E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
6.8208E-01	2.4650E+00	4.4605E-03	5.1009E+00	4.5715E-12	1.0268E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.0038E+00	2.3030E+00	1.0248E-02	4.8475E+00	5.9718E-11	9.6758E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.4235E+00	2.1453E+00	2.1966E-02	4.6049E+00	6.2189E-10	9.1360E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9502E+00	1.9917E+00	4.4151E-02	4.3720E+00	5.2845E-09	8.6405E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
2.5878E+00	1.8420E+00	8.3613E-02	4.1482E+00	3.7391E-08	8.1829E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
3.3337E+00	1.6959E+00	1.4984E-01	3.9328E+00	2.2422E-07	7.7582E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
4.1786E+00	1.5534E+00	2.5513E-01	3.7252E+00	1.1574E-06	7.3620E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
5.1070E+00	1.4141E+00	4.1423E-01	3.5247E+00	5.2127E-06	6.9911E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
6.0983E+00	1.2780E+00	6.4351E-01	3.3310E+00	2.0735E-05	6.6423E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
7.1283E+00	1.1448E+00	9.5952E-01	3.1435E+00	7.3628E-05	6.3134E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
8.1713E+00	1.0145E+00	1.3773E+00	2.9619E+00	2.3563E-04	6.0021E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
9.2019E+00	8.8699E-01	1.9083E+00	2.7857E+00	6.8546E-04	5.7068E+00	6.0618E-15	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.0197E+01	7.6204E-01	2.5587E+00	2.6148E+00	1.8265E-03	5.4260E+00	1.5256E-13	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.1136E+01	6.3957E-01	3.3282E+00	2.4486E+00	4.4892E-03	5.1582E+00	2.7228E-12	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.2005E+01	5.1949E-01	4.2091E+00	2.2870E+00	1.0240E-02	4.9023E+00	3.7512E-11	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.2793E+01	4.0169E-01	5.1869E+00	2.1298E+00	2.1804E-02	4.6574E+00	4.0974E-10	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.3494E+01	2.8607E-01	6.2407E+00	1.9766E+00	4.3555E-02	4.4224E+00	3.6344E-09	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.4106E+01	1.7255E-01	7.3456E+00	1.8272E+00	8.2016E-02	4.1967E+00	2.6730E-08	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.4631E+01	6.1051E-02	8.4739E+00	1.6815E+00	1.4621E-01	3.9795E+00	1.6600E-07	2.5682E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.5075E+01	-4.8516E-02	9.5978E+00	1.5393E+00	2.4772E-01	3.7702E+00	8.8448E-07	4.6409E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.5443E+01	-1.5622E-01	1.0691E+01	1.4003E+00	4.0036E-01	3.5682E+00	4.1005E-06	3.2514E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.5745E+01	-2.6213E-01	1.1731E+01	1.2645E+00	6.1933E-01	3.3731E+00	1.6747E-05	2.6146E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.5989E+01	-3.6632E-01	1.2700E+01	1.1317E+00	9.1984E-01	3.1842E+00	6.0917E-05	2.2262E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6183E+01	-4.6884E-01	1.3584E+01	1.0017E+00	1.3155E+00	3.0014E+00	1.9931E-04	1.9558E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6336E+01	-5.6976E-01	1.4375E+01	8.7438E-01	1.8165E+00	2.8240E+00	5.9170E-04	1.7526E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6454E+01	-6.6913E-01	1.5070E+01	7.4968E-01	2.4280E+00	2.6520E+00	1.6064E-03	1.5919E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6545E+01	-7.6700E-01	1.5670E+01	6.2746E-01	3.1490E+00	2.4848E+00	4.0168E-03	1.4602E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6613E+01	-8.6343E-01	1.6179E+01	5.0761E-01	3.9718E+00	2.3222E+00	9.3098E-03	1.3493E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6665E+01	-9.5846E-01	1.6605E+01	3.9003E-01	4.8824E+00	2.1640E+00	2.0116E-02	1.2540E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6703E+01	-1.0521E+00	1.6955E+01	2.7463E-01	5.8610E+00	2.0099E+00	4.0734E-02	1.1708E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00

Curve 13	Arg 14	Curve 14	Arg 15	Curve 15	Arg 16	Curve 16	Arg 17	Curve 17	Arg 18	Curve 18	Arg 19	Curve 19
1.6731E+01	-1.1445E+00	1.7240E+01	1.6131E-01	6.8842E+00	1.8598E+00	7.7678E-02	1.0971E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6751E+01	-1.2356E+00	1.7467E+01	5.0008E-02	7.9264E+00	1.7133E+00	1.4010E-01	1.0312E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6766E+01	-1.3255E+00	1.7646E+01	-5.9369E-02	8.9621E+00	1.5703E+00	2.3997E-01	9.7155E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6776E+01	-1.4142E+00	1.7786E+01	-1.6689E-01	9.9673E+00	1.4306E+00	3.9177E-01	9.1722E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6784E+01	-1.5017E+00	1.7893E+01	-2.7263E-01	1.0921E+01	1.2941E+00	6.1173E-01	8.6738E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6789E+01	-1.5882E+00	1.7975E+01	-3.7664E-01	1.1808E+01	1.1606E+00	9.1650E-01	8.2138E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6792E+01	-1.6735E+00	1.8037E+01	-4.7900E-01	1.2616E+01	1.0300E+00	1.3214E+00	7.7869E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6795E+01	-1.7578E+00	1.8082E+01	-5.7976E-01	1.3337E+01	9.0216E-01	1.8383E+00	7.3889E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6797E+01	-1.8411E+00	1.8116E+01	-6.7898E-01	1.3970E+01	7.7690E-01	2.4743E+00	7.0163E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6798E+01	-1.9233E+00	1.8141E+01	-7.7671E-01	1.4515E+01	6.5414E-01	3.2297E+00	6.6661E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6798E+01	-2.0046E+00	1.8158E+01	-8.7299E-01	1.4977E+01	5.3378E-01	4.0979E+00	6.3358E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6799E+01	-2.0850E+00	1.8171E+01	-9.6789E-01	1.5363E+01	4.1571E-01	5.0651E+00	6.0234E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6799E+01	-2.1644E+00	1.8180E+01	-1.0614E+00	1.5680E+01	2.9983E-01	6.1111E+00	5.7270E+00	3.8858E-15	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6800E+01	-2.2430E+00	1.8186E+01	-1.1537E+00	1.5937E+01	1.8607E-01	7.2112E+00	5.4452E+00	9.4813E-14	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6800E+01	-2.3207E+00	1.8191E+01	-1.2447E+00	1.6142E+01	7.4327E-02	8.3382E+00	5.1765E+00	1.7268E-12	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6800E+01	-2.3975E+00	1.8194E+01	-1.3344E+00	1.6303E+01	-3.5468E-02	9.4640E+00	4.9199E+00	2.4205E-11	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6800E+01	-2.4735E+00	1.8196E+01	-1.4230E+00	1.6429E+01	-1.4339E-01	1.0562E+01	4.6742E+00	2.6850E-10	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6800E+01	-2.5488E+00	1.8197E+01	-1.5104E+00	1.6526E+01	-2.4952E-01	1.1610E+01	4.4386E+00	2.4148E-09	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6800E+01	-2.6232E+00	1.8198E+01	-1.5968E+00	1.6599E+01	-3.5390E-01	1.2588E+01	4.2122E+00	1.7983E-08	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6800E+01	-2.6969E+00	1.8199E+01	-1.6820E+00	1.6654E+01	-4.5662E-01	1.3482E+01	3.9945E+00	1.1295E-07	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6800E+01	-2.7698E+00	1.8199E+01	-1.7662E+00	1.6695E+01	-5.5773E-01	1.4285E+01	3.7846E+00	6.0802E-07	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6800E+01	-2.8420E+00	1.8199E+01	-1.8493E+00	1.6725E+01	-6.5728E-01	1.4991E+01	3.5821E+00	2.8452E-06	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6800E+01	-2.9135E+00	1.8200E+01	-1.9315E+00	1.6747E+01	-7.5533E-01	1.5603E+01	3.3865E+00	1.1719E-05	6.4507E+01	0.0000E+00	0.0000E+00	0.0000E+00
1.6800E+01	-2.9843E+00	1.8200E+01	-2.0127E+00	1.6763E+01	-8.5193E-01	1.6123E+01	3.1973E+00	4.2962E-05	3.7643E+01	0.0000E+00	0.0000E+00	0.0000E+00
1.6800E+01	-3.0544E+00	1.8200E+01	-2.0930E+00	1.6774E+01	-9.4713E-01	1.6558E+01	3.0140E+00	1.4157E-04	2.8808E+01	0.0000E+00	0.0000E+00	0.0000E+00
1.6800E+01	-3.1239E+00	1.8200E+01	-2.1723E+00	1.6782E+01	-1.0410E+00	1.6917E+01	2.8363E+00	4.2304E-04	2.3967E+01	0.0000E+00	0.0000E+00	0.0000E+00
1.6800E+01	-3.1927E+00	1.8200E+01	-2.2508E+00	1.6788E+01	-1.1335E+00	1.7209E+01	2.6638E+00	1.1555E-03	2.0776E+01	0.0000E+00	0.0000E+00	0.0000E+00
1.6800E+01	-3.2609E+00	1.8200E+01	-2.3284E+00	1.6792E+01	-1.2248E+00	1.7442E+01	2.4963E+00	2.9052E-03	1.8457E+01	0.0000E+00	0.0000E+00	0.0000E+00
1.6800E+01	-3.3285E+00	1.8200E+01	-2.4052E+00	1.6794E+01	-1.3148E+00	1.7627E+01	2.3335E+00	6.7680E-03	1.6663E+01	0.0000E+00	0.0000E+00	0.0000E+00
1.6800E+01	-3.3954E+00	1.8200E+01	-2.4811E+00	1.6796E+01	-1.4036E+00	1.7771E+01	2.1750E+00	1.4693E-02	1.5217E+01	0.0000E+00	0.0000E+00	0.0000E+00
1.6800E+01	-3.4618E+00	1.8200E+01	-2.5562E+00	1.6797E+01	-1.4913E+00	1.7882E+01	2.0206E+00	2.9884E-02	1.4014E+01	0.0000E+00	0.0000E+00	0.0000E+00
1.6800E+01	-3.5276E+00	1.8200E+01	-2.6306E+00	1.6798E+01	-1.5779E+00	1.7967E+01	1.8702E+00	5.7219E-02	1.2990E+01	0.0000E+00	0.0000E+00	0.0000E+00
1.6800E+01	-3.5928E+00	1.8200E+01	-2.7042E+00	1.6799E+01	-1.6633E+00	1.8030E+01	1.7234E+00	1.0359E-01	1.2103E+01	0.0000E+00	0.0000E+00	0.0000E+00
1.6800E+01	-3.6575E+00	1.8200E+01	-2.7771E+00	1.6799E+01	-1.7477E+00	1.8078E+01	1.5802E+00	1.7805E-01	1.1322E+01	0.0000E+00	0.0000E+00	0.0000E+00
1.6800E+01	-3.7216E+00	1.8200E+01	-2.8492E+00	1.6800E+01	-1.8311E+00	1.8113E+01	1.4403E+00	2.9163E-01	1.0626E+01	0.0000E+00	0.0000E+00	0.0000E+00
1.6800E+01	-3.7852E+00	1.8200E+01	-2.9206E+00	1.6800E+01	-1.9135E+00	1.8138E+01	1.3036E+00	4.5674E-01	1.0000E+01	0.0000E+00	0.0000E+00	0.0000E+00
1.6800E+01	-3.8483E+00	1.8200E+01	-2.9913E+00	1.6800E+01	-1.9949E+00	1.8156E+01	1.1699E+00	6.8621E-01	9.4324E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6800E+01	-3.9109E+00	1.8200E+01	-3.0614E+00	1.6800E+01	-2.0754E+00	1.8170E+01	1.0391E+00	9.9191E-01	8.9129E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6800E+01	-3.9730E+00	1.8200E+01	-3.1308E+00	1.6800E+01	-2.1550E+00	1.8179E+01	9.1102E-01	1.3833E+00	8.4348E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6800E+01	-4.0345E+00	1.8200E+01	-3.1996E+00	1.6800E+01	-2.2336E+00	1.8186E+01	7.8558E-01	1.8660E+00	7.9922E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6800E+01	-4.0956E+00	1.8200E+01	-3.2677E+00	1.6800E+01	-2.3114E+00	1.8190E+01	6.6266E-01	2.4408E+00	7.5806E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6800E+01	-4.1563E+00	1.8200E+01	-3.3352E+00	1.6800E+01	-2.3883E+00	1.8193E+01	5.4213E-01	3.1029E+00	7.1959E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6800E+01	-4.2164E+00	1.8200E+01	-3.4021E+00	1.6800E+01	-2.4645E+00	1.8196E+01	4.2390E-01	3.8420E+00	6.8350E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6800E+01	-4.2762E+00	1.8200E+01	-3.4684E+00	1.6800E+01	-2.5398E+00	1.8197E+01	3.0787E-01	4.6429E+00	6.4953E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6800E+01	-4.3354E+00	1.8200E+01	-3.5341E+00	1.6800E+01	-2.6143E+00	1.8198E+01	1.9396E-01	5.4869E+00	6.1743E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6800E+01	-4.3943E+00	1.8200E+01	-3.5993E+00	1.6800E+01	-2.6881E+00	1.8199E+01	8.2085E-02	6.3531E+00	5.8703E+00	7.7716E-16	0.0000E+00	0.0000E+00
1.6800E+01	-4.4527E+00	1.8200E+01	-3.6639E+00	1.6800E+01	-2.7611E+00	1.8199E+01	-2.7844E-02	7.2199E+00	5.5816E+00	2.0206E-14	0.0000E+00	0.0000E+00
1.6800E+01	-4.5106E+00	1.8200E+01	-3.7280E+00	1.6800E+01	-2.8334E+00	1.8199E+01	-1.3590E-01	8.0668E+00	5.3066E+00	4.3132E-13	0.0000E+00	0.0000E+00
1.6800E+01	-4.5682E+00	1.8200E+01	-3.7916E+00	1.6800E+01	-2.9050E+00	1.8200E+01	-2.4214E-01	8.8759E+00	5.0442E+00	6.8460E-12	0.0000E+00	0.0000E+00
1.6800E+01	-4.6254E+00	1.8200E+01	-3.8546E+00	1.6800E+01	-2.9758E+00	1.8200E+01	-3.4665E-01	9.6323E+00	4.7933E+00	8.4892E-11	0.0000E+00	0.0000E+00
1.6800E+01	-4.6821E+00	1.8200E+01	-3.9171E+00	1.6800E+01	-3.0460E+00	1.8200E+01	-4.4949E-01	1.0325E+01	4.5528E+00	8.4377E-10	0.0000E+00	0.0000E+00
1.6800E+01	-4.7385E+00	1.8200E+01	-3.9791E+00	1.6800E+01	-3.1156E+00	1.8200E+01	-5.5070E-01	1.0947E+01	4.3220E+00	6.8755E-09	0.0000E+00	0.0000E+00

Curve 13	Arg 14	Curve 14	Arg 15	Curve 15	Arg 16	Curve 16	Arg 17	Curve 17	Arg 18	Curve 18	Arg 19	Curve 19
1.6800E+01	-4.7945E+00	1.8200E+01	-4.0407E+00	1.6800E+01	-3.1845E+00	1.8200E+01	-6.5036E-01	1.1496E+01	4.1001E+00	4.6843E-08	0.0000E+00	0.0000E+00
1.6800E+01	-4.8501E+00	1.8200E+01	-4.1017E+00	1.6800E+01	-3.2527E+00	1.8200E+01	-7.4852E-01	1.1971E+01	3.8865E+00	2.7144E-07	0.0000E+00	0.0000E+00
1.6800E+01	-4.9053E+00	1.8200E+01	-4.1623E+00	1.6800E+01	-3.3204E+00	1.8200E+01	-8.4522E-01	1.2376E+01	3.6805E+00	1.3582E-06	0.0000E+00	0.0000E+00
1.6800E+01	-4.9602E+00	1.8200E+01	-4.2224E+00	1.6800E+01	-3.3874E+00	1.8200E+01	-9.4051E-01	1.2716E+01	3.4815E+00	5.9465E-06	0.0000E+00	0.0000E+00
1.6800E+01	-5.0147E+00	1.8200E+01	-4.2821E+00	1.6800E+01	-3.4539E+00	1.8200E+01	-1.0344E+00	1.2996E+01	3.2892E+00	2.3050E-05	0.0000E+00	0.0000E+00
1.6800E+01	-5.0689E+00	1.8200E+01	-4.3413E+00	1.6800E+01	-3.5197E+00	1.8200E+01	-1.1271E+00	1.3223E+01	3.1031E+00	7.9936E-05	0.0000E+00	0.0000E+00
1.6800E+01	-5.1227E+00	1.8200E+01	-4.4001E+00	1.6800E+01	-3.5850E+00	1.8200E+01	-1.2184E+00	1.3406E+01	2.9227E+00	2.5033E-04	0.0000E+00	0.0000E+00
1.6800E+01	-5.1761E+00	1.8200E+01	-4.4585E+00	1.6800E+01	-3.6498E+00	1.8200E+01	-1.3085E+00	1.3550E+01	2.7477E+00	7.1385E-04	0.0000E+00	0.0000E+00
1.6800E+01	-5.2292E+00	1.8200E+01	-4.5164E+00	1.6800E+01	-3.7140E+00	1.8200E+01	-1.3974E+00	1.3663E+01	2.5778E+00	1.8676E-03	0.0000E+00	0.0000E+00
1.6800E+01	-5.2820E+00	1.8200E+01	-4.5739E+00	1.6800E+01	-3.7776E+00	1.8200E+01	-1.4852E+00	1.3750E+01	2.4127E+00	4.5131E-03	0.0000E+00	0.0000E+00
1.6800E+01	-5.3345E+00	1.8200E+01	-4.6311E+00	1.6800E+01	-3.8408E+00	1.8200E+01	-1.5718E+00	1.3816E+01	2.2521E+00	1.0135E-02	0.0000E+00	0.0000E+00
1.6800E+01	-5.3867E+00	1.8200E+01	-4.6878E+00	1.6800E+01	-3.9034E+00	1.8200E+01	-1.6574E+00	1.3866E+01	2.0957E+00	2.1270E-02	0.0000E+00	0.0000E+00
1.6800E+01	-5.4385E+00	1.8200E+01	-4.7441E+00	1.6800E+01	-3.9655E+00	1.8200E+01	-1.7419E+00	1.3904E+01	1.9434E+00	4.1924E-02	0.0000E+00	0.0000E+00
1.6800E+01	-5.4900E+00	1.8200E+01	-4.8001E+00	1.6800E+01	-4.0272E+00	1.8200E+01	-1.8253E+00	1.3931E+01	1.7949E+00	7.7970E-02	0.0000E+00	0.0000E+00
1.6800E+01	-5.5412E+00	1.8200E+01	-4.8556E+00	1.6800E+01	-4.0883E+00	1.8200E+01	-1.9078E+00	1.3951E+01	1.6499E+00	1.3740E-01	0.0000E+00	0.0000E+00
1.6800E+01	-5.5921E+00	1.8200E+01	-4.9108E+00	1.6800E+01	-4.1490E+00	1.8200E+01	-1.9893E+00	1.3966E+01	1.5084E+00	2.3033E-01	0.0000E+00	0.0000E+00
1.6800E+01	-5.6427E+00	1.8200E+01	-4.9657E+00	1.6800E+01	-4.2092E+00	1.8200E+01	-2.0698E+00	1.3976E+01	1.3702E+00	3.6859E-01	0.0000E+00	0.0000E+00
1.6800E+01	-5.6931E+00	1.8200E+01	-5.0201E+00	1.6800E+01	-4.2690E+00	1.8200E+01	-2.1494E+00	1.3983E+01	1.2350E+00	5.6494E-01	0.0000E+00	0.0000E+00
1.6800E+01	-5.7431E+00	1.8200E+01	-5.0742E+00	1.6800E+01	-4.3283E+00	1.8200E+01	-2.2281E+00	1.3989E+01	1.1028E+00	8.3192E-01	0.0000E+00	0.0000E+00
1.6800E+01	-5.7928E+00	1.8200E+01	-5.1280E+00	1.6800E+01	-4.3872E+00	1.8200E+01	-2.3060E+00	1.3992E+01	9.7344E-01	1.1803E+00	0.0000E+00	0.0000E+00
1.6800E+01	-5.8423E+00	1.8200E+01	-5.1814E+00	1.6800E+01	-4.4457E+00	1.8200E+01	-2.3830E+00	1.3995E+01	8.4673E-01	1.6179E+00	0.0000E+00	0.0000E+00
1.6800E+01	-5.8915E+00	1.8200E+01	-5.2345E+00	1.6800E+01	-4.5037E+00	1.8200E+01	-2.4592E+00	1.3996E+01	7.2258E-01	2.1478E+00	0.0000E+00	0.0000E+00
1.6800E+01	-5.9404E+00	1.8200E+01	-5.2873E+00	1.6800E+01	-4.5613E+00	1.8200E+01	-2.5345E+00	1.3998E+01	6.0089E-01	2.7681E+00	0.0000E+00	0.0000E+00
1.6800E+01	-5.9891E+00	1.8200E+01	-5.3397E+00	1.6800E+01	-4.6185E+00	1.8200E+01	-2.6091E+00	1.3998E+01	4.8155E-01	3.4710E+00	0.0000E+00	0.0000E+00
1.6800E+01	-6.0375E+00	1.8200E+01	-5.3919E+00	1.6800E+01	-4.6753E+00	1.8200E+01	-2.6829E+00	1.3999E+01	3.6446E-01	4.2438E+00	0.0000E+00	0.0000E+00
1.6800E+01	-6.0856E+00	1.8200E+01	-5.4437E+00	1.6800E+01	-4.7318E+00	1.8200E+01	-2.7560E+00	1.3999E+01	2.4952E-01	5.0693E+00	0.0000E+00	0.0000E+00
1.6800E+01	-6.1335E+00	1.8200E+01	-5.4951E+00	1.6800E+01	-4.7878E+00	1.8200E+01	-2.8283E+00	1.4000E+01	1.3666E-01	5.9273E+00	0.0000E+00	0.0000E+00
1.6800E+01	-6.1811E+00	1.8200E+01	-5.5463E+00	1.6800E+01	-4.8434E+00	1.8200E+01	-2.9000E+00	1.4000E+01	2.5782E-02	6.7964E+00	0.0000E+00	0.0000E+00
1.6800E+01	-6.2284E+00	1.8200E+01	-5.5972E+00	1.6800E+01	-4.8987E+00	1.8200E+01	-2.9709E+00	1.4000E+01	-8.3181E-02	7.6555E+00	0.0000E+00	0.0000E+00
1.6800E+01	-6.2756E+00	1.8200E+01	-5.6478E+00	1.6800E+01	-4.9536E+00	1.8200E+01	-3.0411E+00	1.4000E+01	-1.9030E-01	8.4852E+00	0.0000E+00	0.0000E+00
1.6800E+01	-6.3224E+00	1.8200E+01	-5.6981E+00	1.6800E+01	-5.0082E+00	1.8200E+01	-3.1107E+00	1.4000E+01	-2.9566E-01	9.2690E+00	0.0000E+00	0.0000E+00
1.6800E+01	-6.3691E+00	1.8200E+01	-5.7481E+00	1.6800E+01	-5.0624E+00	1.8200E+01	-3.1797E+00	1.4000E+01	-3.9930E-01	9.9941E+00	0.0000E+00	0.0000E+00
1.6800E+01	-6.4155E+00	1.8200E+01	-5.7978E+00	1.6800E+01	-5.1162E+00	1.8200E+01	-3.2480E+00	1.4000E+01	-5.0130E-01	1.0652E+01	0.0000E+00	0.0000E+00
1.6800E+01	-6.4616E+00	1.8200E+01	-5.8472E+00	1.6800E+01	-5.1697E+00	1.8200E+01	-3.3157E+00	1.4000E+01	-6.0172E-01	1.1236E+01	0.0000E+00	0.0000E+00
1.6800E+01	-6.5076E+00	1.8200E+01	-5.8964E+00	1.6800E+01	-5.2229E+00	1.8200E+01	-3.3827E+00	1.4000E+01	-7.0061E-01	1.1748E+01	0.0000E+00	0.0000E+00
1.6800E+01	-6.5533E+00	1.8200E+01	-5.9453E+00	1.6800E+01	-5.2757E+00	1.8200E+01	-3.4492E+00	1.4000E+01	-7.9801E-01	1.2186E+01	0.0000E+00	0.0000E+00
1.6800E+01	-6.5988E+00	1.8200E+01	-5.9939E+00	1.6800E+01	-5.3282E+00	1.8200E+01	-3.5151E+00	1.4000E+01	-8.9399E-01	1.2557E+01	0.0000E+00	0.0000E+00
1.6800E+01	-6.6440E+00	1.8200E+01	-6.0423E+00	1.6800E+01	-5.3804E+00	1.8200E+01	-3.5805E+00	1.4000E+01	-9.8858E-01	1.2865E+01	0.0000E+00	0.0000E+00
1.6800E+01	-6.6891E+00	1.8200E+01	-6.0904E+00	1.6800E+01	-5.4323E+00	1.8200E+01	-3.6453E+00	1.4000E+01	-1.0818E+00	1.3118E+01	0.0000E+00	0.0000E+00
1.6800E+01	-6.7339E+00	1.8200E+01	-6.1382E+00	1.6800E+01	-5.4838E+00	1.8200E+01	-3.7095E+00	1.4000E+01	-1.1738E+00	1.3322E+01	0.0000E+00	0.0000E+00
1.6800E+01	-6.7785E+00	1.8200E+01	-6.1858E+00	1.6800E+01	-5.5351E+00	1.8200E+01	-3.7732E+00	1.4000E+01	-1.2645E+00	1.3484E+01	0.0000E+00	0.0000E+00
1.6800E+01	-6.8229E+00	1.8200E+01	-6.2332E+00	1.6800E+01	-5.5860E+00	1.8200E+01	-3.8364E+00	1.4000E+01	-1.3540E+00	1.3611E+01	0.0000E+00	0.0000E+00
1.6800E+01	-6.8671E+00	1.8200E+01	-6.2803E+00	1.6800E+01	-5.6367E+00	1.8200E+01	-3.8990E+00	1.4000E+01	-1.4423E+00	1.3710E+01	0.0000E+00	0.0000E+00
1.6800E+01	-6.9111E+00	1.8200E+01	-6.3271E+00	1.6800E+01	-5.6870E+00	1.8200E+01	-3.9612E+00	1.4000E+01	-1.5295E+00	1.3786E+01	0.0000E+00	0.0000E+00
1.6800E+01	-6.9549E+00	1.8200E+01	-6.3737E+00	1.6800E+01	-5.7371E+00	1.8200E+01	-4.0229E+00	1.4000E+01	-1.6156E+00	1.3844E+01	0.0000E+00	0.0000E+00
1.6800E+01	-6.9985E+00	1.8200E+01	-6.4201E+00	1.6800E+01	-5.7869E+00	1.8200E+01	-4.0841E+00	1.4000E+01	-1.7006E+00	1.3887E+01	0.0000E+00	0.0000E+00
1.6800E+01	-7.0418E+00	1.8200E+01	-6.4662E+00	1.6800E+01	-5.8364E+00	1.8200E+01	-4.1448E+00	1.4000E+01	-1.7846E+00	1.3919E+01	0.0000E+00	0.0000E+00
1.6800E+01	-7.0850E+00	1.8200E+01	-6.5122E+00	1.6800E+01	-5.8856E+00	1.8200E+01	-4.2050E+00	1.4000E+01	-1.8675E+00	1.3942E+01	0.0000E+00	0.0000E+00
1.6800E+01	-7.1280E+00	1.8200E+01	-6.5578E+00	1.6800E+01	-5.9346E+00	1.8200E+01	-4.2648E+00	1.4000E+01	-1.9495E+00	1.3959E+01	0.0000E+00	0.0000E+00
1.6800E+01	-7.1708E+00	1.8200E+01	-6.6033E+00	1.6800E+01	-5.9833E+00	1.8200E+01	-4.3242E+00	1.4000E+01	-2.0304E+00	1.3971E+01	0.0000E+00	0.0000E+00
1.6800E+01	-7.2134E+00	1.8200E+01	-6.6485E+00	1.6800E+01	-6.0317E+00	1.8200E+01	-4.3831E+00	1.4000E+01	-2.1105E+00	1.3980E+01	0.0000E+00	0.0000E+00
1.6800E+01	-7.2559E+00	1.8200E+01	-6.6936E+00	1.6800E+01	-6.0798E+00	1.8200E+01	-4.4416E+00	1.4000E+01	-2.1897E+00	1.3986E+01	0.0000E+00	0.0000E+00

Curve 13	Arg 14	Curve 14	Arg 15	Curve 15	Arg 16	Curve 16	Arg 17	Curve 17	Arg 18	Curve 18	Arg 19	Curve 19
1.6800E+01	-7.2981E+00	1.8200E+01	-6.7384E+00	1.6800E+01	-6.1277E+00	1.8200E+01	-4.4997E+00	1.4000E+01	-2.2679E+00	1.3991E+01	0.0000E+00	0.0000E+00
1.6800E+01	-7.3402E+00	1.8200E+01	-6.7830E+00	1.6800E+01	-6.1754E+00	1.8200E+01	-4.5573E+00	1.4000E+01	-2.3454E+00	1.3994E+01	0.0000E+00	0.0000E+00
1.6800E+01	-7.3821E+00	1.8200E+01	-6.8273E+00	1.6800E+01	-6.2228E+00	1.8200E+01	-4.6145E+00	1.4000E+01	-2.4219E+00	1.3996E+01	0.0000E+00	0.0000E+00
1.6800E+01	-7.4238E+00	1.8200E+01	-6.8715E+00	1.6800E+01	-6.2699E+00	1.8200E+01	-4.6714E+00	1.4000E+01	-2.4977E+00	1.3997E+01	0.0000E+00	0.0000E+00
1.6800E+01	-7.4653E+00	1.8200E+01	-6.9155E+00	1.6800E+01	-6.3168E+00	1.8200E+01	-4.7278E+00	1.4000E+01	-2.5727E+00	1.3998E+01	0.0000E+00	0.0000E+00
1.6800E+01	-7.5066E+00	1.8200E+01	-6.9592E+00	1.6800E+01	-6.3635E+00	1.8200E+01	-4.7839E+00	1.4000E+01	-2.6469E+00	1.3999E+01	0.0000E+00	0.0000E+00
1.6800E+01	-7.5478E+00	1.8200E+01	-7.0028E+00	1.6800E+01	-6.4099E+00	1.8200E+01	-4.8396E+00	1.4000E+01	-2.7203E+00	1.3999E+01	0.0000E+00	0.0000E+00
1.6800E+01	-7.5888E+00	1.8200E+01	-7.0462E+00	1.6800E+01	-6.4561E+00	1.8200E+01	-4.8949E+00	1.4000E+01	-2.7930E+00	1.3999E+01	0.0000E+00	0.0000E+00
1.6800E+01	-7.6297E+00	1.8200E+01	-7.0893E+00	1.6800E+01	-6.5021E+00	1.8200E+01	-4.9498E+00	1.4000E+01	-2.8650E+00	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-7.6703E+00	1.8200E+01	-7.1323E+00	1.6800E+01	-6.5478E+00	1.8200E+01	-5.0044E+00	1.4000E+01	-2.9362E+00	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-7.7108E+00	1.8200E+01	-7.1751E+00	1.6800E+01	-6.5933E+00	1.8200E+01	-5.0586E+00	1.4000E+01	-3.0068E+00	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-7.7512E+00	1.8200E+01	-7.2177E+00	1.6800E+01	-6.6386E+00	1.8200E+01	-5.1125E+00	1.4000E+01	-3.0767E+00	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-7.7914E+00	1.8200E+01	-7.2601E+00	1.6800E+01	-6.6837E+00	1.8200E+01	-5.1660E+00	1.4000E+01	-3.1460E+00	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-7.8314E+00	1.8200E+01	-7.3023E+00	1.6800E+01	-6.7285E+00	1.8200E+01	-5.2192E+00	1.4000E+01	-3.2146E+00	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-7.8713E+00	1.8200E+01	-7.3444E+00	1.6800E+01	-6.7732E+00	1.8200E+01	-5.2720E+00	1.4000E+01	-3.2826E+00	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-7.9110E+00	1.8200E+01	-7.3862E+00	1.6800E+01	-6.8176E+00	1.8200E+01	-5.3246E+00	1.4000E+01	-3.3500E+00	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-7.9505E+00	1.8200E+01	-7.4279E+00	1.6800E+01	-6.8618E+00	1.8200E+01	-5.3768E+00	1.4000E+01	-3.4167E+00	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-7.9899E+00	1.8200E+01	-7.4694E+00	1.6800E+01	-6.9058E+00	1.8200E+01	-5.4287E+00	1.4000E+01	-3.4829E+00	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-8.0292E+00	1.8200E+01	-7.5108E+00	1.6800E+01	-6.9496E+00	1.8200E+01	-5.4802E+00	1.4000E+01	-3.5485E+00	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-8.0683E+00	1.8200E+01	-7.5519E+00	1.6800E+01	-6.9932E+00	1.8200E+01	-5.5315E+00	1.4000E+01	-3.6136E+00	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-8.1072E+00	1.8200E+01	-7.5929E+00	1.6800E+01	-7.0366E+00	1.8200E+01	-5.5825E+00	1.4000E+01	-3.6781E+00	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-8.1460E+00	1.8200E+01	-7.6337E+00	1.6800E+01	-7.0799E+00	1.8200E+01	-5.6332E+00	1.4000E+01	-3.7420E+00	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-8.1847E+00	1.8200E+01	-7.6744E+00	1.6800E+01	-7.1229E+00	1.8200E+01	-5.6835E+00	1.4000E+01	-3.8055E+00	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-8.2232E+00	1.8200E+01	-7.7149E+00	1.6800E+01	-7.1657E+00	1.8200E+01	-5.7336E+00	1.4000E+01	-3.8684E+00	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-8.2616E+00	1.8200E+01	-7.7552E+00	1.6800E+01	-7.2083E+00	1.8200E+01	-5.7834E+00	1.4000E+01	-3.9308E+00	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-8.2998E+00	1.8200E+01	-7.7954E+00	1.6800E+01	-7.2508E+00	1.8200E+01	-5.8329E+00	1.4000E+01	-3.9927E+00	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-8.3379E+00	1.8200E+01	-7.8354E+00	1.6800E+01	-7.2931E+00	1.8200E+01	-5.8822E+00	1.4000E+01	-4.0542E+00	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-8.3758E+00	1.8200E+01	-7.8752E+00	1.6800E+01	-7.3351E+00	1.8200E+01	-5.9312E+00	1.4000E+01	-4.1151E+00	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-8.4137E+00	1.8200E+01	-7.9149E+00	1.6800E+01	-7.3770E+00	1.8200E+01	-5.9799E+00	1.4000E+01	-4.1756E+00	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-8.4513E+00	1.8200E+01	-7.9545E+00	1.6800E+01	-7.4188E+00	1.8200E+01	-6.0283E+00	1.4000E+01	-4.2356E+00	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-8.4889E+00	1.8200E+01	-7.9939E+00	1.6800E+01	-7.4603E+00	1.8200E+01	-6.0765E+00	1.4000E+01	-4.2952E+00	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-8.5263E+00	1.8200E+01	-8.0331E+00	1.6800E+01	-7.5017E+00	1.8200E+01	-6.1244E+00	1.4000E+01	-4.3543E+00	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-8.5636E+00	1.8200E+01	-8.0722E+00	1.6800E+01	-7.5429E+00	1.8200E+01	-6.1721E+00	1.4000E+01	-4.4130E+00	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-8.6007E+00	1.8200E+01	-8.1111E+00	1.6800E+01	-7.5839E+00	1.8200E+01	-6.2195E+00	1.4000E+01	-4.4713E+00	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-8.6378E+00	1.8200E+01	-8.1499E+00	1.6800E+01	-7.6248E+00	1.8200E+01	-6.2666E+00	1.4000E+01	-4.5291E+00	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-8.6747E+00	1.8200E+01	-8.1885E+00	1.6800E+01	-7.6655E+00	1.8200E+01	-6.3136E+00	1.4000E+01	-4.5865E+00	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-8.7114E+00	1.8200E+01	-8.2270E+00	1.6800E+01	-7.7060E+00	1.8200E+01	-6.3602E+00	1.4000E+01	-4.6436E+00	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-8.7481E+00	1.8200E+01	-8.2654E+00	1.6800E+01	-7.7464E+00	1.8200E+01	-6.4067E+00	1.4000E+01	-4.7002E+00	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-8.7846E+00	1.8200E+01	-8.3036E+00	1.6800E+01	-7.7866E+00	1.8200E+01	-6.4529E+00	1.4000E+01	-4.7565E+00	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-8.8210E+00	1.8200E+01	-8.3417E+00	1.6800E+01	-7.8266E+00	1.8200E+01	-6.4989E+00	1.4000E+01	-4.8123E+00	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-8.8572E+00	1.8200E+01	-8.3796E+00	1.6800E+01	-7.8665E+00	1.8200E+01	-6.5446E+00	1.4000E+01	-4.8678E+00	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-8.8934E+00	1.8200E+01	-8.4174E+00	1.6800E+01	-7.9062E+00	1.8200E+01	-6.5901E+00	1.4000E+01	-4.9229E+00	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-8.9294E+00	1.8200E+01	-8.4551E+00	1.6800E+01	-7.9458E+00	1.8200E+01	-6.6354E+00	1.4000E+01	-4.9777E+00	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-8.9653E+00	1.8200E+01	-8.4926E+00	1.6800E+01	-7.9852E+00	1.8200E+01	-6.6805E+00	1.4000E+01	-5.0321E+00	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-9.0011E+00	1.8200E+01	-8.5300E+00	1.6800E+01	-8.0245E+00	1.8200E+01	-6.7254E+00	1.4000E+01	-5.0861E+00	1.4000E+01	6.8096E+01	0.0000E+00
1.6800E+01	-9.0368E+00	1.8200E+01	-8.5673E+00	1.6800E+01	-8.0636E+00	1.8200E+01	-6.7700E+00	1.4000E+01	-5.1398E+00	1.4000E+01	3.8369E+01	0.0000E+00
1.6800E+01	-9.0724E+00	1.8200E+01	-8.6044E+00	1.6800E+01	-8.1026E+00	1.8200E+01	-6.8145E+00	1.4000E+01	-5.1932E+00	1.4000E+01	2.9153E+01	0.0000E+00
1.6800E+01	-9.1078E+00	1.8200E+01	-8.6415E+00	1.6800E+01	-8.1414E+00	1.8200E+01	-6.8587E+00	1.4000E+01	-5.2462E+00	1.4000E+01	2.4180E+01	0.0000E+00
1.6800E+01	-9.1431E+00	1.8200E+01	-8.6783E+00	1.6800E+01	-8.1801E+00	1.8200E+01	-6.9027E+00	1.4000E+01	-5.2989E+00	1.4000E+01	2.0925E+01	0.0000E+00
1.6800E+01	-9.1784E+00	1.8200E+01	-8.7151E+00	1.6800E+01	-8.2186E+00	1.8200E+01	-6.9466E+00	1.4000E+01	-5.3512E+00	1.4000E+01	1.8568E+01	0.0000E+00
1.6800E+01	-9.2135E+00	1.8200E+01	-8.7517E+00	1.6800E+01	-8.2570E+00	1.8200E+01	-6.9902E+00	1.4000E+01	-5.4033E+00	1.4000E+01	1.6751E+01	0.0000E+00
1.6800E+01	-9.2485E+00	1.8200E+01	-8.7882E+00	1.6800E+01	-8.2952E+00	1.8200E+01	-7.0336E+00	1.4000E+01	-5.4550E+00	1.4000E+01	1.5289E+01	0.0000E+00

Curve 13	Arg 14	Curve 14	Arg 15	Curve 15	Arg 16	Curve 16	Arg 17	Curve 17	Arg 18	Curve 18	Arg 19	Curve 19
1.6800E+01	-9.2833E+00	1.8200E+01	-8.8246E+00	1.6800E+01	-8.3333E+00	1.8200E+01	-7.0768E+00	1.4000E+01	-5.5064E+00	1.4000E+01	1.4075E+01	0.0000E+00
1.6800E+01	-9.3181E+00	1.8200E+01	-8.8609E+00	1.6800E+01	-8.3713E+00	1.8200E+01	-7.1199E+00	1.4000E+01	-5.5575E+00	1.4000E+01	1.3043E+01	0.0000E+00
1.6800E+01	-9.3528E+00	1.8200E+01	-8.8970E+00	1.6800E+01	-8.4091E+00	1.8200E+01	-7.1627E+00	1.4000E+01	-5.6084E+00	1.4000E+01	1.2149E+01	0.0000E+00
1.6800E+01	-9.3874E+00	1.8200E+01	-8.9330E+00	1.6800E+01	-8.4468E+00	1.8200E+01	-7.2054E+00	1.4000E+01	-5.6589E+00	1.4000E+01	1.1362E+01	0.0000E+00
1.6800E+01	-9.4218E+00	1.8200E+01	-8.9689E+00	1.6800E+01	-8.4844E+00	1.8200E+01	-7.2478E+00	1.4000E+01	-5.7091E+00	1.4000E+01	1.0663E+01	0.0000E+00
1.6800E+01	-9.4562E+00	1.8200E+01	-9.0047E+00	1.6800E+01	-8.5218E+00	1.8200E+01	-7.2901E+00	1.4000E+01	-5.7591E+00	1.4000E+01	1.0033E+01	0.0000E+00
1.6800E+01	-9.4904E+00	1.8200E+01	-9.0404E+00	1.6800E+01	-8.5591E+00	1.8200E+01	-7.3322E+00	1.4000E+01	-5.8087E+00	1.4000E+01	9.4623E+00	0.0000E+00
1.6800E+01	-9.5246E+00	1.8200E+01	-9.0759E+00	1.6800E+01	-8.5963E+00	1.8200E+01	-7.3741E+00	1.4000E+01	-5.8581E+00	1.4000E+01	8.9403E+00	0.0000E+00
1.6800E+01	-9.5586E+00	1.8200E+01	-9.1113E+00	1.6800E+01	-8.6333E+00	1.8200E+01	-7.4158E+00	1.4000E+01	-5.9072E+00	1.4000E+01	8.4601E+00	0.0000E+00
1.6800E+01	-9.5925E+00	1.8200E+01	-9.1467E+00	1.6800E+01	-8.6702E+00	1.8200E+01	-7.4574E+00	1.4000E+01	-5.9560E+00	1.4000E+01	8.0157E+00	0.0000E+00
1.6800E+01	-9.6264E+00	1.8200E+01	-9.1819E+00	1.6800E+01	-8.7070E+00	1.8200E+01	-7.4988E+00	1.4000E+01	-6.0046E+00	1.4000E+01	7.6025E+00	0.0000E+00
1.6800E+01	-9.6601E+00	1.8200E+01	-9.2170E+00	1.6800E+01	-8.7437E+00	1.8200E+01	-7.5400E+00	1.4000E+01	-6.0529E+00	1.4000E+01	7.2164E+00	0.0000E+00
1.6800E+01	-9.6938E+00	1.8200E+01	-9.2520E+00	1.6800E+01	-8.7802E+00	1.8200E+01	-7.5810E+00	1.4000E+01	-6.1009E+00	1.4000E+01	6.8543E+00	0.0000E+00
1.6800E+01	-9.7273E+00	1.8200E+01	-9.2868E+00	1.6800E+01	-8.8166E+00	1.8200E+01	-7.6219E+00	1.4000E+01	-6.1487E+00	1.4000E+01	6.5134E+00	0.0000E+00
1.6800E+01	-9.7607E+00	1.8200E+01	-9.3216E+00	1.6800E+01	-8.8529E+00	1.8200E+01	-7.6626E+00	1.4000E+01	-6.1963E+00	1.4000E+01	6.1915E+00	0.0000E+00
1.6800E+01	-9.7941E+00	1.8200E+01	-9.3563E+00	1.6800E+01	-8.8891E+00	1.8200E+01	-7.7032E+00	1.4000E+01	-6.2436E+00	1.4000E+01	5.8866E+00	6.2172E-16
1.6800E+01	-9.8273E+00	1.8200E+01	-9.3908E+00	1.6800E+01	-8.9251E+00	1.8200E+01	-7.7435E+00	1.4000E+01	-6.2906E+00	1.4000E+01	5.5971E+00	1.3678E-14
1.6800E+01	-9.8605E+00	1.8200E+01	-9.4253E+00	1.6800E+01	-8.9610E+00	1.8200E+01	-7.7837E+00	1.4000E+01	-6.3374E+00	1.4000E+01	5.3214E+00	2.9408E-13
1.6800E+01	-9.8935E+00	1.8200E+01	-9.4596E+00	1.6800E+01	-8.9968E+00	1.8200E+01	-7.8238E+00	1.4000E+01	-6.3840E+00	1.4000E+01	5.0583E+00	4.7357E-12
1.6800E+01	-9.9265E+00	1.8200E+01	-9.4938E+00	1.6800E+01	-9.0325E+00	1.8200E+01	-7.8637E+00	1.4000E+01	-6.4303E+00	1.4000E+01	4.8068E+00	5.9485E-11
1.6800E+01	-9.9594E+00	1.8200E+01	-9.5280E+00	1.6800E+01	-9.0681E+00	1.8200E+01	-7.9034E+00	1.4000E+01	-6.4764E+00	1.4000E+01	4.5658E+00	5.9812E-10
1.6800E+01	-9.9922E+00	1.8200E+01	-9.5620E+00	1.6800E+01	-9.1036E+00	1.8200E+01	-7.9430E+00	1.4000E+01	-6.5222E+00	1.4000E+01	4.3345E+00	4.9247E-09
1.6800E+01	-1.0025E+01	1.8200E+01	-9.5959E+00	1.6800E+01	-9.1389E+00	1.8200E+01	-7.9824E+00	1.4000E+01	-6.5679E+00	1.4000E+01	4.1121E+00	3.3868E-08
1.6800E+01	-1.0057E+01	1.8200E+01	-9.6298E+00	1.6800E+01	-9.1741E+00	1.8200E+01	-8.0217E+00	1.4000E+01	-6.6133E+00	1.4000E+01	3.8980E+00	1.9793E-07
1.6800E+01	-1.0090E+01	1.8200E+01	-9.6635E+00	1.6800E+01	-9.2093E+00	1.8200E+01	-8.0609E+00	1.4000E+01	-6.6585E+00	1.4000E+01	3.6916E+00	9.9804E-07
1.6800E+01	-1.0122E+01	1.8200E+01	-9.6971E+00	1.6800E+01	-9.2443E+00	1.8200E+01	-8.0998E+00	1.4000E+01	-6.7034E+00	1.4000E+01	3.4923E+00	4.4004E-06
1.6800E+01	-1.0155E+01	1.8200E+01	-9.7306E+00	1.6800E+01	-9.2792E+00	1.8200E+01	-8.1387E+00	1.4000E+01	-6.7482E+00	1.4000E+01	3.2996E+00	1.7167E-05
1.6800E+01	-1.0187E+01	1.8200E+01	-9.7641E+00	1.6800E+01	-9.3140E+00	1.8200E+01	-8.1774E+00	1.4000E+01	-6.7927E+00	1.4000E+01	3.1131E+00	5.9884E-05
1.6800E+01	-1.0219E+01	1.8200E+01	-9.7974E+00	1.6800E+01	-9.3486E+00	1.8200E+01	-8.2159E+00	1.4000E+01	-6.8371E+00	1.4000E+01	2.9325E+00	1.8855E-04
1.6800E+01	-1.0251E+01	1.8200E+01	-9.8307E+00	1.6800E+01	-9.3832E+00	1.8200E+01	-8.2543E+00	1.4000E+01	-6.8812E+00	1.4000E+01	2.7572E+00	5.4034E-04
1.6800E+01	-1.0283E+01	1.8200E+01	-9.8638E+00	1.6800E+01	-9.4177E+00	1.8200E+01	-8.2926E+00	1.4000E+01	-6.9251E+00	1.4000E+01	2.5870E+00	1.4201E-03
1.6800E+01	-1.0315E+01	1.8200E+01	-9.8968E+00	1.6800E+01	-9.4521E+00	1.8200E+01	-8.3307E+00	1.4000E+01	-6.9688E+00	1.4000E+01	2.4217E+00	3.4462E-03
1.6800E+01	-1.0347E+01	1.8200E+01	-9.9298E+00	1.6800E+01	-9.4863E+00	1.8200E+01	-8.3686E+00	1.4000E+01	-7.0124E+00	1.4000E+01	2.2608E+00	7.7693E-03
1.6800E+01	-1.0379E+01	1.8200E+01	-9.9627E+00	1.6800E+01	-9.5205E+00	1.8200E+01	-8.4065E+00	1.4000E+01	-7.0557E+00	1.4000E+01	2.1042E+00	1.6363E-02
1.6800E+01	-1.0410E+01	1.8200E+01	-9.9954E+00	1.6800E+01	-9.5545E+00	1.8200E+01	-8.4442E+00	1.4000E+01	-7.0988E+00	1.4000E+01	1.9517E+00	3.2361E-02
1.6800E+01	-1.0442E+01	1.8200E+01	-1.0028E+01	1.6800E+01	-9.5885E+00	1.8200E+01	-8.4818E+00	1.4000E+01	-7.1417E+00	1.4000E+01	1.8029E+00	6.0370E-02
1.6800E+01	-1.0473E+01	1.8200E+01	-1.0061E+01	1.6800E+01	-9.6223E+00	1.8200E+01	-8.5192E+00	1.4000E+01	-7.1845E+00	1.4000E+01	1.6578E+00	1.0669E-01
1.6800E+01	-1.0505E+01	1.8200E+01	-1.0093E+01	1.6800E+01	-9.6561E+00	1.8200E+01	-8.5565E+00	1.4000E+01	-7.2270E+00	1.4000E+01	1.5161E+00	1.7932E-01
1.6800E+01	-1.0536E+01	1.8200E+01	-1.0126E+01	1.6800E+01	-9.6897E+00	1.8200E+01	-8.5937E+00	1.4000E+01	-7.2694E+00	1.4000E+01	1.3777E+00	2.8767E-01
1.6800E+01	-1.0567E+01	1.8200E+01	-1.0158E+01	1.6800E+01	-9.7233E+00	1.8200E+01	-8.6307E+00	1.4000E+01	-7.3116E+00	1.4000E+01	1.2424E+00	4.4194E-01
1.6800E+01	-1.0598E+01	1.8200E+01	-1.0190E+01	1.6800E+01	-9.7567E+00	1.8200E+01	-8.6677E+00	1.4000E+01	-7.3536E+00	1.4000E+01	1.1100E+00	6.5217E-01
1.6800E+01	-1.0629E+01	1.8200E+01	-1.0222E+01	1.6800E+01	-9.7901E+00	1.8200E+01	-8.7044E+00	1.4000E+01	-7.3954E+00	1.4000E+01	9.8048E-01	9.2714E-01
1.6800E+01	-1.0660E+01	1.8200E+01	-1.0254E+01	1.6800E+01	-9.8233E+00	1.8200E+01	-8.7411E+00	1.4000E+01	-7.4371E+00	1.4000E+01	8.5363E-01	1.2732E+00
1.6800E+01	-1.0691E+01	1.8200E+01	-1.0286E+01	1.6800E+01	-9.8565E+00	1.8200E+01	-8.7776E+00	1.4000E+01	-7.4785E+00	1.4000E+01	7.2935E-01	1.6930E+00
1.6800E+01	-1.0722E+01	1.8200E+01	-1.0318E+01	1.6800E+01	-9.8896E+00	1.8200E+01	-8.8141E+00	1.4000E+01	-7.5198E+00	1.4000E+01	6.0752E-01	2.1854E+00
1.6800E+01	-1.0753E+01	1.8200E+01	-1.0350E+01	1.6800E+01	-9.9226E+00	1.8200E+01	-8.8504E+00	1.4000E+01	-7.5610E+00	1.4000E+01	4.8805E-01	2.7443E+00
1.6800E+01	-1.0784E+01	1.8200E+01	-1.0382E+01	1.6800E+01	-9.9554E+00	1.8200E+01	-8.8865E+00	1.4000E+01	-7.6019E+00	1.4000E+01	3.7084E-01	3.3598E+00
1.6800E+01	-1.0814E+01	1.8200E+01	-1.0413E+01	1.6800E+01	-9.9882E+00	1.8200E+01	-8.9226E+00	1.4000E+01	-7.6427E+00	1.4000E+01	2.5579E-01	4.0183E+00
1.6800E+01	-1.0845E+01	1.8200E+01	-1.0445E+01	1.6800E+01	-1.0021E+01	1.8200E+01	-8.9585E+00	1.4000E+01	-7.6833E+00	1.4000E+01	1.4281E-01	4.7037E+00
1.6800E+01	-1.0875E+01	1.8200E+01	-1.0476E+01	1.6800E+01	-1.0054E+01	1.8200E+01	-8.9943E+00	1.4000E+01	-7.7238E+00	1.4000E+01	3.1830E-02	5.3989E+00
1.6800E+01	-1.0906E+01	1.8200E+01	-1.0508E+01	1.6800E+01	-1.0086E+01	1.8200E+01	-9.0300E+00	1.4000E+01	-7.7641E+00	1.4000E+01	-7.7236E-02	6.0871E+00
1.6800E+01	-1.0936E+01	1.8200E+01	-1.0539E+01	1.6800E+01	-1.0118E+01	1.8200E+01	-9.0656E+00	1.4000E+01	-7.8042E+00	1.4000E+01	-1.8446E-01	6.7525E+00

Curve 13	Arg 14	Curve 14	Arg 15	Curve 15	Arg 16	Curve 16	Arg 17	Curve 17	Arg 18	Curve 18	Arg 19	Curve 19
1.6800E+01	-1.0966E+01	1.8200E+01	-1.0570E+01	1.6800E+01	-1.0151E+01	1.8200E+01	-9.1011E+00	1.4000E+01	-7.8442E+00	1.4000E+01	-2.8991E-01	7.3818E+00
1.6800E+01	-1.0996E+01	1.8200E+01	-1.0601E+01	1.6800E+01	-1.0183E+01	1.8200E+01	-9.1364E+00	1.4000E+01	-7.8840E+00	1.4000E+01	-3.9365E-01	7.9647E+00
1.6800E+01	-1.1026E+01	1.8200E+01	-1.0632E+01	1.6800E+01	-1.0215E+01	1.8200E+01	-9.1717E+00	1.4000E+01	-7.9236E+00	1.4000E+01	-4.9574E-01	8.4938E+00
1.6800E+01	-1.1056E+01	1.8200E+01	-1.0663E+01	1.6800E+01	-1.0247E+01	1.8200E+01	-9.2068E+00	1.4000E+01	-7.9631E+00	1.4000E+01	-5.9624E-01	8.9650E+00
1.6800E+01	-1.1086E+01	1.8200E+01	-1.0694E+01	1.6800E+01	-1.0279E+01	1.8200E+01	-9.2418E+00	1.4000E+01	-8.0025E+00	1.4000E+01	-6.9521E-01	9.3771E+00
1.6800E+01	-1.1116E+01	1.8200E+01	-1.0725E+01	1.6800E+01	-1.0311E+01	1.8200E+01	-9.2767E+00	1.4000E+01	-8.0417E+00	1.4000E+01	-7.9269E-01	9.7313E+00
1.6800E+01	-1.1146E+01	1.8200E+01	-1.0756E+01	1.6800E+01	-1.0343E+01	1.8200E+01	-9.3115E+00	1.4000E+01	-8.0808E+00	1.4000E+01	-8.8875E-01	1.0031E+01
1.6800E+01	-1.1176E+01	1.8200E+01	-1.0787E+01	1.6800E+01	-1.0375E+01	1.8200E+01	-9.3462E+00	1.4000E+01	-8.1197E+00	1.4000E+01	-9.8342E-01	1.0280E+01
1.6800E+01	-1.1205E+01	1.8200E+01	-1.0817E+01	1.6800E+01	-1.0406E+01	1.8200E+01	-9.3808E+00	1.4000E+01	-8.1584E+00	1.4000E+01	-1.0767E+00	1.0484E+01
1.6800E+01	-1.1235E+01	1.8200E+01	-1.0848E+01	1.6800E+01	-1.0438E+01	1.8200E+01	-9.4153E+00	1.4000E+01	-8.1970E+00	1.4000E+01	-1.1688E+00	1.0649E+01
1.6800E+01	-1.1264E+01	1.8200E+01	-1.0878E+01	1.6800E+01	-1.0469E+01	1.8200E+01	-9.4496E+00	1.4000E+01	-8.2355E+00	1.4000E+01	-1.2596E+00	1.0781E+01
1.6800E+01	-1.1294E+01	1.8200E+01	-1.0909E+01	1.6800E+01	-1.0501E+01	1.8200E+01	-9.4839E+00	1.4000E+01	-8.2738E+00	1.4000E+01	-1.3491E+00	1.0884E+01
1.6800E+01	-1.1323E+01	1.8200E+01	-1.0939E+01	1.6800E+01	-1.0532E+01	1.8200E+01	-9.5181E+00	1.4000E+01	-8.3120E+00	1.4000E+01	-1.4375E+00	1.0964E+01
1.6800E+01	-1.1353E+01	1.8200E+01	-1.0969E+01	1.6800E+01	-1.0563E+01	1.8200E+01	-9.5521E+00	1.4000E+01	-8.3501E+00	1.4000E+01	-1.5248E+00	1.1026E+01
1.6800E+01	-1.1382E+01	1.8200E+01	-1.0999E+01	1.6800E+01	-1.0595E+01	1.8200E+01	-9.5861E+00	1.4000E+01	-8.3880E+00	1.4000E+01	-1.6109E+00	1.1073E+01
1.6800E+01	-1.1411E+01	1.8200E+01	-1.1029E+01	1.6800E+01	-1.0626E+01	1.8200E+01	-9.6200E+00	1.4000E+01	-8.4257E+00	1.4000E+01	-1.6960E+00	1.1108E+01
1.6800E+01	-1.1440E+01	1.8200E+01	-1.1059E+01	1.6800E+01	-1.0657E+01	1.8200E+01	-9.6537E+00	1.4000E+01	-8.4634E+00	1.4000E+01	-1.7800E+00	1.1134E+01
1.6800E+01	-1.1469E+01	1.8200E+01	-1.1089E+01	1.6800E+01	-1.0688E+01	1.8200E+01	-9.6874E+00	1.4000E+01	-8.5009E+00	1.4000E+01	-1.8630E+00	1.1153E+01
1.6800E+01	-1.1498E+01	1.8200E+01	-1.1119E+01	1.6800E+01	-1.0718E+01	1.8200E+01	-9.7209E+00	1.4000E+01	-8.5383E+00	1.4000E+01	-1.9450E+00	1.1167E+01
1.6800E+01	-1.1527E+01	1.8200E+01	-1.1149E+01	1.6800E+01	-1.0749E+01	1.8200E+01	-9.7544E+00	1.4000E+01	-8.5755E+00	1.4000E+01	-2.0260E+00	1.1177E+01
1.6800E+01	-1.1556E+01	1.8200E+01	-1.1179E+01	1.6800E+01	-1.0780E+01	1.8200E+01	-9.7878E+00	1.4000E+01	-8.6126E+00	1.4000E+01	-2.1061E+00	1.1184E+01
1.6800E+01	-1.1585E+01	1.8200E+01	-1.1208E+01	1.6800E+01	-1.0810E+01	1.8200E+01	-9.8210E+00	1.4000E+01	-8.6496E+00	1.4000E+01	-2.1853E+00	1.1189E+01
1.6800E+01	-1.1613E+01	1.8200E+01	-1.1238E+01	1.6800E+01	-1.0841E+01	1.8200E+01	-9.8542E+00	1.4000E+01	-8.6864E+00	1.4000E+01	-2.2637E+00	1.1192E+01
1.6800E+01	-1.1642E+01	1.8200E+01	-1.1267E+01	1.6800E+01	-1.0871E+01	1.8200E+01	-9.8873E+00	1.4000E+01	-8.7232E+00	1.4000E+01	-2.3411E+00	1.1195E+01
1.6800E+01	-1.1671E+01	1.8200E+01	-1.1297E+01	1.6800E+01	-1.0902E+01	1.8200E+01	-9.9203E+00	1.4000E+01	-8.7598E+00	1.4000E+01	-2.4177E+00	1.1196E+01
1.6800E+01	-1.1699E+01	1.8200E+01	-1.1326E+01	1.6800E+01	-1.0932E+01	1.8200E+01	-9.9531E+00	1.4000E+01	-8.7962E+00	1.4000E+01	-2.4936E+00	1.1198E+01
1.6800E+01	-1.1728E+01	1.8200E+01	-1.1355E+01	1.6800E+01	-1.0962E+01	1.8200E+01	-9.9859E+00	1.4000E+01	-8.8326E+00	1.4000E+01	-2.5686E+00	1.1198E+01
1.6800E+01	-1.1756E+01	1.8200E+01	-1.1385E+01	1.6800E+01	-1.0993E+01	1.8200E+01	-1.0019E+01	1.4000E+01	-8.8688E+00	1.4000E+01	-2.6428E+00	1.1199E+01
1.6800E+01	-1.1784E+01	1.8200E+01	-1.1414E+01	1.6800E+01	-1.1023E+01	1.8200E+01	-1.0051E+01	1.4000E+01	-8.9049E+00	1.4000E+01	-2.7163E+00	1.1199E+01
1.6800E+01	-1.1813E+01	1.8200E+01	-1.1443E+01	1.6800E+01	-1.1053E+01	1.8200E+01	-1.0084E+01	1.4000E+01	-8.9409E+00	1.4000E+01	-2.7890E+00	1.1200E+01
1.6800E+01	-1.1841E+01	1.8200E+01	-1.1472E+01	1.6800E+01	-1.1083E+01	1.8200E+01	-1.0116E+01	1.4000E+01	-8.9768E+00	1.4000E+01	-2.8610E+00	1.1200E+01
1.6800E+01	-1.1869E+01	1.8200E+01	-1.1501E+01	1.6800E+01	-1.1113E+01	1.8200E+01	-1.0149E+01	1.4000E+01	-9.0126E+00	1.4000E+01	-2.9323E+00	1.1200E+01
1.6800E+01	-1.1897E+01	1.8200E+01	-1.1530E+01	1.6800E+01	-1.1142E+01	1.8200E+01	-1.0181E+01	1.4000E+01	-9.0482E+00	1.4000E+01	-3.0029E+00	1.1200E+01
1.6800E+01	-1.1925E+01	1.8200E+01	-1.1559E+01	1.6800E+01	-1.1172E+01	1.8200E+01	-1.0213E+01	1.4000E+01	-9.0837E+00	1.4000E+01	-3.0729E+00	1.1200E+01
1.6800E+01	-1.1953E+01	1.8200E+01	-1.1588E+01	1.6800E+01	-1.1202E+01	1.8200E+01	-1.0245E+01	1.4000E+01	-9.1191E+00	1.4000E+01	-3.1422E+00	1.1200E+01
1.6800E+01	-1.1981E+01	1.8200E+01	-1.1616E+01	1.6800E+01	-1.1231E+01	1.8200E+01	-1.0277E+01	1.4000E+01	-9.1544E+00	1.4000E+01	-3.2108E+00	1.1200E+01
1.6800E+01	-1.2009E+01	1.8200E+01	-1.1645E+01	1.6800E+01	-1.1261E+01	1.8200E+01	-1.0309E+01	1.4000E+01	-9.1896E+00	1.4000E+01	-3.2789E+00	1.1200E+01
1.6800E+01	-1.2037E+01	1.8200E+01	-1.1674E+01	1.6800E+01	-1.1290E+01	1.8200E+01	-1.0341E+01	1.4000E+01	-9.2247E+00	1.4000E+01	-3.3463E+00	1.1200E+01
1.6800E+01	-1.2065E+01	1.8200E+01	-1.1702E+01	1.6800E+01	-1.1320E+01	1.8200E+01	-1.0373E+01	1.4000E+01	-9.2596E+00	1.4000E+01	-3.4131E+00	1.1200E+01
1.6800E+01	-1.2092E+01	1.8200E+01	-1.1731E+01	1.6800E+01	-1.1349E+01	1.8200E+01	-1.0404E+01	1.4000E+01	-9.2945E+00	1.4000E+01	-3.4793E+00	1.1200E+01
1.6800E+01	-1.2120E+01	1.8200E+01	-1.1759E+01	1.6800E+01	-1.1378E+01	1.8200E+01	-1.0436E+01	1.4000E+01	-9.3292E+00	1.4000E+01	-3.5449E+00	1.1200E+01
1.6800E+01	-1.2148E+01	1.8200E+01	-1.1787E+01	1.6800E+01	-1.1407E+01	1.8200E+01	-1.0467E+01	1.4000E+01	-9.3639E+00	1.4000E+01	-3.6100E+00	1.1200E+01
1.6800E+01	-1.2175E+01	1.8200E+01	-1.1816E+01	1.6800E+01	-1.1437E+01	1.8200E+01	-1.0499E+01	1.4000E+01	-9.3984E+00	1.4000E+01	-3.6746E+00	1.1200E+01
1.6800E+01	-1.2203E+01	1.8200E+01	-1.1844E+01	1.6800E+01	-1.1466E+01	1.8200E+01	-1.0530E+01	1.4000E+01	-9.4328E+00	1.4000E+01	-3.7385E+00	1.1200E+01
1.6800E+01	-1.2230E+01	1.8200E+01	-1.1872E+01	1.6800E+01	-1.1495E+01	1.8200E+01	-1.0561E+01	1.4000E+01	-9.4671E+00	1.4000E+01	-3.8020E+00	1.1200E+01
1.6800E+01	-1.2257E+01	1.8200E+01	-1.1900E+01	1.6800E+01	-1.1524E+01	1.8200E+01	-1.0592E+01	1.4000E+01	-9.5014E+00	1.4000E+01	-3.8650E+00	1.1200E+01
1.6800E+01	-1.2285E+01	1.8200E+01	-1.1928E+01	1.6800E+01	-1.1552E+01	1.8200E+01	-1.0623E+01	1.4000E+01	-9.5355E+00	1.4000E+01	-3.9274E+00	1.1200E+01
1.6800E+01	-1.2312E+01	1.8200E+01	-1.1956E+01	1.6800E+01	-1.1581E+01	1.8200E+01	-1.0654E+01	1.4000E+01	-9.5695E+00	1.4000E+01	-3.9893E+00	1.1200E+01
1.6800E+01	-1.2339E+01	1.8200E+01	-1.1984E+01	1.6800E+01	-1.1610E+01	1.8200E+01	-1.0685E+01	1.4000E+01	-9.6034E+00	1.4000E+01	-4.0508E+00	1.1200E+01
1.6800E+01	-1.2366E+01	1.8200E+01	-1.2012E+01	1.6800E+01	-1.1639E+01	1.8200E+01	-1.0716E+01	1.4000E+01	-9.6372E+00	1.4000E+01	-4.1118E+00	1.1200E+01
1.6800E+01	-1.2393E+01	1.8200E+01	-1.2040E+01	1.6800E+01	-1.1667E+01	1.8200E+01	-1.0747E+01	1.4000E+01	-9.6709E+00	1.4000E+01	-4.1723E+00	1.1200E+01
1.6800E+01	-1.2420E+01	1.8200E+01	-1.2067E+01	1.6800E+01	-1.1696E+01	1.8200E+01	-1.0778E+01	1.4000E+01	-9.7045E+00	1.4000E+01	-4.2323E+00	1.1200E+01

Curve 13	Arg 14	Curve 14	Arg 15	Curve 15	Arg 16	Curve 16	Arg 17	Curve 17	Arg 18	Curve 18	Arg 19	Curve 19
1.6800E+01	-1.2447E+01	1.8200E+01	-1.2095E+01	1.6800E+01	-1.1724E+01	1.8200E+01	-1.0808E+01	1.4000E+01	-9.7380E+00	1.4000E+01	-4.2919E+00	1.1200E+01
1.6800E+01	-1.2474E+01	1.8200E+01	-1.2123E+01	1.6800E+01	-1.1753E+01	1.8200E+01	-1.0839E+01	1.4000E+01	-9.7714E+00	1.4000E+01	-4.3511E+00	1.1200E+01
1.6800E+01	-1.2501E+01	1.8200E+01	-1.2150E+01	1.6800E+01	-1.1781E+01	1.8200E+01	-1.0869E+01	1.4000E+01	-9.8047E+00	1.4000E+01	-4.4098E+00	1.1200E+01
1.6800E+01	-1.2528E+01	1.8200E+01	-1.2178E+01	1.6800E+01	-1.1809E+01	1.8200E+01	-1.0900E+01	1.4000E+01	-9.8380E+00	1.4000E+01	-4.4681E+00	1.1200E+01
1.6800E+01	-1.2555E+01	1.8200E+01	-1.2205E+01	1.6800E+01	-1.1838E+01	1.8200E+01	-1.0930E+01	1.4000E+01	-9.8711E+00	1.4000E+01	-4.5259E+00	1.1200E+01
1.6800E+01	-1.2581E+01	1.8200E+01	-1.2233E+01	1.6800E+01	-1.1866E+01	1.8200E+01	-1.0960E+01	1.4000E+01	-9.9041E+00	1.4000E+01	-4.5834E+00	1.1200E+01
1.6800E+01	-1.2608E+01	1.8200E+01	-1.2260E+01	1.6800E+01	-1.1894E+01	1.8200E+01	-1.0990E+01	1.4000E+01	-9.9370E+00	1.4000E+01	-4.6404E+00	1.1200E+01
1.6800E+01	-1.2635E+01	1.8200E+01	-1.2287E+01	1.6800E+01	-1.1922E+01	1.8200E+01	-1.1021E+01	1.4000E+01	-9.9699E+00	1.4000E+01	-4.6971E+00	1.1200E+01
1.6800E+01	-1.2661E+01	1.8200E+01	-1.2315E+01	1.6800E+01	-1.1950E+01	1.8200E+01	-1.1051E+01	1.4000E+01	-1.0003E+01	1.4000E+01	-4.7534E+00	1.1200E+01
1.6800E+01	-1.2688E+01	1.8200E+01	-1.2342E+01	1.6800E+01	-1.1978E+01	1.8200E+01	-1.1081E+01	1.4000E+01	-1.0035E+01	1.4000E+01	-4.8093E+00	1.1200E+01
1.6800E+01	-1.2714E+01	1.8200E+01	-1.2369E+01	1.6800E+01	-1.2006E+01	1.8200E+01	-1.1110E+01	1.4000E+01	-1.0068E+01	1.4000E+01	-4.8648E+00	1.1200E+01
1.6800E+01	-1.2741E+01	1.8200E+01	-1.2396E+01	1.6800E+01	-1.2034E+01	1.8200E+01	-1.1140E+01	1.4000E+01	-1.0100E+01	1.4000E+01	-4.9199E+00	1.1200E+01
1.6800E+01	-1.2767E+01	1.8200E+01	-1.2423E+01	1.6800E+01	-1.2061E+01	1.8200E+01	-1.1170E+01	1.4000E+01	-1.0133E+01	1.4000E+01	-4.9747E+00	1.1200E+01
1.6800E+01	-1.2793E+01	1.8200E+01	-1.2450E+01	1.6800E+01	-1.2089E+01	1.8200E+01	-1.1200E+01	1.4000E+01	-1.0165E+01	1.4000E+01	-5.0291E+00	1.1200E+01
1.6800E+01	-1.2820E+01	1.8200E+01	-1.2477E+01	1.6800E+01	-1.2117E+01	1.8200E+01	-1.1229E+01	1.4000E+01	-1.0197E+01	1.4000E+01	-5.0831E+00	1.1200E+01
1.6800E+01	-1.2846E+01	1.8200E+01	-1.2504E+01	1.6800E+01	-1.2144E+01	1.8200E+01	-1.1259E+01	1.4000E+01	-1.0229E+01	1.4000E+01	-5.1369E+00	1.1200E+01
1.6800E+01	-1.2872E+01	1.8200E+01	-1.2531E+01	1.6800E+01	-1.2172E+01	1.8200E+01	-1.1288E+01	1.4000E+01	-1.0261E+01	1.4000E+01	-5.1902E+00	1.1200E+01
1.6800E+01	-1.2898E+01	1.8200E+01	-1.2557E+01	1.6800E+01	-1.2199E+01	1.8200E+01	-1.1318E+01	1.4000E+01	-1.0293E+01	1.4000E+01	-5.2433E+00	1.1200E+01
1.6800E+01	-1.2924E+01	1.8200E+01	-1.2584E+01	1.6800E+01	-1.2227E+01	1.8200E+01	-1.1347E+01	1.4000E+01	-1.0325E+01	1.4000E+01	-5.2960E+00	1.1200E+01
1.6800E+01	-1.2950E+01	1.8200E+01	-1.2611E+01	1.6800E+01	-1.2254E+01	1.8200E+01	-1.1376E+01	1.4000E+01	-1.0357E+01	1.4000E+01	-5.3484E+00	1.1200E+01
1.6800E+01	-1.2976E+01	1.8200E+01	-1.2637E+01	1.6800E+01	-1.2281E+01	1.8200E+01	-1.1405E+01	1.4000E+01	-1.0389E+01	1.4000E+01	-5.4004E+00	1.1200E+01
1.6800E+01	-1.3002E+01	1.8200E+01	-1.2664E+01	1.6800E+01	-1.2309E+01	1.8200E+01	-1.1435E+01	1.4000E+01	-1.0420E+01	1.4000E+01	-5.4522E+00	1.1200E+01
1.6800E+01	-1.3028E+01	1.8200E+01	-1.2690E+01	1.6800E+01	-1.2336E+01	1.8200E+01	-1.1464E+01	1.4000E+01	-1.0452E+01	1.4000E+01	-5.5036E+00	1.1200E+01
1.6800E+01	-1.3054E+01	1.8200E+01	-1.2717E+01	1.6800E+01	-1.2363E+01	1.8200E+01	-1.1493E+01	1.4000E+01	-1.0483E+01	1.4000E+01	-5.5547E+00	1.1200E+01
1.6800E+01	-1.3080E+01	1.8200E+01	-1.2743E+01	1.6800E+01	-1.2390E+01	1.8200E+01	-1.1522E+01	1.4000E+01	-1.0515E+01	1.4000E+01	-5.6056E+00	1.1200E+01
1.6800E+01	-1.3105E+01	1.8200E+01	-1.2770E+01	1.6800E+01	-1.2417E+01	1.8200E+01	-1.1550E+01	1.4000E+01	-1.0546E+01	1.4000E+01	-5.6561E+00	1.1200E+01
1.6800E+01	-1.3131E+01	1.8200E+01	-1.2796E+01	1.6800E+01	-1.2444E+01	1.8200E+01	-1.1579E+01	1.4000E+01	-1.0577E+01	1.4000E+01	-5.7064E+00	1.1200E+01
1.6800E+01	-1.3157E+01	1.8200E+01	-1.2822E+01	1.6800E+01	-1.2471E+01	1.8200E+01	-1.1608E+01	1.4000E+01	-1.0608E+01	1.4000E+01	-5.7563E+00	1.1200E+01
1.6800E+01	-1.3182E+01	1.8200E+01	-1.2848E+01	1.6800E+01	-1.2498E+01	1.8200E+01	-1.1637E+01	1.4000E+01	-1.0639E+01	1.4000E+01	-5.8060E+00	1.1200E+01
1.6800E+01	-1.3208E+01	1.8200E+01	-1.2875E+01	1.6800E+01	-1.2525E+01	1.8200E+01	-1.1665E+01	1.4000E+01	-1.0670E+01	1.4000E+01	-5.8554E+00	1.1200E+01
1.6800E+01	-1.3233E+01	1.8200E+01	-1.2901E+01	1.6800E+01	-1.2552E+01	1.8200E+01	-1.1694E+01	1.4000E+01	-1.0701E+01	1.4000E+01	-5.9045E+00	1.1200E+01
1.6800E+01	-1.3259E+01	1.8200E+01	-1.2927E+01	1.6800E+01	-1.2578E+01	1.8200E+01	-1.1722E+01	1.4000E+01	-1.0732E+01	1.4000E+01	-5.9533E+00	1.1200E+01
1.6800E+01	-1.3284E+01	1.8200E+01	-1.2953E+01	1.6800E+01	-1.2605E+01	1.8200E+01	-1.1751E+01	1.4000E+01	-1.0763E+01	1.4000E+01	-6.0019E+00	1.1200E+01
1.6800E+01	-1.3309E+01	1.8200E+01	-1.2979E+01	1.6800E+01	-1.2632E+01	1.8200E+01	-1.1779E+01	1.4000E+01	-1.0793E+01	1.4000E+01	-6.0502E+00	1.1200E+01
1.6800E+01	-1.3335E+01	1.8200E+01	-1.3005E+01	1.6800E+01	-1.2658E+01	1.8200E+01	-1.1807E+01	1.4000E+01	-1.0824E+01	1.4000E+01	-6.0983E+00	1.1200E+01
1.6800E+01	-1.3360E+01	1.8200E+01	-1.3030E+01	1.6800E+01	-1.2685E+01	1.8200E+01	-1.1836E+01	1.4000E+01	-1.0854E+01	1.4000E+01	-6.1461E+00	1.1200E+01
1.6800E+01	-1.3385E+01	1.8200E+01	-1.3056E+01	1.6800E+01	-1.2711E+01	1.8200E+01	-1.1864E+01	1.4000E+01	-1.0885E+01	1.4000E+01	-6.1937E+00	1.1200E+01
1.6800E+01	-1.3410E+01	1.8200E+01	-1.3082E+01	1.6800E+01	-1.2737E+01	1.8200E+01	-1.1892E+01	1.4000E+01	-1.0915E+01	1.4000E+01	-6.2410E+00	1.1200E+01
1.6800E+01	-1.3436E+01	1.8200E+01	-1.3108E+01	1.6800E+01	-1.2764E+01	1.8200E+01	-1.1920E+01	1.4000E+01	-1.0946E+01	1.4000E+01	-6.2880E+00	1.1200E+01
1.6800E+01	-1.3461E+01	1.8200E+01	-1.3134E+01	1.6800E+01	-1.2790E+01	1.8200E+01	-1.1948E+01	1.4000E+01	-1.0976E+01	1.4000E+01	-6.3348E+00	1.1200E+01
1.6800E+01	-1.3486E+01	1.8200E+01	-1.3159E+01	1.6800E+01	-1.2816E+01	1.8200E+01	-1.1976E+01	1.4000E+01	-1.1006E+01	1.4000E+01	-6.3814E+00	1.1200E+01
1.6800E+01	-1.3511E+01	1.8200E+01	-1.3185E+01	1.6800E+01	-1.2843E+01	1.8200E+01	-1.2004E+01	1.4000E+01	-1.1036E+01	1.4000E+01	-6.4277E+00	1.1200E+01
1.6800E+01	-1.3536E+01	1.8200E+01	-1.3210E+01	1.6800E+01	-1.2869E+01	1.8200E+01	-1.2032E+01	1.4000E+01	-1.1066E+01	1.4000E+01	-6.4738E+00	1.1200E+01
1.6800E+01	-1.3561E+01	1.8200E+01	-1.3236E+01	1.6800E+01	-1.2895E+01	1.8200E+01	-1.2059E+01	1.4000E+01	-1.1096E+01	1.4000E+01	-6.5197E+00	1.1200E+01
1.6800E+01	-1.3586E+01	1.8200E+01	-1.3261E+01	1.6800E+01	-1.2921E+01	1.8200E+01	-1.2087E+01	1.4000E+01	-1.1126E+01	1.4000E+01	-6.5654E+00	1.1200E+01
1.6800E+01	-1.3610E+01	1.8200E+01	-1.3287E+01	1.6800E+01	-1.2947E+01	1.8200E+01	-1.2115E+01	1.4000E+01	-1.1155E+01	1.4000E+01	-6.6108E+00	1.1200E+01
1.6800E+01	-1.3635E+01	1.8200E+01	-1.3312E+01	1.6800E+01	-1.2973E+01	1.8200E+01	-1.2142E+01	1.4000E+01	-1.1185E+01	1.4000E+01	-6.6560E+00	1.1200E+01
1.6800E+01	-1.3660E+01	1.8200E+01	-1.3337E+01	1.6800E+01	-1.2999E+01	1.8200E+01	-1.2170E+01	1.4000E+01	-1.1215E+01	1.4000E+01	-6.7010E+00	1.1200E+01
1.6800E+01	-1.3685E+01	1.8200E+01	-1.3363E+01	1.6800E+01	-1.3025E+01	1.8200E+01	-1.2197E+01	1.4000E+01	-1.1244E+01	1.4000E+01	-6.7457E+00	1.1200E+01
1.6800E+01	-1.3709E+01	1.8200E+01	-1.3388E+01	1.6800E+01	-1.3051E+01	1.8200E+01	-1.2225E+01	1.4000E+01	-1.1274E+01	1.4000E+01	-6.7903E+00	1.1200E+01
1.6800E+01	-1.3734E+01	1.8200E+01	-1.3413E+01	1.6800E+01	-1.3076E+01	1.8200E+01	-1.2252E+01	1.4000E+01	-1.1303E+01	1.4000E+01	-6.8346E+00	1.1200E+01
1.6800E+01	-1.3759E+01	1.8200E+01	-1.3438E+01	1.6800E+01	-1.3102E+01	1.8200E+01	-1.2279E+01	1.4000E+01	-1.1333E+01	1.4000E+01	-6.8788E+00	1.1200E+01

Curve 13	Arg 14	Curve 14	Arg 15	Curve 15	Arg 16	Curve 16	Arg 17	Curve 17	Arg 18	Curve 18	Arg 19	Curve 19
1.6800E+01	-1.3783E+01	1.8200E+01	-1.3463E+01	1.6800E+01	-1.3128E+01	1.8200E+01	-1.2307E+01	1.4000E+01	-1.1362E+01	1.4000E+01	-6.9227E+00	1.1200E+01
1.6800E+01	-1.3808E+01	1.8200E+01	-1.3488E+01	1.6800E+01	-1.3154E+01	1.8200E+01	-1.2334E+01	1.4000E+01	-1.1391E+01	1.4000E+01	-6.9664E+00	1.1200E+01
1.6800E+01	-1.3832E+01	1.8200E+01	-1.3513E+01	1.6800E+01	-1.3179E+01	1.8200E+01	-1.2361E+01	1.4000E+01	-1.1420E+01	1.4000E+01	-7.0100E+00	1.1200E+01
1.6800E+01	-1.3857E+01	1.8200E+01	-1.3538E+01	1.6800E+01	-1.3205E+01	1.8200E+01	-1.2388E+01	1.4000E+01	-1.1449E+01	1.4000E+01	-7.0533E+00	1.1200E+01
1.6800E+01	-1.3881E+01	1.8200E+01	-1.3563E+01	1.6800E+01	-1.3230E+01	1.8200E+01	-1.2415E+01	1.4000E+01	-1.1478E+01	1.4000E+01	-7.0964E+00	1.1200E+01
1.6800E+01	-1.3905E+01	1.8200E+01	-1.3588E+01	1.6800E+01	-1.3256E+01	1.8200E+01	-1.2442E+01	1.4000E+01	-1.1507E+01	1.4000E+01	-7.1394E+00	1.1200E+01
1.6800E+01	-1.3930E+01	1.8200E+01	-1.3613E+01	1.6800E+01	-1.3281E+01	1.8200E+01	-1.2469E+01	1.4000E+01	-1.1536E+01	1.4000E+01	-7.1821E+00	1.1200E+01
1.6800E+01	-1.3954E+01	1.8200E+01	-1.3638E+01	1.6800E+01	-1.3306E+01	1.8200E+01	-1.2496E+01	1.4000E+01	-1.1565E+01	1.4000E+01	-7.2247E+00	1.1200E+01
1.6800E+01	-1.3978E+01	1.8200E+01	-1.3662E+01	1.6800E+01	-1.3332E+01	1.8200E+01	-1.2523E+01	1.4000E+01	-1.1594E+01	1.4000E+01	-7.2671E+00	1.1200E+01
1.6800E+01	-1.4002E+01	1.8200E+01	-1.3687E+01	1.6800E+01	-1.3357E+01	1.8200E+01	-1.2550E+01	1.4000E+01	-1.1623E+01	1.4000E+01	-7.3093E+00	1.1200E+01
1.6800E+01	-1.4027E+01	1.8200E+01	-1.3712E+01	1.6800E+01	-1.3382E+01	1.8200E+01	-1.2576E+01	1.4000E+01	-1.1651E+01	1.4000E+01	-7.3513E+00	1.1200E+01
1.6800E+01	-1.4051E+01	1.8200E+01	-1.3737E+01	1.6800E+01	-1.3407E+01	1.8200E+01	-1.2603E+01	1.4000E+01	-1.1680E+01	1.4000E+01	-7.3931E+00	1.1200E+01
1.6800E+01	-1.4075E+01	1.8200E+01	-1.3761E+01	1.6800E+01	-1.3433E+01	1.8200E+01	-1.2630E+01	1.4000E+01	-1.1708E+01	1.4000E+01	-7.4348E+00	1.1200E+01
1.6800E+01	-1.4099E+01	1.8200E+01	-1.3786E+01	1.6800E+01	-1.3458E+01	1.8200E+01	-1.2656E+01	1.4000E+01	-1.1737E+01	1.4000E+01	-7.4763E+00	1.1200E+01
1.6800E+01	-1.4123E+01	1.8200E+01	-1.3810E+01	1.6800E+01	-1.3483E+01	1.8200E+01	-1.2683E+01	1.4000E+01	-1.1765E+01	1.4000E+01	-7.5176E+00	1.1200E+01
1.6800E+01	-1.4147E+01	1.8200E+01	-1.3835E+01	1.6800E+01	-1.3508E+01	1.8200E+01	-1.2709E+01	1.4000E+01	-1.1794E+01	1.4000E+01	-7.5587E+00	1.1200E+01
1.6800E+01	-1.4171E+01	1.8200E+01	-1.3859E+01	1.6800E+01	-1.3533E+01	1.8200E+01	-1.2736E+01	1.4000E+01	-1.1822E+01	1.4000E+01	-7.5997E+00	1.1200E+01
1.6800E+01	-1.4195E+01	1.8200E+01	-1.3883E+01	1.6800E+01	-1.3558E+01	1.8200E+01	-1.2762E+01	1.4000E+01	-1.1850E+01	1.4000E+01	-7.6405E+00	1.1200E+01
1.6800E+01	-1.4218E+01	1.8200E+01	-1.3908E+01	1.6800E+01	-1.3583E+01	1.8200E+01	-1.2788E+01	1.4000E+01	-1.1878E+01	1.4000E+01	-7.6811E+00	1.1200E+01
1.6800E+01	-1.4242E+01	1.8200E+01	-1.3932E+01	1.6800E+01	-1.3607E+01	1.8200E+01	-1.2815E+01	1.4000E+01	-1.1906E+01	1.4000E+01	-7.7215E+00	1.1200E+01
1.6800E+01	-1.4266E+01	1.8200E+01	-1.3956E+01	1.6800E+01	-1.3632E+01	1.8200E+01	-1.2841E+01	1.4000E+01	-1.1934E+01	1.4000E+01	-7.7619E+00	1.1200E+01
1.6800E+01	-1.4290E+01	1.8200E+01	-1.3981E+01	1.6800E+01	-1.3657E+01	1.8200E+01	-1.2867E+01	1.4000E+01	-1.1962E+01	1.4000E+01	-7.8020E+00	1.1200E+01
1.6800E+01	-1.4314E+01	1.8200E+01	-1.4005E+01	1.6800E+01	-1.3682E+01	1.8200E+01	-1.2893E+01	1.4000E+01	-1.1990E+01	1.4000E+01	-7.8420E+00	1.1200E+01
1.6800E+01	-1.4337E+01	1.8200E+01	-1.4029E+01	1.6800E+01	-1.3706E+01	1.8200E+01	-1.2919E+01	1.4000E+01	-1.2018E+01	1.4000E+01	-7.8818E+00	1.1200E+01
1.6800E+01	-1.4361E+01	1.8200E+01	-1.4053E+01	1.6800E+01	-1.3731E+01	1.8200E+01	-1.2945E+01	1.4000E+01	-1.2046E+01	1.4000E+01	-7.9215E+00	1.1200E+01
1.6800E+01	-1.4384E+01	1.8200E+01	-1.4077E+01	1.6800E+01	-1.3756E+01	1.8200E+01	-1.2971E+01	1.4000E+01	-1.2074E+01	1.4000E+01	-7.9610E+00	1.1200E+01
1.6800E+01	-1.4408E+01	1.8200E+01	-1.4101E+01	1.6800E+01	-1.3780E+01	1.8200E+01	-1.2997E+01	1.4000E+01	-1.2101E+01	1.4000E+01	-8.0003E+00	1.1200E+01
1.6800E+01	-1.4431E+01	1.8200E+01	-1.4125E+01	1.6800E+01	-1.3805E+01	1.8200E+01	-1.3023E+01	1.4000E+01	-1.2129E+01	1.4000E+01	-8.0395E+00	1.1200E+01
1.6800E+01	-1.4455E+01	1.8200E+01	-1.4149E+01	1.6800E+01	-1.3829E+01	1.8200E+01	-1.3049E+01	1.4000E+01	-1.2156E+01	1.4000E+01	-8.0786E+00	1.1200E+01
1.6800E+01	-1.4478E+01	1.8200E+01	-1.4173E+01	1.6800E+01	-1.3854E+01	1.8200E+01	-1.3075E+01	1.4000E+01	-1.2184E+01	1.4000E+01	-8.1175E+00	1.1200E+01
1.6800E+01	-1.4502E+01	1.8200E+01	-1.4197E+01	1.6800E+01	-1.3878E+01	1.8200E+01	-1.3100E+01	1.4000E+01	-1.2211E+01	1.4000E+01	-8.1563E+00	1.1200E+01
1.6800E+01	-1.4525E+01	1.8200E+01	-1.4221E+01	1.6800E+01	-1.3902E+01	1.8200E+01	-1.3126E+01	1.4000E+01	-1.2239E+01	1.4000E+01	-8.1949E+00	1.1200E+01
1.6800E+01	-1.4549E+01	1.8200E+01	-1.4245E+01	1.6800E+01	-1.3927E+01	1.8200E+01	-1.3152E+01	1.4000E+01	-1.2266E+01	1.4000E+01	-8.2334E+00	1.1200E+01
1.6800E+01	-1.4572E+01	1.8200E+01	-1.4268E+01	1.6800E+01	-1.3951E+01	1.8200E+01	-1.3177E+01	1.4000E+01	-1.2293E+01	1.4000E+01	-8.2717E+00	1.1200E+01
1.6800E+01	-1.4595E+01	1.8200E+01	-1.4292E+01	1.6800E+01	-1.3975E+01	1.8200E+01	-1.3203E+01	1.4000E+01	-1.2321E+01	1.4000E+01	-8.3099E+00	1.1200E+01
1.6800E+01	-1.4618E+01	1.8200E+01	-1.4316E+01	1.6800E+01	-1.4000E+01	1.8200E+01	-1.3228E+01	1.4000E+01	-1.2348E+01	1.4000E+01	-8.3480E+00	1.1200E+01
1.6800E+01	-1.4642E+01	1.8200E+01	-1.4340E+01	1.6800E+01	-1.4024E+01	1.8200E+01	-1.3254E+01	1.4000E+01	-1.2375E+01	1.4000E+01	-8.3859E+00	1.1200E+01
1.6800E+01	-1.4665E+01	1.8200E+01	-1.4363E+01	1.6800E+01	-1.4048E+01	1.8200E+01	-1.3279E+01	1.4000E+01	-1.2402E+01	1.4000E+01	-8.4237E+00	1.1200E+01
1.6800E+01	-1.4688E+01	1.8200E+01	-1.4387E+01	1.6800E+01	-1.4072E+01	1.8200E+01	-1.3305E+01	1.4000E+01	-1.2429E+01	1.4000E+01	-8.4613E+00	1.1200E+01
1.6800E+01	-1.4711E+01	1.8200E+01	-1.4410E+01	1.6800E+01	-1.4096E+01	1.8200E+01	-1.3330E+01	1.4000E+01	-1.2456E+01	1.4000E+01	-8.4988E+00	1.1200E+01
1.6800E+01	-1.4734E+01	1.8200E+01	-1.4434E+01	1.6800E+01	-1.4120E+01	1.8200E+01	-1.3355E+01	1.4000E+01	-1.2483E+01	1.4000E+01	-8.5362E+00	1.1200E+01
1.6800E+01	-1.4757E+01	1.8200E+01	-1.4457E+01	1.6800E+01	-1.4144E+01	1.8200E+01	-1.3381E+01	1.4000E+01	-1.2510E+01	1.4000E+01	-8.5734E+00	1.1200E+01
1.6800E+01	-1.4780E+01	1.8200E+01	-1.4481E+01	1.6800E+01	-1.4168E+01	1.8200E+01	-1.3406E+01	1.4000E+01	-1.2537E+01	1.4000E+01	-8.6106E+00	1.1200E+01
1.6800E+01	-1.4803E+01	1.8200E+01	-1.4504E+01	1.6800E+01	-1.4192E+01	1.8200E+01	-1.3431E+01	1.4000E+01	-1.2563E+01	1.4000E+01	-8.6475E+00	1.1200E+01
1.6800E+01	-1.4826E+01	1.8200E+01	-1.4528E+01	1.6800E+01	-1.4216E+01	1.8200E+01	-1.3456E+01	1.4000E+01	-1.2590E+01	1.4000E+01	-8.6844E+00	1.1200E+01
1.6800E+01	-1.4849E+01	1.8200E+01	-1.4551E+01	1.6800E+01	-1.4239E+01	1.8200E+01	-1.3481E+01	1.4000E+01	-1.2617E+01	1.4000E+01	-8.7211E+00	1.1200E+01
1.6800E+01	-1.4872E+01	1.8200E+01	-1.4574E+01	1.6800E+01	-1.4263E+01	1.8200E+01	-1.3506E+01	1.4000E+01	-1.2643E+01	1.4000E+01	-8.7578E+00	1.1200E+01
1.6800E+01	-1.4895E+01	1.8200E+01	-1.4597E+01	1.6800E+01	-1.4287E+01	1.8200E+01	-1.3531E+01	1.4000E+01	-1.2670E+01	1.4000E+01	-8.7942E+00	1.1200E+01
1.6800E+01	-1.4917E+01	1.8200E+01	-1.4621E+01	1.6800E+01	-1.4311E+01	1.8200E+01	-1.3556E+01	1.4000E+01	-1.2696E+01	1.4000E+01	-8.8306E+00	1.1200E+01
1.6800E+01	-1.4940E+01	1.8200E+01	-1.4644E+01	1.6800E+01	-1.4334E+01	1.8200E+01	-1.3581E+01	1.4000E+01	-1.2723E+01	1.4000E+01	-8.8668E+00	1.1200E+01
1.6800E+01	-1.4963E+01	1.8200E+01	-1.4667E+01	1.6800E+01	-1.4358E+01	1.8200E+01	-1.3606E+01	1.4000E+01	-1.2749E+01	1.4000E+01	-8.9030E+00	1.1200E+01
1.6800E+01	-1.4986E+01	1.8200E+01	-1.4690E+01	1.6800E+01	-1.4382E+01	1.8200E+01	-1.3631E+01	1.4000E+01	-1.2775E+01	1.4000E+01	-8.9389E+00	1.1200E+01

Curve 13	Arg 14	Curve 14	Arg 15	Curve 15	Arg 16	Curve 16	Arg 17	Curve 17	Arg 18	Curve 18	Arg 19	Curve 19
1.6800E+01	-1.5008E+01	1.8200E+01	-1.4713E+01	1.6800E+01	-1.4405E+01	1.8200E+01	-1.3655E+01	1.4000E+01	-1.2802E+01	1.4000E+01	-8.9748E+00	1.1200E+01
1.6800E+01	-1.5031E+01	1.8200E+01	-1.4736E+01	1.6800E+01	-1.4429E+01	1.8200E+01	-1.3680E+01	1.4000E+01	-1.2828E+01	1.4000E+01	-9.0106E+00	1.1200E+01
1.6800E+01	-1.5054E+01	1.8200E+01	-1.4759E+01	1.6800E+01	-1.4452E+01	1.8200E+01	-1.3705E+01	1.4000E+01	-1.2854E+01	1.4000E+01	-9.0462E+00	1.1200E+01
1.6800E+01	-1.5076E+01	1.8200E+01	-1.4782E+01	1.6800E+01	-1.4476E+01	1.8200E+01	-1.3729E+01	1.4000E+01	-1.2880E+01	1.4000E+01	-9.0818E+00	1.1200E+01
1.6800E+01	-1.5099E+01	1.8200E+01	-1.4805E+01	1.6800E+01	-1.4499E+01	1.8200E+01	-1.3754E+01	1.4000E+01	-1.2906E+01	1.4000E+01	-9.1172E+00	1.1200E+01
1.6800E+01	-1.5121E+01	1.8200E+01	-1.4828E+01	1.6800E+01	-1.4522E+01	1.8200E+01	-1.3779E+01	1.4000E+01	-1.2932E+01	1.4000E+01	-9.1525E+00	1.1200E+01
1.6800E+01	-1.5144E+01	1.8200E+01	-1.4851E+01	1.6800E+01	-1.4546E+01	1.8200E+01	-1.3803E+01	1.4000E+01	-1.2958E+01	1.4000E+01	-9.1877E+00	1.1200E+01
1.6800E+01	-1.5166E+01	1.8200E+01	-1.4874E+01	1.6800E+01	-1.4569E+01	1.8200E+01	-1.3828E+01	1.4000E+01	-1.2984E+01	1.4000E+01	-9.2228E+00	1.1200E+01
1.6800E+01	-1.5188E+01	1.8200E+01	-1.4897E+01	1.6800E+01	-1.4592E+01	1.8200E+01	-1.3852E+01	1.4000E+01	-1.3010E+01	1.4000E+01	-9.2577E+00	1.1200E+01
1.6800E+01	-1.5211E+01	1.8200E+01	-1.4920E+01	1.6800E+01	-1.4616E+01	1.8200E+01	-1.3876E+01	1.4000E+01	-1.3036E+01	1.4000E+01	-9.2926E+00	1.1200E+01
1.6800E+01	-1.5233E+01	1.8200E+01	-1.4942E+01	1.6800E+01	-1.4639E+01	1.8200E+01	-1.3901E+01	1.4000E+01	-1.3062E+01	1.4000E+01	-9.3273E+00	1.1200E+01
1.6800E+01	-1.5256E+01	1.8200E+01	-1.4965E+01	1.6800E+01	-1.4662E+01	1.8200E+01	-1.3925E+01	1.4000E+01	-1.3088E+01	1.4000E+01	-9.3620E+00	1.1200E+01
1.6800E+01	-1.5278E+01	1.8200E+01	-1.4988E+01	1.6800E+01	-1.4685E+01	1.8200E+01	-1.3949E+01	1.4000E+01	-1.3113E+01	1.4000E+01	-9.3965E+00	1.1200E+01
1.6800E+01	-1.5300E+01	1.8200E+01	-1.5011E+01	1.6800E+01	-1.4708E+01	1.8200E+01	-1.3974E+01	1.4000E+01	-1.3139E+01	1.4000E+01	-9.4309E+00	1.1200E+01
1.6800E+01	-1.5322E+01	1.8200E+01	-1.5033E+01	1.6800E+01	-1.4731E+01	1.8200E+01	-1.3998E+01	1.4000E+01	-1.3165E+01	1.4000E+01	-9.4653E+00	1.1200E+01
1.6800E+01	-1.5345E+01	1.8200E+01	-1.5056E+01	1.6800E+01	-1.4754E+01	1.8200E+01	-1.4022E+01	1.4000E+01	-1.3190E+01	1.4000E+01	-9.4995E+00	1.1200E+01
1.6800E+01	-1.5367E+01	1.8200E+01	-1.5078E+01	1.6800E+01	-1.4777E+01	1.8200E+01	-1.4046E+01	1.4000E+01	-1.3216E+01	1.4000E+01	-9.5336E+00	1.1200E+01
1.6800E+01	-1.5389E+01	1.8200E+01	-1.5101E+01	1.6800E+01	-1.4800E+01	1.8200E+01	-1.4070E+01	1.4000E+01	-1.3241E+01	1.4000E+01	-9.5676E+00	1.1200E+01
1.6800E+01	-1.5411E+01	1.8200E+01	-1.5123E+01	1.6800E+01	-1.4823E+01	1.8200E+01	-1.4094E+01	1.4000E+01	-1.3267E+01	1.4000E+01	-9.6015E+00	1.1200E+01
1.6800E+01	-1.5433E+01	1.8200E+01	-1.5146E+01	1.6800E+01	-1.4846E+01	1.8200E+01	-1.4118E+01	1.4000E+01	-1.3292E+01	1.4000E+01	-9.6353E+00	1.1200E+01
1.6800E+01	-1.5455E+01	1.8200E+01	-1.5168E+01	1.6800E+01	-1.4869E+01	1.8200E+01	-1.4142E+01	1.4000E+01	-1.3318E+01	1.4000E+01	-9.6690E+00	1.1200E+01
1.6800E+01	-1.5477E+01	1.8200E+01	-1.5191E+01	1.6800E+01	-1.4892E+01	1.8200E+01	-1.4166E+01	1.4000E+01	-1.3343E+01	1.4000E+01	-9.7027E+00	1.1200E+01
1.6800E+01	-1.5499E+01	1.8200E+01	-1.5213E+01	1.6800E+01	-1.4915E+01	1.8200E+01	-1.4190E+01	1.4000E+01	-1.3368E+01	1.4000E+01	-9.7362E+00	1.1200E+01
1.6800E+01	-1.5521E+01	1.8200E+01	-1.5235E+01	1.6800E+01	-1.4937E+01	1.8200E+01	-1.4214E+01	1.4000E+01	-1.3393E+01	1.4000E+01	-9.7696E+00	1.1200E+01
1.6800E+01	-1.5543E+01	1.8200E+01	-1.5258E+01	1.6800E+01	-1.4960E+01	1.8200E+01	-1.4238E+01	1.4000E+01	-1.3419E+01	1.4000E+01	-9.8029E+00	1.1200E+01
1.6800E+01	-1.5565E+01	1.8200E+01	-1.5280E+01	1.6800E+01	-1.4983E+01	1.8200E+01	-1.4262E+01	1.4000E+01	-1.3444E+01	1.4000E+01	-9.8361E+00	1.1200E+01
1.6800E+01	-1.5587E+01	1.8200E+01	-1.5302E+01	1.6800E+01	-1.5006E+01	1.8200E+01	-1.4285E+01	1.4000E+01	-1.3469E+01	1.4000E+01	-9.8693E+00	1.1200E+01
1.6800E+01	-1.5609E+01	1.8200E+01	-1.5325E+01	1.6800E+01	-1.5028E+01	1.8200E+01	-1.4309E+01	1.4000E+01	-1.3494E+01	1.4000E+01	-9.9023E+00	1.1200E+01
1.6800E+01	-1.5630E+01	1.8200E+01	-1.5347E+01	1.6800E+01	-1.5051E+01	1.8200E+01	-1.4333E+01	1.4000E+01	-1.3519E+01	1.4000E+01	-9.9352E+00	1.1200E+01
1.6800E+01	-1.5652E+01	1.8200E+01	-1.5369E+01	1.6800E+01	-1.5073E+01	1.8200E+01	-1.4356E+01	1.4000E+01	-1.3544E+01	1.4000E+01	-9.9681E+00	1.1200E+01
1.6800E+01	-1.5674E+01	1.8200E+01	-1.5391E+01	1.6800E+01	-1.5096E+01	1.8200E+01	-1.4380E+01	1.4000E+01	-1.3569E+01	1.4000E+01	-1.0001E+01	1.1200E+01
1.6800E+01	-1.5696E+01	1.8200E+01	-1.5413E+01	1.6800E+01	-1.5118E+01	1.8200E+01	-1.4403E+01	1.4000E+01	-1.3594E+01	1.4000E+01	-1.0033E+01	1.1200E+01
1.6800E+01	-1.5717E+01	1.8200E+01	-1.5435E+01	1.6800E+01	-1.5141E+01	1.8200E+01	-1.4427E+01	1.4000E+01	-1.3618E+01	1.4000E+01	-1.0066E+01	1.1200E+01

Soil Parameters	
Kd (mL/g)	8
Moisture content	0.2
Erosion Rate (0.2 kg/sq m-yr)	0.2
Bulk Density (g/cc)	1.5
Over watering Rate (m/yr)	0.079
Affected Depth (m)	0.25
Lamda effective (1/yr)	0.026434973

Intake (mg/kg body wt./day) Soil

Flux Out (gm/yr)	No Recycle	Recycle	0.86 Concentration (gm/sq m)
0.0000E+00	0.0000E+00	0.0000E+00	0.00E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.00E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.00E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.00E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.00E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.00E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.00E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.00E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.00E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.00E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.00E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.00E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.00E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.00E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.00E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.00E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.00E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.00E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.00E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.00E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.00E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.00E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.00E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.00E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.00E+00
1.1346E-14	1.5624E-23	1.1488E-22	1.20E-20
3.2501E-13	4.4754E-22	3.2907E-21	3.44E-19
6.6193E-12	9.1148E-21	6.7021E-20	7.01E-18
1.0259E-10	1.4127E-19	1.0387E-18	1.09E-16
1.2507E-09	1.7222E-18	1.2663E-17	1.32E-15
1.2297E-08	1.6933E-17	1.2451E-16	1.30E-14
9.9640E-08	1.3721E-16	1.0089E-15	1.06E-13
6.7808E-07	9.3372E-16	6.8656E-15	7.18E-13
3.9401E-06	5.4255E-15	3.9893E-14	4.17E-12
1.9834E-05	2.7311E-14	2.0082E-13	2.10E-11
8.7611E-05	1.2064E-13	8.8707E-13	9.28E-11
3.4347E-04	4.7297E-13	3.4777E-12	3.64E-10
1.2073E-03	1.6624E-12	1.2224E-11	1.28E-09
3.8389E-03	5.2862E-12	3.8869E-11	4.07E-09
1.1133E-02	1.5331E-11	1.1273E-10	1.18E-08
2.9664E-02	4.0847E-11	3.0035E-10	3.14E-08
7.3090E-02	1.0065E-10	7.4004E-10	7.74E-08
1.6754E-01	2.3070E-10	1.6963E-09	1.77E-07
3.5920E-01	4.9462E-10	3.6369E-09	3.80E-07
7.2389E-01	9.9680E-10	7.3294E-09	7.67E-07
1.3775E+00	1.8968E-09	1.3947E-08	1.46E-06
2.4851E+00	3.4220E-09	2.5162E-08	2.63E-06
4.2670E+00	5.8756E-09	4.3203E-08	4.52E-06
6.9972E+00	9.6351E-09	7.0847E-08	7.41E-06
1.0994E+01	1.5139E-08	1.1132E-07	1.16E-05
1.6601E+01	2.2860E-08	1.6809E-07	1.76E-05
2.4158E+01	3.3266E-08	2.4460E-07	2.56E-05

Flux Out (gm/yr)	No Recycle	Recycle	0.86 Concentration (gm/sq m)
3.3968E+01	4.6775E-08	3.4393E-07	3.60E-05
4.6263E+01	6.3705E-08	4.6842E-07	4.90E-05
6.1171E+01	8.4232E-08	6.1936E-07	6.48E-05
7.8693E+01	1.0836E-07	7.9677E-07	8.33E-05
9.8696E+01	1.3591E-07	9.9930E-07	1.05E-04
1.2091E+02	1.6650E-07	1.2243E-06	1.28E-04
1.4497E+02	1.9962E-07	1.4678E-06	1.54E-04
1.7038E+02	2.3462E-07	1.7251E-06	1.80E-04
1.9664E+02	2.7078E-07	1.9910E-06	2.08E-04
2.2320E+02	3.0734E-07	2.2599E-06	2.36E-04
2.4953E+02	3.4361E-07	2.5265E-06	2.64E-04
2.7516E+02	3.7890E-07	2.7861E-06	2.91E-04
2.9969E+02	4.1268E-07	3.0344E-06	3.17E-04
3.2279E+02	4.4449E-07	3.2683E-06	3.42E-04
3.4423E+02	4.7401E-07	3.4854E-06	3.65E-04
3.6386E+02	5.0104E-07	3.6842E-06	3.85E-04
3.8162E+02	5.2549E-07	3.8639E-06	4.04E-04
3.9750E+02	5.4736E-07	4.0247E-06	4.21E-04
4.1157E+02	5.6674E-07	4.1672E-06	4.36E-04
4.2392E+02	5.8375E-07	4.2923E-06	4.49E-04
4.3469E+02	5.9858E-07	4.4013E-06	4.60E-04
4.4403E+02	6.1143E-07	4.4958E-06	4.70E-04
4.5210E+02	6.2254E-07	4.5775E-06	4.79E-04
4.5905E+02	6.3211E-07	4.6479E-06	4.86E-04
4.6505E+02	6.4037E-07	4.7086E-06	4.93E-04
4.7024E+02	6.4752E-07	4.7612E-06	4.98E-04
4.7475E+02	6.5374E-07	4.8069E-06	5.03E-04
4.7872E+02	6.5920E-07	4.8470E-06	5.07E-04
4.8223E+02	6.6404E-07	4.8826E-06	5.11E-04
4.8539E+02	6.6839E-07	4.9146E-06	5.14E-04
4.8828E+02	6.7236E-07	4.9438E-06	5.17E-04
4.9094E+02	6.7603E-07	4.9708E-06	5.20E-04
4.9344E+02	6.7947E-07	4.9961E-06	5.23E-04
4.9581E+02	6.8274E-07	5.0201E-06	5.25E-04
4.9808E+02	6.8587E-07	5.0431E-06	5.27E-04
5.0028E+02	6.8889E-07	5.0653E-06	5.30E-04
5.0240E+02	6.9181E-07	5.0868E-06	5.32E-04
5.0445E+02	6.9463E-07	5.1076E-06	5.34E-04
5.0643E+02	6.9736E-07	5.1277E-06	5.36E-04
5.0834E+02	6.9999E-07	5.1470E-06	5.38E-04
5.1017E+02	7.0251E-07	5.1655E-06	5.40E-04
5.1192E+02	7.0492E-07	5.1832E-06	5.42E-04
5.1359E+02	7.0722E-07	5.2002E-06	5.44E-04
5.1520E+02	7.0943E-07	5.2164E-06	5.46E-04
5.1674E+02	7.1156E-07	5.2320E-06	5.47E-04
5.1824E+02	7.1361E-07	5.2472E-06	5.49E-04
5.1970E+02	7.1562E-07	5.2619E-06	5.50E-04
5.2113E+02	7.1760E-07	5.2765E-06	5.52E-04
5.2255E+02	7.1956E-07	5.2909E-06	5.53E-04
5.2396E+02	7.2150E-07	5.3052E-06	5.55E-04
5.2537E+02	7.2343E-07	5.3194E-06	5.56E-04
5.2676E+02	7.2535E-07	5.3334E-06	5.58E-04

Flux Out (gm/yr)	No Recycle	Recycle	0.86 Concentration (gm/sq m)
5.2813E+02	7.2724E-07	5.3473E-06	5.59E-04
5.2948E+02	7.2910E-07	5.3610E-06	5.61E-04
5.3081E+02	7.3093E-07	5.3745E-06	5.62E-04
5.3212E+02	7.3273E-07	5.3878E-06	5.64E-04
5.3341E+02	7.3451E-07	5.4008E-06	5.65E-04
5.3469E+02	7.3627E-07	5.4137E-06	5.66E-04
5.3597E+02	7.3803E-07	5.4267E-06	5.68E-04
5.3725E+02	7.3980E-07	5.4397E-06	5.69E-04
5.3856E+02	7.4160E-07	5.4529E-06	5.70E-04
5.3988E+02	7.4342E-07	5.4663E-06	5.72E-04
5.4123E+02	7.4528E-07	5.4800E-06	5.73E-04
5.4260E+02	7.4716E-07	5.4938E-06	5.75E-04
5.4397E+02	7.4905E-07	5.5077E-06	5.76E-04
5.4533E+02	7.5093E-07	5.5215E-06	5.78E-04
5.4667E+02	7.5277E-07	5.5351E-06	5.79E-04
5.4796E+02	7.5455E-07	5.5481E-06	5.80E-04
5.4919E+02	7.5623E-07	5.5605E-06	5.82E-04
5.5033E+02	7.5781E-07	5.5721E-06	5.83E-04
5.5138E+02	7.5926E-07	5.5828E-06	5.84E-04
5.5234E+02	7.6057E-07	5.5924E-06	5.85E-04
5.5318E+02	7.6173E-07	5.6010E-06	5.86E-04
5.5392E+02	7.6275E-07	5.6084E-06	5.87E-04
5.5455E+02	7.6362E-07	5.6148E-06	5.87E-04
5.5509E+02	7.6436E-07	5.6203E-06	5.88E-04
5.5553E+02	7.6497E-07	5.6248E-06	5.88E-04
5.5590E+02	7.6548E-07	5.6285E-06	5.89E-04
5.5620E+02	7.6589E-07	5.6315E-06	5.89E-04
5.5644E+02	7.6622E-07	5.6340E-06	5.89E-04
5.5663E+02	7.6648E-07	5.6359E-06	5.89E-04
5.5678E+02	7.6669E-07	5.6374E-06	5.90E-04
5.5691E+02	7.6687E-07	5.6387E-06	5.90E-04
5.5702E+02	7.6702E-07	5.6399E-06	5.90E-04
5.5713E+02	7.6718E-07	5.6410E-06	5.90E-04
5.5725E+02	7.6734E-07	5.6422E-06	5.90E-04
5.5740E+02	7.6755E-07	5.6437E-06	5.90E-04
5.5759E+02	7.6781E-07	5.6457E-06	5.91E-04
5.5784E+02	7.6815E-07	5.6482E-06	5.91E-04
5.5816E+02	7.6859E-07	5.6514E-06	5.91E-04
5.5856E+02	7.6914E-07	5.6555E-06	5.92E-04
5.5905E+02	7.6982E-07	5.6604E-06	5.92E-04
5.5963E+02	7.7062E-07	5.6663E-06	5.93E-04
5.6030E+02	7.7153E-07	5.6730E-06	5.93E-04
5.6104E+02	7.7255E-07	5.6805E-06	5.94E-04
5.6184E+02	7.7366E-07	5.6887E-06	5.95E-04
5.6268E+02	7.7482E-07	5.6972E-06	5.96E-04
5.6355E+02	7.7602E-07	5.7060E-06	5.97E-04
5.6442E+02	7.7721E-07	5.7148E-06	5.98E-04
5.6527E+02	7.7838E-07	5.7234E-06	5.99E-04
5.6608E+02	7.7949E-07	5.7315E-06	5.99E-04
5.6683E+02	7.8053E-07	5.7392E-06	6.00E-04
5.6752E+02	7.8149E-07	5.7462E-06	6.01E-04
5.6815E+02	7.8234E-07	5.7525E-06	6.02E-04

Flux Out (gm/yr)	No Recycle	Recycle	0.86 Concentration (gm/sq m)
5.6870E+02	7.8310E-07	5.7581E-06	6.02E-04
5.6917E+02	7.8375E-07	5.7629E-06	6.03E-04
5.6958E+02	7.8431E-07	5.7670E-06	6.03E-04
5.6992E+02	7.8478E-07	5.7704E-06	6.04E-04
5.7020E+02	7.8516E-07	5.7733E-06	6.04E-04
5.7042E+02	7.8548E-07	5.7756E-06	6.04E-04
5.7061E+02	7.8573E-07	5.7774E-06	6.04E-04
5.7075E+02	7.8593E-07	5.7789E-06	6.04E-04
5.7087E+02	7.8609E-07	5.7800E-06	6.05E-04
5.7095E+02	7.8621E-07	5.7809E-06	6.05E-04
5.7103E+02	7.8631E-07	5.7817E-06	6.05E-04
5.7109E+02	7.8639E-07	5.7823E-06	6.05E-04
5.7115E+02	7.8647E-07	5.7829E-06	6.05E-04
5.7121E+02	7.8656E-07	5.7835E-06	6.05E-04
5.7129E+02	7.8667E-07	5.7843E-06	6.05E-04
5.7140E+02	7.8682E-07	5.7854E-06	6.05E-04
5.7154E+02	7.8702E-07	5.7869E-06	6.05E-04
5.7175E+02	7.8730E-07	5.7890E-06	6.06E-04
5.7202E+02	7.8768E-07	5.7917E-06	6.06E-04
5.7237E+02	7.8816E-07	5.7953E-06	6.06E-04
5.7281E+02	7.8877E-07	5.7998E-06	6.07E-04
5.7334E+02	7.8950E-07	5.8051E-06	6.07E-04
5.7397E+02	7.9036E-07	5.8114E-06	6.08E-04
5.7467E+02	7.9132E-07	5.8186E-06	6.09E-04
5.7544E+02	7.9239E-07	5.8264E-06	6.09E-04
5.7627E+02	7.9353E-07	5.8348E-06	6.10E-04
5.7713E+02	7.9471E-07	5.8434E-06	6.11E-04
5.7800E+02	7.9591E-07	5.8522E-06	6.12E-04
5.7886E+02	7.9709E-07	5.8609E-06	6.13E-04
5.7969E+02	7.9823E-07	5.8693E-06	6.14E-04
5.8047E+02	7.9931E-07	5.8773E-06	6.15E-04
5.8119E+02	8.0031E-07	5.8846E-06	6.16E-04
5.8185E+02	8.0121E-07	5.8913E-06	6.16E-04
5.8244E+02	8.0202E-07	5.8972E-06	6.17E-04
5.8295E+02	8.0272E-07	5.9024E-06	6.17E-04
5.8339E+02	8.0333E-07	5.9068E-06	6.18E-04
5.8376E+02	8.0384E-07	5.9106E-06	6.18E-04
5.8407E+02	8.0426E-07	5.9137E-06	6.19E-04
5.8432E+02	8.0461E-07	5.9163E-06	6.19E-04
5.8452E+02	8.0489E-07	5.9183E-06	6.19E-04
5.8468E+02	8.0511E-07	5.9200E-06	6.19E-04
5.8481E+02	8.0529E-07	5.9212E-06	6.19E-04
5.8491E+02	8.0543E-07	5.9223E-06	6.19E-04
5.8499E+02	8.0553E-07	5.9230E-06	6.20E-04
5.8504E+02	8.0561E-07	5.9236E-06	6.20E-04
5.8509E+02	8.0567E-07	5.9240E-06	6.20E-04
5.8512E+02	8.0571E-07	5.9244E-06	6.20E-04
5.8514E+02	8.0575E-07	5.9246E-06	6.20E-04
5.8516E+02	8.0577E-07	5.9248E-06	6.20E-04
5.8517E+02	8.0579E-07	5.9249E-06	6.20E-04
5.8518E+02	8.0580E-07	5.9250E-06	6.20E-04
5.8519E+02	8.0581E-07	5.9250E-06	6.20E-04

Flux Out (gm/yr)	No Recycle	Recycle	0.86 Concentration (gm/sq m)
5.8519E+02	8.0581E-07	5.9251E-06	6.20E-04
5.8519E+02	8.0582E-07	5.9251E-06	6.20E-04
5.8520E+02	8.0582E-07	5.9251E-06	6.20E-04
5.8520E+02	8.0582E-07	5.9252

Flux Out (gm/yr)	No Recycle	Recycle	0.86 Concentration (gm/sq m)
5.8520E+02	8.0582E-07	5.9252E-06	6.20E-04
5.8520E+02	8.0582E-07	5.9252E-06	6.20E-04
5.8520E+02	8.0582E-07	5.9252E-06	6.20E-04
5.8520E+02	8.0582E-07	5.9252E-06	6.20E-04
5.8520E+02	8.0582E-07	5.9252E-06	6.20E-04
5.8520E+02	8.0582E-07	5.9252E-06	6.20E-04
5.8520E+02	8.0582E-07	5.9252E-06	6.20E-04
5.8520E+02	8.0582E-07	5.9252E-06	6.20E-04
5.8520E+02	8.0582E-07	5.9252E-06	6.20E-04
5.8520E+02	8.0582E-07	5.9252E-06	6.20E-04
5.8520E+02	8.0582E-07	5.9252E-06	6.20E-04
5.8520E+02	8.0582E-07	5.9252E-06	6.20E-04
5.8520E+02	8.0582E-07	5.9252E-06	6.20E-04
5.8520E+02	8.0582E-07	5.9252E-06	6.20E-04
5.8520E+02	8.0582E-07	5.9252E-06	6.20E-04
5.8520E+02	8.0582E-07	5.9252E-06	6.20E-04
5.8520E+02	8.0582E-07	5.9252E-06	6.20E-04
5.8520E+02	8.0582E-07	5.9252E-06	6.20E-04
5.8520E+02	8.0582E-07	5.9252E-06	6.20E-04
5.8520E+02	8.0582E-07	5.9252E-06	6.20E-04
5.8520E+02	8.0582E-07	5.9252E-06	6.20E-04
5.8520E+02	8.0582E-07	5.9252E-06	6.20E-04
5.8520E+02	8.0582E-07	5.9252E-06	6.20E-04
5.8520E+02	8.0582E-07	5.9252E-06	6.20E-04
5.8520E+02	8.0582E-07	5.9252E-06	6.20E-04
5.8520E+02	8.0582E-07	5.9252E-06	6.20E-04
5.8520E+02	8.0583E-07	5.9252E-06	6.20E-04
5.8520E+02	8.0583E-07	5.9252E-06	6.20E-04
5.8520E+02	8.0583E-07	5.9252E-06	6.20E-04
5.8520E+02	8.0583E-07	5.9252E-06	6.20E-04
5.8520E+02	8.0583E-07	5.9252E-06	6.20E-04
5.8521E+02	8.0584E-07	5.9253E-06	6.20E-04
5.8522E+02	8.0585E-07	5.9253E-06	6.20E-04
5.8523E+02	8.0587E-07	5.9255E-06	6.20E-04
5.8526E+02	8.0591E-07	5.9258E-06	6.20E-04
5.8531E+02	8.0597E-07	5.9263E-06	6.20E-04
5.8538E+02	8.0607E-07	5.9270E-06	6.20E-04
5.8549E+02	8.0622E-07	5.9281E-06	6.20E-04
5.8564E+02	8.0643E-07	5.9297E-06	6.20E-04
5.8585E+02	8.0672E-07	5.9318E-06	6.20E-04
5.8613E+02	8.0710E-07	5.9346E-06	6.21E-04
5.8647E+02	8.0758E-07	5.9381E-06	6.21E-04
5.8689E+02	8.0816E-07	5.9423E-06	6.22E-04
5.8739E+02	8.0883E-07	5.9473E-06	6.22E-04
5.8794E+02	8.0960E-07	5.9530E-06	6.23E-04
5.8856E+02	8.1045E-07	5.9592E-06	6.23E-04
5.8922E+02	8.1136E-07	5.9659E-06	6.24E-04
5.8990E+02	8.1230E-07	5.9728E-06	6.25E-04
5.9060E+02	8.1326E-07	5.9798E-06	6.25E-04
5.9129E+02	8.1421E-07	5.9868E-06	6.26E-04
5.9195E+02	8.1512E-07	5.9936E-06	6.27E-04

Flux Out (gm/yr)	No Recycle	Recycle	0.86 Concentration (gm/sq m)
5.9258E+02	8.1599E-07	5.9999E-06	6.28E-04
5.9316E+02	8.1679E-07	6.0058E-06	6.28E-04
5.9369E+02	8.1752E-07	6.0112E-06	6.29E-04
5.9416E+02	8.1817E-07	6.0160E-06	6.29E-04
5.9458E+02	8.1874E-07	6.0201E-06	6.30E-04
5.9493E+02	8.1922E-07	6.0237E-06	6.30E-04
5.9523E+02	8.1964E-07	6.0267E-06	6.30E-04
5.9548E+02	8.1998E-07	6.0293E-06	6.31E-04
5.9568E+02	8.2026E-07	6.0313E-06	6.31E-04
5.9585E+02	8.2049E-07	6.0330E-06	6.31E-04
5.9598E+02	8.2067E-07	6.0343E-06	6.31E-04
5.9608E+02	8.2081E-07	6.0354E-06	6.31E-04
5.9616E+02	8.2092E-07	6.0362E-06	6.31E-04
5.9623E+02	8.2101E-07	6.0368E-06	6.31E-04
5.9627E+02	8.2107E-07	6.0373E-06	6.31E-04
5.9631E+02	8.2112E-07	6.0377E-06	6.32E-04
5.9633E+02	8.2116E-07	6.0379E-06	6.32E-04
5.9635E+02	8.2118E-07	6.0381E-06	6.32E-04
5.9637E+02	8.2120E-07	6.0382E-06	6.32E-04
5.9638E+02	8.2122E-07	6.0383E-06	6.32E-04
5.9638E+02	8.2123E-07	6.0384E-06	6.32E-04
5.9639E+02	8.2123E-07	6.0385E-06	6.32E-04
5.9639E+02	8.2124E-07	6.0385E-06	6.32E-04
5.9639E+02	8.2124E-07	6.0385E-06	6.32E-04
5.9640E+02	8.2124E-07	6.0385E-06	6.32E-04
5.9640E+02	8.2124E-07	6.0386E-06	6.32E-04
5.9640E+02	8.2125E-07	6.0386E-06	6.32E-04
5.9640E+02	8.2125E-07	6.0386E-06	6.32E-04
5.9640E+02	8.2125E-07	6.0386E-06	6.32E-04
5.9640E+02	8.2125E-07	6.0386E-06	6.32E-04
5.9640E+02	8.2125E-07	6.0386E-06	6.32E-04
5.9640E+02	8.2125E-07	6.0386E-06	6.32E-04
5.9640E+02	8.2125E-07	6.0386E-06	6.32E-04
5.9640E+02	8.2125E-07	6.0386E-06	6.32E-04
5.9640E+02	8.2125E-07	6.0386E-06	6.32E-04
5.9640E+02	8.2125E-07	6.0386E-06	6.32E-04
5.9640E+02	8.2125E-07	6.0386E-06	6.32E-04
5.9640E+02	8.2125E-07	6.0386E-06	6.32E-04
5.9640E+02	8.2125E-07	6.0386E-06	6.32E-04
5.9640E+02	8.2125E-07	6.0386E-06	6.32E-04
5.9640E+02	8.2125E-07	6.0386E-06	6.32E-04
5.9640E+02	8.2125E-07	6.0386E-06	6.32E-04
5.9640E+02	8.2125E-07	6.0386E-06	6.32E-04
5.9640E+02	8.2125E-07	6.0386E-06	6.32E-04
5.9640E+02	8.2125E-07	6.0386E-06	6.32E-04
5.9640E+02	8.2125E-07	6.0386E-06	6.32E-04
5.9640E+02	8.2125E-07	6.0386E-06	6.32E-04
5.9640E+02	8.2125E-07	6.0386E-06	6.32E-04

Flux Out (gm/yr)	No Recycle	Recycle	0.86 Concentration (gm/sq m)
5.9640E+02	8.2125E-07	6.0386E-06	6.32E-04

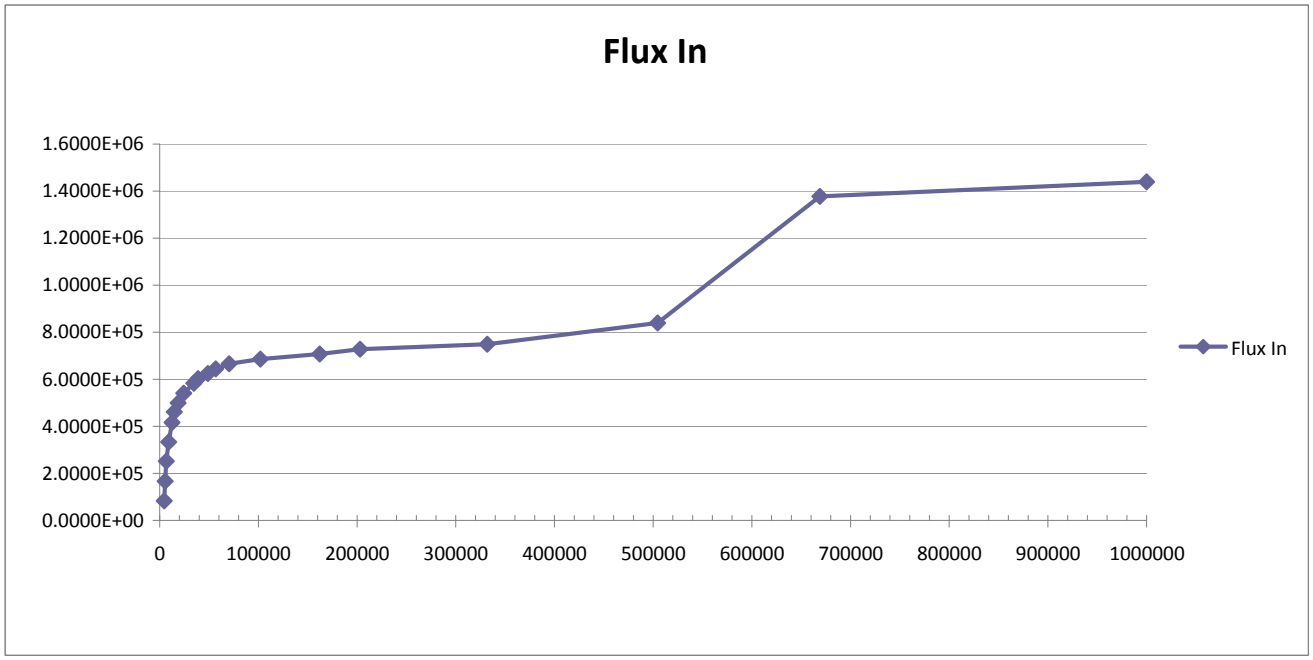
Flux Out (gm/yr)	No Recycle	Recycle	0.86 Concentration (gm/sq m)
5.9640E+02	8.2125E-07	6.0386E-06	6.32E-04

Flux Out (gm/yr)	No Recycle	Recycle	0.86 Concentration (gm/sq m)
5.9640E+02	8.2125E-07	6.0386E-06	6.32E-04
5.9640E+02	8.2125E-07	6.0386E-06	6.32E-04
5.9640E+02	8.2125E-07	6.0386E-06	6.32E-04
5.9640E+02	8.2125E-07	6.0386E-06	6.32E-04
5.9640E+02	8.2125E-07	6.0386E-06	6.32E-04
5.9640E+02	8.2125E-07	6.0386E-06	6.32E-04
5.9640E+02	8.2125E-07	6.0386E-06	6.32E-04
5.9640E+02	8.2125E-07	6.0386E-06	6.32E-04
5.9640E+02	8.2125E-07	6.0386E-06	6.32E-04
5.9640E+02	8.2125E-07	6.0386E-06	6.32E-04
5.9640E+02	8.2125E-07	6.0386E-06	6.32E-04
5.9640E+02	8.2125E-07	6.0386E-06	6.32E-04
5.9640E+02	8.2125E-07	6.0386E-06	6.32E-04
5.9640E+02	8.2125E-07	6.0386E-06	6.32E-04
5.9640E+02	8.2125E-07	6.0386E-06	6.32E-04
5.9640E+02	8.2125E-07	6.0386E-06	6.32E-04
5.9640E+02	8.2125E-07	6.0386E-06	6.32E-04
5.9640E+02	8.2125E-07	6.0386E-06	6.32E-04
5.9640E+02	8.2125E-07	6.0386E-06	6.32E-04
5.9640E+02	8.2125E-07	6.0386E-06	6.32E-04
5.9640E+02	8.2125E-07	6.0386E-06	6.32E-04
5.9640E+02	8.2125E-07	6.0386E-06	6.32E-04
5.9640E+02	8.2125E-07	6.0386E-06	6.32E-04
5.9640E+02	8.2125E-07	6.0386E-06	6.32E-04
5.9640E+02	8.2125E-07	6.0386E-06	6.32E-04
5.9640E+02	8.2125E-07	6.0386E-06	6.32E-04
5.9640E+02	8.2125E-07	6.0386E-06	6.32E-04
5.9640E+02	8.2125E-07	6.0386E-06	6.32E-04
5.9640E+02	8.2125E-07	6.0386E-06	6.32E-04
5.9640E+02	8.2125E-07	6.0386E-06	6.32E-04

Combined TSPA Case, 2003 Pumping Rates, Present Climate
Non-Radiologic Metals Transport from 18 km to Amargosa Farms
Contaminant: Nickel
Oral Ref dose =2E-02 mg/kg body wt./day
Pump Rate= 16828 acre-ft/yr 20748924000 liters/yr

Input Curve

Time (yr)	Flux In	Del R
4500	8.3250E+04	
5450	1.6650E+05	8.3250E+04
6670	2.5142E+05	8.4915E+04
9010	3.3300E+05	8.1585E+04
12440	4.1625E+05	8.3250E+04
14700	4.6121E+05	4.4955E+04
18600	4.9950E+05	3.8295E+04
24290	5.4113E+05	4.1625E+04
34490	5.8275E+05	4.1625E+04
38830	6.0273E+05	1.9980E+04
48770	6.2438E+05	2.1645E+04
56800	6.4436E+05	1.9980E+04
70380	6.6600E+05	2.1645E+04
101940	6.8598E+05	1.9980E+04
162170	7.0763E+05	2.1645E+04
202990	7.2761E+05	1.9980E+04
331880	7.4925E+05	2.1645E+04
504500	8.3924E+05	8.9987E+04
668970	1.3776E+06	5.3837E+05
1000000	1.4394E+06	6.1795E+04



Output Curve

6.13E-03		specific discharge (m/day)
1.3984E-02	v	groundwater velocity (km/yr)
1.6000E+01	L	path length (km)
1.0000E-01	D	Dispersion Coefficient (km)
1.3984E-03	Disp	Dispersivity (sq km/yr)
1.8850E+02	K	Retardation Factor (no units)
2.1567E+05	td	arrival time of the mid-point =TL (yr)
1.5000E+01	Kd	distribution coefficient =Kd (mL/gm)
1.6000E-01	ε	porosity
2.0000E+00	ρ	bulk density of solid (gm/mL)
0.0000E+00	λ	decay constant (1/yr)
NA	t1/2	halflife (yr)

Note: When λ is set to zero this is either a stable contaminant or a member of a decay chain. Decay and growth of radionuclides in decay chain members is adjusted in a separate work sheet.

Composite Curves

Time (yrs)	Arg 1	Curve 1	Arg 2	Curve 2	Arg 3	Curve 3	Arg 4	Curve 4	Arg 5	Curve 5	Arg 6	Curve 6
250	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
2000	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
4000	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
6000	7.5310E+01	0.0000E+00	1.2492E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
8000	4.8842E+01	0.0000E+00	5.7477E+01	0.0000E+00	8.0042E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
10000	3.8595E+01	0.0000E+00	4.2625E+01	0.0000E+00	5.0113E+01	0.0000E+00	9.2921E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
12000	3.2736E+01	0.0000E+00	3.5190E+01	0.0000E+00	3.9237E+01	0.0000E+00	5.2970E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
14000	2.8807E+01	0.0000E+00	3.0506E+01	0.0000E+00	3.3141E+01	0.0000E+00	4.0617E+01	0.0000E+00	7.3827E+01	0.0000E+00	0.0000E+00	0.0000E+00
16000	2.5929E+01	0.0000E+00	2.7197E+01	0.0000E+00	2.9093E+01	0.0000E+00	3.3992E+01	0.0000E+00	4.8415E+01	0.0000E+00	8.0971E+01	0.0000E+00
18000	2.3697E+01	0.0000E+00	2.4693E+01	0.0000E+00	2.6144E+01	0.0000E+00	2.9686E+01	0.0000E+00	3.8375E+01	0.0000E+00	5.0347E+01	0.0000E+00
20000	2.1896E+01	0.0000E+00	2.2707E+01	0.0000E+00	2.3867E+01	0.0000E+00	2.6590E+01	0.0000E+00	3.2597E+01	0.0000E+00	3.9354E+01	0.0000E+00
22000	2.0401E+01	0.0000E+00	2.1079E+01	0.0000E+00	2.2036E+01	0.0000E+00	2.4218E+01	0.0000E+00	2.8708E+01	0.0000E+00	3.3213E+01	0.0000E+00
24000	1.9132E+01	0.0000E+00	1.9711E+01	0.0000E+00	2.0519E+01	0.0000E+00	2.2323E+01	0.0000E+00	2.5854E+01	0.0000E+00	2.9144E+01	0.0000E+00
26000	1.8034E+01	0.0000E+00	1.8537E+01	0.0000E+00	1.9232E+01	0.0000E+00	2.0759E+01	0.0000E+00	2.3637E+01	0.0000E+00	2.6183E+01	0.0000E+00
28000	1.7072E+01	0.0000E+00	1.7514E+01	0.0000E+00	1.8122E+01	0.0000E+00	1.9437E+01	0.0000E+00	2.1848E+01	0.0000E+00	2.3898E+01	0.0000E+00
30000	1.6219E+01	0.0000E+00	1.6612E+01	0.0000E+00	1.7150E+01	0.0000E+00	1.8300E+01	0.0000E+00	2.0360E+01	0.0000E+00	2.2061E+01	0.0000E+00
32000	1.5453E+01	0.0000E+00	1.5807E+01	0.0000E+00	1.6287E+01	0.0000E+00	1.7306E+01	0.0000E+00	1.9097E+01	0.0000E+00	2.0540E+01	0.0000E+00
34000	1.4762E+01	0.0000E+00	1.5082E+01	0.0000E+00	1.5515E+01	0.0000E+00	1.6427E+01	0.0000E+00	1.8004E+01	0.0000E+00	1.9250E+01	0.0000E+00
36000	1.4132E+01	0.0000E+00	1.4424E+01	0.0000E+00	1.4818E+01	0.0000E+00	1.5641E+01	0.0000E+00	1.7045E+01	0.0000E+00	1.8138E+01	0.0000E+00
38000	1.3555E+01	0.0000E+00	1.3823E+01	0.0000E+00	1.4183E+01	0.0000E+00	1.4932E+01	0.0000E+00	1.6194E+01	0.0000E+00	1.7163E+01	0.0000E+00
40000	1.3023E+01	0.0000E+00	1.3270E+01	0.0000E+00	1.3602E+01	0.0000E+00	1.4287E+01	0.0000E+00	1.5432E+01	0.0000E+00	1.6300E+01	0.0000E+00
42000	1.2530E+01	0.0000E+00	1.2760E+01	0.0000E+00	1.3067E+01	0.0000E+00	1.3697E+01	0.0000E+00	1.4742E+01	0.0000E+00	1.5526E+01	0.0000E+00
44000	1.2072E+01	0.0000E+00	1.2286E+01	0.0000E+00	1.2571E+01	0.0000E+00	1.3155E+01	0.0000E+00	1.4114E+01	0.0000E+00	1.4828E+01	0.0000E+00
46000	1.1644E+01	0.0000E+00	1.1844E+01	0.0000E+00	1.2110E+01	0.0000E+00	1.2652E+01	0.0000E+00	1.3538E+01	0.0000E+00	1.4192E+01	0.0000E+00
48000	1.1242E+01	0.0000E+00	1.1430E+01	0.0000E+00	1.1679E+01	0.0000E+00	1.2186E+01	0.0000E+00	1.3008E+01	0.0000E+00	1.3610E+01	0.0000E+00
50000	1.0865E+01	0.0000E+00	1.1041E+01	0.0000E+00	1.1275E+01	0.0000E+00	1.1750E+01	0.0000E+00	1.2516E+01	0.0000E+00	1.3074E+01	0.0000E+00
52000	1.0509E+01	0.0000E+00	1.0675E+01	0.0000E+00	1.0896E+01	0.0000E+00	1.1342E+01	0.0000E+00	1.2059E+01	0.0000E+00	1.2578E+01	0.0000E+00
54000	1.0172E+01	0.0000E+00	1.0329E+01	0.0000E+00	1.0538E+01	0.0000E+00	1.0959E+01	0.0000E+00	1.1631E+01	0.0000E+00	1.2116E+01	0.0000E+00
56000	9.8522E+00	0.0000E+00	1.0002E+01	0.0000E+00	1.0200E+01	0.0000E+00	1.0597E+01	0.0000E+00	1.1231E+01	0.0000E+00	1.1685E+01	0.0000E+00
58000	9.5485E+00	0.0000E+00	9.6909E+00	0.0000E+00	9.8787E+00	0.0000E+00	1.0256E+01	0.0000E+00	1.0854E+01	0.0000E+00	1.1281E+01	0.0000E+00
60000	9.2593E+00	0.0000E+00	9.3949E+00	0.0000E+00	9.5737E+00	0.0000E+00	9.9321E+00	0.0000E+00	1.0498E+01	0.0000E+00	1.0901E+01	0.0000E+00
62000	8.9832E+00	0.0000E+00	9.1128E+00	0.0000E+00	9.2833E+00	0.0000E+00	9.6245E+00	0.0000E+00	1.0162E+01	0.0000E+00	1.0543E+01	0.0000E+00
64000	8.7193E+00	0.0000E+00	8.8432E+00	0.0000E+00	9.0062E+00	0.0000E+00	9.3317E+00	0.0000E+00	9.8428E+00	0.0000E+00	1.0205E+01	0.0000E+00
66000	8.4665E+00	0.0000E+00	8.5853E+00	0.0000E+00	8.7413E+00	0.0000E+00	9.0524E+00	0.0000E+00	9.5396E+00	0.0000E+00	9.8834E+00	0.0000E+00
68000	8.2240E+00	0.0000E+00	8.3380E+00	0.0000E+00	8.4876E+00	0.0000E+00	8.7855E+00	0.0000E+00	9.2508E+00	0.0000E+00	9.5782E+00	0.0000E+00
70000	7.9911E+00	0.0000E+00	8.1006E+00	0.0000E+00	8.2443E+00	0.0000E+00	8.5300E+00	0.0000E+00	8.9751E+00	0.0000E+00	9.2876E+00	0.0000E+00
72000	7.7670E+00	0.0000E+00	7.8724E+00	0.0000E+00	8.0105E+00	0.0000E+00	8.2849E+00	0.0000E+00	8.7116E+00	0.0000E+00	9.0103E+00	0.0000E+00
74000	7.5511E+00	0.0000E+00	7.6526E+00	0.0000E+00	7.7857E+00	0.0000E+00	8.0496E+00	0.0000E+00	8.4591E+00	0.0000E+00	8.7452E+00	0.0000E+00
76000	7.3429E+00	0.0000E+00	7.4408E+00	0.0000E+00	7.5691E+00	0.0000E+00	7.8233E+00	0.0000E+00	8.2169E+00	0.0000E+00	8.4913E+00	0.0000E+00
78000	7.1418E+00	0.0000E+00	7.2364E+00	0.0000E+00	7.3603E+00	0.0000E+00	7.6054E+00	0.0000E+00	7.9842E+00	0.0000E+00	8.2478E+00	0.0000E+00
80000	6.9474E+00	0.0000E+00	7.0390E+00	0.0000E+00	7.1586E+00	0.0000E+00	7.3953E+00	0.0000E+00	7.7604E+00	0.0000E+00	8.0140E+00	0.0000E+00
82000	6.7594E+00	0.0000E+00	6.8480E+00	0.0000E+00	6.9637E+00	0.0000E+00	7.1924E+00	0.0000E+00	7.5447E+00	0.0000E+00	7.7890E+00	0.0000E+00
84000	6.5772E+00	0.0000E+00	6.6630E+00	0.0000E+00	6.7751E+00	0.0000E+00	6.9964E+00	0.0000E+00	7.3367E+00	0.0000E+00	7.5723E+00	0.0000E+00
86000	6.4006E+00	0.0000E+00	6.4838E+00	0.0000E+00	6.5925E+00	0.0000E+00	6.8068E+00	0.0000E+00	7.1359E+00	0.0000E+00	7.3634E+00	0.0000E+00
88000	6.2292E+00	0.0000E+00	6.3100E+00	0.0000E+00	6.4154E+00	0.0000E+00	6.6231E+00	0.0000E+00	6.9417E+00	0.0000E+00	7.1616E+00	0.0000E+00
90000	6.0628E+00	0.0000E+00	6.1412E+00	0.0000E+00	6.2436E+00	0.0000E+00	6.4451E+00	0.0000E+00	6.7538E+00	0.0000E+00	6.9666E+00	0.0000E+00
92000	5.9010E+00	4.6213E-12	5.9773E+00	0.0000E+00	6.0768E+00	0.0000E+00	6.2724E+00	0.0000E+00	6.5718E+00	0.0000E+00	6.7779E+00	0.0000E+00
94000	5.7437E+00	1.8485E-11	5.8179E+00	9.4275E-12	5.9146E+00	4.5289E-12	6.1048E+00	0.0000E+00	6.3954E+00	0.0000E+00	6.5952E+00	0.0000E+00
96000	5.5905E+00	1.1091E-10	5.6628E+00	4.7138E-11	5.7569E+00	1.8116E-11	5.9418E+00	0.0000E+00	6.2242E+00	0.0000E+00	6.4180E+00	0.0000E+00
98000	5.4413E+00	5.8691E-10	5.5117E+00	2.7340E-10	5.6034E+00	9.5107E-11	5.7834E+00	1.3864E-11	6.0579E+00	0.0000E+00	6.2461E+00	0.0000E+00
100000	5.2959E+00	2.8791E-09	5.3645E+00	1.3953E-09	5.4539E+00	5.0271E-10	5.6292E+00	6.9320E-11	5.8962E+00	2.4955E-12	6.0792E+00	0.0000E+00
102000	5.1541E+00	1.3000E-08	5.2210E+00	6.5380E-09	5.3081E+00	2.4728E-09	5.4790E+00	3.8819E-10	5.7390E+00	9.9821E-12	5.9170E+00	2.1258E-12

Time (yrs)	Arg 1	Curve 1	Arg 2	Curve 2	Arg 3	Curve 3	Arg 4	Curve 4	Arg 5	Curve 5	Arg 6	Curve 6
104000	5.0157E+00	5.4536E-08	5.0810E+00	2.8405E-08	5.1660E+00	1.1241E-08	5.3326E+00	1.9363E-09	5.5860E+00	6.2388E-11	5.7592E+00	6.3774E-12
106000	4.8805E+00	2.1330E-07	4.9443E+00	1.1480E-07	5.0273E+00	4.7445E-08	5.1899E+00	8.9145E-09	5.4369E+00	3.3440E-10	5.6056E+00	4.2516E-11
108000	4.7485E+00	7.8097E-07	4.8108E+00	4.3348E-07	4.8919E+00	1.8664E-07	5.0506E+00	3.8094E-08	5.2916E+00	1.6271E-09	5.4561E+00	2.2959E-10
110000	4.6194E+00	2.6870E-06	4.6803E+00	1.5355E-06	4.7596E+00	6.8711E-07	4.9147E+00	1.5162E-07	5.1499E+00	7.3368E-09	5.3103E+00	1.1331E-09
112000	4.4931E+00	8.7176E-06	4.5528E+00	5.1203E-06	4.6302E+00	2.3762E-06	4.7819E+00	5.6433E-07	5.0116E+00	3.0712E-08	5.1681E+00	5.1615E-09
114000	4.3696E+00	2.6757E-05	4.4280E+00	1.6129E-05	4.5038E+00	7.7470E-06	4.6520E+00	1.9720E-06	4.8765E+00	1.1987E-07	5.0294E+00	2.1807E-08
116000	4.2487E+00	7.7927E-05	4.3058E+00	4.8143E-05	4.3800E+00	2.3887E-05	4.5251E+00	6.4923E-06	4.7446E+00	4.3804E-07	4.8939E+00	8.5870E-08
118000	4.1302E+00	2.1596E-04	4.1862E+00	1.3656E-04	4.2589E+00	6.9873E-05	4.4009E+00	2.0205E-05	4.6156E+00	1.5044E-06	4.7615E+00	3.1642E-07
120000	4.0142E+00	5.7096E-04	4.0690E+00	3.6908E-04	4.1402E+00	1.9444E-04	4.2793E+00	5.9621E-05	4.4894E+00	4.8724E-06	4.6322E+00	1.0953E-06
122000	3.9004E+00	1.4436E-03	3.9542E+00	9.5291E-04	4.0239E+00	5.1607E-04	4.1602E+00	1.6729E-04	4.3659E+00	1.4931E-05	4.5056E+00	3.5740E-06
124000	3.7888E+00	3.4985E-03	3.8416E+00	2.3557E-03	3.9100E+00	1.3097E-03	4.0435E+00	4.4752E-04	4.2451E+00	4.3418E-05	4.3818E+00	1.1029E-05
126000	3.6794E+00	8.1439E-03	3.7311E+00	5.5880E-03	3.7982E+00	3.1851E-03	3.9292E+00	1.1442E-03	4.1267E+00	1.2015E-04	4.2607E+00	3.2286E-05
128000	3.5720E+00	1.8245E-02	3.6227E+00	1.2746E-02	3.6886E+00	7.4392E-03	3.8171E+00	2.8025E-03	4.0107E+00	3.1722E-04	4.1420E+00	8.9908E-05
130000	3.4665E+00	3.9414E-02	3.5164E+00	2.8008E-02	3.5810E+00	1.6720E-02	3.7071E+00	6.5898E-03	3.8970E+00	8.0101E-04	4.0257E+00	2.3880E-04
132000	3.3629E+00	8.2240E-02	3.4119E+00	5.9400E-02	3.4754E+00	3.6228E-02	3.5992E+00	1.4906E-02	3.7855E+00	1.9388E-03	3.9117E+00	6.0641E-04
134000	3.2612E+00	1.6602E-01	3.3093E+00	1.2179E-01	3.3717E+00	7.5810E-02	3.4932E+00	3.2495E-02	3.6761E+00	4.5079E-03	3.7999E+00	1.4757E-03
136000	3.1612E+00	3.2474E-01	3.2084E+00	2.4177E-01	3.2697E+00	1.5346E-01	3.3892E+00	6.8394E-02	3.5688E+00	1.0088E-02	3.6902E+00	3.4487E-03
138000	3.0628E+00	6.1640E-01	3.1093E+00	4.6543E-01	3.1696E+00	3.0097E-01	3.2869E+00	1.3922E-01	3.4634E+00	2.1769E-02	3.5826E+00	7.7554E-03
140000	2.9662E+00	1.1369E+00	3.0119E+00	8.7007E-01	3.0711E+00	5.7270E-01	3.1865E+00	2.7448E-01	3.3598E+00	4.5377E-02	3.4770E+00	1.6813E-02
142000	2.8711E+00	2.0401E+00	2.9160E+00	1.5815E+00	2.9743E+00	1.0588E+00	3.0878E+00	5.2493E-01	3.2581E+00	9.1514E-02	3.3732E+00	3.5201E-02
144000	2.7775E+00	3.5661E+00	2.8217E+00	2.7988E+00	2.8791E+00	1.9043E+00	2.9907E+00	9.7516E-01	3.1582E+00	1.7884E-01	3.2713E+00	7.1291E-02
146000	2.6854E+00	6.0793E+00	2.7289E+00	4.8277E+00	2.7854E+00	3.3361E+00	2.8952E+00	1.7620E+00	3.0599E+00	3.3917E-01	3.1711E+00	1.3988E-01
148000	2.5947E+00	1.0118E+01	2.6376E+00	8.1259E+00	2.6931E+00	5.6990E+00	2.8012E+00	3.1003E+00	2.9633E+00	6.2502E-01	3.0726E+00	2.6629E-01
150000	2.5054E+00	1.6457E+01	2.5476E+00	1.3360E+01	2.6023E+00	9.5039E+00	2.7087E+00	5.3185E+00	2.8682E+00	1.1207E+00	2.9758E+00	4.9253E-01
152000	2.4174E+00	2.6185E+01	2.4591E+00	2.1479E+01	2.5129E+00	1.5488E+01	2.6177E+00	8.9051E+00	2.7747E+00	1.9575E+00	2.8805E+00	8.8621E-01
154000	2.3308E+00	4.0794E+01	2.3718E+00	3.3795E+01	2.4249E+00	2.4688E+01	2.5280E+00	1.4568E+01	2.6826E+00	3.3345E+00	2.7868E+00	1.5531E+00
156000	2.2454E+00	6.2282E+01	2.2858E+00	5.2089E+01	2.3381E+00	3.8530E+01	2.4397E+00	2.3308E+01	2.5920E+00	5.5458E+00	2.6945E+00	2.6541E+00
158000	2.1612E+00	9.3265E+01	2.2010E+00	7.8714E+01	2.2526E+00	5.8925E+01	2.3527E+00	3.6504E+01	2.5027E+00	9.0142E+00	2.6037E+00	4.4277E+00
160000	2.0781E+00	1.3709E+02	2.1174E+00	1.1672E+02	2.1683E+00	8.8381E+01	2.2670E+00	5.6017E+01	2.4148E+00	1.4333E+01	2.5143E+00	7.2179E+00
162000	1.9963E+00	1.9794E+02	2.0350E+00	1.6994E+02	2.0852E+00	1.3011E+02	2.1825E+00	8.4291E+01	2.3282E+00	2.2317E+01	2.4262E+00	1.1509E+01
164000	1.9155E+00	2.8095E+02	1.9537E+00	2.4316E+02	2.0032E+00	1.8815E+02	2.0992E+00	1.2448E+02	2.2428E+00	3.4052E+01	2.3394E+00	1.7968E+01
166000	1.8358E+00	3.9227E+02	1.8736E+00	3.4214E+02	1.9223E+00	2.6743E+02	2.0170E+00	1.8054E+02	2.1586E+00	5.0962E+01	2.2538E+00	2.7487E+01
168000	1.7572E+00	5.3912E+02	1.7944E+00	4.7373E+02	1.8426E+00	3.7391E+02	1.9360E+00	2.5736E+02	2.0757E+00	7.4867E+01	2.1695E+00	4.1239E+01
170000	1.6796E+00	7.2980E+02	1.7164E+00	6.4586E+02	1.7639E+00	5.1456E+02	1.8561E+00	3.6082E+02	1.9938E+00	1.0804E+02	2.0864E+00	6.0727E+01
172000	1.6030E+00	9.7361E+02	1.6393E+00	8.6756E+02	1.6862E+00	6.9743E+02	1.7772E+00	4.9786E+02	1.9131E+00	1.5328E+02	2.0044E+00	8.7837E+01
174000	1.5274E+00	1.2808E+03	1.5632E+00	1.1488E+03	1.6095E+00	9.3156E+02	1.6993E+00	6.7652E+02	1.8335E+00	2.1391E+02	1.9235E+00	1.2488E+02
176000	1.4527E+00	1.6625E+03	1.4880E+00	1.5006E+03	1.5338E+00	1.2269E+03	1.6225E+00	9.0584E+02	1.7549E+00	2.9385E+02	1.8438E+00	1.7465E+02
178000	1.3789E+00	2.1301E+03	1.4138E+00	1.9344E+03	1.4590E+00	1.5943E+03	1.5466E+00	1.1959E+03	1.6773E+00	3.9760E+02	1.7650E+00	2.4040E+02
180000	1.3060E+00	2.6955E+03	1.3405E+00	2.4622E+03	1.3851E+00	2.0449E+03	1.4716E+00	1.5574E+03	1.6007E+00	5.3020E+02	1.6873E+00	3.2591E+02
182000	1.2340E+00	3.3704E+03	1.2681E+00	3.0961E+03	1.3121E+00	2.5904E+03	1.3976E+00	2.0020E+03	1.5251E+00	6.9721E+02	1.6106E+00	4.3542E+02
184000	1.1628E+00	4.1663E+03	1.1965E+00	3.8479E+03	1.2400E+00	3.2423E+03	1.3245E+00	2.5413E+03	1.4504E+00	9.0459E+02	1.5349E+00	5.7359E+02
186000	1.0924E+00	5.0935E+03	1.1257E+00	4.7288E+03	1.1688E+00	4.0118E+03	1.2522E+00	3.1873E+03	1.3767E+00	1.1586E+03	1.4601E+00	7.4548E+02
188000	1.0229E+00	6.1615E+03	1.0558E+00	5.7489E+03	1.0984E+00	4.9092E+03	1.1808E+00	3.9513E+03	1.3038E+00	1.4656E+03	1.3862E+00	9.5638E+02
190000	9.5410E-01	7.3777E+03	9.8667E-01	6.9167E+03	1.0287E+00	5.9437E+03	1.1103E+00	4.8441E+03	1.2318E+00	1.8319E+03	1.3132E+00	1.2117E+03
192000	8.8610E-01	8.7479E+03	9.1830E-01	8.2391E+03	9.5991E-01	7.1230E+03	1.0405E+00	5.8753E+03	1.1607E+00	2.2638E+03	1.2411E+00	1.5169E+03
194000	8.1884E-01	1.0276E+04	8.5069E-01	9.7208E+03	8.9185E-01	8.4529E+03	9.7156E-01	7.0531E+03	1.0903E+00	2.7667E+03	1.1699E+00	1.8772E+03
196000	7.5231E-01	1.1962E+04	7.8382E-01	1.1364E+04	8.2453E-01	9.9368E+03	9.0336E-01	8.3837E+03	1.0208E+00	3.3457E+03	1.0994E+00	2.2975E+03
198000	6.8649E-01	1.3804E+04	7.1767E-01	1.3168E+04	7.5794E-01	1.1576E+04	8.3592E-01	9.8710E+03	9.5205E-01	4.0049E+03	1.0298E+00	2.7821E+03
200000	6.2137E-01	1.5798E+04	6.5222E-01	1.5129E+04	6.9206E-01	1.3368E+04	7.6921E-01	1.1517E+04	8.8407E-01	4.7474E+03	9.6094E-01	3.3346E+03
202000	5.5693E-01	1.7937E+04	5.8746E-01	1.7242E+04	6.2688E-01	1.5311E+04	7.0321E-01	1.3319E+04	8.1683E-01	5.5749E+03	8.9286E-01	3.9578E+03
204000	4.9315E-01	2.0211E+04	5.2336E-01	1.9497E+04	5.6238E-01	1.7395E+04	6.3791E-01	1.5276E+04	7.5033E-01	6.4878E+03	8.2553E-01	4.6532E+03
206000	4.3002E-01	2.2606E+04	4.5993E-01	2.1883E+04	4.9855E-01	1.9612E+04	5.7330E-01	1.7379E+04	6.8453E-01	7.4852E+03	7.5893E-01	5.4215E+03

Time (yrs)	Arg 1	Curve 1	Arg 2	Curve 2	Arg 3	Curve 3	Arg 4	Curve 4	Arg 5	Curve 5	Arg 6	Curve 6
208000	3.6752E-01	2.5110E+04	3.9713E-01	2.4386E+04	4.3536E-01	2.1950E+04	5.0935E-01	1.9619E+04	6.1943E-01	8.5646E+03	6.9304E-01	6.2619E+03
210000	3.0565E-01	2.7704E+04	3.3496E-01	2.6991E+04	3.7281E-01	2.4395E+04	4.4606E-01	2.1985E+04	5.5501E-01	9.7219E+03	6.2785E-01	7.1724E+03
212000	2.4438E-01	3.0371E+04	2.7341E-01	2.9678E+04	3.1088E-01	2.6931E+04	3.8340E-01	2.4462E+04	4.9125E-01	1.0952E+04	5.6334E-01	8.1498E+03
214000	1.8370E-01	3.3093E+04	2.1245E-01	3.2431E+04	2.4956E-01	2.9540E+04	3.2137E-01	2.7035E+04	4.2814E-01	1.2247E+04	4.9950E-01	9.1897E+03
216000	1.2361E-01	3.5849E+04	1.5208E-01	3.5228E+04	1.8884E-01	3.2203E+04	2.5994E-01	2.9685E+04	3.6566E-01	1.3601E+04	4.3630E-01	1.0286E+04
218000	6.4078E-02	3.8620E+04	9.2284E-02	3.8049E+04	1.2869E-01	3.4902E+04	1.9912E-01	3.2395E+04	3.0380E-01	1.5003E+04	3.7375E-01	1.1433E+04
220000	5.1073E-03	4.1385E+04	3.3050E-02	4.0875E+04	6.9116E-02	3.7616E+04	1.3888E-01	3.5144E+04	2.4255E-01	1.6444E+04	3.1181E-01	1.2623E+04
222000	-5.3319E-02	4.4127E+04	-2.5634E-02	4.3686E+04	1.0098E-02	4.0328E+04	7.9204E-02	3.7913E+04	1.8189E-01	1.7915E+04	2.5048E-01	1.3847E+04
224000	-1.1121E-01	4.6827E+04	-8.3778E-02	4.6462E+04	-4.8373E-02	4.3018E+04	2.0093E-02	4.0682E+04	1.2181E-01	1.9403E+04	1.8974E-01	1.5097E+04
226000	-1.6858E-01	4.9469E+04	-1.4139E-01	4.9187E+04	-1.0631E-01	4.5668E+04	-3.8471E-02	4.3431E+04	6.2301E-02	2.0899E+04	1.2959E-01	1.6363E+04
228000	-2.2544E-01	5.2037E+04	-1.9849E-01	5.1844E+04	-1.6372E-01	4.8262E+04	-9.6499E-02	4.6144E+04	3.3466E-03	2.2393E+04	7.0006E-02	1.7638E+04
230000	-2.8179E-01	5.4519E+04	-2.5509E-01	5.4419E+04	-2.2062E-01	5.0786E+04	-1.5400E-01	4.8802E+04	-5.5063E-02	2.3873E+04	1.0980E-02	1.8910E+04
232000	-3.3766E-01	5.6902E+04	-3.1118E-01	5.6898E+04	-2.7702E-01	5.3225E+04	-2.1099E-01	5.1390E+04	-1.1294E-01	2.5330E+04	-4.7500E-02	2.0173E+04
234000	-3.9304E-01	5.9178E+04	-3.6679E-01	5.9273E+04	-3.3293E-01	5.5569E+04	-2.6747E-01	5.3895E+04	-1.7029E-01	2.6755E+04	-1.0545E-01	2.1417E+04
236000	-4.4794E-01	6.1338E+04	-4.2192E-01	6.1533E+04	-3.8835E-01	5.7809E+04	-3.2346E-01	5.6304E+04	-2.2714E-01	2.8141E+04	-1.6287E-01	2.2636E+04
238000	-5.0239E-01	6.3378E+04	-4.7658E-01	6.3673E+04	-4.4330E-01	5.9936E+04	-3.7896E-01	5.8608E+04	-2.8348E-01	2.9479E+04	-2.1977E-01	2.3821E+04
240000	-5.5638E-01	6.5294E+04	-5.3079E-01	6.5688E+04	-4.9778E-01	6.1946E+04	-4.3399E-01	6.0799E+04	-3.3932E-01	3.0765E+04	-2.7618E-01	2.4966E+04
242000	-6.0992E-01	6.7084E+04	-5.8454E-01	6.7575E+04	-5.5180E-01	6.3834E+04	-4.8855E-01	6.2870E+04	-3.9469E-01	3.1992E+04	-3.3209E-01	2.6067E+04
244000	-6.6302E-01	6.8747E+04	-6.3785E-01	6.9332E+04	-6.0538E-01	6.5598E+04	-5.4265E-01	6.4818E+04	-4.4958E-01	3.3157E+04	-3.8752E-01	2.7119E+04
246000	-7.1570E-01	7.0285E+04	-6.9073E-01	7.0962E+04	-6.5852E-01	6.7239E+04	-5.9631E-01	6.6640E+04	-5.0401E-01	3.4256E+04	-4.4247E-01	2.8119E+04
248000	-7.6795E-01	7.1701E+04	-7.4318E-01	7.2465E+04	-7.1123E-01	6.8756E+04	-6.4952E-01	6.8335E+04	-5.5799E-01	3.5289E+04	-4.9696E-01	2.9063E+04
250000	-8.1978E-01	7.2998E+04	-7.9521E-01	7.3844E+04	-7.6352E-01	7.0154E+04	-7.0230E-01	6.9905E+04	-6.1152E-01	3.6253E+04	-5.5100E-01	2.9950E+04
252000	-8.7121E-01	7.4179E+04	-8.4683E-01	7.5105E+04	-8.1539E-01	7.1434E+04	-7.5466E-01	7.1352E+04	-6.6461E-01	3.7149E+04	-6.0458E-01	3.0779E+04
254000	-9.2224E-01	7.5252E+04	-8.9805E-01	7.6251E+04	-8.6686E-01	7.2602E+04	-8.0660E-01	7.2678E+04	-7.1727E-01	3.7978E+04	-6.5773E-01	3.1550E+04
256000	-9.7288E-01	7.6221E+04	-9.4888E-01	7.7289E+04	-9.1792E-01	7.3662E+04	-8.5814E-01	7.3889E+04	-7.6951E-01	3.8740E+04	-7.1045E-01	3.2263E+04
258000	-1.0231E+00	7.7093E+04	-9.9931E-01	7.8225E+04	-9.6859E-01	7.4620E+04	-9.0927E-01	7.4989E+04	-8.2133E-01	3.9439E+04	-7.6274E-01	3.2920E+04
260000	-1.0730E+00	7.7874E+04	-1.0494E+00	7.9065E+04	-1.0189E+00	7.5482E+04	-9.6000E-01	7.5984E+04	-8.7275E-01	4.0075E+04	-8.1462E-01	3.3522E+04
262000	-1.1225E+00	7.8571E+04	-1.0990E+00	7.9815E+04	-1.0688E+00	7.6255E+04	-1.0104E+00	7.6880E+04	-9.2377E-01	4.0653E+04	-8.6609E-01	3.4070E+04
264000	-1.1716E+00	7.9191E+04	-1.1483E+00	8.0484E+04	-1.1183E+00	7.6945E+04	-1.0603E+00	7.7684E+04	-9.7439E-01	4.1174E+04	-9.1716E-01	3.4569E+04
266000	-1.2204E+00	7.9739E+04	-1.1973E+00	8.1077E+04	-1.1675E+00	7.7558E+04	-1.1099E+00	7.8401E+04	-1.0246E+00	4.1644E+04	-9.6783E-01	3.5019E+04
268000	-1.2688E+00	8.0222E+04	-1.2459E+00	8.1600E+04	-1.2163E+00	7.8101E+04	-1.1591E+00	7.9040E+04	-1.0745E+00	4.2064E+04	-1.0181E+00	3.5425E+04
270000	-1.3169E+00	8.0647E+04	-1.2941E+00	8.2061E+04	-1.2647E+00	7.8580E+04	-1.2080E+00	7.9605E+04	-1.1240E+00	4.2439E+04	-1.0680E+00	3.5788E+04
272000	-1.3646E+00	8.1018E+04	-1.3420E+00	8.2465E+04	-1.3128E+00	7.9001E+04	-1.2565E+00	8.0105E+04	-1.1731E+00	4.2772E+04	-1.1176E+00	3.6112E+04
274000	-1.4120E+00	8.1342E+04	-1.3896E+00	8.2818E+04	-1.3606E+00	7.9369E+04	-1.3047E+00	8.0544E+04	-1.2219E+00	4.3067E+04	-1.1667E+00	3.6401E+04
276000	-1.4591E+00	8.1624E+04	-1.4368E+00	8.3125E+04	-1.4080E+00	7.9690E+04	-1.3525E+00	8.0928E+04	-1.2703E+00	4.3327E+04	-1.2155E+00	3.6656E+04
278000	-1.5058E+00	8.1868E+04	-1.4837E+00	8.3392E+04	-1.4551E+00	7.9970E+04	-1.4000E+00	8.1264E+04	-1.3183E+00	4.3556E+04	-1.2640E+00	3.6881E+04
280000	-1.5522E+00	8.2079E+04	-1.5302E+00	8.3622E+04	-1.5019E+00	8.0212E+04	-1.4471E+00	8.1556E+04	-1.3661E+00	4.3756E+04	-1.3121E+00	3.7079E+04
282000	-1.5983E+00	8.2260E+04	-1.5765E+00	8.3821E+04	-1.5483E+00	8.0421E+04	-1.4939E+00	8.1809E+04	-1.4134E+00	4.3930E+04	-1.3599E+00	3.7252E+04
284000	-1.6441E+00	8.2415E+04	-1.6224E+00	8.3991E+04	-1.5944E+00	8.0601E+04	-1.5404E+00	8.2028E+04	-1.4605E+00	4.4081E+04	-1.4073E+00	3.7404E+04
286000	-1.6896E+00	8.2548E+04	-1.6681E+00	8.4137E+04	-1.6403E+00	8.0755E+04	-1.5866E+00	8.2216E+04	-1.5072E+00	4.4212E+04	-1.4544E+00	3.7535E+04
288000	-1.7348E+00	8.2661E+04	-1.7134E+00	8.4262E+04	-1.6858E+00	8.0887E+04	-1.6325E+00	8.2378E+04	-1.5536E+00	4.4326E+04	-1.5012E+00	3.7649E+04
290000	-1.7797E+00	8.2758E+04	-1.7584E+00	8.4368E+04	-1.7310E+00	8.0999E+04	-1.6780E+00	8.2516E+04	-1.5997E+00	4.4423E+04	-1.5476E+00	3.7747E+04
292000	-1.8243E+00	8.2839E+04	-1.8031E+00	8.4458E+04	-1.7759E+00	8.1095E+04	-1.7233E+00	8.2634E+04	-1.6455E+00	4.4507E+04	-1.5937E+00	3.7832E+04
294000	-1.8686E+00	8.2908E+04	-1.8476E+00	8.4534E+04	-1.8205E+00	8.1176E+04	-1.7683E+00	8.2734E+04	-1.6910E+00	4.4578E+04	-1.6396E+00	3.7904E+04
296000	-1.9126E+00	8.2966E+04	-1.8917E+00	8.4598E+04	-1.8648E+00	8.1244E+04	-1.8129E+00	8.2820E+04	-1.7362E+00	4.4639E+04	-1.6851E+00	3.7966E+04
298000	-1.9564E+00	8.3015E+04	-1.9356E+00	8.4652E+04	-1.9089E+00	8.1302E+04	-1.8573E+00	8.2891E+04	-1.7810E+00	4.4691E+04	-1.7303E+00	3.8019E+04
300000	-1.9998E+00	8.3056E+04	-1.9792E+00	8.4698E+04	-1.9527E+00	8.1351E+04	-1.9014E+00	8.2952E+04	-1.8256E+00	4.4734E+04	-1.7752E+00	3.8064E+04
302000	-2.0430E+00	8.3090E+04	-2.0226E+00	8.4736E+04	-1.9962E+00	8.1391E+04	-1.9452E+00	8.3003E+04	-1.8699E+00	4.4771E+04	-1.8198E+00	3.8102E+04
304000	-2.0860E+00	8.3118E+04	-2.0656E+00	8.4767E+04	-2.0394E+00	8.1425E+04	-1.9888E+00	8.3046E+04	-1.9139E+00	4.4802E+04	-1.8642E+00	3.8135E+04
306000	-2.1287E+00	8.3142E+04	-2.1084E+00	8.4794E+04	-2.0823E+00	8.1454E+04	-2.0321E+00	8.3082E+04	-1.9577E+00	4.4829E+04	-1.9082E+00	3.8162E+04
308000	-2.1711E+00	8.3161E+04	-2.1510E+00	8.4816E+04	-2.1250E+00	8.1477E+04	-2.0751E+00	8.3111E+04	-2.0011E+00	4.4851E+04	-1.9520E+00	3.8185E+04
310000	-2.2132E+00	8.3178E+04	-2.1932E+00	8.4834E+04	-2.1675E+00	8.1497E+04	-2.1178E+00	8.3136E+04	-2.0443E+00	4.4869E+04	-1.9955E+00	3.8204E+04

Time (yrs)	Arg 1	Curve 1	Arg 2	Curve 2	Arg 3	Curve 3	Arg 4	Curve 4	Arg 5	Curve 5	Arg 6	Curve 6
312000	-2.2551E+00	8.3191E+04	-2.2353E+00	8.4849E+04	-2.2097E+00	8.1513E+04	-2.1603E+00	8.3157E+04	-2.0873E+00	4.4884E+04	-2.0387E+00	3.8220E+04
314000	-2.2968E+00	8.3202E+04	-2.2770E+00	8.4861E+04	-2.2516E+00	8.1526E+04	-2.2025E+00	8.3174E+04	-2.1299E+00	4.4897E+04	-2.0817E+00	3.8233E+04
316000	-2.3382E+00	8.3211E+04	-2.3186E+00	8.4871E+04	-2.2933E+00	8.1537E+04	-2.2445E+00	8.3188E+04	-2.1723E+00	4.4907E+04	-2.1244E+00	3.8244E+04
318000	-2.3794E+00	8.3219E+04	-2.3599E+00	8.4879E+04	-2.3347E+00	8.1546E+04	-2.2862E+00	8.3199E+04	-2.2145E+00	4.4916E+04	-2.1668E+00	3.8253E+04
320000	-2.4203E+00	8.3225E+04	-2.4009E+00	8.4886E+04	-2.3759E+00	8.1554E+04	-2.3277E+00	8.3209E+04	-2.2564E+00	4.4923E+04	-2.2090E+00	3.8261E+04
322000	-2.4610E+00	8.3230E+04	-2.4417E+00	8.4892E+04	-2.4169E+00	8.1560E+04	-2.3689E+00	8.3217E+04	-2.2980E+00	4.4929E+04	-2.2510E+00	3.8267E+04
324000	-2.5015E+00	8.3234E+04	-2.4823E+00	8.4896E+04	-2.4576E+00	8.1565E+04	-2.4099E+00	8.3223E+04	-2.3395E+00	4.4934E+04	-2.2926E+00	3.8272E+04
326000	-2.5417E+00	8.3237E+04	-2.5227E+00	8.4900E+04	-2.4981E+00	8.1569E+04	-2.4507E+00	8.3228E+04	-2.3806E+00	4.4938E+04	-2.3341E+00	3.8277E+04
328000	-2.5818E+00	8.3240E+04	-2.5628E+00	8.4903E+04	-2.5383E+00	8.1572E+04	-2.4912E+00	8.3233E+04	-2.4216E+00	4.4941E+04	-2.3753E+00	3.8280E+04
330000	-2.6216E+00	8.3242E+04	-2.6027E+00	8.4906E+04	-2.5784E+00	8.1575E+04	-2.5315E+00	8.3236E+04	-2.4623E+00	4.4944E+04	-2.4162E+00	3.8283E+04
332000	-2.6611E+00	8.3243E+04	-2.6424E+00	8.4907E+04	-2.6182E+00	8.1577E+04	-2.5716E+00	8.3239E+04	-2.5027E+00	4.4946E+04	-2.4570E+00	3.8285E+04
334000	-2.7005E+00	8.3245E+04	-2.6818E+00	8.4909E+04	-2.6578E+00	8.1578E+04	-2.6114E+00	8.3241E+04	-2.5430E+00	4.4948E+04	-2.4975E+00	3.8287E+04
336000	-2.7396E+00	8.3246E+04	-2.7211E+00	8.4910E+04	-2.6972E+00	8.1580E+04	-2.6511E+00	8.3243E+04	-2.5830E+00	4.4949E+04	-2.5377E+00	3.8289E+04
338000	-2.7786E+00	8.3247E+04	-2.7601E+00	8.4911E+04	-2.7363E+00	8.1581E+04	-2.6905E+00	8.3244E+04	-2.6228E+00	4.4951E+04	-2.5778E+00	3.8290E+04
340000	-2.8173E+00	8.3248E+04	-2.7989E+00	8.4912E+04	-2.7753E+00	8.1582E+04	-2.7297E+00	8.3246E+04	-2.6623E+00	4.4951E+04	-2.6176E+00	3.8291E+04
342000	-2.8558E+00	8.3248E+04	-2.8376E+00	8.4913E+04	-2.8140E+00	8.1583E+04	-2.7687E+00	8.3247E+04	-2.7017E+00	4.4952E+04	-2.6572E+00	3.8292E+04
344000	-2.8942E+00	8.3249E+04	-2.8760E+00	8.4913E+04	-2.8526E+00	8.1583E+04	-2.8075E+00	8.3247E+04	-2.7408E+00	4.4953E+04	-2.6966E+00	3.8293E+04
346000	-2.9323E+00	8.3249E+04	-2.9142E+00	8.4914E+04	-2.8909E+00	8.1584E+04	-2.8460E+00	8.3248E+04	-2.7798E+00	4.4953E+04	-2.7357E+00	3.8293E+04
348000	-2.9702E+00	8.3249E+04	-2.9522E+00	8.4914E+04	-2.9290E+00	8.1584E+04	-2.8844E+00	8.3249E+04	-2.8185E+00	4.4954E+04	-2.7747E+00	3.8294E+04
350000	-3.0079E+00	8.3250E+04	-2.9900E+00	8.4914E+04	-2.9670E+00	8.1584E+04	-2.9226E+00	8.3249E+04	-2.8570E+00	4.4954E+04	-2.8135E+00	3.8294E+04
352000	-3.0455E+00	8.3250E+04	-3.0277E+00	8.4915E+04	-3.0047E+00	8.1585E+04	-2.9606E+00	8.3249E+04	-2.8953E+00	4.4954E+04	-2.8520E+00	3.8294E+04
354000	-3.0828E+00	8.3250E+04	-3.0651E+00	8.4915E+04	-3.0423E+00	8.1585E+04	-2.9983E+00	8.3249E+04	-2.9334E+00	4.4954E+04	-2.8903E+00	3.8294E+04
356000	-3.1200E+00	8.3250E+04	-3.1023E+00	8.4915E+04	-3.0796E+00	8.1585E+04	-3.0359E+00	8.3250E+04	-2.9713E+00	4.4955E+04	-2.9285E+00	3.8295E+04
358000	-3.1569E+00	8.3250E+04	-3.1394E+00	8.4915E+04	-3.1168E+00	8.1585E+04	-3.0733E+00	8.3250E+04	-3.0091E+00	4.4955E+04	-2.9664E+00	3.8295E+04
360000	-3.1937E+00	8.3250E+04	-3.1763E+00	8.4915E+04	-3.1538E+00	8.1585E+04	-3.1105E+00	8.3250E+04	-3.0466E+00	4.4955E+04	-3.0042E+00	3.8295E+04
362000	-3.2303E+00	8.3250E+04	-3.2130E+00	8.4915E+04	-3.1906E+00	8.1585E+04	-3.1475E+00	8.3250E+04	-3.0839E+00	4.4955E+04	-3.0417E+00	3.8295E+04
364000	-3.2668E+00	8.3250E+04	-3.2495E+00	8.4915E+04	-3.2272E+00	8.1585E+04	-3.1844E+00	8.3250E+04	-3.1211E+00	4.4955E+04	-3.0791E+00	3.8295E+04
366000	-3.3030E+00	8.3250E+04	-3.2858E+00	8.4915E+04	-3.2637E+00	8.1585E+04	-3.2210E+00	8.3250E+04	-3.1581E+00	4.4955E+04	-3.1163E+00	3.8295E+04
368000	-3.3391E+00	8.3250E+04	-3.3220E+00	8.4915E+04	-3.2999E+00	8.1585E+04	-3.2575E+00	8.3250E+04	-3.1948E+00	4.4955E+04	-3.1533E+00	3.8295E+04
370000	-3.3750E+00	8.3250E+04	-3.3580E+00	8.4915E+04	-3.3360E+00	8.1585E+04	-3.2938E+00	8.3250E+04	-3.2314E+00	4.4955E+04	-3.1901E+00	3.8295E+04
372000	-3.4107E+00	8.3250E+04	-3.3938E+00	8.4915E+04	-3.3720E+00	8.1585E+04	-3.3299E+00	8.3250E+04	-3.2679E+00	4.4955E+04	-3.2267E+00	3.8295E+04
374000	-3.4463E+00	8.3250E+04	-3.4294E+00	8.4915E+04	-3.4077E+00	8.1585E+04	-3.3659E+00	8.3250E+04	-3.3041E+00	4.4955E+04	-3.2631E+00	3.8295E+04
376000	-3.4817E+00	8.3250E+04	-3.4649E+00	8.4915E+04	-3.4433E+00	8.1585E+04	-3.4016E+00	8.3250E+04	-3.3402E+00	4.4955E+04	-3.2994E+00	3.8295E+04
378000	-3.5169E+00	8.3250E+04	-3.5002E+00	8.4915E+04	-3.4787E+00	8.1585E+04	-3.4372E+00	8.3250E+04	-3.3761E+00	4.4955E+04	-3.3355E+00	3.8295E+04
380000	-3.5520E+00	8.3250E+04	-3.5354E+00	8.4915E+04	-3.5139E+00	8.1585E+04	-3.4727E+00	8.3250E+04	-3.4118E+00	4.4955E+04	-3.3714E+00	3.8295E+04
382000	-3.5869E+00	8.3250E+04	-3.5703E+00	8.4915E+04	-3.5490E+00	8.1585E+04	-3.5080E+00	8.3250E+04	-3.4474E+00	4.4955E+04	-3.4072E+00	3.8295E+04
384000	-3.6217E+00	8.3250E+04	-3.6052E+00	8.4915E+04	-3.5839E+00	8.1585E+04	-3.5431E+00	8.3250E+04	-3.4828E+00	4.4955E+04	-3.4428E+00	3.8295E+04
386000	-3.6563E+00	8.3250E+04	-3.6398E+00	8.4915E+04	-3.6187E+00	8.1585E+04	-3.5780E+00	8.3250E+04	-3.5180E+00	4.4955E+04	-3.4782E+00	3.8295E+04
388000	-3.6907E+00	8.3250E+04	-3.6744E+00	8.4915E+04	-3.6533E+00	8.1585E+04	-3.6128E+00	8.3250E+04	-3.5531E+00	4.4955E+04	-3.5134E+00	3.8295E+04
390000	-3.7250E+00	8.3250E+04	-3.7087E+00	8.4915E+04	-3.6878E+00	8.1585E+04	-3.6474E+00	8.3250E+04	-3.5880E+00	4.4955E+04	-3.5485E+00	3.8295E+04
392000	-3.7591E+00	8.3250E+04	-3.7429E+00	8.4915E+04	-3.7221E+00	8.1585E+04	-3.6819E+00	8.3250E+04	-3.6227E+00	4.4955E+04	-3.5834E+00	3.8295E+04
394000	-3.7931E+00	8.3250E+04	-3.7770E+00	8.4915E+04	-3.7562E+00	8.1585E+04	-3.7162E+00	8.3250E+04	-3.6573E+00	4.4955E+04	-3.6182E+00	3.8295E+04
396000	-3.8269E+00	8.3250E+04	-3.8109E+00	8.4915E+04	-3.7902E+00	8.1585E+04	-3.7504E+00	8.3250E+04	-3.6917E+00	4.4955E+04	-3.6528E+00	3.8295E+04
398000	-3.8606E+00	8.3250E+04	-3.8446E+00	8.4915E+04	-3.8240E+00	8.1585E+04	-3.7844E+00	8.3250E+04	-3.7260E+00	4.4955E+04	-3.6873E+00	3.8295E+04
400000	-3.8941E+00	8.3250E+04	-3.8782E+00	8.4915E+04	-3.8577E+00	8.1585E+04	-3.8183E+00	8.3250E+04	-3.7601E+00	4.4955E+04	-3.7215E+00	3.8295E+04
402000	-3.9275E+00	8.3250E+04	-3.9117E+00	8.4915E+04	-3.8913E+00	8.1585E+04	-3.8520E+00	8.3250E+04	-3.7941E+00	4.4955E+04	-3.7557E+00	3.8295E+04
404000	-3.9608E+00	8.3250E+04	-3.9450E+00	8.4915E+04	-3.9247E+00	8.1585E+04	-3.8856E+00	8.3250E+04	-3.8279E+00	4.4955E+04	-3.7897E+00	3.8295E+04
406000	-3.9939E+00	8.3250E+04	-3.9782E+00	8.4915E+04	-3.9579E+00	8.1585E+04	-3.9190E+00	8.3250E+04	-3.8616E+00	4.4955E+04	-3.8235E+00	3.8295E+04
408000	-4.0268E+00	8.3250E+04	-4.0112E+00	8.4915E+04	-3.9911E+00	8.1585E+04	-3.9523E+00	8.3250E+04	-3.8951E+00	4.4955E+04	-3.8572E+00	3.8295E+04
410000	-4.0597E+00	8.3250E+04	-4.0441E+00	8.4915E+04	-4.0240E+00	8.1585E+04	-3.9854E+00	8.3250E+04	-3.9285E+00	4.4955E+04	-3.8908E+00	3.8295E+04
412000	-4.0924E+00	8.3250E+04	-4.0769E+00	8.4915E+04	-4.0569E+00	8.1585E+04	-4.0184E+00	8.3250E+04	-3.9618E+00	4.4955E+04	-3.9242E+00	3.8295E+04
414000	-4.1249E+00	8.3250E+04	-4.1095E+00	8.4915E+04	-4.0896E+00	8.1585E+04	-4.0513E+00	8.3250E+04	-3.9949E+00	4.4955E+04	-3.9574E+00	3.8295E+04

Time (yrs)	Arg 1	Curve 1	Arg 2	Curve 2	Arg 3	Curve 3	Arg 4	Curve 4	Arg 5	Curve 5	Arg 6	Curve 6
416000	-4.1573E+00	8.3250E+04	-4.1420E+00	8.4915E+04	-4.1222E+00	8.1585E+04	-4.0840E+00	8.3250E+04	-4.0278E+00	4.4955E+04	-3.9906E+00	3.8295E+04
418000	-4.1896E+00	8.3250E+04	-4.1743E+00	8.4915E+04	-4.1546E+00	8.1585E+04	-4.1166E+00	8.3250E+04	-4.0607E+00	4.4955E+04	-4.0236E+00	3.8295E+04
420000	-4.2218E+00	8.3250E+04	-4.2065E+00	8.4915E+04	-4.1869E+00	8.1585E+04	-4.1491E+00	8.3250E+04	-4.0933E+00	4.4955E+04	-4.0564E+00	3.8295E+04
422000	-4.2538E+00	8.3250E+04	-4.2386E+00	8.4915E+04	-4.2191E+00	8.1585E+04	-4.1814E+00	8.3250E+04	-4.1259E+00	4.4955E+04	-4.0891E+00	3.8295E+04
424000	-4.2857E+00	8.3250E+04	-4.2706E+00	8.4915E+04	-4.2511E+00	8.1585E+04	-4.2136E+00	8.3250E+04	-4.1583E+00	4.4955E+04	-4.1217E+00	3.8295E+04
426000	-4.3175E+00	8.3250E+04	-4.3024E+00	8.4915E+04	-4.2830E+00	8.1585E+04	-4.2457E+00	8.3250E+04	-4.1906E+00	4.4955E+04	-4.1541E+00	3.8295E+04
428000	-4.3491E+00	8.3250E+04	-4.3341E+00	8.4915E+04	-4.3148E+00	8.1585E+04	-4.2776E+00	8.3250E+04	-4.2228E+00	4.4955E+04	-4.1864E+00	3.8295E+04
430000	-4.3807E+00	8.3250E+04	-4.3657E+00	8.4915E+04	-4.3465E+00	8.1585E+04	-4.3094E+00	8.3250E+04	-4.2548E+00	4.4955E+04	-4.2186E+00	3.8295E+04
432000	-4.4121E+00	8.3250E+04	-4.3972E+00	8.4915E+04	-4.3780E+00	8.1585E+04	-4.3411E+00	8.3250E+04	-4.2867E+00	4.4955E+04	-4.2506E+00	3.8295E+04
434000	-4.4433E+00	8.3250E+04	-4.4285E+00	8.4915E+04	-4.4094E+00	8.1585E+04	-4.3726E+00	8.3250E+04	-4.3185E+00	4.4955E+04	-4.2825E+00	3.8295E+04
436000	-4.4745E+00	8.3250E+04	-4.4597E+00	8.4915E+04	-4.4407E+00	8.1585E+04	-4.4041E+00	8.3250E+04	-4.3501E+00	4.4955E+04	-4.3143E+00	3.8295E+04
438000	-4.5055E+00	8.3250E+04	-4.4908E+00	8.4915E+04	-4.4719E+00	8.1585E+04	-4.4354E+00	8.3250E+04	-4.3816E+00	4.4955E+04	-4.3460E+00	3.8295E+04
440000	-4.5364E+00	8.3250E+04	-4.5218E+00	8.4915E+04	-4.5029E+00	8.1585E+04	-4.4666E+00	8.3250E+04	-4.4130E+00	4.4955E+04	-4.3775E+00	3.8295E+04
442000	-4.5672E+00	8.3250E+04	-4.5526E+00	8.4915E+04	-4.5338E+00	8.1585E+04	-4.4976E+00	8.3250E+04	-4.4443E+00	4.4955E+04	-4.4089E+00	3.8295E+04
444000	-4.5979E+00	8.3250E+04	-4.5834E+00	8.4915E+04	-4.5646E+00	8.1585E+04	-4.5286E+00	8.3250E+04	-4.4754E+00	4.4955E+04	-4.4402E+00	3.8295E+04
446000	-4.6285E+00	8.3250E+04	-4.6140E+00	8.4915E+04	-4.5953E+00	8.1585E+04	-4.5594E+00	8.3250E+04	-4.5065E+00	4.4955E+04	-4.4714E+00	3.8295E+04
448000	-4.6589E+00	8.3250E+04	-4.6445E+00	8.4915E+04	-4.6259E+00	8.1585E+04	-4.5901E+00	8.3250E+04	-4.5374E+00	4.4955E+04	-4.5024E+00	3.8295E+04
450000	-4.6893E+00	8.3250E+04	-4.6749E+00	8.4915E+04	-4.6564E+00	8.1585E+04	-4.6207E+00	8.3250E+04	-4.5682E+00	4.4955E+04	-4.5334E+00	3.8295E+04
452000	-4.7195E+00	8.3250E+04	-4.7052E+00	8.4915E+04	-4.6867E+00	8.1585E+04	-4.6512E+00	8.3250E+04	-4.5988E+00	4.4955E+04	-4.5642E+00	3.8295E+04
454000	-4.7496E+00	8.3250E+04	-4.7353E+00	8.4915E+04	-4.7169E+00	8.1585E+04	-4.6816E+00	8.3250E+04	-4.6294E+00	4.4955E+04	-4.5949E+00	3.8295E+04
456000	-4.7796E+00	8.3250E+04	-4.7654E+00	8.4915E+04	-4.7471E+00	8.1585E+04	-4.7118E+00	8.3250E+04	-4.6599E+00	4.4955E+04	-4.6254E+00	3.8295E+04
458000	-4.8095E+00	8.3250E+04	-4.7953E+00	8.4915E+04	-4.7771E+00	8.1585E+04	-4.7420E+00	8.3250E+04	-4.6902E+00	4.4955E+04	-4.6559E+00	3.8295E+04
460000	-4.8393E+00	8.3250E+04	-4.8252E+00	8.4915E+04	-4.8070E+00	8.1585E+04	-4.7720E+00	8.3250E+04	-4.7204E+00	4.4955E+04	-4.6863E+00	3.8295E+04
462000	-4.8690E+00	8.3250E+04	-4.8549E+00	8.4915E+04	-4.8368E+00	8.1585E+04	-4.8019E+00	8.3250E+04	-4.7505E+00	4.4955E+04	-4.7165E+00	3.8295E+04
464000	-4.8986E+00	8.3250E+04	-4.8845E+00	8.4915E+04	-4.8665E+00	8.1585E+04	-4.8317E+00	8.3250E+04	-4.7805E+00	4.4955E+04	-4.7466E+00	3.8295E+04
466000	-4.9280E+00	8.3250E+04	-4.9140E+00	8.4915E+04	-4.8960E+00	8.1585E+04	-4.8614E+00	8.3250E+04	-4.8104E+00	4.4955E+04	-4.7766E+00	3.8295E+04
468000	-4.9574E+00	8.3250E+04	-4.9435E+00	8.4915E+04	-4.9255E+00	8.1585E+04	-4.8910E+00	8.3250E+04	-4.8402E+00	4.4955E+04	-4.8065E+00	3.8295E+04
470000	-4.9866E+00	8.3250E+04	-4.9728E+00	8.4915E+04	-4.9549E+00	8.1585E+04	-4.9205E+00	8.3250E+04	-4.8699E+00	4.4955E+04	-4.8363E+00	3.8295E+04
472000	-5.0158E+00	8.3250E+04	-5.0020E+00	8.4915E+04	-4.9842E+00	8.1585E+04	-4.9499E+00	8.3250E+04	-4.8994E+00	4.4955E+04	-4.8660E+00	3.8295E+04
474000	-5.0449E+00	8.3250E+04	-5.0311E+00	8.4915E+04	-5.0133E+00	8.1585E+04	-4.9792E+00	8.3250E+04	-4.9289E+00	4.4955E+04	-4.8956E+00	3.8295E+04
476000	-5.0738E+00	8.3250E+04	-5.0601E+00	8.4915E+04	-5.0424E+00	8.1585E+04	-5.0084E+00	8.3250E+04	-4.9583E+00	4.4955E+04	-4.9251E+00	3.8295E+04
478000	-5.1027E+00	8.3250E+04	-5.0890E+00	8.4915E+04	-5.0714E+00	8.1585E+04	-5.0375E+00	8.3250E+04	-4.9875E+00	4.4955E+04	-4.9545E+00	3.8295E+04
480000	-5.1314E+00	8.3250E+04	-5.1178E+00	8.4915E+04	-5.1002E+00	8.1585E+04	-5.0664E+00	8.3250E+04	-5.0167E+00	4.4955E+04	-4.9837E+00	3.8295E+04
482000	-5.1601E+00	8.3250E+04	-5.1465E+00	8.4915E+04	-5.1290E+00	8.1585E+04	-5.0953E+00	8.3250E+04	-5.0457E+00	4.4955E+04	-5.0129E+00	3.8295E+04
484000	-5.1886E+00	8.3250E+04	-5.1751E+00	8.4915E+04	-5.1577E+00	8.1585E+04	-5.1241E+00	8.3250E+04	-5.0747E+00	4.4955E+04	-5.0420E+00	3.8295E+04
486000	-5.2171E+00	8.3250E+04	-5.2036E+00	8.4915E+04	-5.1862E+00	8.1585E+04	-5.1528E+00	8.3250E+04	-5.1035E+00	4.4955E+04	-5.0709E+00	3.8295E+04
488000	-5.2455E+00	8.3250E+04	-5.2320E+00	8.4915E+04	-5.2147E+00	8.1585E+04	-5.1814E+00	8.3250E+04	-5.1323E+00	4.4955E+04	-5.0998E+00	3.8295E+04
490000	-5.2738E+00	8.3250E+04	-5.2603E+00	8.4915E+04	-5.2431E+00	8.1585E+04	-5.2099E+00	8.3250E+04	-5.1609E+00	4.4955E+04	-5.1286E+00	3.8295E+04
492000	-5.3019E+00	8.3250E+04	-5.2886E+00	8.4915E+04	-5.2714E+00	8.1585E+04	-5.2383E+00	8.3250E+04	-5.1895E+00	4.4955E+04	-5.1572E+00	3.8295E+04
494000	-5.3300E+00	8.3250E+04	-5.3167E+00	8.4915E+04	-5.2995E+00	8.1585E+04	-5.2666E+00	8.3250E+04	-5.2180E+00	4.4955E+04	-5.1858E+00	3.8295E+04
496000	-5.3580E+00	8.3250E+04	-5.3447E+00	8.4915E+04	-5.3276E+00	8.1585E+04	-5.2948E+00	8.3250E+04	-5.2463E+00	4.4955E+04	-5.2143E+00	3.8295E+04
498000	-5.3859E+00	8.3250E+04	-5.3727E+00	8.4915E+04	-5.3556E+00	8.1585E+04	-5.3229E+00	8.3250E+04	-5.2746E+00	4.4955E+04	-5.2426E+00	3.8295E+04
500000	-5.4137E+00	8.3250E+04	-5.4005E+00	8.4915E+04	-5.3836E+00	8.1585E+04	-5.3509E+00	8.3250E+04	-5.3028E+00	4.4955E+04	-5.2709E+00	3.8295E+04
502000	-5.4415E+00	8.3250E+04	-5.4283E+00	8.4915E+04	-5.4114E+00	8.1585E+04	-5.3788E+00	8.3250E+04	-5.3309E+00	4.4955E+04	-5.2991E+00	3.8295E+04
504000	-5.4691E+00	8.3250E+04	-5.4560E+00	8.4915E+04	-5.4391E+00	8.1585E+04	-5.4067E+00	8.3250E+04	-5.3589E+00	4.4955E+04	-5.3272E+00	3.8295E+04
506000	-5.4966E+00	8.3250E+04	-5.4836E+00	8.4915E+04	-5.4667E+00	8.1585E+04	-5.4344E+00	8.3250E+04	-5.3868E+00	4.4955E+04	-5.3552E+00	3.8295E+04
508000	-5.5241E+00	8.3250E+04	-5.5111E+00	8.4915E+04	-5.4943E+00	8.1585E+04	-5.4621E+00	8.3250E+04	-5.4146E+00	4.4955E+04	-5.3831E+00	3.8295E+04
510000	-5.5515E+00	8.3250E+04	-5.5385E+00	8.4915E+04	-5.5218E+00	8.1585E+04	-5.4896E+00	8.3250E+04	-5.4423E+00	4.4955E+04	-5.4110E+00	3.8295E+04
512000	-5.5787E+00	8.3250E+04	-5.5658E+00	8.4915E+04	-5.5491E+00	8.1585E+04	-5.5171E+00	8.3250E+04	-5.4699E+00	4.4955E+04	-5.4387E+00	3.8295E+04
514000	-5.6059E+00	8.3250E+04	-5.5930E+00	8.4915E+04	-5.5764E+00	8.1585E+04	-5.5445E+00	8.3250E+04	-5.4975E+00	4.4955E+04	-5.4663E+00	3.8295E+04
516000	-5.6331E+00	8.3250E+04	-5.6202E+00	8.4915E+04	-5.6036E+00	8.1585E+04	-5.5718E+00	8.3250E+04	-5.5249E+00	4.4955E+04	-5.4939E+00	3.8295E+04
518000	-5.6601E+00	8.3250E+04	-5.6473E+00	8.4915E+04	-5.6308E+00	8.1585E+04	-5.5990E+00	8.3250E+04	-5.5523E+00	4.4955E+04	-5.5214E+00	3.8295E+04

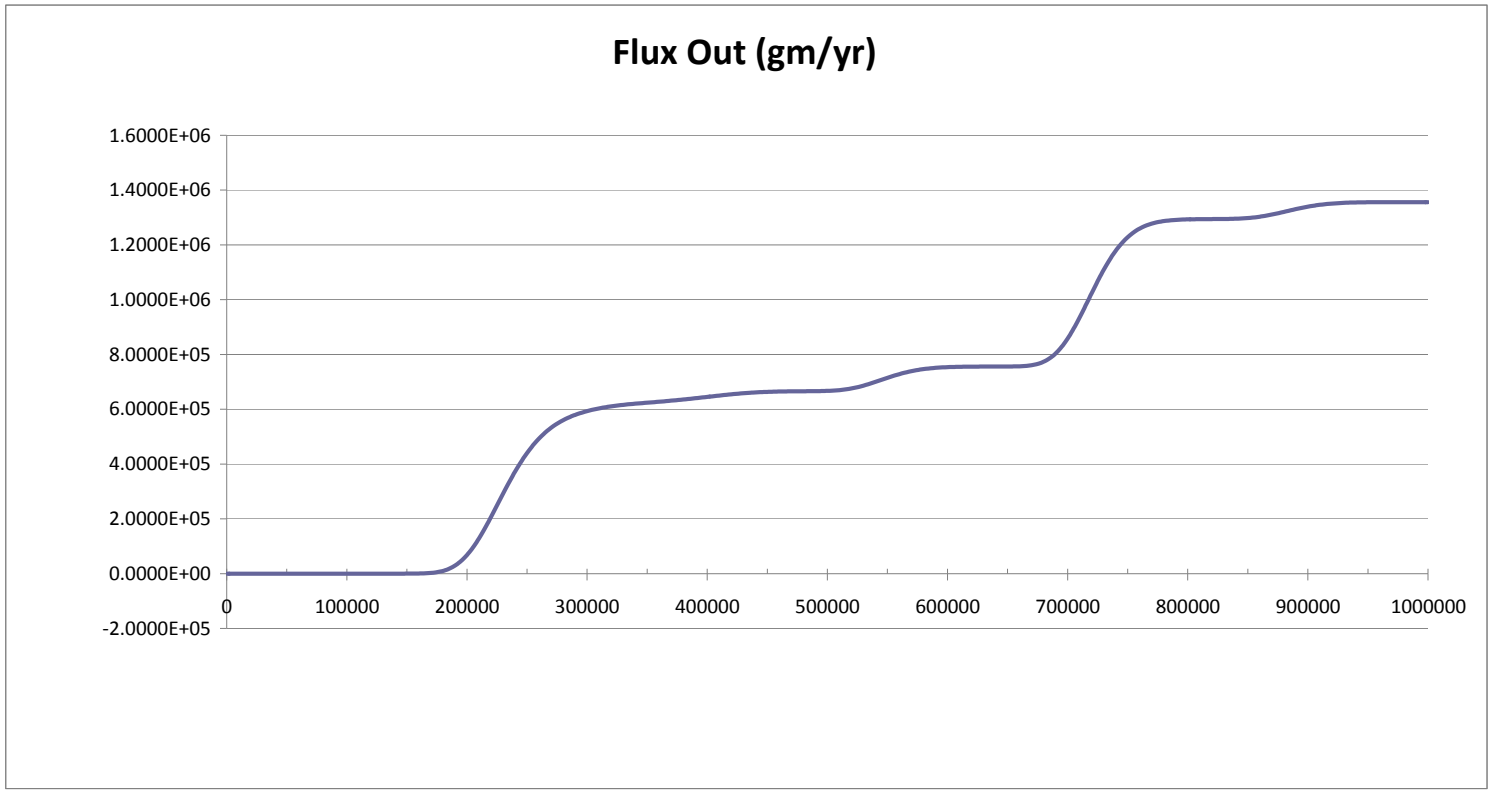
Time (yrs)	Arg 1	Curve 1	Arg 2	Curve 2	Arg 3	Curve 3	Arg 4	Curve 4	Arg 5	Curve 5	Arg 6	Curve 6
520000	-5.6870E+00	8.3250E+04	-5.6742E+00	8.4915E+04	-5.6578E+00	8.1585E+04	-5.6262E+00	8.3250E+04	-5.5796E+00	4.4955E+04	-5.5487E+00	3.8295E+04
522000	-5.7139E+00	8.3250E+04	-5.7011E+00	8.4915E+04	-5.6847E+00	8.1585E+04	-5.6532E+00	8.3250E+04	-5.6068E+00	4.4955E+04	-5.5760E+00	3.8295E+04
524000	-5.7407E+00	8.3250E+04	-5.7280E+00	8.4915E+04	-5.7116E+00	8.1585E+04	-5.6802E+00	8.3250E+04	-5.6339E+00	4.4955E+04	-5.6032E+00	3.8295E+04
526000	-5.7674E+00	8.3250E+04	-5.7547E+00	8.4915E+04	-5.7384E+00	8.1585E+04	-5.7071E+00	8.3250E+04	-5.6609E+00	4.4955E+04	-5.6304E+00	3.8295E+04
528000	-5.7940E+00	8.3250E+04	-5.7814E+00	8.4915E+04	-5.7651E+00	8.1585E+04	-5.7339E+00	8.3250E+04	-5.6878E+00	4.4955E+04	-5.6574E+00	3.8295E+04
530000	-5.8205E+00	8.3250E+04	-5.8079E+00	8.4915E+04	-5.7917E+00	8.1585E+04	-5.7606E+00	8.3250E+04	-5.7147E+00	4.4955E+04	-5.6843E+00	3.8295E+04
532000	-5.8470E+00	8.3250E+04	-5.8344E+00	8.4915E+04	-5.8183E+00	8.1585E+04	-5.7872E+00	8.3250E+04	-5.7415E+00	4.4955E+04	-5.7112E+00	3.8295E+04
534000	-5.8734E+00	8.3250E+04	-5.8608E+00	8.4915E+04	-5.8447E+00	8.1585E+04	-5.8138E+00	8.3250E+04	-5.7682E+00	4.4955E+04	-5.7380E+00	3.8295E+04
536000	-5.8997E+00	8.3250E+04	-5.8872E+00	8.4915E+04	-5.8711E+00	8.1585E+04	-5.8402E+00	8.3250E+04	-5.7948E+00	4.4955E+04	-5.7647E+00	3.8295E+04
538000	-5.9259E+00	8.3250E+04	-5.9134E+00	8.4915E+04	-5.8974E+00	8.1585E+04	-5.8666E+00	8.3250E+04	-5.8213E+00	4.4955E+04	-5.7913E+00	3.8295E+04
540000	-5.9520E+00	8.3250E+04	-5.9396E+00	8.4915E+04	-5.9237E+00	8.1585E+04	-5.8930E+00	8.3250E+04	-5.8478E+00	4.4955E+04	-5.8179E+00	3.8295E+04
542000	-5.9781E+00	8.3250E+04	-5.9657E+00	8.4915E+04	-5.9498E+00	8.1585E+04	-5.9192E+00	8.3250E+04	-5.8742E+00	4.4955E+04	-5.8443E+00	3.8295E+04
544000	-6.0041E+00	8.3250E+04	-5.9917E+00	8.4915E+04	-5.9759E+00	8.1585E+04	-5.9454E+00	8.3250E+04	-5.9004E+00	4.4955E+04	-5.8707E+00	3.8295E+04
546000	-6.0300E+00	8.3250E+04	-6.0177E+00	8.4915E+04	-6.0019E+00	8.1585E+04	-5.9715E+00	8.3250E+04	-5.9267E+00	4.4955E+04	-5.8970E+00	3.8295E+04
548000	-6.0558E+00	8.3250E+04	-6.0436E+00	8.4915E+04	-6.0278E+00	8.1585E+04	-5.9975E+00	8.3250E+04	-5.9528E+00	4.4955E+04	-5.9233E+00	3.8295E+04
550000	-6.0816E+00	8.3250E+04	-6.0694E+00	8.4915E+04	-6.0536E+00	8.1585E+04	-6.0234E+00	8.3250E+04	-5.9789E+00	4.4955E+04	-5.9494E+00	3.8295E+04
552000	-6.1073E+00	8.3250E+04	-6.0951E+00	8.4915E+04	-6.0794E+00	8.1585E+04	-6.0493E+00	8.3250E+04	-6.0049E+00	4.4955E+04	-5.9755E+00	3.8295E+04
554000	-6.1329E+00	8.3250E+04	-6.1208E+00	8.4915E+04	-6.1051E+00	8.1585E+04	-6.0750E+00	8.3250E+04	-6.0308E+00	4.4955E+04	-6.0015E+00	3.8295E+04
556000	-6.1585E+00	8.3250E+04	-6.1463E+00	8.4915E+04	-6.1307E+00	8.1585E+04	-6.1008E+00	8.3250E+04	-6.0566E+00	4.4955E+04	-6.0274E+00	3.8295E+04
558000	-6.1839E+00	8.3250E+04	-6.1718E+00	8.4915E+04	-6.1563E+00	8.1585E+04	-6.1264E+00	8.3250E+04	-6.0824E+00	4.4955E+04	-6.0533E+00	3.8295E+04
560000	-6.2093E+00	8.3250E+04	-6.1973E+00	8.4915E+04	-6.1818E+00	8.1585E+04	-6.1520E+00	8.3250E+04	-6.1081E+00	4.4955E+04	-6.0790E+00	3.8295E+04
562000	-6.2347E+00	8.3250E+04	-6.2226E+00	8.4915E+04	-6.2072E+00	8.1585E+04	-6.1774E+00	8.3250E+04	-6.1337E+00	4.4955E+04	-6.1047E+00	3.8295E+04
564000	-6.2599E+00	8.3250E+04	-6.2479E+00	8.4915E+04	-6.2325E+00	8.1585E+04	-6.2029E+00	8.3250E+04	-6.1592E+00	4.4955E+04	-6.1304E+00	3.8295E+04
566000	-6.2851E+00	8.3250E+04	-6.2732E+00	8.4915E+04	-6.2578E+00	8.1585E+04	-6.2282E+00	8.3250E+04	-6.1847E+00	4.4955E+04	-6.1559E+00	3.8295E+04
568000	-6.3102E+00	8.3250E+04	-6.2983E+00	8.4915E+04	-6.2830E+00	8.1585E+04	-6.2535E+00	8.3250E+04	-6.2101E+00	4.4955E+04	-6.1814E+00	3.8295E+04
570000	-6.3353E+00	8.3250E+04	-6.3234E+00	8.4915E+04	-6.3081E+00	8.1585E+04	-6.2787E+00	8.3250E+04	-6.2354E+00	4.4955E+04	-6.2068E+00	3.8295E+04
572000	-6.3603E+00	8.3250E+04	-6.3484E+00	8.4915E+04	-6.3332E+00	8.1585E+04	-6.3038E+00	8.3250E+04	-6.2607E+00	4.4955E+04	-6.2321E+00	3.8295E+04
574000	-6.3852E+00	8.3250E+04	-6.3734E+00	8.4915E+04	-6.3582E+00	8.1585E+04	-6.3289E+00	8.3250E+04	-6.2859E+00	4.4955E+04	-6.2574E+00	3.8295E+04
576000	-6.4100E+00	8.3250E+04	-6.3982E+00	8.4915E+04	-6.3831E+00	8.1585E+04	-6.3539E+00	8.3250E+04	-6.3110E+00	4.4955E+04	-6.2826E+00	3.8295E+04
578000	-6.4348E+00	8.3250E+04	-6.4231E+00	8.4915E+04	-6.4079E+00	8.1585E+04	-6.3788E+00	8.3250E+04	-6.3360E+00	4.4955E+04	-6.3077E+00	3.8295E+04
580000	-6.4595E+00	8.3250E+04	-6.4478E+00	8.4915E+04	-6.4327E+00	8.1585E+04	-6.4037E+00	8.3250E+04	-6.3610E+00	4.4955E+04	-6.3328E+00	3.8295E+04
582000	-6.4842E+00	8.3250E+04	-6.4725E+00	8.4915E+04	-6.4574E+00	8.1585E+04	-6.4285E+00	8.3250E+04	-6.3859E+00	4.4955E+04	-6.3578E+00	3.8295E+04
584000	-6.5088E+00	8.3250E+04	-6.4971E+00	8.4915E+04	-6.4821E+00	8.1585E+04	-6.4532E+00	8.3250E+04	-6.4108E+00	4.4955E+04	-6.3827E+00	3.8295E+04
586000	-6.5333E+00	8.3250E+04	-6.5216E+00	8.4915E+04	-6.5067E+00	8.1585E+04	-6.4779E+00	8.3250E+04	-6.4356E+00	4.4955E+04	-6.4076E+00	3.8295E+04
588000	-6.5577E+00	8.3250E+04	-6.5461E+00	8.4915E+04	-6.5312E+00	8.1585E+04	-6.5025E+00	8.3250E+04	-6.4603E+00	4.4955E+04	-6.4323E+00	3.8295E+04
590000	-6.5821E+00	8.3250E+04	-6.5705E+00	8.4915E+04	-6.5556E+00	8.1585E+04	-6.5270E+00	8.3250E+04	-6.4849E+00	4.4955E+04	-6.4571E+00	3.8295E+04
592000	-6.6064E+00	8.3250E+04	-6.5949E+00	8.4915E+04	-6.5800E+00	8.1585E+04	-6.5515E+00	8.3250E+04	-6.5095E+00	4.4955E+04	-6.4817E+00	3.8295E+04
594000	-6.6307E+00	8.3250E+04	-6.6192E+00	8.4915E+04	-6.6044E+00	8.1585E+04	-6.5759E+00	8.3250E+04	-6.5340E+00	4.4955E+04	-6.5063E+00	3.8295E+04
596000	-6.6549E+00	8.3250E+04	-6.6434E+00	8.4915E+04	-6.6286E+00	8.1585E+04	-6.6002E+00	8.3250E+04	-6.5585E+00	4.4955E+04	-6.5308E+00	3.8295E+04
598000	-6.6790E+00	8.3250E+04	-6.6676E+00	8.4915E+04	-6.6528E+00	8.1585E+04	-6.6245E+00	8.3250E+04	-6.5828E+00	4.4955E+04	-6.5553E+00	3.8295E+04
600000	-6.7031E+00	8.3250E+04	-6.6917E+00	8.4915E+04	-6.6770E+00	8.1585E+04	-6.6487E+00	8.3250E+04	-6.6072E+00	4.4955E+04	-6.5797E+00	3.8295E+04
602000	-6.7271E+00	8.3250E+04	-6.7157E+00	8.4915E+04	-6.7010E+00	8.1585E+04	-6.6729E+00	8.3250E+04	-6.6314E+00	4.4955E+04	-6.6040E+00	3.8295E+04
604000	-6.7510E+00	8.3250E+04	-6.7397E+00	8.4915E+04	-6.7251E+00	8.1585E+04	-6.6970E+00	8.3250E+04	-6.6556E+00	4.4955E+04	-6.6283E+00	3.8295E+04
606000	-6.7749E+00	8.3250E+04	-6.7636E+00	8.4915E+04	-6.7490E+00	8.1585E+04	-6.7210E+00	8.3250E+04	-6.6797E+00	4.4955E+04	-6.6525E+00	3.8295E+04
608000	-6.7988E+00	8.3250E+04	-6.7874E+00	8.4915E+04	-6.7729E+00	8.1585E+04	-6.7449E+00	8.3250E+04	-6.7038E+00	4.4955E+04	-6.6766E+00	3.8295E+04
610000	-6.8225E+00	8.3250E+04	-6.8112E+00	8.4915E+04	-6.7967E+00	8.1585E+04	-6.7688E+00	8.3250E+04	-6.7278E+00	4.4955E+04	-6.7007E+00	3.8295E+04
612000	-6.8462E+00	8.3250E+04	-6.8350E+00	8.4915E+04	-6.8205E+00	8.1585E+04	-6.7927E+00	8.3250E+04	-6.7518E+00	4.4955E+04	-6.7247E+00	3.8295E+04
614000	-6.8699E+00	8.3250E+04	-6.8586E+00	8.4915E+04	-6.8442E+00	8.1585E+04	-6.8165E+00	8.3250E+04	-6.7756E+00	4.4955E+04	-6.7486E+00	3.8295E+04
616000	-6.8935E+00	8.3250E+04	-6.8823E+00	8.4915E+04	-6.8679E+00	8.1585E+04	-6.8402E+00	8.3250E+04	-6.7995E+00	4.4955E+04	-6.7725E+00	3.8295E+04
618000	-6.9170E+00	8.3250E+04	-6.9058E+00	8.4915E+04	-6.8915E+00	8.1585E+04	-6.8638E+00	8.3250E+04	-6.8232E+00	4.4955E+04	-6.7964E+00	3.8295E+04
620000	-6.9405E+00	8.3250E+04	-6.9293E+00	8.4915E+04	-6.9150E+00	8.1585E+04	-6.8874E+00	8.3250E+04	-6.8469E+00	4.4955E+04	-6.8201E+00	3.8295E+04
622000	-6.9639E+00	8.3250E+04	-6.9528E+00	8.4915E+04	-6.9385E+00	8.1585E+04	-6.9110E+00	8.3250E+04	-6.8706E+00	4.4955E+04	-6.8439E+00	3.8295E+04

Time (yrs)	Arg 1	Curve 1	Arg 2	Curve 2	Arg 3	Curve 3	Arg 4	Curve 4	Arg 5	Curve 5	Arg 6	Curve 6
624000	-6.9872E+00	8.3250E+04	-6.9761E+00	8.4915E+04	-6.9619E+00	8.1585E+04	-6.9345E+00	8.3250E+04	-6.8942E+00	4.4955E+04	-6.8675E+00	3.8295E+04
626000	-7.0105E+00	8.3250E+04	-6.9995E+00	8.4915E+04	-6.9852E+00	8.1585E+04	-6.9579E+00	8.3250E+04	-6.9177E+00	4.4955E+04	-6.8911E+00	3.8295E+04
628000	-7.0338E+00	8.3250E+04	-7.0227E+00	8.4915E+04	-7.0085E+00	8.1585E+04	-6.9813E+00	8.3250E+04	-6.9412E+00	4.4955E+04	-6.9146E+00	3.8295E+04
630000	-7.0569E+00	8.3250E+04	-7.0459E+00	8.4915E+04	-7.0318E+00	8.1585E+04	-7.0046E+00	8.3250E+04	-6.9646E+00	4.4955E+04	-6.9381E+00	3.8295E+04
632000	-7.0801E+00	8.3250E+04	-7.0691E+00	8.4915E+04	-7.0550E+00	8.1585E+04	-7.0278E+00	8.3250E+04	-6.9879E+00	4.4955E+04	-6.9615E+00	3.8295E+04
634000	-7.1031E+00	8.3250E+04	-7.0922E+00	8.4915E+04	-7.0781E+00	8.1585E+04	-7.0510E+00	8.3250E+04	-7.0112E+00	4.4955E+04	-6.9849E+00	3.8295E+04
636000	-7.1262E+00	8.3250E+04	-7.1152E+00	8.4915E+04	-7.1012E+00	8.1585E+04	-7.0742E+00	8.3250E+04	-7.0345E+00	4.4955E+04	-7.0082E+00	3.8295E+04
638000	-7.1491E+00	8.3250E+04	-7.1382E+00	8.4915E+04	-7.1242E+00	8.1585E+04	-7.0973E+00	8.3250E+04	-7.0576E+00	4.4955E+04	-7.0314E+00	3.8295E+04
640000	-7.1720E+00	8.3250E+04	-7.1612E+00	8.4915E+04	-7.1472E+00	8.1585E+04	-7.1203E+00	8.3250E+04	-7.0808E+00	4.4955E+04	-7.0546E+00	3.8295E+04
642000	-7.1949E+00	8.3250E+04	-7.1840E+00	8.4915E+04	-7.1701E+00	8.1585E+04	-7.1433E+00	8.3250E+04	-7.1038E+00	4.4955E+04	-7.0778E+00	3.8295E+04
644000	-7.2177E+00	8.3250E+04	-7.2069E+00	8.4915E+04	-7.1929E+00	8.1585E+04	-7.1662E+00	8.3250E+04	-7.1269E+00	4.4955E+04	-7.1008E+00	3.8295E+04
646000	-7.2404E+00	8.3250E+04	-7.2296E+00	8.4915E+04	-7.2158E+00	8.1585E+04	-7.1891E+00	8.3250E+04	-7.1498E+00	4.4955E+04	-7.1239E+00	3.8295E+04
648000	-7.2631E+00	8.3250E+04	-7.2524E+00	8.4915E+04	-7.2385E+00	8.1585E+04	-7.2119E+00	8.3250E+04	-7.1727E+00	4.4955E+04	-7.1468E+00	3.8295E+04
650000	-7.2858E+00	8.3250E+04	-7.2750E+00	8.4915E+04	-7.2612E+00	8.1585E+04	-7.2346E+00	8.3250E+04	-7.1956E+00	4.4955E+04	-7.1697E+00	3.8295E+04
652000	-7.3084E+00	8.3250E+04	-7.2976E+00	8.4915E+04	-7.2838E+00	8.1585E+04	-7.2573E+00	8.3250E+04	-7.2184E+00	4.4955E+04	-7.1926E+00	3.8295E+04
654000	-7.3309E+00	8.3250E+04	-7.3202E+00	8.4915E+04	-7.3064E+00	8.1585E+04	-7.2800E+00	8.3250E+04	-7.2411E+00	4.4955E+04	-7.2154E+00	3.8295E+04
656000	-7.3534E+00	8.3250E+04	-7.3427E+00	8.4915E+04	-7.3290E+00	8.1585E+04	-7.3026E+00	8.3250E+04	-7.2638E+00	4.4955E+04	-7.2382E+00	3.8295E+04
658000	-7.3758E+00	8.3250E+04	-7.3652E+00	8.4915E+04	-7.3515E+00	8.1585E+04	-7.3252E+00	8.3250E+04	-7.2864E+00	4.4955E+04	-7.2609E+00	3.8295E+04
660000	-7.3982E+00	8.3250E+04	-7.3876E+00	8.4915E+04	-7.3739E+00	8.1585E+04	-7.3476E+00	8.3250E+04	-7.3090E+00	4.4955E+04	-7.2835E+00	3.8295E+04
662000	-7.4205E+00	8.3250E+04	-7.4099E+00	8.4915E+04	-7.3963E+00	8.1585E+04	-7.3701E+00	8.3250E+04	-7.3316E+00	4.4955E+04	-7.3061E+00	3.8295E+04
664000	-7.4428E+00	8.3250E+04	-7.4322E+00	8.4915E+04	-7.4186E+00	8.1585E+04	-7.3925E+00	8.3250E+04	-7.3541E+00	4.4955E+04	-7.3286E+00	3.8295E+04
666000	-7.4650E+00	8.3250E+04	-7.4545E+00	8.4915E+04	-7.4409E+00	8.1585E+04	-7.4148E+00	8.3250E+04	-7.3765E+00	4.4955E+04	-7.3511E+00	3.8295E+04
668000	-7.4872E+00	8.3250E+04	-7.4767E+00	8.4915E+04	-7.4631E+00	8.1585E+04	-7.4371E+00	8.3250E+04	-7.3989E+00	4.4955E+04	-7.3736E+00	3.8295E+04
670000	-7.5093E+00	8.3250E+04	-7.4988E+00	8.4915E+04	-7.4853E+00	8.1585E+04	-7.4594E+00	8.3250E+04	-7.4212E+00	4.4955E+04	-7.3960E+00	3.8295E+04
672000	-7.5314E+00	8.3250E+04	-7.5209E+00	8.4915E+04	-7.5075E+00	8.1585E+04	-7.4816E+00	8.3250E+04	-7.4435E+00	4.4955E+04	-7.4183E+00	3.8295E+04
674000	-7.5534E+00	8.3250E+04	-7.5430E+00	8.4915E+04	-7.5295E+00	8.1585E+04	-7.5037E+00	8.3250E+04	-7.4657E+00	4.4955E+04	-7.4406E+00	3.8295E+04
676000	-7.5754E+00	8.3250E+04	-7.5650E+00	8.4915E+04	-7.5516E+00	8.1585E+04	-7.5258E+00	8.3250E+04	-7.4879E+00	4.4955E+04	-7.4628E+00	3.8295E+04
678000	-7.5974E+00	8.3250E+04	-7.5869E+00	8.4915E+04	-7.5736E+00	8.1585E+04	-7.5478E+00	8.3250E+04	-7.5100E+00	4.4955E+04	-7.4850E+00	3.8295E+04
680000	-7.6192E+00	8.3250E+04	-7.6089E+00	8.4915E+04	-7.5955E+00	8.1585E+04	-7.5698E+00	8.3250E+04	-7.5321E+00	4.4955E+04	-7.5071E+00	3.8295E+04
682000	-7.6411E+00	8.3250E+04	-7.6307E+00	8.4915E+04	-7.6174E+00	8.1585E+04	-7.5918E+00	8.3250E+04	-7.5541E+00	4.4955E+04	-7.5292E+00	3.8295E+04
684000	-7.6629E+00	8.3250E+04	-7.6525E+00	8.4915E+04	-7.6392E+00	8.1585E+04	-7.6137E+00	8.3250E+04	-7.5761E+00	4.4955E+04	-7.5512E+00	3.8295E+04
686000	-7.6846E+00	8.3250E+04	-7.6743E+00	8.4915E+04	-7.6610E+00	8.1585E+04	-7.6355E+00	8.3250E+04	-7.5980E+00	4.4955E+04	-7.5732E+00	3.8295E+04
688000	-7.7063E+00	8.3250E+04	-7.6960E+00	8.4915E+04	-7.6828E+00	8.1585E+04	-7.6573E+00	8.3250E+04	-7.6199E+00	4.4955E+04	-7.5952E+00	3.8295E+04
690000	-7.7279E+00	8.3250E+04	-7.7177E+00	8.4915E+04	-7.7045E+00	8.1585E+04	-7.6791E+00	8.3250E+04	-7.6417E+00	4.4955E+04	-7.6171E+00	3.8295E+04
692000	-7.7495E+00	8.3250E+04	-7.7393E+00	8.4915E+04	-7.7261E+00	8.1585E+04	-7.7008E+00	8.3250E+04	-7.6635E+00	4.4955E+04	-7.6389E+00	3.8295E+04
694000	-7.7711E+00	8.3250E+04	-7.7609E+00	8.4915E+04	-7.7477E+00	8.1585E+04	-7.7224E+00	8.3250E+04	-7.6853E+00	4.4955E+04	-7.6607E+00	3.8295E+04
696000	-7.7926E+00	8.3250E+04	-7.7824E+00	8.4915E+04	-7.7693E+00	8.1585E+04	-7.7440E+00	8.3250E+04	-7.7070E+00	4.4955E+04	-7.6824E+00	3.8295E+04
698000	-7.8141E+00	8.3250E+04	-7.8039E+00	8.4915E+04	-7.7908E+00	8.1585E+04	-7.7656E+00	8.3250E+04	-7.7286E+00	4.4955E+04	-7.7041E+00	3.8295E+04
700000	-7.8355E+00	8.3250E+04	-7.8253E+00	8.4915E+04	-7.8123E+00	8.1585E+04	-7.7871E+00	8.3250E+04	-7.7502E+00	4.4955E+04	-7.7258E+00	3.8295E+04
702000	-7.8569E+00	8.3250E+04	-7.8467E+00	8.4915E+04	-7.8337E+00	8.1585E+04	-7.8086E+00	8.3250E+04	-7.7717E+00	4.4955E+04	-7.7474E+00	3.8295E+04
704000	-7.8782E+00	8.3250E+04	-7.8681E+00	8.4915E+04	-7.8550E+00	8.1585E+04	-7.8300E+00	8.3250E+04	-7.7933E+00	4.4955E+04	-7.7689E+00	3.8295E+04
706000	-7.8995E+00	8.3250E+04	-7.8894E+00	8.4915E+04	-7.8764E+00	8.1585E+04	-7.8514E+00	8.3250E+04	-7.8147E+00	4.4955E+04	-7.7905E+00	3.8295E+04
708000	-7.9207E+00	8.3250E+04	-7.9106E+00	8.4915E+04	-7.8977E+00	8.1585E+04	-7.8728E+00	8.3250E+04	-7.8361E+00	4.4955E+04	-7.8119E+00	3.8295E+04
710000	-7.9419E+00	8.3250E+04	-7.9318E+00	8.4915E+04	-7.9189E+00	8.1585E+04	-7.8940E+00	8.3250E+04	-7.8575E+00	4.4955E+04	-7.8333E+00	3.8295E+04
712000	-7.9630E+00	8.3250E+04	-7.9530E+00	8.4915E+04	-7.9401E+00	8.1585E+04	-7.9153E+00	8.3250E+04	-7.8788E+00	4.4955E+04	-7.8547E+00	3.8295E+04
714000	-7.9841E+00	8.3250E+04	-7.9741E+00	8.4915E+04	-7.9612E+00	8.1585E+04	-7.9365E+00	8.3250E+04	-7.9001E+00	4.4955E+04	-7.8761E+00	3.8295E+04
716000	-8.0052E+00	8.3250E+04	-7.9952E+00	8.4915E+04	-7.9824E+00	8.1585E+04	-7.9577E+00	8.3250E+04	-7.9213E+00	4.4955E+04	-7.8973E+00	3.8295E+04
718000	-8.0262E+00	8.3250E+04	-8.0163E+00	8.4915E+04	-8.0034E+00	8.1585E+04	-7.9788E+00	8.3250E+04	-7.9425E+00	4.4955E+04	-7.9186E+00	3.8295E+04
720000	-8.0472E+00	8.3250E+04	-8.0372E+00	8.4915E+04	-8.0244E+00	8.1585E+04	-7.9998E+00	8.3250E+04	-7.9637E+00	4.4955E+04	-7.9398E+00	3.8295E+04
722000	-8.0681E+00	8.3250E+04	-8.0582E+00	8.4915E+04	-8.0454E+00	8.1585E+04	-8.0209E+00	8.3250E+04	-7.9848E+00	4.4955E+04	-7.9609E+00	3.8295E+04
724000	-8.0890E+00	8.3250E+04	-8.0791E+00	8.4915E+04	-8.0664E+00	8.1585E+04	-8.0419E+00	8.3250E+04	-8.0058E+00	4.4955E+04	-7.9820E+00	3.8295E+04
726000	-8.1099E+00	8.3250E+04	-8.1000E+00	8.4915E+04	-8.0872E+00	8.1585E+04	-8.0628E+00	8.3250E+04	-8.0269E+00	4.4955E+04	-8.0031E+00	3.8295E+04

Time (yrs)	Arg 1	Curve 1	Arg 2	Curve 2	Arg 3	Curve 3	Arg 4	Curve 4	Arg 5	Curve 5	Arg 6	Curve 6
728000	-8.1307E+00	8.3250E+04	-8.1208E+00	8.4915E+04	-8.1081E+00	8.1585E+04	-8.0837E+00	8.3250E+04	-8.0478E+00	4.4955E+04	-8.0241E+00	3.8295E+04
730000	-8.1514E+00	8.3250E+04	-8.1416E+00	8.4915E+04	-8.1289E+00	8.1585E+04	-8.1046E+00	8.3250E+04	-8.0688E+00	4.4955E+04	-8.0451E+00	3.8295E+04
732000	-8.1722E+00	8.3250E+04	-8.1623E+00	8.4915E+04	-8.1497E+00	8.1585E+04	-8.1254E+00	8.3250E+04	-8.0896E+00	4.4955E+04	-8.0660E+00	3.8295E+04
734000	-8.1928E+00	8.3250E+04	-8.1830E+00	8.4915E+04	-8.1704E+00	8.1585E+04	-8.1461E+00	8.3250E+04	-8.1105E+00	4.4955E+04	-8.0869E+00	3.8295E+04
736000	-8.2135E+00	8.3250E+04	-8.2037E+00	8.4915E+04	-8.1911E+00	8.1585E+04	-8.1669E+00	8.3250E+04	-8.1313E+00	4.4955E+04	-8.1078E+00	3.8295E+04
738000	-8.2341E+00	8.3250E+04	-8.2243E+00	8.4915E+04	-8.2117E+00	8.1585E+04	-8.1876E+00	8.3250E+04	-8.1521E+00	4.4955E+04	-8.1286E+00	3.8295E+04
740000	-8.2546E+00	8.3250E+04	-8.2449E+00	8.4915E+04	-8.2323E+00	8.1585E+04	-8.2082E+00	8.3250E+04	-8.1728E+00	4.4955E+04	-8.1494E+00	3.8295E+04
742000	-8.2751E+00	8.3250E+04	-8.2654E+00	8.4915E+04	-8.2529E+00	8.1585E+04	-8.2288E+00	8.3250E+04	-8.1935E+00	4.4955E+04	-8.1701E+00	3.8295E+04
744000	-8.2956E+00	8.3250E+04	-8.2859E+00	8.4915E+04	-8.2734E+00	8.1585E+04	-8.2494E+00	8.3250E+04	-8.2141E+00	4.4955E+04	-8.1908E+00	3.8295E+04
746000	-8.3161E+00	8.3250E+04	-8.3064E+00	8.4915E+04	-8.2939E+00	8.1585E+04	-8.2699E+00	8.3250E+04	-8.2347E+00	4.4955E+04	-8.2114E+00	3.8295E+04
748000	-8.3365E+00	8.3250E+04	-8.3268E+00	8.4915E+04	-8.3143E+00	8.1585E+04	-8.2904E+00	8.3250E+04	-8.2552E+00	4.4955E+04	-8.2320E+00	3.8295E+04
750000	-8.3568E+00	8.3250E+04	-8.3471E+00	8.4915E+04	-8.3347E+00	8.1585E+04	-8.3108E+00	8.3250E+04	-8.2758E+00	4.4955E+04	-8.2526E+00	3.8295E+04
752000	-8.3771E+00	8.3250E+04	-8.3675E+00	8.4915E+04	-8.3551E+00	8.1585E+04	-8.3313E+00	8.3250E+04	-8.2962E+00	4.4955E+04	-8.2731E+00	3.8295E+04
754000	-8.3974E+00	8.3250E+04	-8.3878E+00	8.4915E+04	-8.3754E+00	8.1585E+04	-8.3516E+00	8.3250E+04	-8.3167E+00	4.4955E+04	-8.2936E+00	3.8295E+04
756000	-8.4176E+00	8.3250E+04	-8.4080E+00	8.4915E+04	-8.3957E+00	8.1585E+04	-8.3719E+00	8.3250E+04	-8.3371E+00	4.4955E+04	-8.3140E+00	3.8295E+04
758000	-8.4378E+00	8.3250E+04	-8.4282E+00	8.4915E+04	-8.4159E+00	8.1585E+04	-8.3922E+00	8.3250E+04	-8.3574E+00	4.4955E+04	-8.3344E+00	3.8295E+04
760000	-8.4580E+00	8.3250E+04	-8.4484E+00	8.4915E+04	-8.4361E+00	8.1585E+04	-8.4125E+00	8.3250E+04	-8.3777E+00	4.4955E+04	-8.3548E+00	3.8295E+04
762000	-8.4781E+00	8.3250E+04	-8.4686E+00	8.4915E+04	-8.4563E+00	8.1585E+04	-8.4327E+00	8.3250E+04	-8.3980E+00	4.4955E+04	-8.3751E+00	3.8295E+04
764000	-8.4982E+00	8.3250E+04	-8.4887E+00	8.4915E+04	-8.4764E+00	8.1585E+04	-8.4529E+00	8.3250E+04	-8.4182E+00	4.4955E+04	-8.3954E+00	3.8295E+04
766000	-8.5182E+00	8.3250E+04	-8.5087E+00	8.4915E+04	-8.4965E+00	8.1585E+04	-8.4730E+00	8.3250E+04	-8.4384E+00	4.4955E+04	-8.4156E+00	3.8295E+04
768000	-8.5383E+00	8.3250E+04	-8.5288E+00	8.4915E+04	-8.5165E+00	8.1585E+04	-8.4931E+00	8.3250E+04	-8.4586E+00	4.4955E+04	-8.4358E+00	3.8295E+04
770000	-8.5582E+00	8.3250E+04	-8.5487E+00	8.4915E+04	-8.5366E+00	8.1585E+04	-8.5131E+00	8.3250E+04	-8.4787E+00	4.4955E+04	-8.4560E+00	3.8295E+04
772000	-8.5782E+00	8.3250E+04	-8.5687E+00	8.4915E+04	-8.5565E+00	8.1585E+04	-8.5332E+00	8.3250E+04	-8.4988E+00	4.4955E+04	-8.4761E+00	3.8295E+04
774000	-8.5980E+00	8.3250E+04	-8.5886E+00	8.4915E+04	-8.5765E+00	8.1585E+04	-8.5531E+00	8.3250E+04	-8.5188E+00	4.4955E+04	-8.4962E+00	3.8295E+04
776000	-8.6179E+00	8.3250E+04	-8.6085E+00	8.4915E+04	-8.5964E+00	8.1585E+04	-8.5731E+00	8.3250E+04	-8.5389E+00	4.4955E+04	-8.5162E+00	3.8295E+04
778000	-8.6377E+00	8.3250E+04	-8.6283E+00	8.4915E+04	-8.6162E+00	8.1585E+04	-8.5930E+00	8.3250E+04	-8.5588E+00	4.4955E+04	-8.5363E+00	3.8295E+04
780000	-8.6575E+00	8.3250E+04	-8.6481E+00	8.4915E+04	-8.6360E+00	8.1585E+04	-8.6128E+00	8.3250E+04	-8.5788E+00	4.4955E+04	-8.5562E+00	3.8295E+04
782000	-8.6773E+00	8.3250E+04	-8.6679E+00	8.4915E+04	-8.6558E+00	8.1585E+04	-8.6327E+00	8.3250E+04	-8.5986E+00	4.4955E+04	-8.5762E+00	3.8295E+04
784000	-8.6970E+00	8.3250E+04	-8.6876E+00	8.4915E+04	-8.6756E+00	8.1585E+04	-8.6525E+00	8.3250E+04	-8.6185E+00	4.4955E+04	-8.5961E+00	3.8295E+04
786000	-8.7166E+00	8.3250E+04	-8.7073E+00	8.4915E+04	-8.6953E+00	8.1585E+04	-8.6722E+00	8.3250E+04	-8.6383E+00	4.4955E+04	-8.6159E+00	3.8295E+04
788000	-8.7363E+00	8.3250E+04	-8.7270E+00	8.4915E+04	-8.7150E+00	8.1585E+04	-8.6919E+00	8.3250E+04	-8.6581E+00	4.4955E+04	-8.6357E+00	3.8295E+04
790000	-8.7559E+00	8.3250E+04	-8.7466E+00	8.4915E+04	-8.7346E+00	8.1585E+04	-8.7116E+00	8.3250E+04	-8.6779E+00	4.4955E+04	-8.6555E+00	3.8295E+04
792000	-8.7755E+00	8.3250E+04	-8.7662E+00	8.4915E+04	-8.7542E+00	8.1585E+04	-8.7313E+00	8.3250E+04	-8.6976E+00	4.4955E+04	-8.6753E+00	3.8295E+04
794000	-8.7950E+00	8.3250E+04	-8.7857E+00	8.4915E+04	-8.7738E+00	8.1585E+04	-8.7509E+00	8.3250E+04	-8.7172E+00	4.4955E+04	-8.6950E+00	3.8295E+04
796000	-8.8145E+00	8.3250E+04	-8.8052E+00	8.4915E+04	-8.7933E+00	8.1585E+04	-8.7705E+00	8.3250E+04	-8.7369E+00	4.4955E+04	-8.7147E+00	3.8295E+04
798000	-8.8339E+00	8.3250E+04	-8.8247E+00	8.4915E+04	-8.8128E+00	8.1585E+04	-8.7900E+00	8.3250E+04	-8.7565E+00	4.4955E+04	-8.7343E+00	3.8295E+04
800000	-8.8534E+00	8.3250E+04	-8.8441E+00	8.4915E+04	-8.8323E+00	8.1585E+04	-8.8095E+00	8.3250E+04	-8.7760E+00	4.4955E+04	-8.7539E+00	3.8295E+04
802000	-8.8728E+00	8.3250E+04	-8.8636E+00	8.4915E+04	-8.8517E+00	8.1585E+04	-8.8290E+00	8.3250E+04	-8.7956E+00	4.4955E+04	-8.7735E+00	3.8295E+04
804000	-8.8921E+00	8.3250E+04	-8.8829E+00	8.4915E+04	-8.8711E+00	8.1585E+04	-8.8484E+00	8.3250E+04	-8.8151E+00	4.4955E+04	-8.7930E+00	3.8295E+04
806000	-8.9114E+00	8.3250E+04	-8.9023E+00	8.4915E+04	-8.8905E+00	8.1585E+04	-8.8678E+00	8.3250E+04	-8.8345E+00	4.4955E+04	-8.8125E+00	3.8295E+04
808000	-8.9307E+00	8.3250E+04	-8.9216E+00	8.4915E+04	-8.9098E+00	8.1585E+04	-8.8872E+00	8.3250E+04	-8.8540E+00	4.4955E+04	-8.8320E+00	3.8295E+04
810000	-8.9500E+00	8.3250E+04	-8.9408E+00	8.4915E+04	-8.9291E+00	8.1585E+04	-8.9065E+00	8.3250E+04	-8.8733E+00	4.4955E+04	-8.8514E+00	3.8295E+04
812000	-8.9692E+00	8.3250E+04	-8.9601E+00	8.4915E+04	-8.9483E+00	8.1585E+04	-8.9258E+00	8.3250E+04	-8.8927E+00	4.4955E+04	-8.8708E+00	3.8295E+04
814000	-8.9884E+00	8.3250E+04	-8.9793E+00	8.4915E+04	-8.9676E+00	8.1585E+04	-8.9451E+00	8.3250E+04	-8.9120E+00	4.4955E+04	-8.8902E+00	3.8295E+04
816000	-9.0075E+00	8.3250E+04	-8.9984E+00	8.4915E+04	-8.9868E+00	8.1585E+04	-8.9643E+00	8.3250E+04	-8.9313E+00	4.4955E+04	-8.9095E+00	3.8295E+04
818000	-9.0267E+00	8.3250E+04	-9.0176E+00	8.4915E+04	-9.0059E+00	8.1585E+04	-8.9835E+00	8.3250E+04	-8.9506E+00	4.4955E+04	-8.9288E+00	3.8295E+04
820000	-9.0457E+00	8.3250E+04	-9.0367E+00	8.4915E+04	-9.0250E+00	8.1585E+04	-9.0027E+00	8.3250E+04	-8.9698E+00	4.4955E+04	-8.9481E+00	3.8295E+04
822000	-9.0648E+00	8.3250E+04	-9.0557E+00	8.4915E+04	-9.0441E+00	8.1585E+04	-9.0218E+00	8.3250E+04	-8.9890E+00	4.4955E+04	-8.9673E+00	3.8295E+04
824000	-9.0838E+00	8.3250E+04	-9.0748E+00	8.4915E+04	-9.0632E+00	8.1585E+04	-9.0409E+00	8.3250E+04	-9.0081E+00	4.4955E+04	-8.9865E+00	3.8295E+04
826000	-9.1028E+00	8.3250E+04	-9.0938E+00	8.4915E+04	-9.0822E+00	8.1585E+04	-9.0599E+00	8.3250E+04	-9.0272E+00	4.4955E+04	-9.0056E+00	3.8295E+04
828000	-9.1218E+00	8.3250E+04	-9.1128E+00	8.4915E+04	-9.1012E+00	8.1585E+04	-9.0790E+00	8.3250E+04	-9.0463E+00	4.4955E+04	-9.0247E+00	3.8295E+04
830000	-9.1407E+00	8.3250E+04	-9.1317E+00	8.4915E+04	-9.1201E+00	8.1585E+04	-9.0980E+00	8.3250E+04	-9.0654E+00	4.4955E+04	-9.0438E+00	3.8295E+04

Time (yrs)	Arg 1	Curve 1	Arg 2	Curve 2	Arg 3	Curve 3	Arg 4	Curve 4	Arg 5	Curve 5	Arg 6	Curve 6
832000	-9.1596E+00	8.3250E+04	-9.1506E+00	8.4915E+04	-9.1391E+00	8.1585E+04	-9.1169E+00	8.3250E+04	-9.0844E+00	4.4955E+04	-9.0629E+00	3.8295E+04
834000	-9.1784E+00	8.3250E+04	-9.1695E+00	8.4915E+04	-9.1580E+00	8.1585E+04	-9.1359E+00	8.3250E+04	-9.1034E+00	4.4955E+04	-9.0819E+00	3.8295E+04
836000	-9.1972E+00	8.3250E+04	-9.1883E+00	8.4915E+04	-9.1768E+00	8.1585E+04	-9.1548E+00	8.3250E+04	-9.1223E+00	4.4955E+04	-9.1009E+00	3.8295E+04
838000	-9.2160E+00	8.3250E+04	-9.2071E+00	8.4915E+04	-9.1956E+00	8.1585E+04	-9.1736E+00	8.3250E+04	-9.1412E+00	4.4955E+04	-9.1199E+00	3.8295E+04
840000	-9.2348E+00	8.3250E+04	-9.2259E+00	8.4915E+04	-9.2144E+00	8.1585E+04	-9.1924E+00	8.3250E+04	-9.1601E+00	4.4955E+04	-9.1388E+00	3.8295E+04
842000	-9.2535E+00	8.3250E+04	-9.2446E+00	8.4915E+04	-9.2332E+00	8.1585E+04	-9.2113E+00	8.3250E+04	-9.1790E+00	4.4955E+04	-9.1577E+00	3.8295E+04
844000	-9.2722E+00	8.3250E+04	-9.2633E+00	8.4915E+04	-9.2519E+00	8.1585E+04	-9.2300E+00	8.3250E+04	-9.1978E+00	4.4955E+04	-9.1765E+00	3.8295E+04
846000	-9.2909E+00	8.3250E+04	-9.2820E+00	8.4915E+04	-9.2706E+00	8.1585E+04	-9.2488E+00	8.3250E+04	-9.2166E+00	4.4955E+04	-9.1954E+00	3.8295E+04
848000	-9.3095E+00	8.3250E+04	-9.3007E+00	8.4915E+04	-9.2893E+00	8.1585E+04	-9.2675E+00	8.3250E+04	-9.2354E+00	4.4955E+04	-9.2142E+00	3.8295E+04
850000	-9.3281E+00	8.3250E+04	-9.3193E+00	8.4915E+04	-9.3079E+00	8.1585E+04	-9.2861E+00	8.3250E+04	-9.2541E+00	4.4955E+04	-9.2329E+00	3.8295E+04
852000	-9.3467E+00	8.3250E+04	-9.3379E+00	8.4915E+04	-9.3266E+00	8.1585E+04	-9.3048E+00	8.3250E+04	-9.2728E+00	4.4955E+04	-9.2517E+00	3.8295E+04
854000	-9.3652E+00	8.3250E+04	-9.3564E+00	8.4915E+04	-9.3451E+00	8.1585E+04	-9.3234E+00	8.3250E+04	-9.2915E+00	4.4955E+04	-9.2704E+00	3.8295E+04
856000	-9.3838E+00	8.3250E+04	-9.3750E+00	8.4915E+04	-9.3637E+00	8.1585E+04	-9.3420E+00	8.3250E+04	-9.3101E+00	4.4955E+04	-9.2890E+00	3.8295E+04
858000	-9.4022E+00	8.3250E+04	-9.3935E+00	8.4915E+04	-9.3822E+00	8.1585E+04	-9.3605E+00	8.3250E+04	-9.3287E+00	4.4955E+04	-9.3077E+00	3.8295E+04
860000	-9.4207E+00	8.3250E+04	-9.4119E+00	8.4915E+04	-9.4007E+00	8.1585E+04	-9.3790E+00	8.3250E+04	-9.3473E+00	4.4955E+04	-9.3263E+00	3.8295E+04
862000	-9.4391E+00	8.3250E+04	-9.4304E+00	8.4915E+04	-9.4191E+00	8.1585E+04	-9.3975E+00	8.3250E+04	-9.3658E+00	4.4955E+04	-9.3449E+00	3.8295E+04
864000	-9.4575E+00	8.3250E+04	-9.4488E+00	8.4915E+04	-9.4375E+00	8.1585E+04	-9.4160E+00	8.3250E+04	-9.3843E+00	4.4955E+04	-9.3634E+00	3.8295E+04
866000	-9.4759E+00	8.3250E+04	-9.4671E+00	8.4915E+04	-9.4559E+00	8.1585E+04	-9.4344E+00	8.3250E+04	-9.4028E+00	4.4955E+04	-9.3819E+00	3.8295E+04
868000	-9.4942E+00	8.3250E+04	-9.4855E+00	8.4915E+04	-9.4743E+00	8.1585E+04	-9.4528E+00	8.3250E+04	-9.4212E+00	4.4955E+04	-9.4004E+00	3.8295E+04
870000	-9.5125E+00	8.3250E+04	-9.5038E+00	8.4915E+04	-9.4926E+00	8.1585E+04	-9.4712E+00	8.3250E+04	-9.4397E+00	4.4955E+04	-9.4188E+00	3.8295E+04
872000	-9.5308E+00	8.3250E+04	-9.5221E+00	8.4915E+04	-9.5109E+00	8.1585E+04	-9.4895E+00	8.3250E+04	-9.4581E+00	4.4955E+04	-9.4373E+00	3.8295E+04
874000	-9.5490E+00	8.3250E+04	-9.5403E+00	8.4915E+04	-9.5292E+00	8.1585E+04	-9.5078E+00	8.3250E+04	-9.4764E+00	4.4955E+04	-9.4557E+00	3.8295E+04
876000	-9.5672E+00	8.3250E+04	-9.5586E+00	8.4915E+04	-9.5475E+00	8.1585E+04	-9.5261E+00	8.3250E+04	-9.4947E+00	4.4955E+04	-9.4740E+00	3.8295E+04
878000	-9.5854E+00	8.3250E+04	-9.5768E+00	8.4915E+04	-9.5657E+00	8.1585E+04	-9.5444E+00	8.3250E+04	-9.5130E+00	4.4955E+04	-9.4924E+00	3.8295E+04
880000	-9.6036E+00	8.3250E+04	-9.5949E+00	8.4915E+04	-9.5839E+00	8.1585E+04	-9.5626E+00	8.3250E+04	-9.5313E+00	4.4955E+04	-9.5107E+00	3.8295E+04
882000	-9.6217E+00	8.3250E+04	-9.6131E+00	8.4915E+04	-9.6020E+00	8.1585E+04	-9.5808E+00	8.3250E+04	-9.5496E+00	4.4955E+04	-9.5289E+00	3.8295E+04
884000	-9.6398E+00	8.3250E+04	-9.6312E+00	8.4915E+04	-9.6201E+00	8.1585E+04	-9.5989E+00	8.3250E+04	-9.5678E+00	4.4955E+04	-9.5472E+00	3.8295E+04
886000	-9.6579E+00	8.3250E+04	-9.6493E+00	8.4915E+04	-9.6382E+00	8.1585E+04	-9.6171E+00	8.3250E+04	-9.5860E+00	4.4955E+04	-9.5654E+00	3.8295E+04
888000	-9.6759E+00	8.3250E+04	-9.6673E+00	8.4915E+04	-9.6563E+00	8.1585E+04	-9.6352E+00	8.3250E+04	-9.6041E+00	4.4955E+04	-9.5836E+00	3.8295E+04
890000	-9.6939E+00	8.3250E+04	-9.6854E+00	8.4915E+04	-9.6744E+00	8.1585E+04	-9.6532E+00	8.3250E+04	-9.6222E+00	4.4955E+04	-9.6017E+00	3.8295E+04
892000	-9.7119E+00	8.3250E+04	-9.7033E+00	8.4915E+04	-9.6924E+00	8.1585E+04	-9.6713E+00	8.3250E+04	-9.6403E+00	4.4955E+04	-9.6199E+00	3.8295E+04
894000	-9.7298E+00	8.3250E+04	-9.7213E+00	8.4915E+04	-9.7104E+00	8.1585E+04	-9.6893E+00	8.3250E+04	-9.6584E+00	4.4955E+04	-9.6380E+00	3.8295E+04
896000	-9.7478E+00	8.3250E+04	-9.7393E+00	8.4915E+04	-9.7283E+00	8.1585E+04	-9.7073E+00	8.3250E+04	-9.6764E+00	4.4955E+04	-9.6560E+00	3.8295E+04
898000	-9.7657E+00	8.3250E+04	-9.7572E+00	8.4915E+04	-9.7462E+00	8.1585E+04	-9.7253E+00	8.3250E+04	-9.6944E+00	4.4955E+04	-9.6741E+00	3.8295E+04
900000	-9.7835E+00	8.3250E+04	-9.7751E+00	8.4915E+04	-9.7641E+00	8.1585E+04	-9.7432E+00	8.3250E+04	-9.7124E+00	4.4955E+04	-9.6921E+00	3.8295E+04
902000	-9.8014E+00	8.3250E+04	-9.7929E+00	8.4915E+04	-9.7820E+00	8.1585E+04	-9.7611E+00	8.3250E+04	-9.7304E+00	4.4955E+04	-9.7101E+00	3.8295E+04
904000	-9.8192E+00	8.3250E+04	-9.8107E+00	8.4915E+04	-9.7999E+00	8.1585E+04	-9.7790E+00	8.3250E+04	-9.7483E+00	4.4955E+04	-9.7280E+00	3.8295E+04
906000	-9.8370E+00	8.3250E+04	-9.8285E+00	8.4915E+04	-9.8177E+00	8.1585E+04	-9.7968E+00	8.3250E+04	-9.7662E+00	4.4955E+04	-9.7460E+00	3.8295E+04
908000	-9.8547E+00	8.3250E+04	-9.8463E+00	8.4915E+04	-9.8355E+00	8.1585E+04	-9.8147E+00	8.3250E+04	-9.7841E+00	4.4955E+04	-9.7639E+00	3.8295E+04
910000	-9.8725E+00	8.3250E+04	-9.8641E+00	8.4915E+04	-9.8532E+00	8.1585E+04	-9.8325E+00	8.3250E+04	-9.8019E+00	4.4955E+04	-9.7818E+00	3.8295E+04
912000	-9.8902E+00	8.3250E+04	-9.8818E+00	8.4915E+04	-9.8710E+00	8.1585E+04	-9.8502E+00	8.3250E+04	-9.8197E+00	4.4955E+04	-9.7996E+00	3.8295E+04
914000	-9.9079E+00	8.3250E+04	-9.8995E+00	8.4915E+04	-9.8887E+00	8.1585E+04	-9.8680E+00	8.3250E+04	-9.8375E+00	4.4955E+04	-9.8174E+00	3.8295E+04
916000	-9.9255E+00	8.3250E+04	-9.9171E+00	8.4915E+04	-9.9064E+00	8.1585E+04	-9.8857E+00	8.3250E+04	-9.8553E+00	4.4955E+04	-9.8352E+00	3.8295E+04
918000	-9.9431E+00	8.3250E+04	-9.9348E+00	8.4915E+04	-9.9240E+00	8.1585E+04	-9.9034E+00	8.3250E+04	-9.8730E+00	4.4955E+04	-9.8530E+00	3.8295E+04
920000	-9.9607E+00	8.3250E+04	-9.9524E+00	8.4915E+04	-9.9416E+00	8.1585E+04	-9.9210E+00	8.3250E+04	-9.8907E+00	4.4955E+04	-9.8707E+00	3.8295E+04
922000	-9.9783E+00	8.3250E+04	-9.9700E+00	8.4915E+04	-9.9593E+00	8.1585E+04	-9.9387E+00	8.3250E+04	-9.9084E+00	4.4955E+04	-9.8884E+00	3.8295E+04
924000	-9.9959E+00	8.3250E+04	-9.9875E+00	8.4915E+04	-9.9768E+00	8.1585E+04	-9.9563E+00	8.3250E+04	-9.9260E+00	4.4955E+04	-9.9061E+00	3.8295E+04
926000	-1.0013E+01	8.3250E+04	-1.0005E+01	8.4915E+04	-9.9944E+00	8.1585E+04	-9.9738E+00	8.3250E+04	-9.9437E+00	4.4955E+04	-9.9238E+00	3.8295E+04
928000	-1.0031E+01	8.3250E+04	-1.0023E+01	8.4915E+04	-1.0012E+01	8.1585E+04	-9.9914E+00	8.3250E+04	-9.9613E+00	4.4955E+04	-9.9414E+00	3.8295E+04
930000	-1.0048E+01	8.3250E+04	-1.0040E+01	8.4915E+04	-1.0029E+01	8.1585E+04	-1.0009E+01	8.3250E+04	-9.9788E+00	4.4955E+04	-9.9590E+00	3.8295E+04
932000	-1.0066E+01	8.3250E+04	-1.0058E+01	8.4915E+04	-1.0047E+01	8.1585E+04	-1.0026E+01	8.3250E+04	-9.9964E+00	4.4955E+04	-9.9766E+00	3.8295E+04
934000	-1.0083E+01	8.3250E+04	-1.0075E+01	8.4915E+04	-1.0064E+01	8.1585E+04	-1.0044E+01	8.3250E+04	-1.0014E+01	4.4955E+04	-9.9941E+00	3.8295E+04

Time (yrs)	Arg 1	Curve 1	Arg 2	Curve 2	Arg 3	Curve 3	Arg 4	Curve 4	Arg 5	Curve 5	Arg 6	Curve 6
936000	-1.0101E+01	8.3250E+04	-1.0092E+01	8.4915E+04	-1.0082E+01	8.1585E+04	-1.0061E+01	8.3250E+04	-1.0031E+01	4.4955E+04	-1.0012E+01	3.8295E+04
938000	-1.0118E+01	8.3250E+04	-1.0110E+01	8.4915E+04	-1.0099E+01	8.1585E+04	-1.0079E+01	8.3250E+04	-1.0049E+01	4.4955E+04	-1.0029E+01	3.8295E+04
940000	-1.0135E+01	8.3250E+04	-1.0127E+01	8.4915E+04	-1.0116E+01	8.1585E+04	-1.0096E+01	8.3250E+04	-1.0066E+01	4.4955E+04	-1.0047E+01	3.8295E+04
942000	-1.0153E+01	8.3250E+04	-1.0144E+01	8.4915E+04	-1.0134E+01	8.1585E+04	-1.0114E+01	8.3250E+04	-1.0084E+01	4.4955E+04	-1.0064E+01	3.8295E+04
944000	-1.0170E+01	8.3250E+04	-1.0162E+01	8.4915E+04	-1.0151E+01	8.1585E+04	-1.0131E+01	8.3250E+04	-1.0101E+01	4.4955E+04	-1.0081E+01	3.8295E+04
946000	-1.0187E+01	8.3250E+04	-1.0179E+01	8.4915E+04	-1.0168E+01	8.1585E+04	-1.0148E+01	8.3250E+04	-1.0118E+01	4.4955E+04	-1.0099E+01	3.8295E+04
948000	-1.0204E+01	8.3250E+04	-1.0196E+01	8.4915E+04	-1.0186E+01	8.1585E+04	-1.0165E+01	8.3250E+04	-1.0136E+01	4.4955E+04	-1.0116E+01	3.8295E+04
950000	-1.0222E+01	8.3250E+04	-1.0213E+01	8.4915E+04	-1.0203E+01	8.1585E+04	-1.0183E+01	8.3250E+04	-1.0153E+01	4.4955E+04	-1.0134E+01	3.8295E+04
952000	-1.0239E+01	8.3250E+04	-1.0231E+01	8.4915E+04	-1.0220E+01	8.1585E+04	-1.0200E+01	8.3250E+04	-1.0170E+01	4.4955E+04	-1.0151E+01	3.8295E+04
954000	-1.0256E+01	8.3250E+04	-1.0248E+01	8.4915E+04	-1.0237E+01	8.1585E+04	-1.0217E+01	8.3250E+04	-1.0188E+01	4.4955E+04	-1.0168E+01	3.8295E+04
956000	-1.0273E+01	8.3250E+04	-1.0265E+01	8.4915E+04	-1.0255E+01	8.1585E+04	-1.0234E+01	8.3250E+04	-1.0205E+01	4.4955E+04	-1.0185E+01	3.8295E+04
958000	-1.0290E+01	8.3250E+04	-1.0282E+01	8.4915E+04	-1.0272E+01	8.1585E+04	-1.0252E+01	8.3250E+04	-1.0222E+01	4.4955E+04	-1.0203E+01	3.8295E+04
960000	-1.0307E+01	8.3250E+04	-1.0299E+01	8.4915E+04	-1.0289E+01	8.1585E+04	-1.0269E+01	8.3250E+04	-1.0239E+01	4.4955E+04	-1.0220E+01	3.8295E+04
962000	-1.0324E+01	8.3250E+04	-1.0316E+01	8.4915E+04	-1.0306E+01	8.1585E+04	-1.0286E+01	8.3250E+04	-1.0256E+01	4.4955E+04	-1.0237E+01	3.8295E+04
964000	-1.0341E+01	8.3250E+04	-1.0333E+01	8.4915E+04	-1.0323E+01	8.1585E+04	-1.0303E+01	8.3250E+04	-1.0274E+01	4.4955E+04	-1.0254E+01	3.8295E+04
966000	-1.0358E+01	8.3250E+04	-1.0350E+01	8.4915E+04	-1.0340E+01	8.1585E+04	-1.0320E+01	8.3250E+04	-1.0291E+01	4.4955E+04	-1.0271E+01	3.8295E+04
968000	-1.0375E+01	8.3250E+04	-1.0367E+01	8.4915E+04	-1.0357E+01	8.1585E+04	-1.0337E+01	8.3250E+04	-1.0308E+01	4.4955E+04	-1.0289E+01	3.8295E+04
970000	-1.0392E+01	8.3250E+04	-1.0384E+01	8.4915E+04	-1.0374E+01	8.1585E+04	-1.0354E+01	8.3250E+04	-1.0325E+01	4.4955E+04	-1.0306E+01	3.8295E+04
972000	-1.0409E+01	8.3250E+04	-1.0401E+01	8.4915E+04	-1.0391E+01	8.1585E+04	-1.0371E+01	8.3250E+04	-1.0342E+01	4.4955E+04	-1.0323E+01	3.8295E+04
974000	-1.0426E+01	8.3250E+04	-1.0418E+01	8.4915E+04	-1.0408E+01	8.1585E+04	-1.0388E+01	8.3250E+04	-1.0359E+01	4.4955E+04	-1.0340E+01	3.8295E+04
976000	-1.0443E+01	8.3250E+04	-1.0435E+01	8.4915E+04	-1.0425E+01	8.1585E+04	-1.0405E+01	8.3250E+04	-1.0376E+01	4.4955E+04	-1.0357E+01	3.8295E+04
978000	-1.0460E+01	8.3250E+04	-1.0452E+01	8.4915E+04	-1.0442E+01	8.1585E+04	-1.0422E+01	8.3250E+04	-1.0393E+01	4.4955E+04	-1.0374E+01	3.8295E+04
980000	-1.0477E+01	8.3250E+04	-1.0469E+01	8.4915E+04	-1.0459E+01	8.1585E+04	-1.0439E+01	8.3250E+04	-1.0410E+01	4.4955E+04	-1.0391E+01	3.8295E+04
982000	-1.0494E+01	8.3250E+04	-1.0486E+01	8.4915E+04	-1.0475E+01	8.1585E+04	-1.0456E+01	8.3250E+04	-1.0427E+01	4.4955E+04	-1.0408E+01	3.8295E+04
984000	-1.0510E+01	8.3250E+04	-1.0503E+01	8.4915E+04	-1.0492E+01	8.1585E+04	-1.0473E+01	8.3250E+04	-1.0444E+01	4.4955E+04	-1.0425E+01	3.8295E+04
986000	-1.0527E+01	8.3250E+04	-1.0519E+01	8.4915E+04	-1.0509E+01	8.1585E+04	-1.0489E+01	8.3250E+04	-1.0461E+01	4.4955E+04	-1.0441E+01	3.8295E+04
988000	-1.0544E+01	8.3250E+04	-1.0536E+01	8.4915E+04	-1.0526E+01	8.1585E+04	-1.0506E+01	8.3250E+04	-1.0477E+01	4.4955E+04	-1.0458E+01	3.8295E+04
990000	-1.0561E+01	8.3250E+04	-1.0553E+01	8.4915E+04	-1.0543E+01	8.1585E+04	-1.0523E+01	8.3250E+04	-1.0494E+01	4.4955E+04	-1.0475E+01	3.8295E+04
992000	-1.0577E+01	8.3250E+04	-1.0570E+01	8.4915E+04	-1.0559E+01	8.1585E+04	-1.0540E+01	8.3250E+04	-1.0511E+01	4.4955E+04	-1.0492E+01	3.8295E+04
994000	-1.0594E+01	8.3250E+04	-1.0586E+01	8.4915E+04	-1.0576E+01	8.1585E+04	-1.0556E+01	8.3250E+04	-1.0528E+01	4.4955E+04	-1.0509E+01	3.8295E+04
996000	-1.0611E+01	8.3250E+04	-1.0603E+01	8.4915E+04	-1.0593E+01	8.1585E+04	-1.0573E+01	8.3250E+04	-1.0545E+01	4.4955E+04	-1.0526E+01	3.8295E+04
998000	-1.0627E+01	8.3250E+04	-1.0620E+01	8.4915E+04	-1.0609E+01	8.1585E+04	-1.0590E+01	8.3250E+04	-1.0561E+01	4.4955E+04	-1.0542E+01	3.8295E+04
1000000	-1.0644E+01	8.3250E+04	-1.0636E+01	8.4915E+04	-1.0626E+01	8.1585E+04	-1.0607E+01	8.3250E+04	-1.0578E+01	4.4955E+04	-1.0559E+01	3.8295E+04


Flux Out (gm/yr)
1.6000E+06
1.4000E+06
1.2000E+06
1.0000E+06
8.0000E+05
6.0000E+05
4.0000E+05
2.0000E+05
0.0000E+00
-2.0000E+05
0
100000
200000
300000
400000
500000
600000
700000
800000
900000
1000000

Arg 7	Curve 7	Arg 8	Curve 8	Arg 9	Curve 9	Arg 10	Curve 10	Arg 11	Curve 11	Arg 12	Curve 12	Arg 13
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
7.7990E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
4.9578E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
3.8969E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
3.2972E+01	0.0000E+00	7.0465E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
2.8974E+01	0.0000E+00	4.7392E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
2.6055E+01	0.0000E+00	3.7841E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
2.3797E+01	0.0000E+00	3.2255E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
2.1978E+01	0.0000E+00	2.8465E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
2.0470E+01	0.0000E+00	2.5669E+01	0.0000E+00	7.5057E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9191E+01	0.0000E+00	2.3490E+01	0.0000E+00	4.8770E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.8086E+01	0.0000E+00	2.1727E+01	0.0000E+00	3.8558E+01	0.0000E+00	8.5403E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.7118E+01	0.0000E+00	2.0259E+01	0.0000E+00	3.2713E+01	0.0000E+00	5.1401E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6259E+01	0.0000E+00	1.9009E+01	0.0000E+00	2.8791E+01	0.0000E+00	3.9870E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.5490E+01	0.0000E+00	1.7928E+01	0.0000E+00	2.5916E+01	0.0000E+00	3.3534E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.4795E+01	0.0000E+00	1.6978E+01	0.0000E+00	2.3687E+01	0.0000E+00	2.9368E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.4162E+01	0.0000E+00	1.6134E+01	0.0000E+00	2.1888E+01	0.0000E+00	2.6352E+01	0.0000E+00	8.3271E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.3583E+01	0.0000E+00	1.5378E+01	0.0000E+00	2.0394E+01	0.0000E+00	2.4031E+01	0.0000E+00	5.0907E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.3049E+01	0.0000E+00	1.4693E+01	0.0000E+00	1.9126E+01	0.0000E+00	2.2170E+01	0.0000E+00	3.9629E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.2554E+01	0.0000E+00	1.4069E+01	0.0000E+00	1.8029E+01	0.0000E+00	2.0631E+01	0.0000E+00	3.3385E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.2094E+01	0.0000E+00	1.3497E+01	0.0000E+00	1.7068E+01	0.0000E+00	1.9328E+01	0.0000E+00	2.9264E+01	0.0000E+00	8.4317E+01	0.0000E+00	0.0000E+00
1.1664E+01	0.0000E+00	1.2969E+01	0.0000E+00	1.6215E+01	0.0000E+00	1.8205E+01	0.0000E+00	2.6273E+01	0.0000E+00	5.1152E+01	0.0000E+00	0.0000E+00
1.1262E+01	0.0000E+00	1.2481E+01	0.0000E+00	1.5450E+01	0.0000E+00	1.7223E+01	0.0000E+00	2.3969E+01	0.0000E+00	3.9749E+01	0.0000E+00	0.0000E+00
1.0883E+01	0.0000E+00	1.2026E+01	0.0000E+00	1.4759E+01	0.0000E+00	1.6353E+01	0.0000E+00	2.2119E+01	0.0000E+00	3.3459E+01	0.0000E+00	0.0000E+00
1.0526E+01	0.0000E+00	1.1600E+01	0.0000E+00	1.4129E+01	0.0000E+00	1.5574E+01	0.0000E+00	2.0589E+01	0.0000E+00	2.9316E+01	0.0000E+00	0.0000E+00
1.0188E+01	0.0000E+00	1.1202E+01	0.0000E+00	1.3552E+01	0.0000E+00	1.4871E+01	0.0000E+00	1.9292E+01	0.0000E+00	2.6312E+01	0.0000E+00	0.0000E+00
9.8678E+00	0.0000E+00	1.0826E+01	0.0000E+00	1.3020E+01	0.0000E+00	1.4232E+01	0.0000E+00	1.8174E+01	0.0000E+00	2.4000E+01	0.0000E+00	0.0000E+00
9.5633E+00	0.0000E+00	1.0472E+01	0.0000E+00	1.2528E+01	0.0000E+00	1.3647E+01	0.0000E+00	1.7195E+01	0.0000E+00	2.2145E+01	0.0000E+00	7.2426E+01
9.2734E+00	0.0000E+00	1.0137E+01	0.0000E+00	1.2070E+01	0.0000E+00	1.3108E+01	0.0000E+00	1.6328E+01	0.0000E+00	2.0610E+01	0.0000E+00	4.7998E+01
8.9967E+00	0.0000E+00	9.8196E+00	0.0000E+00	1.1642E+01	0.0000E+00	1.2609E+01	0.0000E+00	1.5552E+01	0.0000E+00	1.9310E+01	0.0000E+00	3.8159E+01
8.7322E+00	0.0000E+00	9.5175E+00	0.0000E+00	1.1240E+01	0.0000E+00	1.2145E+01	0.0000E+00	1.4851E+01	0.0000E+00	1.8190E+01	0.0000E+00	3.2459E+01
8.4789E+00	0.0000E+00	9.2297E+00	0.0000E+00	1.0863E+01	0.0000E+00	1.1712E+01	0.0000E+00	1.4214E+01	0.0000E+00	1.7209E+01	0.0000E+00	2.8610E+01
8.2359E+00	0.0000E+00	8.9550E+00	0.0000E+00	1.0507E+01	0.0000E+00	1.1307E+01	0.0000E+00	1.3630E+01	0.0000E+00	1.6341E+01	0.0000E+00	2.5779E+01
8.0025E+00	0.0000E+00	8.6922E+00	0.0000E+00	1.0170E+01	0.0000E+00	1.0925E+01	0.0000E+00	1.3092E+01	0.0000E+00	1.5563E+01	0.0000E+00	2.3578E+01
7.7780E+00	0.0000E+00	8.4406E+00	0.0000E+00	9.8506E+00	0.0000E+00	1.0566E+01	0.0000E+00	1.2595E+01	0.0000E+00	1.4861E+01	0.0000E+00	2.1799E+01
7.5617E+00	0.0000E+00	8.1991E+00	0.0000E+00	9.5470E+00	0.0000E+00	1.0226E+01	0.0000E+00	1.2132E+01	0.0000E+00	1.4223E+01	0.0000E+00	2.0319E+01
7.3531E+00	0.0000E+00	7.9671E+00	0.0000E+00	9.2579E+00	0.0000E+00	9.9038E+00	0.0000E+00	1.1700E+01	0.0000E+00	1.3638E+01	0.0000E+00	1.9062E+01
7.1517E+00	0.0000E+00	7.7439E+00	0.0000E+00	8.9819E+00	0.0000E+00	9.5976E+00	0.0000E+00	1.1295E+01	0.0000E+00	1.3100E+01	0.0000E+00	1.7973E+01
6.9570E+00	0.0000E+00	7.5289E+00	0.0000E+00	8.7180E+00	0.0000E+00	9.3061E+00	0.0000E+00	1.0914E+01	0.0000E+00	1.2602E+01	0.0000E+00	1.7018E+01
6.7686E+00	0.0000E+00	7.3214E+00	0.0000E+00	8.4653E+00	0.0000E+00	9.0279E+00	0.0000E+00	1.0555E+01	0.0000E+00	1.2139E+01	0.0000E+00	1.6170E+01
6.5862E+00	0.0000E+00	7.1211E+00	0.0000E+00	8.2228E+00	0.0000E+00	8.7621E+00	0.0000E+00	1.0216E+01	0.0000E+00	1.1706E+01	0.0000E+00	1.5410E+01
6.4093E+00	0.0000E+00	6.9274E+00	0.0000E+00	7.9899E+00	0.0000E+00	8.5075E+00	0.0000E+00	9.8943E+00	0.0000E+00	1.1301E+01	0.0000E+00	1.4722E+01
6.2377E+00	0.0000E+00	6.7400E+00	0.0000E+00	7.7659E+00	0.0000E+00	8.2634E+00	0.0000E+00	9.5886E+00	0.0000E+00	1.0920E+01	0.0000E+00	1.4096E+01

Arg 7	Curve 7	Arg 8	Curve 8	Arg 9	Curve 9	Arg 10	Curve 10	Arg 11	Curve 11	Arg 12	Curve 12	Arg 13
6.0710E+00	0.0000E+00	6.5584E+00	0.0000E+00	7.5500E+00	0.0000E+00	8.0289E+00	0.0000E+00	9.2975E+00	0.0000E+00	1.0561E+01	0.0000E+00	1.3522E+01
5.9090E+00	2.3107E-12	6.3824E+00	0.0000E+00	7.3418E+00	0.0000E+00	7.8034E+00	0.0000E+00	9.0198E+00	0.0000E+00	1.0221E+01	0.0000E+00	1.2992E+01
5.7514E+00	9.2427E-12	6.2115E+00	0.0000E+00	7.1408E+00	0.0000E+00	7.5862E+00	0.0000E+00	8.7543E+00	0.0000E+00	9.8991E+00	0.0000E+00	1.2502E+01
5.5981E+00	5.0835E-11	6.0456E+00	0.0000E+00	6.9465E+00	0.0000E+00	7.3767E+00	0.0000E+00	8.5000E+00	0.0000E+00	9.5931E+00	0.0000E+00	1.2045E+01
5.4487E+00	2.7035E-10	5.8843E+00	2.3107E-12	6.7585E+00	0.0000E+00	7.1745E+00	0.0000E+00	8.2562E+00	0.0000E+00	9.3018E+00	0.0000E+00	1.1619E+01
5.3031E+00	1.3309E-09	5.7274E+00	1.1553E-11	6.5763E+00	0.0000E+00	6.9791E+00	0.0000E+00	8.0220E+00	0.0000E+00	9.0238E+00	0.0000E+00	1.1219E+01
5.1611E+00	6.0401E-09	5.5747E+00	6.7009E-11	6.3997E+00	0.0000E+00	6.7900E+00	0.0000E+00	7.7967E+00	0.0000E+00	8.7582E+00	0.0000E+00	1.0843E+01
5.0225E+00	2.5427E-08	5.4259E+00	3.4891E-10	6.2284E+00	0.0000E+00	6.6069E+00	0.0000E+00	7.5798E+00	0.0000E+00	8.5038E+00	0.0000E+00	1.0488E+01
4.8872E+00	9.9779E-08	5.2808E+00	1.6914E-09	6.0620E+00	0.0000E+00	6.4294E+00	0.0000E+00	7.3705E+00	0.0000E+00	8.2598E+00	0.0000E+00	1.0152E+01
4.7550E+00	3.6650E-07	5.1394E+00	7.5836E-09	5.9002E+00	1.1091E-12	6.2572E+00	0.0000E+00	7.1685E+00	0.0000E+00	8.0254E+00	0.0000E+00	9.8335E+00
4.6258E+00	1.2648E-06	5.0013E+00	3.1568E-08	5.7429E+00	4.4365E-12	6.0899E+00	0.0000E+00	6.9733E+00	0.0000E+00	7.8000E+00	0.0000E+00	9.5308E+00
4.4994E+00	4.1152E-06	4.8665E+00	1.2259E-07	5.5898E+00	2.6619E-11	5.9274E+00	0.0000E+00	6.7844E+00	0.0000E+00	7.5830E+00	0.0000E+00	9.2423E+00
4.3757E+00	1.2665E-05	4.7348E+00	4.4586E-07	5.4406E+00	1.4197E-10	5.7693E+00	3.6046E-12	6.6015E+00	0.0000E+00	7.3736E+00	0.0000E+00	8.9671E+00
4.2547E+00	3.6980E-05	4.6060E+00	1.5243E-06	5.2952E+00	6.9542E-10	5.6155E+00	2.1628E-11	6.4241E+00	0.0000E+00	7.1715E+00	0.0000E+00	8.7038E+00
4.1361E+00	1.0273E-04	4.4800E+00	4.9160E-06	5.1534E+00	3.1432E-09	5.4657E+00	1.1655E-10	6.2521E+00	0.0000E+00	6.9762E+00	0.0000E+00	8.4517E+00
4.0199E+00	2.7223E-04	4.3568E+00	1.5004E-05	5.0150E+00	1.3181E-08	5.3196E+00	5.7914E-10	6.0850E+00	0.0000E+00	6.7872E+00	0.0000E+00	8.2098E+00
3.9060E+00	6.8980E-04	4.2361E+00	4.3464E-05	4.8798E+00	5.1534E-08	5.1772E+00	2.6494E-09	5.9226E+00	0.0000E+00	6.6042E+00	0.0000E+00	7.9774E+00
3.7944E+00	1.6752E-03	4.1179E+00	1.1984E-04	4.7478E+00	1.8862E-07	5.0383E+00	1.1248E-08	5.7647E+00	3.3274E-12	6.4268E+00	0.0000E+00	7.7538E+00
3.6848E+00	3.9071E-03	4.0021E+00	3.1533E-04	4.6187E+00	6.4878E-07	4.9026E+00	4.4490E-08	5.6110E+00	2.1073E-11	6.2546E+00	0.0000E+00	7.5384E+00
3.5773E+00	8.7698E-03	3.8886E+00	7.9365E-04	4.4925E+00	2.1043E-06	4.7700E+00	1.6463E-07	5.4612E+00	1.1313E-10	6.0875E+00	0.0000E+00	7.3306E+00
3.4717E+00	1.8978E-02	3.7772E+00	1.9151E-03	4.3690E+00	6.4569E-06	4.6405E+00	5.7213E-07	5.3153E+00	5.6010E-10	5.9250E+00	0.0000E+00	7.1300E+00
3.3681E+00	3.9667E-02	3.6680E+00	4.4397E-03	4.2481E+00	1.8800E-05	4.5138E+00	1.8738E-06	5.1730E+00	2.5565E-09	5.7670E+00	3.6046E-12	6.9360E+00
3.2662E+00	8.0206E-02	3.5608E+00	9.9078E-03	4.1296E+00	5.2088E-05	4.3898E+00	5.8030E-06	5.0342E+00	1.0831E-08	5.6132E+00	2.1628E-11	6.7483E+00
3.1661E+00	1.5713E-01	3.4555E+00	2.1323E-02	4.0136E+00	1.3768E-04	4.2685E+00	1.7044E-05	4.8986E+00	4.2752E-08	5.4635E+00	1.2015E-10	6.5665E+00
3.0677E+00	2.9869E-01	3.3522E+00	4.4335E-02	3.8998E+00	3.4804E-04	4.1496E+00	4.7614E-05	4.7661E+00	1.5790E-07	5.3175E+00	5.9236E-10	6.3902E+00
2.9710E+00	5.5167E-01	3.2506E+00	8.9198E-02	3.7883E+00	8.4328E-04	4.0332E+00	1.2684E-04	4.6366E+00	5.4771E-07	5.1751E+00	2.7095E-09	6.2191E+00
2.8758E+00	9.9128E-01	3.1508E+00	1.7392E-01	3.6788E+00	1.9626E-03	3.9190E+00	3.2303E-04	4.5100E+00	1.7908E-06	5.0362E+00	1.1488E-08	6.0530E+00
2.7821E+00	1.7350E+00	3.0526E+00	3.2910E-01	3.5714E+00	4.3962E-03	3.8071E+00	7.8823E-04	4.3861E+00	5.5368E-06	4.9006E+00	4.5393E-08	5.8915E+00
2.6899E+00	2.9614E+00	2.9561E+00	6.0520E-01	3.4660E+00	9.4951E-03	3.6973E+00	1.8468E-03	4.2649E+00	1.6237E-05	4.7681E+00	1.6781E-07	5.7344E+00
2.5992E+00	4.9344E+00	2.8612E+00	1.0830E+00	3.3624E+00	1.9809E-02	3.5895E+00	4.1633E-03	4.1461E+00	4.5294E-05	4.6386E+00	5.8265E-07	5.5814E+00
2.5098E+00	8.0349E+00	2.7677E+00	1.8880E+00	3.2607E+00	3.9982E-02	3.4838E+00	9.0467E-03	4.0297E+00	1.2049E-04	4.5119E+00	1.9066E-06	5.4325E+00
2.4218E+00	1.2798E+01	2.6758E+00	3.2102E+00	3.1607E+00	7.8195E-02	3.3799E+00	1.8983E-02	3.9156E+00	3.0646E-04	4.3880E+00	5.8998E-06	5.2873E+00
2.3351E+00	1.9959E+01	2.5853E+00	5.3297E+00	3.0624E+00	1.4840E-01	3.2778E+00	3.8526E-02	3.8038E+00	7.4686E-04	4.2667E+00	1.7315E-05	5.1457E+00
2.2496E+00	3.0503E+01	2.4961E+00	8.6484E+00	2.9657E+00	2.7367E-01	3.1775E+00	7.5745E-02	3.6940E+00	1.7478E-03	4.1478E+00	4.8336E-05	5.0075E+00
2.1653E+00	4.5721E+01	2.4083E+00	1.3730E+01	2.8706E+00	4.9102E-01	3.0790E+00	1.4447E-01	3.5863E+00	3.9356E-03	4.0314E+00	1.2868E-04	4.8725E+00
2.0823E+00	6.7266E+01	2.3217E+00	2.1344E+01	2.7770E+00	8.5821E-01	2.9820E+00	2.6771E-01	3.4806E+00	8.5428E-03	3.9173E+00	3.2748E-04	4.7406E+00
2.0003E+00	9.7209E+01	2.2365E+00	3.2519E+01	2.6849E+00	1.4628E+00	2.8866E+00	4.8253E-01	3.3768E+00	1.7907E-02	3.8054E+00	7.9860E-04	4.6117E+00
1.9195E+00	1.3809E+02	2.1524E+00	4.8599E+01	2.5942E+00	2.4343E+00	2.7928E+00	8.4706E-01	3.2748E+00	3.6308E-02	3.6957E+00	1.8700E-03	4.4857E+00
1.8398E+00	1.9296E+02	2.0695E+00	7.1298E+01	2.5050E+00	3.9590E+00	2.7005E+00	1.4499E+00	3.1746E+00	7.1317E-02	3.5879E+00	4.2131E-03	4.3623E+00
1.7611E+00	2.6541E+02	1.9877E+00	1.0276E+02	2.4170E+00	6.2986E+00	2.6096E+00	2.4225E+00	3.0760E+00	1.3591E-01	3.4822E+00	9.1502E-03	4.2415E+00
1.6835E+00	3.5954E+02	1.9071E+00	1.4560E+02	2.3303E+00	9.8117E+00	2.5200E+00	3.9548E+00	2.9791E+00	2.5162E-01	3.3783E+00	1.9190E-02	4.1232E+00
1.6068E+00	4.8000E+02	1.8275E+00	2.0294E+02	2.2449E+00	1.4979E+01	2.4319E+00	6.3151E+00	2.8838E+00	4.5316E-01	3.2763E+00	3.8928E-02	4.0073E+00
1.5311E+00	6.3190E+02	1.7490E+00	2.7847E+02	2.1607E+00	2.2428E+01	2.3450E+00	9.8721E+00	2.7900E+00	7.9490E-01	3.1761E+00	7.6499E-02	3.8936E+00
1.4564E+00	8.2071E+02	1.6715E+00	3.7637E+02	2.0777E+00	3.2963E+01	2.2594E+00	1.5122E+01	2.6977E+00	1.3596E+00	3.0775E+00	1.4585E-01	3.7822E+00
1.3825E+00	1.0522E+03	1.5950E+00	5.0135E+02	1.9959E+00	4.7591E+01	2.1750E+00	2.2716E+01	2.6069E+00	2.2700E+00	2.9806E+00	2.7014E-01	3.6729E+00
1.3096E+00	1.3323E+03	1.5195E+00	6.5860E+02	1.9151E+00	6.7544E+01	2.0918E+00	3.3490E+01	2.5174E+00	3.7034E+00	2.8852E+00	4.8671E-01	3.5656E+00
1.2375E+00	1.6669E+03	1.4449E+00	8.5365E+02	1.8355E+00	9.4299E+01	2.0097E+00	4.8496E+01	2.4292E+00	5.9098E+00	2.7914E+00	8.5407E-01	3.4602E+00
1.1663E+00	2.0617E+03	1.3712E+00	1.0923E+03	1.7568E+00	1.2959E+02	1.9288E+00	6.9025E+01	2.3424E+00	9.2328E+00	2.6991E+00	1.4613E+00	3.3568E+00
1.0959E+00	2.5220E+03	1.2984E+00	1.3805E+03	1.6792E+00	1.7541E+02	1.8489E+00	9.6633E+01	2.2568E+00	1.4134E+01	2.6082E+00	2.4407E+00	3.2551E+00
1.0263E+00	3.0523E+03	1.2264E+00	1.7241E+03	1.6026E+00	2.3400E+02	1.7701E+00	1.3315E+02	2.1725E+00	2.1220E+01	2.5187E+00	3.9834E+00	3.1552E+00
9.5752E-01	3.6566E+03	1.1554E+00	2.1287E+03	1.5270E+00	3.0781E+02	1.6924E+00	1.8068E+02	2.0893E+00	3.1267E+01	2.4305E+00	6.3586E+00	3.0570E+00
8.8948E-01	4.3378E+03	1.0851E+00	2.5995E+03	1.4523E+00	3.9950E+02	1.6156E+00	2.4162E+02	2.0073E+00	4.5253E+01	2.3437E+00	9.9370E+00	2.9604E+00

Arg 7	Curve 7	Arg 8	Curve 8	Arg 9	Curve 9	Arg 10	Curve 10	Arg 11	Curve 11	Arg 12	Curve 12	Arg 13
8.2218E-01	5.0977E+03	1.0156E+00	3.1410E+03	1.3785E+00	5.1183E+02	1.5398E+00	3.1858E+02	1.9264E+00	6.4377E+01	2.2581E+00	1.5217E+01	2.8654E+00
7.5562E-01	5.9367E+03	9.4692E-01	3.7571E+03	1.3056E+00	6.4765E+02	1.4649E+00	4.1441E+02	1.8465E+00	9.0082E+01	2.1737E+00	2.2851E+01	2.7719E+00
6.8977E-01	6.8541E+03	8.7900E-01	4.4504E+03	1.2336E+00	8.0978E+02	1.3910E+00	5.3208E+02	1.7678E+00	1.2406E+02	2.0905E+00	3.3681E+01	2.6799E+00
6.2461E-01	7.8475E+03	8.1182E-01	5.2226E+03	1.1624E+00	1.0009E+03	1.3180E+00	6.7468E+02	1.6900E+00	1.6828E+02	2.0085E+00	4.8759E+01	2.5893E+00
5.6014E-01	8.9135E+03	7.4537E-01	6.0738E+03	1.0921E+00	1.2236E+03	1.2458E+00	8.4527E+02	1.6133E+00	2.2494E+02	1.9276E+00	6.9383E+01	2.5001E+00
4.9632E-01	1.0047E+04	6.7962E-01	7.0031E+03	1.0225E+00	1.4801E+03	1.1745E+00	1.0468E+03	1.5375E+00	2.9646E+02	1.8477E+00	9.7110E+01	2.4122E+00
4.3316E-01	1.1242E+04	6.1457E-01	8.0081E+03	9.5376E-01	1.7722E+03	1.1040E+00	1.2821E+03	1.4627E+00	3.8548E+02	1.7690E+00	1.3377E+02	2.3256E+00
3.7063E-01	1.2491E+04	5.5020E-01	9.0849E+03	8.8576E-01	2.1012E+03	1.0343E+00	1.5536E+03	1.3888E+00	4.9475E+02	1.6912E+00	1.8149E+02	2.2403E+00
3.0873E-01	1.3786E+04	4.8649E-01	1.0228E+04	8.1850E-01	2.4681E+03	9.6539E-01	1.8633E+03	1.3158E+00	6.2712E+02	1.6144E+00	2.4265E+02	2.1561E+00
2.4743E-01	1.5118E+04	4.2343E-01	1.1432E+04	7.5198E-01	2.8729E+03	8.9726E-01	2.2129E+03	1.2436E+00	7.8540E+02	1.5387E+00	3.1987E+02	2.0732E+00
1.8672E-01	1.6478E+04	3.6100E-01	1.2689E+04	6.8617E-01	3.3152E+03	8.2988E-01	2.6033E+03	1.1723E+00	9.7234E+02	1.4638E+00	4.1600E+02	1.9914E+00
1.2660E-01	1.7855E+04	2.9919E-01	1.3991E+04	6.2105E-01	3.7941E+03	7.6324E-01	3.0348E+03	1.1019E+00	1.1905E+03	1.3899E+00	5.3403E+02	1.9107E+00
6.7041E-02	1.9241E+04	2.3798E-01	1.5328E+04	5.5661E-01	4.3076E+03	6.9730E-01	3.5072E+03	1.0322E+00	1.4421E+03	1.3169E+00	6.7703E+02	1.8311E+00
8.0428E-03	2.0624E+04	1.7736E-01	1.6691E+04	4.9283E-01	4.8534E+03	6.3207E-01	4.0193E+03	9.6334E-01	1.7291E+03	1.2447E+00	8.4805E+02	1.7525E+00
-5.0410E-02	2.1995E+04	1.1733E-01	1.8070E+04	4.2971E-01	5.4285E+03	5.6752E-01	4.5694E+03	8.9523E-01	2.0529E+03	1.1734E+00	1.0501E+03	1.6750E+00
-1.0833E-01	2.3347E+04	5.7860E-02	1.9455E+04	3.6721E-01	6.0294E+03	5.0363E-01	5.1550E+03	8.2787E-01	2.4144E+03	1.1029E+00	1.2859E+03	1.5984E+00
-1.6572E-01	2.4669E+04	-1.0529E-03	2.0837E+04	3.0534E-01	6.6521E+03	4.4039E-01	5.7729E+03	7.6125E-01	2.8139E+03	1.0332E+00	1.5579E+03	1.5229E+00
-2.2261E-01	2.5955E+04	-5.9422E-02	2.2206E+04	2.4407E-01	7.2924E+03	3.7779E-01	6.4194E+03	6.9534E-01	3.2511E+03	9.6436E-01	1.8682E+03	1.4482E+00
-2.7899E-01	2.7198E+04	-1.1726E-01	2.3554E+04	1.8340E-01	7.9456E+03	3.1581E-01	7.0903E+03	6.3012E-01	3.7249E+03	8.9625E-01	2.2184E+03	1.3745E+00
-3.3487E-01	2.8393E+04	-1.7457E-01	2.4871E+04	1.2331E-01	8.6071E+03	2.5445E-01	7.7810E+03	5.6559E-01	4.2337E+03	8.2888E-01	2.6094E+03	1.3016E+00
-3.9028E-01	2.9533E+04	-2.3138E-01	2.6151E+04	6.3782E-02	9.2720E+03	1.9367E-01	8.4867E+03	5.0172E-01	4.7751E+03	7.6224E-01	3.0416E+03	1.2297E+00
-4.4521E-01	3.0617E+04	-2.8768E-01	2.7387E+04	4.8138E-03	9.9358E+03	1.3348E-01	9.2021E+03	4.3851E-01	5.3463E+03	6.9632E-01	3.5146E+03	1.1585E+00
-4.9968E-01	3.1640E+04	-3.4349E-01	2.8573E+04	-5.3610E-02	1.0594E+04	7.3862E-02	9.9222E+03	3.7592E-01	5.9439E+03	6.3110E-01	4.0273E+03	1.0882E+00
-5.5369E-01	3.2601E+04	-3.9882E-01	2.9705E+04	-1.1150E-01	1.1242E+04	1.4800E-02	1.0642E+04	3.1397E-01	6.5638E+03	5.6655E-01	4.5779E+03	1.0187E+00
-6.0725E-01	3.3499E+04	-4.5368E-01	3.0779E+04	-1.6887E-01	1.1876E+04	-4.3716E-02	1.1356E+04	2.5261E-01	7.2019E+03	5.0268E-01	5.1640E+03	9.5000E-01
-6.6038E-01	3.4334E+04	-5.0808E-01	3.1793E+04	-2.2572E-01	1.2492E+04	-1.0170E-01	1.2060E+04	1.9186E-01	7.8536E+03	4.3945E-01	5.7824E+03	8.8204E-01
-7.1307E-01	3.5106E+04	-5.6202E-01	3.2744E+04	-2.8207E-01	1.3087E+04	-1.5915E-01	1.2750E+04	1.3169E-01	8.5142E+03	3.7686E-01	6.4293E+03	8.1483E-01
-7.6534E-01	3.5817E+04	-6.1551E-01	3.3632E+04	-3.3793E-01	1.3659E+04	-2.1609E-01	1.3421E+04	7.2082E-02	9.1789E+03	3.1489E-01	7.1005E+03	7.4834E-01
-8.1720E-01	3.6468E+04	-6.6857E-01	3.4457E+04	-3.9331E-01	1.4205E+04	-2.7253E-01	1.4070E+04	1.3036E-02	9.8431E+03	2.5353E-01	7.7915E+03	6.8257E-01
-8.6865E-01	3.7062E+04	-7.2120E-01	3.5220E+04	-4.4822E-01	1.4724E+04	-3.2847E-01	1.4694E+04	-4.5463E-02	1.0502E+04	1.9277E-01	8.4973E+03	6.1749E-01
-9.1970E-01	3.7601E+04	-7.7341E-01	3.5921E+04	-5.0266E-01	1.5213E+04	-3.8393E-01	1.5291E+04	-1.0343E-01	1.1152E+04	1.3258E-01	9.2129E+03	5.5308E-01
-9.7036E-01	3.8088E+04	-8.2520E-01	3.6563E+04	-5.5665E-01	1.5673E+04	-4.3892E-01	1.5857E+04	-1.6087E-01	1.1788E+04	7.2972E-02	9.9330E+03	4.8934E-01
-1.0206E+00	3.8526E+04	-8.7659E-01	3.7149E+04	-6.1018E-01	1.6102E+04	-4.9344E-01	1.6393E+04	-2.1779E-01	1.2407E+04	1.3918E-02	1.0653E+04	4.2625E-01
-1.0705E+00	3.8919E+04	-9.2758E-01	3.7679E+04	-6.6329E-01	1.6501E+04	-5.4750E-01	1.6897E+04	-2.7421E-01	1.3005E+04	-4.4589E-02	1.1367E+04	3.6379E-01
-1.1200E+00	3.9269E+04	-9.7817E-01	3.8159E+04	-7.1596E-01	1.6870E+04	-6.0111E-01	1.7367E+04	-3.3014E-01	1.3581E+04	-1.0256E-01	1.2071E+04	3.0195E-01
-1.1692E+00	3.9581E+04	-1.0284E+00	3.8590E+04	-7.6821E-01	1.7210E+04	-6.5429E-01	1.7805E+04	-3.8559E-01	1.4130E+04	-1.6001E-01	1.2760E+04	2.4072E-01
-1.2180E+00	3.9857E+04	-1.0782E+00	3.8976E+04	-8.2004E-01	1.7521E+04	-7.0703E-01	1.8210E+04	-4.4056E-01	1.4653E+04	-2.1694E-01	1.3431E+04	1.8008E-01
-1.2664E+00	4.0100E+04	-1.1277E+00	3.9320E+04	-8.7147E-01	1.7804E+04	-7.5935E-01	1.8584E+04	-4.9506E-01	1.5146E+04	-2.7337E-01	1.4080E+04	1.2002E-01
-1.3145E+00	4.0313E+04	-1.1768E+00	3.9626E+04	-9.2250E-01	1.8062E+04	-8.1126E-01	1.8926E+04	-5.4911E-01	1.5610E+04	-3.2931E-01	1.4703E+04	6.0524E-02
-1.3623E+00	4.0500E+04	-1.2255E+00	3.9896E+04	-9.7313E-01	1.8294E+04	-8.6275E-01	1.9238E+04	-6.0272E-01	1.6044E+04	-3.8476E-01	1.5299E+04	1.5865E-03
-1.4097E+00	4.0664E+04	-1.2739E+00	4.0135E+04	-1.0234E+00	1.8503E+04	-9.1385E-01	1.9521E+04	-6.5588E-01	1.6447E+04	-4.3974E-01	1.5866E+04	-5.6807E-02
-1.4567E+00	4.0806E+04	-1.3219E+00	4.0344E+04	-1.0733E+00	1.8691E+04	-9.6455E-01	1.9778E+04	-7.0861E-01	1.6820E+04	-4.9425E-01	1.6401E+04	-1.1467E-01
-1.5035E+00	4.0928E+04	-1.3696E+00	4.0527E+04	-1.1228E+00	1.8858E+04	-1.0149E+00	2.0009E+04	-7.6092E-01	1.7164E+04	-5.4831E-01	1.6904E+04	-1.7201E-01
-1.5499E+00	4.1034E+04	-1.4170E+00	4.0687E+04	-1.1719E+00	1.9006E+04	-1.0648E+00	2.0215E+04	-8.1281E-01	1.7479E+04	-6.0191E-01	1.7374E+04	-2.2883E-01
-1.5960E+00	4.1126E+04	-1.4640E+00	4.0826E+04	-1.2207E+00	1.9138E+04	-1.1144E+00	2.0400E+04	-8.6429E-01	1.7766E+04	-6.5508E-01	1.7812E+04	-2.8516E-01
-1.6419E+00	4.1204E+04	-1.5107E+00	4.0946E+04	-1.2691E+00	1.9254E+04	-1.1636E+00	2.0564E+04	-9.1538E-01	1.8027E+04	-7.0782E-01	1.8216E+04	-3.4099E-01
-1.6874E+00	4.1271E+04	-1.5571E+00	4.1050E+04	-1.3171E+00	1.9356E+04	-1.2124E+00	2.0710E+04	-9.6607E-01	1.8263E+04	-7.6014E-01	1.8589E+04	-3.9634E-01
-1.7326E+00	4.1328E+04	-1.6032E+00	4.1139E+04	-1.3649E+00	1.9445E+04	-1.2609E+00	2.0838E+04	-1.0164E+00	1.8475E+04	-8.1203E-01	1.8931E+04	-4.5122E-01
-1.7775E+00	4.1377E+04	-1.6489E+00	4.1215E+04	-1.4123E+00	1.9523E+04	-1.3090E+00	2.0951E+04	-1.0663E+00	1.8666E+04	-8.6352E-01	1.9242E+04	-5.0564E-01
-1.8221E+00	4.1418E+04	-1.6944E+00	4.1280E+04	-1.4593E+00	1.9590E+04	-1.3568E+00	2.1050E+04	-1.1158E+00	1.8836E+04	-9.1461E-01	1.9525E+04	-5.5960E-01
-1.8664E+00	4.1452E+04	-1.7395E+00	4.1336E+04	-1.5061E+00	1.9649E+04	-1.4042E+00	2.1136E+04	-1.1650E+00	1.8987E+04	-9.6531E-01	1.9781E+04	-6.1312E-01
-1.9104E+00	4.1482E+04	-1.7844E+00	4.1383E+04	-1.5525E+00	1.9699E+04	-1.4513E+00	2.1211E+04	-1.2138E+00	1.9121E+04	-1.0156E+00	2.0012E+04	-6.6619E-01

Arg 7	Curve 7	Arg 8	Curve 8	Arg 9	Curve 9	Arg 10	Curve 10	Arg 11	Curve 11	Arg 12	Curve 12	Arg 13
-1.9542E+00	4.1506E+04	-1.8290E+00	4.1423E+04	-1.5986E+00	1.9743E+04	-1.4981E+00	2.1276E+04	-1.2623E+00	1.9239E+04	-1.0655E+00	2.0218E+04	-7.1884E-01
-1.9977E+00	4.1527E+04	-1.8732E+00	4.1457E+04	-1.6444E+00	1.9780E+04	-1.5446E+00	2.1332E+04	-1.3104E+00	1.9342E+04	-1.1151E+00	2.0403E+04	-7.7107E-01
-2.0409E+00	4.1544E+04	-1.9172E+00	4.1486E+04	-1.6898E+00	1.9812E+04	-1.5908E+00	2.1380E+04	-1.3582E+00	1.9433E+04	-1.1643E+00	2.0567E+04	-8.2288E-01
-2.0838E+00	4.1558E+04	-1.9609E+00	4.1510E+04	-1.7350E+00	1.9839E+04	-1.6366E+00	2.1422E+04	-1.4056E+00	1.9512E+04	-1.2131E+00	2.0712E+04	-8.7429E-01
-2.1265E+00	4.1570E+04	-2.0044E+00	4.1530E+04	-1.7799E+00	1.9862E+04	-1.6821E+00	2.1457E+04	-1.4528E+00	1.9581E+04	-1.2616E+00	2.0840E+04	-9.2529E-01
-2.1690E+00	4.1580E+04	-2.0476E+00	4.1546E+04	-1.8245E+00	1.9881E+04	-1.7274E+00	2.1487E+04	-1.4995E+00	1.9641E+04	-1.3097E+00	2.0953E+04	-9.7591E-01
-2.2111E+00	4.1588E+04	-2.0905E+00	4.1560E+04	-1.8688E+00	1.9898E+04	-1.7723E+00	2.1513E+04	-1.5460E+00	1.9692E+04	-1.3575E+00	2.1051E+04	-1.0261E+00
-2.2531E+00	4.1595E+04	-2.1331E+00	4.1572E+04	-1.9128E+00	1.9912E+04	-1.8169E+00	2.1535E+04	-1.5921E+00	1.9737E+04	-1.4049E+00	2.1137E+04	-1.0760E+00
-2.2947E+00	4.1601E+04	-2.1755E+00	4.1582E+04	-1.9566E+00	1.9924E+04	-1.8613E+00	2.1553E+04	-1.6380E+00	1.9775E+04	-1.4521E+00	2.1212E+04	-1.1255E+00
-2.3362E+00	4.1605E+04	-2.2176E+00	4.1590E+04	-2.0001E+00	1.9933E+04	-1.9054E+00	2.1569E+04	-1.6835E+00	1.9808E+04	-1.4988E+00	2.1277E+04	-1.1746E+00
-2.3773E+00	4.1609E+04	-2.2595E+00	4.1596E+04	-2.0433E+00	1.9942E+04	-1.9492E+00	2.1582E+04	-1.7287E+00	1.9835E+04	-1.5453E+00	2.1333E+04	-1.2233E+00
-2.4183E+00	4.1612E+04	-2.3012E+00	4.1602E+04	-2.0862E+00	1.9948E+04	-1.9927E+00	2.1593E+04	-1.7736E+00	1.9859E+04	-1.5914E+00	2.1381E+04	-1.2717E+00
-2.4590E+00	4.1615E+04	-2.3426E+00	4.1606E+04	-2.1289E+00	1.9954E+04	-2.0359E+00	2.1602E+04	-1.8183E+00	1.9879E+04	-1.6373E+00	2.1422E+04	-1.3198E+00
-2.4995E+00	4.1617E+04	-2.3837E+00	4.1610E+04	-2.1713E+00	1.9959E+04	-2.0789E+00	2.1610E+04	-1.8626E+00	1.9896E+04	-1.6828E+00	2.1458E+04	-1.3675E+00
-2.5397E+00	4.1618E+04	-2.4246E+00	4.1613E+04	-2.2134E+00	1.9963E+04	-2.1216E+00	2.1616E+04	-1.9067E+00	1.9910E+04	-1.7280E+00	2.1488E+04	-1.4149E+00
-2.5798E+00	4.1620E+04	-2.4653E+00	4.1615E+04	-2.2553E+00	1.9966E+04	-2.1641E+00	2.1621E+04	-1.9505E+00	1.9922E+04	-1.7730E+00	2.1513E+04	-1.4619E+00
-2.6196E+00	4.1621E+04	-2.5057E+00	4.1617E+04	-2.2970E+00	1.9969E+04	-2.2063E+00	2.1626E+04	-1.9940E+00	1.9932E+04	-1.8176E+00	2.1535E+04	-1.5086E+00
-2.6592E+00	4.1622E+04	-2.5460E+00	4.1619E+04	-2.3384E+00	1.9971E+04	-2.2482E+00	2.1629E+04	-2.0372E+00	1.9941E+04	-1.8620E+00	2.1554E+04	-1.5550E+00
-2.6985E+00	4.1622E+04	-2.5860E+00	4.1620E+04	-2.3796E+00	1.9972E+04	-2.2899E+00	2.1632E+04	-2.0802E+00	1.9948E+04	-1.9060E+00	2.1569E+04	-1.6011E+00
-2.7377E+00	4.1623E+04	-2.6257E+00	4.1621E+04	-2.4205E+00	1.9974E+04	-2.3314E+00	2.1635E+04	-2.1229E+00	1.9953E+04	-1.9498E+00	2.1582E+04	-1.6469E+00
-2.7766E+00	4.1623E+04	-2.6653E+00	4.1622E+04	-2.4612E+00	1.9975E+04	-2.3726E+00	2.1637E+04	-2.1654E+00	1.9958E+04	-1.9933E+00	2.1593E+04	-1.6923E+00
-2.8154E+00	4.1624E+04	-2.7046E+00	4.1622E+04	-2.5017E+00	1.9976E+04	-2.4136E+00	2.1638E+04	-2.2076E+00	1.9962E+04	-2.0366E+00	2.1602E+04	-1.7375E+00
-2.8539E+00	4.1624E+04	-2.7437E+00	4.1623E+04	-2.5419E+00	1.9977E+04	-2.4543E+00	2.1639E+04	-2.2495E+00	1.9965E+04	-2.0796E+00	2.1610E+04	-1.7824E+00
-2.8922E+00	4.1624E+04	-2.7827E+00	4.1623E+04	-2.5820E+00	1.9977E+04	-2.4948E+00	2.1641E+04	-2.2912E+00	1.9968E+04	-2.1223E+00	2.1616E+04	-1.8270E+00
-2.9304E+00	4.1624E+04	-2.8214E+00	4.1624E+04	-2.6218E+00	1.9978E+04	-2.5351E+00	2.1641E+04	-2.3326E+00	1.9970E+04	-2.1647E+00	2.1621E+04	-1.8712E+00
-2.9683E+00	4.1625E+04	-2.8599E+00	4.1624E+04	-2.6613E+00	1.9978E+04	-2.5752E+00	2.1642E+04	-2.3738E+00	1.9972E+04	-2.2069E+00	2.1626E+04	-1.9153E+00
-3.0061E+00	4.1625E+04	-2.8982E+00	4.1624E+04	-2.7007E+00	1.9979E+04	-2.6150E+00	2.1643E+04	-2.4148E+00	1.9974E+04	-2.2489E+00	2.1629E+04	-1.9590E+00
-3.0436E+00	4.1625E+04	-2.9363E+00	4.1625E+04	-2.7398E+00	1.9979E+04	-2.6546E+00	2.1643E+04	-2.4556E+00	1.9975E+04	-2.2906E+00	2.1632E+04	-2.0024E+00
-3.0810E+00	4.1625E+04	-2.9742E+00	4.1625E+04	-2.7788E+00	1.9979E+04	-2.6940E+00	2.1644E+04	-2.4961E+00	1.9976E+04	-2.3320E+00	2.1635E+04	-2.0456E+00
-3.1181E+00	4.1625E+04	-3.0119E+00	4.1625E+04	-2.8175E+00	1.9979E+04	-2.7332E+00	2.1644E+04	-2.5363E+00	1.9977E+04	-2.3732E+00	2.1637E+04	-2.0886E+00
-3.1551E+00	4.1625E+04	-3.0494E+00	4.1625E+04	-2.8560E+00	1.9980E+04	-2.7722E+00	2.1644E+04	-2.5764E+00	1.9977E+04	-2.4142E+00	2.1638E+04	-2.1312E+00
-3.1919E+00	4.1625E+04	-3.0867E+00	4.1625E+04	-2.8944E+00	1.9980E+04	-2.8109E+00	2.1644E+04	-2.6162E+00	1.9978E+04	-2.4549E+00	2.1640E+04	-2.1736E+00
-3.2285E+00	4.1625E+04	-3.1239E+00	4.1625E+04	-2.9325E+00	1.9980E+04	-2.8495E+00	2.1644E+04	-2.6558E+00	1.9978E+04	-2.4954E+00	2.1641E+04	-2.2158E+00
-3.2650E+00	4.1625E+04	-3.1608E+00	4.1625E+04	-2.9704E+00	1.9980E+04	-2.8879E+00	2.1645E+04	-2.6952E+00	1.9979E+04	-2.5357E+00	2.1641E+04	-2.2576E+00
-3.3012E+00	4.1625E+04	-3.1976E+00	4.1625E+04	-3.0081E+00	1.9980E+04	-2.9260E+00	2.1645E+04	-2.7344E+00	1.9979E+04	-2.5758E+00	2.1642E+04	-2.2993E+00
-3.3373E+00	4.1625E+04	-3.2342E+00	4.1625E+04	-3.0457E+00	1.9980E+04	-2.9640E+00	2.1645E+04	-2.7733E+00	1.9979E+04	-2.6156E+00	2.1643E+04	-2.3407E+00
-3.3732E+00	4.1625E+04	-3.2706E+00	4.1625E+04	-3.0830E+00	1.9980E+04	-3.0017E+00	2.1645E+04	-2.8121E+00	1.9979E+04	-2.6552E+00	2.1643E+04	-2.3819E+00
-3.4090E+00	4.1625E+04	-3.3068E+00	4.1625E+04	-3.1202E+00	1.9980E+04	-3.0393E+00	2.1645E+04	-2.8507E+00	1.9980E+04	-2.6946E+00	2.1644E+04	-2.4228E+00
-3.4445E+00	4.1625E+04	-3.3429E+00	4.1625E+04	-3.1571E+00	1.9980E+04	-3.0767E+00	2.1645E+04	-2.8890E+00	1.9980E+04	-2.7338E+00	2.1644E+04	-2.4635E+00
-3.4799E+00	4.1625E+04	-3.3788E+00	4.1625E+04	-3.1939E+00	1.9980E+04	-3.1139E+00	2.1645E+04	-2.9271E+00	1.9980E+04	-2.7728E+00	2.1644E+04	-2.5039E+00
-3.5152E+00	4.1625E+04	-3.4145E+00	4.1625E+04	-3.2305E+00	1.9980E+04	-3.1509E+00	2.1645E+04	-2.9651E+00	1.9980E+04	-2.8115E+00	2.1644E+04	-2.5442E+00
-3.5503E+00	4.1625E+04	-3.4500E+00	4.1625E+04	-3.2670E+00	1.9980E+04	-3.1877E+00	2.1645E+04	-3.0029E+00	1.9980E+04	-2.8501E+00	2.1645E+04	-2.5842E+00
-3.5852E+00	4.1625E+04	-3.4854E+00	4.1625E+04	-3.3032E+00	1.9980E+04	-3.2243E+00	2.1645E+04	-3.0404E+00	1.9980E+04	-2.8884E+00	2.1645E+04	-2.6239E+00
-3.6199E+00	4.1625E+04	-3.5206E+00	4.1625E+04	-3.3393E+00	1.9980E+04	-3.2608E+00	2.1645E+04	-3.0778E+00	1.9980E+04	-2.9266E+00	2.1645E+04	-2.6635E+00
-3.6545E+00	4.1625E+04	-3.5557E+00	4.1625E+04	-3.3752E+00	1.9980E+04	-3.2971E+00	2.1645E+04	-3.1150E+00	1.9980E+04	-2.9645E+00	2.1645E+04	-2.7029E+00
-3.6890E+00	4.1625E+04	-3.5906E+00	4.1625E+04	-3.4109E+00	1.9980E+04	-3.3332E+00	2.1645E+04	-3.1520E+00	1.9980E+04	-3.0023E+00	2.1645E+04	-2.7420E+00
-3.7233E+00	4.1625E+04	-3.6253E+00	4.1625E+04	-3.4465E+00	1.9980E+04	-3.3691E+00	2.1645E+04	-3.1888E+00	1.9980E+04	-3.0399E+00	2.1645E+04	-2.7809E+00
-3.7574E+00	4.1625E+04	-3.6599E+00	4.1625E+04	-3.4819E+00	1.9980E+04	-3.4049E+00	2.1645E+04	-3.2254E+00	1.9980E+04	-3.0772E+00	2.1645E+04	-2.8196E+00
-3.7914E+00	4.1625E+04	-3.6943E+00	4.1625E+04	-3.5171E+00	1.9980E+04	-3.4404E+00	2.1645E+04	-3.2619E+00	1.9980E+04	-3.1144E+00	2.1645E+04	-2.8581E+00
-3.8252E+00	4.1625E+04	-3.7286E+00	4.1625E+04	-3.5522E+00	1.9980E+04	-3.4759E+00	2.1645E+04	-3.2981E+00	1.9980E+04	-3.1514E+00	2.1645E+04	-2.8965E+00
-3.8589E+00	4.1625E+04	-3.7627E+00	4.1625E+04	-3.5871E+00	1.9980E+04	-3.5111E+00	2.1645E+04	-3.3342E+00	1.9980E+04	-3.1882E+00	2.1645E+04	-2.9346E+00
-3.8925E+00	4.1625E+04	-3.7966E+00	4.1625E+04	-3.6218E+00	1.9980E+04	-3.5462E+00	2.1645E+04	-3.3702E+00	1.9980E+04	-3.2249E+00	2.1645E+04	-2.9725E+00

Arg 7	Curve 7	Arg 8	Curve 8	Arg 9	Curve 9	Arg 10	Curve 10	Arg 11	Curve 11	Arg 12	Curve 12	Arg 13
-3.9259E+00	4.1625E+04	-3.8305E+00	4.1625E+04	-3.6564E+00	1.9980E+04	-3.5812E+00	2.1645E+04	-3.4059E+00	1.9980E+04	-3.2613E+00	2.1645E+04	-3.0102E+00
-3.9591E+00	4.1625E+04	-3.8641E+00	4.1625E+04	-3.6909E+00	1.9980E+04	-3.6159E+00	2.1645E+04	-3.4415E+00	1.9980E+04	-3.2976E+00	2.1645E+04	-3.0477E+00
-3.9922E+00	4.1625E+04	-3.8976E+00	4.1625E+04	-3.7251E+00	1.9980E+04	-3.6506E+00	2.1645E+04	-3.4769E+00	1.9980E+04	-3.3337E+00	2.1645E+04	-3.0851E+00
-4.0252E+00	4.1625E+04	-3.9310E+00	4.1625E+04	-3.7593E+00	1.9980E+04	-3.6850E+00	2.1645E+04	-3.5122E+00	1.9980E+04	-3.3696E+00	2.1645E+04	-3.1222E+00
-4.0580E+00	4.1625E+04	-3.9643E+00	4.1625E+04	-3.7932E+00	1.9980E+04	-3.7193E+00	2.1645E+04	-3.5473E+00	1.9980E+04	-3.4054E+00	2.1645E+04	-3.1592E+00
-4.0907E+00	4.1625E+04	-3.9973E+00	4.1625E+04	-3.8271E+00	1.9980E+04	-3.7535E+00	2.1645E+04	-3.5822E+00	1.9980E+04	-3.4410E+00	2.1645E+04	-3.1959E+00
-4.1233E+00	4.1625E+04	-4.0303E+00	4.1625E+04	-3.8608E+00	1.9980E+04	-3.7875E+00	2.1645E+04	-3.6170E+00	1.9980E+04	-3.4764E+00	2.1645E+04	-3.2325E+00
-4.1557E+00	4.1625E+04	-4.0631E+00	4.1625E+04	-3.8943E+00	1.9980E+04	-3.8213E+00	2.1645E+04	-3.6516E+00	1.9980E+04	-3.5117E+00	2.1645E+04	-3.2690E+00
-4.1880E+00	4.1625E+04	-4.0958E+00	4.1625E+04	-3.9277E+00	1.9980E+04	-3.8550E+00	2.1645E+04	-3.6860E+00	1.9980E+04	-3.5468E+00	2.1645E+04	-3.3052E+00
-4.2202E+00	4.1625E+04	-4.1283E+00	4.1625E+04	-3.9609E+00	1.9980E+04	-3.8886E+00	2.1645E+04	-3.7204E+00	1.9980E+04	-3.5817E+00	2.1645E+04	-3.3413E+00
-4.2522E+00	4.1625E+04	-4.1607E+00	4.1625E+04	-3.9940E+00	1.9980E+04	-3.9220E+00	2.1645E+04	-3.7545E+00	1.9980E+04	-3.6165E+00	2.1645E+04	-3.3772E+00
-4.2841E+00	4.1625E+04	-4.1930E+00	4.1625E+04	-4.0270E+00	1.9980E+04	-3.9553E+00	2.1645E+04	-3.7885E+00	1.9980E+04	-3.6511E+00	2.1645E+04	-3.4129E+00
-4.3159E+00	4.1625E+04	-4.2252E+00	4.1625E+04	-4.0598E+00	1.9980E+04	-3.9884E+00	2.1645E+04	-3.8223E+00	1.9980E+04	-3.6855E+00	2.1645E+04	-3.4484E+00
-4.3476E+00	4.1625E+04	-4.2572E+00	4.1625E+04	-4.0925E+00	1.9980E+04	-4.0214E+00	2.1645E+04	-3.8561E+00	1.9980E+04	-3.7198E+00	2.1645E+04	-3.4838E+00
-4.3791E+00	4.1625E+04	-4.2891E+00	4.1625E+04	-4.1251E+00	1.9980E+04	-4.0543E+00	2.1645E+04	-3.8896E+00	1.9980E+04	-3.7540E+00	2.1645E+04	-3.5190E+00
-4.4105E+00	4.1625E+04	-4.3208E+00	4.1625E+04	-4.1575E+00	1.9980E+04	-4.0870E+00	2.1645E+04	-3.9230E+00	1.9980E+04	-3.7880E+00	2.1645E+04	-3.5541E+00
-4.4418E+00	4.1625E+04	-4.3525E+00	4.1625E+04	-4.1898E+00	1.9980E+04	-4.1196E+00	2.1645E+04	-3.9563E+00	1.9980E+04	-3.8218E+00	2.1645E+04	-3.5890E+00
-4.4729E+00	4.1625E+04	-4.3840E+00	4.1625E+04	-4.2220E+00	1.9980E+04	-4.1520E+00	2.1645E+04	-3.9894E+00	1.9980E+04	-3.8555E+00	2.1645E+04	-3.6237E+00
-4.5040E+00	4.1625E+04	-4.4154E+00	4.1625E+04	-4.2540E+00	1.9980E+04	-4.1843E+00	2.1645E+04	-4.0224E+00	1.9980E+04	-3.8891E+00	2.1645E+04	-3.6583E+00
-4.5349E+00	4.1625E+04	-4.4466E+00	4.1625E+04	-4.2859E+00	1.9980E+04	-4.2165E+00	2.1645E+04	-4.0552E+00	1.9980E+04	-3.9225E+00	2.1645E+04	-3.6927E+00
-4.5657E+00	4.1625E+04	-4.4778E+00	4.1625E+04	-4.3177E+00	1.9980E+04	-4.2485E+00	2.1645E+04	-4.0880E+00	1.9980E+04	-3.9558E+00	2.1645E+04	-3.7270E+00
-4.5964E+00	4.1625E+04	-4.5088E+00	4.1625E+04	-4.3493E+00	1.9980E+04	-4.2805E+00	2.1645E+04	-4.1205E+00	1.9980E+04	-3.9889E+00	2.1645E+04	-3.7611E+00
-4.6270E+00	4.1625E+04	-4.5397E+00	4.1625E+04	-4.3808E+00	1.9980E+04	-4.3123E+00	2.1645E+04	-4.1530E+00	1.9980E+04	-4.0219E+00	2.1645E+04	-3.7951E+00
-4.6574E+00	4.1625E+04	-4.5705E+00	4.1625E+04	-4.4122E+00	1.9980E+04	-4.3439E+00	2.1645E+04	-4.1853E+00	1.9980E+04	-4.0548E+00	2.1645E+04	-3.8289E+00
-4.6878E+00	4.1625E+04	-4.6011E+00	4.1625E+04	-4.4435E+00	1.9980E+04	-4.3755E+00	2.1645E+04	-4.2175E+00	1.9980E+04	-4.0875E+00	2.1645E+04	-3.8626E+00
-4.7180E+00	4.1625E+04	-4.6317E+00	4.1625E+04	-4.4747E+00	1.9980E+04	-4.4069E+00	2.1645E+04	-4.2495E+00	1.9980E+04	-4.1200E+00	2.1645E+04	-3.8961E+00
-4.7481E+00	4.1625E+04	-4.6621E+00	4.1625E+04	-4.5057E+00	1.9980E+04	-4.4382E+00	2.1645E+04	-4.2814E+00	1.9980E+04	-4.1525E+00	2.1645E+04	-3.9295E+00
-4.7781E+00	4.1625E+04	-4.6925E+00	4.1625E+04	-4.5366E+00	1.9980E+04	-4.4694E+00	2.1645E+04	-4.3132E+00	1.9980E+04	-4.1848E+00	2.1645E+04	-3.9628E+00
-4.8080E+00	4.1625E+04	-4.7227E+00	4.1625E+04	-4.5674E+00	1.9980E+04	-4.5004E+00	2.1645E+04	-4.3449E+00	1.9980E+04	-4.2170E+00	2.1645E+04	-3.9959E+00
-4.8378E+00	4.1625E+04	-4.7528E+00	4.1625E+04	-4.5981E+00	1.9980E+04	-4.5314E+00	2.1645E+04	-4.3764E+00	1.9980E+04	-4.2490E+00	2.1645E+04	-4.0288E+00
-4.8675E+00	4.1625E+04	-4.7828E+00	4.1625E+04	-4.6286E+00	1.9980E+04	-4.5622E+00	2.1645E+04	-4.4078E+00	1.9980E+04	-4.2809E+00	2.1645E+04	-4.0616E+00
-4.8971E+00	4.1625E+04	-4.8127E+00	4.1625E+04	-4.6591E+00	1.9980E+04	-4.5929E+00	2.1645E+04	-4.4391E+00	1.9980E+04	-4.3127E+00	2.1645E+04	-4.0943E+00
-4.9266E+00	4.1625E+04	-4.8424E+00	4.1625E+04	-4.6894E+00	1.9980E+04	-4.6235E+00	2.1645E+04	-4.4703E+00	1.9980E+04	-4.3444E+00	2.1645E+04	-4.1269E+00
-4.9559E+00	4.1625E+04	-4.8721E+00	4.1625E+04	-4.7197E+00	1.9980E+04	-4.6539E+00	2.1645E+04	-4.5013E+00	1.9980E+04	-4.3759E+00	2.1645E+04	-4.1593E+00
-4.9852E+00	4.1625E+04	-4.9017E+00	4.1625E+04	-4.7498E+00	1.9980E+04	-4.6843E+00	2.1645E+04	-4.5323E+00	1.9980E+04	-4.4074E+00	2.1645E+04	-4.1916E+00
-5.0143E+00	4.1625E+04	-4.9311E+00	4.1625E+04	-4.7798E+00	1.9980E+04	-4.7145E+00	2.1645E+04	-4.5631E+00	1.9980E+04	-4.4387E+00	2.1645E+04	-4.2237E+00
-5.0434E+00	4.1625E+04	-4.9605E+00	4.1625E+04	-4.8097E+00	1.9980E+04	-4.7447E+00	2.1645E+04	-4.5938E+00	1.9980E+04	-4.4698E+00	2.1645E+04	-4.2557E+00
-5.0724E+00	4.1625E+04	-4.9897E+00	4.1625E+04	-4.8395E+00	1.9980E+04	-4.7747E+00	2.1645E+04	-4.6244E+00	1.9980E+04	-4.5009E+00	2.1645E+04	-4.2876E+00
-5.1012E+00	4.1625E+04	-5.0189E+00	4.1625E+04	-4.8691E+00	1.9980E+04	-4.8046E+00	2.1645E+04	-4.6548E+00	1.9980E+04	-4.5318E+00	2.1645E+04	-4.3194E+00
-5.1300E+00	4.1625E+04	-5.0479E+00	4.1625E+04	-4.8987E+00	1.9980E+04	-4.8344E+00	2.1645E+04	-4.6852E+00	1.9980E+04	-4.5626E+00	2.1645E+04	-4.3510E+00
-5.1587E+00	4.1625E+04	-5.0769E+00	4.1625E+04	-4.9282E+00	1.9980E+04	-4.8641E+00	2.1645E+04	-4.7154E+00	1.9980E+04	-4.5933E+00	2.1645E+04	-4.3826E+00
-5.1872E+00	4.1625E+04	-5.1057E+00	4.1625E+04	-4.9575E+00	1.9980E+04	-4.8937E+00	2.1645E+04	-4.7456E+00	1.9980E+04	-4.6239E+00	2.1645E+04	-4.4139E+00
-5.2157E+00	4.1625E+04	-5.1344E+00	4.1625E+04	-4.9868E+00	1.9980E+04	-4.9232E+00	2.1645E+04	-4.7756E+00	1.9980E+04	-4.6544E+00	2.1645E+04	-4.4452E+00
-5.2441E+00	4.1625E+04	-5.1631E+00	4.1625E+04	-5.0160E+00	1.9980E+04	-4.9525E+00	2.1645E+04	-4.8055E+00	1.9980E+04	-4.6847E+00	2.1645E+04	-4.4764E+00
-5.2723E+00	4.1625E+04	-5.1916E+00	4.1625E+04	-5.0450E+00	1.9980E+04	-4.9818E+00	2.1645E+04	-4.8353E+00	1.9980E+04	-4.7150E+00	2.1645E+04	-4.5074E+00
-5.3005E+00	4.1625E+04	-5.2201E+00	4.1625E+04	-5.0740E+00	1.9980E+04	-5.0110E+00	2.1645E+04	-4.8650E+00	1.9980E+04	-4.7451E+00	2.1645E+04	-4.5383E+00
-5.3286E+00	4.1625E+04	-5.2485E+00	4.1625E+04	-5.1028E+00	1.9980E+04	-5.0401E+00	2.1645E+04	-4.8946E+00	1.9980E+04	-4.7751E+00	2.1645E+04	-4.5691E+00
-5.3566E+00	4.1625E+04	-5.2767E+00	4.1625E+04	-5.1316E+00	1.9980E+04	-5.0690E+00	2.1645E+04	-4.9241E+00	1.9980E+04	-4.8050E+00	2.1645E+04	-4.5998E+00
-5.3845E+00	4.1625E+04	-5.3049E+00	4.1625E+04	-5.1602E+00	1.9980E+04	-5.0979E+00	2.1645E+04	-4.9534E+00	1.9980E+04	-4.8348E+00	2.1645E+04	-4.6303E+00
-5.4123E+00	4.1625E+04	-5.3330E+00	4.1625E+04	-5.1888E+00	1.9980E+04	-5.1267E+00	2.1645E+04	-4.9827E+00	1.9980E+04	-4.8645E+00	2.1645E+04	-4.6608E+00
-5.4401E+00	4.1625E+04	-5.3610E+00	4.1625E+04	-5.2173E+00	1.9980E+04	-5.1554E+00	2.1645E+04	-5.0119E+00	1.9980E+04	-4.8941E+00	2.1645E+04	-4.6911E+00
-5.4677E+00	4.1625E+04	-5.3888E+00	4.1625E+04	-5.2456E+00	1.9980E+04	-5.1839E+00	2.1645E+04	-5.0409E+00	1.9980E+04	-4.9236E+00	2.1645E+04	-4.7213E+00

Arg 7	Curve 7	Arg 8	Curve 8	Arg 9	Curve 9	Arg 10	Curve 10	Arg 11	Curve 11	Arg 12	Curve 12	Arg 13
-5.4953E+00	4.1625E+04	-5.4167E+00	4.1625E+04	-5.2739E+00	1.9980E+04	-5.2124E+00	2.1645E+04	-5.0699E+00	1.9980E+04	-4.9530E+00	2.1645E+04	-4.7514E+00
-5.5227E+00	4.1625E+04	-5.4444E+00	4.1625E+04	-5.3021E+00	1.9980E+04	-5.2408E+00	2.1645E+04	-5.0988E+00	1.9980E+04	-4.9823E+00	2.1645E+04	-4.7814E+00
-5.5501E+00	4.1625E+04	-5.4720E+00	4.1625E+04	-5.3302E+00	1.9980E+04	-5.2691E+00	2.1645E+04	-5.1276E+00	1.9980E+04	-5.0114E+00	2.1645E+04	-4.8113E+00
-5.5774E+00	4.1625E+04	-5.4995E+00	4.1625E+04	-5.3582E+00	1.9980E+04	-5.2973E+00	2.1645E+04	-5.1562E+00	1.9980E+04	-5.0405E+00	2.1645E+04	-4.8411E+00
-5.6046E+00	4.1625E+04	-5.5270E+00	4.1625E+04	-5.3861E+00	1.9980E+04	-5.3254E+00	2.1645E+04	-5.1848E+00	1.9980E+04	-5.0695E+00	2.1645E+04	-4.8708E+00
-5.6317E+00	4.1625E+04	-5.5543E+00	4.1625E+04	-5.4139E+00	1.9980E+04	-5.3534E+00	2.1645E+04	-5.2133E+00	1.9980E+04	-5.0983E+00	2.1645E+04	-4.9003E+00
-5.6587E+00	4.1625E+04	-5.5816E+00	4.1625E+04	-5.4416E+00	1.9980E+04	-5.3813E+00	2.1645E+04	-5.2417E+00	1.9980E+04	-5.1271E+00	2.1645E+04	-4.9298E+00
-5.6857E+00	4.1625E+04	-5.6088E+00	4.1625E+04	-5.4692E+00	1.9980E+04	-5.4092E+00	2.1645E+04	-5.2699E+00	1.9980E+04	-5.1558E+00	2.1645E+04	-4.9591E+00
-5.7126E+00	4.1625E+04	-5.6359E+00	4.1625E+04	-5.4968E+00	1.9980E+04	-5.4369E+00	2.1645E+04	-5.2981E+00	1.9980E+04	-5.1844E+00	2.1645E+04	-4.9884E+00
-5.7393E+00	4.1625E+04	-5.6629E+00	4.1625E+04	-5.5242E+00	1.9980E+04	-5.4645E+00	2.1645E+04	-5.3262E+00	1.9980E+04	-5.2128E+00	2.1645E+04	-5.0176E+00
-5.7660E+00	4.1625E+04	-5.6899E+00	4.1625E+04	-5.5516E+00	1.9980E+04	-5.4921E+00	2.1645E+04	-5.3542E+00	1.9980E+04	-5.2412E+00	2.1645E+04	-5.0466E+00
-5.7927E+00	4.1625E+04	-5.7167E+00	4.1625E+04	-5.5789E+00	1.9980E+04	-5.5196E+00	2.1645E+04	-5.3822E+00	1.9980E+04	-5.2695E+00	2.1645E+04	-5.0755E+00
-5.8192E+00	4.1625E+04	-5.7435E+00	4.1625E+04	-5.6061E+00	1.9980E+04	-5.5470E+00	2.1645E+04	-5.4100E+00	1.9980E+04	-5.2977E+00	2.1645E+04	-5.1044E+00
-5.8457E+00	4.1625E+04	-5.7702E+00	4.1625E+04	-5.6332E+00	1.9980E+04	-5.5743E+00	2.1645E+04	-5.4377E+00	1.9980E+04	-5.3258E+00	2.1645E+04	-5.1331E+00
-5.8720E+00	4.1625E+04	-5.7968E+00	4.1625E+04	-5.6602E+00	1.9980E+04	-5.6015E+00	2.1645E+04	-5.4654E+00	1.9980E+04	-5.3538E+00	2.1645E+04	-5.1618E+00
-5.8983E+00	4.1625E+04	-5.8233E+00	4.1625E+04	-5.6872E+00	1.9980E+04	-5.6286E+00	2.1645E+04	-5.4929E+00	1.9980E+04	-5.3817E+00	2.1645E+04	-5.1904E+00
-5.9246E+00	4.1625E+04	-5.8498E+00	4.1625E+04	-5.7140E+00	1.9980E+04	-5.6556E+00	2.1645E+04	-5.5204E+00	1.9980E+04	-5.4096E+00	2.1645E+04	-5.2188E+00
-5.9507E+00	4.1625E+04	-5.8761E+00	4.1625E+04	-5.7408E+00	1.9980E+04	-5.6826E+00	2.1645E+04	-5.5478E+00	1.9980E+04	-5.4373E+00	2.1645E+04	-5.2472E+00
-5.9768E+00	4.1625E+04	-5.9024E+00	4.1625E+04	-5.7675E+00	1.9980E+04	-5.7095E+00	2.1645E+04	-5.5751E+00	1.9980E+04	-5.4650E+00	2.1645E+04	-5.2754E+00
-6.0028E+00	4.1625E+04	-5.9286E+00	4.1625E+04	-5.7941E+00	1.9980E+04	-5.7363E+00	2.1645E+04	-5.6023E+00	1.9980E+04	-5.4925E+00	2.1645E+04	-5.3036E+00
-6.0287E+00	4.1625E+04	-5.9548E+00	4.1625E+04	-5.8207E+00	1.9980E+04	-5.7630E+00	2.1645E+04	-5.6294E+00	1.9980E+04	-5.5200E+00	2.1645E+04	-5.3317E+00
-6.0546E+00	4.1625E+04	-5.9808E+00	4.1625E+04	-5.8471E+00	1.9980E+04	-5.7896E+00	2.1645E+04	-5.6564E+00	1.9980E+04	-5.5474E+00	2.1645E+04	-5.3597E+00
-6.0803E+00	4.1625E+04	-6.0068E+00	4.1625E+04	-5.8735E+00	1.9980E+04	-5.8162E+00	2.1645E+04	-5.6834E+00	1.9980E+04	-5.5747E+00	2.1645E+04	-5.3876E+00
-6.1060E+00	4.1625E+04	-6.0327E+00	4.1625E+04	-5.8998E+00	1.9980E+04	-5.8426E+00	2.1645E+04	-5.7103E+00	1.9980E+04	-5.6019E+00	2.1645E+04	-5.4154E+00
-6.1316E+00	4.1625E+04	-6.0586E+00	4.1625E+04	-5.9260E+00	1.9980E+04	-5.8690E+00	2.1645E+04	-5.7371E+00	1.9980E+04	-5.6290E+00	2.1645E+04	-5.4431E+00
-6.1572E+00	4.1625E+04	-6.0843E+00	4.1625E+04	-5.9522E+00	1.9980E+04	-5.8953E+00	2.1645E+04	-5.7638E+00	1.9980E+04	-5.6560E+00	2.1645E+04	-5.4707E+00
-6.1827E+00	4.1625E+04	-6.1100E+00	4.1625E+04	-5.9782E+00	1.9980E+04	-5.9216E+00	2.1645E+04	-5.7904E+00	1.9980E+04	-5.6830E+00	2.1645E+04	-5.4983E+00
-6.2081E+00	4.1625E+04	-6.1356E+00	4.1625E+04	-6.0042E+00	1.9980E+04	-5.9477E+00	2.1645E+04	-5.8170E+00	1.9980E+04	-5.7099E+00	2.1645E+04	-5.5257E+00
-6.2334E+00	4.1625E+04	-6.1611E+00	4.1625E+04	-6.0301E+00	1.9980E+04	-5.9738E+00	2.1645E+04	-5.8434E+00	1.9980E+04	-5.7367E+00	2.1645E+04	-5.5531E+00
-6.2587E+00	4.1625E+04	-6.1866E+00	4.1625E+04	-6.0560E+00	1.9980E+04	-5.9998E+00	2.1645E+04	-5.8698E+00	1.9980E+04	-5.7634E+00	2.1645E+04	-5.5804E+00
-6.2839E+00	4.1625E+04	-6.2120E+00	4.1625E+04	-6.0817E+00	1.9980E+04	-6.0257E+00	2.1645E+04	-5.8961E+00	1.9980E+04	-5.7900E+00	2.1645E+04	-5.6076E+00
-6.3090E+00	4.1625E+04	-6.2373E+00	4.1625E+04	-6.1074E+00	1.9980E+04	-6.0516E+00	2.1645E+04	-5.9223E+00	1.9980E+04	-5.8166E+00	2.1645E+04	-5.6347E+00
-6.3340E+00	4.1625E+04	-6.2626E+00	4.1625E+04	-6.1330E+00	1.9980E+04	-6.0774E+00	2.1645E+04	-5.9485E+00	1.9980E+04	-5.8430E+00	2.1645E+04	-5.6617E+00
-6.3590E+00	4.1625E+04	-6.2878E+00	4.1625E+04	-6.1586E+00	1.9980E+04	-6.1031E+00	2.1645E+04	-5.9746E+00	1.9980E+04	-5.8694E+00	2.1645E+04	-5.6886E+00
-6.3839E+00	4.1625E+04	-6.3129E+00	4.1625E+04	-6.1841E+00	1.9980E+04	-6.1287E+00	2.1645E+04	-6.0006E+00	1.9980E+04	-5.8957E+00	2.1645E+04	-5.7155E+00
-6.4088E+00	4.1625E+04	-6.3379E+00	4.1625E+04	-6.2095E+00	1.9980E+04	-6.1543E+00	2.1645E+04	-6.0265E+00	1.9980E+04	-5.9220E+00	2.1645E+04	-5.7423E+00
-6.4336E+00	4.1625E+04	-6.3629E+00	4.1625E+04	-6.2348E+00	1.9980E+04	-6.1797E+00	2.1645E+04	-6.0524E+00	1.9980E+04	-5.9481E+00	2.1645E+04	-5.7690E+00
-6.4583E+00	4.1625E+04	-6.3878E+00	4.1625E+04	-6.2601E+00	1.9980E+04	-6.2052E+00	2.1645E+04	-6.0781E+00	1.9980E+04	-5.9742E+00	2.1645E+04	-5.7956E+00
-6.4829E+00	4.1625E+04	-6.4126E+00	4.1625E+04	-6.2852E+00	1.9980E+04	-6.2305E+00	2.1645E+04	-6.1038E+00	1.9980E+04	-6.0002E+00	2.1645E+04	-5.8221E+00
-6.5075E+00	4.1625E+04	-6.4374E+00	4.1625E+04	-6.3104E+00	1.9980E+04	-6.2558E+00	2.1645E+04	-6.1295E+00	1.9980E+04	-6.0261E+00	2.1645E+04	-5.8486E+00
-6.5320E+00	4.1625E+04	-6.4621E+00	4.1625E+04	-6.3354E+00	1.9980E+04	-6.2810E+00	2.1645E+04	-6.1550E+00	1.9980E+04	-6.0520E+00	2.1645E+04	-5.8749E+00
-6.5565E+00	4.1625E+04	-6.4868E+00	4.1625E+04	-6.3604E+00	1.9980E+04	-6.3061E+00	2.1645E+04	-6.1805E+00	1.9980E+04	-6.0777E+00	2.1645E+04	-5.9012E+00
-6.5809E+00	4.1625E+04	-6.5113E+00	4.1625E+04	-6.3853E+00	1.9980E+04	-6.3312E+00	2.1645E+04	-6.2059E+00	1.9980E+04	-6.1035E+00	2.1645E+04	-5.9275E+00
-6.6052E+00	4.1625E+04	-6.5358E+00	4.1625E+04	-6.4102E+00	1.9980E+04	-6.3562E+00	2.1645E+04	-6.2313E+00	1.9980E+04	-6.1291E+00	2.1645E+04	-5.9536E+00
-6.6295E+00	4.1625E+04	-6.5603E+00	4.1625E+04	-6.4349E+00	1.9980E+04	-6.3811E+00	2.1645E+04	-6.2565E+00	1.9980E+04	-6.1546E+00	2.1645E+04	-5.9797E+00
-6.6537E+00	4.1625E+04	-6.5847E+00	4.1625E+04	-6.4597E+00	1.9980E+04	-6.4059E+00	2.1645E+04	-6.2817E+00	1.9980E+04	-6.1801E+00	2.1645E+04	-6.0056E+00
-6.6778E+00	4.1625E+04	-6.6090E+00	4.1625E+04	-6.4843E+00	1.9980E+04	-6.4307E+00	2.1645E+04	-6.3069E+00	1.9980E+04	-6.2055E+00	2.1645E+04	-6.0316E+00
-6.7019E+00	4.1625E+04	-6.6332E+00	4.1625E+04	-6.5089E+00	1.9980E+04	-6.4555E+00	2.1645E+04	-6.3319E+00	1.9980E+04	-6.2309E+00	2.1645E+04	-6.0574E+00
-6.7259E+00	4.1625E+04	-6.6574E+00	4.1625E+04	-6.5334E+00	1.9980E+04	-6.4801E+00	2.1645E+04	-6.3569E+00	1.9980E+04	-6.2561E+00	2.1645E+04	-6.0832E+00
-6.7498E+00	4.1625E+04	-6.6815E+00	4.1625E+04	-6.5578E+00	1.9980E+04	-6.5047E+00	2.1645E+04	-6.3818E+00	1.9980E+04	-6.2813E+00	2.1645E+04	-6.1088E+00
-6.7737E+00	4.1625E+04	-6.7056E+00	4.1625E+04	-6.5822E+00	1.9980E+04	-6.5292E+00	2.1645E+04	-6.4067E+00	1.9980E+04	-6.3065E+00	2.1645E+04	-6.1345E+00
-6.7976E+00	4.1625E+04	-6.7296E+00	4.1625E+04	-6.6065E+00	1.9980E+04	-6.5537E+00	2.1645E+04	-6.4315E+00	1.9980E+04	-6.3315E+00	2.1645E+04	-6.1600E+00

Arg 7	Curve 7	Arg 8	Curve 8	Arg 9	Curve 9	Arg 10	Curve 10	Arg 11	Curve 11	Arg 12	Curve 12	Arg 13
-6.8213E+00	4.1625E+04	-6.7536E+00	4.1625E+04	-6.6308E+00	1.9980E+04	-6.5781E+00	2.1645E+04	-6.4562E+00	1.9980E+04	-6.3565E+00	2.1645E+04	-6.1855E+00
-6.8450E+00	4.1625E+04	-6.7774E+00	4.1625E+04	-6.6550E+00	1.9980E+04	-6.6024E+00	2.1645E+04	-6.4809E+00	1.9980E+04	-6.3815E+00	2.1645E+04	-6.2109E+00
-6.8687E+00	4.1625E+04	-6.8012E+00	4.1625E+04	-6.6791E+00	1.9980E+04	-6.6267E+00	2.1645E+04	-6.5054E+00	1.9980E+04	-6.4063E+00	2.1645E+04	-6.2362E+00
-6.8923E+00	4.1625E+04	-6.8250E+00	4.1625E+04	-6.7032E+00	1.9980E+04	-6.6509E+00	2.1645E+04	-6.5300E+00	1.9980E+04	-6.4311E+00	2.1645E+04	-6.2614E+00
-6.9158E+00	4.1625E+04	-6.8487E+00	4.1625E+04	-6.7272E+00	1.9980E+04	-6.6750E+00	2.1645E+04	-6.5544E+00	1.9980E+04	-6.4558E+00	2.1645E+04	-6.2866E+00
-6.9393E+00	4.1625E+04	-6.8723E+00	4.1625E+04	-6.7512E+00	1.9980E+04	-6.6991E+00	2.1645E+04	-6.5788E+00	1.9980E+04	-6.4805E+00	2.1645E+04	-6.3117E+00
-6.9627E+00	4.1625E+04	-6.8959E+00	4.1625E+04	-6.7750E+00	1.9980E+04	-6.7231E+00	2.1645E+04	-6.6031E+00	1.9980E+04	-6.5051E+00	2.1645E+04	-6.3368E+00
-6.9861E+00	4.1625E+04	-6.9195E+00	4.1625E+04	-6.7989E+00	1.9980E+04	-6.7471E+00	2.1645E+04	-6.6274E+00	1.9980E+04	-6.5296E+00	2.1645E+04	-6.3618E+00
-7.0094E+00	4.1625E+04	-6.9429E+00	4.1625E+04	-6.8226E+00	1.9980E+04	-6.7710E+00	2.1645E+04	-6.6516E+00	1.9980E+04	-6.5541E+00	2.1645E+04	-6.3867E+00
-7.0326E+00	4.1625E+04	-6.9663E+00	4.1625E+04	-6.8463E+00	1.9980E+04	-6.7948E+00	2.1645E+04	-6.6758E+00	1.9980E+04	-6.5785E+00	2.1645E+04	-6.4115E+00
-7.0558E+00	4.1625E+04	-6.9897E+00	4.1625E+04	-6.8700E+00	1.9980E+04	-6.8186E+00	2.1645E+04	-6.6998E+00	1.9980E+04	-6.6028E+00	2.1645E+04	-6.4363E+00
-7.0789E+00	4.1625E+04	-7.0130E+00	4.1625E+04	-6.8936E+00	1.9980E+04	-6.8423E+00	2.1645E+04	-6.7239E+00	1.9980E+04	-6.6271E+00	2.1645E+04	-6.4610E+00
-7.1020E+00	4.1625E+04	-7.0362E+00	4.1625E+04	-6.9171E+00	1.9980E+04	-6.8660E+00	2.1645E+04	-6.7478E+00	1.9980E+04	-6.6513E+00	2.1645E+04	-6.4857E+00
-7.1250E+00	4.1625E+04	-7.0594E+00	4.1625E+04	-6.9406E+00	1.9980E+04	-6.8896E+00	2.1645E+04	-6.7717E+00	1.9980E+04	-6.6754E+00	2.1645E+04	-6.5102E+00
-7.1480E+00	4.1625E+04	-7.0825E+00	4.1625E+04	-6.9640E+00	1.9980E+04	-6.9131E+00	2.1645E+04	-6.7955E+00	1.9980E+04	-6.6995E+00	2.1645E+04	-6.5347E+00
-7.1709E+00	4.1625E+04	-7.1056E+00	4.1625E+04	-6.9873E+00	1.9980E+04	-6.9366E+00	2.1645E+04	-6.8193E+00	1.9980E+04	-6.7235E+00	2.1645E+04	-6.5592E+00
-7.1937E+00	4.1625E+04	-7.1286E+00	4.1625E+04	-7.0106E+00	1.9980E+04	-6.9600E+00	2.1645E+04	-6.8430E+00	1.9980E+04	-6.7475E+00	2.1645E+04	-6.5836E+00
-7.2166E+00	4.1625E+04	-7.1515E+00	4.1625E+04	-7.0339E+00	1.9980E+04	-6.9834E+00	2.1645E+04	-6.8667E+00	1.9980E+04	-6.7713E+00	2.1645E+04	-6.6079E+00
-7.2393E+00	4.1625E+04	-7.1744E+00	4.1625E+04	-7.0571E+00	1.9980E+04	-7.0067E+00	2.1645E+04	-6.8903E+00	1.9980E+04	-6.7952E+00	2.1645E+04	-6.6321E+00
-7.2620E+00	4.1625E+04	-7.1973E+00	4.1625E+04	-7.0802E+00	1.9980E+04	-7.0299E+00	2.1645E+04	-6.9138E+00	1.9980E+04	-6.8190E+00	2.1645E+04	-6.6563E+00
-7.2846E+00	4.1625E+04	-7.2201E+00	4.1625E+04	-7.1033E+00	1.9980E+04	-7.0531E+00	2.1645E+04	-6.9373E+00	1.9980E+04	-6.8427E+00	2.1645E+04	-6.6805E+00
-7.3072E+00	4.1625E+04	-7.2428E+00	4.1625E+04	-7.1263E+00	1.9980E+04	-7.0763E+00	2.1645E+04	-6.9607E+00	1.9980E+04	-6.8663E+00	2.1645E+04	-6.7045E+00
-7.3298E+00	4.1625E+04	-7.2655E+00	4.1625E+04	-7.1492E+00	1.9980E+04	-7.0993E+00	2.1645E+04	-6.9841E+00	1.9980E+04	-6.8899E+00	2.1645E+04	-6.7285E+00
-7.3523E+00	4.1625E+04	-7.2881E+00	4.1625E+04	-7.1722E+00	1.9980E+04	-7.1224E+00	2.1645E+04	-7.0074E+00	1.9980E+04	-6.9135E+00	2.1645E+04	-6.7525E+00
-7.3747E+00	4.1625E+04	-7.3107E+00	4.1625E+04	-7.1950E+00	1.9980E+04	-7.1453E+00	2.1645E+04	-7.0306E+00	1.9980E+04	-6.9369E+00	2.1645E+04	-6.7764E+00
-7.3971E+00	4.1625E+04	-7.3333E+00	4.1625E+04	-7.2178E+00	1.9980E+04	-7.1683E+00	2.1645E+04	-7.0538E+00	1.9980E+04	-6.9604E+00	2.1645E+04	-6.8002E+00
-7.4194E+00	4.1625E+04	-7.3557E+00	4.1625E+04	-7.2406E+00	1.9980E+04	-7.1911E+00	2.1645E+04	-7.0770E+00	1.9980E+04	-6.9837E+00	2.1645E+04	-6.8239E+00
-7.4417E+00	4.1625E+04	-7.3782E+00	4.1625E+04	-7.2632E+00	1.9980E+04	-7.2139E+00	2.1645E+04	-7.1000E+00	1.9980E+04	-7.0070E+00	2.1645E+04	-6.8476E+00
-7.4639E+00	4.1625E+04	-7.4005E+00	4.1625E+04	-7.2859E+00	1.9980E+04	-7.2367E+00	2.1645E+04	-7.1231E+00	1.9980E+04	-7.0303E+00	2.1645E+04	-6.8713E+00
-7.4861E+00	4.1625E+04	-7.4229E+00	4.1625E+04	-7.3085E+00	1.9980E+04	-7.2594E+00	2.1645E+04	-7.1460E+00	1.9980E+04	-7.0535E+00	2.1645E+04	-6.8949E+00
-7.5082E+00	4.1625E+04	-7.4451E+00	4.1625E+04	-7.3310E+00	1.9980E+04	-7.2820E+00	2.1645E+04	-7.1689E+00	1.9980E+04	-7.0766E+00	2.1645E+04	-6.9184E+00
-7.5303E+00	4.1625E+04	-7.4674E+00	4.1625E+04	-7.3535E+00	1.9980E+04	-7.3046E+00	2.1645E+04	-7.1918E+00	1.9980E+04	-7.0997E+00	2.1645E+04	-6.9419E+00
-7.5523E+00	4.1625E+04	-7.4895E+00	4.1625E+04	-7.3759E+00	1.9980E+04	-7.3272E+00	2.1645E+04	-7.2146E+00	1.9980E+04	-7.1227E+00	2.1645E+04	-6.9653E+00
-7.5743E+00	4.1625E+04	-7.5117E+00	4.1625E+04	-7.3983E+00	1.9980E+04	-7.3497E+00	2.1645E+04	-7.2374E+00	1.9980E+04	-7.1457E+00	2.1645E+04	-6.9886E+00
-7.5963E+00	4.1625E+04	-7.5337E+00	4.1625E+04	-7.4206E+00	1.9980E+04	-7.3721E+00	2.1645E+04	-7.2601E+00	1.9980E+04	-7.1686E+00	2.1645E+04	-7.0119E+00
-7.6181E+00	4.1625E+04	-7.5558E+00	4.1625E+04	-7.4429E+00	1.9980E+04	-7.3945E+00	2.1645E+04	-7.2827E+00	1.9980E+04	-7.1915E+00	2.1645E+04	-7.0352E+00
-7.6400E+00	4.1625E+04	-7.5777E+00	4.1625E+04	-7.4651E+00	1.9980E+04	-7.4168E+00	2.1645E+04	-7.3053E+00	1.9980E+04	-7.2143E+00	2.1645E+04	-7.0583E+00
-7.6618E+00	4.1625E+04	-7.5997E+00	4.1625E+04	-7.4873E+00	1.9980E+04	-7.4391E+00	2.1645E+04	-7.3279E+00	1.9980E+04	-7.2370E+00	2.1645E+04	-7.0815E+00
-7.6835E+00	4.1625E+04	-7.6215E+00	4.1625E+04	-7.5094E+00	1.9980E+04	-7.4614E+00	2.1645E+04	-7.3503E+00	1.9980E+04	-7.2597E+00	2.1645E+04	-7.1045E+00
-7.7052E+00	4.1625E+04	-7.6434E+00	4.1625E+04	-7.5315E+00	1.9980E+04	-7.4835E+00	2.1645E+04	-7.3728E+00	1.9980E+04	-7.2824E+00	2.1645E+04	-7.1275E+00
-7.7269E+00	4.1625E+04	-7.6652E+00	4.1625E+04	-7.5536E+00	1.9980E+04	-7.5057E+00	2.1645E+04	-7.3952E+00	1.9980E+04	-7.3050E+00	2.1645E+04	-7.1505E+00
-7.7485E+00	4.1625E+04	-7.6869E+00	4.1625E+04	-7.5755E+00	1.9980E+04	-7.5278E+00	2.1645E+04	-7.4175E+00	1.9980E+04	-7.3275E+00	2.1645E+04	-7.1734E+00
-7.7700E+00	4.1625E+04	-7.7086E+00	4.1625E+04	-7.5975E+00	1.9980E+04	-7.5498E+00	2.1645E+04	-7.4398E+00	1.9980E+04	-7.3500E+00	2.1645E+04	-7.1963E+00
-7.7915E+00	4.1625E+04	-7.7302E+00	4.1625E+04	-7.6194E+00	1.9980E+04	-7.5718E+00	2.1645E+04	-7.4620E+00	1.9980E+04	-7.3724E+00	2.1645E+04	-7.2191E+00
-7.8130E+00	4.1625E+04	-7.7518E+00	4.1625E+04	-7.6412E+00	1.9980E+04	-7.5937E+00	2.1645E+04	-7.4842E+00	1.9980E+04	-7.3948E+00	2.1645E+04	-7.2418E+00
-7.8344E+00	4.1625E+04	-7.7734E+00	4.1625E+04	-7.6630E+00	1.9980E+04	-7.6156E+00	2.1645E+04	-7.5063E+00	1.9980E+04	-7.4172E+00	2.1645E+04	-7.2645E+00
-7.8558E+00	4.1625E+04	-7.7949E+00	4.1625E+04	-7.6847E+00	1.9980E+04	-7.6375E+00	2.1645E+04	-7.5284E+00	1.9980E+04	-7.4395E+00	2.1645E+04	-7.2871E+00
-7.8771E+00	4.1625E+04	-7.8163E+00	4.1625E+04	-7.7064E+00	1.9980E+04	-7.6593E+00	2.1645E+04	-7.5505E+00	1.9980E+04	-7.4617E+00	2.1645E+04	-7.3097E+00
-7.8984E+00	4.1625E+04	-7.8377E+00	4.1625E+04	-7.7281E+00	1.9980E+04	-7.6810E+00	2.1645E+04	-7.5725E+00	1.9980E+04	-7.4839E+00	2.1645E+04	-7.3322E+00
-7.9196E+00	4.1625E+04	-7.8591E+00	4.1625E+04	-7.7497E+00	1.9980E+04	-7.7027E+00	2.1645E+04	-7.5944E+00	1.9980E+04	-7.5060E+00	2.1645E+04	-7.3547E+00
-7.9408E+00	4.1625E+04	-7.8804E+00	4.1625E+04	-7.7712E+00	1.9980E+04	-7.7244E+00	2.1645E+04	-7.6163E+00	1.9980E+04	-7.5281E+00	2.1645E+04	-7.3772E+00
-7.9620E+00	4.1625E+04	-7.9017E+00	4.1625E+04	-7.7927E+00	1.9980E+04	-7.7460E+00	2.1645E+04	-7.6381E+00	1.9980E+04	-7.5501E+00	2.1645E+04	-7.3995E+00

Arg 7	Curve 7	Arg 8	Curve 8	Arg 9	Curve 9	Arg 10	Curve 10	Arg 11	Curve 11	Arg 12	Curve 12	Arg 13
-7.9831E+00	4.1625E+04	-7.9229E+00	4.1625E+04	-7.8142E+00	1.9980E+04	-7.7675E+00	2.1645E+04	-7.6599E+00	1.9980E+04	-7.5721E+00	2.1645E+04	-7.4219E+00
-8.0042E+00	4.1625E+04	-7.9441E+00	4.1625E+04	-7.8356E+00	1.9980E+04	-7.7891E+00	2.1645E+04	-7.6817E+00	1.9980E+04	-7.5941E+00	2.1645E+04	-7.4441E+00
-8.0252E+00	4.1625E+04	-7.9653E+00	4.1625E+04	-7.8570E+00	1.9980E+04	-7.8105E+00	2.1645E+04	-7.7034E+00	1.9980E+04	-7.6160E+00	2.1645E+04	-7.4664E+00
-8.0462E+00	4.1625E+04	-7.9864E+00	4.1625E+04	-7.8783E+00	1.9980E+04	-7.8320E+00	2.1645E+04	-7.7250E+00	1.9980E+04	-7.6378E+00	2.1645E+04	-7.4885E+00
-8.0671E+00	4.1625E+04	-8.0074E+00	4.1625E+04	-7.8996E+00	1.9980E+04	-7.8533E+00	2.1645E+04	-7.7466E+00	1.9980E+04	-7.6596E+00	2.1645E+04	-7.5107E+00
-8.0880E+00	4.1625E+04	-8.0284E+00	4.1625E+04	-7.9208E+00	1.9980E+04	-7.8747E+00	2.1645E+04	-7.7682E+00	1.9980E+04	-7.6813E+00	2.1645E+04	-7.5327E+00
-8.1088E+00	4.1625E+04	-8.0494E+00	4.1625E+04	-7.9420E+00	1.9980E+04	-7.8960E+00	2.1645E+04	-7.7897E+00	1.9980E+04	-7.7031E+00	2.1645E+04	-7.5548E+00
-8.1296E+00	4.1625E+04	-8.0703E+00	4.1625E+04	-7.9632E+00	1.9980E+04	-7.9172E+00	2.1645E+04	-7.8112E+00	1.9980E+04	-7.7247E+00	2.1645E+04	-7.5767E+00
-8.1504E+00	4.1625E+04	-8.0912E+00	4.1625E+04	-7.9843E+00	1.9980E+04	-7.9384E+00	2.1645E+04	-7.8326E+00	1.9980E+04	-7.7463E+00	2.1645E+04	-7.5987E+00
-8.1711E+00	4.1625E+04	-8.1121E+00	4.1625E+04	-8.0053E+00	1.9980E+04	-7.9596E+00	2.1645E+04	-7.8540E+00	1.9980E+04	-7.7679E+00	2.1645E+04	-7.6206E+00
-8.1918E+00	4.1625E+04	-8.1329E+00	4.1625E+04	-8.0263E+00	1.9980E+04	-7.9807E+00	2.1645E+04	-7.8753E+00	1.9980E+04	-7.7894E+00	2.1645E+04	-7.6424E+00
-8.2124E+00	4.1625E+04	-8.1536E+00	4.1625E+04	-8.0473E+00	1.9980E+04	-8.0017E+00	2.1645E+04	-7.8966E+00	1.9980E+04	-7.8109E+00	2.1645E+04	-7.6642E+00
-8.2330E+00	4.1625E+04	-8.1743E+00	4.1625E+04	-8.0682E+00	1.9980E+04	-8.0228E+00	2.1645E+04	-7.9178E+00	1.9980E+04	-7.8323E+00	2.1645E+04	-7.6859E+00
-8.2536E+00	4.1625E+04	-8.1950E+00	4.1625E+04	-8.0891E+00	1.9980E+04	-8.0437E+00	2.1645E+04	-7.9390E+00	1.9980E+04	-7.8537E+00	2.1645E+04	-7.7076E+00
-8.2741E+00	4.1625E+04	-8.2156E+00	4.1625E+04	-8.1100E+00	1.9980E+04	-8.0647E+00	2.1645E+04	-7.9602E+00	1.9980E+04	-7.8750E+00	2.1645E+04	-7.7292E+00
-8.2946E+00	4.1625E+04	-8.2362E+00	4.1625E+04	-8.1308E+00	1.9980E+04	-8.0856E+00	2.1645E+04	-7.9813E+00	1.9980E+04	-7.8963E+00	2.1645E+04	-7.7508E+00
-8.3150E+00	4.1625E+04	-8.2568E+00	4.1625E+04	-8.1515E+00	1.9980E+04	-8.1064E+00	2.1645E+04	-8.0024E+00	1.9980E+04	-7.9175E+00	2.1645E+04	-7.7724E+00
-8.3354E+00	4.1625E+04	-8.2773E+00	4.1625E+04	-8.1723E+00	1.9980E+04	-8.1272E+00	2.1645E+04	-8.0234E+00	1.9980E+04	-7.9387E+00	2.1645E+04	-7.7939E+00
-8.3558E+00	4.1625E+04	-8.2978E+00	4.1625E+04	-8.1929E+00	1.9980E+04	-8.1480E+00	2.1645E+04	-8.0444E+00	1.9980E+04	-7.9599E+00	2.1645E+04	-7.8154E+00
-8.3761E+00	4.1625E+04	-8.3182E+00	4.1625E+04	-8.2136E+00	1.9980E+04	-8.1687E+00	2.1645E+04	-8.0653E+00	1.9980E+04	-7.9810E+00	2.1645E+04	-7.8368E+00
-8.3964E+00	4.1625E+04	-8.3386E+00	4.1625E+04	-8.2342E+00	1.9980E+04	-8.1894E+00	2.1645E+04	-8.0862E+00	1.9980E+04	-8.0021E+00	2.1645E+04	-7.8581E+00
-8.4166E+00	4.1625E+04	-8.3589E+00	4.1625E+04	-8.2547E+00	1.9980E+04	-8.2101E+00	2.1645E+04	-8.1071E+00	1.9980E+04	-8.0231E+00	2.1645E+04	-7.8795E+00
-8.4368E+00	4.1625E+04	-8.3793E+00	4.1625E+04	-8.2752E+00	1.9980E+04	-8.2307E+00	2.1645E+04	-8.1279E+00	1.9980E+04	-8.0441E+00	2.1645E+04	-7.9007E+00
-8.4570E+00	4.1625E+04	-8.3995E+00	4.1625E+04	-8.2957E+00	1.9980E+04	-8.2512E+00	2.1645E+04	-8.1486E+00	1.9980E+04	-8.0650E+00	2.1645E+04	-7.9220E+00
-8.4771E+00	4.1625E+04	-8.4198E+00	4.1625E+04	-8.3162E+00	1.9980E+04	-8.2718E+00	2.1645E+04	-8.1694E+00	1.9980E+04	-8.0859E+00	2.1645E+04	-7.9432E+00
-8.4972E+00	4.1625E+04	-8.4400E+00	4.1625E+04	-8.3366E+00	1.9980E+04	-8.2922E+00	2.1645E+04	-8.1900E+00	1.9980E+04	-8.1067E+00	2.1645E+04	-7.9643E+00
-8.5172E+00	4.1625E+04	-8.4601E+00	4.1625E+04	-8.3569E+00	1.9980E+04	-8.3127E+00	2.1645E+04	-8.2107E+00	1.9980E+04	-8.1276E+00	2.1645E+04	-7.9854E+00
-8.5373E+00	4.1625E+04	-8.4802E+00	4.1625E+04	-8.3772E+00	1.9980E+04	-8.3331E+00	2.1645E+04	-8.2313E+00	1.9980E+04	-8.1483E+00	2.1645E+04	-8.0065E+00
-8.5572E+00	4.1625E+04	-8.5003E+00	4.1625E+04	-8.3975E+00	1.9980E+04	-8.3535E+00	2.1645E+04	-8.2519E+00	1.9980E+04	-8.1691E+00	2.1645E+04	-8.0275E+00
-8.5772E+00	4.1625E+04	-8.5203E+00	4.1625E+04	-8.4177E+00	1.9980E+04	-8.3738E+00	2.1645E+04	-8.2724E+00	1.9980E+04	-8.1897E+00	2.1645E+04	-8.0485E+00
-8.5971E+00	4.1625E+04	-8.5404E+00	4.1625E+04	-8.4379E+00	1.9980E+04	-8.3941E+00	2.1645E+04	-8.2929E+00	1.9980E+04	-8.2104E+00	2.1645E+04	-8.0694E+00
-8.6169E+00	4.1625E+04	-8.5603E+00	4.1625E+04	-8.4581E+00	1.9980E+04	-8.4143E+00	2.1645E+04	-8.3133E+00	1.9980E+04	-8.2310E+00	2.1645E+04	-8.0903E+00
-8.6367E+00	4.1625E+04	-8.5802E+00	4.1625E+04	-8.4782E+00	1.9980E+04	-8.4345E+00	2.1645E+04	-8.3337E+00	1.9980E+04	-8.2515E+00	2.1645E+04	-8.1111E+00
-8.6565E+00	4.1625E+04	-8.6001E+00	4.1625E+04	-8.4983E+00	1.9980E+04	-8.4547E+00	2.1645E+04	-8.3541E+00	1.9980E+04	-8.2721E+00	2.1645E+04	-8.1319E+00
-8.6763E+00	4.1625E+04	-8.6200E+00	4.1625E+04	-8.5183E+00	1.9980E+04	-8.4748E+00	2.1645E+04	-8.3744E+00	1.9980E+04	-8.2926E+00	2.1645E+04	-8.1527E+00
-8.6960E+00	4.1625E+04	-8.6398E+00	4.1625E+04	-8.5384E+00	1.9980E+04	-8.4949E+00	2.1645E+04	-8.3947E+00	1.9980E+04	-8.3130E+00	2.1645E+04	-8.1734E+00
-8.7157E+00	4.1625E+04	-8.6596E+00	4.1625E+04	-8.5583E+00	1.9980E+04	-8.5149E+00	2.1645E+04	-8.4149E+00	1.9980E+04	-8.3334E+00	2.1645E+04	-8.1941E+00
-8.7353E+00	4.1625E+04	-8.6793E+00	4.1625E+04	-8.5783E+00	1.9980E+04	-8.5350E+00	2.1645E+04	-8.4351E+00	1.9980E+04	-8.3538E+00	2.1645E+04	-8.2147E+00
-8.7549E+00	4.1625E+04	-8.6990E+00	4.1625E+04	-8.5981E+00	1.9980E+04	-8.5549E+00	2.1645E+04	-8.4553E+00	1.9980E+04	-8.3741E+00	2.1645E+04	-8.2353E+00
-8.7745E+00	4.1625E+04	-8.7187E+00	4.1625E+04	-8.6180E+00	1.9980E+04	-8.5749E+00	2.1645E+04	-8.4754E+00	1.9980E+04	-8.3944E+00	2.1645E+04	-8.2559E+00
-8.7940E+00	4.1625E+04	-8.7383E+00	4.1625E+04	-8.6378E+00	1.9980E+04	-8.5948E+00	2.1645E+04	-8.4955E+00	1.9980E+04	-8.4146E+00	2.1645E+04	-8.2764E+00
-8.8135E+00	4.1625E+04	-8.7579E+00	4.1625E+04	-8.6576E+00	1.9980E+04	-8.6146E+00	2.1645E+04	-8.5155E+00	1.9980E+04	-8.4348E+00	2.1645E+04	-8.2968E+00
-8.8330E+00	4.1625E+04	-8.7775E+00	4.1625E+04	-8.6774E+00	1.9980E+04	-8.6345E+00	2.1645E+04	-8.5356E+00	1.9980E+04	-8.4550E+00	2.1645E+04	-8.3173E+00
-8.8524E+00	4.1625E+04	-8.7970E+00	4.1625E+04	-8.6971E+00	1.9980E+04	-8.6543E+00	2.1645E+04	-8.5555E+00	1.9980E+04	-8.4751E+00	2.1645E+04	-8.3377E+00
-8.8718E+00	4.1625E+04	-8.8165E+00	4.1625E+04	-8.7167E+00	1.9980E+04	-8.6740E+00	2.1645E+04	-8.5755E+00	1.9980E+04	-8.4952E+00	2.1645E+04	-8.3580E+00
-8.8911E+00	4.1625E+04	-8.8360E+00	4.1625E+04	-8.7364E+00	1.9980E+04	-8.6937E+00	2.1645E+04	-8.5954E+00	1.9980E+04	-8.5152E+00	2.1645E+04	-8.3783E+00
-8.9105E+00	4.1625E+04	-8.8554E+00	4.1625E+04	-8.7560E+00	1.9980E+04	-8.7134E+00	2.1645E+04	-8.6152E+00	1.9980E+04	-8.5353E+00	2.1645E+04	-8.3986E+00
-8.9298E+00	4.1625E+04	-8.8748E+00	4.1625E+04	-8.7756E+00	1.9980E+04	-8.7330E+00	2.1645E+04	-8.6351E+00	1.9980E+04	-8.5552E+00	2.1645E+04	-8.4189E+00
-8.9490E+00	4.1625E+04	-8.8941E+00	4.1625E+04	-8.7951E+00	1.9980E+04	-8.7527E+00	2.1645E+04	-8.6548E+00	1.9980E+04	-8.5752E+00	2.1645E+04	-8.4390E+00
-8.9682E+00	4.1625E+04	-8.9135E+00	4.1625E+04	-8.8146E+00	1.9980E+04	-8.7722E+00	2.1645E+04	-8.6746E+00	1.9980E+04	-8.5951E+00	2.1645E+04	-8.4592E+00
-8.9874E+00	4.1625E+04	-8.9327E+00	4.1625E+04	-8.8340E+00	1.9980E+04	-8.7918E+00	2.1645E+04	-8.6943E+00	1.9980E+04	-8.6149E+00	2.1645E+04	-8.4793E+00
-9.0066E+00	4.1625E+04	-8.9520E+00	4.1625E+04	-8.8535E+00	1.9980E+04	-8.8113E+00	2.1645E+04	-8.7140E+00	1.9980E+04	-8.6348E+00	2.1645E+04	-8.4994E+00

Arg 7	Curve 7	Arg 8	Curve 8	Arg 9	Curve 9	Arg 10	Curve 10	Arg 11	Curve 11	Arg 12	Curve 12	Arg 13
-9.0257E+00	4.1625E+04	-8.9712E+00	4.1625E+04	-8.8729E+00	1.9980E+04	-8.8307E+00	2.1645E+04	-8.7336E+00	1.9980E+04	-8.6545E+00	2.1645E+04	-8.5194E+00
-9.0448E+00	4.1625E+04	-8.9904E+00	4.1625E+04	-8.8922E+00	1.9980E+04	-8.8502E+00	2.1645E+04	-8.7532E+00	1.9980E+04	-8.6743E+00	2.1645E+04	-8.5395E+00
-9.0638E+00	4.1625E+04	-9.0095E+00	4.1625E+04	-8.9115E+00	1.9980E+04	-8.8696E+00	2.1645E+04	-8.7728E+00	1.9980E+04	-8.6940E+00	2.1645E+04	-8.5594E+00
-9.0829E+00	4.1625E+04	-9.0287E+00	4.1625E+04	-8.9308E+00	1.9980E+04	-8.8889E+00	2.1645E+04	-8.7924E+00	1.9980E+04	-8.7137E+00	2.1645E+04	-8.5793E+00
-9.1019E+00	4.1625E+04	-9.0477E+00	4.1625E+04	-8.9501E+00	1.9980E+04	-8.9083E+00	2.1645E+04	-8.8119E+00	1.9980E+04	-8.7333E+00	2.1645E+04	-8.5992E+00
-9.1208E+00	4.1625E+04	-9.0668E+00	4.1625E+04	-8.9693E+00	1.9980E+04	-8.9275E+00	2.1645E+04	-8.8313E+00	1.9980E+04	-8.7529E+00	2.1645E+04	-8.6191E+00
-9.1397E+00	4.1625E+04	-9.0858E+00	4.1625E+04	-8.9885E+00	1.9980E+04	-8.9468E+00	2.1645E+04	-8.8507E+00	1.9980E+04	-8.7725E+00	2.1645E+04	-8.6389E+00
-9.1586E+00	4.1625E+04	-9.1048E+00	4.1625E+04	-9.0076E+00	1.9980E+04	-8.9660E+00	2.1645E+04	-8.8701E+00	1.9980E+04	-8.7921E+00	2.1645E+04	-8.6587E+00
-9.1775E+00	4.1625E+04	-9.1237E+00	4.1625E+04	-9.0268E+00	1.9980E+04	-8.9852E+00	2.1645E+04	-8.8895E+00	1.9980E+04	-8.8116E+00	2.1645E+04	-8.6784E+00
-9.1963E+00	4.1625E+04	-9.1427E+00	4.1625E+04	-9.0458E+00	1.9980E+04	-9.0044E+00	2.1645E+04	-8.9088E+00	1.9980E+04	-8.8310E+00	2.1645E+04	-8.6982E+00
-9.2151E+00	4.1625E+04	-9.1615E+00	4.1625E+04	-9.0649E+00	1.9980E+04	-9.0235E+00	2.1645E+04	-8.9281E+00	1.9980E+04	-8.8505E+00	2.1645E+04	-8.7178E+00
-9.2339E+00	4.1625E+04	-9.1804E+00	4.1625E+04	-9.0839E+00	1.9980E+04	-9.0426E+00	2.1645E+04	-8.9474E+00	1.9980E+04	-8.8699E+00	2.1645E+04	-8.7375E+00
-9.2526E+00	4.1625E+04	-9.1992E+00	4.1625E+04	-9.1029E+00	1.9980E+04	-9.0617E+00	2.1645E+04	-8.9666E+00	1.9980E+04	-8.8892E+00	2.1645E+04	-8.7571E+00
-9.2713E+00	4.1625E+04	-9.2180E+00	4.1625E+04	-9.1218E+00	1.9980E+04	-9.0807E+00	2.1645E+04	-8.9858E+00	1.9980E+04	-8.9085E+00	2.1645E+04	-8.7766E+00
-9.2900E+00	4.1625E+04	-9.2368E+00	4.1625E+04	-9.1408E+00	1.9980E+04	-9.0997E+00	2.1645E+04	-9.0050E+00	1.9980E+04	-8.9278E+00	2.1645E+04	-8.7962E+00
-9.3086E+00	4.1625E+04	-9.2555E+00	4.1625E+04	-9.1597E+00	1.9980E+04	-9.1186E+00	2.1645E+04	-9.0241E+00	1.9980E+04	-8.9471E+00	2.1645E+04	-8.8156E+00
-9.3272E+00	4.1625E+04	-9.2742E+00	4.1625E+04	-9.1785E+00	1.9980E+04	-9.1376E+00	2.1645E+04	-9.0432E+00	1.9980E+04	-8.9663E+00	2.1645E+04	-8.8351E+00
-9.3458E+00	4.1625E+04	-9.2929E+00	4.1625E+04	-9.1973E+00	1.9980E+04	-9.1565E+00	2.1645E+04	-9.0622E+00	1.9980E+04	-8.9855E+00	2.1645E+04	-8.8545E+00
-9.3643E+00	4.1625E+04	-9.3115E+00	4.1625E+04	-9.2161E+00	1.9980E+04	-9.1753E+00	2.1645E+04	-9.0812E+00	1.9980E+04	-9.0047E+00	2.1645E+04	-8.8739E+00
-9.3828E+00	4.1625E+04	-9.3301E+00	4.1625E+04	-9.2349E+00	1.9980E+04	-9.1941E+00	2.1645E+04	-9.1002E+00	1.9980E+04	-9.0238E+00	2.1645E+04	-8.8933E+00
-9.4013E+00	4.1625E+04	-9.3487E+00	4.1625E+04	-9.2536E+00	1.9980E+04	-9.2129E+00	2.1645E+04	-9.1192E+00	1.9980E+04	-9.0429E+00	2.1645E+04	-8.9126E+00
-9.4198E+00	4.1625E+04	-9.3672E+00	4.1625E+04	-9.2723E+00	1.9980E+04	-9.2317E+00	2.1645E+04	-9.1381E+00	1.9980E+04	-9.0619E+00	2.1645E+04	-8.9319E+00
-9.4382E+00	4.1625E+04	-9.3857E+00	4.1625E+04	-9.2910E+00	1.9980E+04	-9.2504E+00	2.1645E+04	-9.1570E+00	1.9980E+04	-9.0810E+00	2.1645E+04	-8.9511E+00
-9.4566E+00	4.1625E+04	-9.4042E+00	4.1625E+04	-9.3096E+00	1.9980E+04	-9.2691E+00	2.1645E+04	-9.1759E+00	1.9980E+04	-9.1000E+00	2.1645E+04	-8.9704E+00
-9.4749E+00	4.1625E+04	-9.4226E+00	4.1625E+04	-9.3282E+00	1.9980E+04	-9.2878E+00	2.1645E+04	-9.1947E+00	1.9980E+04	-9.1189E+00	2.1645E+04	-8.9895E+00
-9.4933E+00	4.1625E+04	-9.4410E+00	4.1625E+04	-9.3468E+00	1.9980E+04	-9.3065E+00	2.1645E+04	-9.2135E+00	1.9980E+04	-9.1378E+00	2.1645E+04	-9.0087E+00
-9.5116E+00	4.1625E+04	-9.4594E+00	4.1625E+04	-9.3653E+00	1.9980E+04	-9.3251E+00	2.1645E+04	-9.2323E+00	1.9980E+04	-9.1567E+00	2.1645E+04	-9.0278E+00
-9.5299E+00	4.1625E+04	-9.4778E+00	4.1625E+04	-9.3839E+00	1.9980E+04	-9.3436E+00	2.1645E+04	-9.2510E+00	1.9980E+04	-9.1756E+00	2.1645E+04	-9.0469E+00
-9.5481E+00	4.1625E+04	-9.4961E+00	4.1625E+04	-9.4023E+00	1.9980E+04	-9.3622E+00	2.1645E+04	-9.2697E+00	1.9980E+04	-9.1944E+00	2.1645E+04	-9.0659E+00
-9.5663E+00	4.1625E+04	-9.5144E+00	4.1625E+04	-9.4208E+00	1.9980E+04	-9.3807E+00	2.1645E+04	-9.2884E+00	1.9980E+04	-9.2132E+00	2.1645E+04	-9.0850E+00
-9.5845E+00	4.1625E+04	-9.5327E+00	4.1625E+04	-9.4392E+00	1.9980E+04	-9.3992E+00	2.1645E+04	-9.3070E+00	1.9980E+04	-9.2320E+00	2.1645E+04	-9.1039E+00
-9.6027E+00	4.1625E+04	-9.5509E+00	4.1625E+04	-9.4576E+00	1.9980E+04	-9.4176E+00	2.1645E+04	-9.3256E+00	1.9980E+04	-9.2507E+00	2.1645E+04	-9.1229E+00
-9.6208E+00	4.1625E+04	-9.5691E+00	4.1625E+04	-9.4760E+00	1.9980E+04	-9.4361E+00	2.1645E+04	-9.3442E+00	1.9980E+04	-9.2694E+00	2.1645E+04	-9.1418E+00
-9.6389E+00	4.1625E+04	-9.5873E+00	4.1625E+04	-9.4943E+00	1.9980E+04	-9.4545E+00	2.1645E+04	-9.3627E+00	1.9980E+04	-9.2881E+00	2.1645E+04	-9.1607E+00
-9.6569E+00	4.1625E+04	-9.6055E+00	4.1625E+04	-9.5126E+00	1.9980E+04	-9.4728E+00	2.1645E+04	-9.3813E+00	1.9980E+04	-9.3067E+00	2.1645E+04	-9.1796E+00
-9.6750E+00	4.1625E+04	-9.6236E+00	4.1625E+04	-9.5309E+00	1.9980E+04	-9.4912E+00	2.1645E+04	-9.3997E+00	1.9980E+04	-9.3253E+00	2.1645E+04	-9.1984E+00
-9.6930E+00	4.1625E+04	-9.6417E+00	4.1625E+04	-9.5491E+00	1.9980E+04	-9.5095E+00	2.1645E+04	-9.4182E+00	1.9980E+04	-9.3439E+00	2.1645E+04	-9.2172E+00
-9.7110E+00	4.1625E+04	-9.6597E+00	4.1625E+04	-9.5673E+00	1.9980E+04	-9.5278E+00	2.1645E+04	-9.4366E+00	1.9980E+04	-9.3625E+00	2.1645E+04	-9.2359E+00
-9.7289E+00	4.1625E+04	-9.6778E+00	4.1625E+04	-9.5855E+00	1.9980E+04	-9.5460E+00	2.1645E+04	-9.4550E+00	1.9980E+04	-9.3810E+00	2.1645E+04	-9.2547E+00
-9.7469E+00	4.1625E+04	-9.6958E+00	4.1625E+04	-9.6037E+00	1.9980E+04	-9.5642E+00	2.1645E+04	-9.4734E+00	1.9980E+04	-9.3995E+00	2.1645E+04	-9.2733E+00
-9.7648E+00	4.1625E+04	-9.7138E+00	4.1625E+04	-9.6218E+00	1.9980E+04	-9.5824E+00	2.1645E+04	-9.4917E+00	1.9980E+04	-9.4179E+00	2.1645E+04	-9.2920E+00
-9.7826E+00	4.1625E+04	-9.7317E+00	4.1625E+04	-9.6399E+00	1.9980E+04	-9.6006E+00	2.1645E+04	-9.5100E+00	1.9980E+04	-9.4364E+00	2.1645E+04	-9.3106E+00
-9.8005E+00	4.1625E+04	-9.7496E+00	4.1625E+04	-9.6579E+00	1.9980E+04	-9.6187E+00	2.1645E+04	-9.5283E+00	1.9980E+04	-9.4547E+00	2.1645E+04	-9.3292E+00
-9.8183E+00	4.1625E+04	-9.7675E+00	4.1625E+04	-9.6760E+00	1.9980E+04	-9.6368E+00	2.1645E+04	-9.5465E+00	1.9980E+04	-9.4731E+00	2.1645E+04	-9.3478E+00
-9.8361E+00	4.1625E+04	-9.7854E+00	4.1625E+04	-9.6940E+00	1.9980E+04	-9.6549E+00	2.1645E+04	-9.5648E+00	1.9980E+04	-9.4914E+00	2.1645E+04	-9.3664E+00
-9.8539E+00	4.1625E+04	-9.8033E+00	4.1625E+04	-9.7120E+00	1.9980E+04	-9.6729E+00	2.1645E+04	-9.5830E+00	1.9980E+04	-9.5098E+00	2.1645E+04	-9.3849E+00
-9.8716E+00	4.1625E+04	-9.8211E+00	4.1625E+04	-9.7299E+00	1.9980E+04	-9.6909E+00	2.1645E+04	-9.6011E+00	1.9980E+04	-9.5280E+00	2.1645E+04	-9.4033E+00
-9.8893E+00	4.1625E+04	-9.8389E+00	4.1625E+04	-9.7479E+00	1.9980E+04	-9.7089E+00	2.1645E+04	-9.6192E+00	1.9980E+04	-9.5463E+00	2.1645E+04	-9.4218E+00
-9.9070E+00	4.1625E+04	-9.8566E+00	4.1625E+04	-9.7658E+00	1.9980E+04	-9.7269E+00	2.1645E+04	-9.6373E+00	1.9980E+04	-9.5645E+00	2.1645E+04	-9.4402E+00
-9.9246E+00	4.1625E+04	-9.8743E+00	4.1625E+04	-9.7836E+00	1.9980E+04	-9.7448E+00	2.1645E+04	-9.6554E+00	1.9980E+04	-9.5827E+00	2.1645E+04	-9.4586E+00
-9.9423E+00	4.1625E+04	-9.8920E+00	4.1625E+04	-9.8015E+00	1.9980E+04	-9.7627E+00	2.1645E+04	-9.6735E+00	1.9980E+04	-9.6008E+00	2.1645E+04	-9.4770E+00
-9.9599E+00	4.1625E+04	-9.9097E+00	4.1625E+04	-9.8193E+00	1.9980E+04	-9.7806E+00	2.1645E+04	-9.6915E+00	1.9980E+04	-9.6190E+00	2.1645E+04	-9.4953E+00

Arg 7	Curve 7	Arg 8	Curve 8	Arg 9	Curve 9	Arg 10	Curve 10	Arg 11	Curve 11	Arg 12	Curve 12	Arg 13
-9.9774E+00	4.1625E+04	-9.9274E+00	4.1625E+04	-9.8371E+00	1.9980E+04	-9.7984E+00	2.1645E+04	-9.7095E+00	1.9980E+04	-9.6371E+00	2.1645E+04	-9.5136E+00
-9.9950E+00	4.1625E+04	-9.9450E+00	4.1625E+04	-9.8548E+00	1.9980E+04	-9.8163E+00	2.1645E+04	-9.7274E+00	1.9980E+04	-9.6551E+00	2.1645E+04	-9.5319E+00
-1.0013E+01	4.1625E+04	-9.9626E+00	4.1625E+04	-9.8726E+00	1.9980E+04	-9.8341E+00	2.1645E+04	-9.7453E+00	1.9980E+04	-9.6732E+00	2.1645E+04	-9.5501E+00
-1.0030E+01	4.1625E+04	-9.9802E+00	4.1625E+04	-9.8903E+00	1.9980E+04	-9.8518E+00	2.1645E+04	-9.7633E+00	1.9980E+04	-9.6912E+00	2.1645E+04	-9.5683E+00
-1.0047E+01	4.1625E+04	-9.9977E+00	4.1625E+04	-9.9080E+00	1.9980E+04	-9.8696E+00	2.1645E+04	-9.7811E+00	1.9980E+04	-9.7092E+00	2.1645E+04	-9.5865E+00
-1.0065E+01	4.1625E+04	-1.0015E+01	4.1625E+04	-9.9256E+00	1.9980E+04	-9.8873E+00	2.1645E+04	-9.7990E+00	1.9980E+04	-9.7271E+00	2.1645E+04	-9.6046E+00
-1.0082E+01	4.1625E+04	-1.0033E+01	4.1625E+04	-9.9432E+00	1.9980E+04	-9.9050E+00	2.1645E+04	-9.8168E+00	1.9980E+04	-9.7451E+00	2.1645E+04	-9.6228E+00
-1.0100E+01	4.1625E+04	-1.0050E+01	4.1625E+04	-9.9608E+00	1.9980E+04	-9.9226E+00	2.1645E+04	-9.8346E+00	1.9980E+04	-9.7630E+00	2.1645E+04	-9.6409E+00
-1.0117E+01	4.1625E+04	-1.0068E+01	4.1625E+04	-9.9784E+00	1.9980E+04	-9.9402E+00	2.1645E+04	-9.8524E+00	1.9980E+04	-9.7809E+00	2.1645E+04	-9.6589E+00
-1.0134E+01	4.1625E+04	-1.0085E+01	4.1625E+04	-9.9960E+00	1.9980E+04	-9.9578E+00	2.1645E+04	-9.8701E+00	1.9980E+04	-9.7987E+00	2.1645E+04	-9.6770E+00
-1.0152E+01	4.1625E+04	-1.0102E+01	4.1625E+04	-1.0013E+01	1.9980E+04	-9.9754E+00	2.1645E+04	-9.8878E+00	1.9980E+04	-9.8165E+00	2.1645E+04	-9.6950E+00
-1.0169E+01	4.1625E+04	-1.0120E+01	4.1625E+04	-1.0031E+01	1.9980E+04	-9.9930E+00	2.1645E+04	-9.9055E+00	1.9980E+04	-9.8343E+00	2.1645E+04	-9.7130E+00
-1.0186E+01	4.1625E+04	-1.0137E+01	4.1625E+04	-1.0048E+01	1.9980E+04	-1.0010E+01	2.1645E+04	-9.9231E+00	1.9980E+04	-9.8521E+00	2.1645E+04	-9.7309E+00
-1.0204E+01	4.1625E+04	-1.0154E+01	4.1625E+04	-1.0066E+01	1.9980E+04	-1.0028E+01	2.1645E+04	-9.9408E+00	1.9980E+04	-9.8698E+00	2.1645E+04	-9.7488E+00
-1.0221E+01	4.1625E+04	-1.0172E+01	4.1625E+04	-1.0083E+01	1.9980E+04	-1.0045E+01	2.1645E+04	-9.9584E+00	1.9980E+04	-9.8875E+00	2.1645E+04	-9.7667E+00
-1.0238E+01	4.1625E+04	-1.0189E+01	4.1625E+04	-1.0101E+01	1.9980E+04	-1.0063E+01	2.1645E+04	-9.9759E+00	1.9980E+04	-9.9052E+00	2.1645E+04	-9.7846E+00
-1.0255E+01	4.1625E+04	-1.0206E+01	4.1625E+04	-1.0118E+01	1.9980E+04	-1.0080E+01	2.1645E+04	-9.9935E+00	1.9980E+04	-9.9229E+00	2.1645E+04	-9.8025E+00
-1.0272E+01	4.1625E+04	-1.0223E+01	4.1625E+04	-1.0135E+01	1.9980E+04	-1.0098E+01	2.1645E+04	-1.0011E+01	1.9980E+04	-9.9405E+00	2.1645E+04	-9.8203E+00
-1.0289E+01	4.1625E+04	-1.0241E+01	4.1625E+04	-1.0153E+01	1.9980E+04	-1.0115E+01	2.1645E+04	-1.0029E+01	1.9980E+04	-9.9581E+00	2.1645E+04	-9.8381E+00
-1.0306E+01	4.1625E+04	-1.0258E+01	4.1625E+04	-1.0170E+01	1.9980E+04	-1.0132E+01	2.1645E+04	-1.0046E+01	1.9980E+04	-9.9757E+00	2.1645E+04	-9.8558E+00
-1.0324E+01	4.1625E+04	-1.0275E+01	4.1625E+04	-1.0187E+01	1.9980E+04	-1.0150E+01	2.1645E+04	-1.0063E+01	1.9980E+04	-9.9932E+00	2.1645E+04	-9.8735E+00
-1.0341E+01	4.1625E+04	-1.0292E+01	4.1625E+04	-1.0204E+01	1.9980E+04	-1.0167E+01	2.1645E+04	-1.0081E+01	1.9980E+04	-1.0011E+01	2.1645E+04	-9.8912E+00
-1.0358E+01	4.1625E+04	-1.0309E+01	4.1625E+04	-1.0222E+01	1.9980E+04	-1.0184E+01	2.1645E+04	-1.0098E+01	1.9980E+04	-1.0028E+01	2.1645E+04	-9.9089E+00
-1.0375E+01	4.1625E+04	-1.0326E+01	4.1625E+04	-1.0239E+01	1.9980E+04	-1.0202E+01	2.1645E+04	-1.0116E+01	1.9980E+04	-1.0046E+01	2.1645E+04	-9.9266E+00
-1.0392E+01	4.1625E+04	-1.0343E+01	4.1625E+04	-1.0256E+01	1.9980E+04	-1.0219E+01	2.1645E+04	-1.0133E+01	1.9980E+04	-1.0063E+01	2.1645E+04	-9.9442E+00
-1.0408E+01	4.1625E+04	-1.0360E+01	4.1625E+04	-1.0273E+01	1.9980E+04	-1.0236E+01	2.1645E+04	-1.0150E+01	1.9980E+04	-1.0081E+01	2.1645E+04	-9.9618E+00
-1.0425E+01	4.1625E+04	-1.0377E+01	4.1625E+04	-1.0290E+01	1.9980E+04	-1.0253E+01	2.1645E+04	-1.0168E+01	1.9980E+04	-1.0098E+01	2.1645E+04	-9.9794E+00
-1.0442E+01	4.1625E+04	-1.0394E+01	4.1625E+04	-1.0307E+01	1.9980E+04	-1.0270E+01	2.1645E+04	-1.0185E+01	1.9980E+04	-1.0115E+01	2.1645E+04	-9.9969E+00
-1.0459E+01	4.1625E+04	-1.0411E+01	4.1625E+04	-1.0324E+01	1.9980E+04	-1.0287E+01	2.1645E+04	-1.0202E+01	1.9980E+04	-1.0133E+01	2.1645E+04	-1.0014E+01
-1.0476E+01	4.1625E+04	-1.0428E+01	4.1625E+04	-1.0341E+01	1.9980E+04	-1.0304E+01	2.1645E+04	-1.0219E+01	1.9980E+04	-1.0150E+01	2.1645E+04	-1.0032E+01
-1.0493E+01	4.1625E+04	-1.0445E+01	4.1625E+04	-1.0359E+01	1.9980E+04	-1.0322E+01	2.1645E+04	-1.0236E+01	1.9980E+04	-1.0167E+01	2.1645E+04	-1.0049E+01
-1.0510E+01	4.1625E+04	-1.0462E+01	4.1625E+04	-1.0376E+01	1.9980E+04	-1.0339E+01	2.1645E+04	-1.0254E+01	1.9980E+04	-1.0185E+01	2.1645E+04	-1.0067E+01
-1.0526E+01	4.1625E+04	-1.0479E+01	4.1625E+04	-1.0392E+01	1.9980E+04	-1.0356E+01	2.1645E+04	-1.0271E+01	1.9980E+04	-1.0202E+01	2.1645E+04	-1.0084E+01

Curve 13	Arg 14	Curve 14	Arg 15	Curve 15	Arg 16	Curve 16	Arg 17	Curve 17	Arg 18	Curve 18	Arg 19	Curve 19
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00

Curve 13	Arg 14	Curve 14	Arg 15	Curve 15	Arg 16	Curve 16	Arg 17	Curve 17	Arg 18	Curve 18	Arg 19	Curve 19
0.0000E+00	6.4095E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	4.5229E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	3.6670E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	3.1493E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	2.7918E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	2.5250E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	2.3156E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	2.1451E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	2.0026E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	1.8809E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	1.7753E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	1.6823E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	1.5996E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	1.5253E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	1.4580E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	1.3965E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	1.3402E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	1.2881E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	1.2399E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	1.1949E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	1.1529E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	1.1134E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	1.0763E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	1.0412E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	1.0081E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	9.7656E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	9.4661E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.1091E-12	9.1807E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
5.5456E-12	8.9082E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
2.8837E-11	8.6474E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.5528E-10	8.3976E+00	0.0000E+00	6.8077E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
7.5753E-10	8.1579E+00	0.0000E+00	4.6617E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
3.4072E-09	7.9275E+00	0.0000E+00	3.7428E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.4232E-08	7.7057E+00	0.0000E+00	3.1988E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
5.5439E-08	7.4920E+00	0.0000E+00	2.8274E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
2.0220E-07	7.2859E+00	0.0000E+00	2.5523E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
6.9319E-07	7.0867E+00	0.0000E+00	2.3374E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
2.2413E-06	6.8942E+00	0.0000E+00	2.1631E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
6.8570E-06	6.7078E+00	0.0000E+00	2.0178E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9909E-05	6.5272E+00	0.0000E+00	1.8940E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
5.5015E-05	6.3521E+00	0.0000E+00	1.7867E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.4505E-04	6.1821E+00	0.0000E+00	1.6925E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
3.6579E-04	6.0170E+00	0.0000E+00	1.6087E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
8.8429E-04	5.8565E+00	1.2015E-12	1.5335E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
2.0536E-03	5.7004E+00	8.4108E-12	1.4654E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
4.5906E-03	5.5483E+00	4.6860E-11	1.4033E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
9.8957E-03	5.4002E+00	2.4031E-10	1.3464E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
2.0606E-02	5.2558E+00	1.1499E-09	1.2939E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
4.1518E-02	5.1150E+00	5.0873E-09	1.2452E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
8.1062E-02	4.9775E+00	2.0918E-08	1.1999E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.5359E-01	4.8432E+00	8.0279E-08	1.1576E+01	0.0000E+00	9.1988E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
2.8281E-01	4.7120E+00	2.8875E-07	1.1178E+01	0.0000E+00	5.2789E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00

Curve 13	Arg 14	Curve 14	Arg 15	Curve 15	Arg 16	Curve 16	Arg 17	Curve 17	Arg 18	Curve 18	Arg 19	Curve 19
5.0667E-01	4.5838E+00	9.7693E-07	1.0805E+01	0.0000E+00	4.0532E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
8.8432E-01	4.4583E+00	3.1197E-06	1.0452E+01	0.0000E+00	3.3941E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.5053E+00	4.3355E+00	9.4329E-06	1.0118E+01	0.0000E+00	2.9651E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
2.5018E+00	4.2153E+00	2.7086E-05	9.8010E+00	0.0000E+00	2.6563E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
4.0637E+00	4.0975E+00	7.4060E-05	9.4998E+00	0.0000E+00	2.4197E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
6.4575E+00	3.9821E+00	1.9332E-04	9.2128E+00	0.0000E+00	2.2305E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.0048E+01	3.8689E+00	4.8292E-04	8.9389E+00	0.0000E+00	2.0744E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.5323E+01	3.7580E+00	1.1570E-03	8.6768E+00	0.0000E+00	1.9425E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
2.2919E+01	3.6491E+00	2.6640E-03	8.4258E+00	0.0000E+00	1.8290E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
3.3651E+01	3.5422E+00	5.9067E-03	8.1850E+00	0.0000E+00	1.7297E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
4.8538E+01	3.4373E+00	1.2634E-02	7.9535E+00	0.0000E+00	1.6419E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
6.8824E+01	3.3343E+00	2.6115E-02	7.7308E+00	0.0000E+00	1.5634E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
9.6001E+01	3.2330E+00	5.2248E-02	7.5162E+00	0.0000E+00	1.4925E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.3182E+02	3.1335E+00	1.0133E-01	7.3092E+00	0.0000E+00	1.4281E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.7828E+02	3.0356E+00	1.9077E-01	7.1093E+00	0.0000E+00	1.3692E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
2.3764E+02	2.9394E+00	3.4911E-01	6.9160E+00	0.0000E+00	1.3149E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
3.1236E+02	2.8447E+00	6.2182E-01	6.7289E+00	0.0000E+00	1.2648E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
4.0511E+02	2.7515E+00	1.0792E+00	6.5477E+00	0.0000E+00	1.2181E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
5.1866E+02	2.6598E+00	1.8273E+00	6.3720E+00	0.0000E+00	1.1746E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
6.5586E+02	2.5696E+00	3.0213E+00	6.2014E+00	0.0000E+00	1.1338E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
8.1952E+02	2.4806E+00	4.8836E+00	6.0358E+00	0.0000E+00	1.0955E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.0123E+03	2.3930E+00	7.7240E+00	5.8748E+00	1.1091E-12	1.0594E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.2369E+03	2.3067E+00	1.1964E+01	5.7181E+00	6.6547E-12	1.0253E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.4952E+03	2.2217E+00	1.8166E+01	5.5656E+00	3.5492E-11	9.9289E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.7893E+03	2.1378E+00	2.7060E+01	5.4171E+00	1.8411E-10	9.6215E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
2.1204E+03	2.0551E+00	3.9574E+01	5.2723E+00	8.9062E-10	9.3289E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
2.4893E+03	1.9736E+00	5.6863E+01	5.1310E+00	3.9729E-09	9.0497E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
2.8962E+03	1.8931E+00	8.0334E+01	4.9931E+00	1.6469E-08	8.7829E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
3.3406E+03	1.8137E+00	1.1166E+02	4.8585E+00	6.3699E-08	8.5275E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
3.8214E+03	1.7354E+00	1.5281E+02	4.7270E+00	2.3079E-07	8.2825E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
4.3368E+03	1.6581E+00	2.0599E+02	4.5984E+00	7.8620E-07	8.0473E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
4.8843E+03	1.5817E+00	2.7372E+02	4.4726E+00	2.5269E-06	7.8211E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
5.4609E+03	1.5064E+00	3.5872E+02	4.3495E+00	7.6875E-06	7.6032E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
6.0631E+03	1.4319E+00	4.6389E+02	4.2290E+00	2.2202E-05	7.3932E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
6.6869E+03	1.3584E+00	5.9228E+02	4.1109E+00	6.1042E-05	7.1904E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
7.3280E+03	1.2857E+00	7.4696E+02	3.9952E+00	1.6017E-04	6.9945E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
7.9818E+03	1.2139E+00	9.3096E+02	3.8818E+00	4.0210E-04	6.8049E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
8.6436E+03	1.1430E+00	1.1472E+03	3.7706E+00	9.6788E-04	6.6213E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
9.3086E+03	1.0729E+00	1.3983E+03	3.6615E+00	2.2386E-03	6.4434E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
9.9722E+03	1.0035E+00	1.6866E+03	3.5544E+00	4.9846E-03	6.2707E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.0630E+04	9.3498E-01	2.0139E+03	3.4493E+00	1.0705E-02	6.1031E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.1277E+04	8.6719E-01	2.3815E+03	3.3460E+00	2.2213E-02	5.9402E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.1910E+04	8.0014E-01	2.7902E+03	3.2445E+00	4.4604E-02	5.7818E+00	3.6046E-12	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.2525E+04	7.3381E-01	3.2401E+03	3.1448E+00	8.6808E-02	5.6277E+00	1.9225E-11	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.3119E+04	6.6819E-01	3.7303E+03	3.0468E+00	1.6398E-01	5.4775E+00	1.0213E-10	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.3690E+04	6.0326E-01	4.2596E+03	2.9504E+00	3.0104E-01	5.3312E+00	5.1066E-10	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.4235E+04	5.3901E-01	4.8258E+03	2.8555E+00	5.3784E-01	5.1885E+00	2.3526E-09	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.4751E+04	4.7541E-01	5.4261E+03	2.7622E+00	9.3620E-01	5.0493E+00	1.0046E-08	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.5239E+04	4.1246E-01	6.0573E+03	2.6703E+00	1.5895E+00	4.9133E+00	3.9955E-08	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.5697E+04	3.5014E-01	6.7152E+03	2.5799E+00	2.6353E+00	4.7805E+00	1.4862E-07	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6125E+04	2.8843E-01	7.3955E+03	2.4908E+00	4.2706E+00	4.6507E+00	5.1901E-07	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6522E+04	2.2733E-01	8.0935E+03	2.4030E+00	6.7709E+00	4.5238E+00	1.7078E-06	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00

Curve 13	Arg 14	Curve 14	Arg 15	Curve 15	Arg 16	Curve 16	Arg 17	Curve 17	Arg 18	Curve 18	Arg 19	Curve 19
1.6890E+04	1.6682E-01	8.8041E+03	2.3166E+00	1.0513E+01	4.3996E+00	5.3118E-06	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.7228E+04	1.0688E-01	9.5223E+03	2.2314E+00	1.5999E+01	4.2781E+00	1.5666E-05	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.7537E+04	4.7511E-02	1.0243E+04	2.1474E+00	2.3882E+01	4.1590E+00	4.3936E-05	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.7819E+04	-1.1306E-02	1.0961E+04	2.0646E+00	3.4999E+01	4.0424E+00	1.1748E-04	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.8075E+04	-6.9582E-02	1.1671E+04	1.9829E+00	5.0390E+01	3.9281E+00	3.0024E-04	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.8306E+04	-1.2733E-01	1.2369E+04	1.9023E+00	7.1326E+01	3.8160E+00	7.3506E-04	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.8514E+04	-1.8455E-01	1.3051E+04	1.8228E+00	9.9323E+01	3.7060E+00	1.7277E-03	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.8700E+04	-2.4127E-01	1.3713E+04	1.7443E+00	1.3616E+02	3.5981E+00	3.9065E-03	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.8867E+04	-2.9748E-01	1.4351E+04	1.6669E+00	1.8386E+02	3.4922E+00	8.5132E-03	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9014E+04	-3.5321E-01	1.4963E+04	1.5905E+00	2.4472E+02	3.3881E+00	1.7912E-02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9145E+04	-4.0846E-01	1.5547E+04	1.5150E+00	3.2121E+02	3.2859E+00	3.6448E-02	2.6798E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9260E+04	-4.6323E-01	1.6100E+04	1.4404E+00	4.1601E+02	3.1855E+00	7.1839E-02	6.3164E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9361E+04	-5.1755E-01	1.6621E+04	1.3668E+00	5.3191E+02	3.0868E+00	1.3735E-01	4.4885E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9449E+04	-5.7141E-01	1.7110E+04	1.2940E+00	6.7175E+02	2.9897E+00	2.5508E-01	3.6480E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9527E+04	-6.2483E-01	1.7566E+04	1.2222E+00	8.3835E+02	2.8942E+00	4.6077E-01	3.1368E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9594E+04	-6.7781E-01	1.7990E+04	1.1511E+00	1.0344E+03	2.8003E+00	8.1053E-01	2.7827E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9652E+04	-7.3037E-01	1.8380E+04	1.0809E+00	1.2624E+03	2.7078E+00	1.3901E+00	2.5180E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9702E+04	-7.8250E-01	1.8740E+04	1.0115E+00	1.5244E+03	2.6168E+00	2.3270E+00	2.3100E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9745E+04	-8.3422E-01	1.9068E+04	9.4283E-01	1.8223E+03	2.5271E+00	3.8059E+00	2.1405E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9782E+04	-8.8554E-01	1.9368E+04	8.7495E-01	2.1574E+03	2.4389E+00	6.0879E+00	1.9987E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9813E+04	-9.3646E-01	1.9639E+04	8.0781E-01	2.5303E+03	2.3519E+00	9.5328E+00	1.8775E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9840E+04	-9.8699E-01	1.9884E+04	7.4140E-01	2.9412E+03	2.2662E+00	1.4625E+01	1.7723E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9863E+04	-1.0371E+00	2.0103E+04	6.7570E-01	3.3894E+03	2.1817E+00	2.2003E+01	1.6797E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9882E+04	-1.0869E+00	2.0300E+04	6.1069E-01	3.8739E+03	2.0984E+00	3.2488E+01	1.5973E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9899E+04	-1.1363E+00	2.0476E+04	5.4636E-01	4.3928E+03	2.0162E+00	4.7111E+01	1.5232E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9913E+04	-1.1853E+00	2.0631E+04	4.8269E-01	4.9435E+03	1.9352E+00	6.7145E+01	1.4560E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9924E+04	-1.2340E+00	2.0769E+04	4.1966E-01	5.5230E+03	1.8553E+00	9.4122E+01	1.3948E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9934E+04	-1.2823E+00	2.0890E+04	3.5727E-01	6.1277E+03	1.7764E+00	1.2985E+02	1.3385E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9942E+04	-1.3303E+00	2.0997E+04	2.9550E-01	6.7535E+03	1.6985E+00	1.7642E+02	1.2866E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9949E+04	-1.3779E+00	2.1090E+04	2.3433E-01	7.3962E+03	1.6217E+00	2.3619E+02	1.2385E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9954E+04	-1.4252E+00	2.1171E+04	1.7375E-01	8.0510E+03	1.5458E+00	3.1177E+02	1.1936E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9959E+04	-1.4722E+00	2.1241E+04	1.1374E-01	8.7134E+03	1.4709E+00	4.0598E+02	1.1517E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9963E+04	-1.5189E+00	2.1302E+04	5.4310E-02	9.3784E+03	1.3969E+00	5.2179E+02	1.1123E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9966E+04	-1.5652E+00	2.1354E+04	-4.5702E-03	1.0042E+04	1.3238E+00	6.6228E+02	1.0752E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9969E+04	-1.6112E+00	2.1400E+04	-6.2907E-02	1.0698E+04	1.2515E+00	8.3052E+02	1.0402E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9971E+04	-1.6569E+00	2.1438E+04	-1.2071E-01	1.1344E+04	1.1801E+00	1.0295E+03	1.0071E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9973E+04	-1.7023E+00	2.1471E+04	-1.7800E-01	1.1976E+04	1.1096E+00	1.2620E+03	9.7564E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9974E+04	-1.7474E+00	2.1499E+04	-2.3477E-01	1.2589E+04	1.0398E+00	1.5305E+03	9.4574E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9975E+04	-1.7922E+00	2.1523E+04	-2.9104E-01	1.3181E+04	9.7088E-01	1.8371E+03	9.1723E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9976E+04	-1.8367E+00	2.1543E+04	-3.4683E-01	1.3748E+04	9.0269E-01	2.1834E+03	8.9002E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9977E+04	-1.8810E+00	2.1561E+04	-4.0213E-01	1.4290E+04	8.3525E-01	2.5705E+03	8.6398E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9978E+04	-1.9249E+00	2.1575E+04	-4.5696E-01	1.4804E+04	7.6854E-01	2.9988E+03	8.3903E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9978E+04	-1.9686E+00	2.1587E+04	-5.1133E-01	1.5289E+04	7.0255E-01	3.4679E+03	8.1508E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9978E+04	-2.0120E+00	2.1597E+04	-5.6524E-01	1.5744E+04	6.3726E-01	3.9769E+03	7.9207E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9979E+04	-2.0551E+00	2.1606E+04	-6.1871E-01	1.6168E+04	5.7266E-01	4.5241E+03	7.6992E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9979E+04	-2.0980E+00	2.1613E+04	-6.7174E-01	1.6562E+04	5.0872E-01	5.1069E+03	7.4857E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9979E+04	-2.1406E+00	2.1618E+04	-7.2435E-01	1.6927E+04	4.4543E-01	5.7223E+03	7.2798E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9979E+04	-2.1829E+00	2.1623E+04	-7.7653E-01	1.7262E+04	3.8278E-01	6.3667E+03	7.0809E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-2.2250E+00	2.1627E+04	-8.2830E-01	1.7568E+04	3.2075E-01	7.0358E+03	6.8885E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-2.2668E+00	2.1631E+04	-8.7966E-01	1.7847E+04	2.5933E-01	7.7252E+03	6.7023E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-2.3084E+00	2.1633E+04	-9.3062E-01	1.8101E+04	1.9851E-01	8.4298E+03	6.5219E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-2.3498E+00	2.1635E+04	-9.8120E-01	1.8329E+04	1.3828E-01	9.1446E+03	6.3469E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00

Curve 13	Arg 14	Curve 14	Arg 15	Curve 15	Arg 16	Curve 16	Arg 17	Curve 17	Arg 18	Curve 18	Arg 19	Curve 19
1.9980E+04	-2.3909E+00	2.1637E+04	-1.0314E+00	1.8535E+04	7.8610E-02	9.8645E+03	6.1771E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-2.4318E+00	2.1639E+04	-1.0812E+00	1.8719E+04	1.9504E-02	1.0584E+04	6.0122E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-2.4724E+00	2.1640E+04	-1.1306E+00	1.8883E+04	-3.9054E-02	1.1299E+04	5.8518E+00	4.9953E-12	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-2.5128E+00	2.1641E+04	-1.1797E+00	1.9029E+04	-9.7076E-02	1.2004E+04	5.6958E+00	3.4967E-11	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-2.5530E+00	2.1642E+04	-1.2284E+00	1.9157E+04	-1.5457E-01	1.2695E+04	5.5438E+00	2.0481E-10	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-2.5929E+00	2.1642E+04	-1.2768E+00	1.9271E+04	-2.1155E-01	1.3368E+04	5.3958E+00	1.0490E-09	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-2.6327E+00	2.1643E+04	-1.3248E+00	1.9371E+04	-2.6803E-01	1.4019E+04	5.2516E+00	5.0053E-09	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-2.6722E+00	2.1643E+04	-1.3725E+00	1.9458E+04	-3.2401E-01	1.4645E+04	5.1108E+00	2.2089E-08	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-2.7115E+00	2.1644E+04	-1.4198E+00	1.9534E+04	-3.7951E-01	1.5244E+04	4.9734E+00	9.0630E-08	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-2.7506E+00	2.1644E+04	-1.4668E+00	1.9600E+04	-4.3454E-01	1.5813E+04	4.8393E+00	3.4714E-07	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-2.7895E+00	2.1644E+04	-1.5135E+00	1.9657E+04	-4.8909E-01	1.6351E+04	4.7081E+00	1.2462E-06	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-2.8281E+00	2.1644E+04	-1.5599E+00	1.9707E+04	-5.4319E-01	1.6857E+04	4.5800E+00	4.2089E-06	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-2.8666E+00	2.1645E+04	-1.6059E+00	1.9749E+04	-5.9684E-01	1.7331E+04	4.4546E+00	1.3418E-05	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-2.9049E+00	2.1645E+04	-1.6517E+00	1.9785E+04	-6.5005E-01	1.7771E+04	4.3318E+00	4.0507E-05	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-2.9429E+00	2.1645E+04	-1.6971E+00	1.9816E+04	-7.0283E-01	1.8179E+04	4.2117E+00	1.1614E-04	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-2.9808E+00	2.1645E+04	-1.7422E+00	1.9843E+04	-7.5518E-01	1.8555E+04	4.0940E+00	3.1710E-04	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-3.0185E+00	2.1645E+04	-1.7871E+00	1.9865E+04	-8.0712E-01	1.8900E+04	3.9787E+00	8.2662E-04	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-3.0559E+00	2.1645E+04	-1.8316E+00	1.9884E+04	-8.5865E-01	1.9214E+04	3.8656E+00	2.0623E-03	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-3.0932E+00	2.1645E+04	-1.8759E+00	1.9900E+04	-9.0978E-01	1.9500E+04	3.7547E+00	4.9347E-03	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-3.1303E+00	2.1645E+04	-1.9199E+00	1.9914E+04	-9.6051E-01	1.9758E+04	3.6459E+00	1.1349E-02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-3.1673E+00	2.1645E+04	-1.9636E+00	1.9925E+04	-1.0109E+00	1.9991E+04	3.5391E+00	2.5136E-02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-3.2040E+00	2.1645E+04	-2.0070E+00	1.9935E+04	-1.0608E+00	2.0200E+04	3.4342E+00	5.3709E-02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-3.2406E+00	2.1645E+04	-2.0501E+00	1.9943E+04	-1.1104E+00	2.0386E+04	3.3312E+00	1.1091E-01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-3.2769E+00	2.1645E+04	-2.0930E+00	1.9949E+04	-1.1596E+00	2.0552E+04	3.2300E+00	2.2167E-01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-3.3131E+00	2.1645E+04	-2.1357E+00	1.9955E+04	-1.2085E+00	2.0699E+04	3.1305E+00	4.2952E-01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-3.3492E+00	2.1645E+04	-2.1780E+00	1.9959E+04	-1.2570E+00	2.0828E+04	3.0327E+00	8.0794E-01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-3.3850E+00	2.1645E+04	-2.2202E+00	1.9963E+04	-1.3052E+00	2.0942E+04	2.9365E+00	1.4773E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-3.4207E+00	2.1645E+04	-2.2620E+00	1.9966E+04	-1.3530E+00	2.1042E+04	2.8419E+00	2.6292E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-3.4562E+00	2.1645E+04	-2.3037E+00	1.9969E+04	-1.4004E+00	2.1129E+04	2.7488E+00	4.5598E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-3.4916E+00	2.1645E+04	-2.3450E+00	1.9971E+04	-1.4476E+00	2.1205E+04	2.6571E+00	7.7148E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-3.5268E+00	2.1645E+04	-2.3862E+00	1.9973E+04	-1.4944E+00	2.1271E+04	2.5669E+00	1.2747E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-3.5618E+00	2.1645E+04	-2.4271E+00	1.9974E+04	-1.5409E+00	2.1328E+04	2.4780E+00	2.0591E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-3.5967E+00	2.1645E+04	-2.4677E+00	1.9975E+04	-1.5871E+00	2.1377E+04	2.3904E+00	3.2546E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-3.6314E+00	2.1645E+04	-2.5082E+00	1.9976E+04	-1.6329E+00	2.1419E+04	2.3042E+00	5.0382E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-3.6659E+00	2.1645E+04	-2.5484E+00	1.9977E+04	-1.6785E+00	2.1455E+04	2.2191E+00	7.6454E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-3.7003E+00	2.1645E+04	-2.5883E+00	1.9978E+04	-1.7238E+00	2.1485E+04	2.1353E+00	1.1382E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-3.7345E+00	2.1645E+04	-2.6281E+00	1.9978E+04	-1.7687E+00	2.1511E+04	2.0526E+00	1.6637E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-3.7686E+00	2.1645E+04	-2.6676E+00	1.9978E+04	-1.8134E+00	2.1533E+04	1.9711E+00	2.3892E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-3.8026E+00	2.1645E+04	-2.7070E+00	1.9979E+04	-1.8578E+00	2.1552E+04	1.8907E+00	3.3738E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-3.8364E+00	2.1645E+04	-2.7461E+00	1.9979E+04	-1.9019E+00	2.1568E+04	1.8114E+00	4.6872E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-3.8700E+00	2.1645E+04	-2.7850E+00	1.9979E+04	-1.9457E+00	2.1581E+04	1.7331E+00	6.4113E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-3.9035E+00	2.1645E+04	-2.8237E+00	1.9979E+04	-1.9892E+00	2.1592E+04	1.6558E+00	8.6391E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-3.9368E+00	2.1645E+04	-2.8622E+00	1.9980E+04	-2.0325E+00	2.1601E+04	1.5795E+00	1.1475E+03	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-3.9701E+00	2.1645E+04	-2.9005E+00	1.9980E+04	-2.0755E+00	2.1609E+04	1.5041E+00	1.5032E+03	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-4.0031E+00	2.1645E+04	-2.9386E+00	1.9980E+04	-2.1182E+00	2.1615E+04	1.4297E+00	1.9431E+03	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-4.0360E+00	2.1645E+04	-2.9764E+00	1.9980E+04	-2.1607E+00	2.1621E+04	1.3562E+00	2.4800E+03	7.5310E+01	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-4.0688E+00	2.1645E+04	-3.0141E+00	1.9980E+04	-2.2029E+00	2.1625E+04	1.2836E+00	3.1265E+03	4.8842E+01	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-4.1015E+00	2.1645E+04	-3.0516E+00	1.9980E+04	-2.2449E+00	2.1629E+04	1.2118E+00	3.8953E+03	3.8595E+01	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-4.1340E+00	2.1645E+04	-3.0890E+00	1.9980E+04	-2.2866E+00	2.1632E+04	1.1409E+00	4.7985E+03	3.2736E+01	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-4.1664E+00	2.1645E+04	-3.1261E+00	1.9980E+04	-2.3281E+00	2.1634E+04	1.0708E+00	5.8469E+03	2.8807E+01	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-4.1987E+00	2.1645E+04	-3.1630E+00	1.9980E+04	-2.3693E+00	2.1636E+04	1.0015E+00	7.0501E+03	2.5929E+01	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-4.2308E+00	2.1645E+04	-3.1998E+00	1.9980E+04	-2.4103E+00	2.1638E+04	9.3294E-01	8.4158E+03	2.3697E+01	0.0000E+00	0.0000E+00	0.0000E+00

Curve 13	Arg 14	Curve 14	Arg 15	Curve 15	Arg 16	Curve 16	Arg 17	Curve 17	Arg 18	Curve 18	Arg 19	Curve 19
1.9980E+04	-4.2628E+00	2.1645E+04	-3.2364E+00	1.9980E+04	-2.4511E+00	2.1639E+04	8.6517E-01	9.9494E+03	2.1896E+01	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-4.2946E+00	2.1645E+04	-3.2728E+00	1.9980E+04	-2.4916E+00	2.1640E+04	7.9814E-01	1.1654E+04	2.0401E+01	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-4.3264E+00	2.1645E+04	-3.3090E+00	1.9980E+04	-2.5319E+00	2.1641E+04	7.3183E-01	1.3529E+04	1.9132E+01	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-4.3580E+00	2.1645E+04	-3.3450E+00	1.9980E+04	-2.5720E+00	2.1642E+04	6.6623E-01	1.5572E+04	1.8034E+01	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-4.3895E+00	2.1645E+04	-3.3809E+00	1.9980E+04	-2.6118E+00	2.1643E+04	6.0132E-01	1.7777E+04	1.7072E+01	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-4.4208E+00	2.1645E+04	-3.4166E+00	1.9980E+04	-2.6515E+00	2.1643E+04	5.3709E-01	2.0136E+04	1.6219E+01	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-4.4521E+00	2.1645E+04	-3.4522E+00	1.9980E+04	-2.6909E+00	2.1644E+04	4.7351E-01	2.2636E+04	1.5453E+01	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-4.4832E+00	2.1645E+04	-3.4875E+00	1.9980E+04	-2.7301E+00	2.1644E+04	4.1058E-01	2.5263E+04	1.4762E+01	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-4.5142E+00	2.1645E+04	-3.5227E+00	1.9980E+04	-2.7691E+00	2.1644E+04	3.4828E-01	2.8001E+04	1.4132E+01	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-4.5451E+00	2.1645E+04	-3.5578E+00	1.9980E+04	-2.8078E+00	2.1644E+04	2.8659E-01	3.0832E+04	1.3555E+01	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-4.5758E+00	2.1645E+04	-3.5927E+00	1.9980E+04	-2.8464E+00	2.1644E+04	2.2551E-01	3.3736E+04	1.3023E+01	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-4.6065E+00	2.1645E+04	-3.6274E+00	1.9980E+04	-2.8848E+00	2.1645E+04	1.6501E-01	3.6691E+04	1.2530E+01	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-4.6370E+00	2.1645E+04	-3.6619E+00	1.9980E+04	-2.9230E+00	2.1645E+04	1.0509E-01	3.9678E+04	1.2072E+01	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-4.6674E+00	2.1645E+04	-3.6964E+00	1.9980E+04	-2.9609E+00	2.1645E+04	4.5738E-02	4.2673E+04	1.1644E+01	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-4.6978E+00	2.1645E+04	-3.7306E+00	1.9980E+04	-2.9987E+00	2.1645E+04	-1.3063E-02	4.5657E+04	1.1242E+01	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-4.7279E+00	2.1645E+04	-3.7647E+00	1.9980E+04	-3.0363E+00	2.1645E+04	-7.1322E-02	4.8608E+04	1.0865E+01	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-4.7580E+00	2.1645E+04	-3.7987E+00	1.9980E+04	-3.0737E+00	2.1645E+04	-1.2905E-01	5.1509E+04	1.0509E+01	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-4.7880E+00	2.1645E+04	-3.8325E+00	1.9980E+04	-3.1109E+00	2.1645E+04	-1.8626E-01	5.4342E+04	1.0172E+01	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-4.8179E+00	2.1645E+04	-3.8661E+00	1.9980E+04	-3.1479E+00	2.1645E+04	-2.4296E-01	5.7090E+04	9.8522E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-4.8476E+00	2.1645E+04	-3.8996E+00	1.9980E+04	-3.1847E+00	2.1645E+04	-2.9916E-01	5.9741E+04	9.5485E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-4.8773E+00	2.1645E+04	-3.9330E+00	1.9980E+04	-3.2214E+00	2.1645E+04	-3.5488E-01	6.2282E+04	9.2593E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-4.9068E+00	2.1645E+04	-3.9662E+00	1.9980E+04	-3.2579E+00	2.1645E+04	-4.1011E-01	6.4704E+04	8.9832E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-4.9363E+00	2.1645E+04	-3.9993E+00	1.9980E+04	-3.2942E+00	2.1645E+04	-4.6487E-01	6.7000E+04	8.7193E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-4.9656E+00	2.1645E+04	-4.0323E+00	1.9980E+04	-3.3303E+00	2.1645E+04	-5.1917E-01	6.9164E+04	8.4665E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-4.9948E+00	2.1645E+04	-4.0651E+00	1.9980E+04	-3.3662E+00	2.1645E+04	-5.7302E-01	7.1192E+04	8.2240E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-5.0240E+00	2.1645E+04	-4.0977E+00	1.9980E+04	-3.4020E+00	2.1645E+04	-6.2643E-01	7.3084E+04	7.9911E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-5.0530E+00	2.1645E+04	-4.1303E+00	1.9980E+04	-3.4376E+00	2.1645E+04	-6.7940E-01	7.4840E+04	7.7670E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-5.0819E+00	2.1645E+04	-4.1627E+00	1.9980E+04	-3.4730E+00	2.1645E+04	-7.3194E-01	7.6461E+04	7.5511E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-5.1107E+00	2.1645E+04	-4.1950E+00	1.9980E+04	-3.5083E+00	2.1645E+04	-7.8406E-01	7.7951E+04	7.3429E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-5.1395E+00	2.1645E+04	-4.2271E+00	1.9980E+04	-3.5434E+00	2.1645E+04	-8.3577E-01	7.9314E+04	7.1418E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-5.1681E+00	2.1645E+04	-4.2591E+00	1.9980E+04	-3.5784E+00	2.1645E+04	-8.8707E-01	8.0554E+04	6.9474E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-5.1966E+00	2.1645E+04	-4.2910E+00	1.9980E+04	-3.6132E+00	2.1645E+04	-9.3798E-01	8.1678E+04	6.7594E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-5.2251E+00	2.1645E+04	-4.3227E+00	1.9980E+04	-3.6478E+00	2.1645E+04	-9.8850E-01	8.2692E+04	6.5772E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-5.2534E+00	2.1645E+04	-4.3544E+00	1.9980E+04	-3.6823E+00	2.1645E+04	-1.0386E+00	8.3604E+04	6.4006E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-5.2817E+00	2.1645E+04	-4.3859E+00	1.9980E+04	-3.7166E+00	2.1645E+04	-1.0884E+00	8.4419E+04	6.2292E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-5.3098E+00	2.1645E+04	-4.4172E+00	1.9980E+04	-3.7508E+00	2.1645E+04	-1.1378E+00	8.5146E+04	6.0628E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-5.3379E+00	2.1645E+04	-4.4485E+00	1.9980E+04	-3.7848E+00	2.1645E+04	-1.1868E+00	8.5791E+04	5.9010E+00	2.9886E-11	0.0000E+00	0.0000E+00
1.9980E+04	-5.3658E+00	2.1645E+04	-4.4796E+00	1.9980E+04	-3.8186E+00	2.1645E+04	-1.2355E+00	8.6361E+04	5.7437E+00	1.1954E-10	0.0000E+00	0.0000E+00
1.9980E+04	-5.3937E+00	2.1645E+04	-4.5106E+00	1.9980E+04	-3.8524E+00	2.1645E+04	-1.2838E+00	8.6863E+04	5.5905E+00	7.1726E-10	0.0000E+00	0.0000E+00
1.9980E+04	-5.4215E+00	2.1645E+04	-4.5415E+00	1.9980E+04	-3.8859E+00	2.1645E+04	-1.3317E+00	8.7303E+04	5.4413E+00	3.7955E-09	0.0000E+00	0.0000E+00
1.9980E+04	-5.4492E+00	2.1645E+04	-4.5723E+00	1.9980E+04	-3.9194E+00	2.1645E+04	-1.3794E+00	8.7688E+04	5.2959E+00	1.8619E-08	0.0000E+00	0.0000E+00
1.9980E+04	-5.4768E+00	2.1645E+04	-4.6030E+00	1.9980E+04	-3.9526E+00	2.1645E+04	-1.4267E+00	8.8024E+04	5.1541E+00	8.4069E-08	0.0000E+00	0.0000E+00
1.9980E+04	-5.5043E+00	2.1645E+04	-4.6335E+00	1.9980E+04	-3.9858E+00	2.1645E+04	-1.4736E+00	8.8315E+04	5.0157E+00	3.5268E-07	0.0000E+00	0.0000E+00
1.9980E+04	-5.5318E+00	2.1645E+04	-4.6640E+00	1.9980E+04	-4.0188E+00	2.1645E+04	-1.5202E+00	8.8567E+04	4.8805E+00	1.3794E-06	0.0000E+00	0.0000E+00
1.9980E+04	-5.5591E+00	2.1645E+04	-4.6943E+00	1.9980E+04	-4.0516E+00	2.1645E+04	-1.5666E+00	8.8785E+04	4.7485E+00	5.0505E-06	0.0000E+00	0.0000E+00
1.9980E+04	-5.5864E+00	2.1645E+04	-4.7245E+00	1.9980E+04	-4.0844E+00	2.1645E+04	-1.6126E+00	8.8971E+04	4.6194E+00	1.7377E-05	0.0000E+00	0.0000E+00
1.9980E+04	-5.6135E+00	2.1645E+04	-4.7546E+00	1.9980E+04	-4.1170E+00	2.1645E+04	-1.6583E+00	8.9131E+04	4.4931E+00	5.6376E-05	0.0000E+00	0.0000E+00
1.9980E+04	-5.6406E+00	2.1645E+04	-4.7846E+00	1.9980E+04	-4.1494E+00	2.1645E+04	-1.7037E+00	8.9268E+04	4.3696E+00	1.7304E-04	0.0000E+00	0.0000E+00
1.9980E+04	-5.6676E+00	2.1645E+04	-4.8144E+00	1.9980E+04	-4.1817E+00	2.1645E+04	-1.7487E+00	8.9385E+04	4.2487E+00	5.0395E-04	0.0000E+00	0.0000E+00
1.9980E+04	-5.6946E+00	2.1645E+04	-4.8442E+00	1.9980E+04	-4.2139E+00	2.1645E+04	-1.7935E+00	8.9483E+04	4.1302E+00	1.3966E-03	0.0000E+00	0.0000E+00
1.9980E+04	-5.7214E+00	2.1645E+04	-4.8739E+00	1.9980E+04	-4.2460E+00	2.1645E+04	-1.8381E+00	8.9567E+04	4.0142E+00	3.6923E-03	0.0000E+00	0.0000E+00
1.9980E+04	-5.7482E+00	2.1645E+04	-4.9034E+00	1.9980E+04	-4.2779E+00	2.1645E+04	-1.8823E+00	8.9638E+04	3.9004E+00	9.3356E-03	0.0000E+00	0.0000E+00

Curve 13	Arg 14	Curve 14	Arg 15	Curve 15	Arg 16	Curve 16	Arg 17	Curve 17	Arg 18	Curve 18	Arg 19	Curve 19
1.9980E+04	-5.7748E+00	2.1645E+04	-4.9329E+00	1.9980E+04	-4.3097E+00	2.1645E+04	-1.9262E+00	8.9697E+04	3.7888E+00	2.2625E-02	0.0000E+00	0.0000E+00
1.9980E+04	-5.8014E+00	2.1645E+04	-4.9622E+00	1.9980E+04	-4.3414E+00	2.1645E+04	-1.9699E+00	8.9747E+04	3.6794E+00	5.2666E-02	0.0000E+00	0.0000E+00
1.9980E+04	-5.8279E+00	2.1645E+04	-4.9915E+00	1.9980E+04	-4.3730E+00	2.1645E+04	-2.0133E+00	8.9789E+04	3.5720E+00	1.1799E-01	0.0000E+00	0.0000E+00
1.9980E+04	-5.8544E+00	2.1645E+04	-5.0206E+00	1.9980E+04	-4.4044E+00	2.1645E+04	-2.0564E+00	8.9824E+04	3.4665E+00	2.5489E-01	0.0000E+00	0.0000E+00
1.9980E+04	-5.8807E+00	2.1645E+04	-5.0496E+00	1.9980E+04	-4.4357E+00	2.1645E+04	-2.0992E+00	8.9853E+04	3.3629E+00	5.3184E-01	0.0000E+00	0.0000E+00
1.9980E+04	-5.9070E+00	2.1645E+04	-5.0786E+00	1.9980E+04	-4.4669E+00	2.1645E+04	-2.1418E+00	8.9877E+04	3.2612E+00	1.0736E+00	0.0000E+00	0.0000E+00
1.9980E+04	-5.9332E+00	2.1645E+04	-5.1074E+00	1.9980E+04	-4.4979E+00	2.1645E+04	-2.1842E+00	8.9897E+04	3.1612E+00	2.1001E+00	0.0000E+00	0.0000E+00
1.9980E+04	-5.9593E+00	2.1645E+04	-5.1362E+00	1.9980E+04	-4.5289E+00	2.1645E+04	-2.2263E+00	8.9913E+04	3.0628E+00	3.9862E+00	0.0000E+00	0.0000E+00
1.9980E+04	-5.9854E+00	2.1645E+04	-5.1648E+00	1.9980E+04	-4.5597E+00	2.1645E+04	-2.2681E+00	8.9927E+04	2.9662E+00	7.3521E+00	0.0000E+00	0.0000E+00
1.9980E+04	-6.0113E+00	2.1645E+04	-5.1934E+00	1.9980E+04	-4.5904E+00	2.1645E+04	-2.3097E+00	8.9938E+04	2.8711E+00	1.3193E+01	0.0000E+00	0.0000E+00
1.9980E+04	-6.0372E+00	2.1645E+04	-5.2218E+00	1.9980E+04	-4.6210E+00	2.1645E+04	-2.3510E+00	8.9947E+04	2.7775E+00	2.3062E+01	0.0000E+00	0.0000E+00
1.9980E+04	-6.0631E+00	2.1645E+04	-5.2502E+00	1.9980E+04	-4.6515E+00	2.1645E+04	-2.3921E+00	8.9955E+04	2.6854E+00	3.9314E+01	0.0000E+00	0.0000E+00
1.9980E+04	-6.0888E+00	2.1645E+04	-5.2784E+00	1.9980E+04	-4.6819E+00	2.1645E+04	-2.4330E+00	8.9961E+04	2.5947E+00	6.5431E+01	0.0000E+00	0.0000E+00
1.9980E+04	-6.1145E+00	2.1645E+04	-5.3066E+00	1.9980E+04	-4.7121E+00	2.1645E+04	-2.4736E+00	8.9966E+04	2.5054E+00	1.0642E+02	0.0000E+00	0.0000E+00
1.9980E+04	-6.1401E+00	2.1645E+04	-5.3346E+00	1.9980E+04	-4.7423E+00	2.1645E+04	-2.5140E+00	8.9970E+04	2.4174E+00	1.6933E+02	0.0000E+00	0.0000E+00
1.9980E+04	-6.1656E+00	2.1645E+04	-5.3626E+00	1.9980E+04	-4.7723E+00	2.1645E+04	-2.5542E+00	8.9974E+04	2.3308E+00	2.6381E+02	0.0000E+00	0.0000E+00
1.9980E+04	-6.1911E+00	2.1645E+04	-5.3905E+00	1.9980E+04	-4.8022E+00	2.1645E+04	-2.5941E+00	8.9976E+04	2.2454E+00	4.0277E+02	0.0000E+00	0.0000E+00
1.9980E+04	-6.2164E+00	2.1645E+04	-5.4183E+00	1.9980E+04	-4.8320E+00	2.1645E+04	-2.6339E+00	8.9978E+04	2.1612E+00	6.0314E+02	0.0000E+00	0.0000E+00
1.9980E+04	-6.2418E+00	2.1645E+04	-5.4460E+00	1.9980E+04	-4.8617E+00	2.1645E+04	-2.6734E+00	8.9980E+04	2.0781E+00	8.8654E+02	0.0000E+00	0.0000E+00
1.9980E+04	-6.2670E+00	2.1645E+04	-5.4736E+00	1.9980E+04	-4.8913E+00	2.1645E+04	-2.7127E+00	8.9982E+04	1.9963E+00	1.2801E+03	0.0000E+00	0.0000E+00
1.9980E+04	-6.2922E+00	2.1645E+04	-5.5012E+00	1.9980E+04	-4.9208E+00	2.1645E+04	-2.7517E+00	8.9983E+04	1.9155E+00	1.8169E+03	0.0000E+00	0.0000E+00
1.9980E+04	-6.3173E+00	2.1645E+04	-5.5286E+00	1.9980E+04	-4.9502E+00	2.1645E+04	-2.7906E+00	8.9984E+04	1.8358E+00	2.5368E+03	0.0000E+00	0.0000E+00
1.9980E+04	-6.3423E+00	2.1645E+04	-5.5560E+00	1.9980E+04	-4.9795E+00	2.1645E+04	-2.8293E+00	8.9984E+04	1.7572E+00	3.4865E+03	0.0000E+00	0.0000E+00
1.9980E+04	-6.3673E+00	2.1645E+04	-5.5832E+00	1.9980E+04	-5.0087E+00	2.1645E+04	-2.8677E+00	8.9985E+04	1.6796E+00	4.7195E+03	9.1082E+01	0.0000E+00
1.9980E+04	-6.3922E+00	2.1645E+04	-5.6104E+00	1.9980E+04	-5.0378E+00	2.1645E+04	-2.9060E+00	8.9985E+04	1.6030E+00	6.2963E+03	5.2609E+01	0.0000E+00
1.9980E+04	-6.4170E+00	2.1645E+04	-5.6375E+00	1.9980E+04	-5.0667E+00	2.1645E+04	-2.9441E+00	8.9986E+04	1.5274E+00	8.2830E+03	4.0448E+01	0.0000E+00
1.9980E+04	-6.4417E+00	2.1645E+04	-5.6645E+00	1.9980E+04	-5.0956E+00	2.1645E+04	-2.9819E+00	8.9986E+04	1.4527E+00	1.0751E+04	3.3889E+01	0.0000E+00
1.9980E+04	-6.4664E+00	2.1645E+04	-5.6915E+00	1.9980E+04	-5.1244E+00	2.1645E+04	-3.0196E+00	8.9986E+04	1.3789E+00	1.3775E+04	2.9615E+01	0.0000E+00
1.9980E+04	-6.4911E+00	2.1645E+04	-5.7183E+00	1.9980E+04	-5.1531E+00	2.1645E+04	-3.0571E+00	8.9987E+04	1.3060E+00	1.7431E+04	2.6536E+01	0.0000E+00
1.9980E+04	-6.5156E+00	2.1645E+04	-5.7451E+00	1.9980E+04	-5.1817E+00	2.1645E+04	-3.0944E+00	8.9987E+04	1.2340E+00	2.1796E+04	2.4176E+01	0.0000E+00
1.9980E+04	-6.5401E+00	2.1645E+04	-5.7718E+00	1.9980E+04	-5.2101E+00	2.1645E+04	-3.1315E+00	8.9987E+04	1.1628E+00	2.6943E+04	2.2288E+01	0.0000E+00
1.9980E+04	-6.5646E+00	2.1645E+04	-5.7984E+00	1.9980E+04	-5.2385E+00	2.1645E+04	-3.1684E+00	8.9987E+04	1.0924E+00	3.2940E+04	2.0730E+01	0.0000E+00
1.9980E+04	-6.5889E+00	2.1645E+04	-5.8249E+00	1.9980E+04	-5.2668E+00	2.1645E+04	-3.2051E+00	8.9987E+04	1.0229E+00	3.9846E+04	1.9413E+01	0.0000E+00
1.9980E+04	-6.6132E+00	2.1645E+04	-5.8513E+00	1.9980E+04	-5.2950E+00	2.1645E+04	-3.2417E+00	8.9987E+04	9.5410E-01	4.7711E+04	1.8279E+01	0.0000E+00
1.9980E+04	-6.6375E+00	2.1645E+04	-5.8777E+00	1.9980E+04	-5.3232E+00	2.1645E+04	-3.2780E+00	8.9987E+04	8.8610E-01	5.6572E+04	1.7288E+01	0.0000E+00
1.9980E+04	-6.6616E+00	2.1645E+04	-5.9040E+00	1.9980E+04	-5.3512E+00	2.1645E+04	-3.3142E+00	8.9987E+04	8.1884E-01	6.6451E+04	1.6411E+01	0.0000E+00
1.9980E+04	-6.6858E+00	2.1645E+04	-5.9302E+00	1.9980E+04	-5.3791E+00	2.1645E+04	-3.3502E+00	8.9987E+04	7.5231E-01	7.7354E+04	1.5626E+01	0.0000E+00
1.9980E+04	-6.7098E+00	2.1645E+04	-5.9563E+00	1.9980E+04	-5.4069E+00	2.1645E+04	-3.3861E+00	8.9987E+04	6.8649E-01	8.9269E+04	1.4918E+01	0.0000E+00
1.9980E+04	-6.7338E+00	2.1645E+04	-5.9824E+00	1.9980E+04	-5.4347E+00	2.1645E+04	-3.4218E+00	8.9987E+04	6.2137E-01	1.0217E+05	1.4275E+01	0.0000E+00
1.9980E+04	-6.7577E+00	2.1645E+04	-6.0084E+00	1.9980E+04	-5.4623E+00	2.1645E+04	-3.4573E+00	8.9987E+04	5.5693E-01	1.1600E+05	1.3686E+01	0.0000E+00
1.9980E+04	-6.7816E+00	2.1645E+04	-6.0343E+00	1.9980E+04	-5.4899E+00	2.1645E+04	-3.4926E+00	8.9987E+04	4.9315E-01	1.3070E+05	1.3144E+01	0.0000E+00
1.9980E+04	-6.8054E+00	2.1645E+04	-6.0601E+00	1.9980E+04	-5.5174E+00	2.1645E+04	-3.5278E+00	8.9987E+04	4.3002E-01	1.4619E+05	1.2643E+01	0.0000E+00
1.9980E+04	-6.8292E+00	2.1645E+04	-6.0859E+00	1.9980E+04	-5.5448E+00	2.1645E+04	-3.5628E+00	8.9987E+04	3.6752E-01	1.6238E+05	1.2177E+01	0.0000E+00
1.9980E+04	-6.8528E+00	2.1645E+04	-6.1115E+00	1.9980E+04	-5.5721E+00	2.1645E+04	-3.5977E+00	8.9987E+04	3.0565E-01	1.7916E+05	1.1742E+01	0.0000E+00
1.9980E+04	-6.8765E+00	2.1645E+04	-6.1371E+00	1.9980E+04	-5.5993E+00	2.1645E+04	-3.6324E+00	8.9987E+04	2.4438E-01	1.9641E+05	1.1334E+01	0.0000E+00
1.9980E+04	-6.9000E+00	2.1645E+04	-6.1627E+00	1.9980E+04	-5.6264E+00	2.1645E+04	-3.6669E+00	8.9987E+04	1.8370E-01	2.1401E+05	1.0951E+01	0.0000E+00
1.9980E+04	-6.9236E+00	2.1645E+04	-6.1881E+00	1.9980E+04	-5.6535E+00	2.1645E+04	-3.7013E+00	8.9987E+04	1.2361E-01	2.3183E+05	1.0590E+01	0.0000E+00
1.9980E+04	-6.9470E+00	2.1645E+04	-6.2135E+00	1.9980E+04	-5.6804E+00	2.1645E+04	-3.7356E+00	8.9987E+04	6.4078E-02	2.4975E+05	1.0249E+01	0.0000E+00
1.9980E+04	-6.9704E+00	2.1645E+04	-6.2388E+00	1.9980E+04	-5.7073E+00	2.1645E+04	-3.7696E+00	8.9987E+04	5.1073E-03	2.6764E+05	9.9258E+00	0.0000E+00
1.9980E+04	-6.9938E+00	2.1645E+04	-6.2641E+00	1.9980E+04	-5.7341E+00	2.1645E+04	-3.8036E+00	8.9987E+04	-5.3319E-02	2.8537E+05	9.6185E+00	0.0000E+00
1.9980E+04	-7.0170E+00	2.1645E+04	-6.2893E+00	1.9980E+04	-5.7608E+00	2.1645E+04	-3.8374E+00	8.9987E+04	-1.1121E-01	3.0283E+05	9.3260E+00	0.0000E+00
1.9980E+04	-7.0403E+00	2.1645E+04	-6.3144E+00	1.9980E+04	-5.7875E+00	2.1645E+04	-3.8710E+00	8.9987E+04	-1.6858E-01	3.1991E+05	9.0470E+00	0.0000E+00

Curve 13	Arg 14	Curve 14	Arg 15	Curve 15	Arg 16	Curve 16	Arg 17	Curve 17	Arg 18	Curve 18	Arg 19	Curve 19
1.9980E+04	-7.0634E+00	2.1645E+04	-6.3394E+00	1.9980E+04	-5.8140E+00	2.1645E+04	-3.9045E+00	8.9987E+04	-2.2544E-01	3.3652E+05	8.7803E+00	0.0000E+00
1.9980E+04	-7.0865E+00	2.1645E+04	-6.3644E+00	1.9980E+04	-5.8405E+00	2.1645E+04	-3.9378E+00	8.9987E+04	-2.8179E-01	3.5257E+05	8.5250E+00	0.0000E+00
1.9980E+04	-7.1096E+00	2.1645E+04	-6.3893E+00	1.9980E+04	-5.8669E+00	2.1645E+04	-3.9710E+00	8.9987E+04	-3.3766E-01	3.6798E+05	8.2801E+00	0.0000E+00
1.9980E+04	-7.1326E+00	2.1645E+04	-6.4141E+00	1.9980E+04	-5.8932E+00	2.1645E+04	-4.0041E+00	8.9987E+04	-3.9304E-01	3.8270E+05	8.0450E+00	0.0000E+00
1.9980E+04	-7.1555E+00	2.1645E+04	-6.4389E+00	1.9980E+04	-5.9195E+00	2.1645E+04	-4.0370E+00	8.9987E+04	-4.4794E-01	3.9667E+05	7.8189E+00	0.0000E+00
1.9980E+04	-7.1784E+00	2.1645E+04	-6.4636E+00	1.9980E+04	-5.9456E+00	2.1645E+04	-4.0698E+00	8.9987E+04	-5.0239E-01	4.0986E+05	7.6011E+00	0.0000E+00
1.9980E+04	-7.2013E+00	2.1645E+04	-6.4882E+00	1.9980E+04	-5.9717E+00	2.1645E+04	-4.1025E+00	8.9987E+04	-5.5638E-01	4.2225E+05	7.3911E+00	0.0000E+00
1.9980E+04	-7.2241E+00	2.1645E+04	-6.5128E+00	1.9980E+04	-5.9977E+00	2.1645E+04	-4.1350E+00	8.9987E+04	-6.0992E-01	4.3383E+05	7.1884E+00	0.0000E+00
1.9980E+04	-7.2468E+00	2.1645E+04	-6.5373E+00	1.9980E+04	-6.0237E+00	2.1645E+04	-4.1674E+00	8.9987E+04	-6.6302E-01	4.4458E+05	6.9925E+00	0.0000E+00
1.9980E+04	-7.2695E+00	2.1645E+04	-6.5617E+00	1.9980E+04	-6.0495E+00	2.1645E+04	-4.1996E+00	8.9987E+04	-7.1570E-01	4.5453E+05	6.8030E+00	0.0000E+00
1.9980E+04	-7.2921E+00	2.1645E+04	-6.5861E+00	1.9980E+04	-6.0753E+00	2.1645E+04	-4.2317E+00	8.9987E+04	-7.6795E-01	4.6368E+05	6.6195E+00	0.0000E+00
1.9980E+04	-7.3147E+00	2.1645E+04	-6.6104E+00	1.9980E+04	-6.1010E+00	2.1645E+04	-4.2637E+00	8.9987E+04	-8.1978E-01	4.7207E+05	6.4416E+00	0.0000E+00
1.9980E+04	-7.3372E+00	2.1645E+04	-6.6347E+00	1.9980E+04	-6.1266E+00	2.1645E+04	-4.2956E+00	8.9987E+04	-8.7121E-01	4.7971E+05	6.2690E+00	0.0000E+00
1.9980E+04	-7.3597E+00	2.1645E+04	-6.6589E+00	1.9980E+04	-6.1522E+00	2.1645E+04	-4.3273E+00	8.9987E+04	-9.2224E-01	4.8665E+05	6.1015E+00	0.0000E+00
1.9980E+04	-7.3821E+00	2.1645E+04	-6.6830E+00	1.9980E+04	-6.1777E+00	2.1645E+04	-4.3589E+00	8.9987E+04	-9.7288E-01	4.9292E+05	5.9386E+00	0.0000E+00
1.9980E+04	-7.4044E+00	2.1645E+04	-6.7071E+00	1.9980E+04	-6.2031E+00	2.1645E+04	-4.3904E+00	8.9987E+04	-1.0231E+00	4.9856E+05	5.7803E+00	1.0291E-11
1.9980E+04	-7.4268E+00	2.1645E+04	-6.7310E+00	1.9980E+04	-6.2285E+00	2.1645E+04	-4.4218E+00	8.9987E+04	-1.0730E+00	5.0361E+05	5.6261E+00	5.4885E-11
1.9980E+04	-7.4490E+00	2.1645E+04	-6.7550E+00	1.9980E+04	-6.2537E+00	2.1645E+04	-4.4530E+00	8.9987E+04	-1.1225E+00	5.0811E+05	5.4760E+00	2.9844E-10
1.9980E+04	-7.4712E+00	2.1645E+04	-6.7789E+00	1.9980E+04	-6.2790E+00	2.1645E+04	-4.4841E+00	8.9987E+04	-1.1716E+00	5.1212E+05	5.3297E+00	1.4819E-09
1.9980E+04	-7.4934E+00	2.1645E+04	-6.8027E+00	1.9980E+04	-6.3041E+00	2.1645E+04	-4.5151E+00	8.9987E+04	-1.2204E+00	5.1566E+05	5.1871E+00	6.8161E-09
1.9980E+04	-7.5155E+00	2.1645E+04	-6.8264E+00	1.9980E+04	-6.3292E+00	2.1645E+04	-4.5460E+00	8.9987E+04	-1.2688E+00	5.1879E+05	5.0479E+00	2.9089E-08
1.9980E+04	-7.5376E+00	2.1645E+04	-6.8501E+00	1.9980E+04	-6.3542E+00	2.1645E+04	-4.5768E+00	8.9987E+04	-1.3169E+00	5.2154E+05	4.9120E+00	1.1562E-07
1.9980E+04	-7.5596E+00	2.1645E+04	-6.8738E+00	1.9980E+04	-6.3791E+00	2.1645E+04	-4.6074E+00	8.9987E+04	-1.3646E+00	5.2394E+05	4.7792E+00	4.2977E-07
1.9980E+04	-7.5816E+00	2.1645E+04	-6.8973E+00	1.9980E+04	-6.4040E+00	2.1645E+04	-4.6379E+00	8.9987E+04	-1.4120E+00	5.2604E+05	4.6495E+00	1.4999E-06
1.9980E+04	-7.6035E+00	2.1645E+04	-6.9209E+00	1.9980E+04	-6.4288E+00	2.1645E+04	-4.6684E+00	8.9987E+04	-1.4591E+00	5.2786E+05	4.5226E+00	4.9325E-06
1.9980E+04	-7.6254E+00	2.1645E+04	-6.9443E+00	1.9980E+04	-6.4535E+00	2.1645E+04	-4.6987E+00	8.9987E+04	-1.5058E+00	5.2943E+05	4.3984E+00	1.5334E-05
1.9980E+04	-7.6472E+00	2.1645E+04	-6.9677E+00	1.9980E+04	-6.4781E+00	2.1645E+04	-4.7289E+00	8.9987E+04	-1.5522E+00	5.3080E+05	4.2769E+00	4.5200E-05
1.9980E+04	-7.6690E+00	2.1645E+04	-6.9911E+00	1.9980E+04	-6.5027E+00	2.1645E+04	-4.7589E+00	8.9987E+04	-1.5983E+00	5.3197E+05	4.1578E+00	1.2670E-04
1.9980E+04	-7.6907E+00	2.1645E+04	-7.0144E+00	1.9980E+04	-6.5273E+00	2.1645E+04	-4.7889E+00	8.9987E+04	-1.6441E+00	5.3297E+05	4.0412E+00	3.3863E-04
1.9980E+04	-7.7124E+00	2.1645E+04	-7.0376E+00	1.9980E+04	-6.5517E+00	2.1645E+04	-4.8188E+00	8.9987E+04	-1.6896E+00	5.3383E+05	3.9269E+00	8.6504E-04
1.9980E+04	-7.7340E+00	2.1645E+04	-7.0608E+00	1.9980E+04	-6.5761E+00	2.1645E+04	-4.8485E+00	8.9987E+04	-1.7348E+00	5.3456E+05	3.8149E+00	2.1170E-03
1.9980E+04	-7.7556E+00	2.1645E+04	-7.0839E+00	1.9980E+04	-6.6005E+00	2.1645E+04	-4.8782E+00	8.9987E+04	-1.7797E+00	5.3519E+05	3.7049E+00	4.9739E-03
1.9980E+04	-7.7771E+00	2.1645E+04	-7.1069E+00	1.9980E+04	-6.6247E+00	2.1645E+04	-4.9077E+00	8.9987E+04	-1.8243E+00	5.3571E+05	3.5970E+00	1.1242E-02
1.9980E+04	-7.7986E+00	2.1645E+04	-7.1300E+00	1.9980E+04	-6.6490E+00	2.1645E+04	-4.9371E+00	8.9987E+04	-1.8686E+00	5.3616E+05	3.4911E+00	2.4490E-02
1.9980E+04	-7.8201E+00	2.1645E+04	-7.1529E+00	1.9980E+04	-6.6731E+00	2.1645E+04	-4.9665E+00	8.9987E+04	-1.9126E+00	5.3653E+05	3.3871E+00	5.1511E-02
1.9980E+04	-7.8415E+00	2.1645E+04	-7.1758E+00	1.9980E+04	-6.6972E+00	2.1645E+04	-4.9957E+00	8.9987E+04	-1.9564E+00	5.3685E+05	3.2849E+00	1.0478E-01
1.9980E+04	-7.8628E+00	2.1645E+04	-7.1987E+00	1.9980E+04	-6.7212E+00	2.1645E+04	-5.0248E+00	8.9987E+04	-1.9998E+00	5.3711E+05	3.1845E+00	2.0646E-01
1.9980E+04	-7.8841E+00	2.1645E+04	-7.2214E+00	1.9980E+04	-6.7452E+00	2.1645E+04	-5.0538E+00	8.9987E+04	-2.0430E+00	5.3733E+05	3.0858E+00	3.9461E-01
1.9980E+04	-7.9054E+00	2.1645E+04	-7.2442E+00	1.9980E+04	-6.7691E+00	2.1645E+04	-5.0828E+00	8.9987E+04	-2.0860E+00	5.3752E+05	2.9887E+00	7.3265E-01
1.9980E+04	-7.9266E+00	2.1645E+04	-7.2669E+00	1.9980E+04	-6.7929E+00	2.1645E+04	-5.1116E+00	8.9987E+04	-2.1287E+00	5.3767E+05	2.8933E+00	1.3231E+00
1.9980E+04	-7.9478E+00	2.1645E+04	-7.2895E+00	1.9980E+04	-6.8167E+00	2.1645E+04	-5.1403E+00	8.9987E+04	-2.1711E+00	5.3780E+05	2.7993E+00	2.3268E+00
1.9980E+04	-7.9690E+00	2.1645E+04	-7.3121E+00	1.9980E+04	-6.8404E+00	2.1645E+04	-5.1690E+00	8.9987E+04	-2.2132E+00	5.3790E+05	2.7069E+00	3.9897E+00
1.9980E+04	-7.9901E+00	2.1645E+04	-7.3346E+00	1.9980E+04	-6.8641E+00	2.1645E+04	-5.1975E+00	8.9987E+04	-2.2551E+00	5.3799E+05	2.6159E+00	6.6770E+00
1.9980E+04	-8.0111E+00	2.1645E+04	-7.3571E+00	1.9980E+04	-6.8877E+00	2.1645E+04	-5.2259E+00	8.9987E+04	-2.2968E+00	5.3806E+05	2.5263E+00	1.0918E+01
1.9980E+04	-8.0321E+00	2.1645E+04	-7.3795E+00	1.9980E+04	-6.9112E+00	2.1645E+04	-5.2543E+00	8.9987E+04	-2.3382E+00	5.3812E+05	2.4380E+00	1.7460E+01
1.9980E+04	-8.0531E+00	2.1645E+04	-7.4019E+00	1.9980E+04	-6.9347E+00	2.1645E+04	-5.2825E+00	8.9987E+04	-2.3794E+00	5.3817E+05	2.3510E+00	2.7335E+01
1.9980E+04	-8.0740E+00	2.1645E+04	-7.4242E+00	1.9980E+04	-6.9581E+00	2.1645E+04	-5.3107E+00	8.9987E+04	-2.4203E+00	5.3821E+05	2.2653E+00	4.1929E+01
1.9980E+04	-8.0949E+00	2.1645E+04	-7.4465E+00	1.9980E+04	-6.9815E+00	2.1645E+04	-5.3387E+00	8.9987E+04	-2.4610E+00	5.3824E+05	2.1808E+00	6.3069E+01
1.9980E+04	-8.1157E+00	2.1645E+04	-7.4687E+00	1.9980E+04	-7.0048E+00	2.1645E+04	-5.3667E+00	8.9987E+04	-2.5015E+00	5.3826E+05	2.0975E+00	9.3104E+01
1.9980E+04	-8.1365E+00	2.1645E+04	-7.4909E+00	1.9980E+04	-7.0281E+00	2.1645E+04	-5.3946E+00	8.9987E+04	-2.5417E+00	5.3829E+05	2.0154E+00	1.3499E+02
1.9980E+04	-8.1572E+00	2.1645E+04	-7.5130E+00	1.9980E+04	-7.0513E+00	2.1645E+04	-5.4223E+00	8.9987E+04	-2.5818E+00	5.3830E+05	1.9344E+00	1.9236E+02
1.9980E+04	-8.1780E+00	2.1645E+04	-7.5351E+00	1.9980E+04	-7.0744E+00	2.1645E+04	-5.4500E+00	8.9987E+04	-2.6216E+00	5.3832E+05	1.8545E+00	2.6960E+02

Curve 13	Arg 14	Curve 14	Arg 15	Curve 15	Arg 16	Curve 16	Arg 17	Curve 17	Arg 18	Curve 18	Arg 19	Curve 19
1.9980E+04	-8.1986E+00	2.1645E+04	-7.5571E+00	1.9980E+04	-7.0975E+00	2.1645E+04	-5.4776E+00	8.9987E+04	-2.6611E+00	5.3833E+05	1.7756E+00	3.7188E+02
1.9980E+04	-8.2192E+00	2.1645E+04	-7.5790E+00	1.9980E+04	-7.1205E+00	2.1645E+04	-5.5052E+00	8.9987E+04	-2.7005E+00	5.3834E+05	1.6978E+00	5.0518E+02
1.9980E+04	-8.2398E+00	2.1645E+04	-7.6010E+00	1.9980E+04	-7.1435E+00	2.1645E+04	-5.5326E+00	8.9987E+04	-2.7396E+00	5.3834E+05	1.6209E+00	6.7623E+02
1.9980E+04	-8.2604E+00	2.1645E+04	-7.6228E+00	1.9980E+04	-7.1664E+00	2.1645E+04	-5.5599E+00	8.9987E+04	-2.7786E+00	5.3835E+05	1.5451E+00	8.9249E+02
1.9980E+04	-8.2809E+00	2.1645E+04	-7.6447E+00	1.9980E+04	-7.1893E+00	2.1645E+04	-5.5872E+00	8.9987E+04	-2.8173E+00	5.3836E+05	1.4701E+00	1.1620E+03
1.9980E+04	-8.3013E+00	2.1645E+04	-7.6665E+00	1.9980E+04	-7.2121E+00	2.1645E+04	-5.6144E+00	8.9987E+04	-2.8558E+00	5.3836E+05	1.3961E+00	1.4933E+03
1.9980E+04	-8.3218E+00	2.1645E+04	-7.6882E+00	1.9980E+04	-7.2349E+00	2.1645E+04	-5.6414E+00	8.9987E+04	-2.8942E+00	5.3836E+05	1.3230E+00	1.8952E+03
1.9980E+04	-8.3422E+00	2.1645E+04	-7.7099E+00	1.9980E+04	-7.2576E+00	2.1645E+04	-5.6685E+00	8.9987E+04	-2.9323E+00	5.3836E+05	1.2508E+00	2.3763E+03
1.9980E+04	-8.3625E+00	2.1645E+04	-7.7315E+00	1.9980E+04	-7.2802E+00	2.1645E+04	-5.6954E+00	8.9987E+04	-2.9702E+00	5.3837E+05	1.1794E+00	2.9452E+03
1.9980E+04	-8.3828E+00	2.1645E+04	-7.7531E+00	1.9980E+04	-7.3028E+00	2.1645E+04	-5.7222E+00	8.9987E+04	-3.0079E+00	5.3837E+05	1.1089E+00	3.6100E+03
1.9980E+04	-8.4031E+00	2.1645E+04	-7.7747E+00	1.9980E+04	-7.3254E+00	2.1645E+04	-5.7490E+00	8.9987E+04	-3.0455E+00	5.3837E+05	1.0391E+00	4.3775E+03
1.9980E+04	-8.4233E+00	2.1645E+04	-7.7962E+00	1.9980E+04	-7.3479E+00	2.1645E+04	-5.7756E+00	8.9987E+04	-3.0828E+00	5.3837E+05	9.7019E-01	5.2540E+03
1.9980E+04	-8.4435E+00	2.1645E+04	-7.8176E+00	1.9980E+04	-7.3703E+00	2.1645E+04	-5.8022E+00	8.9987E+04	-3.1200E+00	5.3837E+05	9.0201E-01	6.2440E+03
1.9980E+04	-8.4636E+00	2.1645E+04	-7.8390E+00	1.9980E+04	-7.3927E+00	2.1645E+04	-5.8287E+00	8.9987E+04	-3.1569E+00	5.3837E+05	8.3458E-01	7.3503E+03
1.9980E+04	-8.4837E+00	2.1645E+04	-7.8604E+00	1.9980E+04	-7.4151E+00	2.1645E+04	-5.8552E+00	8.9987E+04	-3.1937E+00	5.3837E+05	7.6788E-01	8.5742E+03
1.9980E+04	-8.5038E+00	2.1645E+04	-7.8817E+00	1.9980E+04	-7.4373E+00	2.1645E+04	-5.8815E+00	8.9987E+04	-3.2303E+00	5.3837E+05	7.0190E-01	9.9147E+03
1.9980E+04	-8.5239E+00	2.1645E+04	-7.9030E+00	1.9980E+04	-7.4596E+00	2.1645E+04	-5.9078E+00	8.9987E+04	-3.2668E+00	5.3837E+05	6.3661E-01	1.1369E+04
1.9980E+04	-8.5438E+00	2.1645E+04	-7.9242E+00	1.9980E+04	-7.4818E+00	2.1645E+04	-5.9340E+00	8.9987E+04	-3.3030E+00	5.3837E+05	5.7201E-01	1.2932E+04
1.9980E+04	-8.5638E+00	2.1645E+04	-7.9454E+00	1.9980E+04	-7.5039E+00	2.1645E+04	-5.9601E+00	8.9987E+04	-3.3391E+00	5.3837E+05	5.0808E-01	1.4597E+04
1.9980E+04	-8.5837E+00	2.1645E+04	-7.9665E+00	1.9980E+04	-7.5260E+00	2.1645E+04	-5.9862E+00	8.9987E+04	-3.3750E+00	5.3837E+05	4.4480E-01	1.6355E+04
1.9980E+04	-8.6036E+00	2.1645E+04	-7.9876E+00	1.9980E+04	-7.5481E+00	2.1645E+04	-6.0121E+00	8.9987E+04	-3.4107E+00	5.3837E+05	3.8215E-01	1.8195E+04
1.9980E+04	-8.6235E+00	2.1645E+04	-8.0087E+00	1.9980E+04	-7.5700E+00	2.1645E+04	-6.0380E+00	8.9987E+04	-3.4463E+00	5.3837E+05	3.2013E-01	2.0106E+04
1.9980E+04	-8.6433E+00	2.1645E+04	-8.0297E+00	1.9980E+04	-7.5920E+00	2.1645E+04	-6.0638E+00	8.9987E+04	-3.4817E+00	5.3837E+05	2.5872E-01	2.2075E+04
1.9980E+04	-8.6630E+00	2.1645E+04	-8.0507E+00	1.9980E+04	-7.6139E+00	2.1645E+04	-6.0896E+00	8.9987E+04	-3.5169E+00	5.3837E+05	1.9791E-01	2.4087E+04
1.9980E+04	-8.6828E+00	2.1645E+04	-8.0716E+00	1.9980E+04	-7.6357E+00	2.1645E+04	-6.1152E+00	8.9987E+04	-3.5520E+00	5.3837E+05	1.3768E-01	2.6128E+04
1.9980E+04	-8.7025E+00	2.1645E+04	-8.0925E+00	1.9980E+04	-7.6575E+00	2.1645E+04	-6.1408E+00	8.9987E+04	-3.5869E+00	5.3837E+05	7.8017E-02	2.8183E+04
1.9980E+04	-8.7221E+00	2.1645E+04	-8.1133E+00	1.9980E+04	-7.6793E+00	2.1645E+04	-6.1664E+00	8.9987E+04	-3.6217E+00	5.3837E+05	1.8916E-02	3.0238E+04
1.9980E+04	-8.7418E+00	2.1645E+04	-8.1341E+00	1.9980E+04	-7.7010E+00	2.1645E+04	-6.1918E+00	8.9987E+04	-3.6563E+00	5.3837E+05	-3.9637E-02	3.2279E+04
1.9980E+04	-8.7614E+00	2.1645E+04	-8.1549E+00	1.9980E+04	-7.7226E+00	2.1645E+04	-6.2172E+00	8.9987E+04	-3.6907E+00	5.3837E+05	-9.7654E-02	3.4291E+04
1.9980E+04	-8.7809E+00	2.1645E+04	-8.1756E+00	1.9980E+04	-7.7443E+00	2.1645E+04	-6.2425E+00	8.9987E+04	-3.7250E+00	5.3837E+05	-1.5515E-01	3.6264E+04
1.9980E+04	-8.8004E+00	2.1645E+04	-8.1962E+00	1.9980E+04	-7.7658E+00	2.1645E+04	-6.2677E+00	8.9987E+04	-3.7591E+00	5.3837E+05	-2.1212E-01	3.8184E+04
1.9980E+04	-8.8199E+00	2.1645E+04	-8.2169E+00	1.9980E+04	-7.7873E+00	2.1645E+04	-6.2929E+00	8.9987E+04	-3.7931E+00	5.3837E+05	-2.6859E-01	4.0042E+04
1.9980E+04	-8.8394E+00	2.1645E+04	-8.2375E+00	1.9980E+04	-7.8088E+00	2.1645E+04	-6.3180E+00	8.9987E+04	-3.8269E+00	5.3837E+05	-3.2457E-01	4.1829E+04
1.9980E+04	-8.8588E+00	2.1645E+04	-8.2580E+00	1.9980E+04	-7.8302E+00	2.1645E+04	-6.3430E+00	8.9987E+04	-3.8606E+00	5.3837E+05	-3.8007E-01	4.3537E+04
1.9980E+04	-8.8782E+00	2.1645E+04	-8.2785E+00	1.9980E+04	-7.8516E+00	2.1645E+04	-6.3680E+00	8.9987E+04	-3.8941E+00	5.3837E+05	-4.3508E-01	4.5161E+04
1.9980E+04	-8.8975E+00	2.1645E+04	-8.2990E+00	1.9980E+04	-7.8730E+00	2.1645E+04	-6.3929E+00	8.9987E+04	-3.9275E+00	5.3837E+05	-4.8963E-01	4.6697E+04
1.9980E+04	-8.9168E+00	2.1645E+04	-8.3194E+00	1.9980E+04	-7.8943E+00	2.1645E+04	-6.4177E+00	8.9987E+04	-3.9608E+00	5.3837E+05	-5.4373E-01	4.8141E+04
1.9980E+04	-8.9361E+00	2.1645E+04	-8.3398E+00	1.9980E+04	-7.9155E+00	2.1645E+04	-6.4425E+00	8.9987E+04	-3.9939E+00	5.3837E+05	-5.9738E-01	4.9491E+04
1.9980E+04	-8.9554E+00	2.1645E+04	-8.3602E+00	1.9980E+04	-7.9367E+00	2.1645E+04	-6.4672E+00	8.9987E+04	-4.0268E+00	5.3837E+05	-6.5058E-01	5.0748E+04
1.9980E+04	-8.9746E+00	2.1645E+04	-8.3805E+00	1.9980E+04	-7.9579E+00	2.1645E+04	-6.4918E+00	8.9987E+04	-4.0597E+00	5.3837E+05	-7.0336E-01	5.1912E+04
1.9980E+04	-8.9938E+00	2.1645E+04	-8.4007E+00	1.9980E+04	-7.9790E+00	2.1645E+04	-6.5164E+00	8.9987E+04	-4.0924E+00	5.3837E+05	-7.5570E-01	5.2984E+04
1.9980E+04	-9.0129E+00	2.1645E+04	-8.4210E+00	1.9980E+04	-8.0001E+00	2.1645E+04	-6.5409E+00	8.9987E+04	-4.1249E+00	5.3837E+05	-8.0764E-01	5.3966E+04
1.9980E+04	-9.0320E+00	2.1645E+04	-8.4412E+00	1.9980E+04	-8.0211E+00	2.1645E+04	-6.5653E+00	8.9987E+04	-4.1573E+00	5.3837E+05	-8.5916E-01	5.4863E+04
1.9980E+04	-9.0511E+00	2.1645E+04	-8.4613E+00	1.9980E+04	-8.0421E+00	2.1645E+04	-6.5897E+00	8.9987E+04	-4.1896E+00	5.3837E+05	-9.1029E-01	5.5678E+04
1.9980E+04	-9.0701E+00	2.1645E+04	-8.4814E+00	1.9980E+04	-8.0630E+00	2.1645E+04	-6.6140E+00	8.9987E+04	-4.2218E+00	5.3837E+05	-9.6102E-01	5.6415E+04
1.9980E+04	-9.0891E+00	2.1645E+04	-8.5015E+00	1.9980E+04	-8.0839E+00	2.1645E+04	-6.6382E+00	8.9987E+04	-4.2538E+00	5.3837E+05	-1.0114E+00	5.7079E+04
1.9980E+04	-9.1081E+00	2.1645E+04	-8.5216E+00	1.9980E+04	-8.1048E+00	2.1645E+04	-6.6624E+00	8.9987E+04	-4.2857E+00	5.3837E+05	-1.0613E+00	5.7674E+04
1.9980E+04	-9.1271E+00	2.1645E+04	-8.5416E+00	1.9980E+04	-8.1256E+00	2.1645E+04	-6.6865E+00	8.9987E+04	-4.3175E+00	5.3837E+05	-1.1109E+00	5.8206E+04
1.9980E+04	-9.1460E+00	2.1645E+04	-8.5615E+00	1.9980E+04	-8.1464E+00	2.1645E+04	-6.7105E+00	8.9987E+04	-4.3491E+00	5.3837E+05	-1.1601E+00	5.8679E+04
1.9980E+04	-9.1648E+00	2.1645E+04	-8.5814E+00	1.9980E+04	-8.1671E+00	2.1645E+04	-6.7345E+00	8.9987E+04	-4.3807E+00	5.3837E+05	-1.2090E+00	5.9098E+04
1.9980E+04	-9.1837E+00	2.1645E+04	-8.6013E+00	1.9980E+04	-8.1878E+00	2.1645E+04	-6.7585E+00	8.9987E+04	-4.4121E+00	5.3837E+05	-1.2575E+00	5.9467E+04
1.9980E+04	-9.2025E+00	2.1645E+04	-8.6212E+00	1.9980E+04	-8.2084E+00	2.1645E+04	-6.7823E+00	8.9987E+04	-4.4433E+00	5.3837E+05	-1.3056E+00	5.9792E+04

Curve 13	Arg 14	Curve 14	Arg 15	Curve 15	Arg 16	Curve 16	Arg 17	Curve 17	Arg 18	Curve 18	Arg 19	Curve 19
1.9980E+04	-9.2213E+00	2.1645E+04	-8.6410E+00	1.9980E+04	-8.2290E+00	2.1645E+04	-6.8061E+00	8.9987E+04	-4.4745E+00	5.3837E+05	-1.3534E+00	6.0077E+04
1.9980E+04	-9.2400E+00	2.1645E+04	-8.6608E+00	1.9980E+04	-8.2496E+00	2.1645E+04	-6.8299E+00	8.9987E+04	-4.5055E+00	5.3837E+05	-1.4009E+00	6.0326E+04
1.9980E+04	-9.2588E+00	2.1645E+04	-8.6805E+00	1.9980E+04	-8.2701E+00	2.1645E+04	-6.8536E+00	8.9987E+04	-4.5364E+00	5.3837E+05	-1.4481E+00	6.0542E+04
1.9980E+04	-9.2775E+00	2.1645E+04	-8.7002E+00	1.9980E+04	-8.2906E+00	2.1645E+04	-6.8772E+00	8.9987E+04	-4.5672E+00	5.3837E+05	-1.4949E+00	6.0729E+04
1.9980E+04	-9.2961E+00	2.1645E+04	-8.7199E+00	1.9980E+04	-8.3111E+00	2.1645E+04	-6.9008E+00	8.9987E+04	-4.5979E+00	5.3837E+05	-1.5414E+00	6.0891E+04
1.9980E+04	-9.3147E+00	2.1645E+04	-8.7395E+00	1.9980E+04	-8.3315E+00	2.1645E+04	-6.9243E+00	8.9987E+04	-4.6285E+00	5.3837E+05	-1.5875E+00	6.1030E+04
1.9980E+04	-9.3333E+00	2.1645E+04	-8.7591E+00	1.9980E+04	-8.3518E+00	2.1645E+04	-6.9477E+00	8.9987E+04	-4.6589E+00	5.3837E+05	-1.6334E+00	6.1150E+04
1.9980E+04	-9.3519E+00	2.1645E+04	-8.7787E+00	1.9980E+04	-8.3721E+00	2.1645E+04	-6.9711E+00	8.9987E+04	-4.6893E+00	5.3837E+05	-1.6790E+00	6.1252E+04
1.9980E+04	-9.3704E+00	2.1645E+04	-8.7982E+00	1.9980E+04	-8.3924E+00	2.1645E+04	-6.9945E+00	8.9987E+04	-4.7195E+00	5.3837E+05	-1.7242E+00	6.1339E+04
1.9980E+04	-9.3889E+00	2.1645E+04	-8.8177E+00	1.9980E+04	-8.4127E+00	2.1645E+04	-7.0177E+00	8.9987E+04	-4.7496E+00	5.3837E+05	-1.7692E+00	6.1414E+04
1.9980E+04	-9.4074E+00	2.1645E+04	-8.8371E+00	1.9980E+04	-8.4329E+00	2.1645E+04	-7.0410E+00	8.9987E+04	-4.7796E+00	5.3837E+05	-1.8138E+00	6.1477E+04
1.9980E+04	-9.4259E+00	2.1645E+04	-8.8566E+00	1.9980E+04	-8.4531E+00	2.1645E+04	-7.0641E+00	8.9987E+04	-4.8095E+00	5.3837E+05	-1.8582E+00	6.1530E+04
1.9980E+04	-9.4443E+00	2.1645E+04	-8.8760E+00	1.9980E+04	-8.4732E+00	2.1645E+04	-7.0872E+00	8.9987E+04	-4.8393E+00	5.3837E+05	-1.9023E+00	6.1575E+04
1.9980E+04	-9.4626E+00	2.1645E+04	-8.8953E+00	1.9980E+04	-8.4933E+00	2.1645E+04	-7.1103E+00	8.9987E+04	-4.8690E+00	5.3837E+05	-1.9461E+00	6.1612E+04
1.9980E+04	-9.4810E+00	2.1645E+04	-8.9146E+00	1.9980E+04	-8.5133E+00	2.1645E+04	-7.1333E+00	8.9987E+04	-4.8986E+00	5.3837E+05	-1.9897E+00	6.1644E+04
1.9980E+04	-9.4993E+00	2.1645E+04	-8.9339E+00	1.9980E+04	-8.5334E+00	2.1645E+04	-7.1562E+00	8.9987E+04	-4.9280E+00	5.3837E+05	-2.0329E+00	6.1670E+04
1.9980E+04	-9.5176E+00	2.1645E+04	-8.9532E+00	1.9980E+04	-8.5533E+00	2.1645E+04	-7.1791E+00	8.9987E+04	-4.9574E+00	5.3837E+05	-2.0759E+00	6.1693E+04
1.9980E+04	-9.5359E+00	2.1645E+04	-8.9724E+00	1.9980E+04	-8.5733E+00	2.1645E+04	-7.2020E+00	8.9987E+04	-4.9866E+00	5.3837E+05	-2.1187E+00	6.1711E+04
1.9980E+04	-9.5541E+00	2.1645E+04	-8.9915E+00	1.9980E+04	-8.5932E+00	2.1645E+04	-7.2247E+00	8.9987E+04	-5.0158E+00	5.3837E+05	-2.1611E+00	6.1726E+04
1.9980E+04	-9.5723E+00	2.1645E+04	-9.0107E+00	1.9980E+04	-8.6130E+00	2.1645E+04	-7.2475E+00	8.9987E+04	-5.0449E+00	5.3837E+05	-2.2033E+00	6.1739E+04
1.9980E+04	-9.5905E+00	2.1645E+04	-9.0298E+00	1.9980E+04	-8.6329E+00	2.1645E+04	-7.2702E+00	8.9987E+04	-5.0738E+00	5.3837E+05	-2.2453E+00	6.1749E+04
1.9980E+04	-9.6086E+00	2.1645E+04	-9.0489E+00	1.9980E+04	-8.6527E+00	2.1645E+04	-7.2928E+00	8.9987E+04	-5.1027E+00	5.3837E+05	-2.2870E+00	6.1758E+04
1.9980E+04	-9.6268E+00	2.1645E+04	-9.0679E+00	1.9980E+04	-8.6724E+00	2.1645E+04	-7.3153E+00	8.9987E+04	-5.1314E+00	5.3837E+05	-2.3285E+00	6.1765E+04
1.9980E+04	-9.6448E+00	2.1645E+04	-9.0869E+00	1.9980E+04	-8.6921E+00	2.1645E+04	-7.3379E+00	8.9987E+04	-5.1601E+00	5.3837E+05	-2.3697E+00	6.1770E+04
1.9980E+04	-9.6629E+00	2.1645E+04	-9.1059E+00	1.9980E+04	-8.7118E+00	2.1645E+04	-7.3603E+00	8.9987E+04	-5.1886E+00	5.3837E+05	-2.4107E+00	6.1775E+04
1.9980E+04	-9.6809E+00	2.1645E+04	-9.1249E+00	1.9980E+04	-8.7315E+00	2.1645E+04	-7.3828E+00	8.9987E+04	-5.2171E+00	5.3837E+05	-2.4515E+00	6.1779E+04
1.9980E+04	-9.6989E+00	2.1645E+04	-9.1438E+00	1.9980E+04	-8.7511E+00	2.1645E+04	-7.4051E+00	8.9987E+04	-5.2455E+00	5.3837E+05	-2.4920E+00	6.1782E+04
1.9980E+04	-9.7169E+00	2.1645E+04	-9.1627E+00	1.9980E+04	-8.7707E+00	2.1645E+04	-7.4274E+00	8.9987E+04	-5.2738E+00	5.3837E+05	-2.5323E+00	6.1785E+04
1.9980E+04	-9.7349E+00	2.1645E+04	-9.1815E+00	1.9980E+04	-8.7902E+00	2.1645E+04	-7.4497E+00	8.9987E+04	-5.3019E+00	5.3837E+05	-2.5724E+00	6.1787E+04
1.9980E+04	-9.7528E+00	2.1645E+04	-9.2003E+00	1.9980E+04	-8.8097E+00	2.1645E+04	-7.4719E+00	8.9987E+04	-5.3300E+00	5.3837E+05	-2.6122E+00	6.1788E+04
1.9980E+04	-9.7707E+00	2.1645E+04	-9.2191E+00	1.9980E+04	-8.8292E+00	2.1645E+04	-7.4941E+00	8.9987E+04	-5.3580E+00	5.3837E+05	-2.6519E+00	6.1790E+04
1.9980E+04	-9.7885E+00	2.1645E+04	-9.2379E+00	1.9980E+04	-8.8486E+00	2.1645E+04	-7.5162E+00	8.9987E+04	-5.3859E+00	5.3837E+05	-2.6913E+00	6.1791E+04
1.9980E+04	-9.8064E+00	2.1645E+04	-9.2566E+00	1.9980E+04	-8.8680E+00	2.1645E+04	-7.5382E+00	8.9987E+04	-5.4137E+00	5.3837E+05	-2.7305E+00	6.1792E+04

Soil Parameters	
Kd (mL/g)	30
Moisture content	0.2
Erosion Rate (0.2 kg/sq m-yr)	0.2
Bulk Density (g/cc)	1.5
Over watering Rate (m/yr)	0.079
Affected Depth (m)	0.25
Lamda effective (1/yr)	0.007524484

Intake (mg/kg body wt./day) Soil

Flux Out (gm/yr)	No Recycle	Recycle	0.86 Concentration (gm/sq m)
0.0000E+00	0.0000E+00	0.0000E+00	0.00E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.00E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.00E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.00E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.00E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.00E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.00E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.00E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.00E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.00E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.00E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.00E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.00E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.00E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.00E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.00E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.00E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.00E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.00E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.00E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.00E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.00E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.00E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.00E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.00E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.00E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.00E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.00E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.00E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.00E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.00E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.00E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.00E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.00E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.00E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.00E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.00E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.00E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.00E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.00E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.00E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.00E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.00E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.00E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.00E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.00E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.00E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.00E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.00E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.00E+00
4.6213E-12	6.3636E-21	4.6791E-20	1.72E-17
3.2442E-11	4.4672E-20	3.2847E-19	1.21E-16
1.7616E-10	2.4258E-19	1.7837E-18	6.55E-16
9.6928E-10	1.3347E-18	9.8140E-18	3.61E-15
4.8489E-09	6.6769E-18	4.9095E-17	1.80E-14
2.2411E-08	3.0860E-17	2.2691E-16	8.34E-14

Flux Out (gm/yr)	No Recycle	Recycle	0.86 Concentration (gm/sq m)
9.6187E-08	1.3245E-16	9.7390E-16	3.58E-13
3.8484E-07	5.2993E-16	3.8965E-15	1.43E-12
1.4411E-06	1.9843E-15	1.4591E-14	5.36E-12
5.0697E-06	6.9810E-15	5.1331E-14	1.89E-11
1.6815E-05	2.3154E-14	1.7025E-13	6.26E-11
5.2748E-05	7.2635E-14	5.3408E-13	1.96E-10
1.5698E-04	2.1616E-13	1.5894E-12	5.84E-10
4.4444E-04	6.1200E-13	4.5000E-12	1.65E-09
1.2002E-03	1.6526E-12	1.2152E-11	4.47E-09
3.0987E-03	4.2670E-12	3.1375E-11	1.15E-08
7.6671E-03	1.0558E-11	7.7630E-11	2.85E-08
1.8218E-02	2.5086E-11	1.8446E-10	6.78E-08
4.1653E-02	5.7357E-11	4.2174E-10	1.55E-07
9.1810E-02	1.2642E-10	9.2959E-10	3.42E-07
1.9543E-01	2.6910E-10	1.9787E-09	7.27E-07
4.0238E-01	5.5408E-10	4.0741E-09	1.50E-06
8.0264E-01	1.1052E-09	8.1268E-09	2.99E-06
1.5533E+00	2.1389E-09	1.5728E-08	5.78E-06
2.9205E+00	4.0216E-09	2.9571E-08	1.09E-05
5.3416E+00	7.3555E-09	5.4084E-08	1.99E-05
9.5155E+00	1.3103E-08	9.6345E-08	3.54E-05
1.6528E+01	2.2760E-08	1.6735E-07	6.15E-05
2.8024E+01	3.8590E-08	2.8375E-07	1.04E-04
4.6431E+01	6.3936E-08	4.7012E-07	1.73E-04
7.5243E+01	1.0361E-07	7.6184E-07	2.80E-04
1.1937E+02	1.6438E-07	1.2087E-06	4.44E-04
1.8558E+02	2.5554E-07	1.8790E-06	6.90E-04
2.8292E+02	3.8958E-07	2.8646E-06	1.05E-03
4.2333E+02	5.8293E-07	4.2862E-06	1.58E-03
6.2215E+02	8.5671E-07	6.2993E-06	2.31E-03
8.9873E+02	1.2376E-06	9.0997E-06	3.34E-03
1.2769E+03	1.7584E-06	1.2929E-05	4.75E-03
1.7857E+03	2.4589E-06	1.8080E-05	6.64E-03
2.4593E+03	3.3865E-06	2.4901E-05	9.15E-03
3.3377E+03	4.5960E-06	3.3794E-05	1.24E-02
4.4663E+03	6.1501E-06	4.5221E-05	1.66E-02
5.8960E+03	8.1189E-06	5.9698E-05	2.19E-02
7.6826E+03	1.0579E-05	7.7787E-05	2.86E-02
9.8859E+03	1.3613E-05	1.0010E-04	3.68E-02
1.2569E+04	1.7307E-05	1.2726E-04	4.68E-02
1.5795E+04	2.1750E-05	1.5993E-04	5.88E-02
1.9630E+04	2.7031E-05	1.9876E-04	7.30E-02
2.4136E+04	3.3236E-05	2.4438E-04	8.98E-02
2.9373E+04	4.0446E-05	2.9740E-04	1.09E-01
3.5393E+04	4.8736E-05	3.5835E-04	1.32E-01
4.2242E+04	5.8168E-05	4.2771E-04	1.57E-01
4.9959E+04	6.8794E-05	5.0584E-04	1.86E-01
5.8569E+04	8.0650E-05	5.9301E-04	2.18E-01
6.8085E+04	9.3754E-05	6.8937E-04	2.53E-01
7.8510E+04	1.0811E-04	7.9492E-04	2.92E-01
8.9831E+04	1.2370E-04	9.0954E-04	3.34E-01
1.0202E+05	1.4048E-04	1.0330E-03	3.80E-01

Flux Out (gm/yr)	No Recycle	Recycle	0.86 Concentration (gm/sq m)
1.1504E+05	1.5841E-04	1.1648E-03	4.28E-01
1.2884E+05	1.7741E-04	1.3045E-03	4.79E-01
1.4335E+05	1.9739E-04	1.4514E-03	5.33E-01
1.5850E+05	2.1826E-04	1.6048E-03	5.90E-01
1.7421E+05	2.3988E-04	1.7638E-03	6.48E-01
1.9038E+05	2.6215E-04	1.9276E-03	7.08E-01
2.0692E+05	2.8493E-04	2.0951E-03	7.70E-01
2.2374E+05	3.0809E-04	2.2654E-03	8.32E-01
2.4073E+05	3.3148E-04	2.4374E-03	8.96E-01
2.5779E+05	3.5498E-04	2.6102E-03	9.59E-01
2.7484E+05	3.7846E-04	2.7828E-03	1.02E+00
2.9178E+05	4.0178E-04	2.9542E-03	1.09E+00
3.0852E+05	4.2483E-04	3.1237E-03	1.15E+00
3.2498E+05	4.4750E-04	3.2905E-03	1.21E+00
3.4111E+05	4.6971E-04	3.4537E-03	1.27E+00
3.5682E+05	4.9134E-04	3.6128E-03	1.33E+00
3.7207E+05	5.1235E-04	3.7673E-03	1.38E+00
3.8682E+05	5.3265E-04	3.9166E-03	1.44E+00
4.0102E+05	5.5221E-04	4.0604E-03	1.49E+00
4.1465E+05	5.7098E-04	4.1984E-03	1.54E+00
4.2769E+05	5.8894E-04	4.3304E-03	1.59E+00
4.4013E+05	6.0606E-04	4.4563E-03	1.64E+00
4.5195E+05	6.2233E-04	4.5760E-03	1.68E+00
4.6316E+05	6.3777E-04	4.6895E-03	1.72E+00
4.7376E+05	6.5237E-04	4.7968E-03	1.76E+00
4.8376E+05	6.6614E-04	4.8981E-03	1.80E+00
4.9318E+05	6.7911E-04	4.9935E-03	1.83E+00
5.0203E+05	6.9130E-04	5.0831E-03	1.87E+00
5.1033E+05	7.0273E-04	5.1672E-03	1.90E+00
5.1811E+05	7.1344E-04	5.2459E-03	1.93E+00
5.2539E+05	7.2346E-04	5.3196E-03	1.95E+00
5.3218E+05	7.3282E-04	5.3884E-03	1.98E+00
5.3852E+05	7.4155E-04	5.4526E-03	2.00E+00
5.4444E+05	7.4969E-04	5.5124E-03	2.03E+00
5.4995E+05	7.5728E-04	5.5682E-03	2.05E+00
5.5508E+05	7.6435E-04	5.6202E-03	2.07E+00
5.5986E+05	7.7094E-04	5.6686E-03	2.08E+00
5.6432E+05	7.7707E-04	5.7137E-03	2.10E+00
5.6847E+05	7.8278E-04	5.7558E-03	2.12E+00
5.7233E+05	7.8811E-04	5.7949E-03	2.13E+00
5.7594E+05	7.9308E-04	5.8314E-03	2.14E+00
5.7931E+05	7.9771E-04	5.8655E-03	2.16E+00
5.8245E+05	8.0204E-04	5.8974E-03	2.17E+00
5.8540E+05	8.0610E-04	5.9272E-03	2.18E+00
5.8815E+05	8.0989E-04	5.9551E-03	2.19E+00
5.9073E+05	8.1344E-04	5.9812E-03	2.20E+00
5.9315E+05	8.1678E-04	6.0057E-03	2.21E+00
5.9543E+05	8.1991E-04	6.0287E-03	2.22E+00
5.9757E+05	8.2285E-04	6.0504E-03	2.22E+00
5.9958E+05	8.2562E-04	6.0707E-03	2.23E+00
6.0147E+05	8.2822E-04	6.0899E-03	2.24E+00
6.0325E+05	8.3068E-04	6.1079E-03	2.24E+00

Flux Out (gm/yr)	No Recycle	Recycle	0.86 Concentration (gm/sq m)
6.0492E+05	8.3298E-04	6.1249E-03	2.25E+00
6.0650E+05	8.3516E-04	6.1408E-03	2.26E+00
6.0798E+05	8.3720E-04	6.1559E-03	2.26E+00
6.0938E+05	8.3912E-04	6.1700E-03	2.27E+00
6.1069E+05	8.4093E-04	6.1833E-03	2.27E+00
6.1193E+05	8.4263E-04	6.1958E-03	2.28E+00
6.1309E+05	8.4423E-04	6.2076E-03	2.28E+00
6.1419E+05	8.4574E-04	6.2187E-03	2.29E+00
6.1522E+05	8.4716E-04	6.2291E-03	2.29E+00
6.1619E+05	8.4850E-04	6.2389E-03	2.29E+00
6.1711E+05	8.4976E-04	6.2482E-03	2.30E+00
6.1798E+05	8.5096E-04	6.2571E-03	2.30E+00
6.1881E+05	8.5211E-04	6.2655E-03	2.30E+00
6.1960E+05	8.5320E-04	6.2735E-03	2.31E+00
6.2037E+05	8.5425E-04	6.2813E-03	2.31E+00
6.2111E+05	8.5527E-04	6.2888E-03	2.31E+00
6.2183E+05	8.5627E-04	6.2961E-03	2.31E+00
6.2254E+05	8.5725E-04	6.3033E-03	2.32E+00
6.2325E+05	8.5821E-04	6.3104E-03	2.32E+00
6.2395E+05	8.5918E-04	6.3175E-03	2.32E+00
6.2465E+05	8.6014E-04	6.3246E-03	2.32E+00
6.2535E+05	8.6111E-04	6.3317E-03	2.33E+00
6.2607E+05	8.6210E-04	6.3389E-03	2.33E+00
6.2679E+05	8.6309E-04	6.3463E-03	2.33E+00
6.2752E+05	8.6410E-04	6.3537E-03	2.33E+00
6.2827E+05	8.6514E-04	6.3613E-03	2.34E+00
6.2903E+05	8.6619E-04	6.3690E-03	2.34E+00
6.2981E+05	8.6725E-04	6.3769E-03	2.34E+00
6.3060E+05	8.6834E-04	6.3849E-03	2.35E+00
6.3141E+05	8.6945E-04	6.3930E-03	2.35E+00
6.3223E+05	8.7058E-04	6.4013E-03	2.35E+00
6.3306E+05	8.7173E-04	6.4098E-03	2.36E+00
6.3391E+05	8.7290E-04	6.4184E-03	2.36E+00
6.3477E+05	8.7408E-04	6.4271E-03	2.36E+00
6.3564E+05	8.7529E-04	6.4359E-03	2.36E+00
6.3653E+05	8.7651E-04	6.4449E-03	2.37E+00
6.3743E+05	8.7775E-04	6.4540E-03	2.37E+00
6.3834E+05	8.7900E-04	6.4633E-03	2.38E+00
6.3927E+05	8.8028E-04	6.4726E-03	2.38E+00
6.4020E+05	8.8156E-04	6.4821E-03	2.38E+00
6.4115E+05	8.8287E-04	6.4917E-03	2.39E+00
6.4211E+05	8.8419E-04	6.5014E-03	2.39E+00
6.4307E+05	8.8552E-04	6.5112E-03	2.39E+00
6.4405E+05	8.8686E-04	6.5210E-03	2.40E+00
6.4503E+05	8.8821E-04	6.5310E-03	2.40E+00
6.4601E+05	8.8957E-04	6.5409E-03	2.40E+00
6.4700E+05	8.9092E-04	6.5509E-03	2.41E+00
6.4798E+05	8.9228E-04	6.5609E-03	2.41E+00
6.4896E+05	8.9363E-04	6.5708E-03	2.41E+00
6.4994E+05	8.9497E-04	6.5806E-03	2.42E+00
6.5090E+05	8.9629E-04	6.5904E-03	2.42E+00
6.5184E+05	8.9759E-04	6.5999E-03	2.43E+00

Flux Out (gm/yr)	No Recycle	Recycle	0.86 Concentration (gm/sq m)
6.5277E+05	8.9887E-04	6.6093E-03	2.43E+00
6.5367E+05	9.0012E-04	6.6185E-03	2.43E+00
6.5455E+05	9.0133E-04	6.6274E-03	2.44E+00
6.5541E+05	9.0250E-04	6.6360E-03	2.44E+00
6.5623E+05	9.0363E-04	6.6443E-03	2.44E+00
6.5701E+05	9.0471E-04	6.6523E-03	2.44E+00
6.5777E+05	9.0575E-04	6.6599E-03	2.45E+00
6.5848E+05	9.0673E-04	6.6671E-03	2.45E+00
6.5915E+05	9.0766E-04	6.6740E-03	2.45E+00
6.5979E+05	9.0854E-04	6.6804E-03	2.45E+00
6.6039E+05	9.0936E-04	6.6864E-03	2.46E+00
6.6094E+05	9.1012E-04	6.6921E-03	2.46E+00
6.6146E+05	9.1083E-04	6.6973E-03	2.46E+00
6.6193E+05	9.1149E-04	6.7021E-03	2.46E+00
6.6237E+05	9.1209E-04	6.7066E-03	2.46E+00
6.6278E+05	9.1265E-04	6.7106E-03	2.47E+00
6.6314E+05	9.1315E-04	6.7144E-03	2.47E+00
6.6348E+05	9.1361E-04	6.7177E-03	2.47E+00
6.6378E+05	9.1403E-04	6.7208E-03	2.47E+00
6.6405E+05	9.1440E-04	6.7235E-03	2.47E+00
6.6429E+05	9.1474E-04	6.7260E-03	2.47E+00
6.6451E+05	9.1504E-04	6.7282E-03	2.47E+00
6.6471E+05	9.1531E-04	6.7302E-03	2.47E+00
6.6488E+05	9.1554E-04	6.7319E-03	2.47E+00
6.6503E+05	9.1575E-04	6.7335E-03	2.47E+00
6.6517E+05	9.1594E-04	6.7349E-03	2.47E+00
6.6529E+05	9.1610E-04	6.7360E-03	2.48E+00
6.6539E+05	9.1625E-04	6.7371E-03	2.48E+00
6.6548E+05	9.1637E-04	6.7380E-03	2.48E+00
6.6556E+05	9.1648E-04	6.7389E-03	2.48E+00
6.6563E+05	9.1658E-04	6.7396E-03	2.48E+00
6.6570E+05	9.1667E-04	6.7403E-03	2.48E+00
6.6576E+05	9.1676E-04	6.7409E-03	2.48E+00
6.6582E+05	9.1684E-04	6.7415E-03	2.48E+00
6.6589E+05	9.1693E-04	6.7421E-03	2.48E+00
6.6595E+05	9.1702E-04	6.7428E-03	2.48E+00
6.6603E+05	9.1713E-04	6.7436E-03	2.48E+00
6.6613E+05	9.1726E-04	6.7446E-03	2.48E+00
6.6625E+05	9.1743E-04	6.7458E-03	2.48E+00
6.6639E+05	9.1763E-04	6.7473E-03	2.48E+00
6.6658E+05	9.1788E-04	6.7492E-03	2.48E+00
6.6681E+05	9.1821E-04	6.7515E-03	2.48E+00
6.6711E+05	9.1861E-04	6.7545E-03	2.48E+00
6.6747E+05	9.1911E-04	6.7582E-03	2.48E+00
6.6792E+05	9.1973E-04	6.7627E-03	2.49E+00
6.6846E+05	9.2047E-04	6.7682E-03	2.49E+00
6.6911E+05	9.2137E-04	6.7748E-03	2.49E+00
6.6988E+05	9.2243E-04	6.7826E-03	2.49E+00
6.7079E+05	9.2368E-04	6.7918E-03	2.50E+00
6.7184E+05	9.2513E-04	6.8024E-03	2.50E+00
6.7304E+05	9.2679E-04	6.8146E-03	2.50E+00
6.7441E+05	9.2867E-04	6.8285E-03	2.51E+00

Flux Out (gm/yr)	No Recycle	Recycle	0.86 Concentration (gm/sq m)
6.7595E+05	9.3078E-04	6.8440E-03	2.51E+00
6.7765E+05	9.3313E-04	6.8613E-03	2.52E+00
6.7953E+05	9.3572E-04	6.8803E-03	2.53E+00
6.8157E+05	9.3853E-04	6.9010E-03	2.54E+00
6.8378E+05	9.4157E-04	6.9233E-03	2.54E+00
6.8614E+05	9.4482E-04	6.9472E-03	2.55E+00
6.8864E+05	9.4826E-04	6.9725E-03	2.56E+00
6.9126E+05	9.5188E-04	6.9991E-03	2.57E+00
6.9400E+05	9.5565E-04	7.0268E-03	2.58E+00
6.9683E+05	9.5955E-04	7.0555E-03	2.59E+00
6.9974E+05	9.6355E-04	7.0849E-03	2.60E+00
7.0269E+05	9.6762E-04	7.1148E-03	2.61E+00
7.0568E+05	9.7173E-04	7.1451E-03	2.63E+00
7.0868E+05	9.7585E-04	7.1754E-03	2.64E+00
7.1166E+05	9.7996E-04	7.2056E-03	2.65E+00
7.1461E+05	9.8403E-04	7.2355E-03	2.66E+00
7.1751E+05	9.8802E-04	7.2649E-03	2.67E+00
7.2034E+05	9.9192E-04	7.2935E-03	2.68E+00
7.2309E+05	9.9571E-04	7.3214E-03	2.69E+00
7.2574E+05	9.9936E-04	7.3482E-03	2.70E+00
7.2829E+05	1.0029E-03	7.3739E-03	2.71E+00
7.3071E+05	1.0062E-03	7.3985E-03	2.72E+00
7.3300E+05	1.0094E-03	7.4217E-03	2.73E+00
7.3517E+05	1.0123E-03	7.4436E-03	2.74E+00
7.3720E+05	1.0151E-03	7.4641E-03	2.74E+00
7.3909E+05	1.0177E-03	7.4833E-03	2.75E+00
7.4084E+05	1.0201E-03	7.5011E-03	2.76E+00
7.4246E+05	1.0224E-03	7.5175E-03	2.76E+00
7.4395E+05	1.0244E-03	7.5326E-03	2.77E+00
7.4532E+05	1.0263E-03	7.5464E-03	2.77E+00
7.4656E+05	1.0280E-03	7.5589E-03	2.78E+00
7.4768E+05	1.0296E-03	7.5703E-03	2.78E+00
7.4870E+05	1.0310E-03	7.5806E-03	2.79E+00
7.4961E+05	1.0322E-03	7.5898E-03	2.79E+00
7.5042E+05	1.0333E-03	7.5981E-03	2.79E+00
7.5115E+05	1.0343E-03	7.6054E-03	2.79E+00
7.5179E+05	1.0352E-03	7.6120E-03	2.80E+00
7.5236E+05	1.0360E-03	7.6177E-03	2.80E+00
7.5287E+05	1.0367E-03	7.6228E-03	2.80E+00
7.5331E+05	1.0373E-03	7.6273E-03	2.80E+00
7.5369E+05	1.0378E-03	7.6312E-03	2.80E+00
7.5403E+05	1.0383E-03	7.6346E-03	2.81E+00
7.5432E+05	1.0387E-03	7.6375E-03	2.81E+00
7.5457E+05	1.0390E-03	7.6401E-03	2.81E+00
7.5479E+05	1.0393E-03	7.6423E-03	2.81E+00
7.5497E+05	1.0396E-03	7.6442E-03	2.81E+00
7.5513E+05	1.0398E-03	7.6458E-03	2.81E+00
7.5527E+05	1.0400E-03	7.6472E-03	2.81E+00
7.5539E+05	1.0402E-03	7.6483E-03	2.81E+00
7.5549E+05	1.0403E-03	7.6493E-03	2.81E+00
7.5557E+05	1.0404E-03	7.6502E-03	2.81E+00
7.5564E+05	1.0405E-03	7.6509E-03	2.81E+00

Flux Out (gm/yr)	No Recycle	Recycle	0.86 Concentration (gm/sq m)
7.5570E+05	1.0406E-03	7.6515E-03	2.81E+00
7.5575E+05	1.0407E-03	7.6520E-03	2.81E+00
7.5579E+05	1.0407E-03	7.6524E-03	2.81E+00
7.5583E+05	1.0408E-03	7.6528E-03	2.81E+00
7.5586E+05	1.0408E-03	7.6531E-03	2.81E+00
7.5588E+05	1.0409E-03	7.6533E-03	2.81E+00
7.5590E+05	1.0409E-03	7.6536E-03	2.81E+00
7.5592E+05	1.0409E-03	7.6537E-03	2.81E+00
7.5594E+05	1.0409E-03	7.6539E-03	2.81E+00
7.5595E+05	1.0410E-03	7.6541E-03	2.81E+00
7.5597E+05	1.0410E-03	7.6543E-03	2.81E+00
7.5600E+05	1.0410E-03	7.6545E-03	2.81E+00
7.5603E+05	1.0411E-03	7.6548E-03	2.81E+00
7.5608E+05	1.0411E-03	7.6553E-03	2.81E+00
7.5614E+05	1.0412E-03	7.6560E-03	2.81E+00
7.5624E+05	1.0413E-03	7.6570E-03	2.81E+00
7.5638E+05	1.0415E-03	7.6584E-03	2.81E+00
7.5658E+05	1.0418E-03	7.6605E-03	2.81E+00
7.5687E+05	1.0422E-03	7.6634E-03	2.82E+00
7.5726E+05	1.0428E-03	7.6673E-03	2.82E+00
7.5780E+05	1.0435E-03	7.6728E-03	2.82E+00
7.5852E+05	1.0445E-03	7.6801E-03	2.82E+00
7.5947E+05	1.0458E-03	7.6897E-03	2.83E+00
7.6071E+05	1.0475E-03	7.7022E-03	2.83E+00
7.6228E+05	1.0497E-03	7.7182E-03	2.84E+00
7.6427E+05	1.0524E-03	7.7383E-03	2.84E+00
7.6674E+05	1.0558E-03	7.7633E-03	2.85E+00
7.6976E+05	1.0600E-03	7.7939E-03	2.86E+00
7.7342E+05	1.0650E-03	7.8309E-03	2.88E+00
7.7779E+05	1.0710E-03	7.8751E-03	2.89E+00
7.8293E+05	1.0781E-03	7.9272E-03	2.91E+00
7.8893E+05	1.0864E-03	7.9880E-03	2.94E+00
7.9584E+05	1.0959E-03	8.0579E-03	2.96E+00
8.0370E+05	1.1067E-03	8.1375E-03	2.99E+00
8.1256E+05	1.1189E-03	8.2272E-03	3.02E+00
8.2244E+05	1.1325E-03	8.3273E-03	3.06E+00
8.3334E+05	1.1475E-03	8.4377E-03	3.10E+00
8.4526E+05	1.1639E-03	8.5583E-03	3.14E+00
8.5816E+05	1.1817E-03	8.6889E-03	3.19E+00
8.7199E+05	1.2007E-03	8.8289E-03	3.24E+00
8.8669E+05	1.2210E-03	8.9778E-03	3.30E+00
9.0218E+05	1.2423E-03	9.1347E-03	3.36E+00
9.1837E+05	1.2646E-03	9.2986E-03	3.42E+00
9.3515E+05	1.2877E-03	9.4684E-03	3.48E+00
9.5240E+05	1.3115E-03	9.6431E-03	3.54E+00
9.7000E+05	1.3357E-03	9.8213E-03	3.61E+00
9.8782E+05	1.3602E-03	1.0002E-02	3.68E+00
1.0057E+06	1.3849E-03	1.0183E-02	3.74E+00
1.0236E+06	1.4095E-03	1.0364E-02	3.81E+00
1.0414E+06	1.4340E-03	1.0544E-02	3.87E+00
1.0588E+06	1.4580E-03	1.0721E-02	3.94E+00
1.0759E+06	1.4815E-03	1.0894E-02	4.00E+00

Flux Out (gm/yr)	No Recycle	Recycle	0.86 Concentration (gm/sq m)
1.0925E+06	1.5044E-03	1.1062E-02	4.06E+00
1.1086E+06	1.5265E-03	1.1224E-02	4.12E+00
1.1240E+06	1.5477E-03	1.1380E-02	4.18E+00
1.1387E+06	1.5680E-03	1.1529E-02	4.24E+00
1.1527E+06	1.5872E-03	1.1671E-02	4.29E+00
1.1659E+06	1.6054E-03	1.1804E-02	4.34E+00
1.1782E+06	1.6224E-03	1.1930E-02	4.38E+00
1.1898E+06	1.6384E-03	1.2047E-02	4.43E+00
1.2006E+06	1.6532E-03	1.2156E-02	4.47E+00
1.2105E+06	1.6669E-03	1.2257E-02	4.50E+00
1.2197E+06	1.6795E-03	1.2349E-02	4.54E+00
1.2281E+06	1.6910E-03	1.2434E-02	4.57E+00
1.2357E+06	1.7016E-03	1.2512E-02	4.60E+00
1.2426E+06	1.7111E-03	1.2582E-02	4.62E+00
1.2489E+06	1.7198E-03	1.2645E-02	4.65E+00
1.2545E+06	1.7275E-03	1.2702E-02	4.67E+00
1.2596E+06	1.7345E-03	1.2753E-02	4.69E+00
1.2641E+06	1.7407E-03	1.2799E-02	4.70E+00
1.2681E+06	1.7462E-03	1.2840E-02	4.72E+00
1.2717E+06	1.7511E-03	1.2876E-02	4.73E+00
1.2748E+06	1.7554E-03	1.2907E-02	4.74E+00
1.2775E+06	1.7592E-03	1.2935E-02	4.75E+00
1.2799E+06	1.7625E-03	1.2959E-02	4.76E+00
1.2820E+06	1.7654E-03	1.2981E-02	4.77E+00
1.2838E+06	1.7679E-03	1.2999E-02	4.78E+00
1.2854E+06	1.7700E-03	1.3015E-02	4.78E+00
1.2868E+06	1.7719E-03	1.3029E-02	4.79E+00
1.2880E+06	1.7735E-03	1.3041E-02	4.79E+00
1.2890E+06	1.7749E-03	1.3051E-02	4.80E+00
1.2898E+06	1.7761E-03	1.3060E-02	4.80E+00
1.2906E+06	1.7771E-03	1.3067E-02	4.80E+00
1.2912E+06	1.7780E-03	1.3073E-02	4.80E+00
1.2917E+06	1.7787E-03	1.3079E-02	4.81E+00
1.2921E+06	1.7793E-03	1.3083E-02	4.81E+00
1.2925E+06	1.7798E-03	1.3087E-02	4.81E+00
1.2928E+06	1.7803E-03	1.3090E-02	4.81E+00
1.2931E+06	1.7806E-03	1.3093E-02	4.81E+00
1.2933E+06	1.7809E-03	1.3095E-02	4.81E+00
1.2935E+06	1.7812E-03	1.3097E-02	4.81E+00
1.2937E+06	1.7814E-03	1.3098E-02	4.81E+00
1.2938E+06	1.7816E-03	1.3100E-02	4.81E+00
1.2939E+06	1.7817E-03	1.3101E-02	4.81E+00
1.2940E+06	1.7818E-03	1.3102E-02	4.81E+00
1.2941E+06	1.7819E-03	1.3102E-02	4.81E+00
1.2941E+06	1.7820E-03	1.3103E-02	4.81E+00
1.2942E+06	1.7821E-03	1.3104E-02	4.82E+00
1.2942E+06	1.7822E-03	1.3104E-02	4.82E+00
1.2943E+06	1.7823E-03	1.3105E-02	4.82E+00
1.2943E+06	1.7823E-03	1.3105E-02	4.82E+00
1.2944E+06	1.7824E-03	1.3106E-02	4.82E+00
1.2945E+06	1.7825E-03	1.3107E-02	4.82E+00
1.2946E+06	1.7826E-03	1.3108E-02	4.82E+00

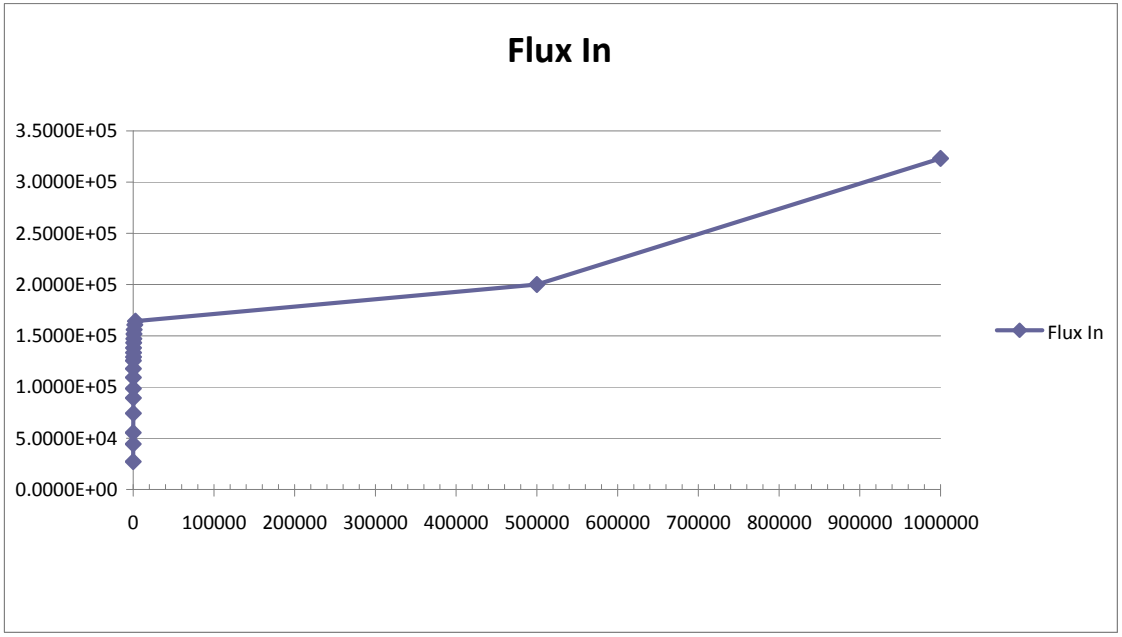
Flux Out (gm/yr)	No Recycle	Recycle	0.86 Concentration (gm/sq m)
1.2947E+06	1.7828E-03	1.3109E-02	4.82E+00
1.2948E+06	1.7830E-03	1.3110E-02	4.82E+00
1.2950E+06	1.7832E-03	1.3112E-02	4.82E+00
1.2952E+06	1.7835E-03	1.3114E-02	4.82E+00
1.2955E+06	1.7839E-03	1.3117E-02	4.82E+00
1.2958E+06	1.7844E-03	1.3120E-02	4.82E+00
1.2962E+06	1.7849E-03	1.3125E-02	4.82E+00
1.2967E+06	1.7856E-03	1.3129E-02	4.82E+00
1.2973E+06	1.7864E-03	1.3135E-02	4.83E+00
1.2980E+06	1.7873E-03	1.3142E-02	4.83E+00
1.2987E+06	1.7884E-03	1.3150E-02	4.83E+00
1.2996E+06	1.7896E-03	1.3159E-02	4.84E+00
1.3006E+06	1.7909E-03	1.3169E-02	4.84E+00
1.3017E+06	1.7925E-03	1.3180E-02	4.84E+00
1.3029E+06	1.7942E-03	1.3192E-02	4.85E+00
1.3043E+06	1.7960E-03	1.3206E-02	4.85E+00
1.3057E+06	1.7980E-03	1.3221E-02	4.86E+00
1.3073E+06	1.8002E-03	1.3236E-02	4.86E+00
1.3090E+06	1.8024E-03	1.3253E-02	4.87E+00
1.3107E+06	1.8049E-03	1.3271E-02	4.88E+00
1.3126E+06	1.8074E-03	1.3290E-02	4.88E+00
1.3145E+06	1.8100E-03	1.3309E-02	4.89E+00
1.3164E+06	1.8127E-03	1.3329E-02	4.90E+00
1.3185E+06	1.8155E-03	1.3349E-02	4.91E+00
1.3205E+06	1.8183E-03	1.3370E-02	4.91E+00
1.3225E+06	1.8212E-03	1.3391E-02	4.92E+00
1.3246E+06	1.8240E-03	1.3412E-02	4.93E+00
1.3266E+06	1.8268E-03	1.3432E-02	4.94E+00
1.3287E+06	1.8296E-03	1.3453E-02	4.94E+00
1.3306E+06	1.8323E-03	1.3473E-02	4.95E+00
1.3325E+06	1.8349E-03	1.3492E-02	4.96E+00
1.3344E+06	1.8375E-03	1.3511E-02	4.96E+00
1.3362E+06	1.8399E-03	1.3529E-02	4.97E+00
1.3379E+06	1.8423E-03	1.3546E-02	4.98E+00
1.3395E+06	1.8445E-03	1.3563E-02	4.98E+00
1.3411E+06	1.8467E-03	1.3578E-02	4.99E+00
1.3425E+06	1.8486E-03	1.3593E-02	4.99E+00
1.3439E+06	1.8505E-03	1.3607E-02	5.00E+00
1.3451E+06	1.8522E-03	1.3619E-02	5.00E+00
1.3463E+06	1.8538E-03	1.3631E-02	5.01E+00
1.3473E+06	1.8553E-03	1.3642E-02	5.01E+00
1.3483E+06	1.8567E-03	1.3652E-02	5.02E+00
1.3492E+06	1.8579E-03	1.3661E-02	5.02E+00
1.3500E+06	1.8590E-03	1.3669E-02	5.02E+00
1.3508E+06	1.8600E-03	1.3677E-02	5.03E+00
1.3514E+06	1.8609E-03	1.3683E-02	5.03E+00
1.3520E+06	1.8618E-03	1.3689E-02	5.03E+00
1.3526E+06	1.8625E-03	1.3695E-02	5.03E+00
1.3530E+06	1.8631E-03	1.3700E-02	5.03E+00
1.3535E+06	1.8637E-03	1.3704E-02	5.04E+00
1.3538E+06	1.8642E-03	1.3708E-02	5.04E+00
1.3542E+06	1.8647E-03	1.3711E-02	5.04E+00

Flux Out (gm/yr)	No Recycle	Recycle	0.86 Concentration (gm/sq m)
1.3544E+06	1.8651E-03	1.3714E-02	5.04E+00
1.3547E+06	1.8654E-03	1.3716E-02	5.04E+00
1.3549E+06	1.8657E-03	1.3718E-02	5.04E+00
1.3551E+06	1.8660E-03	1.3720E-02	5.04E+00
1.3553E+06	1.8662E-03	1.3722E-02	5.04E+00
1.3554E+06	1.8664E-03	1.3723E-02	5.04E+00
1.3555E+06	1.8666E-03	1.3725E-02	5.04E+00
1.3556E+06	1.8667E-03	1.3726E-02	5.04E+00
1.3557E+06	1.8668E-03	1.3727E-02	5.04E+00
1.3558E+06	1.8669E-03	1.3727E-02	5.04E+00
1.3558E+06	1.8670E-03	1.3728E-02	5.04E+00
1.3559E+06	1.8671E-03	1.3728E-02	5.04E+00
1.3559E+06	1.8671E-03	1.3729E-02	5.04E+00
1.3560E+06	1.8672E-03	1.3729E-02	5.05E+00
1.3560E+06	1.8672E-03	1.3730E-02	5.05E+00
1.3560E+06	1.8673E-03	1.3730E-02	5.05E+00
1.3561E+06	1.8673E-03	1.3730E-02	5.05E+00
1.3561E+06	1.8673E-03	1.3730E-02	5.05E+00
1.3561E+06	1.8673E-03	1.3730E-02	5.05E+00
1.3561E+06	1.8674E-03	1.3731E-02	5.05E+00
1.3561E+06	1.8674E-03	1.3731E-02	5.05E+00
1.3561E+06	1.8674E-03	1.3731E-02	5.05E+00
1.3561E+06	1.8674E-03	1.3731E-02	5.05E+00
1.3561E+06	1.8674E-03	1.3731E-02	5.05E+00
1.3561E+06	1.8674E-03	1.3731E-02	5.05E+00
1.3561E+06	1.8674E-03	1.3731E-02	5.05E+00
1.3561E+06	1.8674E-03	1.3731E-02	5.05E+00
1.3561E+06	1.8674E-03	1.3731E-02	5.05E+00
1.3562E+06	1.8674E-03	1.3731E-02	5.05E+00
1.3562E+06	1.8674E-03	1.3731E-02	5.05E+00
1.3562E+06	1.8674E-03	1.3731E-02	5.05E+00
1.3562E+06	1.8674E-03	1.3731E-02	5.05E+00
1.3562E+06	1.8674E-03	1.3731E-02	5.05E+00

Combined TSPA Case, 2003 Pumping Rates, Present Climate
Non-Radiologic Metals Transport from 18 km to Amargosa Farms
Contaminant: Molybdenum
Oral Ref dose =5E-03 mg/kg body wt./day
Pump Rate= 16828 acre-ft/yr 20748924000 liters/yr

Input Curve

Time (yr)	Flux In	Del R
60	2.7147E+04	
70	4.4293E+04	1.7146E+04
80	5.5366E+04	1.1073E+04
100	7.4298E+04	1.8932E+04
120	8.9301E+04	1.5002E+04
140	9.8588E+04	9.2873E+03
190	1.0930E+05	1.0716E+04
240	1.1788E+05	8.5728E+03
290	1.2574E+05	7.8584E+03
360	1.2931E+05	3.5720E+03
400	1.3359E+05	4.2864E+03
480	1.3824E+05	4.6436E+03
630	1.4324E+05	5.0008E+03
700	1.4717E+05	3.9292E+03
910	1.5181E+05	4.6436E+03
1190	1.5610E+05	4.2864E+03
2010	1.6074E+05	4.6436E+03
2760	1.6431E+05	3.5720E+03
500000	2.0006E+05	3.5743E+04
1000000	323152.2	1.2310E+05



Output Curve

6.13E-03		specific discharge (m/day)
1.3984E-02	v	groundwater velocity (km/yr)
1.6000E+01	L	path length (km)
1.0000E-01	D	Dispersion Coefficient (km)
1.3984E-03	Disp	Dispersivity (sq km/yr)
1.0000E+00	K	Retardation Factor (no units)
1.1442E+03	td	arrival time of the mid-point =TL (yr)
0.0000E+00	Kd	distribution coefficient =Kd (mL/gm)
1.6000E-01	ε	porosity
2.0000E+00	ρ	bulk density of solid (gm/mL)
0.0000E+00	λ	decay constant (1/yr)
NA	t1/2	halflife (yr)

Note: When λ is set to zero this is either a stable contaminant or a member of a decay chain. Decay and growth of radionuclides in decay chain members is adjusted in a separate work sheet.

Composite Curves

Time (yrs)	Arg 1	Curve 1	Arg 2	Curve 2	Arg 3	Curve 3	Arg 4	Curve 4	Arg 5	Curve 5	Arg 6	Curve 6
250	1.2943E+01	0.0000E+00	1.3437E+01	0.0000E+00	1.3970E+01	0.0000E+00	1.5177E+01	0.0000E+00	1.6631E+01	0.0000E+00	1.8436E+01	0.0000E+00
2000	-3.3784E+00	1.7146E+04	-3.3446E+00	1.1073E+04	-3.3106E+00	1.8932E+04	-3.2422E+00	1.5002E+04	-3.1732E+00	9.2872E+03	-3.1035E+00	1.0716E+04
4000	-8.3282E+00	1.7146E+04	-8.3090E+00	1.1073E+04	-8.2897E+00	1.8932E+04	-8.2510E+00	1.5002E+04	-8.2122E+00	9.2873E+03	-8.1733E+00	1.0716E+04
6000	-1.1635E+01	1.7146E+04	-1.1620E+01	1.1073E+04	-1.1606E+01	1.8932E+04	-1.1577E+01	1.5002E+04	-1.1548E+01	9.2873E+03	-1.1519E+01	1.0716E+04
8000	-1.4260E+01	1.7146E+04	-1.4248E+01	1.1073E+04	-1.4236E+01	1.8932E+04	-1.4212E+01	1.5002E+04	-1.4188E+01	9.2873E+03	-1.4164E+01	1.0716E+04
10000	-1.6496E+01	1.7146E+04	-1.6485E+01	1.1073E+04	-1.6475E+01	1.8932E+04	-1.6454E+01	1.5002E+04	-1.6433E+01	9.2873E+03	-1.6412E+01	1.0716E+04
12000	-1.8473E+01	1.7146E+04	-1.8464E+01	1.1073E+04	-1.8454E+01	1.8932E+04	-1.8436E+01	1.5002E+04	-1.8417E+01	9.2873E+03	-1.8398E+01	1.0716E+04
14000	-2.0264E+01	1.7146E+04	-2.0255E+01	1.1073E+04	-2.0247E+01	1.8932E+04	-2.0230E+01	1.5002E+04	-2.0212E+01	9.2873E+03	-2.0195E+01	1.0716E+04
16000	-2.1912E+01	1.7146E+04	-2.1904E+01	1.1073E+04	-2.1896E+01	1.8932E+04	-2.1880E+01	1.5002E+04	-2.1864E+01	9.2873E+03	-2.1848E+01	1.0716E+04
18000	-2.3446E+01	1.7146E+04	-2.3439E+01	1.1073E+04	-2.3432E+01	1.8932E+04	-2.3417E+01	1.5002E+04	-2.3402E+01	9.2873E+03	-2.3387E+01	1.0716E+04
20000	-2.4888E+01	1.7146E+04	-2.4881E+01	1.1073E+04	-2.4874E+01	1.8932E+04	-2.4860E+01	1.5002E+04	-2.4846E+01	9.2873E+03	-2.4832E+01	1.0716E+04
22000	-2.6251E+01	1.7146E+04	-2.6244E+01	1.1073E+04	-2.6238E+01	1.8932E+04	-2.6224E+01	1.5002E+04	-2.6211E+01	9.2873E+03	-2.6198E+01	1.0716E+04
24000	-2.7547E+01	1.7146E+04	-2.7541E+01	1.1073E+04	-2.7535E+01	1.8932E+04	-2.7522E+01	1.5002E+04	-2.7509E+01	9.2873E+03	-2.7497E+01	1.0716E+04
26000	-2.8786E+01	1.7146E+04	-2.8780E+01	1.1073E+04	-2.8774E+01	1.8932E+04	-2.8762E+01	1.5002E+04	-2.8750E+01	9.2873E+03	-2.8737E+01	1.0716E+04
28000	-2.9974E+01	1.7146E+04	-2.9968E+01	1.1073E+04	-2.9962E+01	1.8932E+04	-2.9950E+01	1.5002E+04	-2.9939E+01	9.2873E+03	-2.9927E+01	1.0716E+04
30000	-3.1116E+01	1.7146E+04	-3.1111E+01	1.1073E+04	-3.1105E+01	1.8932E+04	-3.1094E+01	1.5002E+04	-3.1083E+01	9.2873E+03	-3.1072E+01	1.0716E+04
32000	-3.2219E+01	1.7146E+04	-3.2214E+01	1.1073E+04	-3.2208E+01	1.8932E+04	-3.2197E+01	1.5002E+04	-3.2186E+01	9.2873E+03	-3.2176E+01	1.0716E+04
34000	-3.3285E+01	1.7146E+04	-3.3280E+01	1.1073E+04	-3.3275E+01	1.8932E+04	-3.3264E+01	1.5002E+04	-3.3254E+01	9.2873E+03	-3.3243E+01	1.0716E+04
36000	-3.4318E+01	1.7146E+04	-3.4313E+01	1.1073E+04	-3.4308E+01	1.8932E+04	-3.4298E+01	1.5002E+04	-3.4288E+01	9.2873E+03	-3.4278E+01	1.0716E+04
38000	-3.5321E+01	1.7146E+04	-3.5316E+01	1.1073E+04	-3.5311E+01	1.8932E+04	-3.5302E+01	1.5002E+04	-3.5292E+01	9.2873E+03	-3.5282E+01	1.0716E+04
40000	-3.6297E+01	1.7146E+04	-3.6292E+01	1.1073E+04	-3.6287E+01	1.8932E+04	-3.6278E+01	1.5002E+04	-3.6268E+01	9.2873E+03	-3.6258E+01	1.0716E+04
42000	-3.7247E+01	1.7146E+04	-3.7242E+01	1.1073E+04	-3.7237E+01	1.8932E+04	-3.7228E+01	1.5002E+04	-3.7219E+01	9.2873E+03	-3.7209E+01	1.0716E+04
44000	-3.8173E+01	1.7146E+04	-3.8169E+01	1.1073E+04	-3.8164E+01	1.8932E+04	-3.8155E+01	1.5002E+04	-3.8146E+01	9.2873E+03	-3.8137E+01	1.0716E+04
46000	-3.9078E+01	1.7146E+04	-3.9073E+01	1.1073E+04	-3.9069E+01	1.8932E+04	-3.9060E+01	1.5002E+04	-3.9051E+01	9.2873E+03	-3.9042E+01	1.0716E+04
48000	-3.9962E+01	1.7146E+04	-3.9957E+01	1.1073E+04	-3.9953E+01	1.8932E+04	-3.9944E+01	1.5002E+04	-3.9936E+01	9.2873E+03	-3.9927E+01	1.0716E+04
50000	-4.0827E+01	1.7146E+04	-4.0823E+01	1.1073E+04	-4.0818E+01	1.8932E+04	-4.0810E+01	1.5002E+04	-4.0801E+01	9.2873E+03	-4.0793E+01	1.0716E+04
52000	-4.1674E+01	1.7146E+04	-4.1670E+01	1.1073E+04	-4.1665E+01	1.8932E+04	-4.1657E+01	1.5002E+04	-4.1649E+01	9.2873E+03	-4.1640E+01	1.0716E+04
54000	-4.2504E+01	1.7146E+04	-4.2500E+01	1.1073E+04	-4.2496E+01	1.8932E+04	-4.2488E+01	1.5002E+04	-4.2479E+01	9.2873E+03	-4.2471E+01	1.0716E+04
56000	-4.3318E+01	1.7146E+04	-4.3314E+01	1.1073E+04	-4.3310E+01	1.8932E+04	-4.3302E+01	1.5002E+04	-4.3294E+01	9.2873E+03	-4.3286E+01	1.0716E+04
58000	-4.4118E+01	1.7146E+04	-4.4114E+01	1.1073E+04	-4.4110E+01	1.8932E+04	-4.4102E+01	1.5002E+04	-4.4094E+01	9.2873E+03	-4.4086E+01	1.0716E+04
60000	-4.4903E+01	1.7146E+04	-4.4899E+01	1.1073E+04	-4.4895E+01	1.8932E+04	-4.4887E+01	1.5002E+04	-4.4880E+01	9.2873E+03	-4.4872E+01	1.0716E+04
62000	-4.5675E+01	1.7146E+04	-4.5671E+01	1.1073E+04	-4.5667E+01	1.8932E+04	-4.5659E+01	1.5002E+04	-4.5652E+01	9.2873E+03	-4.5644E+01	1.0716E+04
64000	-4.6433E+01	1.7146E+04	-4.6430E+01	1.1073E+04	-4.6426E+01	1.8932E+04	-4.6418E+01	1.5002E+04	-4.6411E+01	9.2873E+03	-4.6403E+01	1.0716E+04
66000	-4.7180E+01	1.7146E+04	-4.7176E+01	1.1073E+04	-4.7173E+01	1.8932E+04	-4.7165E+01	1.5002E+04	-4.7158E+01	9.2873E+03	-4.7151E+01	1.0716E+04
68000	-4.7915E+01	1.7146E+04	-4.7912E+01	1.1073E+04	-4.7908E+01	1.8932E+04	-4.7901E+01	1.5002E+04	-4.7893E+01	9.2873E+03	-4.7886E+01	1.0716E+04
70000	-4.8639E+01	1.7146E+04	-4.8636E+01	1.1073E+04	-4.8632E+01	1.8932E+04	-4.8625E+01	1.5002E+04	-4.8618E+01	9.2873E+03	-4.8610E+01	1.0716E+04
72000	-4.9353E+01	1.7146E+04	-4.9349E+01	1.1073E+04	-4.9345E+01	1.8932E+04	-4.9338E+01	1.5002E+04	-4.9331E+01	9.2873E+03	-4.9324E+01	1.0716E+04
74000	-5.0056E+01	1.7146E+04	-5.0052E+01	1.1073E+04	-5.0049E+01	1.8932E+04	-5.0042E+01	1.5002E+04	-5.0035E+01	9.2873E+03	-5.0028E+01	1.0716E+04
76000	-5.0749E+01	1.7146E+04	-5.0746E+01	1.1073E+04	-5.0742E+01	1.8932E+04	-5.0735E+01	1.5002E+04	-5.0728E+01	9.2873E+03	-5.0722E+01	1.0716E+04
78000	-5.1433E+01	1.7146E+04	-5.1430E+01	1.1073E+04	-5.1426E+01	1.8932E+04	-5.1420E+01	1.5002E+04	-5.1413E+01	9.2873E+03	-5.1406E+01	1.0716E+04
80000	-5.2108E+01	1.7146E+04	-5.2105E+01	1.1073E+04	-5.2102E+01	1.8932E+04	-5.2095E+01	1.5002E+04	-5.2088E+01	9.2873E+03	-5.2082E+01	1.0716E+04
82000	-5.2775E+01	1.7146E+04	-5.2772E+01	1.1073E+04	-5.2768E+01	1.8932E+04	-5.2762E+01	1.5002E+04	-5.2755E+01	9.2873E+03	-5.2748E+01	1.0716E+04
84000	-5.3433E+01	1.7146E+04	-5.3430E+01	1.1073E+04	-5.3427E+01	1.8932E+04	-5.3420E+01	1.5002E+04	-5.3414E+01	9.2873E+03	-5.3407E+01	1.0716E+04
86000	-5.4083E+01	1.7146E+04	-5.4080E+01	1.1073E+04	-5.4077E+01	1.8932E+04	-5.4070E+01	1.5002E+04	-5.4064E+01	9.2873E+03	-5.4057E+01	1.0716E+04
88000	-5.4726E+01	1.7146E+04	-5.4723E+01	1.1073E+04	-5.4719E+01	1.8932E+04	-5.4713E+01	1.5002E+04	-5.4707E+01	9.2873E+03	-5.4700E+01	1.0716E+04
90000	-5.5361E+01	1.7146E+04	-5.5358E+01	1.1073E+04	-5.5355E+01	1.8932E+04	-5.5348E+01	1.5002E+04	-5.5342E+01	9.2873E+03	-5.5336E+01	1.0716E+04
92000	-5.5989E+01	1.7146E+04	-5.5986E+01	1.1073E+04	-5.5982E+01	1.8932E+04	-5.5976E+01	1.5002E+04	-5.5970E+01	9.2873E+03	-5.5964E+01	1.0716E+04
94000	-5.6610E+01	1.7146E+04	-5.6606E+01	1.1073E+04	-5.6603E+01	1.8932E+04	-5.6597E+01	1.5002E+04	-5.6591E+01	9.2873E+03	-5.6585E+01	1.0716E+04
96000	-5.7224E+01	1.7146E+04	-5.7221E+01	1.1073E+04	-5.7218E+01	1.8932E+04	-5.7212E+01	1.5002E+04	-5.7205E+01	9.2873E+03	-5.7199E+01	1.0716E+04
98000	-5.7831E+01	1.7146E+04	-5.7828E+01	1.1073E+04	-5.7825E+01	1.8932E+04	-5.7819E+01	1.5002E+04	-5.7813E+01	9.2873E+03	-5.7807E+01	1.0716E+04
100000	-5.8433E+01	1.7146E+04	-5.8430E+01	1.1073E+04	-5.8427E+01	1.8932E+04	-5.8421E+01	1.5002E+04	-5.8415E+01	9.2873E+03	-5.8409E+01	1.0716E+04

Time (yrs)	Arg 1	Curve 1	Arg 2	Curve 2	Arg 3	Curve 3	Arg 4	Curve 4	Arg 5	Curve 5	Arg 6	Curve 6
102000	-5.9028E+01	1.7146E+04	-5.9025E+01	1.1073E+04	-5.9022E+01	1.8932E+04	-5.9016E+01	1.5002E+04	-5.9010E+01	9.2873E+03	-5.9004E+01	1.0716E+04
104000	-5.9617E+01	1.7146E+04	-5.9614E+01	1.1073E+04	-5.9611E+01	1.8932E+04	-5.9605E+01	1.5002E+04	-5.9600E+01	9.2873E+03	-5.9594E+01	1.0716E+04
106000	-6.0201E+01	1.7146E+04	-6.0198E+01	1.1073E+04	-6.0195E+01	1.8932E+04	-6.0189E+01	1.5002E+04	-6.0183E+01	9.2873E+03	-6.0177E+01	1.0716E+04
108000	-6.0778E+01	1.7146E+04	-6.0776E+01	1.1073E+04	-6.0773E+01	1.8932E+04	-6.0767E+01	1.5002E+04	-6.0761E+01	9.2873E+03	-6.0755E+01	1.0716E+04
110000	-6.1351E+01	1.7146E+04	-6.1348E+01	1.1073E+04	-6.1345E+01	1.8932E+04	-6.1340E+01	1.5002E+04	-6.1334E+01	9.2873E+03	-6.1328E+01	1.0716E+04
112000	-6.1918E+01	1.7146E+04	-6.1915E+01	1.1073E+04	-6.1912E+01	1.8932E+04	-6.1907E+01	1.5002E+04	-6.1901E+01	9.2873E+03	-6.1895E+01	1.0716E+04
114000	-6.2480E+01	1.7146E+04	-6.2477E+01	1.1073E+04	-6.2474E+01	1.8932E+04	-6.2469E+01	1.5002E+04	-6.2463E+01	9.2873E+03	-6.2458E+01	1.0716E+04
116000	-6.3037E+01	1.7146E+04	-6.3034E+01	1.1073E+04	-6.3032E+01	1.8932E+04	-6.3026E+01	1.5002E+04	-6.3020E+01	9.2873E+03	-6.3015E+01	1.0716E+04
118000	-6.3589E+01	1.7146E+04	-6.3586E+01	1.1073E+04	-6.3584E+01	1.8932E+04	-6.3578E+01	1.5002E+04	-6.3573E+01	9.2873E+03	-6.3567E+01	1.0716E+04
120000	-6.4137E+01	1.7146E+04	-6.4134E+01	1.1073E+04	-6.4131E+01	1.8932E+04	-6.4126E+01	1.5002E+04	-6.4120E+01	9.2873E+03	-6.4115E+01	1.0716E+04
122000	-6.4679E+01	1.7146E+04	-6.4677E+01	1.1073E+04	-6.4674E+01	1.8932E+04	-6.4669E+01	1.5002E+04	-6.4663E+01	9.2873E+03	-6.4658E+01	1.0716E+04
124000	-6.5218E+01	1.7146E+04	-6.5215E+01	1.1073E+04	-6.5212E+01	1.8932E+04	-6.5207E+01	1.5002E+04	-6.5201E+01	9.2873E+03	-6.5196E+01	1.0716E+04
126000	-6.5751E+01	1.7146E+04	-6.5749E+01	1.1073E+04	-6.5746E+01	1.8932E+04	-6.5741E+01	1.5002E+04	-6.5735E+01	9.2873E+03	-6.5730E+01	1.0716E+04
128000	-6.6281E+01	1.7146E+04	-6.6278E+01	1.1073E+04	-6.6276E+01	1.8932E+04	-6.6270E+01	1.5002E+04	-6.6265E+01	9.2873E+03	-6.6260E+01	1.0716E+04
130000	-6.6806E+01	1.7146E+04	-6.6804E+01	1.1073E+04	-6.6801E+01	1.8932E+04	-6.6796E+01	1.5002E+04	-6.6791E+01	9.2873E+03	-6.6785E+01	1.0716E+04
132000	-6.7327E+01	1.7146E+04	-6.7325E+01	1.1073E+04	-6.7322E+01	1.8932E+04	-6.7317E+01	1.5002E+04	-6.7312E+01	9.2873E+03	-6.7307E+01	1.0716E+04
134000	-6.7845E+01	1.7146E+04	-6.7842E+01	1.1073E+04	-6.7840E+01	1.8932E+04	-6.7834E+01	1.5002E+04	-6.7829E+01	9.2873E+03	-6.7824E+01	1.0716E+04
136000	-6.8358E+01	1.7146E+04	-6.8355E+01	1.1073E+04	-6.8353E+01	1.8932E+04	-6.8348E+01	1.5002E+04	-6.8343E+01	9.2873E+03	-6.8338E+01	1.0716E+04
138000	-6.8868E+01	1.7146E+04	-6.8865E+01	1.1073E+04	-6.8862E+01	1.8932E+04	-6.8857E+01	1.5002E+04	-6.8852E+01	9.2873E+03	-6.8847E+01	1.0716E+04
140000	-6.9373E+01	1.7146E+04	-6.9371E+01	1.1073E+04	-6.9368E+01	1.8932E+04	-6.9363E+01	1.5002E+04	-6.9358E+01	9.2873E+03	-6.9353E+01	1.0716E+04
142000	-6.9875E+01	1.7146E+04	-6.9873E+01	1.1073E+04	-6.9870E+01	1.8932E+04	-6.9865E+01	1.5002E+04	-6.9860E+01	9.2873E+03	-6.9855E+01	1.0716E+04
144000	-7.0374E+01	1.7146E+04	-7.0371E+01	1.1073E+04	-7.0369E+01	1.8932E+04	-7.0364E+01	1.5002E+04	-7.0359E+01	9.2873E+03	-7.0354E+01	1.0716E+04
146000	-7.0869E+01	1.7146E+04	-7.0866E+01	1.1073E+04	-7.0864E+01	1.8932E+04	-7.0859E+01	1.5002E+04	-7.0854E+01	9.2873E+03	-7.0849E+01	1.0716E+04
148000	-7.1360E+01	1.7146E+04	-7.1358E+01	1.1073E+04	-7.1356E+01	1.8932E+04	-7.1351E+01	1.5002E+04	-7.1346E+01	9.2873E+03	-7.1341E+01	1.0716E+04
150000	-7.1849E+01	1.7146E+04	-7.1846E+01	1.1073E+04	-7.1844E+01	1.8932E+04	-7.1839E+01	1.5002E+04	-7.1834E+01	9.2873E+03	-7.1829E+01	1.0716E+04
152000	-7.2334E+01	1.7146E+04	-7.2331E+01	1.1073E+04	-7.2329E+01	1.8932E+04	-7.2324E+01	1.5002E+04	-7.2319E+01	9.2873E+03	-7.2314E+01	1.0716E+04
154000	-7.2815E+01	1.7146E+04	-7.2813E+01	1.1073E+04	-7.2810E+01	1.8932E+04	-7.2806E+01	1.5002E+04	-7.2801E+01	9.2873E+03	-7.2796E+01	1.0716E+04
156000	-7.3294E+01	1.7146E+04	-7.3291E+01	1.1073E+04	-7.3289E+01	1.8932E+04	-7.3284E+01	1.5002E+04	-7.3279E+01	9.2873E+03	-7.3275E+01	1.0716E+04
158000	-7.3769E+01	1.7146E+04	-7.3767E+01	1.1073E+04	-7.3764E+01	1.8932E+04	-7.3760E+01	1.5002E+04	-7.3755E+01	9.2873E+03	-7.3750E+01	1.0716E+04
160000	-7.4242E+01	1.7146E+04	-7.4239E+01	1.1073E+04	-7.4237E+01	1.8932E+04	-7.4232E+01	1.5002E+04	-7.4227E+01	9.2873E+03	-7.4223E+01	1.0716E+04
162000	-7.4711E+01	1.7146E+04	-7.4709E+01	1.1073E+04	-7.4706E+01	1.8932E+04	-7.4702E+01	1.5002E+04	-7.4697E+01	9.2873E+03	-7.4692E+01	1.0716E+04
164000	-7.5177E+01	1.7146E+04	-7.5175E+01	1.1073E+04	-7.5173E+01	1.8932E+04	-7.5168E+01	1.5002E+04	-7.5163E+01	9.2873E+03	-7.5159E+01	1.0716E+04
166000	-7.5641E+01	1.7146E+04	-7.5639E+01	1.1073E+04	-7.5636E+01	1.8932E+04	-7.5632E+01	1.5002E+04	-7.5627E+01	9.2873E+03	-7.5623E+01	1.0716E+04
168000	-7.6102E+01	1.7146E+04	-7.6099E+01	1.1073E+04	-7.6097E+01	1.8932E+04	-7.6093E+01	1.5002E+04	-7.6088E+01	9.2873E+03	-7.6083E+01	1.0716E+04
170000	-7.6560E+01	1.7146E+04	-7.6557E+01	1.1073E+04	-7.6555E+01	1.8932E+04	-7.6551E+01	1.5002E+04	-7.6546E+01	9.2873E+03	-7.6542E+01	1.0716E+04
172000	-7.7015E+01	1.7146E+04	-7.7013E+01	1.1073E+04	-7.7010E+01	1.8932E+04	-7.7006E+01	1.5002E+04	-7.7001E+01	9.2873E+03	-7.6997E+01	1.0716E+04
174000	-7.7468E+01	1.7146E+04	-7.7465E+01	1.1073E+04	-7.7463E+01	1.8932E+04	-7.7459E+01	1.5002E+04	-7.7454E+01	9.2873E+03	-7.7450E+01	1.0716E+04
176000	-7.7918E+01	1.7146E+04	-7.7915E+01	1.1073E+04	-7.7913E+01	1.8932E+04	-7.7909E+01	1.5002E+04	-7.7904E+01	9.2873E+03	-7.7900E+01	1.0716E+04
178000	-7.8365E+01	1.7146E+04	-7.8363E+01	1.1073E+04	-7.8361E+01	1.8932E+04	-7.8356E+01	1.5002E+04	-7.8352E+01	9.2873E+03	-7.8347E+01	1.0716E+04
180000	-7.8810E+01	1.7146E+04	-7.8808E+01	1.1073E+04	-7.8805E+01	1.8932E+04	-7.8801E+01	1.5002E+04	-7.8796E+01	9.2873E+03	-7.8792E+01	1.0716E+04
182000	-7.9252E+01	1.7146E+04	-7.9250E+01	1.1073E+04	-7.9248E+01	1.8932E+04	-7.9243E+01	1.5002E+04	-7.9239E+01	9.2873E+03	-7.9234E+01	1.0716E+04
184000	-7.9692E+01	1.7146E+04	-7.9690E+01	1.1073E+04	-7.9688E+01	1.8932E+04	-7.9683E+01	1.5002E+04	-7.9679E+01	9.2873E+03	-7.9674E+01	1.0716E+04
186000	-8.0130E+01	1.7146E+04	-8.0127E+01	1.1073E+04	-8.0125E+01	1.8932E+04	-8.0121E+01	1.5002E+04	-8.0116E+01	9.2873E+03	-8.0112E+01	1.0716E+04
188000	-8.0565E+01	1.7146E+04	-8.0562E+01	1.1073E+04	-8.0560E+01	1.8932E+04	-8.0556E+01	1.5002E+04	-8.0552E+01	9.2873E+03	-8.0547E+01	1.0716E+04
190000	-8.0997E+01	1.7146E+04	-8.0995E+01	1.1073E+04	-8.0993E+01	1.8932E+04	-8.0989E+01	1.5002E+04	-8.0984E+01	9.2873E+03	-8.0980E+01	1.0716E+04
192000	-8.1428E+01	1.7146E+04	-8.1426E+01	1.1073E+04	-8.1424E+01	1.8932E+04	-8.1419E+01	1.5002E+04	-8.1415E+01	9.2873E+03	-8.1411E+01	1.0716E+04
194000	-8.1856E+01	1.7146E+04	-8.1854E+01	1.1073E+04	-8.1852E+01	1.8932E+04	-8.1847E+01	1.5002E+04	-8.1843E+01	9.2873E+03	-8.1839E+01	1.0716E+04
196000	-8.2282E+01	1.7146E+04	-8.2280E+01	1.1073E+04	-8.2278E+01	1.8932E+04	-8.2273E+01	1.5002E+04	-8.2269E+01	9.2873E+03	-8.2265E+01	1.0716E+04
198000	-8.2706E+01	1.7146E+04	-8.2704E+01	1.1073E+04	-8.2702E+01	1.8932E+04	-8.2697E+01	1.5002E+04	-8.2693E+01	9.2873E+03	-8.2689E+01	1.0716E+04
200000	-8.3127E+01	1.7146E+04	-8.3125E+01	1.1073E+04	-8.3123E+01	1.8932E+04	-8.3119E+01	1.5002E+04	-8.3115E+01	9.2873E+03	-8.3111E+01	1.0716E+04
202000	-8.3547E+01	1.7146E+04	-8.3545E+01	1.1073E+04	-8.3543E+01	1.8932E+04	-8.3539E+01	1.5002E+04	-8.3534E+01	9.2873E+03	-8.3530E+01	1.0716E+04
204000	-8.3964E+01	1.7146E+04	-8.3962E+01	1.1073E+04	-8.3960E+01	1.8932E+04	-8.3956E+01	1.5002E+04	-8.3952E+01	9.2873E+03	-8.3948E+01	1.0716E+04

Time (yrs)	Arg 1	Curve 1	Arg 2	Curve 2	Arg 3	Curve 3	Arg 4	Curve 4	Arg 5	Curve 5	Arg 6	Curve 6
206000	-8.4380E+01	1.7146E+04	-8.4378E+01	1.1073E+04	-8.4375E+01	1.8932E+04	-8.4371E+01	1.5002E+04	-8.4367E+01	9.2873E+03	-8.4363E+01	1.0716E+04
208000	-8.4793E+01	1.7146E+04	-8.4791E+01	1.1073E+04	-8.4789E+01	1.8932E+04	-8.4785E+01	1.5002E+04	-8.4781E+01	9.2873E+03	-8.4776E+01	1.0716E+04
210000	-8.5204E+01	1.7146E+04	-8.5202E+01	1.1073E+04	-8.5200E+01	1.8932E+04	-8.5196E+01	1.5002E+04	-8.5192E+01	9.2873E+03	-8.5188E+01	1.0716E+04
212000	-8.5614E+01	1.7146E+04	-8.5611E+01	1.1073E+04	-8.5609E+01	1.8932E+04	-8.5605E+01	1.5002E+04	-8.5601E+01	9.2873E+03	-8.5597E+01	1.0716E+04
214000	-8.6021E+01	1.7146E+04	-8.6019E+01	1.1073E+04	-8.6017E+01	1.8932E+04	-8.6013E+01	1.5002E+04	-8.6009E+01	9.2873E+03	-8.6005E+01	1.0716E+04
216000	-8.6426E+01	1.7146E+04	-8.6424E+01	1.1073E+04	-8.6422E+01	1.8932E+04	-8.6418E+01	1.5002E+04	-8.6414E+01	9.2873E+03	-8.6410E+01	1.0716E+04
218000	-8.6830E+01	1.7146E+04	-8.6828E+01	1.1073E+04	-8.6826E+01	1.8932E+04	-8.6822E+01	1.5002E+04	-8.6818E+01	9.2873E+03	-8.6814E+01	1.0716E+04
220000	-8.7232E+01	1.7146E+04	-8.7230E+01	1.1073E+04	-8.7228E+01	1.8932E+04	-8.7224E+01	1.5002E+04	-8.7220E+01	9.2873E+03	-8.7216E+01	1.0716E+04
222000	-8.7631E+01	1.7146E+04	-8.7629E+01	1.1073E+04	-8.7627E+01	1.8932E+04	-8.7623E+01	1.5002E+04	-8.7619E+01	9.2873E+03	-8.7615E+01	1.0716E+04
224000	-8.8029E+01	1.7146E+04	-8.8027E+01	1.1073E+04	-8.8025E+01	1.8932E+04	-8.8021E+01	1.5002E+04	-8.8018E+01	9.2873E+03	-8.8014E+01	1.0716E+04
226000	-8.8426E+01	1.7146E+04	-8.8424E+01	1.1073E+04	-8.8422E+01	1.8932E+04	-8.8418E+01	1.5002E+04	-8.8414E+01	9.2873E+03	-8.8410E+01	1.0716E+04
228000	-8.8820E+01	1.7146E+04	-8.8818E+01	1.1073E+04	-8.8816E+01	1.8932E+04	-8.8812E+01	1.5002E+04	-8.8808E+01	9.2873E+03	-8.8804E+01	1.0716E+04
230000	-8.9213E+01	1.7146E+04	-8.9211E+01	1.1073E+04	-8.9209E+01	1.8932E+04	-8.9205E+01	1.5002E+04	-8.9201E+01	9.2873E+03	-8.9197E+01	1.0716E+04
232000	-8.9604E+01	1.7146E+04	-8.9602E+01	1.1073E+04	-8.9600E+01	1.8932E+04	-8.9596E+01	1.5002E+04	-8.9592E+01	9.2873E+03	-8.9588E+01	1.0716E+04
234000	-8.9993E+01	1.7146E+04	-8.9991E+01	1.1073E+04	-8.9989E+01	1.8932E+04	-8.9985E+01	1.5002E+04	-8.9982E+01	9.2873E+03	-8.9978E+01	1.0716E+04
236000	-9.0381E+01	1.7146E+04	-9.0379E+01	1.1073E+04	-9.0377E+01	1.8932E+04	-9.0373E+01	1.5002E+04	-9.0369E+01	9.2873E+03	-9.0365E+01	1.0716E+04
238000	-9.0767E+01	1.7146E+04	-9.0765E+01	1.1073E+04	-9.0763E+01	1.8932E+04	-9.0759E+01	1.5002E+04	-9.0755E+01	9.2873E+03	-9.0751E+01	1.0716E+04
240000	-9.1151E+01	1.7146E+04	-9.1149E+01	1.1073E+04	-9.1147E+01	1.8932E+04	-9.1143E+01	1.5002E+04	-9.1140E+01	9.2873E+03	-9.1136E+01	1.0716E+04
242000	-9.1534E+01	1.7146E+04	-9.1532E+01	1.1073E+04	-9.1530E+01	1.8932E+04	-9.1526E+01	1.5002E+04	-9.1522E+01	9.2873E+03	-9.1519E+01	1.0716E+04
244000	-9.1915E+01	1.7146E+04	-9.1913E+01	1.1073E+04	-9.1911E+01	1.8932E+04	-9.1907E+01	1.5002E+04	-9.1904E+01	9.2873E+03	-9.1900E+01	1.0716E+04
246000	-9.2295E+01	1.7146E+04	-9.2293E+01	1.1073E+04	-9.2291E+01	1.8932E+04	-9.2287E+01	1.5002E+04	-9.2283E+01	9.2873E+03	-9.2279E+01	1.0716E+04
248000	-9.2673E+01	1.7146E+04	-9.2671E+01	1.1073E+04	-9.2669E+01	1.8932E+04	-9.2665E+01	1.5002E+04	-9.2661E+01	9.2873E+03	-9.2657E+01	1.0716E+04
250000	-9.3049E+01	1.7146E+04	-9.3047E+01	1.1073E+04	-9.3045E+01	1.8932E+04	-9.3042E+01	1.5002E+04	-9.3038E+01	9.2873E+03	-9.3034E+01	1.0716E+04
252000	-9.3424E+01	1.7146E+04	-9.3422E+01	1.1073E+04	-9.3420E+01	1.8932E+04	-9.3417E+01	1.5002E+04	-9.3413E+01	9.2873E+03	-9.3409E+01	1.0716E+04
254000	-9.3797E+01	1.7146E+04	-9.3796E+01	1.1073E+04	-9.3794E+01	1.8932E+04	-9.3790E+01	1.5002E+04	-9.3786E+01	9.2873E+03	-9.3783E+01	1.0716E+04
256000	-9.4169E+01	1.7146E+04	-9.4168E+01	1.1073E+04	-9.4166E+01	1.8932E+04	-9.4162E+01	1.5002E+04	-9.4158E+01	9.2873E+03	-9.4155E+01	1.0716E+04
258000	-9.4540E+01	1.7146E+04	-9.4538E+01	1.1073E+04	-9.4536E+01	1.8932E+04	-9.4533E+01	1.5002E+04	-9.4529E+01	9.2873E+03	-9.4525E+01	1.0716E+04
260000	-9.4909E+01	1.7146E+04	-9.4907E+01	1.1073E+04	-9.4905E+01	1.8932E+04	-9.4902E+01	1.5002E+04	-9.4898E+01	9.2873E+03	-9.4894E+01	1.0716E+04
262000	-9.5277E+01	1.7146E+04	-9.5275E+01	1.1073E+04	-9.5273E+01	1.8932E+04	-9.5269E+01	1.5002E+04	-9.5266E+01	9.2873E+03	-9.5262E+01	1.0716E+04
264000	-9.5643E+01	1.7146E+04	-9.5641E+01	1.1073E+04	-9.5639E+01	1.8932E+04	-9.5636E+01	1.5002E+04	-9.5632E+01	9.2873E+03	-9.5628E+01	1.0716E+04
266000	-9.6008E+01	1.7146E+04	-9.6006E+01	1.1073E+04	-9.6004E+01	1.8932E+04	-9.6000E+01	1.5002E+04	-9.5997E+01	9.2873E+03	-9.5993E+01	1.0716E+04
268000	-9.6371E+01	1.7146E+04	-9.6369E+01	1.1073E+04	-9.6368E+01	1.8932E+04	-9.6364E+01	1.5002E+04	-9.6360E+01	9.2873E+03	-9.6357E+01	1.0716E+04
270000	-9.6733E+01	1.7146E+04	-9.6731E+01	1.1073E+04	-9.6730E+01	1.8932E+04	-9.6726E+01	1.5002E+04	-9.6722E+01	9.2873E+03	-9.6719E+01	1.0716E+04
272000	-9.7094E+01	1.7146E+04	-9.7092E+01	1.1073E+04	-9.7090E+01	1.8932E+04	-9.7087E+01	1.5002E+04	-9.7083E+01	9.2873E+03	-9.7080E+01	1.0716E+04
274000	-9.7453E+01	1.7146E+04	-9.7452E+01	1.1073E+04	-9.7450E+01	1.8932E+04	-9.7446E+01	1.5002E+04	-9.7443E+01	9.2873E+03	-9.7439E+01	1.0716E+04
276000	-9.7811E+01	1.7146E+04	-9.7810E+01	1.1073E+04	-9.7808E+01	1.8932E+04	-9.7804E+01	1.5002E+04	-9.7801E+01	9.2873E+03	-9.7797E+01	1.0716E+04
278000	-9.8168E+01	1.7146E+04	-9.8166E+01	1.1073E+04	-9.8165E+01	1.8932E+04	-9.8161E+01	1.5002E+04	-9.8157E+01	9.2873E+03	-9.8154E+01	1.0716E+04
280000	-9.8524E+01	1.7146E+04	-9.8522E+01	1.1073E+04	-9.8520E+01	1.8932E+04	-9.8517E+01	1.5002E+04	-9.8513E+01	9.2873E+03	-9.8509E+01	1.0716E+04
282000	-9.8878E+01	1.7146E+04	-9.8876E+01	1.1073E+04	-9.8874E+01	1.8932E+04	-9.8871E+01	1.5002E+04	-9.8867E+01	9.2873E+03	-9.8864E+01	1.0716E+04
284000	-9.9231E+01	1.7146E+04	-9.9229E+01	1.1073E+04	-9.9227E+01	1.8932E+04	-9.9224E+01	1.5002E+04	-9.9220E+01	9.2873E+03	-9.9217E+01	1.0716E+04
286000	-9.9582E+01	1.7146E+04	-9.9581E+01	1.1073E+04	-9.9579E+01	1.8932E+04	-9.9575E+01	1.5002E+04	-9.9572E+01	9.2873E+03	-9.9568E+01	1.0716E+04
288000	-9.9933E+01	1.7146E+04	-9.9931E+01	1.1073E+04	-9.9929E+01	1.8932E+04	-9.9926E+01	1.5002E+04	-9.9922E+01	9.2873E+03	-9.9919E+01	1.0716E+04
290000	-1.0028E+02	1.7146E+04	-1.0028E+02	1.1073E+04	-1.0028E+02	1.8932E+04	-1.0028E+02	1.5002E+04	-1.0027E+02	9.2873E+03	-1.0027E+02	1.0716E+04
292000	-1.0063E+02	1.7146E+04	-1.0063E+02	1.1073E+04	-1.0063E+02	1.8932E+04	-1.0062E+02	1.5002E+04	-1.0062E+02	9.2873E+03	-1.0062E+02	1.0716E+04
294000	-1.0098E+02	1.7146E+04	-1.0098E+02	1.1073E+04	-1.0097E+02	1.8932E+04	-1.0097E+02	1.5002E+04	-1.0097E+02	9.2873E+03	-1.0096E+02	1.0716E+04
296000	-1.0132E+02	1.7146E+04	-1.0132E+02	1.1073E+04	-1.0132E+02	1.8932E+04	-1.0132E+02	1.5002E+04	-1.0131E+02	9.2873E+03	-1.0131E+02	1.0716E+04
298000	-1.0167E+02	1.7146E+04	-1.0167E+02	1.1073E+04	-1.0166E+02	1.8932E+04	-1.0166E+02	1.5002E+04	-1.0166E+02	9.2873E+03	-1.0165E+02	1.0716E+04
300000	-1.0201E+02	1.7146E+04	-1.0201E+02	1.1073E+04	-1.0201E+02	1.8932E+04	-1.0200E+02	1.5002E+04	-1.0200E+02	9.2873E+03	-1.0200E+02	1.0716E+04
302000	-1.0235E+02	1.7146E+04	-1.0235E+02	1.1073E+04	-1.0235E+02	1.8932E+04	-1.0235E+02	1.5002E+04	-1.0234E+02	9.2873E+03	-1.0234E+02	1.0716E+04
304000	-1.0269E+02	1.7146E+04	-1.0269E+02	1.1073E+04	-1.0269E+02	1.8932E+04	-1.0269E+02	1.5002E+04	-1.0268E+02	9.2873E+03	-1.0268E+02	1.0716E+04
306000	-1.0303E+02	1.7146E+04	-1.0303E+02	1.1073E+04	-1.0303E+02	1.8932E+04	-1.0303E+02	1.5002E+04	-1.0302E+02	9.2873E+03	-1.0302E+02	1.0716E+04
308000	-1.0337E+02	1.7146E+04	-1.0337E+02	1.1073E+04	-1.0337E+02	1.8932E+04	-1.0337E+02	1.5002E+04	-1.0336E+02	9.2873E+03	-1.0336E+02	1.0716E+04

Time (yrs)	Arg 1	Curve 1	Arg 2	Curve 2	Arg 3	Curve 3	Arg 4	Curve 4	Arg 5	Curve 5	Arg 6	Curve 6
310000	-1.0371E+02	1.7146E+04	-1.0371E+02	1.1073E+04	-1.0371E+02	1.8932E+04	-1.0370E+02	1.5002E+04	-1.0370E+02	9.2873E+03	-1.0370E+02	1.0716E+04
312000	-1.0405E+02	1.7146E+04	-1.0404E+02	1.1073E+04	-1.0404E+02	1.8932E+04	-1.0404E+02	1.5002E+04	-1.0404E+02	9.2873E+03	-1.0403E+02	1.0716E+04
314000	-1.0438E+02	1.7146E+04	-1.0438E+02	1.1073E+04	-1.0438E+02	1.8932E+04	-1.0437E+02	1.5002E+04	-1.0437E+02	9.2873E+03	-1.0437E+02	1.0716E+04
316000	-1.0472E+02	1.7146E+04	-1.0471E+02	1.1073E+04	-1.0471E+02	1.8932E+04	-1.0471E+02	1.5002E+04	-1.0471E+02	9.2873E+03	-1.0470E+02	1.0716E+04
318000	-1.0505E+02	1.7146E+04	-1.0505E+02	1.1073E+04	-1.0505E+02	1.8932E+04	-1.0504E+02	1.5002E+04	-1.0504E+02	9.2873E+03	-1.0504E+02	1.0716E+04
320000	-1.0538E+02	1.7146E+04	-1.0538E+02	1.1073E+04	-1.0538E+02	1.8932E+04	-1.0538E+02	1.5002E+04	-1.0537E+02	9.2873E+03	-1.0537E+02	1.0716E+04
322000	-1.0571E+02	1.7146E+04	-1.0571E+02	1.1073E+04	-1.0571E+02	1.8932E+04	-1.0571E+02	1.5002E+04	-1.0570E+02	9.2873E+03	-1.0570E+02	1.0716E+04
324000	-1.0604E+02	1.7146E+04	-1.0604E+02	1.1073E+04	-1.0604E+02	1.8932E+04	-1.0604E+02	1.5002E+04	-1.0603E+02	9.2873E+03	-1.0603E+02	1.0716E+04
326000	-1.0637E+02	1.7146E+04	-1.0637E+02	1.1073E+04	-1.0637E+02	1.8932E+04	-1.0637E+02	1.5002E+04	-1.0636E+02	9.2873E+03	-1.0636E+02	1.0716E+04
328000	-1.0670E+02	1.7146E+04	-1.0670E+02	1.1073E+04	-1.0670E+02	1.8932E+04	-1.0669E+02	1.5002E+04	-1.0669E+02	9.2873E+03	-1.0669E+02	1.0716E+04
330000	-1.0703E+02	1.7146E+04	-1.0703E+02	1.1073E+04	-1.0702E+02	1.8932E+04	-1.0702E+02	1.5002E+04	-1.0702E+02	9.2873E+03	-1.0701E+02	1.0716E+04
332000	-1.0735E+02	1.7146E+04	-1.0735E+02	1.1073E+04	-1.0735E+02	1.8932E+04	-1.0735E+02	1.5002E+04	-1.0734E+02	9.2873E+03	-1.0734E+02	1.0716E+04
334000	-1.0768E+02	1.7146E+04	-1.0768E+02	1.1073E+04	-1.0768E+02	1.8932E+04	-1.0767E+02	1.5002E+04	-1.0767E+02	9.2873E+03	-1.0767E+02	1.0716E+04
336000	-1.0800E+02	1.7146E+04	-1.0800E+02	1.1073E+04	-1.0800E+02	1.8932E+04	-1.0800E+02	1.5002E+04	-1.0799E+02	9.2873E+03	-1.0799E+02	1.0716E+04
338000	-1.0833E+02	1.7146E+04	-1.0832E+02	1.1073E+04	-1.0832E+02	1.8932E+04	-1.0832E+02	1.5002E+04	-1.0832E+02	9.2873E+03	-1.0831E+02	1.0716E+04
340000	-1.0865E+02	1.7146E+04	-1.0865E+02	1.1073E+04	-1.0865E+02	1.8932E+04	-1.0864E+02	1.5002E+04	-1.0864E+02	9.2873E+03	-1.0864E+02	1.0716E+04
342000	-1.0897E+02	1.7146E+04	-1.0897E+02	1.1073E+04	-1.0897E+02	1.8932E+04	-1.0896E+02	1.5002E+04	-1.0896E+02	9.2873E+03	-1.0896E+02	1.0716E+04
344000	-1.0929E+02	1.7146E+04	-1.0929E+02	1.1073E+04	-1.0929E+02	1.8932E+04	-1.0928E+02	1.5002E+04	-1.0928E+02	9.2873E+03	-1.0928E+02	1.0716E+04
346000	-1.0961E+02	1.7146E+04	-1.0961E+02	1.1073E+04	-1.0961E+02	1.8932E+04	-1.0960E+02	1.5002E+04	-1.0960E+02	9.2873E+03	-1.0960E+02	1.0716E+04
348000	-1.0993E+02	1.7146E+04	-1.0993E+02	1.1073E+04	-1.0992E+02	1.8932E+04	-1.0992E+02	1.5002E+04	-1.0992E+02	9.2873E+03	-1.0992E+02	1.0716E+04
350000	-1.1025E+02	1.7146E+04	-1.1024E+02	1.1073E+04	-1.1024E+02	1.8932E+04	-1.1024E+02	1.5002E+04	-1.1024E+02	9.2873E+03	-1.1023E+02	1.0716E+04
352000	-1.1056E+02	1.7146E+04	-1.1056E+02	1.1073E+04	-1.1056E+02	1.8932E+04	-1.1056E+02	1.5002E+04	-1.1055E+02	9.2873E+03	-1.1055E+02	1.0716E+04
354000	-1.1088E+02	1.7146E+04	-1.1088E+02	1.1073E+04	-1.1087E+02	1.8932E+04	-1.1087E+02	1.5002E+04	-1.1087E+02	9.2873E+03	-1.1087E+02	1.0716E+04
356000	-1.1119E+02	1.7146E+04	-1.1119E+02	1.1073E+04	-1.1119E+02	1.8932E+04	-1.1119E+02	1.5002E+04	-1.1118E+02	9.2873E+03	-1.1118E+02	1.0716E+04
358000	-1.1151E+02	1.7146E+04	-1.1151E+02	1.1073E+04	-1.1150E+02	1.8932E+04	-1.1150E+02	1.5002E+04	-1.1150E+02	9.2873E+03	-1.1149E+02	1.0716E+04
360000	-1.1182E+02	1.7146E+04	-1.1182E+02	1.1073E+04	-1.1182E+02	1.8932E+04	-1.1181E+02	1.5002E+04	-1.1181E+02	9.2873E+03	-1.1181E+02	1.0716E+04
362000	-1.1213E+02	1.7146E+04	-1.1213E+02	1.1073E+04	-1.1213E+02	1.8932E+04	-1.1213E+02	1.5002E+04	-1.1212E+02	9.2873E+03	-1.1212E+02	1.0716E+04
364000	-1.1244E+02	1.7146E+04	-1.1244E+02	1.1073E+04	-1.1244E+02	1.8932E+04	-1.1244E+02	1.5002E+04	-1.1243E+02	9.2873E+03	-1.1243E+02	1.0716E+04
366000	-1.1275E+02	1.7146E+04	-1.1275E+02	1.1073E+04	-1.1275E+02	1.8932E+04	-1.1275E+02	1.5002E+04	-1.1274E+02	9.2873E+03	-1.1274E+02	1.0716E+04
368000	-1.1306E+02	1.7146E+04	-1.1306E+02	1.1073E+04	-1.1306E+02	1.8932E+04	-1.1306E+02	1.5002E+04	-1.1305E+02	9.2873E+03	-1.1305E+02	1.0716E+04
370000	-1.1337E+02	1.7146E+04	-1.1337E+02	1.1073E+04	-1.1337E+02	1.8932E+04	-1.1337E+02	1.5002E+04	-1.1336E+02	9.2873E+03	-1.1336E+02	1.0716E+04
372000	-1.1368E+02	1.7146E+04	-1.1368E+02	1.1073E+04	-1.1368E+02	1.8932E+04	-1.1367E+02	1.5002E+04	-1.1367E+02	9.2873E+03	-1.1367E+02	1.0716E+04
374000	-1.1399E+02	1.7146E+04	-1.1399E+02	1.1073E+04	-1.1398E+02	1.8932E+04	-1.1398E+02	1.5002E+04	-1.1398E+02	9.2873E+03	-1.1398E+02	1.0716E+04
376000	-1.1429E+02	1.7146E+04	-1.1429E+02	1.1073E+04	-1.1429E+02	1.8932E+04	-1.1429E+02	1.5002E+04	-1.1428E+02	9.2873E+03	-1.1428E+02	1.0716E+04
378000	-1.1460E+02	1.7146E+04	-1.1460E+02	1.1073E+04	-1.1460E+02	1.8932E+04	-1.1459E+02	1.5002E+04	-1.1459E+02	9.2873E+03	-1.1459E+02	1.0716E+04
380000	-1.1490E+02	1.7146E+04	-1.1490E+02	1.1073E+04	-1.1490E+02	1.8932E+04	-1.1490E+02	1.5002E+04	-1.1489E+02	9.2873E+03	-1.1489E+02	1.0716E+04
382000	-1.1521E+02	1.7146E+04	-1.1521E+02	1.1073E+04	-1.1520E+02	1.8932E+04	-1.1520E+02	1.5002E+04	-1.1520E+02	9.2873E+03	-1.1520E+02	1.0716E+04
384000	-1.1551E+02	1.7146E+04	-1.1551E+02	1.1073E+04	-1.1551E+02	1.8932E+04	-1.1550E+02	1.5002E+04	-1.1550E+02	9.2873E+03	-1.1550E+02	1.0716E+04
386000	-1.1581E+02	1.7146E+04	-1.1581E+02	1.1073E+04	-1.1581E+02	1.8932E+04	-1.1581E+02	1.5002E+04	-1.1580E+02	9.2873E+03	-1.1580E+02	1.0716E+04
388000	-1.1611E+02	1.7146E+04	-1.1611E+02	1.1073E+04	-1.1611E+02	1.8932E+04	-1.1611E+02	1.5002E+04	-1.1611E+02	9.2873E+03	-1.1610E+02	1.0716E+04
390000	-1.1642E+02	1.7146E+04	-1.1641E+02	1.1073E+04	-1.1641E+02	1.8932E+04	-1.1641E+02	1.5002E+04	-1.1641E+02	9.2873E+03	-1.1640E+02	1.0716E+04
392000	-1.1672E+02	1.7146E+04	-1.1671E+02	1.1073E+04	-1.1671E+02	1.8932E+04	-1.1671E+02	1.5002E+04	-1.1671E+02	9.2873E+03	-1.1670E+02	1.0716E+04
394000	-1.1701E+02	1.7146E+04	-1.1701E+02	1.1073E+04	-1.1701E+02	1.8932E+04	-1.1701E+02	1.5002E+04	-1.1701E+02	9.2873E+03	-1.1700E+02	1.0716E+04
396000	-1.1731E+02	1.7146E+04	-1.1731E+02	1.1073E+04	-1.1731E+02	1.8932E+04	-1.1731E+02	1.5002E+04	-1.1730E+02	9.2873E+03	-1.1730E+02	1.0716E+04
398000	-1.1761E+02	1.7146E+04	-1.1761E+02	1.1073E+04	-1.1761E+02	1.8932E+04	-1.1760E+02	1.5002E+04	-1.1760E+02	9.2873E+03	-1.1760E+02	1.0716E+04
400000	-1.1791E+02	1.7146E+04	-1.1791E+02	1.1073E+04	-1.1790E+02	1.8932E+04	-1.1790E+02	1.5002E+04	-1.1790E+02	9.2873E+03	-1.1790E+02	1.0716E+04
402000	-1.1820E+02	1.7146E+04	-1.1820E+02	1.1073E+04	-1.1820E+02	1.8932E+04	-1.1820E+02	1.5002E+04	-1.1819E+02	9.2873E+03	-1.1819E+02	1.0716E+04
404000	-1.1850E+02	1.7146E+04	-1.1850E+02	1.1073E+04	-1.1850E+02	1.8932E+04	-1.1849E+02	1.5002E+04	-1.1849E+02	9.2873E+03	-1.1849E+02	1.0716E+04
406000	-1.1879E+02	1.7146E+04	-1.1879E+02	1.1073E+04	-1.1879E+02	1.8932E+04	-1.1879E+02	1.5002E+04	-1.1878E+02	9.2873E+03	-1.1878E+02	1.0716E+04
408000	-1.1909E+02	1.7146E+04	-1.1909E+02	1.1073E+04	-1.1908E+02	1.8932E+04	-1.1908E+02	1.5002E+04	-1.1908E+02	9.2873E+03	-1.1908E+02	1.0716E+04
410000	-1.1938E+02	1.7146E+04	-1.1938E+02	1.1073E+04	-1.1938E+02	1.8932E+04	-1.1937E+02	1.5002E+04	-1.1937E+02	9.2873E+03	-1.1937E+02	1.0716E+04
412000	-1.1967E+02	1.7146E+04	-1.1967E+02	1.1073E+04	-1.1967E+02	1.8932E+04	-1.1967E+02	1.5002E+04	-1.1966E+02	9.2873E+03	-1.1966E+02	1.0716E+04

Time (yrs)	Arg 1	Curve 1	Arg 2	Curve 2	Arg 3	Curve 3	Arg 4	Curve 4	Arg 5	Curve 5	Arg 6	Curve 6
414000	-1.1996E+02	1.7146E+04	-1.1996E+02	1.1073E+04	-1.1996E+02	1.8932E+04	-1.1996E+02	1.5002E+04	-1.1996E+02	9.2873E+03	-1.1995E+02	1.0716E+04
416000	-1.2026E+02	1.7146E+04	-1.2025E+02	1.1073E+04	-1.2025E+02	1.8932E+04	-1.2025E+02	1.5002E+04	-1.2025E+02	9.2873E+03	-1.2024E+02	1.0716E+04
418000	-1.2055E+02	1.7146E+04	-1.2054E+02	1.1073E+04	-1.2054E+02	1.8932E+04	-1.2054E+02	1.5002E+04	-1.2054E+02	9.2873E+03	-1.2053E+02	1.0716E+04
420000	-1.2084E+02	1.7146E+04	-1.2083E+02	1.1073E+04	-1.2083E+02	1.8932E+04	-1.2083E+02	1.5002E+04	-1.2083E+02	9.2873E+03	-1.2082E+02	1.0716E+04
422000	-1.2112E+02	1.7146E+04	-1.2112E+02	1.1073E+04	-1.2112E+02	1.8932E+04	-1.2112E+02	1.5002E+04	-1.2112E+02	9.2873E+03	-1.2111E+02	1.0716E+04
424000	-1.2141E+02	1.7146E+04	-1.2141E+02	1.1073E+04	-1.2141E+02	1.8932E+04	-1.2141E+02	1.5002E+04	-1.2140E+02	9.2873E+03	-1.2140E+02	1.0716E+04
426000	-1.2170E+02	1.7146E+04	-1.2170E+02	1.1073E+04	-1.2170E+02	1.8932E+04	-1.2169E+02	1.5002E+04	-1.2169E+02	9.2873E+03	-1.2169E+02	1.0716E+04
428000	-1.2199E+02	1.7146E+04	-1.2199E+02	1.1073E+04	-1.2198E+02	1.8932E+04	-1.2198E+02	1.5002E+04	-1.2198E+02	9.2873E+03	-1.2198E+02	1.0716E+04
430000	-1.2227E+02	1.7146E+04	-1.2227E+02	1.1073E+04	-1.2227E+02	1.8932E+04	-1.2227E+02	1.5002E+04	-1.2227E+02	9.2873E+03	-1.2226E+02	1.0716E+04
432000	-1.2256E+02	1.7146E+04	-1.2256E+02	1.1073E+04	-1.2256E+02	1.8932E+04	-1.2255E+02	1.5002E+04	-1.2255E+02	9.2873E+03	-1.2255E+02	1.0716E+04
434000	-1.2284E+02	1.7146E+04	-1.2284E+02	1.1073E+04	-1.2284E+02	1.8932E+04	-1.2284E+02	1.5002E+04	-1.2284E+02	9.2873E+03	-1.2283E+02	1.0716E+04
436000	-1.2313E+02	1.7146E+04	-1.2313E+02	1.1073E+04	-1.2313E+02	1.8932E+04	-1.2312E+02	1.5002E+04	-1.2312E+02	9.2873E+03	-1.2312E+02	1.0716E+04
438000	-1.2341E+02	1.7146E+04	-1.2341E+02	1.1073E+04	-1.2341E+02	1.8932E+04	-1.2341E+02	1.5002E+04	-1.2340E+02	9.2873E+03	-1.2340E+02	1.0716E+04
440000	-1.2370E+02	1.7146E+04	-1.2369E+02	1.1073E+04	-1.2369E+02	1.8932E+04	-1.2369E+02	1.5002E+04	-1.2369E+02	9.2873E+03	-1.2368E+02	1.0716E+04
442000	-1.2398E+02	1.7146E+04	-1.2398E+02	1.1073E+04	-1.2397E+02	1.8932E+04	-1.2397E+02	1.5002E+04	-1.2397E+02	9.2873E+03	-1.2397E+02	1.0716E+04
444000	-1.2426E+02	1.7146E+04	-1.2426E+02	1.1073E+04	-1.2426E+02	1.8932E+04	-1.2425E+02	1.5002E+04	-1.2425E+02	9.2873E+03	-1.2425E+02	1.0716E+04
446000	-1.2454E+02	1.7146E+04	-1.2454E+02	1.1073E+04	-1.2454E+02	1.8932E+04	-1.2453E+02	1.5002E+04	-1.2453E+02	9.2873E+03	-1.2453E+02	1.0716E+04
448000	-1.2482E+02	1.7146E+04	-1.2482E+02	1.1073E+04	-1.2482E+02	1.8932E+04	-1.2481E+02	1.5002E+04	-1.2481E+02	9.2873E+03	-1.2481E+02	1.0716E+04
450000	-1.2510E+02	1.7146E+04	-1.2510E+02	1.1073E+04	-1.2510E+02	1.8932E+04	-1.2509E+02	1.5002E+04	-1.2509E+02	9.2873E+03	-1.2509E+02	1.0716E+04
452000	-1.2538E+02	1.7146E+04	-1.2538E+02	1.1073E+04	-1.2538E+02	1.8932E+04	-1.2537E+02	1.5002E+04	-1.2537E+02	9.2873E+03	-1.2537E+02	1.0716E+04
454000	-1.2566E+02	1.7146E+04	-1.2566E+02	1.1073E+04	-1.2566E+02	1.8932E+04	-1.2565E+02	1.5002E+04	-1.2565E+02	9.2873E+03	-1.2565E+02	1.0716E+04
456000	-1.2594E+02	1.7146E+04	-1.2593E+02	1.1073E+04	-1.2593E+02	1.8932E+04	-1.2593E+02	1.5002E+04	-1.2593E+02	9.2873E+03	-1.2592E+02	1.0716E+04
458000	-1.2621E+02	1.7146E+04	-1.2621E+02	1.1073E+04	-1.2621E+02	1.8932E+04	-1.2621E+02	1.5002E+04	-1.2620E+02	9.2873E+03	-1.2620E+02	1.0716E+04
460000	-1.2649E+02	1.7146E+04	-1.2649E+02	1.1073E+04	-1.2649E+02	1.8932E+04	-1.2648E+02	1.5002E+04	-1.2648E+02	9.2873E+03	-1.2648E+02	1.0716E+04
462000	-1.2677E+02	1.7146E+04	-1.2676E+02	1.1073E+04	-1.2676E+02	1.8932E+04	-1.2676E+02	1.5002E+04	-1.2676E+02	9.2873E+03	-1.2675E+02	1.0716E+04
464000	-1.2704E+02	1.7146E+04	-1.2704E+02	1.1073E+04	-1.2704E+02	1.8932E+04	-1.2704E+02	1.5002E+04	-1.2703E+02	9.2873E+03	-1.2703E+02	1.0716E+04
466000	-1.2732E+02	1.7146E+04	-1.2731E+02	1.1073E+04	-1.2731E+02	1.8932E+04	-1.2731E+02	1.5002E+04	-1.2731E+02	9.2873E+03	-1.2731E+02	1.0716E+04
468000	-1.2759E+02	1.7146E+04	-1.2759E+02	1.1073E+04	-1.2759E+02	1.8932E+04	-1.2759E+02	1.5002E+04	-1.2758E+02	9.2873E+03	-1.2758E+02	1.0716E+04
470000	-1.2786E+02	1.7146E+04	-1.2786E+02	1.1073E+04	-1.2786E+02	1.8932E+04	-1.2786E+02	1.5002E+04	-1.2786E+02	9.2873E+03	-1.2785E+02	1.0716E+04
472000	-1.2814E+02	1.7146E+04	-1.2814E+02	1.1073E+04	-1.2813E+02	1.8932E+04	-1.2813E+02	1.5002E+04	-1.2813E+02	9.2873E+03	-1.2813E+02	1.0716E+04
474000	-1.2841E+02	1.7146E+04	-1.2841E+02	1.1073E+04	-1.2841E+02	1.8932E+04	-1.2840E+02	1.5002E+04	-1.2840E+02	9.2873E+03	-1.2840E+02	1.0716E+04
476000	-1.2868E+02	1.7146E+04	-1.2868E+02	1.1073E+04	-1.2868E+02	1.8932E+04	-1.2868E+02	1.5002E+04	-1.2867E+02	9.2873E+03	-1.2867E+02	1.0716E+04
478000	-1.2895E+02	1.7146E+04	-1.2895E+02	1.1073E+04	-1.2895E+02	1.8932E+04	-1.2895E+02	1.5002E+04	-1.2895E+02	9.2873E+03	-1.2894E+02	1.0716E+04
480000	-1.2922E+02	1.7146E+04	-1.2922E+02	1.1073E+04	-1.2922E+02	1.8932E+04	-1.2922E+02	1.5002E+04	-1.2922E+02	9.2873E+03	-1.2921E+02	1.0716E+04
482000	-1.2949E+02	1.7146E+04	-1.2949E+02	1.1073E+04	-1.2949E+02	1.8932E+04	-1.2949E+02	1.5002E+04	-1.2949E+02	9.2873E+03	-1.2948E+02	1.0716E+04
484000	-1.2976E+02	1.7146E+04	-1.2976E+02	1.1073E+04	-1.2976E+02	1.8932E+04	-1.2976E+02	1.5002E+04	-1.2976E+02	9.2873E+03	-1.2975E+02	1.0716E+04
486000	-1.3003E+02	1.7146E+04	-1.3003E+02	1.1073E+04	-1.3003E+02	1.8932E+04	-1.3003E+02	1.5002E+04	-1.3003E+02	9.2873E+03	-1.3002E+02	1.0716E+04
488000	-1.3030E+02	1.7146E+04	-1.3030E+02	1.1073E+04	-1.3030E+02	1.8932E+04	-1.3030E+02	1.5002E+04	-1.3029E+02	9.2873E+03	-1.3029E+02	1.0716E+04
490000	-1.3057E+02	1.7146E+04	-1.3057E+02	1.1073E+04	-1.3057E+02	1.8932E+04	-1.3056E+02	1.5002E+04	-1.3056E+02	9.2873E+03	-1.3056E+02	1.0716E+04
492000	-1.3084E+02	1.7146E+04	-1.3084E+02	1.1073E+04	-1.3083E+02	1.8932E+04	-1.3083E+02	1.5002E+04	-1.3083E+02	9.2873E+03	-1.3083E+02	1.0716E+04
494000	-1.3110E+02	1.7146E+04	-1.3110E+02	1.1073E+04	-1.3110E+02	1.8932E+04	-1.3110E+02	1.5002E+04	-1.3110E+02	9.2873E+03	-1.3109E+02	1.0716E+04
496000	-1.3137E+02	1.7146E+04	-1.3137E+02	1.1073E+04	-1.3137E+02	1.8932E+04	-1.3137E+02	1.5002E+04	-1.3136E+02	9.2873E+03	-1.3136E+02	1.0716E+04
498000	-1.3164E+02	1.7146E+04	-1.3164E+02	1.1073E+04	-1.3163E+02	1.8932E+04	-1.3163E+02	1.5002E+04	-1.3163E+02	9.2873E+03	-1.3163E+02	1.0716E+04
500000	-1.3190E+02	1.7146E+04	-1.3190E+02	1.1073E+04	-1.3190E+02	1.8932E+04	-1.3190E+02	1.5002E+04	-1.3189E+02	9.2873E+03	-1.3189E+02	1.0716E+04
502000	-1.3217E+02	1.7146E+04	-1.3217E+02	1.1073E+04	-1.3216E+02	1.8932E+04	-1.3216E+02	1.5002E+04	-1.3216E+02	9.2873E+03	-1.3216E+02	1.0716E+04
504000	-1.3243E+02	1.7146E+04	-1.3243E+02	1.1073E+04	-1.3243E+02	1.8932E+04	-1.3243E+02	1.5002E+04	-1.3242E+02	9.2873E+03	-1.3242E+02	1.0716E+04
506000	-1.3269E+02	1.7146E+04	-1.3269E+02	1.1073E+04	-1.3269E+02	1.8932E+04	-1.3269E+02	1.5002E+04	-1.3269E+02	9.2873E+03	-1.3268E+02	1.0716E+04
508000	-1.3296E+02	1.7146E+04	-1.3296E+02	1.1073E+04	-1.3296E+02	1.8932E+04	-1.3295E+02	1.5002E+04	-1.3295E+02	9.2873E+03	-1.3295E+02	1.0716E+04
510000	-1.3322E+02	1.7146E+04	-1.3322E+02	1.1073E+04	-1.3322E+02	1.8932E+04	-1.3322E+02	1.5002E+04	-1.3321E+02	9.2873E+03	-1.3321E+02	1.0716E+04
512000	-1.3348E+02	1.7146E+04	-1.3348E+02	1.1073E+04	-1.3348E+02	1.8932E+04	-1.3348E+02	1.5002E+04	-1.3347E+02	9.2873E+03	-1.3347E+02	1.0716E+04
514000	-1.3374E+02	1.7146E+04	-1.3374E+02	1.1073E+04	-1.3374E+02	1.8932E+04	-1.3374E+02	1.5002E+04	-1.3374E+02	9.2873E+03	-1.3373E+02	1.0716E+04
516000	-1.3401E+02	1.7146E+04	-1.3400E+02	1.1073E+04	-1.3400E+02	1.8932E+04	-1.3400E+02	1.5002E+04	-1.3400E+02	9.2873E+03	-1.3399E+02	1.0716E+04

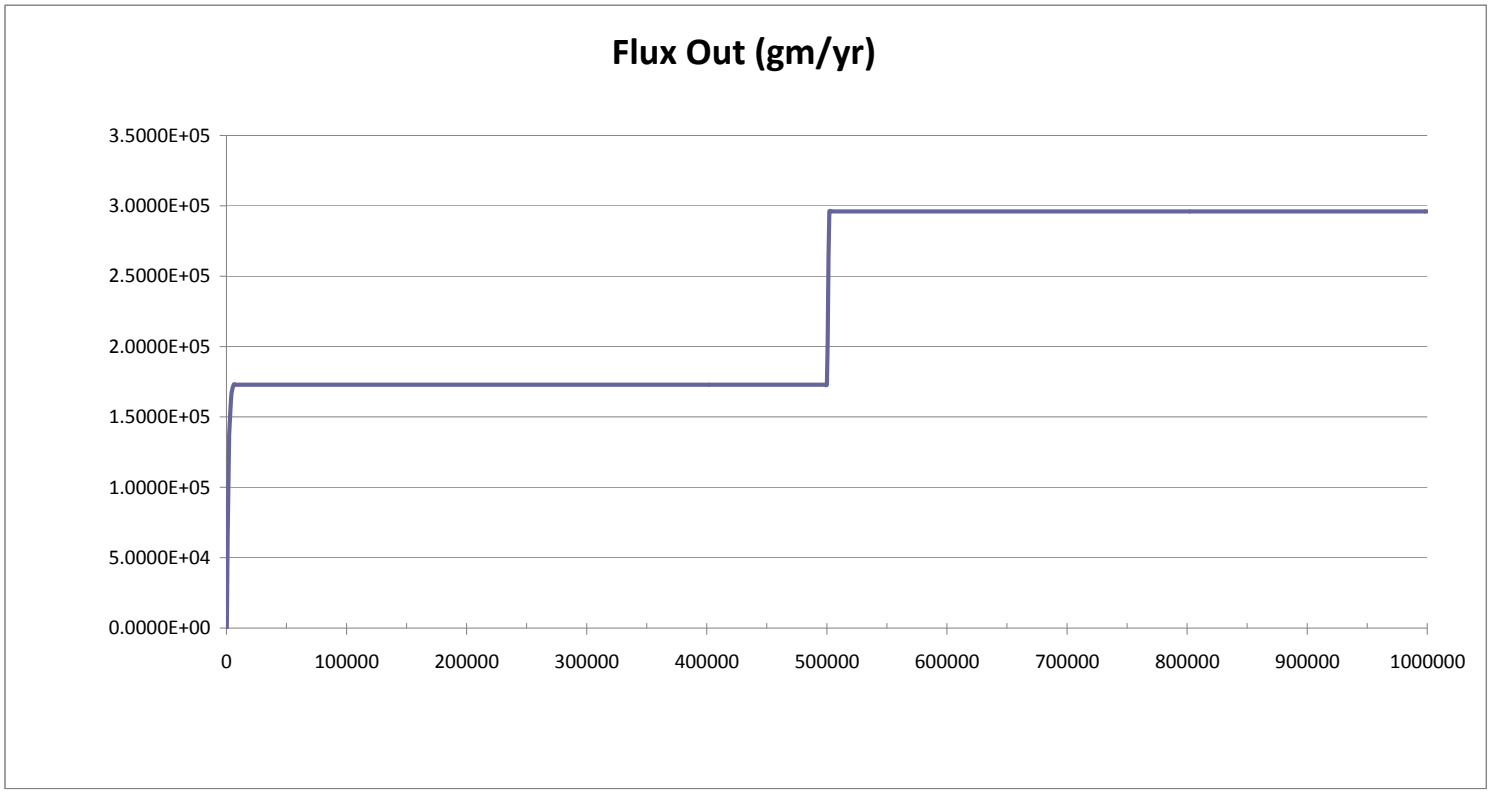
Time (yrs)	Arg 1	Curve 1	Arg 2	Curve 2	Arg 3	Curve 3	Arg 4	Curve 4	Arg 5	Curve 5	Arg 6	Curve 6
518000	-1.3427E+02	1.7146E+04	-1.3426E+02	1.1073E+04	-1.3426E+02	1.8932E+04	-1.3426E+02	1.5002E+04	-1.3426E+02	9.2873E+03	-1.3426E+02	1.0716E+04
520000	-1.3453E+02	1.7146E+04	-1.3452E+02	1.1073E+04	-1.3452E+02	1.8932E+04	-1.3452E+02	1.5002E+04	-1.3452E+02	9.2873E+03	-1.3452E+02	1.0716E+04
522000	-1.3479E+02	1.7146E+04	-1.3478E+02	1.1073E+04	-1.3478E+02	1.8932E+04	-1.3478E+02	1.5002E+04	-1.3478E+02	9.2873E+03	-1.3478E+02	1.0716E+04
524000	-1.3504E+02	1.7146E+04	-1.3504E+02	1.1073E+04	-1.3504E+02	1.8932E+04	-1.3504E+02	1.5002E+04	-1.3504E+02	9.2873E+03	-1.3503E+02	1.0716E+04
526000	-1.3530E+02	1.7146E+04	-1.3530E+02	1.1073E+04	-1.3530E+02	1.8932E+04	-1.3530E+02	1.5002E+04	-1.3530E+02	9.2873E+03	-1.3529E+02	1.0716E+04
528000	-1.3556E+02	1.7146E+04	-1.3556E+02	1.1073E+04	-1.3556E+02	1.8932E+04	-1.3556E+02	1.5002E+04	-1.3555E+02	9.2873E+03	-1.3555E+02	1.0716E+04
530000	-1.3582E+02	1.7146E+04	-1.3582E+02	1.1073E+04	-1.3582E+02	1.8932E+04	-1.3581E+02	1.5002E+04	-1.3581E+02	9.2873E+03	-1.3581E+02	1.0716E+04
532000	-1.3608E+02	1.7146E+04	-1.3608E+02	1.1073E+04	-1.3607E+02	1.8932E+04	-1.3607E+02	1.5002E+04	-1.3607E+02	9.2873E+03	-1.3607E+02	1.0716E+04
534000	-1.3633E+02	1.7146E+04	-1.3633E+02	1.1073E+04	-1.3633E+02	1.8932E+04	-1.3633E+02	1.5002E+04	-1.3633E+02	9.2873E+03	-1.3632E+02	1.0716E+04
536000	-1.3659E+02	1.7146E+04	-1.3659E+02	1.1073E+04	-1.3659E+02	1.8932E+04	-1.3658E+02	1.5002E+04	-1.3658E+02	9.2873E+03	-1.3658E+02	1.0716E+04
538000	-1.3684E+02	1.7146E+04	-1.3684E+02	1.1073E+04	-1.3684E+02	1.8932E+04	-1.3684E+02	1.5002E+04	-1.3684E+02	9.2873E+03	-1.3683E+02	1.0716E+04
540000	-1.3710E+02	1.7146E+04	-1.3710E+02	1.1073E+04	-1.3710E+02	1.8932E+04	-1.3710E+02	1.5002E+04	-1.3709E+02	9.2873E+03	-1.3709E+02	1.0716E+04
542000	-1.3735E+02	1.7146E+04	-1.3735E+02	1.1073E+04	-1.3735E+02	1.8932E+04	-1.3735E+02	1.5002E+04	-1.3735E+02	9.2873E+03	-1.3734E+02	1.0716E+04
544000	-1.3761E+02	1.7146E+04	-1.3761E+02	1.1073E+04	-1.3761E+02	1.8932E+04	-1.3760E+02	1.5002E+04	-1.3760E+02	9.2873E+03	-1.3760E+02	1.0716E+04
546000	-1.3786E+02	1.7146E+04	-1.3786E+02	1.1073E+04	-1.3786E+02	1.8932E+04	-1.3786E+02	1.5002E+04	-1.3786E+02	9.2873E+03	-1.3785E+02	1.0716E+04
548000	-1.3812E+02	1.7146E+04	-1.3812E+02	1.1073E+04	-1.3811E+02	1.8932E+04	-1.3811E+02	1.5002E+04	-1.3811E+02	9.2873E+03	-1.3811E+02	1.0716E+04
550000	-1.3837E+02	1.7146E+04	-1.3837E+02	1.1073E+04	-1.3837E+02	1.8932E+04	-1.3836E+02	1.5002E+04	-1.3836E+02	9.2873E+03	-1.3836E+02	1.0716E+04
552000	-1.3862E+02	1.7146E+04	-1.3862E+02	1.1073E+04	-1.3862E+02	1.8932E+04	-1.3862E+02	1.5002E+04	-1.3861E+02	9.2873E+03	-1.3861E+02	1.0716E+04
554000	-1.3887E+02	1.7146E+04	-1.3887E+02	1.1073E+04	-1.3887E+02	1.8932E+04	-1.3887E+02	1.5002E+04	-1.3887E+02	9.2873E+03	-1.3886E+02	1.0716E+04
556000	-1.3913E+02	1.7146E+04	-1.3912E+02	1.1073E+04	-1.3912E+02	1.8932E+04	-1.3912E+02	1.5002E+04	-1.3912E+02	9.2873E+03	-1.3912E+02	1.0716E+04
558000	-1.3938E+02	1.7146E+04	-1.3938E+02	1.1073E+04	-1.3937E+02	1.8932E+04	-1.3937E+02	1.5002E+04	-1.3937E+02	9.2873E+03	-1.3937E+02	1.0716E+04
560000	-1.3963E+02	1.7146E+04	-1.3963E+02	1.1073E+04	-1.3962E+02	1.8932E+04	-1.3962E+02	1.5002E+04	-1.3962E+02	9.2873E+03	-1.3962E+02	1.0716E+04
562000	-1.3988E+02	1.7146E+04	-1.3988E+02	1.1073E+04	-1.3987E+02	1.8932E+04	-1.3987E+02	1.5002E+04	-1.3987E+02	9.2873E+03	-1.3987E+02	1.0716E+04
564000	-1.4013E+02	1.7146E+04	-1.4013E+02	1.1073E+04	-1.4012E+02	1.8932E+04	-1.4012E+02	1.5002E+04	-1.4012E+02	9.2873E+03	-1.4012E+02	1.0716E+04
566000	-1.4038E+02	1.7146E+04	-1.4037E+02	1.1073E+04	-1.4037E+02	1.8932E+04	-1.4037E+02	1.5002E+04	-1.4037E+02	9.2873E+03	-1.4037E+02	1.0716E+04
568000	-1.4062E+02	1.7146E+04	-1.4062E+02	1.1073E+04	-1.4062E+02	1.8932E+04	-1.4062E+02	1.5002E+04	-1.4062E+02	9.2873E+03	-1.4061E+02	1.0716E+04
570000	-1.4087E+02	1.7146E+04	-1.4087E+02	1.1073E+04	-1.4087E+02	1.8932E+04	-1.4087E+02	1.5002E+04	-1.4087E+02	9.2873E+03	-1.4086E+02	1.0716E+04
572000	-1.4112E+02	1.7146E+04	-1.4112E+02	1.1073E+04	-1.4112E+02	1.8932E+04	-1.4112E+02	1.5002E+04	-1.4111E+02	9.2873E+03	-1.4111E+02	1.0716E+04
574000	-1.4137E+02	1.7146E+04	-1.4137E+02	1.1073E+04	-1.4137E+02	1.8932E+04	-1.4136E+02	1.5002E+04	-1.4136E+02	9.2873E+03	-1.4136E+02	1.0716E+04
576000	-1.4162E+02	1.7146E+04	-1.4161E+02	1.1073E+04	-1.4161E+02	1.8932E+04	-1.4161E+02	1.5002E+04	-1.4161E+02	9.2873E+03	-1.4161E+02	1.0716E+04
578000	-1.4186E+02	1.7146E+04	-1.4186E+02	1.1073E+04	-1.4186E+02	1.8932E+04	-1.4186E+02	1.5002E+04	-1.4186E+02	9.2873E+03	-1.4185E+02	1.0716E+04
580000	-1.4211E+02	1.7146E+04	-1.4211E+02	1.1073E+04	-1.4211E+02	1.8932E+04	-1.4210E+02	1.5002E+04	-1.4210E+02	9.2873E+03	-1.4210E+02	1.0716E+04
582000	-1.4235E+02	1.7146E+04	-1.4235E+02	1.1073E+04	-1.4235E+02	1.8932E+04	-1.4235E+02	1.5002E+04	-1.4235E+02	9.2873E+03	-1.4234E+02	1.0716E+04
584000	-1.4260E+02	1.7146E+04	-1.4260E+02	1.1073E+04	-1.4260E+02	1.8932E+04	-1.4259E+02	1.5002E+04	-1.4259E+02	9.2873E+03	-1.4259E+02	1.0716E+04
586000	-1.4284E+02	1.7146E+04	-1.4284E+02	1.1073E+04	-1.4284E+02	1.8932E+04	-1.4284E+02	1.5002E+04	-1.4284E+02	9.2873E+03	-1.4283E+02	1.0716E+04
588000	-1.4309E+02	1.7146E+04	-1.4309E+02	1.1073E+04	-1.4309E+02	1.8932E+04	-1.4308E+02	1.5002E+04	-1.4308E+02	9.2873E+03	-1.4308E+02	1.0716E+04
590000	-1.4333E+02	1.7146E+04	-1.4333E+02	1.1073E+04	-1.4333E+02	1.8932E+04	-1.4333E+02	1.5002E+04	-1.4333E+02	9.2873E+03	-1.4332E+02	1.0716E+04
592000	-1.4358E+02	1.7146E+04	-1.4358E+02	1.1073E+04	-1.4357E+02	1.8932E+04	-1.4357E+02	1.5002E+04	-1.4357E+02	9.2873E+03	-1.4357E+02	1.0716E+04
594000	-1.4382E+02	1.7146E+04	-1.4382E+02	1.1073E+04	-1.4382E+02	1.8932E+04	-1.4382E+02	1.5002E+04	-1.4381E+02	9.2873E+03	-1.4381E+02	1.0716E+04
596000	-1.4406E+02	1.7146E+04	-1.4406E+02	1.1073E+04	-1.4406E+02	1.8932E+04	-1.4406E+02	1.5002E+04	-1.4406E+02	9.2873E+03	-1.4405E+02	1.0716E+04
598000	-1.4431E+02	1.7146E+04	-1.4430E+02	1.1073E+04	-1.4430E+02	1.8932E+04	-1.4430E+02	1.5002E+04	-1.4430E+02	9.2873E+03	-1.4430E+02	1.0716E+04
600000	-1.4455E+02	1.7146E+04	-1.4455E+02	1.1073E+04	-1.4455E+02	1.8932E+04	-1.4454E+02	1.5002E+04	-1.4454E+02	9.2873E+03	-1.4454E+02	1.0716E+04
602000	-1.4479E+02	1.7146E+04	-1.4479E+02	1.1073E+04	-1.4479E+02	1.8932E+04	-1.4478E+02	1.5002E+04	-1.4478E+02	9.2873E+03	-1.4478E+02	1.0716E+04
604000	-1.4503E+02	1.7146E+04	-1.4503E+02	1.1073E+04	-1.4503E+02	1.8932E+04	-1.4503E+02	1.5002E+04	-1.4502E+02	9.2873E+03	-1.4502E+02	1.0716E+04
606000	-1.4527E+02	1.7146E+04	-1.4527E+02	1.1073E+04	-1.4527E+02	1.8932E+04	-1.4527E+02	1.5002E+04	-1.4526E+02	9.2873E+03	-1.4526E+02	1.0716E+04
608000	-1.4551E+02	1.7146E+04	-1.4551E+02	1.1073E+04	-1.4551E+02	1.8932E+04	-1.4551E+02	1.5002E+04	-1.4550E+02	9.2873E+03	-1.4550E+02	1.0716E+04
610000	-1.4575E+02	1.7146E+04	-1.4575E+02	1.1073E+04	-1.4575E+02	1.8932E+04	-1.4575E+02	1.5002E+04	-1.4574E+02	9.2873E+03	-1.4574E+02	1.0716E+04
612000	-1.4599E+02	1.7146E+04	-1.4599E+02	1.1073E+04	-1.4599E+02	1.8932E+04	-1.4599E+02	1.5002E+04	-1.4598E+02	9.2873E+03	-1.4598E+02	1.0716E+04
614000	-1.4623E+02	1.7146E+04	-1.4623E+02	1.1073E+04	-1.4623E+02	1.8932E+04	-1.4623E+02	1.5002E+04	-1.4622E+02	9.2873E+03	-1.4622E+02	1.0716E+04
616000	-1.4647E+02	1.7146E+04	-1.4647E+02	1.1073E+04	-1.4647E+02	1.8932E+04	-1.4647E+02	1.5002E+04	-1.4646E+02	9.2873E+03	-1.4646E+02	1.0716E+04
618000	-1.4671E+02	1.7146E+04	-1.4671E+02	1.1073E+04	-1.4671E+02	1.8932E+04	-1.4670E+02	1.5002E+04	-1.4670E+02	9.2873E+03	-1.4670E+02	1.0716E+04
620000	-1.4695E+02	1.7146E+04	-1.4695E+02	1.1073E+04	-1.4694E+02	1.8932E+04	-1.4694E+02	1.5002E+04	-1.4694E+02	9.2873E+03	-1.4694E+02	1.0716E+04

Time (yrs)	Arg 1	Curve 1	Arg 2	Curve 2	Arg 3	Curve 3	Arg 4	Curve 4	Arg 5	Curve 5	Arg 6	Curve 6
622000	-1.4718E+02	1.7146E+04	-1.4718E+02	1.1073E+04	-1.4718E+02	1.8932E+04	-1.4718E+02	1.5002E+04	-1.4718E+02	9.2873E+03	-1.4717E+02	1.0716E+04
624000	-1.4742E+02	1.7146E+04	-1.4742E+02	1.1073E+04	-1.4742E+02	1.8932E+04	-1.4742E+02	1.5002E+04	-1.4741E+02	9.2873E+03	-1.4741E+02	1.0716E+04
626000	-1.4766E+02	1.7146E+04	-1.4766E+02	1.1073E+04	-1.4766E+02	1.8932E+04	-1.4765E+02	1.5002E+04	-1.4765E+02	9.2873E+03	-1.4765E+02	1.0716E+04
628000	-1.4790E+02	1.7146E+04	-1.4789E+02	1.1073E+04	-1.4789E+02	1.8932E+04	-1.4789E+02	1.5002E+04	-1.4789E+02	9.2873E+03	-1.4789E+02	1.0716E+04
630000	-1.4813E+02	1.7146E+04	-1.4813E+02	1.1073E+04	-1.4813E+02	1.8932E+04	-1.4813E+02	1.5002E+04	-1.4812E+02	9.2873E+03	-1.4812E+02	1.0716E+04
632000	-1.4837E+02	1.7146E+04	-1.4837E+02	1.1073E+04	-1.4836E+02	1.8932E+04	-1.4836E+02	1.5002E+04	-1.4836E+02	9.2873E+03	-1.4836E+02	1.0716E+04
634000	-1.4860E+02	1.7146E+04	-1.4860E+02	1.1073E+04	-1.4860E+02	1.8932E+04	-1.4860E+02	1.5002E+04	-1.4860E+02	9.2873E+03	-1.4859E+02	1.0716E+04
636000	-1.4884E+02	1.7146E+04	-1.4884E+02	1.1073E+04	-1.4884E+02	1.8932E+04	-1.4883E+02	1.5002E+04	-1.4883E+02	9.2873E+03	-1.4883E+02	1.0716E+04
638000	-1.4907E+02	1.7146E+04	-1.4907E+02	1.1073E+04	-1.4907E+02	1.8932E+04	-1.4907E+02	1.5002E+04	-1.4907E+02	9.2873E+03	-1.4906E+02	1.0716E+04
640000	-1.4931E+02	1.7146E+04	-1.4931E+02	1.1073E+04	-1.4930E+02	1.8932E+04	-1.4930E+02	1.5002E+04	-1.4930E+02	9.2873E+03	-1.4930E+02	1.0716E+04
642000	-1.4954E+02	1.7146E+04	-1.4954E+02	1.1073E+04	-1.4954E+02	1.8932E+04	-1.4954E+02	1.5002E+04	-1.4953E+02	9.2873E+03	-1.4953E+02	1.0716E+04
644000	-1.4977E+02	1.7146E+04	-1.4977E+02	1.1073E+04	-1.4977E+02	1.8932E+04	-1.4977E+02	1.5002E+04	-1.4977E+02	9.2873E+03	-1.4976E+02	1.0716E+04
646000	-1.5001E+02	1.7146E+04	-1.5001E+02	1.1073E+04	-1.5001E+02	1.8932E+04	-1.5000E+02	1.5002E+04	-1.5000E+02	9.2873E+03	-1.5000E+02	1.0716E+04
648000	-1.5024E+02	1.7146E+04	-1.5024E+02	1.1073E+04	-1.5024E+02	1.8932E+04	-1.5024E+02	1.5002E+04	-1.5023E+02	9.2873E+03	-1.5023E+02	1.0716E+04
650000	-1.5047E+02	1.7146E+04	-1.5047E+02	1.1073E+04	-1.5047E+02	1.8932E+04	-1.5047E+02	1.5002E+04	-1.5047E+02	9.2873E+03	-1.5046E+02	1.0716E+04
652000	-1.5070E+02	1.7146E+04	-1.5070E+02	1.1073E+04	-1.5070E+02	1.8932E+04	-1.5070E+02	1.5002E+04	-1.5070E+02	9.2873E+03	-1.5070E+02	1.0716E+04
654000	-1.5094E+02	1.7146E+04	-1.5094E+02	1.1073E+04	-1.5093E+02	1.8932E+04	-1.5093E+02	1.5002E+04	-1.5093E+02	9.2873E+03	-1.5093E+02	1.0716E+04
656000	-1.5117E+02	1.7146E+04	-1.5117E+02	1.1073E+04	-1.5117E+02	1.8932E+04	-1.5116E+02	1.5002E+04	-1.5116E+02	9.2873E+03	-1.5116E+02	1.0716E+04
658000	-1.5140E+02	1.7146E+04	-1.5140E+02	1.1073E+04	-1.5140E+02	1.8932E+04	-1.5139E+02	1.5002E+04	-1.5139E+02	9.2873E+03	-1.5139E+02	1.0716E+04
660000	-1.5163E+02	1.7146E+04	-1.5163E+02	1.1073E+04	-1.5163E+02	1.8932E+04	-1.5163E+02	1.5002E+04	-1.5162E+02	9.2873E+03	-1.5162E+02	1.0716E+04
662000	-1.5186E+02	1.7146E+04	-1.5186E+02	1.1073E+04	-1.5186E+02	1.8932E+04	-1.5186E+02	1.5002E+04	-1.5185E+02	9.2873E+03	-1.5185E+02	1.0716E+04
664000	-1.5209E+02	1.7146E+04	-1.5209E+02	1.1073E+04	-1.5209E+02	1.8932E+04	-1.5209E+02	1.5002E+04	-1.5208E+02	9.2873E+03	-1.5208E+02	1.0716E+04
666000	-1.5232E+02	1.7146E+04	-1.5232E+02	1.1073E+04	-1.5232E+02	1.8932E+04	-1.5232E+02	1.5002E+04	-1.5231E+02	9.2873E+03	-1.5231E+02	1.0716E+04
668000	-1.5255E+02	1.7146E+04	-1.5255E+02	1.1073E+04	-1.5255E+02	1.8932E+04	-1.5254E+02	1.5002E+04	-1.5254E+02	9.2873E+03	-1.5254E+02	1.0716E+04
670000	-1.5278E+02	1.7146E+04	-1.5278E+02	1.1073E+04	-1.5278E+02	1.8932E+04	-1.5277E+02	1.5002E+04	-1.5277E+02	9.2873E+03	-1.5277E+02	1.0716E+04
672000	-1.5301E+02	1.7146E+04	-1.5301E+02	1.1073E+04	-1.5300E+02	1.8932E+04	-1.5300E+02	1.5002E+04	-1.5300E+02	9.2873E+03	-1.5300E+02	1.0716E+04
674000	-1.5324E+02	1.7146E+04	-1.5323E+02	1.1073E+04	-1.5323E+02	1.8932E+04	-1.5323E+02	1.5002E+04	-1.5323E+02	9.2873E+03	-1.5323E+02	1.0716E+04
676000	-1.5346E+02	1.7146E+04	-1.5346E+02	1.1073E+04	-1.5346E+02	1.8932E+04	-1.5346E+02	1.5002E+04	-1.5346E+02	9.2873E+03	-1.5345E+02	1.0716E+04
678000	-1.5369E+02	1.7146E+04	-1.5369E+02	1.1073E+04	-1.5369E+02	1.8932E+04	-1.5369E+02	1.5002E+04	-1.5368E+02	9.2873E+03	-1.5368E+02	1.0716E+04
680000	-1.5392E+02	1.7146E+04	-1.5392E+02	1.1073E+04	-1.5392E+02	1.8932E+04	-1.5391E+02	1.5002E+04	-1.5391E+02	9.2873E+03	-1.5391E+02	1.0716E+04
682000	-1.5415E+02	1.7146E+04	-1.5414E+02	1.1073E+04	-1.5414E+02	1.8932E+04	-1.5414E+02	1.5002E+04	-1.5414E+02	9.2873E+03	-1.5414E+02	1.0716E+04
684000	-1.5437E+02	1.7146E+04	-1.5437E+02	1.1073E+04	-1.5437E+02	1.8932E+04	-1.5437E+02	1.5002E+04	-1.5437E+02	9.2873E+03	-1.5436E+02	1.0716E+04
686000	-1.5460E+02	1.7146E+04	-1.5460E+02	1.1073E+04	-1.5460E+02	1.8932E+04	-1.5459E+02	1.5002E+04	-1.5459E+02	9.2873E+03	-1.5459E+02	1.0716E+04
688000	-1.5482E+02	1.7146E+04	-1.5482E+02	1.1073E+04	-1.5482E+02	1.8932E+04	-1.5482E+02	1.5002E+04	-1.5482E+02	9.2873E+03	-1.5482E+02	1.0716E+04
690000	-1.5505E+02	1.7146E+04	-1.5505E+02	1.1073E+04	-1.5505E+02	1.8932E+04	-1.5505E+02	1.5002E+04	-1.5504E+02	9.2873E+03	-1.5504E+02	1.0716E+04
692000	-1.5528E+02	1.7146E+04	-1.5527E+02	1.1073E+04	-1.5527E+02	1.8932E+04	-1.5527E+02	1.5002E+04	-1.5527E+02	9.2873E+03	-1.5527E+02	1.0716E+04
694000	-1.5550E+02	1.7146E+04	-1.5550E+02	1.1073E+04	-1.5550E+02	1.8932E+04	-1.5550E+02	1.5002E+04	-1.5549E+02	9.2873E+03	-1.5549E+02	1.0716E+04
696000	-1.5572E+02	1.7146E+04	-1.5572E+02	1.1073E+04	-1.5572E+02	1.8932E+04	-1.5572E+02	1.5002E+04	-1.5572E+02	9.2873E+03	-1.5572E+02	1.0716E+04
698000	-1.5595E+02	1.7146E+04	-1.5595E+02	1.1073E+04	-1.5595E+02	1.8932E+04	-1.5594E+02	1.5002E+04	-1.5594E+02	9.2873E+03	-1.5594E+02	1.0716E+04
700000	-1.5617E+02	1.7146E+04	-1.5617E+02	1.1073E+04	-1.5617E+02	1.8932E+04	-1.5617E+02	1.5002E+04	-1.5617E+02	9.2873E+03	-1.5616E+02	1.0716E+04
702000	-1.5640E+02	1.7146E+04	-1.5640E+02	1.1073E+04	-1.5639E+02	1.8932E+04	-1.5639E+02	1.5002E+04	-1.5639E+02	9.2873E+03	-1.5639E+02	1.0716E+04
704000	-1.5662E+02	1.7146E+04	-1.5662E+02	1.1073E+04	-1.5662E+02	1.8932E+04	-1.5662E+02	1.5002E+04	-1.5661E+02	9.2873E+03	-1.5661E+02	1.0716E+04
706000	-1.5684E+02	1.7146E+04	-1.5684E+02	1.1073E+04	-1.5684E+02	1.8932E+04	-1.5684E+02	1.5002E+04	-1.5684E+02	9.2873E+03	-1.5683E+02	1.0716E+04
708000	-1.5707E+02	1.7146E+04	-1.5706E+02	1.1073E+04	-1.5706E+02	1.8932E+04	-1.5706E+02	1.5002E+04	-1.5706E+02	9.2873E+03	-1.5706E+02	1.0716E+04
710000	-1.5729E+02	1.7146E+04	-1.5729E+02	1.1073E+04	-1.5729E+02	1.8932E+04	-1.5728E+02	1.5002E+04	-1.5728E+02	9.2873E+03	-1.5728E+02	1.0716E+04
712000	-1.5751E+02	1.7146E+04	-1.5751E+02	1.1073E+04	-1.5751E+02	1.8932E+04	-1.5751E+02	1.5002E+04	-1.5750E+02	9.2873E+03	-1.5750E+02	1.0716E+04
714000	-1.5773E+02	1.7146E+04	-1.5773E+02	1.1073E+04	-1.5773E+02	1.8932E+04	-1.5773E+02	1.5002E+04	-1.5773E+02	9.2873E+03	-1.5772E+02	1.0716E+04
716000	-1.5795E+02	1.7146E+04	-1.5795E+02	1.1073E+04	-1.5795E+02	1.8932E+04	-1.5795E+02	1.5002E+04	-1.5795E+02	9.2873E+03	-1.5795E+02	1.0716E+04
718000	-1.5818E+02	1.7146E+04	-1.5817E+02	1.1073E+04	-1.5817E+02	1.8932E+04	-1.5817E+02	1.5002E+04	-1.5817E+02	9.2873E+03	-1.5817E+02	1.0716E+04
720000	-1.5840E+02	1.7146E+04	-1.5839E+02	1.1073E+04	-1.5839E+02	1.8932E+04	-1.5839E+02	1.5002E+04	-1.5839E+02	9.2873E+03	-1.5839E+02	1.0716E+04
722000	-1.5862E+02	1.7146E+04	-1.5862E+02	1.1073E+04	-1.5861E+02	1.8932E+04	-1.5861E+02	1.5002E+04	-1.5861E+02	9.2873E+03	-1.5861E+02	1.0716E+04
724000	-1.5884E+02	1.7146E+04	-1.5884E+02	1.1073E+04	-1.5883E+02	1.8932E+04	-1.5883E+02	1.5002E+04	-1.5883E+02	9.2873E+03	-1.5883E+02	1.0716E+04

Time (yrs)	Arg 1	Curve 1	Arg 2	Curve 2	Arg 3	Curve 3	Arg 4	Curve 4	Arg 5	Curve 5	Arg 6	Curve 6
726000	-1.5906E+02	1.7146E+04	-1.5906E+02	1.1073E+04	-1.5905E+02	1.8932E+04	-1.5905E+02	1.5002E+04	-1.5905E+02	9.2873E+03	-1.5905E+02	1.0716E+04
728000	-1.5928E+02	1.7146E+04	-1.5928E+02	1.1073E+04	-1.5927E+02	1.8932E+04	-1.5927E+02	1.5002E+04	-1.5927E+02	9.2873E+03	-1.5927E+02	1.0716E+04
730000	-1.5950E+02	1.7146E+04	-1.5949E+02	1.1073E+04	-1.5949E+02	1.8932E+04	-1.5949E+02	1.5002E+04	-1.5949E+02	9.2873E+03	-1.5949E+02	1.0716E+04
732000	-1.5971E+02	1.7146E+04	-1.5971E+02	1.1073E+04	-1.5971E+02	1.8932E+04	-1.5971E+02	1.5002E+04	-1.5971E+02	9.2873E+03	-1.5971E+02	1.0716E+04
734000	-1.5993E+02	1.7146E+04	-1.5993E+02	1.1073E+04	-1.5993E+02	1.8932E+04	-1.5993E+02	1.5002E+04	-1.5993E+02	9.2873E+03	-1.5992E+02	1.0716E+04
736000	-1.6015E+02	1.7146E+04	-1.6015E+02	1.1073E+04	-1.6015E+02	1.8932E+04	-1.6015E+02	1.5002E+04	-1.6015E+02	9.2873E+03	-1.6014E+02	1.0716E+04
738000	-1.6037E+02	1.7146E+04	-1.6037E+02	1.1073E+04	-1.6037E+02	1.8932E+04	-1.6037E+02	1.5002E+04	-1.6036E+02	9.2873E+03	-1.6036E+02	1.0716E+04
740000	-1.6059E+02	1.7146E+04	-1.6059E+02	1.1073E+04	-1.6059E+02	1.8932E+04	-1.6058E+02	1.5002E+04	-1.6058E+02	9.2873E+03	-1.6058E+02	1.0716E+04
742000	-1.6081E+02	1.7146E+04	-1.6080E+02	1.1073E+04	-1.6080E+02	1.8932E+04	-1.6080E+02	1.5002E+04	-1.6080E+02	9.2873E+03	-1.6080E+02	1.0716E+04
744000	-1.6102E+02	1.7146E+04	-1.6102E+02	1.1073E+04	-1.6102E+02	1.8932E+04	-1.6102E+02	1.5002E+04	-1.6102E+02	9.2873E+03	-1.6101E+02	1.0716E+04
746000	-1.6124E+02	1.7146E+04	-1.6124E+02	1.1073E+04	-1.6124E+02	1.8932E+04	-1.6124E+02	1.5002E+04	-1.6123E+02	9.2873E+03	-1.6123E+02	1.0716E+04
748000	-1.6146E+02	1.7146E+04	-1.6146E+02	1.1073E+04	-1.6145E+02	1.8932E+04	-1.6145E+02	1.5002E+04	-1.6145E+02	9.2873E+03	-1.6145E+02	1.0716E+04
750000	-1.6167E+02	1.7146E+04	-1.6167E+02	1.1073E+04	-1.6167E+02	1.8932E+04	-1.6167E+02	1.5002E+04	-1.6167E+02	9.2873E+03	-1.6166E+02	1.0716E+04
752000	-1.6189E+02	1.7146E+04	-1.6189E+02	1.1073E+04	-1.6189E+02	1.8932E+04	-1.6188E+02	1.5002E+04	-1.6188E+02	9.2873E+03	-1.6188E+02	1.0716E+04
754000	-1.6210E+02	1.7146E+04	-1.6210E+02	1.1073E+04	-1.6210E+02	1.8932E+04	-1.6210E+02	1.5002E+04	-1.6210E+02	9.2873E+03	-1.6210E+02	1.0716E+04
756000	-1.6232E+02	1.7146E+04	-1.6232E+02	1.1073E+04	-1.6232E+02	1.8932E+04	-1.6232E+02	1.5002E+04	-1.6231E+02	9.2873E+03	-1.6231E+02	1.0716E+04
758000	-1.6254E+02	1.7146E+04	-1.6253E+02	1.1073E+04	-1.6253E+02	1.8932E+04	-1.6253E+02	1.5002E+04	-1.6253E+02	9.2873E+03	-1.6253E+02	1.0716E+04
760000	-1.6275E+02	1.7146E+04	-1.6275E+02	1.1073E+04	-1.6275E+02	1.8932E+04	-1.6275E+02	1.5002E+04	-1.6274E+02	9.2873E+03	-1.6274E+02	1.0716E+04
762000	-1.6297E+02	1.7146E+04	-1.6296E+02	1.1073E+04	-1.6296E+02	1.8932E+04	-1.6296E+02	1.5002E+04	-1.6296E+02	9.2873E+03	-1.6296E+02	1.0716E+04
764000	-1.6318E+02	1.7146E+04	-1.6318E+02	1.1073E+04	-1.6318E+02	1.8932E+04	-1.6318E+02	1.5002E+04	-1.6317E+02	9.2873E+03	-1.6317E+02	1.0716E+04
766000	-1.6339E+02	1.7146E+04	-1.6339E+02	1.1073E+04	-1.6339E+02	1.8932E+04	-1.6339E+02	1.5002E+04	-1.6339E+02	9.2873E+03	-1.6338E+02	1.0716E+04
768000	-1.6361E+02	1.7146E+04	-1.6361E+02	1.1073E+04	-1.6361E+02	1.8932E+04	-1.6360E+02	1.5002E+04	-1.6360E+02	9.2873E+03	-1.6360E+02	1.0716E+04
770000	-1.6382E+02	1.7146E+04	-1.6382E+02	1.1073E+04	-1.6382E+02	1.8932E+04	-1.6382E+02	1.5002E+04	-1.6381E+02	9.2873E+03	-1.6381E+02	1.0716E+04
772000	-1.6403E+02	1.7146E+04	-1.6403E+02	1.1073E+04	-1.6403E+02	1.8932E+04	-1.6403E+02	1.5002E+04	-1.6403E+02	9.2873E+03	-1.6403E+02	1.0716E+04
774000	-1.6425E+02	1.7146E+04	-1.6425E+02	1.1073E+04	-1.6425E+02	1.8932E+04	-1.6424E+02	1.5002E+04	-1.6424E+02	9.2873E+03	-1.6424E+02	1.0716E+04
776000	-1.6446E+02	1.7146E+04	-1.6446E+02	1.1073E+04	-1.6446E+02	1.8932E+04	-1.6446E+02	1.5002E+04	-1.6445E+02	9.2873E+03	-1.6445E+02	1.0716E+04
778000	-1.6467E+02	1.7146E+04	-1.6467E+02	1.1073E+04	-1.6467E+02	1.8932E+04	-1.6467E+02	1.5002E+04	-1.6467E+02	9.2873E+03	-1.6466E+02	1.0716E+04
780000	-1.6488E+02	1.7146E+04	-1.6488E+02	1.1073E+04	-1.6488E+02	1.8932E+04	-1.6488E+02	1.5002E+04	-1.6488E+02	9.2873E+03	-1.6488E+02	1.0716E+04
782000	-1.6510E+02	1.7146E+04	-1.6510E+02	1.1073E+04	-1.6509E+02	1.8932E+04	-1.6509E+02	1.5002E+04	-1.6509E+02	9.2873E+03	-1.6509E+02	1.0716E+04
784000	-1.6531E+02	1.7146E+04	-1.6531E+02	1.1073E+04	-1.6531E+02	1.8932E+04	-1.6530E+02	1.5002E+04	-1.6530E+02	9.2873E+03	-1.6530E+02	1.0716E+04
786000	-1.6552E+02	1.7146E+04	-1.6552E+02	1.1073E+04	-1.6552E+02	1.8932E+04	-1.6552E+02	1.5002E+04	-1.6551E+02	9.2873E+03	-1.6551E+02	1.0716E+04
788000	-1.6573E+02	1.7146E+04	-1.6573E+02	1.1073E+04	-1.6573E+02	1.8932E+04	-1.6573E+02	1.5002E+04	-1.6572E+02	9.2873E+03	-1.6572E+02	1.0716E+04
790000	-1.6594E+02	1.7146E+04	-1.6594E+02	1.1073E+04	-1.6594E+02	1.8932E+04	-1.6594E+02	1.5002E+04	-1.6593E+02	9.2873E+03	-1.6593E+02	1.0716E+04
792000	-1.6615E+02	1.7146E+04	-1.6615E+02	1.1073E+04	-1.6615E+02	1.8932E+04	-1.6615E+02	1.5002E+04	-1.6615E+02	9.2873E+03	-1.6614E+02	1.0716E+04
794000	-1.6636E+02	1.7146E+04	-1.6636E+02	1.1073E+04	-1.6636E+02	1.8932E+04	-1.6636E+02	1.5002E+04	-1.6636E+02	9.2873E+03	-1.6635E+02	1.0716E+04
796000	-1.6657E+02	1.7146E+04	-1.6657E+02	1.1073E+04	-1.6657E+02	1.8932E+04	-1.6657E+02	1.5002E+04	-1.6657E+02	9.2873E+03	-1.6656E+02	1.0716E+04
798000	-1.6678E+02	1.7146E+04	-1.6678E+02	1.1073E+04	-1.6678E+02	1.8932E+04	-1.6678E+02	1.5002E+04	-1.6678E+02	9.2873E+03	-1.6677E+02	1.0716E+04
800000	-1.6699E+02	1.7146E+04	-1.6699E+02	1.1073E+04	-1.6699E+02	1.8932E+04	-1.6699E+02	1.5002E+04	-1.6698E+02	9.2873E+03	-1.6698E+02	1.0716E+04
802000	-1.6720E+02	1.7146E+04	-1.6720E+02	1.1073E+04	-1.6720E+02	1.8932E+04	-1.6720E+02	1.5002E+04	-1.6719E+02	9.2873E+03	-1.6719E+02	1.0716E+04
804000	-1.6741E+02	1.7146E+04	-1.6741E+02	1.1073E+04	-1.6741E+02	1.8932E+04	-1.6741E+02	1.5002E+04	-1.6740E+02	9.2873E+03	-1.6740E+02	1.0716E+04
806000	-1.6762E+02	1.7146E+04	-1.6762E+02	1.1073E+04	-1.6762E+02	1.8932E+04	-1.6761E+02	1.5002E+04	-1.6761E+02	9.2873E+03	-1.6761E+02	1.0716E+04
808000	-1.6783E+02	1.7146E+04	-1.6783E+02	1.1073E+04	-1.6782E+02	1.8932E+04	-1.6782E+02	1.5002E+04	-1.6782E+02	9.2873E+03	-1.6782E+02	1.0716E+04
810000	-1.6803E+02	1.7146E+04	-1.6803E+02	1.1073E+04	-1.6803E+02	1.8932E+04	-1.6803E+02	1.5002E+04	-1.6803E+02	9.2873E+03	-1.6803E+02	1.0716E+04
812000	-1.6824E+02	1.7146E+04	-1.6824E+02	1.1073E+04	-1.6824E+02	1.8932E+04	-1.6824E+02	1.5002E+04	-1.6824E+02	9.2873E+03	-1.6823E+02	1.0716E+04
814000	-1.6845E+02	1.7146E+04	-1.6845E+02	1.1073E+04	-1.6845E+02	1.8932E+04	-1.6845E+02	1.5002E+04	-1.6844E+02	9.2873E+03	-1.6844E+02	1.0716E+04
816000	-1.6866E+02	1.7146E+04	-1.6866E+02	1.1073E+04	-1.6866E+02	1.8932E+04	-1.6865E+02	1.5002E+04	-1.6865E+02	9.2873E+03	-1.6865E+02	1.0716E+04
818000	-1.6886E+02	1.7146E+04	-1.6886E+02	1.1073E+04	-1.6886E+02	1.8932E+04	-1.6886E+02	1.5002E+04	-1.6886E+02	9.2873E+03	-1.6886E+02	1.0716E+04
820000	-1.6907E+02	1.7146E+04	-1.6907E+02	1.1073E+04	-1.6907E+02	1.8932E+04	-1.6907E+02	1.5002E+04	-1.6907E+02	9.2873E+03	-1.6906E+02	1.0716E+04
822000	-1.6928E+02	1.7146E+04	-1.6928E+02	1.1073E+04	-1.6928E+02	1.8932E+04	-1.6927E+02	1.5002E+04	-1.6927E+02	9.2873E+03	-1.6927E+02	1.0716E+04
824000	-1.6948E+02	1.7146E+04	-1.6948E+02	1.1073E+04	-1.6948E+02	1.8932E+04	-1.6948E+02	1.5002E+04	-1.6948E+02	9.2873E+03	-1.6948E+02	1.0716E+04
826000	-1.6969E+02	1.7146E+04	-1.6969E+02	1.1073E+04	-1.6969E+02	1.8932E+04	-1.6969E+02	1.5002E+04	-1.6968E+02	9.2873E+03	-1.6968E+02	1.0716E+04
828000	-1.6990E+02	1.7146E+04	-1.6990E+02	1.1073E+04	-1.6989E+02	1.8932E+04	-1.6989E+02	1.5002E+04	-1.6989E+02	9.2873E+03	-1.6989E+02	1.0716E+04

Time (yrs)	Arg 1	Curve 1	Arg 2	Curve 2	Arg 3	Curve 3	Arg 4	Curve 4	Arg 5	Curve 5	Arg 6	Curve 6
830000	-1.7010E+02	1.7146E+04	-1.7010E+02	1.1073E+04	-1.7010E+02	1.8932E+04	-1.7010E+02	1.5002E+04	-1.7010E+02	9.2873E+03	-1.7009E+02	1.0716E+04
832000	-1.7031E+02	1.7146E+04	-1.7031E+02	1.1073E+04	-1.7031E+02	1.8932E+04	-1.7030E+02	1.5002E+04	-1.7030E+02	9.2873E+03	-1.7030E+02	1.0716E+04
834000	-1.7051E+02	1.7146E+04	-1.7051E+02	1.1073E+04	-1.7051E+02	1.8932E+04	-1.7051E+02	1.5002E+04	-1.7051E+02	9.2873E+03	-1.7050E+02	1.0716E+04
836000	-1.7072E+02	1.7146E+04	-1.7072E+02	1.1073E+04	-1.7072E+02	1.8932E+04	-1.7071E+02	1.5002E+04	-1.7071E+02	9.2873E+03	-1.7071E+02	1.0716E+04
838000	-1.7092E+02	1.7146E+04	-1.7092E+02	1.1073E+04	-1.7092E+02	1.8932E+04	-1.7092E+02	1.5002E+04	-1.7092E+02	9.2873E+03	-1.7091E+02	1.0716E+04
840000	-1.7113E+02	1.7146E+04	-1.7113E+02	1.1073E+04	-1.7113E+02	1.8932E+04	-1.7112E+02	1.5002E+04	-1.7112E+02	9.2873E+03	-1.7112E+02	1.0716E+04
842000	-1.7133E+02	1.7146E+04	-1.7133E+02	1.1073E+04	-1.7133E+02	1.8932E+04	-1.7133E+02	1.5002E+04	-1.7133E+02	9.2873E+03	-1.7132E+02	1.0716E+04
844000	-1.7154E+02	1.7146E+04	-1.7153E+02	1.1073E+04	-1.7153E+02	1.8932E+04	-1.7153E+02	1.5002E+04	-1.7153E+02	9.2873E+03	-1.7153E+02	1.0716E+04
846000	-1.7174E+02	1.7146E+04	-1.7174E+02	1.1073E+04	-1.7174E+02	1.8932E+04	-1.7173E+02	1.5002E+04	-1.7173E+02	9.2873E+03	-1.7173E+02	1.0716E+04
848000	-1.7194E+02	1.7146E+04	-1.7194E+02	1.1073E+04	-1.7194E+02	1.8932E+04	-1.7194E+02	1.5002E+04	-1.7194E+02	9.2873E+03	-1.7193E+02	1.0716E+04
850000	-1.7215E+02	1.7146E+04	-1.7214E+02	1.1073E+04	-1.7214E+02	1.8932E+04	-1.7214E+02	1.5002E+04	-1.7214E+02	9.2873E+03	-1.7214E+02	1.0716E+04
852000	-1.7235E+02	1.7146E+04	-1.7235E+02	1.1073E+04	-1.7235E+02	1.8932E+04	-1.7234E+02	1.5002E+04	-1.7234E+02	9.2873E+03	-1.7234E+02	1.0716E+04
854000	-1.7255E+02	1.7146E+04	-1.7255E+02	1.1073E+04	-1.7255E+02	1.8932E+04	-1.7255E+02	1.5002E+04	-1.7255E+02	9.2873E+03	-1.7254E+02	1.0716E+04
856000	-1.7275E+02	1.7146E+04	-1.7275E+02	1.1073E+04	-1.7275E+02	1.8932E+04	-1.7275E+02	1.5002E+04	-1.7275E+02	9.2873E+03	-1.7275E+02	1.0716E+04
858000	-1.7296E+02	1.7146E+04	-1.7295E+02	1.1073E+04	-1.7295E+02	1.8932E+04	-1.7295E+02	1.5002E+04	-1.7295E+02	9.2873E+03	-1.7295E+02	1.0716E+04
860000	-1.7316E+02	1.7146E+04	-1.7316E+02	1.1073E+04	-1.7316E+02	1.8932E+04	-1.7315E+02	1.5002E+04	-1.7315E+02	9.2873E+03	-1.7315E+02	1.0716E+04
862000	-1.7336E+02	1.7146E+04	-1.7336E+02	1.1073E+04	-1.7336E+02	1.8932E+04	-1.7336E+02	1.5002E+04	-1.7335E+02	9.2873E+03	-1.7335E+02	1.0716E+04
864000	-1.7356E+02	1.7146E+04	-1.7356E+02	1.1073E+04	-1.7356E+02	1.8932E+04	-1.7356E+02	1.5002E+04	-1.7356E+02	9.2873E+03	-1.7355E+02	1.0716E+04
866000	-1.7376E+02	1.7146E+04	-1.7376E+02	1.1073E+04	-1.7376E+02	1.8932E+04	-1.7376E+02	1.5002E+04	-1.7376E+02	9.2873E+03	-1.7375E+02	1.0716E+04
868000	-1.7396E+02	1.7146E+04	-1.7396E+02	1.1073E+04	-1.7396E+02	1.8932E+04	-1.7396E+02	1.5002E+04	-1.7396E+02	9.2873E+03	-1.7396E+02	1.0716E+04
870000	-1.7416E+02	1.7146E+04	-1.7416E+02	1.1073E+04	-1.7416E+02	1.8932E+04	-1.7416E+02	1.5002E+04	-1.7416E+02	9.2873E+03	-1.7416E+02	1.0716E+04
872000	-1.7437E+02	1.7146E+04	-1.7436E+02	1.1073E+04	-1.7436E+02	1.8932E+04	-1.7436E+02	1.5002E+04	-1.7436E+02	9.2873E+03	-1.7436E+02	1.0716E+04
874000	-1.7457E+02	1.7146E+04	-1.7456E+02	1.1073E+04	-1.7456E+02	1.8932E+04	-1.7456E+02	1.5002E+04	-1.7456E+02	9.2873E+03	-1.7456E+02	1.0716E+04
876000	-1.7477E+02	1.7146E+04	-1.7476E+02	1.1073E+04	-1.7476E+02	1.8932E+04	-1.7476E+02	1.5002E+04	-1.7476E+02	9.2873E+03	-1.7476E+02	1.0716E+04
878000	-1.7497E+02	1.7146E+04	-1.7496E+02	1.1073E+04	-1.7496E+02	1.8932E+04	-1.7496E+02	1.5002E+04	-1.7496E+02	9.2873E+03	-1.7496E+02	1.0716E+04
880000	-1.7517E+02	1.7146E+04	-1.7516E+02	1.1073E+04	-1.7516E+02	1.8932E+04	-1.7516E+02	1.5002E+04	-1.7516E+02	9.2873E+03	-1.7516E+02	1.0716E+04
882000	-1.7536E+02	1.7146E+04	-1.7536E+02	1.1073E+04	-1.7536E+02	1.8932E+04	-1.7536E+02	1.5002E+04	-1.7536E+02	9.2873E+03	-1.7536E+02	1.0716E+04
884000	-1.7556E+02	1.7146E+04	-1.7556E+02	1.1073E+04	-1.7556E+02	1.8932E+04	-1.7556E+02	1.5002E+04	-1.7556E+02	9.2873E+03	-1.7556E+02	1.0716E+04
886000	-1.7576E+02	1.7146E+04	-1.7576E+02	1.1073E+04	-1.7576E+02	1.8932E+04	-1.7576E+02	1.5002E+04	-1.7576E+02	9.2873E+03	-1.7576E+02	1.0716E+04
888000	-1.7596E+02	1.7146E+04	-1.7596E+02	1.1073E+04	-1.7596E+02	1.8932E+04	-1.7596E+02	1.5002E+04	-1.7596E+02	9.2873E+03	-1.7595E+02	1.0716E+04
890000	-1.7616E+02	1.7146E+04	-1.7616E+02	1.1073E+04	-1.7616E+02	1.8932E+04	-1.7616E+02	1.5002E+04	-1.7615E+02	9.2873E+03	-1.7615E+02	1.0716E+04
892000	-1.7636E+02	1.7146E+04	-1.7636E+02	1.1073E+04	-1.7636E+02	1.8932E+04	-1.7635E+02	1.5002E+04	-1.7635E+02	9.2873E+03	-1.7635E+02	1.0716E+04
894000	-1.7656E+02	1.7146E+04	-1.7656E+02	1.1073E+04	-1.7655E+02	1.8932E+04	-1.7655E+02	1.5002E+04	-1.7655E+02	9.2873E+03	-1.7655E+02	1.0716E+04
896000	-1.7675E+02	1.7146E+04	-1.7675E+02	1.1073E+04	-1.7675E+02	1.8932E+04	-1.7675E+02	1.5002E+04	-1.7675E+02	9.2873E+03	-1.7675E+02	1.0716E+04
898000	-1.7695E+02	1.7146E+04	-1.7695E+02	1.1073E+04	-1.7695E+02	1.8932E+04	-1.7695E+02	1.5002E+04	-1.7695E+02	9.2873E+03	-1.7694E+02	1.0716E+04
900000	-1.7715E+02	1.7146E+04	-1.7715E+02	1.1073E+04	-1.7715E+02	1.8932E+04	-1.7715E+02	1.5002E+04	-1.7714E+02	9.2873E+03	-1.7714E+02	1.0716E+04
902000	-1.7735E+02	1.7146E+04	-1.7735E+02	1.1073E+04	-1.7735E+02	1.8932E+04	-1.7734E+02	1.5002E+04	-1.7734E+02	9.2873E+03	-1.7734E+02	1.0716E+04
904000	-1.7754E+02	1.7146E+04	-1.7754E+02	1.1073E+04	-1.7754E+02	1.8932E+04	-1.7754E+02	1.5002E+04	-1.7754E+02	9.2873E+03	-1.7754E+02	1.0716E+04
906000	-1.7774E+02	1.7146E+04	-1.7774E+02	1.1073E+04	-1.7774E+02	1.8932E+04	-1.7774E+02	1.5002E+04	-1.7774E+02	9.2873E+03	-1.7773E+02	1.0716E+04
908000	-1.7794E+02	1.7146E+04	-1.7794E+02	1.1073E+04	-1.7794E+02	1.8932E+04	-1.7793E+02	1.5002E+04	-1.7793E+02	9.2873E+03	-1.7793E+02	1.0716E+04
910000	-1.7813E+02	1.7146E+04	-1.7813E+02	1.1073E+04	-1.7813E+02	1.8932E+04	-1.7813E+02	1.5002E+04	-1.7813E+02	9.2873E+03	-1.7813E+02	1.0716E+04
912000	-1.7833E+02	1.7146E+04	-1.7833E+02	1.1073E+04	-1.7833E+02	1.8932E+04	-1.7833E+02	1.5002E+04	-1.7832E+02	9.2873E+03	-1.7832E+02	1.0716E+04
914000	-1.7853E+02	1.7146E+04	-1.7853E+02	1.1073E+04	-1.7852E+02	1.8932E+04	-1.7852E+02	1.5002E+04	-1.7852E+02	9.2873E+03	-1.7852E+02	1.0716E+04
916000	-1.7872E+02	1.7146E+04	-1.7872E+02	1.1073E+04	-1.7872E+02	1.8932E+04	-1.7872E+02	1.5002E+04	-1.7872E+02	9.2873E+03	-1.7871E+02	1.0716E+04
918000	-1.7892E+02	1.7146E+04	-1.7892E+02	1.1073E+04	-1.7892E+02	1.8932E+04	-1.7891E+02	1.5002E+04	-1.7891E+02	9.2873E+03	-1.7891E+02	1.0716E+04
920000	-1.7911E+02	1.7146E+04	-1.7911E+02	1.1073E+04	-1.7911E+02	1.8932E+04	-1.7911E+02	1.5002E+04	-1.7911E+02	9.2873E+03	-1.7910E+02	1.0716E+04
922000	-1.7931E+02	1.7146E+04	-1.7931E+02	1.1073E+04	-1.7931E+02	1.8932E+04	-1.7930E+02	1.5002E+04	-1.7930E+02	9.2873E+03	-1.7930E+02	1.0716E+04
924000	-1.7950E+02	1.7146E+04	-1.7950E+02	1.1073E+04	-1.7950E+02	1.8932E+04	-1.7950E+02	1.5002E+04	-1.7950E+02	9.2873E+03	-1.7949E+02	1.0716E+04
926000	-1.7970E+02	1.7146E+04	-1.7970E+02	1.1073E+04	-1.7970E+02	1.8932E+04	-1.7969E+02	1.5002E+04	-1.7969E+02	9.2873E+03	-1.7969E+02	1.0716E+04
928000	-1.7989E+02	1.7146E+04	-1.7989E+02	1.1073E+04	-1.7989E+02	1.8932E+04	-1.7989E+02	1.5002E+04	-1.7989E+02	9.2873E+03	-1.7988E+02	1.0716E+04
930000	-1.8009E+02	1.7146E+04	-1.8008E+02	1.1073E+04	-1.8008E+02	1.8932E+04	-1.8008E+02	1.5002E+04	-1.8008E+02	9.2873E+03	-1.8008E+02	1.0716E+04
932000	-1.8028E+02	1.7146E+04	-1.8028E+02	1.1073E+04	-1.8028E+02	1.8932E+04	-1.8028E+02	1.5002E+04	-1.8027E+02	9.2873E+03	-1.8027E+02	1.0716E+04

Time (yrs)	Arg 1	Curve 1	Arg 2	Curve 2	Arg 3	Curve 3	Arg 4	Curve 4	Arg 5	Curve 5	Arg 6	Curve 6
934000	-1.8047E+02	1.7146E+04	-1.8047E+02	1.1073E+04	-1.8047E+02	1.8932E+04	-1.8047E+02	1.5002E+04	-1.8047E+02	9.2873E+03	-1.8047E+02	1.0716E+04
936000	-1.8067E+02	1.7146E+04	-1.8067E+02	1.1073E+04	-1.8067E+02	1.8932E+04	-1.8066E+02	1.5002E+04	-1.8066E+02	9.2873E+03	-1.8066E+02	1.0716E+04
938000	-1.8086E+02	1.7146E+04	-1.8086E+02	1.1073E+04	-1.8086E+02	1.8932E+04	-1.8086E+02	1.5002E+04	-1.8085E+02	9.2873E+03	-1.8085E+02	1.0716E+04
940000	-1.8105E+02	1.7146E+04	-1.8105E+02	1.1073E+04	-1.8105E+02	1.8932E+04	-1.8105E+02	1.5002E+04	-1.8105E+02	9.2873E+03	-1.8105E+02	1.0716E+04
942000	-1.8125E+02	1.7146E+04	-1.8125E+02	1.1073E+04	-1.8124E+02	1.8932E+04	-1.8124E+02	1.5002E+04	-1.8124E+02	9.2873E+03	-1.8124E+02	1.0716E+04
944000	-1.8144E+02	1.7146E+04	-1.8144E+02	1.1073E+04	-1.8144E+02	1.8932E+04	-1.8144E+02	1.5002E+04	-1.8143E+02	9.2873E+03	-1.8143E+02	1.0716E+04
946000	-1.8163E+02	1.7146E+04	-1.8163E+02	1.1073E+04	-1.8163E+02	1.8932E+04	-1.8163E+02	1.5002E+04	-1.8163E+02	9.2873E+03	-1.8162E+02	1.0716E+04
948000	-1.8182E+02	1.7146E+04	-1.8182E+02	1.1073E+04	-1.8182E+02	1.8932E+04	-1.8182E+02	1.5002E+04	-1.8182E+02	9.2873E+03	-1.8182E+02	1.0716E+04
950000	-1.8202E+02	1.7146E+04	-1.8202E+02	1.1073E+04	-1.8201E+02	1.8932E+04	-1.8201E+02	1.5002E+04	-1.8201E+02	9.2873E+03	-1.8201E+02	1.0716E+04
952000	-1.8221E+02	1.7146E+04	-1.8221E+02	1.1073E+04	-1.8221E+02	1.8932E+04	-1.8220E+02	1.5002E+04	-1.8220E+02	9.2873E+03	-1.8220E+02	1.0716E+04
954000	-1.8240E+02	1.7146E+04	-1.8240E+02	1.1073E+04	-1.8240E+02	1.8932E+04	-1.8240E+02	1.5002E+04	-1.8239E+02	9.2873E+03	-1.8239E+02	1.0716E+04
956000	-1.8259E+02	1.7146E+04	-1.8259E+02	1.1073E+04	-1.8259E+02	1.8932E+04	-1.8259E+02	1.5002E+04	-1.8259E+02	9.2873E+03	-1.8258E+02	1.0716E+04
958000	-1.8278E+02	1.7146E+04	-1.8278E+02	1.1073E+04	-1.8278E+02	1.8932E+04	-1.8278E+02	1.5002E+04	-1.8278E+02	9.2873E+03	-1.8278E+02	1.0716E+04
960000	-1.8297E+02	1.7146E+04	-1.8297E+02	1.1073E+04	-1.8297E+02	1.8932E+04	-1.8297E+02	1.5002E+04	-1.8297E+02	9.2873E+03	-1.8297E+02	1.0716E+04
962000	-1.8317E+02	1.7146E+04	-1.8316E+02	1.1073E+04	-1.8316E+02	1.8932E+04	-1.8316E+02	1.5002E+04	-1.8316E+02	9.2873E+03	-1.8316E+02	1.0716E+04
964000	-1.8336E+02	1.7146E+04	-1.8336E+02	1.1073E+04	-1.8335E+02	1.8932E+04	-1.8335E+02	1.5002E+04	-1.8335E+02	9.2873E+03	-1.8335E+02	1.0716E+04
966000	-1.8355E+02	1.7146E+04	-1.8355E+02	1.1073E+04	-1.8354E+02	1.8932E+04	-1.8354E+02	1.5002E+04	-1.8354E+02	9.2873E+03	-1.8354E+02	1.0716E+04
968000	-1.8374E+02	1.7146E+04	-1.8374E+02	1.1073E+04	-1.8374E+02	1.8932E+04	-1.8373E+02	1.5002E+04	-1.8373E+02	9.2873E+03	-1.8373E+02	1.0716E+04
970000	-1.8393E+02	1.7146E+04	-1.8393E+02	1.1073E+04	-1.8393E+02	1.8932E+04	-1.8392E+02	1.5002E+04	-1.8392E+02	9.2873E+03	-1.8392E+02	1.0716E+04
972000	-1.8412E+02	1.7146E+04	-1.8412E+02	1.1073E+04	-1.8412E+02	1.8932E+04	-1.8411E+02	1.5002E+04	-1.8411E+02	9.2873E+03	-1.8411E+02	1.0716E+04
974000	-1.8431E+02	1.7146E+04	-1.8431E+02	1.1073E+04	-1.8431E+02	1.8932E+04	-1.8430E+02	1.5002E+04	-1.8430E+02	9.2873E+03	-1.8430E+02	1.0716E+04
976000	-1.8450E+02	1.7146E+04	-1.8450E+02	1.1073E+04	-1.8449E+02	1.8932E+04	-1.8449E+02	1.5002E+04	-1.8449E+02	9.2873E+03	-1.8449E+02	1.0716E+04
978000	-1.8469E+02	1.7146E+04	-1.8469E+02	1.1073E+04	-1.8468E+02	1.8932E+04	-1.8468E+02	1.5002E+04	-1.8468E+02	9.2873E+03	-1.8468E+02	1.0716E+04
980000	-1.8488E+02	1.7146E+04	-1.8487E+02	1.1073E+04	-1.8487E+02	1.8932E+04	-1.8487E+02	1.5002E+04	-1.8487E+02	9.2873E+03	-1.8487E+02	1.0716E+04
982000	-1.8506E+02	1.7146E+04	-1.8506E+02	1.1073E+04	-1.8506E+02	1.8932E+04	-1.8506E+02	1.5002E+04	-1.8506E+02	9.2873E+03	-1.8506E+02	1.0716E+04
984000	-1.8525E+02	1.7146E+04	-1.8525E+02	1.1073E+04	-1.8525E+02	1.8932E+04	-1.8525E+02	1.5002E+04	-1.8525E+02	9.2873E+03	-1.8525E+02	1.0716E+04
986000	-1.8544E+02	1.7146E+04	-1.8544E+02	1.1073E+04	-1.8544E+02	1.8932E+04	-1.8544E+02	1.5002E+04	-1.8544E+02	9.2873E+03	-1.8543E+02	1.0716E+04
988000	-1.8563E+02	1.7146E+04	-1.8563E+02	1.1073E+04	-1.8563E+02	1.8932E+04	-1.8563E+02	1.5002E+04	-1.8562E+02	9.2873E+03	-1.8562E+02	1.0716E+04
990000	-1.8582E+02	1.7146E+04	-1.8582E+02	1.1073E+04	-1.8582E+02	1.8932E+04	-1.8581E+02	1.5002E+04	-1.8581E+02	9.2873E+03	-1.8581E+02	1.0716E+04
992000	-1.8601E+02	1.7146E+04	-1.8601E+02	1.1073E+04	-1.8600E+02	1.8932E+04	-1.8600E+02	1.5002E+04	-1.8600E+02	9.2873E+03	-1.8600E+02	1.0716E+04
994000	-1.8619E+02	1.7146E+04	-1.8619E+02	1.1073E+04	-1.8619E+02	1.8932E+04	-1.8619E+02	1.5002E+04	-1.8619E+02	9.2873E+03	-1.8619E+02	1.0716E+04
996000	-1.8638E+02	1.7146E+04	-1.8638E+02	1.1073E+04	-1.8638E+02	1.8932E+04	-1.8638E+02	1.5002E+04	-1.8638E+02	9.2873E+03	-1.8637E+02	1.0716E+04
998000	-1.8657E+02	1.7146E+04	-1.8657E+02	1.1073E+04	-1.8657E+02	1.8932E+04	-1.8657E+02	1.5002E+04	-1.8656E+02	9.2873E+03	-1.8656E+02	1.0716E+04
1000000	-1.8676E+02	1.7146E+04	-1.8676E+02	1.1073E+04	-1.8675E+02	1.8932E+04	-1.8675E+02	1.5002E+04	-1.8675E+02	9.2873E+03	-1.8675E+02	1.0716E+04


Flux Out (gm/yr)
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3.0000E+05
2.5000E+05
2.0000E+05
1.5000E+05
1.0000E+05
5.0000E+04
0.0000E+00
0
100000
200000
300000
400000
500000
600000
700000
800000
900000
1000000

Arg 7	Curve 7	Arg 8	Curve 8	Arg 9	Curve 9	Arg 10	Curve 10	Arg 11	Curve 11	Arg 12	Curve 12	Arg 13
2.6170E+01	0.0000E+00	6.7060E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
-2.9263E+00	8.5727E+03	-2.7447E+00	7.8580E+03	-2.5585E+00	3.5715E+03	-2.2893E+00	4.2838E+03	-2.1308E+00	4.6376E+03	-1.8025E+00	4.9738E+03	-1.1408E+00
-8.0753E+00	8.5728E+03	-7.9763E+00	7.8584E+03	-7.8764E+00	3.5720E+03	-7.7349E+00	4.2864E+03	-7.6531E+00	4.6436E+03	-7.4874E+00	5.0008E+03	-7.1691E+00
-1.1445E+01	8.5728E+03	-1.1372E+01	7.8584E+03	-1.1298E+01	3.5720E+03	-1.1193E+01	4.2864E+03	-1.1133E+01	4.6436E+03	-1.1012E+01	5.0008E+03	-1.0782E+01
-1.4103E+01	8.5728E+03	-1.4042E+01	7.8584E+03	-1.3981E+01	3.5720E+03	-1.3896E+01	4.2864E+03	-1.3846E+01	4.6436E+03	-1.3747E+01	5.0008E+03	-1.3560E+01
-1.6359E+01	8.5728E+03	-1.6306E+01	7.8584E+03	-1.6254E+01	3.5720E+03	-1.6179E+01	4.2864E+03	-1.6136E+01	4.6436E+03	-1.6051E+01	5.0008E+03	-1.5889E+01
-1.8351E+01	8.5728E+03	-1.8304E+01	7.8584E+03	-1.8256E+01	3.5720E+03	-1.8190E+01	4.2864E+03	-1.8152E+01	4.6436E+03	-1.8075E+01	5.0008E+03	-1.7931E+01
-2.0152E+01	8.5728E+03	-2.0109E+01	7.8584E+03	-2.0066E+01	3.5720E+03	-2.0005E+01	4.2864E+03	-1.9971E+01	4.6436E+03	-1.9901E+01	5.0008E+03	-1.9770E+01
-2.1809E+01	8.5728E+03	-2.1769E+01	7.8584E+03	-2.1729E+01	3.5720E+03	-2.1673E+01	4.2864E+03	-2.1641E+01	4.6436E+03	-2.1576E+01	5.0008E+03	-2.1455E+01
-2.3350E+01	8.5728E+03	-2.3312E+01	7.8584E+03	-2.3275E+01	3.5720E+03	-2.3223E+01	4.2864E+03	-2.3193E+01	4.6436E+03	-2.3133E+01	5.0008E+03	-2.3019E+01
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-2.7465E+01	8.5728E+03	-2.7433E+01	7.8584E+03	-2.7401E+01	3.5720E+03	-2.7357E+01	4.2864E+03	-2.7331E+01	4.6436E+03	-2.7280E+01	5.0008E+03	-2.7184E+01
-2.8707E+01	8.5728E+03	-2.8677E+01	7.8584E+03	-2.8646E+01	3.5720E+03	-2.8604E+01	4.2864E+03	-2.8579E+01	4.6436E+03	-2.8530E+01	5.0008E+03	-2.8438E+01
-2.9898E+01	8.5728E+03	-2.9869E+01	7.8584E+03	-2.9840E+01	3.5720E+03	-2.9799E+01	4.2864E+03	-2.9775E+01	4.6436E+03	-2.9728E+01	5.0008E+03	-2.9640E+01
-3.1043E+01	8.5728E+03	-3.1015E+01	7.8584E+03	-3.0987E+01	3.5720E+03	-3.0948E+01	4.2864E+03	-3.0925E+01	4.6436E+03	-3.0880E+01	5.0008E+03	-3.0795E+01
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-3.3217E+01	8.5728E+03	-3.3191E+01	7.8584E+03	-3.3164E+01	3.5720E+03	-3.3127E+01	4.2864E+03	-3.3106E+01	4.6436E+03	-3.3064E+01	5.0008E+03	-3.2985E+01
-3.4252E+01	8.5728E+03	-3.4227E+01	7.8584E+03	-3.4201E+01	3.5720E+03	-3.4165E+01	4.2864E+03	-3.4145E+01	4.6436E+03	-3.4104E+01	5.0008E+03	-3.4027E+01
-3.5257E+01	8.5728E+03	-3.5232E+01	7.8584E+03	-3.5207E+01	3.5720E+03	-3.5173E+01	4.2864E+03	-3.5153E+01	4.6436E+03	-3.5113E+01	5.0008E+03	-3.5038E+01
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-3.9020E+01	8.5728E+03	-3.8997E+01	7.8584E+03	-3.8975E+01	3.5720E+03	-3.8943E+01	4.2864E+03	-3.8925E+01	4.6436E+03	-3.8889E+01	5.0008E+03	-3.8822E+01
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-4.1619E+01	8.5728E+03	-4.1598E+01	7.8584E+03	-4.1577E+01	3.5720E+03	-4.1548E+01	4.2864E+03	-4.1531E+01	4.6436E+03	-4.1497E+01	5.0008E+03	-4.1434E+01
-4.2451E+01	8.5728E+03	-4.2430E+01	7.8584E+03	-4.2409E+01	3.5720E+03	-4.2381E+01	4.2864E+03	-4.2364E+01	4.6436E+03	-4.2331E+01	5.0008E+03	-4.2269E+01
-4.3266E+01	8.5728E+03	-4.3246E+01	7.8584E+03	-4.3226E+01	3.5720E+03	-4.3197E+01	4.2864E+03	-4.3181E+01	4.6436E+03	-4.3149E+01	5.0008E+03	-4.3088E+01
-4.4066E+01	8.5728E+03	-4.4046E+01	7.8584E+03	-4.4027E+01	3.5720E+03	-4.3999E+01	4.2864E+03	-4.3983E+01	4.6436E+03	-4.3951E+01	5.0008E+03	-4.3891E+01
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-4.7132E+01	8.5728E+03	-4.7113E+01	7.8584E+03	-4.7095E+01	3.5720E+03	-4.7069E+01	4.2864E+03	-4.7054E+01	4.6436E+03	-4.7024E+01	5.0008E+03	-4.6969E+01
-4.7868E+01	8.5728E+03	-4.7850E+01	7.8584E+03	-4.7831E+01	3.5720E+03	-4.7806E+01	4.2864E+03	-4.7791E+01	4.6436E+03	-4.7762E+01	5.0008E+03	-4.7707E+01
-4.8592E+01	8.5728E+03	-4.8574E+01	7.8584E+03	-4.8556E+01	3.5720E+03	-4.8531E+01	4.2864E+03	-4.8517E+01	4.6436E+03	-4.8488E+01	5.0008E+03	-4.8434E+01
-4.9306E+01	8.5728E+03	-4.9289E+01	7.8584E+03	-4.9271E+01	3.5720E+03	-4.9246E+01	4.2864E+03	-4.9232E+01	4.6436E+03	-4.9204E+01	5.0008E+03	-4.9150E+01
-5.0010E+01	8.5728E+03	-4.9993E+01	7.8584E+03	-4.9975E+01	3.5720E+03	-4.9951E+01	4.2864E+03	-4.9937E+01	4.6436E+03	-4.9909E+01	5.0008E+03	-4.9856E+01
-5.0704E+01	8.5728E+03	-5.0687E+01	7.8584E+03	-5.0670E+01	3.5720E+03	-5.0646E+01	4.2864E+03	-5.0632E+01	4.6436E+03	-5.0604E+01	5.0008E+03	-5.0552E+01
-5.1389E+01	8.5728E+03	-5.1372E+01	7.8584E+03	-5.1355E+01	3.5720E+03	-5.1331E+01	4.2864E+03	-5.1318E+01	4.6436E+03	-5.1290E+01	5.0008E+03	-5.1239E+01
-5.2065E+01	8.5728E+03	-5.2048E+01	7.8584E+03	-5.2031E+01	3.5720E+03	-5.2008E+01	4.2864E+03	-5.1994E+01	4.6436E+03	-5.1967E+01	5.0008E+03	-5.1917E+01
-5.2732E+01	8.5728E+03	-5.2715E+01	7.8584E+03	-5.2699E+01	3.5720E+03	-5.2675E+01	4.2864E+03	-5.2662E+01	4.6436E+03	-5.2636E+01	5.0008E+03	-5.2586E+01
-5.3391E+01	8.5728E+03	-5.3374E+01	7.8584E+03	-5.3358E+01	3.5720E+03	-5.3335E+01	4.2864E+03	-5.3322E+01	4.6436E+03	-5.3296E+01	5.0008E+03	-5.3246E+01
-5.4041E+01	8.5728E+03	-5.4025E+01	7.8584E+03	-5.4009E+01	3.5720E+03	-5.3986E+01	4.2864E+03	-5.3973E+01	4.6436E+03	-5.3947E+01	5.0008E+03	-5.3899E+01
-5.4684E+01	8.5728E+03	-5.4668E+01	7.8584E+03	-5.4652E+01	3.5720E+03	-5.4630E+01	4.2864E+03	-5.4617E+01	4.6436E+03	-5.4592E+01	5.0008E+03	-5.4543E+01
-5.5320E+01	8.5728E+03	-5.5304E+01	7.8584E+03	-5.5288E+01	3.5720E+03	-5.5266E+01	4.2864E+03	-5.5253E+01	4.6436E+03	-5.5228E+01	5.0008E+03	-5.5181E+01
-5.5948E+01	8.5728E+03	-5.5932E+01	7.8584E+03	-5.5917E+01	3.5720E+03	-5.5895E+01	4.2864E+03	-5.5882E+01	4.6436E+03	-5.5857E+01	5.0008E+03	-5.5810E+01
-5.6569E+01	8.5728E+03	-5.6554E+01	7.8584E+03	-5.6539E+01	3.5720E+03	-5.6517E+01	4.2864E+03	-5.6505E+01	4.6436E+03	-5.6480E+01	5.0008E+03	-5.6433E+01
-5.7184E+01	8.5728E+03	-5.7169E+01	7.8584E+03	-5.7153E+01	3.5720E+03	-5.7132E+01	4.2864E+03	-5.7120E+01	4.6436E+03	-5.7095E+01	5.0008E+03	-5.7049E+01
-5.7792E+01	8.5728E+03	-5.7777E+01	7.8584E+03	-5.7762E+01	3.5720E+03	-5.7741E+01	4.2864E+03	-5.7729E+01	4.6436E+03	-5.7704E+01	5.0008E+03	-5.7659E+01
-5.8394E+01	8.5728E+03	-5.8379E+01	7.8584E+03	-5.8364E+01	3.5720E+03	-5.8343E+01	4.2864E+03	-5.8331E+01	4.6436E+03	-5.8307E+01	5.0008E+03	-5.8262E+01

Arg 7	Curve 7	Arg 8	Curve 8	Arg 9	Curve 9	Arg 10	Curve 10	Arg 11	Curve 11	Arg 12	Curve 12	Arg 13
-5.8989E+01	8.5728E+03	-5.8975E+01	7.8584E+03	-5.8960E+01	3.5720E+03	-5.8939E+01	4.2864E+03	-5.8927E+01	4.6436E+03	-5.8903E+01	5.0008E+03	-5.8859E+01
-5.9579E+01	8.5728E+03	-5.9564E+01	7.8584E+03	-5.9550E+01	3.5720E+03	-5.9529E+01	4.2864E+03	-5.9517E+01	4.6436E+03	-5.9494E+01	5.0008E+03	-5.9450E+01
-6.0163E+01	8.5728E+03	-6.0148E+01	7.8584E+03	-6.0134E+01	3.5720E+03	-6.0113E+01	4.2864E+03	-6.0102E+01	4.6436E+03	-6.0079E+01	5.0008E+03	-6.0035E+01
-6.0741E+01	8.5728E+03	-6.0727E+01	7.8584E+03	-6.0712E+01	3.5720E+03	-6.0692E+01	4.2864E+03	-6.0681E+01	4.6436E+03	-6.0658E+01	5.0008E+03	-6.0614E+01
-6.1314E+01	8.5728E+03	-6.1300E+01	7.8584E+03	-6.1285E+01	3.5720E+03	-6.1265E+01	4.2864E+03	-6.1254E+01	4.6436E+03	-6.1231E+01	5.0008E+03	-6.1188E+01
-6.1881E+01	8.5728E+03	-6.1867E+01	7.8584E+03	-6.1853E+01	3.5720E+03	-6.1833E+01	4.2864E+03	-6.1822E+01	4.6436E+03	-6.1799E+01	5.0008E+03	-6.1757E+01
-6.2444E+01	8.5728E+03	-6.2430E+01	7.8584E+03	-6.2416E+01	3.5720E+03	-6.2396E+01	4.2864E+03	-6.2385E+01	4.6436E+03	-6.2362E+01	5.0008E+03	-6.2320E+01
-6.3001E+01	8.5728E+03	-6.2987E+01	7.8584E+03	-6.2973E+01	3.5720E+03	-6.2954E+01	4.2864E+03	-6.2943E+01	4.6436E+03	-6.2921E+01	5.0008E+03	-6.2879E+01
-6.3553E+01	8.5728E+03	-6.3540E+01	7.8584E+03	-6.3526E+01	3.5720E+03	-6.3507E+01	4.2864E+03	-6.3496E+01	4.6436E+03	-6.3474E+01	5.0008E+03	-6.3432E+01
-6.4101E+01	8.5728E+03	-6.4088E+01	7.8584E+03	-6.4074E+01	3.5720E+03	-6.4055E+01	4.2864E+03	-6.4044E+01	4.6436E+03	-6.4022E+01	5.0008E+03	-6.3981E+01
-6.4644E+01	8.5728E+03	-6.4631E+01	7.8584E+03	-6.4617E+01	3.5720E+03	-6.4598E+01	4.2864E+03	-6.4587E+01	4.6436E+03	-6.4566E+01	5.0008E+03	-6.4525E+01
-6.5183E+01	8.5728E+03	-6.5169E+01	7.8584E+03	-6.5156E+01	3.5720E+03	-6.5137E+01	4.2864E+03	-6.5126E+01	4.6436E+03	-6.5105E+01	5.0008E+03	-6.5065E+01
-6.5717E+01	8.5728E+03	-6.5704E+01	7.8584E+03	-6.5690E+01	3.5720E+03	-6.5672E+01	4.2864E+03	-6.5661E+01	4.6436E+03	-6.5640E+01	5.0008E+03	-6.5600E+01
-6.6247E+01	8.5728E+03	-6.6233E+01	7.8584E+03	-6.6220E+01	3.5720E+03	-6.6202E+01	4.2864E+03	-6.6191E+01	4.6436E+03	-6.6170E+01	5.0008E+03	-6.6130E+01
-6.6772E+01	8.5728E+03	-6.6759E+01	7.8584E+03	-6.6746E+01	3.5720E+03	-6.6728E+01	4.2864E+03	-6.6717E+01	4.6436E+03	-6.6696E+01	5.0008E+03	-6.6657E+01
-6.7294E+01	8.5728E+03	-6.7281E+01	7.8584E+03	-6.7268E+01	3.5720E+03	-6.7250E+01	4.2864E+03	-6.7239E+01	4.6436E+03	-6.7218E+01	5.0008E+03	-6.7179E+01
-6.7811E+01	8.5728E+03	-6.7798E+01	7.8584E+03	-6.7785E+01	3.5720E+03	-6.7767E+01	4.2864E+03	-6.7757E+01	4.6436E+03	-6.7736E+01	5.0008E+03	-6.7698E+01
-6.8325E+01	8.5728E+03	-6.8312E+01	7.8584E+03	-6.8299E+01	3.5720E+03	-6.8281E+01	4.2864E+03	-6.8271E+01	4.6436E+03	-6.8251E+01	5.0008E+03	-6.8212E+01
-6.8835E+01	8.5728E+03	-6.8822E+01	7.8584E+03	-6.8809E+01	3.5720E+03	-6.8791E+01	4.2864E+03	-6.8781E+01	4.6436E+03	-6.8761E+01	5.0008E+03	-6.8723E+01
-6.9341E+01	8.5728E+03	-6.9328E+01	7.8584E+03	-6.9315E+01	3.5720E+03	-6.9298E+01	4.2864E+03	-6.9288E+01	4.6436E+03	-6.9267E+01	5.0008E+03	-6.9230E+01
-6.9843E+01	8.5728E+03	-6.9830E+01	7.8584E+03	-6.9818E+01	3.5720E+03	-6.9800E+01	4.2864E+03	-6.9790E+01	4.6436E+03	-6.9770E+01	5.0008E+03	-6.9733E+01
-7.0342E+01	8.5728E+03	-7.0329E+01	7.8584E+03	-7.0317E+01	3.5720E+03	-7.0299E+01	4.2864E+03	-7.0289E+01	4.6436E+03	-7.0269E+01	5.0008E+03	-7.0232E+01
-7.0837E+01	8.5728E+03	-7.0824E+01	7.8584E+03	-7.0812E+01	3.5720E+03	-7.0795E+01	4.2864E+03	-7.0785E+01	4.6436E+03	-7.0765E+01	5.0008E+03	-7.0728E+01
-7.1329E+01	8.5728E+03	-7.1316E+01	7.8584E+03	-7.1304E+01	3.5720E+03	-7.1287E+01	4.2864E+03	-7.1277E+01	4.6436E+03	-7.1258E+01	5.0008E+03	-7.1221E+01
-7.1817E+01	8.5728E+03	-7.1805E+01	7.8584E+03	-7.1793E+01	3.5720E+03	-7.1776E+01	4.2864E+03	-7.1766E+01	4.6436E+03	-7.1746E+01	5.0008E+03	-7.1710E+01
-7.2302E+01	8.5728E+03	-7.2290E+01	7.8584E+03	-7.2278E+01	3.5720E+03	-7.2261E+01	4.2864E+03	-7.2251E+01	4.6436E+03	-7.2232E+01	5.0008E+03	-7.2196E+01
-7.2784E+01	8.5728E+03	-7.2772E+01	7.8584E+03	-7.2760E+01	3.5720E+03	-7.2743E+01	4.2864E+03	-7.2734E+01	4.6436E+03	-7.2714E+01	5.0008E+03	-7.2678E+01
-7.3263E+01	8.5728E+03	-7.3251E+01	7.8584E+03	-7.3239E+01	3.5720E+03	-7.3222E+01	4.2864E+03	-7.3213E+01	4.6436E+03	-7.3194E+01	5.0008E+03	-7.3158E+01
-7.3738E+01	8.5728E+03	-7.3727E+01	7.8584E+03	-7.3715E+01	3.5720E+03	-7.3698E+01	4.2864E+03	-7.3689E+01	4.6436E+03	-7.3670E+01	5.0008E+03	-7.3634E+01
-7.4211E+01	8.5728E+03	-7.4199E+01	7.8584E+03	-7.4187E+01	3.5720E+03	-7.4171E+01	4.2864E+03	-7.4161E+01	4.6436E+03	-7.4143E+01	5.0008E+03	-7.4107E+01
-7.4681E+01	8.5728E+03	-7.4669E+01	7.8584E+03	-7.4657E+01	3.5720E+03	-7.4641E+01	4.2864E+03	-7.4631E+01	4.6436E+03	-7.4613E+01	5.0008E+03	-7.4578E+01
-7.5147E+01	8.5728E+03	-7.5136E+01	7.8584E+03	-7.5124E+01	3.5720E+03	-7.5108E+01	4.2864E+03	-7.5098E+01	4.6436E+03	-7.5080E+01	5.0008E+03	-7.5045E+01
-7.5611E+01	8.5728E+03	-7.5599E+01	7.8584E+03	-7.5588E+01	3.5720E+03	-7.5572E+01	4.2864E+03	-7.5562E+01	4.6436E+03	-7.5544E+01	5.0008E+03	-7.5509E+01
-7.6072E+01	8.5728E+03	-7.6060E+01	7.8584E+03	-7.6049E+01	3.5720E+03	-7.6033E+01	4.2864E+03	-7.6024E+01	4.6436E+03	-7.6005E+01	5.0008E+03	-7.5971E+01
-7.6530E+01	8.5728E+03	-7.6519E+01	7.8584E+03	-7.6507E+01	3.5720E+03	-7.6491E+01	4.2864E+03	-7.6482E+01	4.6436E+03	-7.6464E+01	5.0008E+03	-7.6430E+01
-7.6986E+01	8.5728E+03	-7.6974E+01	7.8584E+03	-7.6963E+01	3.5720E+03	-7.6947E+01	4.2864E+03	-7.6938E+01	4.6436E+03	-7.6920E+01	5.0008E+03	-7.6886E+01
-7.7438E+01	8.5728E+03	-7.7427E+01	7.8584E+03	-7.7416E+01	3.5720E+03	-7.7400E+01	4.2864E+03	-7.7391E+01	4.6436E+03	-7.7373E+01	5.0008E+03	-7.7339E+01
-7.7888E+01	8.5728E+03	-7.7877E+01	7.8584E+03	-7.7866E+01	3.5720E+03	-7.7850E+01	4.2864E+03	-7.7841E+01	4.6436E+03	-7.7823E+01	5.0008E+03	-7.7790E+01
-7.8336E+01	8.5728E+03	-7.8325E+01	7.8584E+03	-7.8314E+01	3.5720E+03	-7.8298E+01	4.2864E+03	-7.8289E+01	4.6436E+03	-7.8271E+01	5.0008E+03	-7.8238E+01
-7.8781E+01	8.5728E+03	-7.8770E+01	7.8584E+03	-7.8759E+01	3.5720E+03	-7.8743E+01	4.2864E+03	-7.8734E+01	4.6436E+03	-7.8717E+01	5.0008E+03	-7.8683E+01
-7.9223E+01	8.5728E+03	-7.9212E+01	7.8584E+03	-7.9201E+01	3.5720E+03	-7.9186E+01	4.2864E+03	-7.9177E+01	4.6436E+03	-7.9159E+01	5.0008E+03	-7.9126E+01
-7.9664E+01	8.5728E+03	-7.9653E+01	7.8584E+03	-7.9642E+01	3.5720E+03	-7.9626E+01	4.2864E+03	-7.9617E+01	4.6436E+03	-7.9600E+01	5.0008E+03	-7.9567E+01
-8.0101E+01	8.5728E+03	-8.0090E+01	7.8584E+03	-8.0079E+01	3.5720E+03	-8.0064E+01	4.2864E+03	-8.0055E+01	4.6436E+03	-8.0038E+01	5.0008E+03	-8.0005E+01
-8.0536E+01	8.5728E+03	-8.0526E+01	7.8584E+03	-8.0515E+01	3.5720E+03	-8.0499E+01	4.2864E+03	-8.0491E+01	4.6436E+03	-8.0473E+01	5.0008E+03	-8.0441E+01
-8.0969E+01	8.5728E+03	-8.0959E+01	7.8584E+03	-8.0948E+01	3.5720E+03	-8.0933E+01	4.2864E+03	-8.0924E+01	4.6436E+03	-8.0907E+01	5.0008E+03	-8.0874E+01
-8.1400E+01	8.5728E+03	-8.1389E+01	7.8584E+03	-8.1378E+01	3.5720E+03	-8.1363E+01	4.2864E+03	-8.1355E+01	4.6436E+03	-8.1338E+01	5.0008E+03	-8.1305E+01
-8.1828E+01	8.5728E+03	-8.1818E+01	7.8584E+03	-8.1807E+01	3.5720E+03	-8.1792E+01	4.2864E+03	-8.1783E+01	4.6436E+03	-8.1766E+01	5.0008E+03	-8.1734E+01
-8.2254E+01	8.5728E+03	-8.2244E+01	7.8584E+03	-8.2233E+01	3.5720E+03	-8.2218E+01	4.2864E+03	-8.2210E+01	4.6436E+03	-8.2193E+01	5.0008E+03	-8.2161E+01
-8.2678E+01	8.5728E+03	-8.2668E+01	7.8584E+03	-8.2657E+01	3.5720E+03	-8.2642E+01	4.2864E+03	-8.2634E+01	4.6436E+03	-8.2617E+01	5.0008E+03	-8.2585E+01
-8.3100E+01	8.5728E+03	-8.3090E+01	7.8584E+03	-8.3079E+01	3.5720E+03	-8.3064E+01	4.2864E+03	-8.3056E+01	4.6436E+03	-8.3039E+01	5.0008E+03	-8.3007E+01
-8.3520E+01	8.5728E+03	-8.3509E+01	7.8584E+03	-8.3499E+01	3.5720E+03	-8.3484E+01	4.2864E+03	-8.3476E+01	4.6436E+03	-8.3459E+01	5.0008E+03	-8.3428E+01
-8.3937E+01	8.5728E+03	-8.3927E+01	7.8584E+03	-8.3916E+01	3.5720E+03	-8.3902E+01	4.2864E+03	-8.3893E+01	4.6436E+03	-8.3877E+01	5.0008E+03	-8.3846E+01

Arg 7	Curve 7	Arg 8	Curve 8	Arg 9	Curve 9	Arg 10	Curve 10	Arg 11	Curve 11	Arg 12	Curve 12	Arg 13
-8.4353E+01	8.5728E+03	-8.4342E+01	7.8584E+03	-8.4332E+01	3.5720E+03	-8.4317E+01	4.2864E+03	-8.4309E+01	4.6436E+03	-8.4293E+01	5.0008E+03	-8.4261E+01
-8.4766E+01	8.5728E+03	-8.4756E+01	7.8584E+03	-8.4745E+01	3.5720E+03	-8.4731E+01	4.2864E+03	-8.4723E+01	4.6436E+03	-8.4706E+01	5.0008E+03	-8.4675E+01
-8.5178E+01	8.5728E+03	-8.5167E+01	7.8584E+03	-8.5157E+01	3.5720E+03	-8.5143E+01	4.2864E+03	-8.5134E+01	4.6436E+03	-8.5118E+01	5.0008E+03	-8.5087E+01
-8.5587E+01	8.5728E+03	-8.5577E+01	7.8584E+03	-8.5567E+01	3.5720E+03	-8.5552E+01	4.2864E+03	-8.5544E+01	4.6436E+03	-8.5528E+01	5.0008E+03	-8.5497E+01
-8.5994E+01	8.5728E+03	-8.5984E+01	7.8584E+03	-8.5974E+01	3.5720E+03	-8.5960E+01	4.2864E+03	-8.5952E+01	4.6436E+03	-8.5935E+01	5.0008E+03	-8.5905E+01
-8.6400E+01	8.5728E+03	-8.6390E+01	7.8584E+03	-8.6380E+01	3.5720E+03	-8.6366E+01	4.2864E+03	-8.6358E+01	4.6436E+03	-8.6341E+01	5.0008E+03	-8.6311E+01
-8.6804E+01	8.5728E+03	-8.6794E+01	7.8584E+03	-8.6784E+01	3.5720E+03	-8.6769E+01	4.2864E+03	-8.6761E+01	4.6436E+03	-8.6745E+01	5.0008E+03	-8.6715E+01
-8.7206E+01	8.5728E+03	-8.7195E+01	7.8584E+03	-8.7185E+01	3.5720E+03	-8.7171E+01	4.2864E+03	-8.7163E+01	4.6436E+03	-8.7147E+01	5.0008E+03	-8.7117E+01
-8.7605E+01	8.5728E+03	-8.7595E+01	7.8584E+03	-8.7586E+01	3.5720E+03	-8.7572E+01	4.2864E+03	-8.7564E+01	4.6436E+03	-8.7548E+01	5.0008E+03	-8.7518E+01
-8.8004E+01	8.5728E+03	-8.7994E+01	7.8584E+03	-8.7984E+01	3.5720E+03	-8.7970E+01	4.2864E+03	-8.7962E+01	4.6436E+03	-8.7946E+01	5.0008E+03	-8.7916E+01
-8.8400E+01	8.5728E+03	-8.8390E+01	7.8584E+03	-8.8380E+01	3.5720E+03	-8.8366E+01	4.2864E+03	-8.8358E+01	4.6436E+03	-8.8343E+01	5.0008E+03	-8.8313E+01
-8.8795E+01	8.5728E+03	-8.8785E+01	7.8584E+03	-8.8775E+01	3.5720E+03	-8.8761E+01	4.2864E+03	-8.8753E+01	4.6436E+03	-8.8737E+01	5.0008E+03	-8.8708E+01
-8.9187E+01	8.5728E+03	-8.9178E+01	7.8584E+03	-8.9168E+01	3.5720E+03	-8.9154E+01	4.2864E+03	-8.9146E+01	4.6436E+03	-8.9131E+01	5.0008E+03	-8.9101E+01
-8.9579E+01	8.5728E+03	-8.9569E+01	7.8584E+03	-8.9559E+01	3.5720E+03	-8.9545E+01	4.2864E+03	-8.9538E+01	4.6436E+03	-8.9522E+01	5.0008E+03	-8.9493E+01
-8.9968E+01	8.5728E+03	-8.9958E+01	7.8584E+03	-8.9949E+01	3.5720E+03	-8.9935E+01	4.2864E+03	-8.9927E+01	4.6436E+03	-8.9912E+01	5.0008E+03	-8.9882E+01
-9.0356E+01	8.5728E+03	-9.0346E+01	7.8584E+03	-9.0336E+01	3.5720E+03	-9.0323E+01	4.2864E+03	-9.0315E+01	4.6436E+03	-9.0300E+01	5.0008E+03	-9.0271E+01
-9.0742E+01	8.5728E+03	-9.0732E+01	7.8584E+03	-9.0722E+01	3.5720E+03	-9.0709E+01	4.2864E+03	-9.0701E+01	4.6436E+03	-9.0686E+01	5.0008E+03	-9.0657E+01
-9.1126E+01	8.5728E+03	-9.1117E+01	7.8584E+03	-9.1107E+01	3.5720E+03	-9.1094E+01	4.2864E+03	-9.1086E+01	4.6436E+03	-9.1071E+01	5.0008E+03	-9.1042E+01
-9.1509E+01	8.5728E+03	-9.1499E+01	7.8584E+03	-9.1490E+01	3.5720E+03	-9.1477E+01	4.2864E+03	-9.1469E+01	4.6436E+03	-9.1454E+01	5.0008E+03	-9.1425E+01
-9.1890E+01	8.5728E+03	-9.1881E+01	7.8584E+03	-9.1871E+01	3.5720E+03	-9.1858E+01	4.2864E+03	-9.1850E+01	4.6436E+03	-9.1835E+01	5.0008E+03	-9.1807E+01
-9.2270E+01	8.5728E+03	-9.2260E+01	7.8584E+03	-9.2251E+01	3.5720E+03	-9.2238E+01	4.2864E+03	-9.2230E+01	4.6436E+03	-9.2215E+01	5.0008E+03	-9.2187E+01
-9.2648E+01	8.5728E+03	-9.2639E+01	7.8584E+03	-9.2629E+01	3.5720E+03	-9.2616E+01	4.2864E+03	-9.2608E+01	4.6436E+03	-9.2593E+01	5.0008E+03	-9.2565E+01
-9.3025E+01	8.5728E+03	-9.3015E+01	7.8584E+03	-9.3006E+01	3.5720E+03	-9.2993E+01	4.2864E+03	-9.2985E+01	4.6436E+03	-9.2970E+01	5.0008E+03	-9.2942E+01
-9.3400E+01	8.5728E+03	-9.3390E+01	7.8584E+03	-9.3381E+01	3.5720E+03	-9.3368E+01	4.2864E+03	-9.3360E+01	4.6436E+03	-9.3345E+01	5.0008E+03	-9.3317E+01
-9.3773E+01	8.5728E+03	-9.3764E+01	7.8584E+03	-9.3755E+01	3.5720E+03	-9.3742E+01	4.2864E+03	-9.3734E+01	4.6436E+03	-9.3719E+01	5.0008E+03	-9.3691E+01
-9.4145E+01	8.5728E+03	-9.4136E+01	7.8584E+03	-9.4127E+01	3.5720E+03	-9.4114E+01	4.2864E+03	-9.4106E+01	4.6436E+03	-9.4091E+01	5.0008E+03	-9.4064E+01
-9.4516E+01	8.5728E+03	-9.4507E+01	7.8584E+03	-9.4497E+01	3.5720E+03	-9.4484E+01	4.2864E+03	-9.4477E+01	4.6436E+03	-9.4462E+01	5.0008E+03	-9.4434E+01
-9.4885E+01	8.5728E+03	-9.4876E+01	7.8584E+03	-9.4867E+01	3.5720E+03	-9.4854E+01	4.2864E+03	-9.4846E+01	4.6436E+03	-9.4832E+01	5.0008E+03	-9.4804E+01
-9.5253E+01	8.5728E+03	-9.5244E+01	7.8584E+03	-9.5234E+01	3.5720E+03	-9.5222E+01	4.2864E+03	-9.5214E+01	4.6436E+03	-9.5200E+01	5.0008E+03	-9.5172E+01
-9.5619E+01	8.5728E+03	-9.5610E+01	7.8584E+03	-9.5601E+01	3.5720E+03	-9.5588E+01	4.2864E+03	-9.5581E+01	4.6436E+03	-9.5566E+01	5.0008E+03	-9.5539E+01
-9.5984E+01	8.5728E+03	-9.5975E+01	7.8584E+03	-9.5966E+01	3.5720E+03	-9.5953E+01	4.2864E+03	-9.5946E+01	4.6436E+03	-9.5931E+01	5.0008E+03	-9.5904E+01
-9.6348E+01	8.5728E+03	-9.6338E+01	7.8584E+03	-9.6329E+01	3.5720E+03	-9.6317E+01	4.2864E+03	-9.6309E+01	4.6436E+03	-9.6295E+01	5.0008E+03	-9.6268E+01
-9.6710E+01	8.5728E+03	-9.6701E+01	7.8584E+03	-9.6692E+01	3.5720E+03	-9.6679E+01	4.2864E+03	-9.6672E+01	4.6436E+03	-9.6657E+01	5.0008E+03	-9.6630E+01
-9.7071E+01	8.5728E+03	-9.7062E+01	7.8584E+03	-9.7053E+01	3.5720E+03	-9.7040E+01	4.2864E+03	-9.7033E+01	4.6436E+03	-9.7018E+01	5.0008E+03	-9.6991E+01
-9.7430E+01	8.5728E+03	-9.7421E+01	7.8584E+03	-9.7412E+01	3.5720E+03	-9.7400E+01	4.2864E+03	-9.7392E+01	4.6436E+03	-9.7378E+01	5.0008E+03	-9.7351E+01
-9.7788E+01	8.5728E+03	-9.7779E+01	7.8584E+03	-9.7770E+01	3.5720E+03	-9.7758E+01	4.2864E+03	-9.7751E+01	4.6436E+03	-9.7736E+01	5.0008E+03	-9.7709E+01
-9.8145E+01	8.5728E+03	-9.8136E+01	7.8584E+03	-9.8127E+01	3.5720E+03	-9.8115E+01	4.2864E+03	-9.8108E+01	4.6436E+03	-9.8093E+01	5.0008E+03	-9.8067E+01
-9.8501E+01	8.5728E+03	-9.8492E+01	7.8584E+03	-9.8483E+01	3.5720E+03	-9.8470E+01	4.2864E+03	-9.8463E+01	4.6436E+03	-9.8449E+01	5.0008E+03	-9.8422E+01
-9.8855E+01	8.5728E+03	-9.8846E+01	7.8584E+03	-9.8837E+01	3.5720E+03	-9.8825E+01	4.2864E+03	-9.8818E+01	4.6436E+03	-9.8804E+01	5.0008E+03	-9.8777E+01
-9.9208E+01	8.5728E+03	-9.9199E+01	7.8584E+03	-9.9190E+01	3.5720E+03	-9.9178E+01	4.2864E+03	-9.9171E+01	4.6436E+03	-9.9157E+01	5.0008E+03	-9.9130E+01
-9.9560E+01	8.5728E+03	-9.9551E+01	7.8584E+03	-9.9542E+01	3.5720E+03	-9.9530E+01	4.2864E+03	-9.9523E+01	4.6436E+03	-9.9509E+01	5.0008E+03	-9.9482E+01
-9.9910E+01	8.5728E+03	-9.9901E+01	7.8584E+03	-9.9893E+01	3.5720E+03	-9.9880E+01	4.2864E+03	-9.9873E+01	4.6436E+03	-9.9859E+01	5.0008E+03	-9.9833E+01
-1.0026E+02	8.5728E+03	-1.0025E+02	7.8584E+03	-1.0024E+02	3.5720E+03	-1.0023E+02	4.2864E+03	-1.0022E+02	4.6436E+03	-1.0021E+02	5.0008E+03	-1.0018E+02
-1.0061E+02	8.5728E+03	-1.0060E+02	7.8584E+03	-1.0059E+02	3.5720E+03	-1.0058E+02	4.2864E+03	-1.0057E+02	4.6436E+03	-1.0056E+02	5.0008E+03	-1.0053E+02
-1.0095E+02	8.5728E+03	-1.0095E+02	7.8584E+03	-1.0094E+02	3.5720E+03	-1.0093E+02	4.2864E+03	-1.0092E+02	4.6436E+03	-1.0090E+02	5.0008E+03	-1.0088E+02
-1.0130E+02	8.5728E+03	-1.0129E+02	7.8584E+03	-1.0128E+02	3.5720E+03	-1.0127E+02	4.2864E+03	-1.0126E+02	4.6436E+03	-1.0125E+02	5.0008E+03	-1.0122E+02
-1.0164E+02	8.5728E+03	-1.0164E+02	7.8584E+03	-1.0163E+02	3.5720E+03	-1.0162E+02	4.2864E+03	-1.0161E+02	4.6436E+03	-1.0159E+02	5.0008E+03	-1.0157E+02
-1.0199E+02	8.5728E+03	-1.0198E+02	7.8584E+03	-1.0197E+02	3.5720E+03	-1.0196E+02	4.2864E+03	-1.0195E+02	4.6436E+03	-1.0194E+02	5.0008E+03	-1.0191E+02
-1.0233E+02	8.5728E+03	-1.0232E+02	7.8584E+03	-1.0231E+02	3.5720E+03	-1.0230E+02	4.2864E+03	-1.0229E+02	4.6436E+03	-1.0228E+02	5.0008E+03	-1.0226E+02
-1.0267E+02	8.5728E+03	-1.0266E+02	7.8584E+03	-1.0265E+02	3.5720E+03	-1.0264E+02	4.2864E+03	-1.0264E+02	4.6436E+03	-1.0262E+02	5.0008E+03	-1.0260E+02
-1.0301E+02	8.5728E+03	-1.0300E+02	7.8584E+03	-1.0299E+02	3.5720E+03	-1.0298E+02	4.2864E+03	-1.0298E+02	4.6436E+03	-1.0296E+02	5.0008E+03	-1.0294E+02
-1.0335E+02	8.5728E+03	-1.0334E+02	7.8584E+03	-1.0333E+02	3.5720E+03	-1.0332E+02	4.2864E+03	-1.0331E+02	4.6436E+03	-1.0330E+02	5.0008E+03	-1.0328E+02

Arg 7	Curve 7	Arg 8	Curve 8	Arg 9	Curve 9	Arg 10	Curve 10	Arg 11	Curve 11	Arg 12	Curve 12	Arg 13
-1.0369E+02	8.5728E+03	-1.0368E+02	7.8584E+03	-1.0367E+02	3.5720E+03	-1.0366E+02	4.2864E+03	-1.0365E+02	4.6436E+03	-1.0364E+02	5.0008E+03	-1.0361E+02
-1.0402E+02	8.5728E+03	-1.0402E+02	7.8584E+03	-1.0401E+02	3.5720E+03	-1.0400E+02	4.2864E+03	-1.0399E+02	4.6436E+03	-1.0398E+02	5.0008E+03	-1.0395E+02
-1.0436E+02	8.5728E+03	-1.0435E+02	7.8584E+03	-1.0434E+02	3.5720E+03	-1.0433E+02	4.2864E+03	-1.0432E+02	4.6436E+03	-1.0431E+02	5.0008E+03	-1.0429E+02
-1.0469E+02	8.5728E+03	-1.0469E+02	7.8584E+03	-1.0468E+02	3.5720E+03	-1.0467E+02	4.2864E+03	-1.0466E+02	4.6436E+03	-1.0465E+02	5.0008E+03	-1.0462E+02
-1.0503E+02	8.5728E+03	-1.0502E+02	7.8584E+03	-1.0501E+02	3.5720E+03	-1.0500E+02	4.2864E+03	-1.0499E+02	4.6436E+03	-1.0498E+02	5.0008E+03	-1.0495E+02
-1.0536E+02	8.5728E+03	-1.0535E+02	7.8584E+03	-1.0534E+02	3.5720E+03	-1.0533E+02	4.2864E+03	-1.0533E+02	4.6436E+03	-1.0531E+02	5.0008E+03	-1.0529E+02
-1.0569E+02	8.5728E+03	-1.0568E+02	7.8584E+03	-1.0567E+02	3.5720E+03	-1.0566E+02	4.2864E+03	-1.0566E+02	4.6436E+03	-1.0564E+02	5.0008E+03	-1.0562E+02
-1.0602E+02	8.5728E+03	-1.0601E+02	7.8584E+03	-1.0601E+02	3.5720E+03	-1.0599E+02	4.2864E+03	-1.0599E+02	4.6436E+03	-1.0597E+02	5.0008E+03	-1.0595E+02
-1.0635E+02	8.5728E+03	-1.0634E+02	7.8584E+03	-1.0633E+02	3.5720E+03	-1.0632E+02	4.2864E+03	-1.0632E+02	4.6436E+03	-1.0630E+02	5.0008E+03	-1.0628E+02
-1.0668E+02	8.5728E+03	-1.0667E+02	7.8584E+03	-1.0666E+02	3.5720E+03	-1.0665E+02	4.2864E+03	-1.0664E+02	4.6436E+03	-1.0663E+02	5.0008E+03	-1.0661E+02
-1.0701E+02	8.5728E+03	-1.0700E+02	7.8584E+03	-1.0699E+02	3.5720E+03	-1.0698E+02	4.2864E+03	-1.0697E+02	4.6436E+03	-1.0696E+02	5.0008E+03	-1.0693E+02
-1.0733E+02	8.5728E+03	-1.0732E+02	7.8584E+03	-1.0732E+02	3.5720E+03	-1.0730E+02	4.2864E+03	-1.0730E+02	4.6436E+03	-1.0729E+02	5.0008E+03	-1.0726E+02
-1.0766E+02	8.5728E+03	-1.0765E+02	7.8584E+03	-1.0764E+02	3.5720E+03	-1.0763E+02	4.2864E+03	-1.0762E+02	4.6436E+03	-1.0761E+02	5.0008E+03	-1.0759E+02
-1.0798E+02	8.5728E+03	-1.0797E+02	7.8584E+03	-1.0797E+02	3.5720E+03	-1.0795E+02	4.2864E+03	-1.0795E+02	4.6436E+03	-1.0794E+02	5.0008E+03	-1.0791E+02
-1.0831E+02	8.5728E+03	-1.0830E+02	7.8584E+03	-1.0829E+02	3.5720E+03	-1.0828E+02	4.2864E+03	-1.0827E+02	4.6436E+03	-1.0826E+02	5.0008E+03	-1.0823E+02
-1.0863E+02	8.5728E+03	-1.0862E+02	7.8584E+03	-1.0861E+02	3.5720E+03	-1.0860E+02	4.2864E+03	-1.0859E+02	4.6436E+03	-1.0858E+02	5.0008E+03	-1.0856E+02
-1.0895E+02	8.5728E+03	-1.0894E+02	7.8584E+03	-1.0893E+02	3.5720E+03	-1.0892E+02	4.2864E+03	-1.0892E+02	4.6436E+03	-1.0890E+02	5.0008E+03	-1.0888E+02
-1.0927E+02	8.5728E+03	-1.0926E+02	7.8584E+03	-1.0925E+02	3.5720E+03	-1.0924E+02	4.2864E+03	-1.0924E+02	4.6436E+03	-1.0922E+02	5.0008E+03	-1.0920E+02
-1.0959E+02	8.5728E+03	-1.0958E+02	7.8584E+03	-1.0957E+02	3.5720E+03	-1.0956E+02	4.2864E+03	-1.0956E+02	4.6436E+03	-1.0954E+02	5.0008E+03	-1.0952E+02
-1.0991E+02	8.5728E+03	-1.0990E+02	7.8584E+03	-1.0989E+02	3.5720E+03	-1.0988E+02	4.2864E+03	-1.0987E+02	4.6436E+03	-1.0986E+02	5.0008E+03	-1.0984E+02
-1.1022E+02	8.5728E+03	-1.1022E+02	7.8584E+03	-1.1021E+02	3.5720E+03	-1.1020E+02	4.2864E+03	-1.1019E+02	4.6436E+03	-1.1018E+02	5.0008E+03	-1.1016E+02
-1.1054E+02	8.5728E+03	-1.1053E+02	7.8584E+03	-1.1053E+02	3.5720E+03	-1.1051E+02	4.2864E+03	-1.1051E+02	4.6436E+03	-1.1050E+02	5.0008E+03	-1.1047E+02
-1.1086E+02	8.5728E+03	-1.1085E+02	7.8584E+03	-1.1084E+02	3.5720E+03	-1.1083E+02	4.2864E+03	-1.1082E+02	4.6436E+03	-1.1081E+02	5.0008E+03	-1.1079E+02
-1.1117E+02	8.5728E+03	-1.1116E+02	7.8584E+03	-1.1116E+02	3.5720E+03	-1.1115E+02	4.2864E+03	-1.1114E+02	4.6436E+03	-1.1113E+02	5.0008E+03	-1.1110E+02
-1.1149E+02	8.5728E+03	-1.1148E+02	7.8584E+03	-1.1147E+02	3.5720E+03	-1.1146E+02	4.2864E+03	-1.1145E+02	4.6436E+03	-1.1144E+02	5.0008E+03	-1.1142E+02
-1.1180E+02	8.5728E+03	-1.1179E+02	7.8584E+03	-1.1178E+02	3.5720E+03	-1.1177E+02	4.2864E+03	-1.1177E+02	4.6436E+03	-1.1175E+02	5.0008E+03	-1.1173E+02
-1.1211E+02	8.5728E+03	-1.1210E+02	7.8584E+03	-1.1210E+02	3.5720E+03	-1.1209E+02	4.2864E+03	-1.1208E+02	4.6436E+03	-1.1207E+02	5.0008E+03	-1.1204E+02
-1.1242E+02	8.5728E+03	-1.1242E+02	7.8584E+03	-1.1241E+02	3.5720E+03	-1.1240E+02	4.2864E+03	-1.1239E+02	4.6436E+03	-1.1238E+02	5.0008E+03	-1.1235E+02
-1.1273E+02	8.5728E+03	-1.1273E+02	7.8584E+03	-1.1272E+02	3.5720E+03	-1.1271E+02	4.2864E+03	-1.1270E+02	4.6436E+03	-1.1269E+02	5.0008E+03	-1.1267E+02
-1.1304E+02	8.5728E+03	-1.1304E+02	7.8584E+03	-1.1303E+02	3.5720E+03	-1.1302E+02	4.2864E+03	-1.1301E+02	4.6436E+03	-1.1300E+02	5.0008E+03	-1.1298E+02
-1.1335E+02	8.5728E+03	-1.1334E+02	7.8584E+03	-1.1334E+02	3.5720E+03	-1.1333E+02	4.2864E+03	-1.1332E+02	4.6436E+03	-1.1331E+02	5.0008E+03	-1.1328E+02
-1.1366E+02	8.5728E+03	-1.1365E+02	7.8584E+03	-1.1364E+02	3.5720E+03	-1.1363E+02	4.2864E+03	-1.1363E+02	4.6436E+03	-1.1362E+02	5.0008E+03	-1.1359E+02
-1.1397E+02	8.5728E+03	-1.1396E+02	7.8584E+03	-1.1395E+02	3.5720E+03	-1.1394E+02	4.2864E+03	-1.1394E+02	4.6436E+03	-1.1392E+02	5.0008E+03	-1.1390E+02
-1.1427E+02	8.5728E+03	-1.1427E+02	7.8584E+03	-1.1426E+02	3.5720E+03	-1.1425E+02	4.2864E+03	-1.1424E+02	4.6436E+03	-1.1423E+02	5.0008E+03	-1.1421E+02
-1.1458E+02	8.5728E+03	-1.1457E+02	7.8584E+03	-1.1456E+02	3.5720E+03	-1.1455E+02	4.2864E+03	-1.1455E+02	4.6436E+03	-1.1454E+02	5.0008E+03	-1.1451E+02
-1.1488E+02	8.5728E+03	-1.1488E+02	7.8584E+03	-1.1487E+02	3.5720E+03	-1.1486E+02	4.2864E+03	-1.1485E+02	4.6436E+03	-1.1484E+02	5.0008E+03	-1.1482E+02
-1.1519E+02	8.5728E+03	-1.1518E+02	7.8584E+03	-1.1517E+02	3.5720E+03	-1.1516E+02	4.2864E+03	-1.1516E+02	4.6436E+03	-1.1514E+02	5.0008E+03	-1.1512E+02
-1.1549E+02	8.5728E+03	-1.1548E+02	7.8584E+03	-1.1548E+02	3.5720E+03	-1.1547E+02	4.2864E+03	-1.1546E+02	4.6436E+03	-1.1545E+02	5.0008E+03	-1.1542E+02
-1.1579E+02	8.5728E+03	-1.1579E+02	7.8584E+03	-1.1578E+02	3.5720E+03	-1.1577E+02	4.2864E+03	-1.1576E+02	4.6436E+03	-1.1575E+02	5.0008E+03	-1.1573E+02
-1.1609E+02	8.5728E+03	-1.1609E+02	7.8584E+03	-1.1608E+02	3.5720E+03	-1.1607E+02	4.2864E+03	-1.1606E+02	4.6436E+03	-1.1605E+02	5.0008E+03	-1.1603E+02
-1.1640E+02	8.5728E+03	-1.1639E+02	7.8584E+03	-1.1638E+02	3.5720E+03	-1.1637E+02	4.2864E+03	-1.1636E+02	4.6436E+03	-1.1635E+02	5.0008E+03	-1.1633E+02
-1.1670E+02	8.5728E+03	-1.1669E+02	7.8584E+03	-1.1668E+02	3.5720E+03	-1.1667E+02	4.2864E+03	-1.1666E+02	4.6436E+03	-1.1665E+02	5.0008E+03	-1.1663E+02
-1.1699E+02	8.5728E+03	-1.1699E+02	7.8584E+03	-1.1698E+02	3.5720E+03	-1.1697E+02	4.2864E+03	-1.1696E+02	4.6436E+03	-1.1695E+02	5.0008E+03	-1.1693E+02
-1.1729E+02	8.5728E+03	-1.1729E+02	7.8584E+03	-1.1728E+02	3.5720E+03	-1.1727E+02	4.2864E+03	-1.1726E+02	4.6436E+03	-1.1725E+02	5.0008E+03	-1.1723E+02
-1.1759E+02	8.5728E+03	-1.1758E+02	7.8584E+03	-1.1758E+02	3.5720E+03	-1.1757E+02	4.2864E+03	-1.1756E+02	4.6436E+03	-1.1755E+02	5.0008E+03	-1.1753E+02
-1.1789E+02	8.5728E+03	-1.1788E+02	7.8584E+03	-1.1787E+02	3.5720E+03	-1.1786E+02	4.2864E+03	-1.1786E+02	4.6436E+03	-1.1784E+02	5.0008E+03	-1.1782E+02
-1.1818E+02	8.5728E+03	-1.1818E+02	7.8584E+03	-1.1817E+02	3.5720E+03	-1.1816E+02	4.2864E+03	-1.1815E+02	4.6436E+03	-1.1814E+02	5.0008E+03	-1.1812E+02
-1.1848E+02	8.5728E+03	-1.1847E+02	7.8584E+03	-1.1846E+02	3.5720E+03	-1.1845E+02	4.2864E+03	-1.1845E+02	4.6436E+03	-1.1844E+02	5.0008E+03	-1.1841E+02
-1.1877E+02	8.5728E+03	-1.1877E+02	7.8584E+03	-1.1876E+02	3.5720E+03	-1.1875E+02	4.2864E+03	-1.1874E+02	4.6436E+03	-1.1873E+02	5.0008E+03	-1.1871E+02
-1.1907E+02	8.5728E+03	-1.1906E+02	7.8584E+03	-1.1905E+02	3.5720E+03	-1.1904E+02	4.2864E+03	-1.1904E+02	4.6436E+03	-1.1903E+02	5.0008E+03	-1.1900E+02
-1.1936E+02	8.5728E+03	-1.1935E+02	7.8584E+03	-1.1935E+02	3.5720E+03	-1.1934E+02	4.2864E+03	-1.1933E+02	4.6436E+03	-1.1932E+02	5.0008E+03	-1.1930E+02
-1.1965E+02	8.5728E+03	-1.1965E+02	7.8584E+03	-1.1964E+02	3.5720E+03	-1.1963E+02	4.2864E+03	-1.1962E+02	4.6436E+03	-1.1961E+02	5.0008E+03	-1.1959E+02

Arg 7	Curve 7	Arg 8	Curve 8	Arg 9	Curve 9	Arg 10	Curve 10	Arg 11	Curve 11	Arg 12	Curve 12	Arg 13
-1.1995E+02	8.5728E+03	-1.1994E+02	7.8584E+03	-1.1993E+02	3.5720E+03	-1.1992E+02	4.2864E+03	-1.1992E+02	4.6436E+03	-1.1990E+02	5.0008E+03	-1.1988E+02
-1.2024E+02	8.5728E+03	-1.2023E+02	7.8584E+03	-1.2022E+02	3.5720E+03	-1.2021E+02	4.2864E+03	-1.2021E+02	4.6436E+03	-1.2019E+02	5.0008E+03	-1.2017E+02
-1.2053E+02	8.5728E+03	-1.2052E+02	7.8584E+03	-1.2051E+02	3.5720E+03	-1.2050E+02	4.2864E+03	-1.2050E+02	4.6436E+03	-1.2049E+02	5.0008E+03	-1.2046E+02
-1.2082E+02	8.5728E+03	-1.2081E+02	7.8584E+03	-1.2080E+02	3.5720E+03	-1.2079E+02	4.2864E+03	-1.2079E+02	4.6436E+03	-1.2077E+02	5.0008E+03	-1.2075E+02
-1.2111E+02	8.5728E+03	-1.2110E+02	7.8584E+03	-1.2109E+02	3.5720E+03	-1.2108E+02	4.2864E+03	-1.2108E+02	4.6436E+03	-1.2106E+02	5.0008E+03	-1.2104E+02
-1.2139E+02	8.5728E+03	-1.2139E+02	7.8584E+03	-1.2138E+02	3.5720E+03	-1.2137E+02	4.2864E+03	-1.2136E+02	4.6436E+03	-1.2135E+02	5.0008E+03	-1.2133E+02
-1.2168E+02	8.5728E+03	-1.2167E+02	7.8584E+03	-1.2167E+02	3.5720E+03	-1.2166E+02	4.2864E+03	-1.2165E+02	4.6436E+03	-1.2164E+02	5.0008E+03	-1.2162E+02
-1.2197E+02	8.5728E+03	-1.2196E+02	7.8584E+03	-1.2195E+02	3.5720E+03	-1.2194E+02	4.2864E+03	-1.2194E+02	4.6436E+03	-1.2193E+02	5.0008E+03	-1.2191E+02
-1.2226E+02	8.5728E+03	-1.2225E+02	7.8584E+03	-1.2224E+02	3.5720E+03	-1.2223E+02	4.2864E+03	-1.2223E+02	4.6436E+03	-1.2221E+02	5.0008E+03	-1.2219E+02
-1.2254E+02	8.5728E+03	-1.2253E+02	7.8584E+03	-1.2253E+02	3.5720E+03	-1.2252E+02	4.2864E+03	-1.2251E+02	4.6436E+03	-1.2250E+02	5.0008E+03	-1.2248E+02
-1.2283E+02	8.5728E+03	-1.2282E+02	7.8584E+03	-1.2281E+02	3.5720E+03	-1.2280E+02	4.2864E+03	-1.2280E+02	4.6436E+03	-1.2278E+02	5.0008E+03	-1.2276E+02
-1.2311E+02	8.5728E+03	-1.2310E+02	7.8584E+03	-1.2310E+02	3.5720E+03	-1.2309E+02	4.2864E+03	-1.2308E+02	4.6436E+03	-1.2307E+02	5.0008E+03	-1.2305E+02
-1.2339E+02	8.5728E+03	-1.2339E+02	7.8584E+03	-1.2338E+02	3.5720E+03	-1.2337E+02	4.2864E+03	-1.2336E+02	4.6436E+03	-1.2335E+02	5.0008E+03	-1.2333E+02
-1.2368E+02	8.5728E+03	-1.2367E+02	7.8584E+03	-1.2366E+02	3.5720E+03	-1.2365E+02	4.2864E+03	-1.2365E+02	4.6436E+03	-1.2364E+02	5.0008E+03	-1.2361E+02
-1.2396E+02	8.5728E+03	-1.2395E+02	7.8584E+03	-1.2394E+02	3.5720E+03	-1.2394E+02	4.2864E+03	-1.2393E+02	4.6436E+03	-1.2392E+02	5.0008E+03	-1.2390E+02
-1.2424E+02	8.5728E+03	-1.2423E+02	7.8584E+03	-1.2423E+02	3.5720E+03	-1.2422E+02	4.2864E+03	-1.2421E+02	4.6436E+03	-1.2420E+02	5.0008E+03	-1.2418E+02
-1.2452E+02	8.5728E+03	-1.2451E+02	7.8584E+03	-1.2451E+02	3.5720E+03	-1.2450E+02	4.2864E+03	-1.2449E+02	4.6436E+03	-1.2448E+02	5.0008E+03	-1.2446E+02
-1.2480E+02	8.5728E+03	-1.2480E+02	7.8584E+03	-1.2479E+02	3.5720E+03	-1.2478E+02	4.2864E+03	-1.2477E+02	4.6436E+03	-1.2476E+02	5.0008E+03	-1.2474E+02
-1.2508E+02	8.5728E+03	-1.2508E+02	7.8584E+03	-1.2507E+02	3.5720E+03	-1.2506E+02	4.2864E+03	-1.2505E+02	4.6436E+03	-1.2504E+02	5.0008E+03	-1.2502E+02
-1.2536E+02	8.5728E+03	-1.2535E+02	7.8584E+03	-1.2535E+02	3.5720E+03	-1.2534E+02	4.2864E+03	-1.2533E+02	4.6436E+03	-1.2532E+02	5.0008E+03	-1.2530E+02
-1.2564E+02	8.5728E+03	-1.2563E+02	7.8584E+03	-1.2563E+02	3.5720E+03	-1.2562E+02	4.2864E+03	-1.2561E+02	4.6436E+03	-1.2560E+02	5.0008E+03	-1.2558E+02
-1.2592E+02	8.5728E+03	-1.2591E+02	7.8584E+03	-1.2590E+02	3.5720E+03	-1.2589E+02	4.2864E+03	-1.2589E+02	4.6436E+03	-1.2588E+02	5.0008E+03	-1.2586E+02
-1.2620E+02	8.5728E+03	-1.2619E+02	7.8584E+03	-1.2618E+02	3.5720E+03	-1.2617E+02	4.2864E+03	-1.2617E+02	4.6436E+03	-1.2615E+02	5.0008E+03	-1.2613E+02
-1.2647E+02	8.5728E+03	-1.2646E+02	7.8584E+03	-1.2646E+02	3.5720E+03	-1.2645E+02	4.2864E+03	-1.2644E+02	4.6436E+03	-1.2643E+02	5.0008E+03	-1.2641E+02
-1.2675E+02	8.5728E+03	-1.2674E+02	7.8584E+03	-1.2673E+02	3.5720E+03	-1.2672E+02	4.2864E+03	-1.2672E+02	4.6436E+03	-1.2671E+02	5.0008E+03	-1.2669E+02
-1.2702E+02	8.5728E+03	-1.2702E+02	7.8584E+03	-1.2701E+02	3.5720E+03	-1.2700E+02	4.2864E+03	-1.2699E+02	4.6436E+03	-1.2698E+02	5.0008E+03	-1.2696E+02
-1.2730E+02	8.5728E+03	-1.2729E+02	7.8584E+03	-1.2728E+02	3.5720E+03	-1.2728E+02	4.2864E+03	-1.2727E+02	4.6436E+03	-1.2726E+02	5.0008E+03	-1.2724E+02
-1.2757E+02	8.5728E+03	-1.2757E+02	7.8584E+03	-1.2756E+02	3.5720E+03	-1.2755E+02	4.2864E+03	-1.2754E+02	4.6436E+03	-1.2753E+02	5.0008E+03	-1.2751E+02
-1.2785E+02	8.5728E+03	-1.2784E+02	7.8584E+03	-1.2783E+02	3.5720E+03	-1.2782E+02	4.2864E+03	-1.2782E+02	4.6436E+03	-1.2781E+02	5.0008E+03	-1.2779E+02
-1.2812E+02	8.5728E+03	-1.2811E+02	7.8584E+03	-1.2811E+02	3.5720E+03	-1.2810E+02	4.2864E+03	-1.2809E+02	4.6436E+03	-1.2808E+02	5.0008E+03	-1.2806E+02
-1.2839E+02	8.5728E+03	-1.2839E+02	7.8584E+03	-1.2838E+02	3.5720E+03	-1.2837E+02	4.2864E+03	-1.2836E+02	4.6436E+03	-1.2835E+02	5.0008E+03	-1.2833E+02
-1.2866E+02	8.5728E+03	-1.2866E+02	7.8584E+03	-1.2865E+02	3.5720E+03	-1.2864E+02	4.2864E+03	-1.2864E+02	4.6436E+03	-1.2862E+02	5.0008E+03	-1.2860E+02
-1.2894E+02	8.5728E+03	-1.2893E+02	7.8584E+03	-1.2892E+02	3.5720E+03	-1.2891E+02	4.2864E+03	-1.2891E+02	4.6436E+03	-1.2890E+02	5.0008E+03	-1.2888E+02
-1.2921E+02	8.5728E+03	-1.2920E+02	7.8584E+03	-1.2919E+02	3.5720E+03	-1.2918E+02	4.2864E+03	-1.2918E+02	4.6436E+03	-1.2917E+02	5.0008E+03	-1.2915E+02
-1.2948E+02	8.5728E+03	-1.2947E+02	7.8584E+03	-1.2946E+02	3.5720E+03	-1.2945E+02	4.2864E+03	-1.2945E+02	4.6436E+03	-1.2944E+02	5.0008E+03	-1.2942E+02
-1.2975E+02	8.5728E+03	-1.2974E+02	7.8584E+03	-1.2973E+02	3.5720E+03	-1.2972E+02	4.2864E+03	-1.2972E+02	4.6436E+03	-1.2971E+02	5.0008E+03	-1.2969E+02
-1.3002E+02	8.5728E+03	-1.3001E+02	7.8584E+03	-1.3000E+02	3.5720E+03	-1.2999E+02	4.2864E+03	-1.2999E+02	4.6436E+03	-1.2998E+02	5.0008E+03	-1.2996E+02
-1.3028E+02	8.5728E+03	-1.3028E+02	7.8584E+03	-1.3027E+02	3.5720E+03	-1.3026E+02	4.2864E+03	-1.3026E+02	4.6436E+03	-1.3025E+02	5.0008E+03	-1.3023E+02
-1.3055E+02	8.5728E+03	-1.3055E+02	7.8584E+03	-1.3054E+02	3.5720E+03	-1.3053E+02	4.2864E+03	-1.3052E+02	4.6436E+03	-1.3051E+02	5.0008E+03	-1.3049E+02
-1.3082E+02	8.5728E+03	-1.3081E+02	7.8584E+03	-1.3081E+02	3.5720E+03	-1.3080E+02	4.2864E+03	-1.3079E+02	4.6436E+03	-1.3078E+02	5.0008E+03	-1.3076E+02
-1.3109E+02	8.5728E+03	-1.3108E+02	7.8584E+03	-1.3107E+02	3.5720E+03	-1.3106E+02	4.2864E+03	-1.3106E+02	4.6436E+03	-1.3105E+02	5.0008E+03	-1.3103E+02
-1.3135E+02	8.5728E+03	-1.3135E+02	7.8584E+03	-1.3134E+02	3.5720E+03	-1.3133E+02	4.2864E+03	-1.3133E+02	4.6436E+03	-1.3131E+02	5.0008E+03	-1.3129E+02
-1.3162E+02	8.5728E+03	-1.3161E+02	7.8584E+03	-1.3161E+02	3.5720E+03	-1.3160E+02	4.2864E+03	-1.3159E+02	4.6436E+03	-1.3158E+02	5.0008E+03	-1.3156E+02
-1.3188E+02	8.5728E+03	-1.3188E+02	7.8584E+03	-1.3187E+02	3.5720E+03	-1.3186E+02	4.2864E+03	-1.3186E+02	4.6436E+03	-1.3185E+02	5.0008E+03	-1.3183E+02
-1.3215E+02	8.5728E+03	-1.3214E+02	7.8584E+03	-1.3214E+02	3.5720E+03	-1.3213E+02	4.2864E+03	-1.3212E+02	4.6436E+03	-1.3211E+02	5.0008E+03	-1.3209E+02
-1.3241E+02	8.5728E+03	-1.3241E+02	7.8584E+03	-1.3240E+02	3.5720E+03	-1.3239E+02	4.2864E+03	-1.3239E+02	4.6436E+03	-1.3238E+02	5.0008E+03	-1.3236E+02
-1.3268E+02	8.5728E+03	-1.3267E+02	7.8584E+03	-1.3266E+02	3.5720E+03	-1.3265E+02	4.2864E+03	-1.3265E+02	4.6436E+03	-1.3264E+02	5.0008E+03	-1.3262E+02
-1.3294E+02	8.5728E+03	-1.3293E+02	7.8584E+03	-1.3293E+02	3.5720E+03	-1.3292E+02	4.2864E+03	-1.3291E+02	4.6436E+03	-1.3290E+02	5.0008E+03	-1.3288E+02
-1.3320E+02	8.5728E+03	-1.3320E+02	7.8584E+03	-1.3319E+02	3.5720E+03	-1.3318E+02	4.2864E+03	-1.3318E+02	4.6436E+03	-1.3317E+02	5.0008E+03	-1.3315E+02
-1.3347E+02	8.5728E+03	-1.3346E+02	7.8584E+03	-1.3345E+02	3.5720E+03	-1.3344E+02	4.2864E+03	-1.3344E+02	4.6436E+03	-1.3343E+02	5.0008E+03	-1.3341E+02
-1.3373E+02	8.5728E+03	-1.3372E+02	7.8584E+03	-1.3371E+02	3.5720E+03	-1.3370E+02	4.2864E+03	-1.3370E+02	4.6436E+03	-1.3369E+02	5.0008E+03	-1.3367E+02
-1.3399E+02	8.5728E+03	-1.3398E+02	7.8584E+03	-1.3398E+02	3.5720E+03	-1.3397E+02	4.2864E+03	-1.3396E+02	4.6436E+03	-1.3395E+02	5.0008E+03	-1.3393E+02

Arg 7	Curve 7	Arg 8	Curve 8	Arg 9	Curve 9	Arg 10	Curve 10	Arg 11	Curve 11	Arg 12	Curve 12	Arg 13
-1.3425E+02	8.5728E+03	-1.3424E+02	7.8584E+03	-1.3424E+02	3.5720E+03	-1.3423E+02	4.2864E+03	-1.3422E+02	4.6436E+03	-1.3421E+02	5.0008E+03	-1.3419E+02
-1.3451E+02	8.5728E+03	-1.3450E+02	7.8584E+03	-1.3450E+02	3.5720E+03	-1.3449E+02	4.2864E+03	-1.3448E+02	4.6436E+03	-1.3447E+02	5.0008E+03	-1.3445E+02
-1.3477E+02	8.5728E+03	-1.3476E+02	7.8584E+03	-1.3476E+02	3.5720E+03	-1.3475E+02	4.2864E+03	-1.3474E+02	4.6436E+03	-1.3473E+02	5.0008E+03	-1.3471E+02
-1.3503E+02	8.5728E+03	-1.3502E+02	7.8584E+03	-1.3502E+02	3.5720E+03	-1.3501E+02	4.2864E+03	-1.3500E+02	4.6436E+03	-1.3499E+02	5.0008E+03	-1.3497E+02
-1.3529E+02	8.5728E+03	-1.3528E+02	7.8584E+03	-1.3527E+02	3.5720E+03	-1.3526E+02	4.2864E+03	-1.3526E+02	4.6436E+03	-1.3525E+02	5.0008E+03	-1.3523E+02
-1.3554E+02	8.5728E+03	-1.3554E+02	7.8584E+03	-1.3553E+02	3.5720E+03	-1.3552E+02	4.2864E+03	-1.3552E+02	4.6436E+03	-1.3551E+02	5.0008E+03	-1.3549E+02
-1.3580E+02	8.5728E+03	-1.3580E+02	7.8584E+03	-1.3579E+02	3.5720E+03	-1.3578E+02	4.2864E+03	-1.3578E+02	4.6436E+03	-1.3577E+02	5.0008E+03	-1.3575E+02
-1.3606E+02	8.5728E+03	-1.3605E+02	7.8584E+03	-1.3605E+02	3.5720E+03	-1.3604E+02	4.2864E+03	-1.3603E+02	4.6436E+03	-1.3602E+02	5.0008E+03	-1.3600E+02
-1.3632E+02	8.5728E+03	-1.3631E+02	7.8584E+03	-1.3630E+02	3.5720E+03	-1.3629E+02	4.2864E+03	-1.3629E+02	4.6436E+03	-1.3628E+02	5.0008E+03	-1.3626E+02
-1.3657E+02	8.5728E+03	-1.3657E+02	7.8584E+03	-1.3656E+02	3.5720E+03	-1.3655E+02	4.2864E+03	-1.3655E+02	4.6436E+03	-1.3654E+02	5.0008E+03	-1.3652E+02
-1.3683E+02	8.5728E+03	-1.3682E+02	7.8584E+03	-1.3682E+02	3.5720E+03	-1.3681E+02	4.2864E+03	-1.3680E+02	4.6436E+03	-1.3679E+02	5.0008E+03	-1.3677E+02
-1.3708E+02	8.5728E+03	-1.3708E+02	7.8584E+03	-1.3707E+02	3.5720E+03	-1.3706E+02	4.2864E+03	-1.3706E+02	4.6436E+03	-1.3705E+02	5.0008E+03	-1.3703E+02
-1.3734E+02	8.5728E+03	-1.3733E+02	7.8584E+03	-1.3733E+02	3.5720E+03	-1.3732E+02	4.2864E+03	-1.3731E+02	4.6436E+03	-1.3730E+02	5.0008E+03	-1.3728E+02
-1.3759E+02	8.5728E+03	-1.3759E+02	7.8584E+03	-1.3758E+02	3.5720E+03	-1.3757E+02	4.2864E+03	-1.3757E+02	4.6436E+03	-1.3756E+02	5.0008E+03	-1.3754E+02
-1.3785E+02	8.5728E+03	-1.3784E+02	7.8584E+03	-1.3783E+02	3.5720E+03	-1.3783E+02	4.2864E+03	-1.3782E+02	4.6436E+03	-1.3781E+02	5.0008E+03	-1.3779E+02
-1.3810E+02	8.5728E+03	-1.3809E+02	7.8584E+03	-1.3809E+02	3.5720E+03	-1.3808E+02	4.2864E+03	-1.3807E+02	4.6436E+03	-1.3806E+02	5.0008E+03	-1.3804E+02
-1.3835E+02	8.5728E+03	-1.3835E+02	7.8584E+03	-1.3834E+02	3.5720E+03	-1.3833E+02	4.2864E+03	-1.3833E+02	4.6436E+03	-1.3832E+02	5.0008E+03	-1.3830E+02
-1.3861E+02	8.5728E+03	-1.3860E+02	7.8584E+03	-1.3859E+02	3.5720E+03	-1.3858E+02	4.2864E+03	-1.3858E+02	4.6436E+03	-1.3857E+02	5.0008E+03	-1.3855E+02
-1.3886E+02	8.5728E+03	-1.3885E+02	7.8584E+03	-1.3884E+02	3.5720E+03	-1.3884E+02	4.2864E+03	-1.3883E+02	4.6436E+03	-1.3882E+02	5.0008E+03	-1.3880E+02
-1.3911E+02	8.5728E+03	-1.3910E+02	7.8584E+03	-1.3910E+02	3.5720E+03	-1.3909E+02	4.2864E+03	-1.3908E+02	4.6436E+03	-1.3907E+02	5.0008E+03	-1.3905E+02
-1.3936E+02	8.5728E+03	-1.3935E+02	7.8584E+03	-1.3935E+02	3.5720E+03	-1.3934E+02	4.2864E+03	-1.3933E+02	4.6436E+03	-1.3932E+02	5.0008E+03	-1.3930E+02
-1.3961E+02	8.5728E+03	-1.3960E+02	7.8584E+03	-1.3960E+02	3.5720E+03	-1.3959E+02	4.2864E+03	-1.3958E+02	4.6436E+03	-1.3957E+02	5.0008E+03	-1.3956E+02
-1.3986E+02	8.5728E+03	-1.3985E+02	7.8584E+03	-1.3985E+02	3.5720E+03	-1.3984E+02	4.2864E+03	-1.3983E+02	4.6436E+03	-1.3982E+02	5.0008E+03	-1.3981E+02
-1.4011E+02	8.5728E+03	-1.4010E+02	7.8584E+03	-1.4010E+02	3.5720E+03	-1.4009E+02	4.2864E+03	-1.4008E+02	4.6436E+03	-1.4007E+02	5.0008E+03	-1.4006E+02
-1.4036E+02	8.5728E+03	-1.4035E+02	7.8584E+03	-1.4035E+02	3.5720E+03	-1.4034E+02	4.2864E+03	-1.4033E+02	4.6436E+03	-1.4032E+02	5.0008E+03	-1.4031E+02
-1.4061E+02	8.5728E+03	-1.4060E+02	7.8584E+03	-1.4060E+02	3.5720E+03	-1.4059E+02	4.2864E+03	-1.4058E+02	4.6436E+03	-1.4057E+02	5.0008E+03	-1.4055E+02
-1.4086E+02	8.5728E+03	-1.4085E+02	7.8584E+03	-1.4084E+02	3.5720E+03	-1.4084E+02	4.2864E+03	-1.4083E+02	4.6436E+03	-1.4082E+02	5.0008E+03	-1.4080E+02
-1.4111E+02	8.5728E+03	-1.4110E+02	7.8584E+03	-1.4109E+02	3.5720E+03	-1.4108E+02	4.2864E+03	-1.4108E+02	4.6436E+03	-1.4107E+02	5.0008E+03	-1.4105E+02
-1.4135E+02	8.5728E+03	-1.4135E+02	7.8584E+03	-1.4134E+02	3.5720E+03	-1.4133E+02	4.2864E+03	-1.4133E+02	4.6436E+03	-1.4132E+02	5.0008E+03	-1.4130E+02
-1.4160E+02	8.5728E+03	-1.4159E+02	7.8584E+03	-1.4159E+02	3.5720E+03	-1.4158E+02	4.2864E+03	-1.4157E+02	4.6436E+03	-1.4156E+02	5.0008E+03	-1.4155E+02
-1.4185E+02	8.5728E+03	-1.4184E+02	7.8584E+03	-1.4183E+02	3.5720E+03	-1.4183E+02	4.2864E+03	-1.4182E+02	4.6436E+03	-1.4181E+02	5.0008E+03	-1.4179E+02
-1.4209E+02	8.5728E+03	-1.4209E+02	7.8584E+03	-1.4208E+02	3.5720E+03	-1.4207E+02	4.2864E+03	-1.4207E+02	4.6436E+03	-1.4206E+02	5.0008E+03	-1.4204E+02
-1.4234E+02	8.5728E+03	-1.4233E+02	7.8584E+03	-1.4233E+02	3.5720E+03	-1.4232E+02	4.2864E+03	-1.4231E+02	4.6436E+03	-1.4230E+02	5.0008E+03	-1.4228E+02
-1.4258E+02	8.5728E+03	-1.4258E+02	7.8584E+03	-1.4257E+02	3.5720E+03	-1.4256E+02	4.2864E+03	-1.4256E+02	4.6436E+03	-1.4255E+02	5.0008E+03	-1.4253E+02
-1.4283E+02	8.5728E+03	-1.4282E+02	7.8584E+03	-1.4282E+02	3.5720E+03	-1.4281E+02	4.2864E+03	-1.4280E+02	4.6436E+03	-1.4279E+02	5.0008E+03	-1.4278E+02
-1.4307E+02	8.5728E+03	-1.4307E+02	7.8584E+03	-1.4306E+02	3.5720E+03	-1.4305E+02	4.2864E+03	-1.4305E+02	4.6436E+03	-1.4304E+02	5.0008E+03	-1.4302E+02
-1.4332E+02	8.5728E+03	-1.4331E+02	7.8584E+03	-1.4331E+02	3.5720E+03	-1.4330E+02	4.2864E+03	-1.4329E+02	4.6436E+03	-1.4328E+02	5.0008E+03	-1.4326E+02
-1.4356E+02	8.5728E+03	-1.4356E+02	7.8584E+03	-1.4355E+02	3.5720E+03	-1.4354E+02	4.2864E+03	-1.4354E+02	4.6436E+03	-1.4353E+02	5.0008E+03	-1.4351E+02
-1.4380E+02	8.5728E+03	-1.4380E+02	7.8584E+03	-1.4379E+02	3.5720E+03	-1.4378E+02	4.2864E+03	-1.4378E+02	4.6436E+03	-1.4377E+02	5.0008E+03	-1.4375E+02
-1.4405E+02	8.5728E+03	-1.4404E+02	7.8584E+03	-1.4404E+02	3.5720E+03	-1.4403E+02	4.2864E+03	-1.4402E+02	4.6436E+03	-1.4401E+02	5.0008E+03	-1.4399E+02
-1.4429E+02	8.5728E+03	-1.4428E+02	7.8584E+03	-1.4428E+02	3.5720E+03	-1.4427E+02	4.2864E+03	-1.4426E+02	4.6436E+03	-1.4425E+02	5.0008E+03	-1.4424E+02
-1.4453E+02	8.5728E+03	-1.4453E+02	7.8584E+03	-1.4452E+02	3.5720E+03	-1.4451E+02	4.2864E+03	-1.4451E+02	4.6436E+03	-1.4450E+02	5.0008E+03	-1.4448E+02
-1.4477E+02	8.5728E+03	-1.4477E+02	7.8584E+03	-1.4476E+02	3.5720E+03	-1.4475E+02	4.2864E+03	-1.4475E+02	4.6436E+03	-1.4474E+02	5.0008E+03	-1.4472E+02
-1.4502E+02	8.5728E+03	-1.4501E+02	7.8584E+03	-1.4500E+02	3.5720E+03	-1.4499E+02	4.2864E+03	-1.4499E+02	4.6436E+03	-1.4498E+02	5.0008E+03	-1.4496E+02
-1.4526E+02	8.5728E+03	-1.4525E+02	7.8584E+03	-1.4524E+02	3.5720E+03	-1.4524E+02	4.2864E+03	-1.4523E+02	4.6436E+03	-1.4522E+02	5.0008E+03	-1.4520E+02
-1.4550E+02	8.5728E+03	-1.4549E+02	7.8584E+03	-1.4548E+02	3.5720E+03	-1.4548E+02	4.2864E+03	-1.4547E+02	4.6436E+03	-1.4546E+02	5.0008E+03	-1.4544E+02
-1.4574E+02	8.5728E+03	-1.4573E+02	7.8584E+03	-1.4572E+02	3.5720E+03	-1.4572E+02	4.2864E+03	-1.4571E+02	4.6436E+03	-1.4570E+02	5.0008E+03	-1.4568E+02
-1.4598E+02	8.5728E+03	-1.4597E+02	7.8584E+03	-1.4596E+02	3.5720E+03	-1.4596E+02	4.2864E+03	-1.4595E+02	4.6436E+03	-1.4594E+02	5.0008E+03	-1.4592E+02
-1.4622E+02	8.5728E+03	-1.4621E+02	7.8584E+03	-1.4620E+02	3.5720E+03	-1.4620E+02	4.2864E+03	-1.4619E+02	4.6436E+03	-1.4618E+02	5.0008E+03	-1.4616E+02
-1.4645E+02	8.5728E+03	-1.4645E+02	7.8584E+03	-1.4644E+02	3.5720E+03	-1.4643E+02	4.2864E+03	-1.4643E+02	4.6436E+03	-1.4642E+02	5.0008E+03	-1.4640E+02
-1.4669E+02	8.5728E+03	-1.4669E+02	7.8584E+03	-1.4668E+02	3.5720E+03	-1.4667E+02	4.2864E+03	-1.4667E+02	4.6436E+03	-1.4666E+02	5.0008E+03	-1.4664E+02
-1.4693E+02	8.5728E+03	-1.4693E+02	7.8584E+03	-1.4692E+02	3.5720E+03	-1.4691E+02	4.2864E+03	-1.4691E+02	4.6436E+03	-1.4690E+02	5.0008E+03	-1.4688E+02

Arg 7	Curve 7	Arg 8	Curve 8	Arg 9	Curve 9	Arg 10	Curve 10	Arg 11	Curve 11	Arg 12	Curve 12	Arg 13
-1.4717E+02	8.5728E+03	-1.4716E+02	7.8584E+03	-1.4716E+02	3.5720E+03	-1.4715E+02	4.2864E+03	-1.4714E+02	4.6436E+03	-1.4713E+02	5.0008E+03	-1.4712E+02
-1.4741E+02	8.5728E+03	-1.4740E+02	7.8584E+03	-1.4739E+02	3.5720E+03	-1.4739E+02	4.2864E+03	-1.4738E+02	4.6436E+03	-1.4737E+02	5.0008E+03	-1.4735E+02
-1.4764E+02	8.5728E+03	-1.4764E+02	7.8584E+03	-1.4763E+02	3.5720E+03	-1.4762E+02	4.2864E+03	-1.4762E+02	4.6436E+03	-1.4761E+02	5.0008E+03	-1.4759E+02
-1.4788E+02	8.5728E+03	-1.4787E+02	7.8584E+03	-1.4787E+02	3.5720E+03	-1.4786E+02	4.2864E+03	-1.4785E+02	4.6436E+03	-1.4785E+02	5.0008E+03	-1.4783E+02
-1.4812E+02	8.5728E+03	-1.4811E+02	7.8584E+03	-1.4810E+02	3.5720E+03	-1.4810E+02	4.2864E+03	-1.4809E+02	4.6436E+03	-1.4808E+02	5.0008E+03	-1.4806E+02
-1.4835E+02	8.5728E+03	-1.4835E+02	7.8584E+03	-1.4834E+02	3.5720E+03	-1.4833E+02	4.2864E+03	-1.4833E+02	4.6436E+03	-1.4832E+02	5.0008E+03	-1.4830E+02
-1.4859E+02	8.5728E+03	-1.4858E+02	7.8584E+03	-1.4858E+02	3.5720E+03	-1.4857E+02	4.2864E+03	-1.4856E+02	4.6436E+03	-1.4855E+02	5.0008E+03	-1.4854E+02
-1.4882E+02	8.5728E+03	-1.4882E+02	7.8584E+03	-1.4881E+02	3.5720E+03	-1.4880E+02	4.2864E+03	-1.4880E+02	4.6436E+03	-1.4879E+02	5.0008E+03	-1.4877E+02
-1.4906E+02	8.5728E+03	-1.4905E+02	7.8584E+03	-1.4905E+02	3.5720E+03	-1.4904E+02	4.2864E+03	-1.4903E+02	4.6436E+03	-1.4902E+02	5.0008E+03	-1.4901E+02
-1.4929E+02	8.5728E+03	-1.4929E+02	7.8584E+03	-1.4928E+02	3.5720E+03	-1.4927E+02	4.2864E+03	-1.4927E+02	4.6436E+03	-1.4926E+02	5.0008E+03	-1.4924E+02
-1.4953E+02	8.5728E+03	-1.4952E+02	7.8584E+03	-1.4951E+02	3.5720E+03	-1.4951E+02	4.2864E+03	-1.4950E+02	4.6436E+03	-1.4949E+02	5.0008E+03	-1.4947E+02
-1.4976E+02	8.5728E+03	-1.4975E+02	7.8584E+03	-1.4975E+02	3.5720E+03	-1.4974E+02	4.2864E+03	-1.4973E+02	4.6436E+03	-1.4973E+02	5.0008E+03	-1.4971E+02
-1.4999E+02	8.5728E+03	-1.4999E+02	7.8584E+03	-1.4998E+02	3.5720E+03	-1.4997E+02	4.2864E+03	-1.4997E+02	4.6436E+03	-1.4996E+02	5.0008E+03	-1.4994E+02
-1.5023E+02	8.5728E+03	-1.5022E+02	7.8584E+03	-1.5021E+02	3.5720E+03	-1.5021E+02	4.2864E+03	-1.5020E+02	4.6436E+03	-1.5019E+02	5.0008E+03	-1.5017E+02
-1.5046E+02	8.5728E+03	-1.5045E+02	7.8584E+03	-1.5045E+02	3.5720E+03	-1.5044E+02	4.2864E+03	-1.5043E+02	4.6436E+03	-1.5042E+02	5.0008E+03	-1.5041E+02
-1.5069E+02	8.5728E+03	-1.5068E+02	7.8584E+03	-1.5068E+02	3.5720E+03	-1.5067E+02	4.2864E+03	-1.5067E+02	4.6436E+03	-1.5066E+02	5.0008E+03	-1.5064E+02
-1.5092E+02	8.5728E+03	-1.5092E+02	7.8584E+03	-1.5091E+02	3.5720E+03	-1.5090E+02	4.2864E+03	-1.5090E+02	4.6436E+03	-1.5089E+02	5.0008E+03	-1.5087E+02
-1.5115E+02	8.5728E+03	-1.5115E+02	7.8584E+03	-1.5114E+02	3.5720E+03	-1.5113E+02	4.2864E+03	-1.5113E+02	4.6436E+03	-1.5112E+02	5.0008E+03	-1.5110E+02
-1.5138E+02	8.5728E+03	-1.5138E+02	7.8584E+03	-1.5137E+02	3.5720E+03	-1.5136E+02	4.2864E+03	-1.5136E+02	4.6436E+03	-1.5135E+02	5.0008E+03	-1.5133E+02
-1.5162E+02	8.5728E+03	-1.5161E+02	7.8584E+03	-1.5160E+02	3.5720E+03	-1.5160E+02	4.2864E+03	-1.5159E+02	4.6436E+03	-1.5158E+02	5.0008E+03	-1.5156E+02
-1.5185E+02	8.5728E+03	-1.5184E+02	7.8584E+03	-1.5183E+02	3.5720E+03	-1.5183E+02	4.2864E+03	-1.5182E+02	4.6436E+03	-1.5181E+02	5.0008E+03	-1.5179E+02
-1.5208E+02	8.5728E+03	-1.5207E+02	7.8584E+03	-1.5206E+02	3.5720E+03	-1.5206E+02	4.2864E+03	-1.5205E+02	4.6436E+03	-1.5204E+02	5.0008E+03	-1.5202E+02
-1.5231E+02	8.5728E+03	-1.5230E+02	7.8584E+03	-1.5229E+02	3.5720E+03	-1.5229E+02	4.2864E+03	-1.5228E+02	4.6436E+03	-1.5227E+02	5.0008E+03	-1.5225E+02
-1.5253E+02	8.5728E+03	-1.5253E+02	7.8584E+03	-1.5252E+02	3.5720E+03	-1.5252E+02	4.2864E+03	-1.5251E+02	4.6436E+03	-1.5250E+02	5.0008E+03	-1.5248E+02
-1.5276E+02	8.5728E+03	-1.5276E+02	7.8584E+03	-1.5275E+02	3.5720E+03	-1.5274E+02	4.2864E+03	-1.5274E+02	4.6436E+03	-1.5273E+02	5.0008E+03	-1.5271E+02
-1.5299E+02	8.5728E+03	-1.5299E+02	7.8584E+03	-1.5298E+02	3.5720E+03	-1.5297E+02	4.2864E+03	-1.5297E+02	4.6436E+03	-1.5296E+02	5.0008E+03	-1.5294E+02
-1.5322E+02	8.5728E+03	-1.5321E+02	7.8584E+03	-1.5321E+02	3.5720E+03	-1.5320E+02	4.2864E+03	-1.5320E+02	4.6436E+03	-1.5319E+02	5.0008E+03	-1.5317E+02
-1.5345E+02	8.5728E+03	-1.5344E+02	7.8584E+03	-1.5344E+02	3.5720E+03	-1.5343E+02	4.2864E+03	-1.5342E+02	4.6436E+03	-1.5342E+02	5.0008E+03	-1.5340E+02
-1.5368E+02	8.5728E+03	-1.5367E+02	7.8584E+03	-1.5366E+02	3.5720E+03	-1.5366E+02	4.2864E+03	-1.5365E+02	4.6436E+03	-1.5364E+02	5.0008E+03	-1.5363E+02
-1.5390E+02	8.5728E+03	-1.5390E+02	7.8584E+03	-1.5389E+02	3.5720E+03	-1.5388E+02	4.2864E+03	-1.5388E+02	4.6436E+03	-1.5387E+02	5.0008E+03	-1.5385E+02
-1.5413E+02	8.5728E+03	-1.5412E+02	7.8584E+03	-1.5412E+02	3.5720E+03	-1.5411E+02	4.2864E+03	-1.5411E+02	4.6436E+03	-1.5410E+02	5.0008E+03	-1.5408E+02
-1.5436E+02	8.5728E+03	-1.5435E+02	7.8584E+03	-1.5435E+02	3.5720E+03	-1.5434E+02	4.2864E+03	-1.5433E+02	4.6436E+03	-1.5432E+02	5.0008E+03	-1.5431E+02
-1.5458E+02	8.5728E+03	-1.5458E+02	7.8584E+03	-1.5457E+02	3.5720E+03	-1.5456E+02	4.2864E+03	-1.5456E+02	4.6436E+03	-1.5455E+02	5.0008E+03	-1.5453E+02
-1.5481E+02	8.5728E+03	-1.5480E+02	7.8584E+03	-1.5480E+02	3.5720E+03	-1.5479E+02	4.2864E+03	-1.5479E+02	4.6436E+03	-1.5478E+02	5.0008E+03	-1.5476E+02
-1.5504E+02	8.5728E+03	-1.5503E+02	7.8584E+03	-1.5502E+02	3.5720E+03	-1.5502E+02	4.2864E+03	-1.5501E+02	4.6436E+03	-1.5500E+02	5.0008E+03	-1.5499E+02
-1.5526E+02	8.5728E+03	-1.5525E+02	7.8584E+03	-1.5525E+02	3.5720E+03	-1.5524E+02	4.2864E+03	-1.5524E+02	4.6436E+03	-1.5523E+02	5.0008E+03	-1.5521E+02
-1.5549E+02	8.5728E+03	-1.5548E+02	7.8584E+03	-1.5547E+02	3.5720E+03	-1.5547E+02	4.2864E+03	-1.5546E+02	4.6436E+03	-1.5545E+02	5.0008E+03	-1.5544E+02
-1.5571E+02	8.5728E+03	-1.5570E+02	7.8584E+03	-1.5570E+02	3.5720E+03	-1.5569E+02	4.2864E+03	-1.5569E+02	4.6436E+03	-1.5568E+02	5.0008E+03	-1.5566E+02
-1.5593E+02	8.5728E+03	-1.5593E+02	7.8584E+03	-1.5592E+02	3.5720E+03	-1.5592E+02	4.2864E+03	-1.5591E+02	4.6436E+03	-1.5590E+02	5.0008E+03	-1.5589E+02
-1.5616E+02	8.5728E+03	-1.5615E+02	7.8584E+03	-1.5615E+02	3.5720E+03	-1.5614E+02	4.2864E+03	-1.5614E+02	4.6436E+03	-1.5613E+02	5.0008E+03	-1.5611E+02
-1.5638E+02	8.5728E+03	-1.5638E+02	7.8584E+03	-1.5637E+02	3.5720E+03	-1.5636E+02	4.2864E+03	-1.5636E+02	4.6436E+03	-1.5635E+02	5.0008E+03	-1.5633E+02
-1.5661E+02	8.5728E+03	-1.5660E+02	7.8584E+03	-1.5659E+02	3.5720E+03	-1.5659E+02	4.2864E+03	-1.5658E+02	4.6436E+03	-1.5657E+02	5.0008E+03	-1.5656E+02
-1.5683E+02	8.5728E+03	-1.5682E+02	7.8584E+03	-1.5682E+02	3.5720E+03	-1.5681E+02	4.2864E+03	-1.5681E+02	4.6436E+03	-1.5680E+02	5.0008E+03	-1.5678E+02
-1.5705E+02	8.5728E+03	-1.5705E+02	7.8584E+03	-1.5704E+02	3.5720E+03	-1.5703E+02	4.2864E+03	-1.5703E+02	4.6436E+03	-1.5702E+02	5.0008E+03	-1.5700E+02
-1.5727E+02	8.5728E+03	-1.5727E+02	7.8584E+03	-1.5726E+02	3.5720E+03	-1.5726E+02	4.2864E+03	-1.5725E+02	4.6436E+03	-1.5724E+02	5.0008E+03	-1.5723E+02
-1.5750E+02	8.5728E+03	-1.5749E+02	7.8584E+03	-1.5749E+02	3.5720E+03	-1.5748E+02	4.2864E+03	-1.5747E+02	4.6436E+03	-1.5746E+02	5.0008E+03	-1.5745E+02
-1.5772E+02	8.5728E+03	-1.5771E+02	7.8584E+03	-1.5771E+02	3.5720E+03	-1.5770E+02	4.2864E+03	-1.5769E+02	4.6436E+03	-1.5769E+02	5.0008E+03	-1.5767E+02
-1.5794E+02	8.5728E+03	-1.5793E+02	7.8584E+03	-1.5793E+02	3.5720E+03	-1.5792E+02	4.2864E+03	-1.5792E+02	4.6436E+03	-1.5791E+02	5.0008E+03	-1.5789E+02
-1.5816E+02	8.5728E+03	-1.5816E+02	7.8584E+03	-1.5815E+02	3.5720E+03	-1.5814E+02	4.2864E+03	-1.5814E+02	4.6436E+03	-1.5813E+02	5.0008E+03	-1.5811E+02
-1.5838E+02	8.5728E+03	-1.5838E+02	7.8584E+03	-1.5837E+02	3.5720E+03	-1.5836E+02	4.2864E+03	-1.5836E+02	4.6436E+03	-1.5835E+02	5.0008E+03	-1.5833E+02
-1.5860E+02	8.5728E+03	-1.5860E+02	7.8584E+03	-1.5859E+02	3.5720E+03	-1.5858E+02	4.2864E+03	-1.5858E+02	4.6436E+03	-1.5857E+02	5.0008E+03	-1.5855E+02
-1.5882E+02	8.5728E+03	-1.5882E+02	7.8584E+03	-1.5881E+02	3.5720E+03	-1.5880E+02	4.2864E+03	-1.5880E+02	4.6436E+03	-1.5879E+02	5.0008E+03	-1.5877E+02

Arg 7	Curve 7	Arg 8	Curve 8	Arg 9	Curve 9	Arg 10	Curve 10	Arg 11	Curve 11	Arg 12	Curve 12	Arg 13
-1.5904E+02	8.5728E+03	-1.5904E+02	7.8584E+03	-1.5903E+02	3.5720E+03	-1.5902E+02	4.2864E+03	-1.5902E+02	4.6436E+03	-1.5901E+02	5.0008E+03	-1.5899E+02
-1.5926E+02	8.5728E+03	-1.5926E+02	7.8584E+03	-1.5925E+02	3.5720E+03	-1.5924E+02	4.2864E+03	-1.5924E+02	4.6436E+03	-1.5923E+02	5.0008E+03	-1.5921E+02
-1.5948E+02	8.5728E+03	-1.5948E+02	7.8584E+03	-1.5947E+02	3.5720E+03	-1.5946E+02	4.2864E+03	-1.5946E+02	4.6436E+03	-1.5945E+02	5.0008E+03	-1.5943E+02
-1.5970E+02	8.5728E+03	-1.5970E+02	7.8584E+03	-1.5969E+02	3.5720E+03	-1.5968E+02	4.2864E+03	-1.5968E+02	4.6436E+03	-1.5967E+02	5.0008E+03	-1.5965E+02
-1.5992E+02	8.5728E+03	-1.5991E+02	7.8584E+03	-1.5991E+02	3.5720E+03	-1.5990E+02	4.2864E+03	-1.5990E+02	4.6436E+03	-1.5989E+02	5.0008E+03	-1.5987E+02
-1.6014E+02	8.5728E+03	-1.6013E+02	7.8584E+03	-1.6013E+02	3.5720E+03	-1.6012E+02	4.2864E+03	-1.6011E+02	4.6436E+03	-1.6011E+02	5.0008E+03	-1.6009E+02
-1.6036E+02	8.5728E+03	-1.6035E+02	7.8584E+03	-1.6034E+02	3.5720E+03	-1.6034E+02	4.2864E+03	-1.6033E+02	4.6436E+03	-1.6032E+02	5.0008E+03	-1.6031E+02
-1.6057E+02	8.5728E+03	-1.6057E+02	7.8584E+03	-1.6056E+02	3.5720E+03	-1.6056E+02	4.2864E+03	-1.6055E+02	4.6436E+03	-1.6054E+02	5.0008E+03	-1.6053E+02
-1.6079E+02	8.5728E+03	-1.6079E+02	7.8584E+03	-1.6078E+02	3.5720E+03	-1.6077E+02	4.2864E+03	-1.6077E+02	4.6436E+03	-1.6076E+02	5.0008E+03	-1.6074E+02
-1.6101E+02	8.5728E+03	-1.6100E+02	7.8584E+03	-1.6100E+02	3.5720E+03	-1.6099E+02	4.2864E+03	-1.6099E+02	4.6436E+03	-1.6098E+02	5.0008E+03	-1.6096E+02
-1.6123E+02	8.5728E+03	-1.6122E+02	7.8584E+03	-1.6121E+02	3.5720E+03	-1.6121E+02	4.2864E+03	-1.6120E+02	4.6436E+03	-1.6119E+02	5.0008E+03	-1.6118E+02
-1.6144E+02	8.5728E+03	-1.6144E+02	7.8584E+03	-1.6143E+02	3.5720E+03	-1.6142E+02	4.2864E+03	-1.6142E+02	4.6436E+03	-1.6141E+02	5.0008E+03	-1.6139E+02
-1.6166E+02	8.5728E+03	-1.6165E+02	7.8584E+03	-1.6165E+02	3.5720E+03	-1.6164E+02	4.2864E+03	-1.6164E+02	4.6436E+03	-1.6163E+02	5.0008E+03	-1.6161E+02
-1.6187E+02	8.5728E+03	-1.6187E+02	7.8584E+03	-1.6186E+02	3.5720E+03	-1.6186E+02	4.2864E+03	-1.6185E+02	4.6436E+03	-1.6184E+02	5.0008E+03	-1.6183E+02
-1.6209E+02	8.5728E+03	-1.6209E+02	7.8584E+03	-1.6208E+02	3.5720E+03	-1.6207E+02	4.2864E+03	-1.6207E+02	4.6436E+03	-1.6206E+02	5.0008E+03	-1.6204E+02
-1.6231E+02	8.5728E+03	-1.6230E+02	7.8584E+03	-1.6230E+02	3.5720E+03	-1.6229E+02	4.2864E+03	-1.6228E+02	4.6436E+03	-1.6227E+02	5.0008E+03	-1.6226E+02
-1.6252E+02	8.5728E+03	-1.6252E+02	7.8584E+03	-1.6251E+02	3.5720E+03	-1.6250E+02	4.2864E+03	-1.6250E+02	4.6436E+03	-1.6249E+02	5.0008E+03	-1.6247E+02
-1.6274E+02	8.5728E+03	-1.6273E+02	7.8584E+03	-1.6273E+02	3.5720E+03	-1.6272E+02	4.2864E+03	-1.6271E+02	4.6436E+03	-1.6271E+02	5.0008E+03	-1.6269E+02
-1.6295E+02	8.5728E+03	-1.6295E+02	7.8584E+03	-1.6294E+02	3.5720E+03	-1.6293E+02	4.2864E+03	-1.6293E+02	4.6436E+03	-1.6292E+02	5.0008E+03	-1.6290E+02
-1.6317E+02	8.5728E+03	-1.6316E+02	7.8584E+03	-1.6315E+02	3.5720E+03	-1.6315E+02	4.2864E+03	-1.6314E+02	4.6436E+03	-1.6313E+02	5.0008E+03	-1.6312E+02
-1.6338E+02	8.5728E+03	-1.6337E+02	7.8584E+03	-1.6337E+02	3.5720E+03	-1.6336E+02	4.2864E+03	-1.6336E+02	4.6436E+03	-1.6335E+02	5.0008E+03	-1.6333E+02
-1.6359E+02	8.5728E+03	-1.6359E+02	7.8584E+03	-1.6358E+02	3.5720E+03	-1.6358E+02	4.2864E+03	-1.6357E+02	4.6436E+03	-1.6356E+02	5.0008E+03	-1.6355E+02
-1.6381E+02	8.5728E+03	-1.6380E+02	7.8584E+03	-1.6380E+02	3.5720E+03	-1.6379E+02	4.2864E+03	-1.6378E+02	4.6436E+03	-1.6378E+02	5.0008E+03	-1.6376E+02
-1.6402E+02	8.5728E+03	-1.6401E+02	7.8584E+03	-1.6401E+02	3.5720E+03	-1.6400E+02	4.2864E+03	-1.6400E+02	4.6436E+03	-1.6399E+02	5.0008E+03	-1.6397E+02
-1.6423E+02	8.5728E+03	-1.6423E+02	7.8584E+03	-1.6422E+02	3.5720E+03	-1.6422E+02	4.2864E+03	-1.6421E+02	4.6436E+03	-1.6420E+02	5.0008E+03	-1.6419E+02
-1.6445E+02	8.5728E+03	-1.6444E+02	7.8584E+03	-1.6444E+02	3.5720E+03	-1.6443E+02	4.2864E+03	-1.6442E+02	4.6436E+03	-1.6442E+02	5.0008E+03	-1.6440E+02
-1.6466E+02	8.5728E+03	-1.6465E+02	7.8584E+03	-1.6465E+02	3.5720E+03	-1.6464E+02	4.2864E+03	-1.6464E+02	4.6436E+03	-1.6463E+02	5.0008E+03	-1.6461E+02
-1.6487E+02	8.5728E+03	-1.6487E+02	7.8584E+03	-1.6486E+02	3.5720E+03	-1.6485E+02	4.2864E+03	-1.6485E+02	4.6436E+03	-1.6484E+02	5.0008E+03	-1.6482E+02
-1.6508E+02	8.5728E+03	-1.6508E+02	7.8584E+03	-1.6507E+02	3.5720E+03	-1.6506E+02	4.2864E+03	-1.6506E+02	4.6436E+03	-1.6505E+02	5.0008E+03	-1.6504E+02
-1.6529E+02	8.5728E+03	-1.6529E+02	7.8584E+03	-1.6528E+02	3.5720E+03	-1.6528E+02	4.2864E+03	-1.6527E+02	4.6436E+03	-1.6526E+02	5.0008E+03	-1.6525E+02
-1.6551E+02	8.5728E+03	-1.6550E+02	7.8584E+03	-1.6550E+02	3.5720E+03	-1.6549E+02	4.2864E+03	-1.6548E+02	4.6436E+03	-1.6547E+02	5.0008E+03	-1.6546E+02
-1.6572E+02	8.5728E+03	-1.6571E+02	7.8584E+03	-1.6571E+02	3.5720E+03	-1.6570E+02	4.2864E+03	-1.6569E+02	4.6436E+03	-1.6569E+02	5.0008E+03	-1.6567E+02
-1.6593E+02	8.5728E+03	-1.6592E+02	7.8584E+03	-1.6592E+02	3.5720E+03	-1.6591E+02	4.2864E+03	-1.6591E+02	4.6436E+03	-1.6590E+02	5.0008E+03	-1.6588E+02
-1.6614E+02	8.5728E+03	-1.6613E+02	7.8584E+03	-1.6613E+02	3.5720E+03	-1.6612E+02	4.2864E+03	-1.6612E+02	4.6436E+03	-1.6611E+02	5.0008E+03	-1.6609E+02
-1.6635E+02	8.5728E+03	-1.6634E+02	7.8584E+03	-1.6634E+02	3.5720E+03	-1.6633E+02	4.2864E+03	-1.6633E+02	4.6436E+03	-1.6632E+02	5.0008E+03	-1.6630E+02
-1.6656E+02	8.5728E+03	-1.6655E+02	7.8584E+03	-1.6655E+02	3.5720E+03	-1.6654E+02	4.2864E+03	-1.6654E+02	4.6436E+03	-1.6653E+02	5.0008E+03	-1.6651E+02
-1.6677E+02	8.5728E+03	-1.6676E+02	7.8584E+03	-1.6676E+02	3.5720E+03	-1.6675E+02	4.2864E+03	-1.6675E+02	4.6436E+03	-1.6674E+02	5.0008E+03	-1.6672E+02
-1.6698E+02	8.5728E+03	-1.6697E+02	7.8584E+03	-1.6697E+02	3.5720E+03	-1.6696E+02	4.2864E+03	-1.6696E+02	4.6436E+03	-1.6695E+02	5.0008E+03	-1.6693E+02
-1.6719E+02	8.5728E+03	-1.6718E+02	7.8584E+03	-1.6718E+02	3.5720E+03	-1.6717E+02	4.2864E+03	-1.6716E+02	4.6436E+03	-1.6716E+02	5.0008E+03	-1.6714E+02
-1.6740E+02	8.5728E+03	-1.6739E+02	7.8584E+03	-1.6739E+02	3.5720E+03	-1.6738E+02	4.2864E+03	-1.6737E+02	4.6436E+03	-1.6737E+02	5.0008E+03	-1.6735E+02
-1.6760E+02	8.5728E+03	-1.6760E+02	7.8584E+03	-1.6759E+02	3.5720E+03	-1.6759E+02	4.2864E+03	-1.6758E+02	4.6436E+03	-1.6757E+02	5.0008E+03	-1.6756E+02
-1.6781E+02	8.5728E+03	-1.6781E+02	7.8584E+03	-1.6780E+02	3.5720E+03	-1.6780E+02	4.2864E+03	-1.6779E+02	4.6436E+03	-1.6778E+02	5.0008E+03	-1.6777E+02
-1.6802E+02	8.5728E+03	-1.6802E+02	7.8584E+03	-1.6801E+02	3.5720E+03	-1.6800E+02	4.2864E+03	-1.6800E+02	4.6436E+03	-1.6799E+02	5.0008E+03	-1.6798E+02
-1.6823E+02	8.5728E+03	-1.6822E+02	7.8584E+03	-1.6822E+02	3.5720E+03	-1.6821E+02	4.2864E+03	-1.6821E+02	4.6436E+03	-1.6820E+02	5.0008E+03	-1.6818E+02
-1.6844E+02	8.5728E+03	-1.6843E+02	7.8584E+03	-1.6843E+02	3.5720E+03	-1.6842E+02	4.2864E+03	-1.6842E+02	4.6436E+03	-1.6841E+02	5.0008E+03	-1.6839E+02
-1.6864E+02	8.5728E+03	-1.6864E+02	7.8584E+03	-1.6863E+02	3.5720E+03	-1.6863E+02	4.2864E+03	-1.6862E+02	4.6436E+03	-1.6861E+02	5.0008E+03	-1.6860E+02
-1.6885E+02	8.5728E+03	-1.6885E+02	7.8584E+03	-1.6884E+02	3.5720E+03	-1.6883E+02	4.2864E+03	-1.6883E+02	4.6436E+03	-1.6882E+02	5.0008E+03	-1.6881E+02
-1.6906E+02	8.5728E+03	-1.6905E+02	7.8584E+03	-1.6905E+02	3.5720E+03	-1.6904E+02	4.2864E+03	-1.6904E+02	4.6436E+03	-1.6903E+02	5.0008E+03	-1.6901E+02
-1.6927E+02	8.5728E+03	-1.6926E+02	7.8584E+03	-1.6925E+02	3.5720E+03	-1.6925E+02	4.2864E+03	-1.6924E+02	4.6436E+03	-1.6924E+02	5.0008E+03	-1.6922E+02
-1.6947E+02	8.5728E+03	-1.6947E+02	7.8584E+03	-1.6946E+02	3.5720E+03	-1.6945E+02	4.2864E+03	-1.6945E+02	4.6436E+03	-1.6944E+02	5.0008E+03	-1.6943E+02
-1.6968E+02	8.5728E+03	-1.6967E+02	7.8584E+03	-1.6967E+02	3.5720E+03	-1.6966E+02	4.2864E+03	-1.6966E+02	4.6436E+03	-1.6965E+02	5.0008E+03	-1.6963E+02
-1.6988E+02	8.5728E+03	-1.6988E+02	7.8584E+03	-1.6987E+02	3.5720E+03	-1.6987E+02	4.2864E+03	-1.6986E+02	4.6436E+03	-1.6985E+02	5.0008E+03	-1.6984E+02

Arg 7	Curve 7	Arg 8	Curve 8	Arg 9	Curve 9	Arg 10	Curve 10	Arg 11	Curve 11	Arg 12	Curve 12	Arg 13
-1.7009E+02	8.5728E+03	-1.7008E+02	7.8584E+03	-1.7008E+02	3.5720E+03	-1.7007E+02	4.2864E+03	-1.7007E+02	4.6436E+03	-1.7006E+02	5.0008E+03	-1.7004E+02
-1.7029E+02	8.5728E+03	-1.7029E+02	7.8584E+03	-1.7028E+02	3.5720E+03	-1.7028E+02	4.2864E+03	-1.7027E+02	4.6436E+03	-1.7026E+02	5.0008E+03	-1.7025E+02
-1.7050E+02	8.5728E+03	-1.7049E+02	7.8584E+03	-1.7049E+02	3.5720E+03	-1.7048E+02	4.2864E+03	-1.7048E+02	4.6436E+03	-1.7047E+02	5.0008E+03	-1.7045E+02
-1.7070E+02	8.5728E+03	-1.7070E+02	7.8584E+03	-1.7069E+02	3.5720E+03	-1.7069E+02	4.2864E+03	-1.7068E+02	4.6436E+03	-1.7068E+02	5.0008E+03	-1.7066E+02
-1.7091E+02	8.5728E+03	-1.7090E+02	7.8584E+03	-1.7090E+02	3.5720E+03	-1.7089E+02	4.2864E+03	-1.7089E+02	4.6436E+03	-1.7088E+02	5.0008E+03	-1.7086E+02
-1.7111E+02	8.5728E+03	-1.7111E+02	7.8584E+03	-1.7110E+02	3.5720E+03	-1.7110E+02	4.2864E+03	-1.7109E+02	4.6436E+03	-1.7108E+02	5.0008E+03	-1.7107E+02
-1.7132E+02	8.5728E+03	-1.7131E+02	7.8584E+03	-1.7131E+02	3.5720E+03	-1.7130E+02	4.2864E+03	-1.7130E+02	4.6436E+03	-1.7129E+02	5.0008E+03	-1.7127E+02
-1.7152E+02	8.5728E+03	-1.7152E+02	7.8584E+03	-1.7151E+02	3.5720E+03	-1.7150E+02	4.2864E+03	-1.7150E+02	4.6436E+03	-1.7149E+02	5.0008E+03	-1.7148E+02
-1.7173E+02	8.5728E+03	-1.7172E+02	7.8584E+03	-1.7172E+02	3.5720E+03	-1.7171E+02	4.2864E+03	-1.7170E+02	4.6436E+03	-1.7170E+02	5.0008E+03	-1.7168E+02
-1.7193E+02	8.5728E+03	-1.7192E+02	7.8584E+03	-1.7192E+02	3.5720E+03	-1.7191E+02	4.2864E+03	-1.7191E+02	4.6436E+03	-1.7190E+02	5.0008E+03	-1.7188E+02
-1.7213E+02	8.5728E+03	-1.7213E+02	7.8584E+03	-1.7212E+02	3.5720E+03	-1.7212E+02	4.2864E+03	-1.7211E+02	4.6436E+03	-1.7210E+02	5.0008E+03	-1.7209E+02
-1.7234E+02	8.5728E+03	-1.7233E+02	7.8584E+03	-1.7233E+02	3.5720E+03	-1.7232E+02	4.2864E+03	-1.7231E+02	4.6436E+03	-1.7231E+02	5.0008E+03	-1.7229E+02
-1.7254E+02	8.5728E+03	-1.7253E+02	7.8584E+03	-1.7253E+02	3.5720E+03	-1.7252E+02	4.2864E+03	-1.7252E+02	4.6436E+03	-1.7251E+02	5.0008E+03	-1.7249E+02
-1.7274E+02	8.5728E+03	-1.7274E+02	7.8584E+03	-1.7273E+02	3.5720E+03	-1.7272E+02	4.2864E+03	-1.7272E+02	4.6436E+03	-1.7271E+02	5.0008E+03	-1.7270E+02
-1.7294E+02	8.5728E+03	-1.7294E+02	7.8584E+03	-1.7293E+02	3.5720E+03	-1.7293E+02	4.2864E+03	-1.7292E+02	4.6436E+03	-1.7291E+02	5.0008E+03	-1.7290E+02
-1.7314E+02	8.5728E+03	-1.7314E+02	7.8584E+03	-1.7313E+02	3.5720E+03	-1.7313E+02	4.2864E+03	-1.7312E+02	4.6436E+03	-1.7312E+02	5.0008E+03	-1.7310E+02
-1.7335E+02	8.5728E+03	-1.7334E+02	7.8584E+03	-1.7334E+02	3.5720E+03	-1.7333E+02	4.2864E+03	-1.7333E+02	4.6436E+03	-1.7332E+02	5.0008E+03	-1.7330E+02
-1.7355E+02	8.5728E+03	-1.7354E+02	7.8584E+03	-1.7354E+02	3.5720E+03	-1.7353E+02	4.2864E+03	-1.7353E+02	4.6436E+03	-1.7352E+02	5.0008E+03	-1.7350E+02
-1.7375E+02	8.5728E+03	-1.7374E+02	7.8584E+03	-1.7374E+02	3.5720E+03	-1.7373E+02	4.2864E+03	-1.7373E+02	4.6436E+03	-1.7372E+02	5.0008E+03	-1.7371E+02
-1.7395E+02	8.5728E+03	-1.7395E+02	7.8584E+03	-1.7394E+02	3.5720E+03	-1.7393E+02	4.2864E+03	-1.7393E+02	4.6436E+03	-1.7392E+02	5.0008E+03	-1.7391E+02
-1.7415E+02	8.5728E+03	-1.7415E+02	7.8584E+03	-1.7414E+02	3.5720E+03	-1.7413E+02	4.2864E+03	-1.7413E+02	4.6436E+03	-1.7412E+02	5.0008E+03	-1.7411E+02
-1.7435E+02	8.5728E+03	-1.7435E+02	7.8584E+03	-1.7434E+02	3.5720E+03	-1.7434E+02	4.2864E+03	-1.7433E+02	4.6436E+03	-1.7432E+02	5.0008E+03	-1.7431E+02
-1.7455E+02	8.5728E+03	-1.7455E+02	7.8584E+03	-1.7454E+02	3.5720E+03	-1.7454E+02	4.2864E+03	-1.7453E+02	4.6436E+03	-1.7452E+02	5.0008E+03	-1.7451E+02
-1.7475E+02	8.5728E+03	-1.7475E+02	7.8584E+03	-1.7474E+02	3.5720E+03	-1.7474E+02	4.2864E+03	-1.7473E+02	4.6436E+03	-1.7472E+02	5.0008E+03	-1.7471E+02
-1.7495E+02	8.5728E+03	-1.7495E+02	7.8584E+03	-1.7494E+02	3.5720E+03	-1.7494E+02	4.2864E+03	-1.7493E+02	4.6436E+03	-1.7492E+02	5.0008E+03	-1.7491E+02
-1.7515E+02	8.5728E+03	-1.7515E+02	7.8584E+03	-1.7514E+02	3.5720E+03	-1.7514E+02	4.2864E+03	-1.7513E+02	4.6436E+03	-1.7512E+02	5.0008E+03	-1.7511E+02
-1.7535E+02	8.5728E+03	-1.7535E+02	7.8584E+03	-1.7534E+02	3.5720E+03	-1.7533E+02	4.2864E+03	-1.7533E+02	4.6436E+03	-1.7532E+02	5.0008E+03	-1.7531E+02
-1.7555E+02	8.5728E+03	-1.7555E+02	7.8584E+03	-1.7554E+02	3.5720E+03	-1.7553E+02	4.2864E+03	-1.7553E+02	4.6436E+03	-1.7552E+02	5.0008E+03	-1.7551E+02
-1.7575E+02	8.5728E+03	-1.7575E+02	7.8584E+03	-1.7574E+02	3.5720E+03	-1.7573E+02	4.2864E+03	-1.7573E+02	4.6436E+03	-1.7572E+02	5.0008E+03	-1.7571E+02
-1.7595E+02	8.5728E+03	-1.7594E+02	7.8584E+03	-1.7594E+02	3.5720E+03	-1.7593E+02	4.2864E+03	-1.7593E+02	4.6436E+03	-1.7592E+02	5.0008E+03	-1.7591E+02
-1.7615E+02	8.5728E+03	-1.7614E+02	7.8584E+03	-1.7614E+02	3.5720E+03	-1.7613E+02	4.2864E+03	-1.7613E+02	4.6436E+03	-1.7612E+02	5.0008E+03	-1.7610E+02
-1.7635E+02	8.5728E+03	-1.7634E+02	7.8584E+03	-1.7634E+02	3.5720E+03	-1.7633E+02	4.2864E+03	-1.7633E+02	4.6436E+03	-1.7632E+02	5.0008E+03	-1.7630E+02
-1.7654E+02	8.5728E+03	-1.7654E+02	7.8584E+03	-1.7653E+02	3.5720E+03	-1.7653E+02	4.2864E+03	-1.7652E+02	4.6436E+03	-1.7652E+02	5.0008E+03	-1.7650E+02
-1.7674E+02	8.5728E+03	-1.7674E+02	7.8584E+03	-1.7673E+02	3.5720E+03	-1.7673E+02	4.2864E+03	-1.7672E+02	4.6436E+03	-1.7671E+02	5.0008E+03	-1.7670E+02
-1.7694E+02	8.5728E+03	-1.7693E+02	7.8584E+03	-1.7693E+02	3.5720E+03	-1.7692E+02	4.2864E+03	-1.7692E+02	4.6436E+03	-1.7691E+02	5.0008E+03	-1.7690E+02
-1.7714E+02	8.5728E+03	-1.7713E+02	7.8584E+03	-1.7713E+02	3.5720E+03	-1.7712E+02	4.2864E+03	-1.7712E+02	4.6436E+03	-1.7711E+02	5.0008E+03	-1.7709E+02
-1.7733E+02	8.5728E+03	-1.7733E+02	7.8584E+03	-1.7732E+02	3.5720E+03	-1.7732E+02	4.2864E+03	-1.7731E+02	4.6436E+03	-1.7731E+02	5.0008E+03	-1.7729E+02
-1.7753E+02	8.5728E+03	-1.7753E+02	7.8584E+03	-1.7752E+02	3.5720E+03	-1.7751E+02	4.2864E+03	-1.7751E+02	4.6436E+03	-1.7750E+02	5.0008E+03	-1.7749E+02
-1.7773E+02	8.5728E+03	-1.7772E+02	7.8584E+03	-1.7772E+02	3.5720E+03	-1.7771E+02	4.2864E+03	-1.7771E+02	4.6436E+03	-1.7770E+02	5.0008E+03	-1.7768E+02
-1.7792E+02	8.5728E+03	-1.7792E+02	7.8584E+03	-1.7791E+02	3.5720E+03	-1.7791E+02	4.2864E+03	-1.7790E+02	4.6436E+03	-1.7790E+02	5.0008E+03	-1.7788E+02
-1.7812E+02	8.5728E+03	-1.7812E+02	7.8584E+03	-1.7811E+02	3.5720E+03	-1.7810E+02	4.2864E+03	-1.7810E+02	4.6436E+03	-1.7809E+02	5.0008E+03	-1.7808E+02
-1.7832E+02	8.5728E+03	-1.7831E+02	7.8584E+03	-1.7831E+02	3.5720E+03	-1.7830E+02	4.2864E+03	-1.7830E+02	4.6436E+03	-1.7829E+02	5.0008E+03	-1.7827E+02
-1.7851E+02	8.5728E+03	-1.7851E+02	7.8584E+03	-1.7850E+02	3.5720E+03	-1.7850E+02	4.2864E+03	-1.7849E+02	4.6436E+03	-1.7848E+02	5.0008E+03	-1.7847E+02
-1.7871E+02	8.5728E+03	-1.7870E+02	7.8584E+03	-1.7870E+02	3.5720E+03	-1.7869E+02	4.2864E+03	-1.7869E+02	4.6436E+03	-1.7868E+02	5.0008E+03	-1.7867E+02
-1.7890E+02	8.5728E+03	-1.7890E+02	7.8584E+03	-1.7889E+02	3.5720E+03	-1.7889E+02	4.2864E+03	-1.7888E+02	4.6436E+03	-1.7888E+02	5.0008E+03	-1.7886E+02
-1.7910E+02	8.5728E+03	-1.7909E+02	7.8584E+03	-1.7909E+02	3.5720E+03	-1.7908E+02	4.2864E+03	-1.7908E+02	4.6436E+03	-1.7907E+02	5.0008E+03	-1.7906E+02
-1.7929E+02	8.5728E+03	-1.7929E+02	7.8584E+03	-1.7929E+02	3.5720E+03	-1.7928E+02	4.2864E+03	-1.7927E+02	4.6436E+03	-1.7927E+02	5.0008E+03	-1.7925E+02
-1.7949E+02	8.5728E+03	-1.7948E+02	7.8584E+03	-1.7948E+02	3.5720E+03	-1.7947E+02	4.2864E+03	-1.7947E+02	4.6436E+03	-1.7946E+02	5.0008E+03	-1.7945E+02
-1.7968E+02	8.5728E+03	-1.7968E+02	7.8584E+03	-1.7967E+02	3.5720E+03	-1.7967E+02	4.2864E+03	-1.7966E+02	4.6436E+03	-1.7966E+02	5.0008E+03	-1.7964E+02
-1.7988E+02	8.5728E+03	-1.7987E+02	7.8584E+03	-1.7987E+02	3.5720E+03	-1.7986E+02	4.2864E+03	-1.7986E+02	4.6436E+03	-1.7985E+02	5.0008E+03	-1.7984E+02
-1.8007E+02	8.5728E+03	-1.8007E+02	7.8584E+03	-1.8006E+02	3.5720E+03	-1.8006E+02	4.2864E+03	-1.8005E+02	4.6436E+03	-1.8005E+02	5.0008E+03	-1.8003E+02
-1.8027E+02	8.5728E+03	-1.8026E+02	7.8584E+03	-1.8026E+02	3.5720E+03	-1.8025E+02	4.2864E+03	-1.8025E+02	4.6436E+03	-1.8024E+02	5.0008E+03	-1.8022E+02

Arg 7	Curve 7	Arg 8	Curve 8	Arg 9	Curve 9	Arg 10	Curve 10	Arg 11	Curve 11	Arg 12	Curve 12	Arg 13
-1.8046E+02	8.5728E+03	-1.8046E+02	7.8584E+03	-1.8045E+02	3.5720E+03	-1.8044E+02	4.2864E+03	-1.8044E+02	4.6436E+03	-1.8043E+02	5.0008E+03	-1.8042E+02
-1.8065E+02	8.5728E+03	-1.8065E+02	7.8584E+03	-1.8065E+02	3.5720E+03	-1.8064E+02	4.2864E+03	-1.8063E+02	4.6436E+03	-1.8063E+02	5.0008E+03	-1.8061E+02
-1.8085E+02	8.5728E+03	-1.8084E+02	7.8584E+03	-1.8084E+02	3.5720E+03	-1.8083E+02	4.2864E+03	-1.8083E+02	4.6436E+03	-1.8082E+02	5.0008E+03	-1.8081E+02
-1.8104E+02	8.5728E+03	-1.8104E+02	7.8584E+03	-1.8103E+02	3.5720E+03	-1.8102E+02	4.2864E+03	-1.8102E+02	4.6436E+03	-1.8101E+02	5.0008E+03	-1.8100E+02
-1.8123E+02	8.5728E+03	-1.8123E+02	7.8584E+03	-1.8122E+02	3.5720E+03	-1.8122E+02	4.2864E+03	-1.8121E+02	4.6436E+03	-1.8121E+02	5.0008E+03	-1.8119E+02
-1.8143E+02	8.5728E+03	-1.8142E+02	7.8584E+03	-1.8142E+02	3.5720E+03	-1.8141E+02	4.2864E+03	-1.8141E+02	4.6436E+03	-1.8140E+02	5.0008E+03	-1.8138E+02
-1.8162E+02	8.5728E+03	-1.8161E+02	7.8584E+03	-1.8161E+02	3.5720E+03	-1.8160E+02	4.2864E+03	-1.8160E+02	4.6436E+03	-1.8159E+02	5.0008E+03	-1.8158E+02
-1.8181E+02	8.5728E+03	-1.8181E+02	7.8584E+03	-1.8180E+02	3.5720E+03	-1.8180E+02	4.2864E+03	-1.8179E+02	4.6436E+03	-1.8178E+02	5.0008E+03	-1.8177E+02
-1.8200E+02	8.5728E+03	-1.8200E+02	7.8584E+03	-1.8199E+02	3.5720E+03	-1.8199E+02	4.2864E+03	-1.8198E+02	4.6436E+03	-1.8198E+02	5.0008E+03	-1.8196E+02
-1.8220E+02	8.5728E+03	-1.8219E+02	7.8584E+03	-1.8219E+02	3.5720E+03	-1.8218E+02	4.2864E+03	-1.8218E+02	4.6436E+03	-1.8217E+02	5.0008E+03	-1.8215E+02
-1.8239E+02	8.5728E+03	-1.8238E+02	7.8584E+03	-1.8238E+02	3.5720E+03	-1.8237E+02	4.2864E+03	-1.8237E+02	4.6436E+03	-1.8236E+02	5.0008E+03	-1.8235E+02
-1.8258E+02	8.5728E+03	-1.8257E+02	7.8584E+03	-1.8257E+02	3.5720E+03	-1.8256E+02	4.2864E+03	-1.8256E+02	4.6436E+03	-1.8255E+02	5.0008E+03	-1.8254E+02
-1.8277E+02	8.5728E+03	-1.8277E+02	7.8584E+03	-1.8276E+02	3.5720E+03	-1.8275E+02	4.2864E+03	-1.8275E+02	4.6436E+03	-1.8274E+02	5.0008E+03	-1.8273E+02
-1.8296E+02	8.5728E+03	-1.8296E+02	7.8584E+03	-1.8295E+02	3.5720E+03	-1.8295E+02	4.2864E+03	-1.8294E+02	4.6436E+03	-1.8293E+02	5.0008E+03	-1.8292E+02
-1.8315E+02	8.5728E+03	-1.8315E+02	7.8584E+03	-1.8314E+02	3.5720E+03	-1.8314E+02	4.2864E+03	-1.8313E+02	4.6436E+03	-1.8313E+02	5.0008E+03	-1.8311E+02
-1.8334E+02	8.5728E+03	-1.8334E+02	7.8584E+03	-1.8333E+02	3.5720E+03	-1.8333E+02	4.2864E+03	-1.8332E+02	4.6436E+03	-1.8332E+02	5.0008E+03	-1.8330E+02
-1.8353E+02	8.5728E+03	-1.8353E+02	7.8584E+03	-1.8352E+02	3.5720E+03	-1.8352E+02	4.2864E+03	-1.8351E+02	4.6436E+03	-1.8351E+02	5.0008E+03	-1.8349E+02
-1.8372E+02	8.5728E+03	-1.8372E+02	7.8584E+03	-1.8372E+02	3.5720E+03	-1.8371E+02	4.2864E+03	-1.8370E+02	4.6436E+03	-1.8370E+02	5.0008E+03	-1.8368E+02
-1.8392E+02	8.5728E+03	-1.8391E+02	7.8584E+03	-1.8391E+02	3.5720E+03	-1.8390E+02	4.2864E+03	-1.8390E+02	4.6436E+03	-1.8389E+02	5.0008E+03	-1.8387E+02
-1.8411E+02	8.5728E+03	-1.8410E+02	7.8584E+03	-1.8410E+02	3.5720E+03	-1.8409E+02	4.2864E+03	-1.8409E+02	4.6436E+03	-1.8408E+02	5.0008E+03	-1.8406E+02
-1.8429E+02	8.5728E+03	-1.8429E+02	7.8584E+03	-1.8429E+02	3.5720E+03	-1.8428E+02	4.2864E+03	-1.8427E+02	4.6436E+03	-1.8427E+02	5.0008E+03	-1.8425E+02
-1.8448E+02	8.5728E+03	-1.8448E+02	7.8584E+03	-1.8447E+02	3.5720E+03	-1.8447E+02	4.2864E+03	-1.8446E+02	4.6436E+03	-1.8446E+02	5.0008E+03	-1.8444E+02
-1.8467E+02	8.5728E+03	-1.8467E+02	7.8584E+03	-1.8466E+02	3.5720E+03	-1.8466E+02	4.2864E+03	-1.8465E+02	4.6436E+03	-1.8465E+02	5.0008E+03	-1.8463E+02
-1.8486E+02	8.5728E+03	-1.8486E+02	7.8584E+03	-1.8485E+02	3.5720E+03	-1.8485E+02	4.2864E+03	-1.8484E+02	4.6436E+03	-1.8484E+02	5.0008E+03	-1.8482E+02
-1.8505E+02	8.5728E+03	-1.8505E+02	7.8584E+03	-1.8504E+02	3.5720E+03	-1.8504E+02	4.2864E+03	-1.8503E+02	4.6436E+03	-1.8502E+02	5.0008E+03	-1.8501E+02
-1.8524E+02	8.5728E+03	-1.8524E+02	7.8584E+03	-1.8523E+02	3.5720E+03	-1.8522E+02	4.2864E+03	-1.8522E+02	4.6436E+03	-1.8521E+02	5.0008E+03	-1.8520E+02
-1.8543E+02	8.5728E+03	-1.8542E+02	7.8584E+03	-1.8542E+02	3.5720E+03	-1.8541E+02	4.2864E+03	-1.8541E+02	4.6436E+03	-1.8540E+02	5.0008E+03	-1.8539E+02
-1.8562E+02	8.5728E+03	-1.8561E+02	7.8584E+03	-1.8561E+02	3.5720E+03	-1.8560E+02	4.2864E+03	-1.8560E+02	4.6436E+03	-1.8559E+02	5.0008E+03	-1.8558E+02
-1.8581E+02	8.5728E+03	-1.8580E+02	7.8584E+03	-1.8580E+02	3.5720E+03	-1.8579E+02	4.2864E+03	-1.8579E+02	4.6436E+03	-1.8578E+02	5.0008E+03	-1.8576E+02
-1.8599E+02	8.5728E+03	-1.8599E+02	7.8584E+03	-1.8598E+02	3.5720E+03	-1.8598E+02	4.2864E+03	-1.8597E+02	4.6436E+03	-1.8597E+02	5.0008E+03	-1.8595E+02
-1.8618E+02	8.5728E+03	-1.8618E+02	7.8584E+03	-1.8617E+02	3.5720E+03	-1.8617E+02	4.2864E+03	-1.8616E+02	4.6436E+03	-1.8615E+02	5.0008E+03	-1.8614E+02
-1.8637E+02	8.5728E+03	-1.8637E+02	7.8584E+03	-1.8636E+02	3.5720E+03	-1.8635E+02	4.2864E+03	-1.8635E+02	4.6436E+03	-1.8634E+02	5.0008E+03	-1.8633E+02
-1.8656E+02	8.5728E+03	-1.8655E+02	7.8584E+03	-1.8655E+02	3.5720E+03	-1.8654E+02	4.2864E+03	-1.8654E+02	4.6436E+03	-1.8653E+02	5.0008E+03	-1.8652E+02
-1.8674E+02	8.5728E+03	-1.8674E+02	7.8584E+03	-1.8674E+02	3.5720E+03	-1.8673E+02	4.2864E+03	-1.8672E+02	4.6436E+03	-1.8672E+02	5.0008E+03	-1.8670E+02

Curve 13	Arg 14	Curve 14	Arg 15	Curve 15	Arg 16	Curve 16	Arg 17	Curve 17	Arg 18	Curve 18	Arg 19	Curve 19
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
3.7197E+03	-8.0816E-01	4.0560E+03	3.0673E-01	1.4241E+03	2.1953E+00	4.4231E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
3.9292E+03	-7.0169E+00	4.6436E+03	-6.5451E+00	4.2864E+03	-5.8758E+00	4.6436E+03	-3.5453E+00	3.5720E+03	-5.0889E-01	2.7312E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.0674E+01	4.6436E+03	-1.0341E+01	4.2864E+03	-9.8830E+00	4.6436E+03	-8.4239E+00	3.5720E+03	-6.8845E+00	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.3471E+01	4.6436E+03	-1.3203E+01	4.2864E+03	-1.2837E+01	4.6436E+03	-1.1707E+01	3.5720E+03	-1.0579E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.5813E+01	4.6436E+03	-1.5583E+01	4.2864E+03	-1.5271E+01	4.6436E+03	-1.4320E+01	3.5720E+03	-1.3395E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.7863E+01	4.6436E+03	-1.7659E+01	4.2864E+03	-1.7383E+01	4.6436E+03	-1.6548E+01	3.5720E+03	-1.5748E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.9708E+01	4.6436E+03	-1.9522E+01	4.2864E+03	-1.9272E+01	4.6436E+03	-1.8520E+01	3.5720E+03	-1.7805E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-2.1398E+01	4.6436E+03	-2.1227E+01	4.2864E+03	-2.0996E+01	4.6436E+03	-2.0307E+01	3.5720E+03	-1.9655E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-2.2966E+01	4.6436E+03	-2.2807E+01	4.2864E+03	-2.2592E+01	4.6436E+03	-2.1952E+01	3.5720E+03	-2.1349E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-2.4436E+01	4.6436E+03	-2.4286E+01	4.2864E+03	-2.4084E+01	4.6436E+03	-2.3484E+01	3.5720E+03	-2.2921E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-2.5822E+01	4.6436E+03	-2.5680E+01	4.2864E+03	-2.5490E+01	4.6436E+03	-2.4923E+01	3.5720E+03	-2.4393E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-2.7139E+01	4.6436E+03	-2.7004E+01	4.2864E+03	-2.6823E+01	4.6436E+03	-2.6284E+01	3.5720E+03	-2.5782E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-2.8395E+01	4.6436E+03	-2.8266E+01	4.2864E+03	-2.8093E+01	4.6436E+03	-2.7579E+01	3.5720E+03	-2.7101E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-2.9599E+01	4.6436E+03	-2.9475E+01	4.2864E+03	-2.9309E+01	4.6436E+03	-2.8816E+01	3.5720E+03	-2.8359E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-3.0755E+01	4.6436E+03	-3.0636E+01	4.2864E+03	-3.0476E+01	4.6436E+03	-3.0003E+01	3.5720E+03	-2.9563E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-3.1870E+01	4.6436E+03	-3.1755E+01	4.2864E+03	-3.1601E+01	4.6436E+03	-3.1145E+01	3.5720E+03	-3.0721E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-3.2948E+01	4.6436E+03	-3.2836E+01	4.2864E+03	-3.2687E+01	4.6436E+03	-3.2246E+01	3.5720E+03	-3.1837E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-3.3991E+01	4.6436E+03	-3.3883E+01	4.2864E+03	-3.3738E+01	4.6436E+03	-3.3311E+01	3.5720E+03	-3.2916E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-3.5003E+01	4.6436E+03	-3.4899E+01	4.2864E+03	-3.4758E+01	4.6436E+03	-3.4344E+01	3.5720E+03	-3.3960E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-3.5987E+01	4.6436E+03	-3.5885E+01	4.2864E+03	-3.5749E+01	4.6436E+03	-3.5346E+01	3.5720E+03	-3.4973E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-3.6945E+01	4.6436E+03	-3.6846E+01	4.2864E+03	-3.6713E+01	4.6436E+03	-3.6321E+01	3.5720E+03	-3.5958E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-3.7879E+01	4.6436E+03	-3.7782E+01	4.2864E+03	-3.7653E+01	4.6436E+03	-3.7270E+01	3.5720E+03	-3.6917E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-3.8791E+01	4.6436E+03	-3.8696E+01	4.2864E+03	-3.8569E+01	4.6436E+03	-3.8196E+01	3.5720E+03	-3.7851E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-3.9681E+01	4.6436E+03	-3.9588E+01	4.2864E+03	-3.9465E+01	4.6436E+03	-3.9100E+01	3.5720E+03	-3.8764E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-4.0552E+01	4.6436E+03	-4.0461E+01	4.2864E+03	-4.0340E+01	4.6436E+03	-3.9984E+01	3.5720E+03	-3.9655E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-4.1405E+01	4.6436E+03	-4.1316E+01	4.2864E+03	-4.1197E+01	4.6436E+03	-4.0848E+01	3.5720E+03	-4.0526E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-4.2240E+01	4.6436E+03	-4.2153E+01	4.2864E+03	-4.2037E+01	4.6436E+03	-4.1695E+01	3.5720E+03	-4.1379E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-4.3060E+01	4.6436E+03	-4.2974E+01	4.2864E+03	-4.2860E+01	4.6436E+03	-4.2525E+01	3.5720E+03	-4.2215E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-4.3864E+01	4.6436E+03	-4.3780E+01	4.2864E+03	-4.3668E+01	4.6436E+03	-4.3339E+01	3.5720E+03	-4.3035E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-4.4653E+01	4.6436E+03	-4.4571E+01	4.2864E+03	-4.4461E+01	4.6436E+03	-4.4138E+01	3.5720E+03	-4.3840E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-4.5429E+01	4.6436E+03	-4.5348E+01	4.2864E+03	-4.5240E+01	4.6436E+03	-4.4922E+01	3.5720E+03	-4.4630E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-4.6192E+01	4.6436E+03	-4.6112E+01	4.2864E+03	-4.6006E+01	4.6436E+03	-4.5694E+01	3.5720E+03	-4.5406E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-4.6943E+01	4.6436E+03	-4.6864E+01	4.2864E+03	-4.6760E+01	4.6436E+03	-4.6452E+01	3.5720E+03	-4.6169E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-4.7681E+01	4.6436E+03	-4.7604E+01	4.2864E+03	-4.7501E+01	4.6436E+03	-4.7199E+01	3.5720E+03	-4.6920E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-4.8409E+01	4.6436E+03	-4.8333E+01	4.2864E+03	-4.8231E+01	4.6436E+03	-4.7933E+01	3.5720E+03	-4.7659E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-4.9125E+01	4.6436E+03	-4.9051E+01	4.2864E+03	-4.8951E+01	4.6436E+03	-4.8657E+01	3.5720E+03	-4.8387E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-4.9832E+01	4.6436E+03	-4.9758E+01	4.2864E+03	-4.9660E+01	4.6436E+03	-4.9370E+01	3.5720E+03	-4.9104E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-5.0528E+01	4.6436E+03	-5.0456E+01	4.2864E+03	-5.0359E+01	4.6436E+03	-5.0073E+01	3.5720E+03	-4.9811E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-5.1215E+01	4.6436E+03	-5.1144E+01	4.2864E+03	-5.1048E+01	4.6436E+03	-5.0766E+01	3.5720E+03	-5.0508E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-5.1893E+01	4.6436E+03	-5.1823E+01	4.2864E+03	-5.1728E+01	4.6436E+03	-5.1450E+01	3.5720E+03	-5.1195E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-5.2563E+01	4.6436E+03	-5.2493E+01	4.2864E+03	-5.2399E+01	4.6436E+03	-5.2125E+01	3.5720E+03	-5.1873E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-5.3223E+01	4.6436E+03	-5.3154E+01	4.2864E+03	-5.3062E+01	4.6436E+03	-5.2791E+01	3.5720E+03	-5.2543E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-5.3876E+01	4.6436E+03	-5.3808E+01	4.2864E+03	-5.3717E+01	4.6436E+03	-5.3449E+01	3.5720E+03	-5.3204E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-5.4521E+01	4.6436E+03	-5.4454E+01	4.2864E+03	-5.4364E+01	4.6436E+03	-5.4100E+01	3.5720E+03	-5.3857E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-5.5158E+01	4.6436E+03	-5.5092E+01	4.2864E+03	-5.5003E+01	4.6436E+03	-5.4742E+01	3.5720E+03	-5.4502E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-5.5789E+01	4.6436E+03	-5.5723E+01	4.2864E+03	-5.5635E+01	4.6436E+03	-5.5377E+01	3.5720E+03	-5.5139E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-5.6412E+01	4.6436E+03	-5.6347E+01	4.2864E+03	-5.6260E+01	4.6436E+03	-5.6004E+01	3.5720E+03	-5.5770E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-5.7028E+01	4.6436E+03	-5.6964E+01	4.2864E+03	-5.6878E+01	4.6436E+03	-5.6625E+01	3.5720E+03	-5.6393E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-5.7638E+01	4.6436E+03	-5.7574E+01	4.2864E+03	-5.7489E+01	4.6436E+03	-5.7239E+01	3.5720E+03	-5.7010E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-5.8241E+01	4.6436E+03	-5.8178E+01	4.2864E+03	-5.8094E+01	4.6436E+03	-5.7846E+01	3.5720E+03	-5.7619E+01	3.5743E+04	0.0000E+00	0.0000E+00

Curve 13	Arg 14	Curve 14	Arg 15	Curve 15	Arg 16	Curve 16	Arg 17	Curve 17	Arg 18	Curve 18	Arg 19	Curve 19
3.9292E+03	-5.8838E+01	4.6436E+03	-5.8776E+01	4.2864E+03	-5.8692E+01	4.6436E+03	-5.8448E+01	3.5720E+03	-5.8223E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-5.9429E+01	4.6436E+03	-5.9367E+01	4.2864E+03	-5.9285E+01	4.6436E+03	-5.9043E+01	3.5720E+03	-5.8820E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-6.0014E+01	4.6436E+03	-5.9953E+01	4.2864E+03	-5.9872E+01	4.6436E+03	-5.9632E+01	3.5720E+03	-5.9412E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-6.0594E+01	4.6436E+03	-6.0534E+01	4.2864E+03	-6.0453E+01	4.6436E+03	-6.0215E+01	3.5720E+03	-5.9997E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-6.1168E+01	4.6436E+03	-6.1108E+01	4.2864E+03	-6.1028E+01	4.6436E+03	-6.0793E+01	3.5720E+03	-6.0577E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-6.1737E+01	4.6436E+03	-6.1678E+01	4.2864E+03	-6.1598E+01	4.6436E+03	-6.1365E+01	3.5720E+03	-6.1151E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-6.2301E+01	4.6436E+03	-6.2242E+01	4.2864E+03	-6.2163E+01	4.6436E+03	-6.1932E+01	3.5720E+03	-6.1720E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-6.2859E+01	4.6436E+03	-6.2801E+01	4.2864E+03	-6.2723E+01	4.6436E+03	-6.2494E+01	3.5720E+03	-6.2284E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-6.3413E+01	4.6436E+03	-6.3355E+01	4.2864E+03	-6.3278E+01	4.6436E+03	-6.3051E+01	3.5720E+03	-6.2843E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-6.3962E+01	4.6436E+03	-6.3905E+01	4.2864E+03	-6.3828E+01	4.6436E+03	-6.3603E+01	3.5720E+03	-6.3397E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-6.4506E+01	4.6436E+03	-6.4449E+01	4.2864E+03	-6.4373E+01	4.6436E+03	-6.4150E+01	3.5720E+03	-6.3946E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-6.5046E+01	4.6436E+03	-6.4989E+01	4.2864E+03	-6.4914E+01	4.6436E+03	-6.4693E+01	3.5720E+03	-6.4490E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-6.5581E+01	4.6436E+03	-6.5525E+01	4.2864E+03	-6.5450E+01	4.6436E+03	-6.5231E+01	3.5720E+03	-6.5030E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-6.6112E+01	4.6436E+03	-6.6056E+01	4.2864E+03	-6.5982E+01	4.6436E+03	-6.5765E+01	3.5720E+03	-6.5565E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-6.6639E+01	4.6436E+03	-6.6583E+01	4.2864E+03	-6.6510E+01	4.6436E+03	-6.6294E+01	3.5720E+03	-6.6096E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-6.7161E+01	4.6436E+03	-6.7106E+01	4.2864E+03	-6.7033E+01	4.6436E+03	-6.6819E+01	3.5720E+03	-6.6623E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-6.7680E+01	4.6436E+03	-6.7625E+01	4.2864E+03	-6.7553E+01	4.6436E+03	-6.7340E+01	3.5720E+03	-6.7146E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-6.8194E+01	4.6436E+03	-6.8140E+01	4.2864E+03	-6.8068E+01	4.6436E+03	-6.7858E+01	3.5720E+03	-6.7664E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-6.8705E+01	4.6436E+03	-6.8651E+01	4.2864E+03	-6.8580E+01	4.6436E+03	-6.8371E+01	3.5720E+03	-6.8179E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-6.9212E+01	4.6436E+03	-6.9159E+01	4.2864E+03	-6.9088E+01	4.6436E+03	-6.8880E+01	3.5720E+03	-6.8690E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-6.9715E+01	4.6436E+03	-6.9662E+01	4.2864E+03	-6.9592E+01	4.6436E+03	-6.9386E+01	3.5720E+03	-6.9197E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-7.0215E+01	4.6436E+03	-7.0162E+01	4.2864E+03	-7.0093E+01	4.6436E+03	-6.9888E+01	3.5720E+03	-6.9700E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-7.0711E+01	4.6436E+03	-7.0659E+01	4.2864E+03	-7.0590E+01	4.6436E+03	-7.0386E+01	3.5720E+03	-7.0200E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-7.1204E+01	4.6436E+03	-7.1152E+01	4.2864E+03	-7.1083E+01	4.6436E+03	-7.0881E+01	3.5720E+03	-7.0696E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-7.1693E+01	4.6436E+03	-7.1642E+01	4.2864E+03	-7.1573E+01	4.6436E+03	-7.1373E+01	3.5720E+03	-7.1189E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-7.2179E+01	4.6436E+03	-7.2128E+01	4.2864E+03	-7.2060E+01	4.6436E+03	-7.1861E+01	3.5720E+03	-7.1678E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-7.2661E+01	4.6436E+03	-7.2611E+01	4.2864E+03	-7.2544E+01	4.6436E+03	-7.2346E+01	3.5720E+03	-7.2164E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-7.3141E+01	4.6436E+03	-7.3091E+01	4.2864E+03	-7.3024E+01	4.6436E+03	-7.2827E+01	3.5720E+03	-7.2647E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-7.3617E+01	4.6436E+03	-7.3568E+01	4.2864E+03	-7.3501E+01	4.6436E+03	-7.3306E+01	3.5720E+03	-7.3127E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-7.4091E+01	4.6436E+03	-7.4041E+01	4.2864E+03	-7.3975E+01	4.6436E+03	-7.3781E+01	3.5720E+03	-7.3603E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-7.4561E+01	4.6436E+03	-7.4512E+01	4.2864E+03	-7.4446E+01	4.6436E+03	-7.4253E+01	3.5720E+03	-7.4077E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-7.5028E+01	4.6436E+03	-7.4980E+01	4.2864E+03	-7.4914E+01	4.6436E+03	-7.4723E+01	3.5720E+03	-7.4547E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-7.5493E+01	4.6436E+03	-7.5444E+01	4.2864E+03	-7.5379E+01	4.6436E+03	-7.5189E+01	3.5720E+03	-7.5015E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-7.5955E+01	4.6436E+03	-7.5906E+01	4.2864E+03	-7.5842E+01	4.6436E+03	-7.5653E+01	3.5720E+03	-7.5479E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-7.6414E+01	4.6436E+03	-7.6365E+01	4.2864E+03	-7.6301E+01	4.6436E+03	-7.6113E+01	3.5720E+03	-7.5941E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-7.6870E+01	4.6436E+03	-7.6822E+01	4.2864E+03	-7.6758E+01	4.6436E+03	-7.6571E+01	3.5720E+03	-7.6400E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-7.7323E+01	4.6436E+03	-7.7276E+01	4.2864E+03	-7.7212E+01	4.6436E+03	-7.7026E+01	3.5720E+03	-7.6856E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-7.7774E+01	4.6436E+03	-7.7727E+01	4.2864E+03	-7.7664E+01	4.6436E+03	-7.7479E+01	3.5720E+03	-7.7310E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-7.8222E+01	4.6436E+03	-7.8175E+01	4.2864E+03	-7.8113E+01	4.6436E+03	-7.7929E+01	3.5720E+03	-7.7760E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-7.8668E+01	4.6436E+03	-7.8621E+01	4.2864E+03	-7.8559E+01	4.6436E+03	-7.8376E+01	3.5720E+03	-7.8209E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-7.9111E+01	4.6436E+03	-7.9064E+01	4.2864E+03	-7.9003E+01	4.6436E+03	-7.8821E+01	3.5720E+03	-7.8654E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-7.9552E+01	4.6436E+03	-7.9505E+01	4.2864E+03	-7.9444E+01	4.6436E+03	-7.9263E+01	3.5720E+03	-7.9098E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-7.9990E+01	4.6436E+03	-7.9944E+01	4.2864E+03	-7.9883E+01	4.6436E+03	-7.9703E+01	3.5720E+03	-7.9538E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-8.0426E+01	4.6436E+03	-8.0380E+01	4.2864E+03	-8.0319E+01	4.6436E+03	-8.0140E+01	3.5720E+03	-7.9977E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-8.0859E+01	4.6436E+03	-8.0814E+01	4.2864E+03	-8.0753E+01	4.6436E+03	-8.0575E+01	3.5720E+03	-8.0413E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-8.1290E+01	4.6436E+03	-8.1245E+01	4.2864E+03	-8.1185E+01	4.6436E+03	-8.1008E+01	3.5720E+03	-8.0846E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-8.1719E+01	4.6436E+03	-8.1674E+01	4.2864E+03	-8.1614E+01	4.6436E+03	-8.1439E+01	3.5720E+03	-8.1277E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-8.2146E+01	4.6436E+03	-8.2101E+01	4.2864E+03	-8.2042E+01	4.6436E+03	-8.1867E+01	3.5720E+03	-8.1706E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-8.2570E+01	4.6436E+03	-8.2526E+01	4.2864E+03	-8.2467E+01	4.6436E+03	-8.2293E+01	3.5720E+03	-8.2133E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-8.2993E+01	4.6436E+03	-8.2948E+01	4.2864E+03	-8.2889E+01	4.6436E+03	-8.2716E+01	3.5720E+03	-8.2558E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-8.3413E+01	4.6436E+03	-8.3369E+01	4.2864E+03	-8.3310E+01	4.6436E+03	-8.3138E+01	3.5720E+03	-8.2980E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-8.3831E+01	4.6436E+03	-8.3787E+01	4.2864E+03	-8.3729E+01	4.6436E+03	-8.3557E+01	3.5720E+03	-8.3400E+01	3.5743E+04	0.0000E+00	0.0000E+00

Curve 13	Arg 14	Curve 14	Arg 15	Curve 15	Arg 16	Curve 16	Arg 17	Curve 17	Arg 18	Curve 18	Arg 19	Curve 19
3.9292E+03	-8.4247E+01	4.6436E+03	-8.4203E+01	4.2864E+03	-8.4145E+01	4.6436E+03	-8.3975E+01	3.5720E+03	-8.3818E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-8.4661E+01	4.6436E+03	-8.4617E+01	4.2864E+03	-8.4560E+01	4.6436E+03	-8.4390E+01	3.5720E+03	-8.4234E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-8.5073E+01	4.6436E+03	-8.5030E+01	4.2864E+03	-8.4972E+01	4.6436E+03	-8.4803E+01	3.5720E+03	-8.4648E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-8.5483E+01	4.6436E+03	-8.5440E+01	4.2864E+03	-8.5382E+01	4.6436E+03	-8.5214E+01	3.5720E+03	-8.5060E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-8.5891E+01	4.6436E+03	-8.5848E+01	4.2864E+03	-8.5791E+01	4.6436E+03	-8.5624E+01	3.5720E+03	-8.5470E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-8.6297E+01	4.6436E+03	-8.6254E+01	4.2864E+03	-8.6197E+01	4.6436E+03	-8.6031E+01	3.5720E+03	-8.5879E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-8.6701E+01	4.6436E+03	-8.6659E+01	4.2864E+03	-8.6602E+01	4.6436E+03	-8.6436E+01	3.5720E+03	-8.6285E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-8.7103E+01	4.6436E+03	-8.7061E+01	4.2864E+03	-8.7005E+01	4.6436E+03	-8.6840E+01	3.5720E+03	-8.6689E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-8.7504E+01	4.6436E+03	-8.7462E+01	4.2864E+03	-8.7406E+01	4.6436E+03	-8.7242E+01	3.5720E+03	-8.7091E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-8.7902E+01	4.6436E+03	-8.7860E+01	4.2864E+03	-8.7805E+01	4.6436E+03	-8.7641E+01	3.5720E+03	-8.7492E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-8.8299E+01	4.6436E+03	-8.8257E+01	4.2864E+03	-8.8202E+01	4.6436E+03	-8.8039E+01	3.5720E+03	-8.7890E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-8.8694E+01	4.6436E+03	-8.8653E+01	4.2864E+03	-8.8597E+01	4.6436E+03	-8.8436E+01	3.5720E+03	-8.8287E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-8.9087E+01	4.6436E+03	-8.9046E+01	4.2864E+03	-8.8991E+01	4.6436E+03	-8.8830E+01	3.5720E+03	-8.8682E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-8.9479E+01	4.6436E+03	-8.9438E+01	4.2864E+03	-8.9383E+01	4.6436E+03	-8.9223E+01	3.5720E+03	-8.9076E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-8.9869E+01	4.6436E+03	-8.9828E+01	4.2864E+03	-8.9773E+01	4.6436E+03	-8.9614E+01	3.5720E+03	-8.9467E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-9.0257E+01	4.6436E+03	-9.0216E+01	4.2864E+03	-9.0162E+01	4.6436E+03	-9.0003E+01	3.5720E+03	-8.9857E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-9.0643E+01	4.6436E+03	-9.0603E+01	4.2864E+03	-9.0549E+01	4.6436E+03	-9.0390E+01	3.5720E+03	-9.0245E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-9.1028E+01	4.6436E+03	-9.0988E+01	4.2864E+03	-9.0934E+01	4.6436E+03	-9.0776E+01	3.5720E+03	-9.0632E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-9.1412E+01	4.6436E+03	-9.1371E+01	4.2864E+03	-9.1318E+01	4.6436E+03	-9.1161E+01	3.5720E+03	-9.1017E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-9.1793E+01	4.6436E+03	-9.1753E+01	4.2864E+03	-9.1700E+01	4.6436E+03	-9.1543E+01	3.5720E+03	-9.1400E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-9.2173E+01	4.6436E+03	-9.2133E+01	4.2864E+03	-9.2080E+01	4.6436E+03	-9.1925E+01	3.5720E+03	-9.1782E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-9.2552E+01	4.6436E+03	-9.2512E+01	4.2864E+03	-9.2459E+01	4.6436E+03	-9.2304E+01	3.5720E+03	-9.2162E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-9.2929E+01	4.6436E+03	-9.2889E+01	4.2864E+03	-9.2837E+01	4.6436E+03	-9.2682E+01	3.5720E+03	-9.2540E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-9.3304E+01	4.6436E+03	-9.3265E+01	4.2864E+03	-9.3212E+01	4.6436E+03	-9.3058E+01	3.5720E+03	-9.2917E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-9.3678E+01	4.6436E+03	-9.3639E+01	4.2864E+03	-9.3587E+01	4.6436E+03	-9.3433E+01	3.5720E+03	-9.3293E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-9.4051E+01	4.6436E+03	-9.4012E+01	4.2864E+03	-9.3959E+01	4.6436E+03	-9.3807E+01	3.5720E+03	-9.3667E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-9.4422E+01	4.6436E+03	-9.4383E+01	4.2864E+03	-9.4331E+01	4.6436E+03	-9.4179E+01	3.5720E+03	-9.4039E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-9.4791E+01	4.6436E+03	-9.4752E+01	4.2864E+03	-9.4701E+01	4.6436E+03	-9.4549E+01	3.5720E+03	-9.4410E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-9.5159E+01	4.6436E+03	-9.5121E+01	4.2864E+03	-9.5069E+01	4.6436E+03	-9.4918E+01	3.5720E+03	-9.4780E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-9.5526E+01	4.6436E+03	-9.5487E+01	4.2864E+03	-9.5436E+01	4.6436E+03	-9.5286E+01	3.5720E+03	-9.5148E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-9.5891E+01	4.6436E+03	-9.5853E+01	4.2864E+03	-9.5802E+01	4.6436E+03	-9.5652E+01	3.5720E+03	-9.5515E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-9.6255E+01	4.6436E+03	-9.6217E+01	4.2864E+03	-9.6166E+01	4.6436E+03	-9.6017E+01	3.5720E+03	-9.5880E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-9.6617E+01	4.6436E+03	-9.6579E+01	4.2864E+03	-9.6529E+01	4.6436E+03	-9.6380E+01	3.5720E+03	-9.6244E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-9.6979E+01	4.6436E+03	-9.6941E+01	4.2864E+03	-9.6890E+01	4.6436E+03	-9.6742E+01	3.5720E+03	-9.6607E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-9.7338E+01	4.6436E+03	-9.7301E+01	4.2864E+03	-9.7250E+01	4.6436E+03	-9.7103E+01	3.5720E+03	-9.6968E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-9.7697E+01	4.6436E+03	-9.7659E+01	4.2864E+03	-9.7609E+01	4.6436E+03	-9.7462E+01	3.5720E+03	-9.7328E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-9.8054E+01	4.6436E+03	-9.8017E+01	4.2864E+03	-9.7967E+01	4.6436E+03	-9.7820E+01	3.5720E+03	-9.7686E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-9.8410E+01	4.6436E+03	-9.8373E+01	4.2864E+03	-9.8323E+01	4.6436E+03	-9.8177E+01	3.5720E+03	-9.8043E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-9.8765E+01	4.6436E+03	-9.8727E+01	4.2864E+03	-9.8678E+01	4.6436E+03	-9.8533E+01	3.5720E+03	-9.8399E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-9.9118E+01	4.6436E+03	-9.9081E+01	4.2864E+03	-9.9032E+01	4.6436E+03	-9.8887E+01	3.5720E+03	-9.8754E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-9.9470E+01	4.6436E+03	-9.9433E+01	4.2864E+03	-9.9384E+01	4.6436E+03	-9.9240E+01	3.5720E+03	-9.9107E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-9.9821E+01	4.6436E+03	-9.9784E+01	4.2864E+03	-9.9735E+01	4.6436E+03	-9.9591E+01	3.5720E+03	-9.9460E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.0017E+02	4.6436E+03	-1.0013E+02	4.2864E+03	-1.0008E+02	4.6436E+03	-9.9942E+01	3.5720E+03	-9.9810E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.0052E+02	4.6436E+03	-1.0048E+02	4.2864E+03	-1.0043E+02	4.6436E+03	-1.0029E+02	3.5720E+03	-1.0016E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.0087E+02	4.6436E+03	-1.0083E+02	4.2864E+03	-1.0078E+02	4.6436E+03	-1.0064E+02	3.5720E+03	-1.0051E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.0121E+02	4.6436E+03	-1.0118E+02	4.2864E+03	-1.0113E+02	4.6436E+03	-1.0099E+02	3.5720E+03	-1.0086E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.0156E+02	4.6436E+03	-1.0152E+02	4.2864E+03	-1.0147E+02	4.6436E+03	-1.0133E+02	3.5720E+03	-1.0120E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.0190E+02	4.6436E+03	-1.0186E+02	4.2864E+03	-1.0182E+02	4.6436E+03	-1.0168E+02	3.5720E+03	-1.0155E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.0224E+02	4.6436E+03	-1.0221E+02	4.2864E+03	-1.0216E+02	4.6436E+03	-1.0202E+02	3.5720E+03	-1.0189E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.0258E+02	4.6436E+03	-1.0255E+02	4.2864E+03	-1.0250E+02	4.6436E+03	-1.0236E+02	3.5720E+03	-1.0223E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.0292E+02	4.6436E+03	-1.0289E+02	4.2864E+03	-1.0284E+02	4.6436E+03	-1.0270E+02	3.5720E+03	-1.0257E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.0326E+02	4.6436E+03	-1.0323E+02	4.2864E+03	-1.0318E+02	4.6436E+03	-1.0304E+02	3.5720E+03	-1.0291E+02	3.5743E+04	0.0000E+00	0.0000E+00

Curve 13	Arg 14	Curve 14	Arg 15	Curve 15	Arg 16	Curve 16	Arg 17	Curve 17	Arg 18	Curve 18	Arg 19	Curve 19
3.9292E+03	-1.0360E+02	4.6436E+03	-1.0357E+02	4.2864E+03	-1.0352E+02	4.6436E+03	-1.0338E+02	3.5720E+03	-1.0325E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.0394E+02	4.6436E+03	-1.0390E+02	4.2864E+03	-1.0386E+02	4.6436E+03	-1.0372E+02	3.5720E+03	-1.0359E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.0427E+02	4.6436E+03	-1.0424E+02	4.2864E+03	-1.0419E+02	4.6436E+03	-1.0405E+02	3.5720E+03	-1.0393E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.0461E+02	4.6436E+03	-1.0457E+02	4.2864E+03	-1.0453E+02	4.6436E+03	-1.0439E+02	3.5720E+03	-1.0426E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.0494E+02	4.6436E+03	-1.0491E+02	4.2864E+03	-1.0486E+02	4.6436E+03	-1.0472E+02	3.5720E+03	-1.0460E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.0528E+02	4.6436E+03	-1.0524E+02	4.2864E+03	-1.0519E+02	4.6436E+03	-1.0506E+02	3.5720E+03	-1.0493E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.0561E+02	4.6436E+03	-1.0557E+02	4.2864E+03	-1.0553E+02	4.6436E+03	-1.0539E+02	3.5720E+03	-1.0527E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.0594E+02	4.6436E+03	-1.0590E+02	4.2864E+03	-1.0586E+02	4.6436E+03	-1.0572E+02	3.5720E+03	-1.0560E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.0627E+02	4.6436E+03	-1.0623E+02	4.2864E+03	-1.0619E+02	4.6436E+03	-1.0605E+02	3.5720E+03	-1.0593E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.0660E+02	4.6436E+03	-1.0656E+02	4.2864E+03	-1.0652E+02	4.6436E+03	-1.0638E+02	3.5720E+03	-1.0626E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.0692E+02	4.6436E+03	-1.0689E+02	4.2864E+03	-1.0684E+02	4.6436E+03	-1.0671E+02	3.5720E+03	-1.0659E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.0725E+02	4.6436E+03	-1.0722E+02	4.2864E+03	-1.0717E+02	4.6436E+03	-1.0704E+02	3.5720E+03	-1.0691E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.0757E+02	4.6436E+03	-1.0754E+02	4.2864E+03	-1.0750E+02	4.6436E+03	-1.0736E+02	3.5720E+03	-1.0724E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.0790E+02	4.6436E+03	-1.0787E+02	4.2864E+03	-1.0782E+02	4.6436E+03	-1.0769E+02	3.5720E+03	-1.0757E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.0822E+02	4.6436E+03	-1.0819E+02	4.2864E+03	-1.0814E+02	4.6436E+03	-1.0801E+02	3.5720E+03	-1.0789E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.0855E+02	4.6436E+03	-1.0851E+02	4.2864E+03	-1.0847E+02	4.6436E+03	-1.0833E+02	3.5720E+03	-1.0821E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.0887E+02	4.6436E+03	-1.0883E+02	4.2864E+03	-1.0879E+02	4.6436E+03	-1.0866E+02	3.5720E+03	-1.0854E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.0919E+02	4.6436E+03	-1.0915E+02	4.2864E+03	-1.0911E+02	4.6436E+03	-1.0898E+02	3.5720E+03	-1.0886E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.0951E+02	4.6436E+03	-1.0947E+02	4.2864E+03	-1.0943E+02	4.6436E+03	-1.0930E+02	3.5720E+03	-1.0918E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.0983E+02	4.6436E+03	-1.0979E+02	4.2864E+03	-1.0975E+02	4.6436E+03	-1.0962E+02	3.5720E+03	-1.0950E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.1014E+02	4.6436E+03	-1.1011E+02	4.2864E+03	-1.1007E+02	4.6436E+03	-1.0994E+02	3.5720E+03	-1.0982E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.1046E+02	4.6436E+03	-1.1043E+02	4.2864E+03	-1.1038E+02	4.6436E+03	-1.1025E+02	3.5720E+03	-1.1013E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.1078E+02	4.6436E+03	-1.1074E+02	4.2864E+03	-1.1070E+02	4.6436E+03	-1.1057E+02	3.5720E+03	-1.1045E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.1109E+02	4.6436E+03	-1.1106E+02	4.2864E+03	-1.1102E+02	4.6436E+03	-1.1089E+02	3.5720E+03	-1.1077E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.1141E+02	4.6436E+03	-1.1137E+02	4.2864E+03	-1.1133E+02	4.6436E+03	-1.1120E+02	3.5720E+03	-1.1108E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.1172E+02	4.6436E+03	-1.1169E+02	4.2864E+03	-1.1164E+02	4.6436E+03	-1.1151E+02	3.5720E+03	-1.1140E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.1203E+02	4.6436E+03	-1.1200E+02	4.2864E+03	-1.1196E+02	4.6436E+03	-1.1183E+02	3.5720E+03	-1.1171E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.1234E+02	4.6436E+03	-1.1231E+02	4.2864E+03	-1.1227E+02	4.6436E+03	-1.1214E+02	3.5720E+03	-1.1202E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.1265E+02	4.6436E+03	-1.1262E+02	4.2864E+03	-1.1258E+02	4.6436E+03	-1.1245E+02	3.5720E+03	-1.1233E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.1296E+02	4.6436E+03	-1.1293E+02	4.2864E+03	-1.1289E+02	4.6436E+03	-1.1276E+02	3.5720E+03	-1.1265E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.1327E+02	4.6436E+03	-1.1324E+02	4.2864E+03	-1.1320E+02	4.6436E+03	-1.1307E+02	3.5720E+03	-1.1296E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.1358E+02	4.6436E+03	-1.1355E+02	4.2864E+03	-1.1351E+02	4.6436E+03	-1.1338E+02	3.5720E+03	-1.1326E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.1389E+02	4.6436E+03	-1.1386E+02	4.2864E+03	-1.1381E+02	4.6436E+03	-1.1369E+02	3.5720E+03	-1.1357E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.1420E+02	4.6436E+03	-1.1416E+02	4.2864E+03	-1.1412E+02	4.6436E+03	-1.1400E+02	3.5720E+03	-1.1388E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.1450E+02	4.6436E+03	-1.1447E+02	4.2864E+03	-1.1443E+02	4.6436E+03	-1.1430E+02	3.5720E+03	-1.1419E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.1481E+02	4.6436E+03	-1.1477E+02	4.2864E+03	-1.1473E+02	4.6436E+03	-1.1461E+02	3.5720E+03	-1.1449E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.1511E+02	4.6436E+03	-1.1508E+02	4.2864E+03	-1.1504E+02	4.6436E+03	-1.1491E+02	3.5720E+03	-1.1480E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.1541E+02	4.6436E+03	-1.1538E+02	4.2864E+03	-1.1534E+02	4.6436E+03	-1.1522E+02	3.5720E+03	-1.1510E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.1572E+02	4.6436E+03	-1.1568E+02	4.2864E+03	-1.1564E+02	4.6436E+03	-1.1552E+02	3.5720E+03	-1.1540E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.1602E+02	4.6436E+03	-1.1599E+02	4.2864E+03	-1.1594E+02	4.6436E+03	-1.1582E+02	3.5720E+03	-1.1571E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.1632E+02	4.6436E+03	-1.1629E+02	4.2864E+03	-1.1625E+02	4.6436E+03	-1.1612E+02	3.5720E+03	-1.1601E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.1662E+02	4.6436E+03	-1.1659E+02	4.2864E+03	-1.1655E+02	4.6436E+03	-1.1642E+02	3.5720E+03	-1.1631E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.1692E+02	4.6436E+03	-1.1689E+02	4.2864E+03	-1.1685E+02	4.6436E+03	-1.1672E+02	3.5720E+03	-1.1661E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.1722E+02	4.6436E+03	-1.1719E+02	4.2864E+03	-1.1714E+02	4.6436E+03	-1.1702E+02	3.5720E+03	-1.1691E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.1752E+02	4.6436E+03	-1.1748E+02	4.2864E+03	-1.1744E+02	4.6436E+03	-1.1732E+02	3.5720E+03	-1.1721E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.1781E+02	4.6436E+03	-1.1778E+02	4.2864E+03	-1.1774E+02	4.6436E+03	-1.1762E+02	3.5720E+03	-1.1751E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.1811E+02	4.6436E+03	-1.1808E+02	4.2864E+03	-1.1804E+02	4.6436E+03	-1.1791E+02	3.5720E+03	-1.1780E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.1840E+02	4.6436E+03	-1.1837E+02	4.2864E+03	-1.1833E+02	4.6436E+03	-1.1821E+02	3.5720E+03	-1.1810E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.1870E+02	4.6436E+03	-1.1867E+02	4.2864E+03	-1.1863E+02	4.6436E+03	-1.1851E+02	3.5720E+03	-1.1840E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.1899E+02	4.6436E+03	-1.1896E+02	4.2864E+03	-1.1892E+02	4.6436E+03	-1.1880E+02	3.5720E+03	-1.1869E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.1929E+02	4.6436E+03	-1.1926E+02	4.2864E+03	-1.1921E+02	4.6436E+03	-1.1909E+02	3.5720E+03	-1.1898E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.1958E+02	4.6436E+03	-1.1955E+02	4.2864E+03	-1.1951E+02	4.6436E+03	-1.1939E+02	3.5720E+03	-1.1928E+02	3.5743E+04	0.0000E+00	0.0000E+00

Curve 13	Arg 14	Curve 14	Arg 15	Curve 15	Arg 16	Curve 16	Arg 17	Curve 17	Arg 18	Curve 18	Arg 19	Curve 19
3.9292E+03	-1.1987E+02	4.6436E+03	-1.1984E+02	4.2864E+03	-1.1980E+02	4.6436E+03	-1.1968E+02	3.5720E+03	-1.1957E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.2016E+02	4.6436E+03	-1.2013E+02	4.2864E+03	-1.2009E+02	4.6436E+03	-1.1997E+02	3.5720E+03	-1.1986E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.2045E+02	4.6436E+03	-1.2042E+02	4.2864E+03	-1.2038E+02	4.6436E+03	-1.2026E+02	3.5720E+03	-1.2015E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.2074E+02	4.6436E+03	-1.2071E+02	4.2864E+03	-1.2067E+02	4.6436E+03	-1.2055E+02	3.5720E+03	-1.2044E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.2103E+02	4.6436E+03	-1.2100E+02	4.2864E+03	-1.2096E+02	4.6436E+03	-1.2084E+02	3.5720E+03	-1.2073E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.2132E+02	4.6436E+03	-1.2129E+02	4.2864E+03	-1.2125E+02	4.6436E+03	-1.2113E+02	3.5720E+03	-1.2102E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.2161E+02	4.6436E+03	-1.2158E+02	4.2864E+03	-1.2154E+02	4.6436E+03	-1.2142E+02	3.5720E+03	-1.2131E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.2190E+02	4.6436E+03	-1.2187E+02	4.2864E+03	-1.2183E+02	4.6436E+03	-1.2171E+02	3.5720E+03	-1.2160E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.2218E+02	4.6436E+03	-1.2215E+02	4.2864E+03	-1.2211E+02	4.6436E+03	-1.2199E+02	3.5720E+03	-1.2189E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.2247E+02	4.6436E+03	-1.2244E+02	4.2864E+03	-1.2240E+02	4.6436E+03	-1.2228E+02	3.5720E+03	-1.2217E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.2275E+02	4.6436E+03	-1.2272E+02	4.2864E+03	-1.2268E+02	4.6436E+03	-1.2257E+02	3.5720E+03	-1.2246E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.2304E+02	4.6436E+03	-1.2301E+02	4.2864E+03	-1.2297E+02	4.6436E+03	-1.2285E+02	3.5720E+03	-1.2274E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.2332E+02	4.6436E+03	-1.2329E+02	4.2864E+03	-1.2325E+02	4.6436E+03	-1.2314E+02	3.5720E+03	-1.2303E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.2360E+02	4.6436E+03	-1.2357E+02	4.2864E+03	-1.2354E+02	4.6436E+03	-1.2342E+02	3.5720E+03	-1.2331E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.2389E+02	4.6436E+03	-1.2386E+02	4.2864E+03	-1.2382E+02	4.6436E+03	-1.2370E+02	3.5720E+03	-1.2360E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.2417E+02	4.6436E+03	-1.2414E+02	4.2864E+03	-1.2410E+02	4.6436E+03	-1.2398E+02	3.5720E+03	-1.2388E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.2445E+02	4.6436E+03	-1.2442E+02	4.2864E+03	-1.2438E+02	4.6436E+03	-1.2427E+02	3.5720E+03	-1.2416E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.2473E+02	4.6436E+03	-1.2470E+02	4.2864E+03	-1.2466E+02	4.6436E+03	-1.2455E+02	3.5720E+03	-1.2444E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.2501E+02	4.6436E+03	-1.2498E+02	4.2864E+03	-1.2494E+02	4.6436E+03	-1.2483E+02	3.5720E+03	-1.2472E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.2529E+02	4.6436E+03	-1.2526E+02	4.2864E+03	-1.2522E+02	4.6436E+03	-1.2511E+02	3.5720E+03	-1.2500E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.2557E+02	4.6436E+03	-1.2554E+02	4.2864E+03	-1.2550E+02	4.6436E+03	-1.2539E+02	3.5720E+03	-1.2528E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.2585E+02	4.6436E+03	-1.2582E+02	4.2864E+03	-1.2578E+02	4.6436E+03	-1.2566E+02	3.5720E+03	-1.2556E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.2612E+02	4.6436E+03	-1.2610E+02	4.2864E+03	-1.2606E+02	4.6436E+03	-1.2594E+02	3.5720E+03	-1.2584E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.2640E+02	4.6436E+03	-1.2637E+02	4.2864E+03	-1.2633E+02	4.6436E+03	-1.2622E+02	3.5720E+03	-1.2612E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.2668E+02	4.6436E+03	-1.2665E+02	4.2864E+03	-1.2661E+02	4.6436E+03	-1.2650E+02	3.5720E+03	-1.2639E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.2695E+02	4.6436E+03	-1.2692E+02	4.2864E+03	-1.2689E+02	4.6436E+03	-1.2677E+02	3.5720E+03	-1.2667E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.2723E+02	4.6436E+03	-1.2720E+02	4.2864E+03	-1.2716E+02	4.6436E+03	-1.2705E+02	3.5720E+03	-1.2695E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.2750E+02	4.6436E+03	-1.2747E+02	4.2864E+03	-1.2744E+02	4.6436E+03	-1.2732E+02	3.5720E+03	-1.2722E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.2778E+02	4.6436E+03	-1.2775E+02	4.2864E+03	-1.2771E+02	4.6436E+03	-1.2760E+02	3.5720E+03	-1.2749E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.2805E+02	4.6436E+03	-1.2802E+02	4.2864E+03	-1.2798E+02	4.6436E+03	-1.2787E+02	3.5720E+03	-1.2777E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.2832E+02	4.6436E+03	-1.2829E+02	4.2864E+03	-1.2826E+02	4.6436E+03	-1.2814E+02	3.5720E+03	-1.2804E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.2859E+02	4.6436E+03	-1.2857E+02	4.2864E+03	-1.2853E+02	4.6436E+03	-1.2842E+02	3.5720E+03	-1.2831E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.2887E+02	4.6436E+03	-1.2884E+02	4.2864E+03	-1.2880E+02	4.6436E+03	-1.2869E+02	3.5720E+03	-1.2859E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.2914E+02	4.6436E+03	-1.2911E+02	4.2864E+03	-1.2907E+02	4.6436E+03	-1.2896E+02	3.5720E+03	-1.2886E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.2941E+02	4.6436E+03	-1.2938E+02	4.2864E+03	-1.2934E+02	4.6436E+03	-1.2923E+02	3.5720E+03	-1.2913E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.2968E+02	4.6436E+03	-1.2965E+02	4.2864E+03	-1.2961E+02	4.6436E+03	-1.2950E+02	3.5720E+03	-1.2940E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.2995E+02	4.6436E+03	-1.2992E+02	4.2864E+03	-1.2988E+02	4.6436E+03	-1.2977E+02	3.5720E+03	-1.2967E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.3022E+02	4.6436E+03	-1.3019E+02	4.2864E+03	-1.3015E+02	4.6436E+03	-1.3004E+02	3.5720E+03	-1.2994E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.3048E+02	4.6436E+03	-1.3046E+02	4.2864E+03	-1.3042E+02	4.6436E+03	-1.3031E+02	3.5720E+03	-1.3021E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.3075E+02	4.6436E+03	-1.3072E+02	4.2864E+03	-1.3069E+02	4.6436E+03	-1.3058E+02	3.5720E+03	-1.3048E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.3102E+02	4.6436E+03	-1.3099E+02	4.2864E+03	-1.3095E+02	4.6436E+03	-1.3084E+02	3.5720E+03	-1.3074E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.3129E+02	4.6436E+03	-1.3126E+02	4.2864E+03	-1.3122E+02	4.6436E+03	-1.3111E+02	3.5720E+03	-1.3101E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.3155E+02	4.6436E+03	-1.3152E+02	4.2864E+03	-1.3149E+02	4.6436E+03	-1.3138E+02	3.5720E+03	-1.3128E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.3182E+02	4.6436E+03	-1.3179E+02	4.2864E+03	-1.3175E+02	4.6436E+03	-1.3164E+02	3.5720E+03	-1.3154E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.3208E+02	4.6436E+03	-1.3205E+02	4.2864E+03	-1.3202E+02	4.6436E+03	-1.3191E+02	3.5720E+03	-1.3181E+02	3.5743E+04	-3.5782E+00	1.2310E+05
3.9292E+03	-1.3235E+02	4.6436E+03	-1.3232E+02	4.2864E+03	-1.3228E+02	4.6436E+03	-1.3217E+02	3.5720E+03	-1.3207E+02	3.5743E+04	-8.4429E+00	1.2310E+05
3.9292E+03	-1.3261E+02	4.6436E+03	-1.3258E+02	4.2864E+03	-1.3255E+02	4.6436E+03	-1.3244E+02	3.5720E+03	-1.3234E+02	3.5743E+04	-1.1721E+01	1.2310E+05
3.9292E+03	-1.3287E+02	4.6436E+03	-1.3285E+02	4.2864E+03	-1.3281E+02	4.6436E+03	-1.3270E+02	3.5720E+03	-1.3260E+02	3.5743E+04	-1.4332E+01	1.2310E+05
3.9292E+03	-1.3314E+02	4.6436E+03	-1.3311E+02	4.2864E+03	-1.3307E+02	4.6436E+03	-1.3296E+02	3.5720E+03	-1.3287E+02	3.5743E+04	-1.6558E+01	1.2310E+05
3.9292E+03	-1.3340E+02	4.6436E+03	-1.3337E+02	4.2864E+03	-1.3333E+02	4.6436E+03	-1.3323E+02	3.5720E+03	-1.3313E+02	3.5743E+04	-1.8529E+01	1.2310E+05
3.9292E+03	-1.3366E+02	4.6436E+03	-1.3363E+02	4.2864E+03	-1.3360E+02	4.6436E+03	-1.3349E+02	3.5720E+03	-1.3339E+02	3.5743E+04	-2.0315E+01	1.2310E+05
3.9292E+03	-1.3392E+02	4.6436E+03	-1.3389E+02	4.2864E+03	-1.3386E+02	4.6436E+03	-1.3375E+02	3.5720E+03	-1.3365E+02	3.5743E+04	-2.1960E+01	1.2310E+05

Curve 13	Arg 14	Curve 14	Arg 15	Curve 15	Arg 16	Curve 16	Arg 17	Curve 17	Arg 18	Curve 18	Arg 19	Curve 19
3.9292E+03	-1.3418E+02	4.6436E+03	-1.3416E+02	4.2864E+03	-1.3412E+02	4.6436E+03	-1.3401E+02	3.5720E+03	-1.3391E+02	3.5743E+04	-2.3491E+01	1.2310E+05
3.9292E+03	-1.3444E+02	4.6436E+03	-1.3442E+02	4.2864E+03	-1.3438E+02	4.6436E+03	-1.3427E+02	3.5720E+03	-1.3417E+02	3.5743E+04	-2.4930E+01	1.2310E+05
3.9292E+03	-1.3470E+02	4.6436E+03	-1.3468E+02	4.2864E+03	-1.3464E+02	4.6436E+03	-1.3453E+02	3.5720E+03	-1.3444E+02	3.5743E+04	-2.6291E+01	1.2310E+05
3.9292E+03	-1.3496E+02	4.6436E+03	-1.3493E+02	4.2864E+03	-1.3490E+02	4.6436E+03	-1.3479E+02	3.5720E+03	-1.3469E+02	3.5743E+04	-2.7585E+01	1.2310E+05
3.9292E+03	-1.3522E+02	4.6436E+03	-1.3519E+02	4.2864E+03	-1.3516E+02	4.6436E+03	-1.3505E+02	3.5720E+03	-1.3495E+02	3.5743E+04	-2.8822E+01	1.2310E+05
3.9292E+03	-1.3548E+02	4.6436E+03	-1.3545E+02	4.2864E+03	-1.3542E+02	4.6436E+03	-1.3531E+02	3.5720E+03	-1.3521E+02	3.5743E+04	-3.0009E+01	1.2310E+05
3.9292E+03	-1.3574E+02	4.6436E+03	-1.3571E+02	4.2864E+03	-1.3567E+02	4.6436E+03	-1.3557E+02	3.5720E+03	-1.3547E+02	3.5743E+04	-3.1150E+01	1.2310E+05
3.9292E+03	-1.3599E+02	4.6436E+03	-1.3597E+02	4.2864E+03	-1.3593E+02	4.6436E+03	-1.3583E+02	3.5720E+03	-1.3573E+02	3.5743E+04	-3.2251E+01	1.2310E+05
3.9292E+03	-1.3625E+02	4.6436E+03	-1.3622E+02	4.2864E+03	-1.3619E+02	4.6436E+03	-1.3608E+02	3.5720E+03	-1.3599E+02	3.5743E+04	-3.3317E+01	1.2310E+05
3.9292E+03	-1.3651E+02	4.6436E+03	-1.3648E+02	4.2864E+03	-1.3644E+02	4.6436E+03	-1.3634E+02	3.5720E+03	-1.3624E+02	3.5743E+04	-3.4349E+01	1.2310E+05
3.9292E+03	-1.3676E+02	4.6436E+03	-1.3674E+02	4.2864E+03	-1.3670E+02	4.6436E+03	-1.3660E+02	3.5720E+03	-1.3650E+02	3.5743E+04	-3.5351E+01	1.2310E+05
3.9292E+03	-1.3702E+02	4.6436E+03	-1.3699E+02	4.2864E+03	-1.3696E+02	4.6436E+03	-1.3685E+02	3.5720E+03	-1.3676E+02	3.5743E+04	-3.6326E+01	1.2310E+05
3.9292E+03	-1.3727E+02	4.6436E+03	-1.3725E+02	4.2864E+03	-1.3721E+02	4.6436E+03	-1.3711E+02	3.5720E+03	-1.3701E+02	3.5743E+04	-3.7275E+01	1.2310E+05
3.9292E+03	-1.3753E+02	4.6436E+03	-1.3750E+02	4.2864E+03	-1.3747E+02	4.6436E+03	-1.3736E+02	3.5720E+03	-1.3727E+02	3.5743E+04	-3.8201E+01	1.2310E+05
3.9292E+03	-1.3778E+02	4.6436E+03	-1.3776E+02	4.2864E+03	-1.3772E+02	4.6436E+03	-1.3762E+02	3.5720E+03	-1.3752E+02	3.5743E+04	-3.9105E+01	1.2310E+05
3.9292E+03	-1.3804E+02	4.6436E+03	-1.3801E+02	4.2864E+03	-1.3797E+02	4.6436E+03	-1.3787E+02	3.5720E+03	-1.3777E+02	3.5743E+04	-3.9988E+01	1.2310E+05
3.9292E+03	-1.3829E+02	4.6436E+03	-1.3826E+02	4.2864E+03	-1.3823E+02	4.6436E+03	-1.3812E+02	3.5720E+03	-1.3803E+02	3.5743E+04	-4.0852E+01	1.2310E+05
3.9292E+03	-1.3854E+02	4.6436E+03	-1.3851E+02	4.2864E+03	-1.3848E+02	4.6436E+03	-1.3838E+02	3.5720E+03	-1.3828E+02	3.5743E+04	-4.1699E+01	1.2310E+05
3.9292E+03	-1.3879E+02	4.6436E+03	-1.3877E+02	4.2864E+03	-1.3873E+02	4.6436E+03	-1.3863E+02	3.5720E+03	-1.3853E+02	3.5743E+04	-4.2529E+01	1.2310E+05
3.9292E+03	-1.3904E+02	4.6436E+03	-1.3902E+02	4.2864E+03	-1.3898E+02	4.6436E+03	-1.3888E+02	3.5720E+03	-1.3879E+02	3.5743E+04	-4.3343E+01	1.2310E+05
3.9292E+03	-1.3930E+02	4.6436E+03	-1.3927E+02	4.2864E+03	-1.3923E+02	4.6436E+03	-1.3913E+02	3.5720E+03	-1.3904E+02	3.5743E+04	-4.4142E+01	1.2310E+05
3.9292E+03	-1.3955E+02	4.6436E+03	-1.3952E+02	4.2864E+03	-1.3949E+02	4.6436E+03	-1.3938E+02	3.5720E+03	-1.3929E+02	3.5743E+04	-4.4926E+01	1.2310E+05
3.9292E+03	-1.3980E+02	4.6436E+03	-1.3977E+02	4.2864E+03	-1.3974E+02	4.6436E+03	-1.3963E+02	3.5720E+03	-1.3954E+02	3.5743E+04	-4.5698E+01	1.2310E+05
3.9292E+03	-1.4005E+02	4.6436E+03	-1.4002E+02	4.2864E+03	-1.3999E+02	4.6436E+03	-1.3988E+02	3.5720E+03	-1.3979E+02	3.5743E+04	-4.6456E+01	1.2310E+05
3.9292E+03	-1.4030E+02	4.6436E+03	-1.4027E+02	4.2864E+03	-1.4024E+02	4.6436E+03	-1.4013E+02	3.5720E+03	-1.4004E+02	3.5743E+04	-4.7202E+01	1.2310E+05
3.9292E+03	-1.4055E+02	4.6436E+03	-1.4052E+02	4.2864E+03	-1.4048E+02	4.6436E+03	-1.4038E+02	3.5720E+03	-1.4029E+02	3.5743E+04	-4.7937E+01	1.2310E+05
3.9292E+03	-1.4079E+02	4.6436E+03	-1.4077E+02	4.2864E+03	-1.4073E+02	4.6436E+03	-1.4063E+02	3.5720E+03	-1.4054E+02	3.5743E+04	-4.8661E+01	1.2310E+05
3.9292E+03	-1.4104E+02	4.6436E+03	-1.4102E+02	4.2864E+03	-1.4098E+02	4.6436E+03	-1.4088E+02	3.5720E+03	-1.4079E+02	3.5743E+04	-4.9374E+01	1.2310E+05
3.9292E+03	-1.4129E+02	4.6436E+03	-1.4126E+02	4.2864E+03	-1.4123E+02	4.6436E+03	-1.4113E+02	3.5720E+03	-1.4103E+02	3.5743E+04	-5.0077E+01	1.2310E+05
3.9292E+03	-1.4154E+02	4.6436E+03	-1.4151E+02	4.2864E+03	-1.4148E+02	4.6436E+03	-1.4137E+02	3.5720E+03	-1.4128E+02	3.5743E+04	-5.0770E+01	1.2310E+05
3.9292E+03	-1.4178E+02	4.6436E+03	-1.4176E+02	4.2864E+03	-1.4172E+02	4.6436E+03	-1.4162E+02	3.5720E+03	-1.4153E+02	3.5743E+04	-5.1454E+01	1.2310E+05
3.9292E+03	-1.4203E+02	4.6436E+03	-1.4200E+02	4.2864E+03	-1.4197E+02	4.6436E+03	-1.4187E+02	3.5720E+03	-1.4178E+02	3.5743E+04	-5.2129E+01	1.2310E+05
3.9292E+03	-1.4228E+02	4.6436E+03	-1.4225E+02	4.2864E+03	-1.4222E+02	4.6436E+03	-1.4211E+02	3.5720E+03	-1.4202E+02	3.5743E+04	-5.2795E+01	1.2310E+05
3.9292E+03	-1.4252E+02	4.6436E+03	-1.4250E+02	4.2864E+03	-1.4246E+02	4.6436E+03	-1.4236E+02	3.5720E+03	-1.4227E+02	3.5743E+04	-5.3453E+01	1.2310E+05
3.9292E+03	-1.4277E+02	4.6436E+03	-1.4274E+02	4.2864E+03	-1.4271E+02	4.6436E+03	-1.4261E+02	3.5720E+03	-1.4251E+02	3.5743E+04	-5.4103E+01	1.2310E+05
3.9292E+03	-1.4301E+02	4.6436E+03	-1.4299E+02	4.2864E+03	-1.4295E+02	4.6436E+03	-1.4285E+02	3.5720E+03	-1.4276E+02	3.5743E+04	-5.4745E+01	1.2310E+05
3.9292E+03	-1.4326E+02	4.6436E+03	-1.4323E+02	4.2864E+03	-1.4320E+02	4.6436E+03	-1.4310E+02	3.5720E+03	-1.4300E+02	3.5743E+04	-5.5380E+01	1.2310E+05
3.9292E+03	-1.4350E+02	4.6436E+03	-1.4347E+02	4.2864E+03	-1.4344E+02	4.6436E+03	-1.4334E+02	3.5720E+03	-1.4325E+02	3.5743E+04	-5.6007E+01	1.2310E+05
3.9292E+03	-1.4374E+02	4.6436E+03	-1.4372E+02	4.2864E+03	-1.4368E+02	4.6436E+03	-1.4358E+02	3.5720E+03	-1.4349E+02	3.5743E+04	-5.6628E+01	1.2310E+05
3.9292E+03	-1.4399E+02	4.6436E+03	-1.4396E+02	4.2864E+03	-1.4393E+02	4.6436E+03	-1.4383E+02	3.5720E+03	-1.4374E+02	3.5743E+04	-5.7242E+01	1.2310E+05
3.9292E+03	-1.4423E+02	4.6436E+03	-1.4420E+02	4.2864E+03	-1.4417E+02	4.6436E+03	-1.4407E+02	3.5720E+03	-1.4398E+02	3.5743E+04	-5.7849E+01	1.2310E+05
3.9292E+03	-1.4447E+02	4.6436E+03	-1.4444E+02	4.2864E+03	-1.4441E+02	4.6436E+03	-1.4431E+02	3.5720E+03	-1.4422E+02	3.5743E+04	-5.8451E+01	1.2310E+05
3.9292E+03	-1.4471E+02	4.6436E+03	-1.4469E+02	4.2864E+03	-1.4465E+02	4.6436E+03	-1.4455E+02	3.5720E+03	-1.4446E+02	3.5743E+04	-5.9046E+01	1.2310E+05
3.9292E+03	-1.4495E+02	4.6436E+03	-1.4493E+02	4.2864E+03	-1.4489E+02	4.6436E+03	-1.4480E+02	3.5720E+03	-1.4470E+02	3.5743E+04	-5.9635E+01	1.2310E+05
3.9292E+03	-1.4519E+02	4.6436E+03	-1.4517E+02	4.2864E+03	-1.4514E+02	4.6436E+03	-1.4504E+02	3.5720E+03	-1.4495E+02	3.5743E+04	-6.0218E+01	1.2310E+05
3.9292E+03	-1.4544E+02	4.6436E+03	-1.4541E+02	4.2864E+03	-1.4538E+02	4.6436E+03	-1.4528E+02	3.5720E+03	-1.4519E+02	3.5743E+04	-6.0796E+01	1.2310E+05
3.9292E+03	-1.4568E+02	4.6436E+03	-1.4565E+02	4.2864E+03	-1.4562E+02	4.6436E+03	-1.4552E+02	3.5720E+03	-1.4543E+02	3.5743E+04	-6.1368E+01	1.2310E+05
3.9292E+03	-1.4592E+02	4.6436E+03	-1.4589E+02	4.2864E+03	-1.4586E+02	4.6436E+03	-1.4576E+02	3.5720E+03	-1.4567E+02	3.5743E+04	-6.1935E+01	1.2310E+05
3.9292E+03	-1.4615E+02	4.6436E+03	-1.4613E+02	4.2864E+03	-1.4610E+02	4.6436E+03	-1.4600E+02	3.5720E+03	-1.4591E+02	3.5743E+04	-6.2497E+01	1.2310E+05
3.9292E+03	-1.4639E+02	4.6436E+03	-1.4637E+02	4.2864E+03	-1.4633E+02	4.6436E+03	-1.4624E+02	3.5720E+03	-1.4615E+02	3.5743E+04	-6.3054E+01	1.2310E+05
3.9292E+03	-1.4663E+02	4.6436E+03	-1.4661E+02	4.2864E+03	-1.4657E+02	4.6436E+03	-1.4648E+02	3.5720E+03	-1.4639E+02	3.5743E+04	-6.3606E+01	1.2310E+05
3.9292E+03	-1.4687E+02	4.6436E+03	-1.4685E+02	4.2864E+03	-1.4681E+02	4.6436E+03	-1.4671E+02	3.5720E+03	-1.4662E+02	3.5743E+04	-6.4153E+01	1.2310E+05

Curve 13	Arg 14	Curve 14	Arg 15	Curve 15	Arg 16	Curve 16	Arg 17	Curve 17	Arg 18	Curve 18	Arg 19	Curve 19
3.9292E+03	-1.4711E+02	4.6436E+03	-1.4708E+02	4.2864E+03	-1.4705E+02	4.6436E+03	-1.4695E+02	3.5720E+03	-1.4686E+02	3.5743E+04	-6.4696E+01	1.2310E+05
3.9292E+03	-1.4735E+02	4.6436E+03	-1.4732E+02	4.2864E+03	-1.4729E+02	4.6436E+03	-1.4719E+02	3.5720E+03	-1.4710E+02	3.5743E+04	-6.5234E+01	1.2310E+05
3.9292E+03	-1.4758E+02	4.6436E+03	-1.4756E+02	4.2864E+03	-1.4752E+02	4.6436E+03	-1.4743E+02	3.5720E+03	-1.4734E+02	3.5743E+04	-6.5767E+01	1.2310E+05
3.9292E+03	-1.4782E+02	4.6436E+03	-1.4779E+02	4.2864E+03	-1.4776E+02	4.6436E+03	-1.4766E+02	3.5720E+03	-1.4758E+02	3.5743E+04	-6.6297E+01	1.2310E+05
3.9292E+03	-1.4806E+02	4.6436E+03	-1.4803E+02	4.2864E+03	-1.4800E+02	4.6436E+03	-1.4790E+02	3.5720E+03	-1.4781E+02	3.5743E+04	-6.6822E+01	1.2310E+05
3.9292E+03	-1.4829E+02	4.6436E+03	-1.4827E+02	4.2864E+03	-1.4823E+02	4.6436E+03	-1.4814E+02	3.5720E+03	-1.4805E+02	3.5743E+04	-6.7343E+01	1.2310E+05
3.9292E+03	-1.4853E+02	4.6436E+03	-1.4850E+02	4.2864E+03	-1.4847E+02	4.6436E+03	-1.4837E+02	3.5720E+03	-1.4828E+02	3.5743E+04	-6.7860E+01	1.2310E+05
3.9292E+03	-1.4876E+02	4.6436E+03	-1.4874E+02	4.2864E+03	-1.4870E+02	4.6436E+03	-1.4861E+02	3.5720E+03	-1.4852E+02	3.5743E+04	-6.8373E+01	1.2310E+05
3.9292E+03	-1.4900E+02	4.6436E+03	-1.4897E+02	4.2864E+03	-1.4894E+02	4.6436E+03	-1.4884E+02	3.5720E+03	-1.4876E+02	3.5743E+04	-6.8883E+01	1.2310E+05
3.9292E+03	-1.4923E+02	4.6436E+03	-1.4921E+02	4.2864E+03	-1.4917E+02	4.6436E+03	-1.4908E+02	3.5720E+03	-1.4899E+02	3.5743E+04	-6.9388E+01	1.2310E+05
3.9292E+03	-1.4947E+02	4.6436E+03	-1.4944E+02	4.2864E+03	-1.4941E+02	4.6436E+03	-1.4931E+02	3.5720E+03	-1.4922E+02	3.5743E+04	-6.9890E+01	1.2310E+05
3.9292E+03	-1.4970E+02	4.6436E+03	-1.4967E+02	4.2864E+03	-1.4964E+02	4.6436E+03	-1.4955E+02	3.5720E+03	-1.4946E+02	3.5743E+04	-7.0389E+01	1.2310E+05
3.9292E+03	-1.4993E+02	4.6436E+03	-1.4991E+02	4.2864E+03	-1.4988E+02	4.6436E+03	-1.4978E+02	3.5720E+03	-1.4969E+02	3.5743E+04	-7.0884E+01	1.2310E+05
3.9292E+03	-1.5017E+02	4.6436E+03	-1.5014E+02	4.2864E+03	-1.5011E+02	4.6436E+03	-1.5001E+02	3.5720E+03	-1.4993E+02	3.5743E+04	-7.1375E+01	1.2310E+05
3.9292E+03	-1.5040E+02	4.6436E+03	-1.5037E+02	4.2864E+03	-1.5034E+02	4.6436E+03	-1.5025E+02	3.5720E+03	-1.5016E+02	3.5743E+04	-7.1863E+01	1.2310E+05
3.9292E+03	-1.5063E+02	4.6436E+03	-1.5061E+02	4.2864E+03	-1.5057E+02	4.6436E+03	-1.5048E+02	3.5720E+03	-1.5039E+02	3.5743E+04	-7.2348E+01	1.2310E+05
3.9292E+03	-1.5086E+02	4.6436E+03	-1.5084E+02	4.2864E+03	-1.5081E+02	4.6436E+03	-1.5071E+02	3.5720E+03	-1.5062E+02	3.5743E+04	-7.2830E+01	1.2310E+05
3.9292E+03	-1.5109E+02	4.6436E+03	-1.5107E+02	4.2864E+03	-1.5104E+02	4.6436E+03	-1.5094E+02	3.5720E+03	-1.5086E+02	3.5743E+04	-7.3308E+01	1.2310E+05
3.9292E+03	-1.5133E+02	4.6436E+03	-1.5130E+02	4.2864E+03	-1.5127E+02	4.6436E+03	-1.5117E+02	3.5720E+03	-1.5109E+02	3.5743E+04	-7.3783E+01	1.2310E+05
3.9292E+03	-1.5156E+02	4.6436E+03	-1.5153E+02	4.2864E+03	-1.5150E+02	4.6436E+03	-1.5141E+02	3.5720E+03	-1.5132E+02	3.5743E+04	-7.4256E+01	1.2310E+05
3.9292E+03	-1.5179E+02	4.6436E+03	-1.5176E+02	4.2864E+03	-1.5173E+02	4.6436E+03	-1.5164E+02	3.5720E+03	-1.5155E+02	3.5743E+04	-7.4725E+01	1.2310E+05
3.9292E+03	-1.5202E+02	4.6436E+03	-1.5199E+02	4.2864E+03	-1.5196E+02	4.6436E+03	-1.5187E+02	3.5720E+03	-1.5178E+02	3.5743E+04	-7.5191E+01	1.2310E+05
3.9292E+03	-1.5225E+02	4.6436E+03	-1.5222E+02	4.2864E+03	-1.5219E+02	4.6436E+03	-1.5210E+02	3.5720E+03	-1.5201E+02	3.5743E+04	-7.5655E+01	1.2310E+05
3.9292E+03	-1.5248E+02	4.6436E+03	-1.5245E+02	4.2864E+03	-1.5242E+02	4.6436E+03	-1.5233E+02	3.5720E+03	-1.5224E+02	3.5743E+04	-7.6116E+01	1.2310E+05
3.9292E+03	-1.5271E+02	4.6436E+03	-1.5268E+02	4.2864E+03	-1.5265E+02	4.6436E+03	-1.5256E+02	3.5720E+03	-1.5247E+02	3.5743E+04	-7.6573E+01	1.2310E+05
3.9292E+03	-1.5293E+02	4.6436E+03	-1.5291E+02	4.2864E+03	-1.5288E+02	4.6436E+03	-1.5278E+02	3.5720E+03	-1.5270E+02	3.5743E+04	-7.7029E+01	1.2310E+05
3.9292E+03	-1.5316E+02	4.6436E+03	-1.5314E+02	4.2864E+03	-1.5311E+02	4.6436E+03	-1.5301E+02	3.5720E+03	-1.5293E+02	3.5743E+04	-7.7481E+01	1.2310E+05
3.9292E+03	-1.5339E+02	4.6436E+03	-1.5337E+02	4.2864E+03	-1.5333E+02	4.6436E+03	-1.5324E+02	3.5720E+03	-1.5316E+02	3.5743E+04	-7.7931E+01	1.2310E+05
3.9292E+03	-1.5362E+02	4.6436E+03	-1.5359E+02	4.2864E+03	-1.5356E+02	4.6436E+03	-1.5347E+02	3.5720E+03	-1.5338E+02	3.5743E+04	-7.8378E+01	1.2310E+05
3.9292E+03	-1.5385E+02	4.6436E+03	-1.5382E+02	4.2864E+03	-1.5379E+02	4.6436E+03	-1.5370E+02	3.5720E+03	-1.5361E+02	3.5743E+04	-7.8823E+01	1.2310E+05
3.9292E+03	-1.5407E+02	4.6436E+03	-1.5405E+02	4.2864E+03	-1.5402E+02	4.6436E+03	-1.5392E+02	3.5720E+03	-1.5384E+02	3.5743E+04	-7.9265E+01	1.2310E+05
3.9292E+03	-1.5430E+02	4.6436E+03	-1.5428E+02	4.2864E+03	-1.5424E+02	4.6436E+03	-1.5415E+02	3.5720E+03	-1.5407E+02	3.5743E+04	-7.9705E+01	1.2310E+05
3.9292E+03	-1.5453E+02	4.6436E+03	-1.5450E+02	4.2864E+03	-1.5447E+02	4.6436E+03	-1.5438E+02	3.5720E+03	-1.5429E+02	3.5743E+04	-8.0143E+01	1.2310E+05
3.9292E+03	-1.5475E+02	4.6436E+03	-1.5473E+02	4.2864E+03	-1.5470E+02	4.6436E+03	-1.5460E+02	3.5720E+03	-1.5452E+02	3.5743E+04	-8.0578E+01	1.2310E+05
3.9292E+03	-1.5498E+02	4.6436E+03	-1.5495E+02	4.2864E+03	-1.5492E+02	4.6436E+03	-1.5483E+02	3.5720E+03	-1.5475E+02	3.5743E+04	-8.1010E+01	1.2310E+05
3.9292E+03	-1.5520E+02	4.6436E+03	-1.5518E+02	4.2864E+03	-1.5515E+02	4.6436E+03	-1.5506E+02	3.5720E+03	-1.5497E+02	3.5743E+04	-8.1441E+01	1.2310E+05
3.9292E+03	-1.5543E+02	4.6436E+03	-1.5540E+02	4.2864E+03	-1.5537E+02	4.6436E+03	-1.5528E+02	3.5720E+03	-1.5520E+02	3.5743E+04	-8.1869E+01	1.2310E+05
3.9292E+03	-1.5565E+02	4.6436E+03	-1.5563E+02	4.2864E+03	-1.5560E+02	4.6436E+03	-1.5551E+02	3.5720E+03	-1.5542E+02	3.5743E+04	-8.2295E+01	1.2310E+05
3.9292E+03	-1.5588E+02	4.6436E+03	-1.5585E+02	4.2864E+03	-1.5582E+02	4.6436E+03	-1.5573E+02	3.5720E+03	-1.5565E+02	3.5743E+04	-8.2718E+01	1.2310E+05
3.9292E+03	-1.5610E+02	4.6436E+03	-1.5608E+02	4.2864E+03	-1.5605E+02	4.6436E+03	-1.5595E+02	3.5720E+03	-1.5587E+02	3.5743E+04	-8.3140E+01	1.2310E+05
3.9292E+03	-1.5633E+02	4.6436E+03	-1.5630E+02	4.2864E+03	-1.5627E+02	4.6436E+03	-1.5618E+02	3.5720E+03	-1.5609E+02	3.5743E+04	-8.3559E+01	1.2310E+05
3.9292E+03	-1.5655E+02	4.6436E+03	-1.5653E+02	4.2864E+03	-1.5649E+02	4.6436E+03	-1.5640E+02	3.5720E+03	-1.5632E+02	3.5743E+04	-8.3977E+01	1.2310E+05
3.9292E+03	-1.5677E+02	4.6436E+03	-1.5675E+02	4.2864E+03	-1.5672E+02	4.6436E+03	-1.5663E+02	3.5720E+03	-1.5654E+02	3.5743E+04	-8.4392E+01	1.2310E+05
3.9292E+03	-1.5699E+02	4.6436E+03	-1.5697E+02	4.2864E+03	-1.5694E+02	4.6436E+03	-1.5685E+02	3.5720E+03	-1.5677E+02	3.5743E+04	-8.4805E+01	1.2310E+05
3.9292E+03	-1.5722E+02	4.6436E+03	-1.5719E+02	4.2864E+03	-1.5716E+02	4.6436E+03	-1.5707E+02	3.5720E+03	-1.5699E+02	3.5743E+04	-8.5216E+01	1.2310E+05
3.9292E+03	-1.5744E+02	4.6436E+03	-1.5742E+02	4.2864E+03	-1.5739E+02	4.6436E+03	-1.5729E+02	3.5720E+03	-1.5721E+02	3.5743E+04	-8.5626E+01	1.2310E+05
3.9292E+03	-1.5766E+02	4.6436E+03	-1.5764E+02	4.2864E+03	-1.5761E+02	4.6436E+03	-1.5752E+02	3.5720E+03	-1.5743E+02	3.5743E+04	-8.6033E+01	1.2310E+05
3.9292E+03	-1.5788E+02	4.6436E+03	-1.5786E+02	4.2864E+03	-1.5783E+02	4.6436E+03	-1.5774E+02	3.5720E+03	-1.5765E+02	3.5743E+04	-8.6438E+01	1.2310E+05
3.9292E+03	-1.5810E+02	4.6436E+03	-1.5808E+02	4.2864E+03	-1.5805E+02	4.6436E+03	-1.5796E+02	3.5720E+03	-1.5788E+02	3.5743E+04	-8.6842E+01	1.2310E+05
3.9292E+03	-1.5833E+02	4.6436E+03	-1.5830E+02	4.2864E+03	-1.5827E+02	4.6436E+03	-1.5818E+02	3.5720E+03	-1.5810E+02	3.5743E+04	-8.7244E+01	1.2310E+05
3.9292E+03	-1.5855E+02	4.6436E+03	-1.5852E+02	4.2864E+03	-1.5849E+02	4.6436E+03	-1.5840E+02	3.5720E+03	-1.5832E+02	3.5743E+04	-8.7643E+01	1.2310E+05
3.9292E+03	-1.5877E+02	4.6436E+03	-1.5874E+02	4.2864E+03	-1.5871E+02	4.6436E+03	-1.5862E+02	3.5720E+03	-1.5854E+02	3.5743E+04	-8.8041E+01	1.2310E+05

Curve 13	Arg 14	Curve 14	Arg 15	Curve 15	Arg 16	Curve 16	Arg 17	Curve 17	Arg 18	Curve 18	Arg 19	Curve 19
3.9292E+03	-1.5899E+02	4.6436E+03	-1.5896E+02	4.2864E+03	-1.5893E+02	4.6436E+03	-1.5884E+02	3.5720E+03	-1.5876E+02	3.5743E+04	-8.8438E+01	1.2310E+05
3.9292E+03	-1.5921E+02	4.6436E+03	-1.5918E+02	4.2864E+03	-1.5915E+02	4.6436E+03	-1.5906E+02	3.5720E+03	-1.5898E+02	3.5743E+04	-8.8832E+01	1.2310E+05
3.9292E+03	-1.5943E+02	4.6436E+03	-1.5940E+02	4.2864E+03	-1.5937E+02	4.6436E+03	-1.5928E+02	3.5720E+03	-1.5920E+02	3.5743E+04	-8.9225E+01	1.2310E+05
3.9292E+03	-1.5964E+02	4.6436E+03	-1.5962E+02	4.2864E+03	-1.5959E+02	4.6436E+03	-1.5950E+02	3.5720E+03	-1.5942E+02	3.5743E+04	-8.9616E+01	1.2310E+05
3.9292E+03	-1.5986E+02	4.6436E+03	-1.5984E+02	4.2864E+03	-1.5981E+02	4.6436E+03	-1.5972E+02	3.5720E+03	-1.5964E+02	3.5743E+04	-9.0005E+01	1.2310E+05
3.9292E+03	-1.6008E+02	4.6436E+03	-1.6006E+02	4.2864E+03	-1.6003E+02	4.6436E+03	-1.5994E+02	3.5720E+03	-1.5986E+02	3.5743E+04	-9.0392E+01	1.2310E+05
3.9292E+03	-1.6030E+02	4.6436E+03	-1.6028E+02	4.2864E+03	-1.6025E+02	4.6436E+03	-1.6016E+02	3.5720E+03	-1.6008E+02	3.5743E+04	-9.0778E+01	1.2310E+05
3.9292E+03	-1.6052E+02	4.6436E+03	-1.6050E+02	4.2864E+03	-1.6046E+02	4.6436E+03	-1.6038E+02	3.5720E+03	-1.6029E+02	3.5743E+04	-9.1163E+01	1.2310E+05
3.9292E+03	-1.6074E+02	4.6436E+03	-1.6071E+02	4.2864E+03	-1.6068E+02	4.6436E+03	-1.6059E+02	3.5720E+03	-1.6051E+02	3.5743E+04	-9.1545E+01	1.2310E+05
3.9292E+03	-1.6095E+02	4.6436E+03	-1.6093E+02	4.2864E+03	-1.6090E+02	4.6436E+03	-1.6081E+02	3.5720E+03	-1.6073E+02	3.5743E+04	-9.1926E+01	1.2310E+05
3.9292E+03	-1.6117E+02	4.6436E+03	-1.6115E+02	4.2864E+03	-1.6112E+02	4.6436E+03	-1.6103E+02	3.5720E+03	-1.6095E+02	3.5743E+04	-9.2306E+01	1.2310E+05
3.9292E+03	-1.6139E+02	4.6436E+03	-1.6136E+02	4.2864E+03	-1.6133E+02	4.6436E+03	-1.6125E+02	3.5720E+03	-1.6116E+02	3.5743E+04	-9.2684E+01	1.2310E+05
3.9292E+03	-1.6160E+02	4.6436E+03	-1.6158E+02	4.2864E+03	-1.6155E+02	4.6436E+03	-1.6146E+02	3.5720E+03	-1.6138E+02	3.5743E+04	-9.3060E+01	1.2310E+05
3.9292E+03	-1.6182E+02	4.6436E+03	-1.6180E+02	4.2864E+03	-1.6177E+02	4.6436E+03	-1.6168E+02	3.5720E+03	-1.6160E+02	3.5743E+04	-9.3435E+01	1.2310E+05
3.9292E+03	-1.6204E+02	4.6436E+03	-1.6201E+02	4.2864E+03	-1.6198E+02	4.6436E+03	-1.6189E+02	3.5720E+03	-1.6181E+02	3.5743E+04	-9.3809E+01	1.2310E+05
3.9292E+03	-1.6225E+02	4.6436E+03	-1.6223E+02	4.2864E+03	-1.6220E+02	4.6436E+03	-1.6211E+02	3.5720E+03	-1.6203E+02	3.5743E+04	-9.4181E+01	1.2310E+05
3.9292E+03	-1.6247E+02	4.6436E+03	-1.6244E+02	4.2864E+03	-1.6241E+02	4.6436E+03	-1.6233E+02	3.5720E+03	-1.6224E+02	3.5743E+04	-9.4551E+01	1.2310E+05
3.9292E+03	-1.6268E+02	4.6436E+03	-1.6266E+02	4.2864E+03	-1.6263E+02	4.6436E+03	-1.6254E+02	3.5720E+03	-1.6246E+02	3.5743E+04	-9.4920E+01	1.2310E+05
3.9292E+03	-1.6290E+02	4.6436E+03	-1.6287E+02	4.2864E+03	-1.6284E+02	4.6436E+03	-1.6276E+02	3.5720E+03	-1.6268E+02	3.5743E+04	-9.5288E+01	1.2310E+05
3.9292E+03	-1.6311E+02	4.6436E+03	-1.6309E+02	4.2864E+03	-1.6306E+02	4.6436E+03	-1.6297E+02	3.5720E+03	-1.6289E+02	3.5743E+04	-9.5654E+01	1.2310E+05
3.9292E+03	-1.6333E+02	4.6436E+03	-1.6330E+02	4.2864E+03	-1.6327E+02	4.6436E+03	-1.6318E+02	3.5720E+03	-1.6310E+02	3.5743E+04	-9.6019E+01	1.2310E+05
3.9292E+03	-1.6354E+02	4.6436E+03	-1.6352E+02	4.2864E+03	-1.6349E+02	4.6436E+03	-1.6340E+02	3.5720E+03	-1.6332E+02	3.5743E+04	-9.6382E+01	1.2310E+05
3.9292E+03	-1.6375E+02	4.6436E+03	-1.6373E+02	4.2864E+03	-1.6370E+02	4.6436E+03	-1.6361E+02	3.5720E+03	-1.6353E+02	3.5743E+04	-9.6744E+01	1.2310E+05
3.9292E+03	-1.6397E+02	4.6436E+03	-1.6394E+02	4.2864E+03	-1.6391E+02	4.6436E+03	-1.6383E+02	3.5720E+03	-1.6375E+02	3.5743E+04	-9.7105E+01	1.2310E+05
3.9292E+03	-1.6418E+02	4.6436E+03	-1.6416E+02	4.2864E+03	-1.6413E+02	4.6436E+03	-1.6404E+02	3.5720E+03	-1.6396E+02	3.5743E+04	-9.7464E+01	1.2310E+05
3.9292E+03	-1.6439E+02	4.6436E+03	-1.6437E+02	4.2864E+03	-1.6434E+02	4.6436E+03	-1.6425E+02	3.5720E+03	-1.6417E+02	3.5743E+04	-9.7822E+01	1.2310E+05
3.9292E+03	-1.6460E+02	4.6436E+03	-1.6458E+02	4.2864E+03	-1.6455E+02	4.6436E+03	-1.6447E+02	3.5720E+03	-1.6439E+02	3.5743E+04	-9.8179E+01	1.2310E+05
3.9292E+03	-1.6482E+02	4.6436E+03	-1.6479E+02	4.2864E+03	-1.6476E+02	4.6436E+03	-1.6468E+02	3.5720E+03	-1.6460E+02	3.5743E+04	-9.8534E+01	1.2310E+05
3.9292E+03	-1.6503E+02	4.6436E+03	-1.6501E+02	4.2864E+03	-1.6498E+02	4.6436E+03	-1.6489E+02	3.5720E+03	-1.6481E+02	3.5743E+04	-9.8888E+01	1.2310E+05
3.9292E+03	-1.6524E+02	4.6436E+03	-1.6522E+02	4.2864E+03	-1.6519E+02	4.6436E+03	-1.6510E+02	3.5720E+03	-1.6502E+02	3.5743E+04	-9.9241E+01	1.2310E+05
3.9292E+03	-1.6545E+02	4.6436E+03	-1.6543E+02	4.2864E+03	-1.6540E+02	4.6436E+03	-1.6531E+02	3.5720E+03	-1.6523E+02	3.5743E+04	-9.9593E+01	1.2310E+05
3.9292E+03	-1.6566E+02	4.6436E+03	-1.6564E+02	4.2864E+03	-1.6561E+02	4.6436E+03	-1.6552E+02	3.5720E+03	-1.6545E+02	3.5743E+04	-9.9943E+01	1.2310E+05
3.9292E+03	-1.6587E+02	4.6436E+03	-1.6585E+02	4.2864E+03	-1.6582E+02	4.6436E+03	-1.6574E+02	3.5720E+03	-1.6566E+02	3.5743E+04	-1.0029E+02	1.2310E+05
3.9292E+03	-1.6608E+02	4.6436E+03	-1.6606E+02	4.2864E+03	-1.6603E+02	4.6436E+03	-1.6595E+02	3.5720E+03	-1.6587E+02	3.5743E+04	-1.0064E+02	1.2310E+05
3.9292E+03	-1.6629E+02	4.6436E+03	-1.6627E+02	4.2864E+03	-1.6624E+02	4.6436E+03	-1.6616E+02	3.5720E+03	-1.6608E+02	3.5743E+04	-1.0099E+02	1.2310E+05
3.9292E+03	-1.6650E+02	4.6436E+03	-1.6648E+02	4.2864E+03	-1.6645E+02	4.6436E+03	-1.6637E+02	3.5720E+03	-1.6629E+02	3.5743E+04	-1.0133E+02	1.2310E+05
3.9292E+03	-1.6671E+02	4.6436E+03	-1.6669E+02	4.2864E+03	-1.6666E+02	4.6436E+03	-1.6658E+02	3.5720E+03	-1.6650E+02	3.5743E+04	-1.0168E+02	1.2310E+05
3.9292E+03	-1.6692E+02	4.6436E+03	-1.6690E+02	4.2864E+03	-1.6687E+02	4.6436E+03	-1.6679E+02	3.5720E+03	-1.6671E+02	3.5743E+04	-1.0202E+02	1.2310E+05
3.9292E+03	-1.6713E+02	4.6436E+03	-1.6711E+02	4.2864E+03	-1.6708E+02	4.6436E+03	-1.6700E+02	3.5720E+03	-1.6692E+02	3.5743E+04	-1.0236E+02	1.2310E+05
3.9292E+03	-1.6734E+02	4.6436E+03	-1.6732E+02	4.2864E+03	-1.6729E+02	4.6436E+03	-1.6721E+02	3.5720E+03	-1.6713E+02	3.5743E+04	-1.0270E+02	1.2310E+05
3.9292E+03	-1.6755E+02	4.6436E+03	-1.6753E+02	4.2864E+03	-1.6750E+02	4.6436E+03	-1.6741E+02	3.5720E+03	-1.6734E+02	3.5743E+04	-1.0304E+02	1.2310E+05
3.9292E+03	-1.6776E+02	4.6436E+03	-1.6774E+02	4.2864E+03	-1.6771E+02	4.6436E+03	-1.6762E+02	3.5720E+03	-1.6755E+02	3.5743E+04	-1.0338E+02	1.2310E+05
3.9292E+03	-1.6797E+02	4.6436E+03	-1.6795E+02	4.2864E+03	-1.6792E+02	4.6436E+03	-1.6783E+02	3.5720E+03	-1.6775E+02	3.5743E+04	-1.0372E+02	1.2310E+05
3.9292E+03	-1.6818E+02	4.6436E+03	-1.6815E+02	4.2864E+03	-1.6813E+02	4.6436E+03	-1.6804E+02	3.5720E+03	-1.6796E+02	3.5743E+04	-1.0406E+02	1.2310E+05
3.9292E+03	-1.6838E+02	4.6436E+03	-1.6836E+02	4.2864E+03	-1.6833E+02	4.6436E+03	-1.6825E+02	3.5720E+03	-1.6817E+02	3.5743E+04	-1.0439E+02	1.2310E+05
3.9292E+03	-1.6859E+02	4.6436E+03	-1.6857E+02	4.2864E+03	-1.6854E+02	4.6436E+03	-1.6846E+02	3.5720E+03	-1.6838E+02	3.5743E+04	-1.0473E+02	1.2310E+05
3.9292E+03	-1.6880E+02	4.6436E+03	-1.6878E+02	4.2864E+03	-1.6875E+02	4.6436E+03	-1.6866E+02	3.5720E+03	-1.6859E+02	3.5743E+04	-1.0506E+02	1.2310E+05
3.9292E+03	-1.6901E+02	4.6436E+03	-1.6898E+02	4.2864E+03	-1.6895E+02	4.6436E+03	-1.6887E+02	3.5720E+03	-1.6879E+02	3.5743E+04	-1.0539E+02	1.2310E+05
3.9292E+03	-1.6921E+02	4.6436E+03	-1.6919E+02	4.2864E+03	-1.6916E+02	4.6436E+03	-1.6908E+02	3.5720E+03	-1.6900E+02	3.5743E+04	-1.0572E+02	1.2310E+05
3.9292E+03	-1.6942E+02	4.6436E+03	-1.6940E+02	4.2864E+03	-1.6937E+02	4.6436E+03	-1.6928E+02	3.5720E+03	-1.6921E+02	3.5743E+04	-1.0605E+02	1.2310E+05
3.9292E+03	-1.6963E+02	4.6436E+03	-1.6960E+02	4.2864E+03	-1.6957E+02	4.6436E+03	-1.6949E+02	3.5720E+03	-1.6941E+02	3.5743E+04	-1.0638E+02	1.2310E+05
3.9292E+03	-1.6983E+02	4.6436E+03	-1.6981E+02	4.2864E+03	-1.6978E+02	4.6436E+03	-1.6970E+02	3.5720E+03	-1.6962E+02	3.5743E+04	-1.0671E+02	1.2310E+05

Curve 13	Arg 14	Curve 14	Arg 15	Curve 15	Arg 16	Curve 16	Arg 17	Curve 17	Arg 18	Curve 18	Arg 19	Curve 19
3.9292E+03	-1.7004E+02	4.6436E+03	-1.7002E+02	4.2864E+03	-1.6999E+02	4.6436E+03	-1.6990E+02	3.5720E+03	-1.6982E+02	3.5743E+04	-1.0704E+02	1.2310E+05
3.9292E+03	-1.7024E+02	4.6436E+03	-1.7022E+02	4.2864E+03	-1.7019E+02	4.6436E+03	-1.7011E+02	3.5720E+03	-1.7003E+02	3.5743E+04	-1.0736E+02	1.2310E+05
3.9292E+03	-1.7045E+02	4.6436E+03	-1.7043E+02	4.2864E+03	-1.7040E+02	4.6436E+03	-1.7031E+02	3.5720E+03	-1.7024E+02	3.5743E+04	-1.0769E+02	1.2310E+05
3.9292E+03	-1.7065E+02	4.6436E+03	-1.7063E+02	4.2864E+03	-1.7060E+02	4.6436E+03	-1.7052E+02	3.5720E+03	-1.7044E+02	3.5743E+04	-1.0801E+02	1.2310E+05
3.9292E+03	-1.7086E+02	4.6436E+03	-1.7084E+02	4.2864E+03	-1.7081E+02	4.6436E+03	-1.7072E+02	3.5720E+03	-1.7065E+02	3.5743E+04	-1.0834E+02	1.2310E+05
3.9292E+03	-1.7106E+02	4.6436E+03	-1.7104E+02	4.2864E+03	-1.7101E+02	4.6436E+03	-1.7093E+02	3.5720E+03	-1.7085E+02	3.5743E+04	-1.0866E+02	1.2310E+05
3.9292E+03	-1.7127E+02	4.6436E+03	-1.7124E+02	4.2864E+03	-1.7122E+02	4.6436E+03	-1.7113E+02	3.5720E+03	-1.7106E+02	3.5743E+04	-1.0898E+02	1.2310E+05
3.9292E+03	-1.7147E+02	4.6436E+03	-1.7145E+02	4.2864E+03	-1.7142E+02	4.6436E+03	-1.7134E+02	3.5720E+03	-1.7126E+02	3.5743E+04	-1.0930E+02	1.2310E+05
3.9292E+03	-1.7167E+02	4.6436E+03	-1.7165E+02	4.2864E+03	-1.7162E+02	4.6436E+03	-1.7154E+02	3.5720E+03	-1.7146E+02	3.5743E+04	-1.0962E+02	1.2310E+05
3.9292E+03	-1.7188E+02	4.6436E+03	-1.7186E+02	4.2864E+03	-1.7183E+02	4.6436E+03	-1.7174E+02	3.5720E+03	-1.7167E+02	3.5743E+04	-1.0994E+02	1.2310E+05
3.9292E+03	-1.7208E+02	4.6436E+03	-1.7206E+02	4.2864E+03	-1.7203E+02	4.6436E+03	-1.7195E+02	3.5720E+03	-1.7187E+02	3.5743E+04	-1.1026E+02	1.2310E+05
3.9292E+03	-1.7228E+02	4.6436E+03	-1.7226E+02	4.2864E+03	-1.7223E+02	4.6436E+03	-1.7215E+02	3.5720E+03	-1.7207E+02	3.5743E+04	-1.1057E+02	1.2310E+05
3.9292E+03	-1.7249E+02	4.6436E+03	-1.7247E+02	4.2864E+03	-1.7244E+02	4.6436E+03	-1.7235E+02	3.5720E+03	-1.7228E+02	3.5743E+04	-1.1089E+02	1.2310E+05
3.9292E+03	-1.7269E+02	4.6436E+03	-1.7267E+02	4.2864E+03	-1.7264E+02	4.6436E+03	-1.7256E+02	3.5720E+03	-1.7248E+02	3.5743E+04	-1.1120E+02	1.2310E+05
3.9292E+03	-1.7289E+02	4.6436E+03	-1.7287E+02	4.2864E+03	-1.7284E+02	4.6436E+03	-1.7276E+02	3.5720E+03	-1.7268E+02	3.5743E+04	-1.1152E+02	1.2310E+05
3.9292E+03	-1.7309E+02	4.6436E+03	-1.7307E+02	4.2864E+03	-1.7304E+02	4.6436E+03	-1.7296E+02	3.5720E+03	-1.7289E+02	3.5743E+04	-1.1183E+02	1.2310E+05
3.9292E+03	-1.7330E+02	4.6436E+03	-1.7327E+02	4.2864E+03	-1.7325E+02	4.6436E+03	-1.7316E+02	3.5720E+03	-1.7309E+02	3.5743E+04	-1.1214E+02	1.2310E+05
3.9292E+03	-1.7350E+02	4.6436E+03	-1.7348E+02	4.2864E+03	-1.7345E+02	4.6436E+03	-1.7336E+02	3.5720E+03	-1.7329E+02	3.5743E+04	-1.1245E+02	1.2310E+05
3.9292E+03	-1.7370E+02	4.6436E+03	-1.7368E+02	4.2864E+03	-1.7365E+02	4.6436E+03	-1.7357E+02	3.5720E+03	-1.7349E+02	3.5743E+04	-1.1276E+02	1.2310E+05
3.9292E+03	-1.7390E+02	4.6436E+03	-1.7388E+02	4.2864E+03	-1.7385E+02	4.6436E+03	-1.7377E+02	3.5720E+03	-1.7369E+02	3.5743E+04	-1.1307E+02	1.2310E+05
3.9292E+03	-1.7410E+02	4.6436E+03	-1.7408E+02	4.2864E+03	-1.7405E+02	4.6436E+03	-1.7397E+02	3.5720E+03	-1.7389E+02	3.5743E+04	-1.1338E+02	1.2310E+05
3.9292E+03	-1.7430E+02	4.6436E+03	-1.7428E+02	4.2864E+03	-1.7425E+02	4.6436E+03	-1.7417E+02	3.5720E+03	-1.7409E+02	3.5743E+04	-1.1369E+02	1.2310E+05
3.9292E+03	-1.7450E+02	4.6436E+03	-1.7448E+02	4.2864E+03	-1.7445E+02	4.6436E+03	-1.7437E+02	3.5720E+03	-1.7429E+02	3.5743E+04	-1.1400E+02	1.2310E+05
3.9292E+03	-1.7470E+02	4.6436E+03	-1.7468E+02	4.2864E+03	-1.7465E+02	4.6436E+03	-1.7457E+02	3.5720E+03	-1.7450E+02	3.5743E+04	-1.1430E+02	1.2310E+05
3.9292E+03	-1.7490E+02	4.6436E+03	-1.7488E+02	4.2864E+03	-1.7485E+02	4.6436E+03	-1.7477E+02	3.5720E+03	-1.7470E+02	3.5743E+04	-1.1461E+02	1.2310E+05
3.9292E+03	-1.7510E+02	4.6436E+03	-1.7508E+02	4.2864E+03	-1.7505E+02	4.6436E+03	-1.7497E+02	3.5720E+03	-1.7490E+02	3.5743E+04	-1.1491E+02	1.2310E+05
3.9292E+03	-1.7530E+02	4.6436E+03	-1.7528E+02	4.2864E+03	-1.7525E+02	4.6436E+03	-1.7517E+02	3.5720E+03	-1.7510E+02	3.5743E+04	-1.1522E+02	1.2310E+05
3.9292E+03	-1.7550E+02	4.6436E+03	-1.7548E+02	4.2864E+03	-1.7545E+02	4.6436E+03	-1.7537E+02	3.5720E+03	-1.7530E+02	3.5743E+04	-1.1552E+02	1.2310E+05
3.9292E+03	-1.7570E+02	4.6436E+03	-1.7568E+02	4.2864E+03	-1.7565E+02	4.6436E+03	-1.7557E+02	3.5720E+03	-1.7549E+02	3.5743E+04	-1.1582E+02	1.2310E+05
3.9292E+03	-1.7590E+02	4.6436E+03	-1.7588E+02	4.2864E+03	-1.7585E+02	4.6436E+03	-1.7577E+02	3.5720E+03	-1.7569E+02	3.5743E+04	-1.1612E+02	1.2310E+05
3.9292E+03	-1.7610E+02	4.6436E+03	-1.7608E+02	4.2864E+03	-1.7605E+02	4.6436E+03	-1.7597E+02	3.5720E+03	-1.7589E+02	3.5743E+04	-1.1642E+02	1.2310E+05
3.9292E+03	-1.7630E+02	4.6436E+03	-1.7627E+02	4.2864E+03	-1.7625E+02	4.6436E+03	-1.7617E+02	3.5720E+03	-1.7609E+02	3.5743E+04	-1.1672E+02	1.2310E+05
3.9292E+03	-1.7649E+02	4.6436E+03	-1.7647E+02	4.2864E+03	-1.7644E+02	4.6436E+03	-1.7636E+02	3.5720E+03	-1.7629E+02	3.5743E+04	-1.1702E+02	1.2310E+05
3.9292E+03	-1.7669E+02	4.6436E+03	-1.7667E+02	4.2864E+03	-1.7664E+02	4.6436E+03	-1.7656E+02	3.5720E+03	-1.7649E+02	3.5743E+04	-1.1732E+02	1.2310E+05
3.9292E+03	-1.7689E+02	4.6436E+03	-1.7687E+02	4.2864E+03	-1.7684E+02	4.6436E+03	-1.7676E+02	3.5720E+03	-1.7669E+02	3.5743E+04	-1.1762E+02	1.2310E+05
3.9292E+03	-1.7709E+02	4.6436E+03	-1.7707E+02	4.2864E+03	-1.7704E+02	4.6436E+03	-1.7696E+02	3.5720E+03	-1.7688E+02	3.5743E+04	-1.1792E+02	1.2310E+05
3.9292E+03	-1.7728E+02	4.6436E+03	-1.7726E+02	4.2864E+03	-1.7724E+02	4.6436E+03	-1.7715E+02	3.5720E+03	-1.7708E+02	3.5743E+04	-1.1821E+02	1.2310E+05
3.9292E+03	-1.7748E+02	4.6436E+03	-1.7746E+02	4.2864E+03	-1.7743E+02	4.6436E+03	-1.7735E+02	3.5720E+03	-1.7728E+02	3.5743E+04	-1.1851E+02	1.2310E+05
3.9292E+03	-1.7768E+02	4.6436E+03	-1.7766E+02	4.2864E+03	-1.7763E+02	4.6436E+03	-1.7755E+02	3.5720E+03	-1.7748E+02	3.5743E+04	-1.1880E+02	1.2310E+05
3.9292E+03	-1.7787E+02	4.6436E+03	-1.7785E+02	4.2864E+03	-1.7783E+02	4.6436E+03	-1.7775E+02	3.5720E+03	-1.7767E+02	3.5743E+04	-1.1910E+02	1.2310E+05
3.9292E+03	-1.7807E+02	4.6436E+03	-1.7805E+02	4.2864E+03	-1.7802E+02	4.6436E+03	-1.7794E+02	3.5720E+03	-1.7787E+02	3.5743E+04	-1.1939E+02	1.2310E+05
3.9292E+03	-1.7827E+02	4.6436E+03	-1.7825E+02	4.2864E+03	-1.7822E+02	4.6436E+03	-1.7814E+02	3.5720E+03	-1.7807E+02	3.5743E+04	-1.1968E+02	1.2310E+05
3.9292E+03	-1.7846E+02	4.6436E+03	-1.7844E+02	4.2864E+03	-1.7842E+02	4.6436E+03	-1.7833E+02	3.5720E+03	-1.7826E+02	3.5743E+04	-1.1997E+02	1.2310E+05
3.9292E+03	-1.7866E+02	4.6436E+03	-1.7864E+02	4.2864E+03	-1.7861E+02	4.6436E+03	-1.7853E+02	3.5720E+03	-1.7846E+02	3.5743E+04	-1.2026E+02	1.2310E+05
3.9292E+03	-1.7885E+02	4.6436E+03	-1.7883E+02	4.2864E+03	-1.7881E+02	4.6436E+03	-1.7873E+02	3.5720E+03	-1.7865E+02	3.5743E+04	-1.2055E+02	1.2310E+05
3.9292E+03	-1.7905E+02	4.6436E+03	-1.7903E+02	4.2864E+03	-1.7900E+02	4.6436E+03	-1.7892E+02	3.5720E+03	-1.7885E+02	3.5743E+04	-1.2084E+02	1.2310E+05
3.9292E+03	-1.7925E+02	4.6436E+03	-1.7922E+02	4.2864E+03	-1.7920E+02	4.6436E+03	-1.7912E+02	3.5720E+03	-1.7904E+02	3.5743E+04	-1.2113E+02	1.2310E+05
3.9292E+03	-1.7944E+02	4.6436E+03	-1.7942E+02	4.2864E+03	-1.7939E+02	4.6436E+03	-1.7931E+02	3.5720E+03	-1.7924E+02	3.5743E+04	-1.2142E+02	1.2310E+05
3.9292E+03	-1.7963E+02	4.6436E+03	-1.7961E+02	4.2864E+03	-1.7959E+02	4.6436E+03	-1.7951E+02	3.5720E+03	-1.7943E+02	3.5743E+04	-1.2171E+02	1.2310E+05
3.9292E+03	-1.7983E+02	4.6436E+03	-1.7981E+02	4.2864E+03	-1.7978E+02	4.6436E+03	-1.7970E+02	3.5720E+03	-1.7963E+02	3.5743E+04	-1.2200E+02	1.2310E+05
3.9292E+03	-1.8002E+02	4.6436E+03	-1.8000E+02	4.2864E+03	-1.7998E+02	4.6436E+03	-1.7990E+02	3.5720E+03	-1.7982E+02	3.5743E+04	-1.2228E+02	1.2310E+05
3.9292E+03	-1.8022E+02	4.6436E+03	-1.8020E+02	4.2864E+03	-1.8017E+02	4.6436E+03	-1.8009E+02	3.5720E+03	-1.8002E+02	3.5743E+04	-1.2257E+02	1.2310E+05

Curve 13	Arg 14	Curve 14	Arg 15	Curve 15	Arg 16	Curve 16	Arg 17	Curve 17	Arg 18	Curve 18	Arg 19	Curve 19
3.9292E+03	-1.8041E+02	4.6436E+03	-1.8039E+02	4.2864E+03	-1.8036E+02	4.6436E+03	-1.8028E+02	3.5720E+03	-1.8021E+02	3.5743E+04	-1.2285E+02	1.2310E+05
3.9292E+03	-1.8061E+02	4.6436E+03	-1.8058E+02	4.2864E+03	-1.8056E+02	4.6436E+03	-1.8048E+02	3.5720E+03	-1.8041E+02	3.5743E+04	-1.2314E+02	1.2310E+05
3.9292E+03	-1.8080E+02	4.6436E+03	-1.8078E+02	4.2864E+03	-1.8075E+02	4.6436E+03	-1.8067E+02	3.5720E+03	-1.8060E+02	3.5743E+04	-1.2342E+02	1.2310E+05
3.9292E+03	-1.8099E+02	4.6436E+03	-1.8097E+02	4.2864E+03	-1.8094E+02	4.6436E+03	-1.8087E+02	3.5720E+03	-1.8079E+02	3.5743E+04	-1.2370E+02	1.2310E+05
3.9292E+03	-1.8119E+02	4.6436E+03	-1.8116E+02	4.2864E+03	-1.8114E+02	4.6436E+03	-1.8106E+02	3.5720E+03	-1.8099E+02	3.5743E+04	-1.2399E+02	1.2310E+05
3.9292E+03	-1.8138E+02	4.6436E+03	-1.8136E+02	4.2864E+03	-1.8133E+02	4.6436E+03	-1.8125E+02	3.5720E+03	-1.8118E+02	3.5743E+04	-1.2427E+02	1.2310E+05
3.9292E+03	-1.8157E+02	4.6436E+03	-1.8155E+02	4.2864E+03	-1.8152E+02	4.6436E+03	-1.8144E+02	3.5720E+03	-1.8137E+02	3.5743E+04	-1.2455E+02	1.2310E+05
3.9292E+03	-1.8176E+02	4.6436E+03	-1.8174E+02	4.2864E+03	-1.8172E+02	4.6436E+03	-1.8164E+02	3.5720E+03	-1.8156E+02	3.5743E+04	-1.2483E+02	1.2310E+05
3.9292E+03	-1.8196E+02	4.6436E+03	-1.8194E+02	4.2864E+03	-1.8191E+02	4.6436E+03	-1.8183E+02	3.5720E+03	-1.8176E+02	3.5743E+04	-1.2511E+02	1.2310E+05
3.9292E+03	-1.8215E+02	4.6436E+03	-1.8213E+02	4.2864E+03	-1.8210E+02	4.6436E+03	-1.8202E+02	3.5720E+03	-1.8195E+02	3.5743E+04	-1.2539E+02	1.2310E+05
3.9292E+03	-1.8234E+02	4.6436E+03	-1.8232E+02	4.2864E+03	-1.8229E+02	4.6436E+03	-1.8221E+02	3.5720E+03	-1.8214E+02	3.5743E+04	-1.2567E+02	1.2310E+05
3.9292E+03	-1.8253E+02	4.6436E+03	-1.8251E+02	4.2864E+03	-1.8248E+02	4.6436E+03	-1.8241E+02	3.5720E+03	-1.8233E+02	3.5743E+04	-1.2594E+02	1.2310E+05
3.9292E+03	-1.8272E+02	4.6436E+03	-1.8270E+02	4.2864E+03	-1.8268E+02	4.6436E+03	-1.8260E+02	3.5720E+03	-1.8253E+02	3.5743E+04	-1.2622E+02	1.2310E+05
3.9292E+03	-1.8291E+02	4.6436E+03	-1.8289E+02	4.2864E+03	-1.8287E+02	4.6436E+03	-1.8279E+02	3.5720E+03	-1.8272E+02	3.5743E+04	-1.2650E+02	1.2310E+05
3.9292E+03	-1.8310E+02	4.6436E+03	-1.8308E+02	4.2864E+03	-1.8306E+02	4.6436E+03	-1.8298E+02	3.5720E+03	-1.8291E+02	3.5743E+04	-1.2677E+02	1.2310E+05
3.9292E+03	-1.8330E+02	4.6436E+03	-1.8328E+02	4.2864E+03	-1.8325E+02	4.6436E+03	-1.8317E+02	3.5720E+03	-1.8310E+02	3.5743E+04	-1.2705E+02	1.2310E+05
3.9292E+03	-1.8349E+02	4.6436E+03	-1.8347E+02	4.2864E+03	-1.8344E+02	4.6436E+03	-1.8336E+02	3.5720E+03	-1.8329E+02	3.5743E+04	-1.2732E+02	1.2310E+05
3.9292E+03	-1.8368E+02	4.6436E+03	-1.8366E+02	4.2864E+03	-1.8363E+02	4.6436E+03	-1.8355E+02	3.5720E+03	-1.8348E+02	3.5743E+04	-1.2760E+02	1.2310E+05
3.9292E+03	-1.8387E+02	4.6436E+03	-1.8385E+02	4.2864E+03	-1.8382E+02	4.6436E+03	-1.8374E+02	3.5720E+03	-1.8367E+02	3.5743E+04	-1.2787E+02	1.2310E+05
3.9292E+03	-1.8406E+02	4.6436E+03	-1.8404E+02	4.2864E+03	-1.8401E+02	4.6436E+03	-1.8393E+02	3.5720E+03	-1.8386E+02	3.5743E+04	-1.2815E+02	1.2310E+05
3.9292E+03	-1.8425E+02	4.6436E+03	-1.8423E+02	4.2864E+03	-1.8420E+02	4.6436E+03	-1.8412E+02	3.5720E+03	-1.8405E+02	3.5743E+04	-1.2842E+02	1.2310E+05
3.9292E+03	-1.8444E+02	4.6436E+03	-1.8442E+02	4.2864E+03	-1.8439E+02	4.6436E+03	-1.8431E+02	3.5720E+03	-1.8424E+02	3.5743E+04	-1.2869E+02	1.2310E+05
3.9292E+03	-1.8463E+02	4.6436E+03	-1.8461E+02	4.2864E+03	-1.8458E+02	4.6436E+03	-1.8450E+02	3.5720E+03	-1.8443E+02	3.5743E+04	-1.2896E+02	1.2310E+05
3.9292E+03	-1.8481E+02	4.6436E+03	-1.8479E+02	4.2864E+03	-1.8477E+02	4.6436E+03	-1.8469E+02	3.5720E+03	-1.8462E+02	3.5743E+04	-1.2923E+02	1.2310E+05
3.9292E+03	-1.8500E+02	4.6436E+03	-1.8498E+02	4.2864E+03	-1.8496E+02	4.6436E+03	-1.8488E+02	3.5720E+03	-1.8481E+02	3.5743E+04	-1.2950E+02	1.2310E+05
3.9292E+03	-1.8519E+02	4.6436E+03	-1.8517E+02	4.2864E+03	-1.8515E+02	4.6436E+03	-1.8507E+02	3.5720E+03	-1.8500E+02	3.5743E+04	-1.2977E+02	1.2310E+05
3.9292E+03	-1.8538E+02	4.6436E+03	-1.8536E+02	4.2864E+03	-1.8534E+02	4.6436E+03	-1.8526E+02	3.5720E+03	-1.8519E+02	3.5743E+04	-1.3004E+02	1.2310E+05
3.9292E+03	-1.8557E+02	4.6436E+03	-1.8555E+02	4.2864E+03	-1.8552E+02	4.6436E+03	-1.8545E+02	3.5720E+03	-1.8538E+02	3.5743E+04	-1.3031E+02	1.2310E+05
3.9292E+03	-1.8576E+02	4.6436E+03	-1.8574E+02	4.2864E+03	-1.8571E+02	4.6436E+03	-1.8563E+02	3.5720E+03	-1.8556E+02	3.5743E+04	-1.3058E+02	1.2310E+05
3.9292E+03	-1.8595E+02	4.6436E+03	-1.8593E+02	4.2864E+03	-1.8590E+02	4.6436E+03	-1.8582E+02	3.5720E+03	-1.8575E+02	3.5743E+04	-1.3085E+02	1.2310E+05
3.9292E+03	-1.8613E+02	4.6436E+03	-1.8611E+02	4.2864E+03	-1.8609E+02	4.6436E+03	-1.8601E+02	3.5720E+03	-1.8594E+02	3.5743E+04	-1.3111E+02	1.2310E+05
3.9292E+03	-1.8632E+02	4.6436E+03	-1.8630E+02	4.2864E+03	-1.8628E+02	4.6436E+03	-1.8620E+02	3.5720E+03	-1.8613E+02	3.5743E+04	-1.3138E+02	1.2310E+05
3.9292E+03	-1.8651E+02	4.6436E+03	-1.8649E+02	4.2864E+03	-1.8646E+02	4.6436E+03	-1.8639E+02	3.5720E+03	-1.8632E+02	3.5743E+04	-1.3164E+02	1.2310E+05
3.9292E+03	-1.8670E+02	4.6436E+03	-1.8668E+02	4.2864E+03	-1.8665E+02	4.6436E+03	-1.8657E+02	3.5720E+03	-1.8650E+02	3.5743E+04	-1.3191E+02	1.2310E+05

Soil Parameters	
Kd (mL/g)	0
Moisture content	0.2
Erosion Rate (0.2 kg/sq m-yr)	0.2
Bulk Density (g/cc)	1.5
Over watering Rate (m/yr)	0.079
Affected Depth (m)	0.25
Lamda effective (1/yr)	1.580533333

	Intake (mg/kg body wt./day)		Soil
	No	0.86	Concentration
Flux Out (gm/yr)	Recycle	Recycle	(gm/sq m)
0.0000E+00	0.0000E+00	0.0000E+00	0.00E+00
1.2526E+05	1.7248E-04	1.2682E-03	2.22E-03
1.6448E+05	2.2649E-04	1.6653E-03	2.91E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03

Flux Out (gm/yr)	No Recycle	Recycle	0.86 Concentration (gm/sq m)
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03

Flux Out (gm/yr)	No Recycle	Recycle	0.86 Concentration (gm/sq m)
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03

Flux Out (gm/yr)	No Recycle	Recycle	0.86 Concentration (gm/sq m)
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03

Flux Out (gm/yr)	No Recycle	Recycle	0.86 Concentration (gm/sq m)
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
2.9600E+05	4.0760E-04	2.9971E-03	5.24E-03
2.9600E+05	4.0760E-04	2.9971E-03	5.24E-03
2.9600E+05	4.0760E-04	2.9971E-03	5.24E-03
2.9600E+05	4.0760E-04	2.9971E-03	5.24E-03
2.9600E+05	4.0760E-04	2.9971E-03	5.24E-03
2.9600E+05	4.0760E-04	2.9971E-03	5.24E-03
2.9600E+05	4.0760E-04	2.9971E-03	5.24E-03
2.9600E+05	4.0760E-04	2.9971E-03	5.24E-03

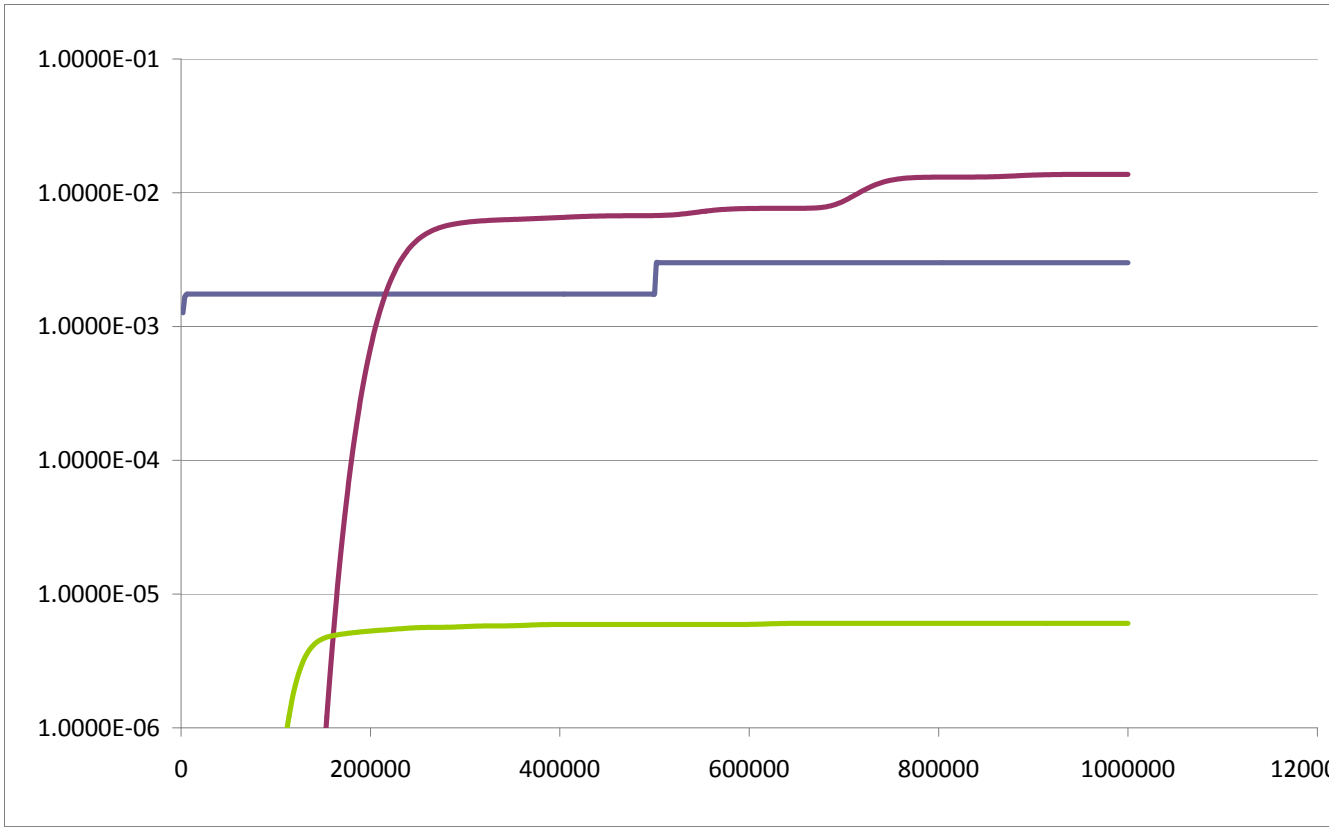
Flux Out (gm/yr)	No Recycle	Recycle	0.86 Concentration (gm/sq m)
2.9600E+05	4.0760E-04	2.9971E-03	5.24E-03

Flux Out (gm/yr)	No Recycle	Recycle	0.86 Concentration (gm/sq m)
2.9600E+05	4.0760E-04	2.9971E-03	5.24E-03

Flux Out (gm/yr)	No Recycle	Recycle	0.86 Concentration (gm/sq m)
2.9600E+05	4.0760E-04	2.9971E-03	5.24E-03

Flux Out (gm/yr)	No Recycle	Recycle	0.86 Concentration (gm/sq m)
2.9600E+05	4.0760E-04	2.9971E-03	5.24E-03

Flux Out (gm/yr)	No Recycle	Recycle	0.86 Concentration (gm/sq m)
2.9600E+05	4.0760E-04	2.9971E-03	5.24E-03
2.9600E+05	4.0760E-04	2.9971E-03	5.24E-03
2.9600E+05	4.0760E-04	2.9971E-03	5.24E-03
2.9600E+05	4.0760E-04	2.9971E-03	5.24E-03
2.9600E+05	4.0760E-04	2.9971E-03	5.24E-03
2.9600E+05	4.0760E-04	2.9971E-03	5.24E-03
2.9600E+05	4.0760E-04	2.9971E-03	5.24E-03
2.9600E+05	4.0760E-04	2.9971E-03	5.24E-03
2.9600E+05	4.0760E-04	2.9971E-03	5.24E-03
2.9600E+05	4.0760E-04	2.9971E-03	5.24E-03
2.9600E+05	4.0760E-04	2.9971E-03	5.24E-03
2.9600E+05	4.0760E-04	2.9971E-03	5.24E-03
2.9600E+05	4.0760E-04	2.9971E-03	5.24E-03
2.9600E+05	4.0760E-04	2.9971E-03	5.24E-03
2.9600E+05	4.0760E-04	2.9971E-03	5.24E-03
2.9600E+05	4.0760E-04	2.9971E-03	5.24E-03
2.9600E+05	4.0760E-04	2.9971E-03	5.24E-03
2.9600E+05	4.0760E-04	2.9971E-03	5.24E-03
2.9600E+05	4.0760E-04	2.9971E-03	5.24E-03
2.9600E+05	4.0760E-04	2.9971E-03	5.24E-03
2.9600E+05	4.0760E-04	2.9971E-03	5.24E-03
2.9600E+05	4.0760E-04	2.9971E-03	5.24E-03
2.9600E+05	4.0760E-04	2.9971E-03	5.24E-03
2.9600E+05	4.0760E-04	2.9971E-03	5.24E-03
2.9600E+05	4.0760E-04	2.9971E-03	5.24E-03
2.9600E+05	4.0760E-04	2.9971E-03	5.24E-03
2.9600E+05	4.0760E-04	2.9971E-03	5.24E-03
2.9600E+05	4.0760E-04	2.9971E-03	5.24E-03
2.9600E+05	4.0760E-04	2.9971E-03	5.24E-03
2.9600E+05	4.0760E-04	2.9971E-03	5.24E-03
2.9600E+05	4.0760E-04	2.9971E-03	5.24E-03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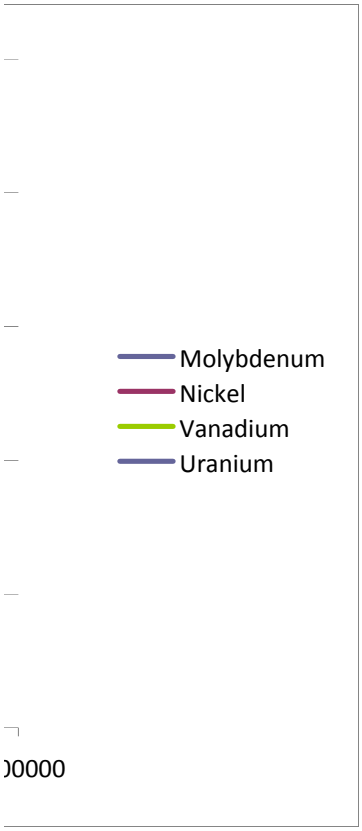

Molybdenum
Nickel
Vanadium
Uranium
00000

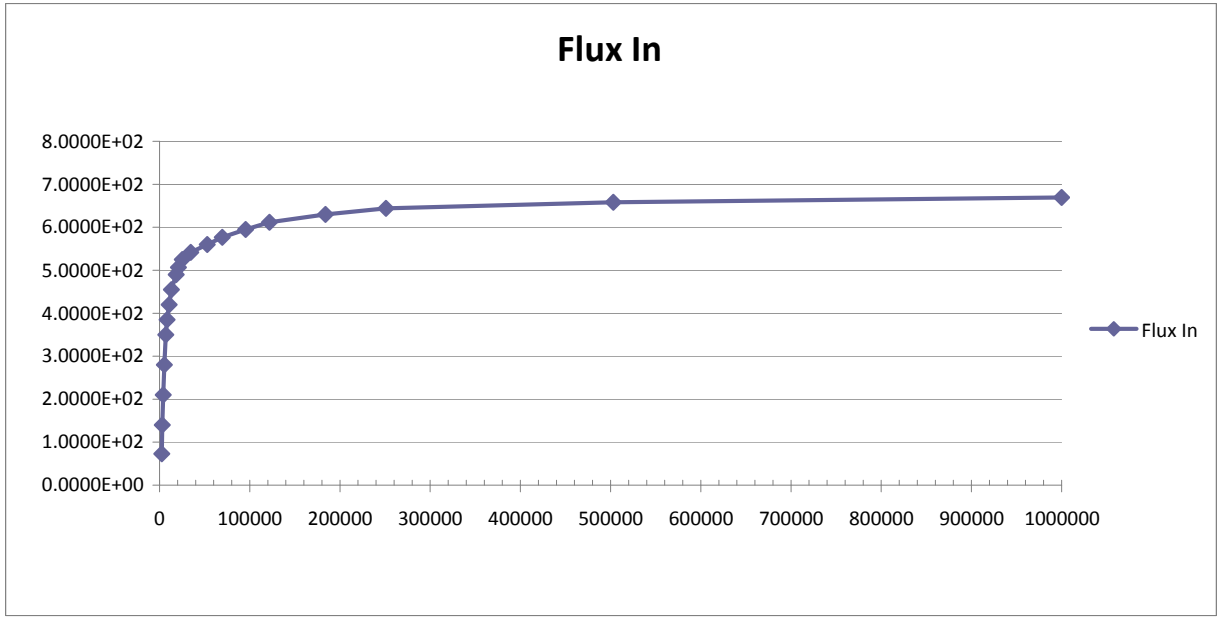
Combined TSPA Case, 2003 Pumping Rates, Wet Climate
Non-Radiologic Metals Transport from 18 km to Amargosa Farms

Pump Rate=	16828	acre-ft/yr	2.07E+10	liters/yr
specific discharge (m/day)=			2.39E-02	
path length (km)	1.6000E+01			
Recycle Fraction	0.864			

Combined TSPA Case, 2003 Pumping Rates, Wet Climate
Non-Radiologic Metals Transport from 18 km to Amargosa Farms
Contaminant: Vanadium
Oral Ref dose =7E-03 mg/kg body wt./day
Pump Rate= 16828 acre-ft/yr 20748924000 liters/yr

Input Curve

Time (yr)	Flux In	Del R
2400	7.2800E+01	
3010	1.4000E+02	6.7200E+01
4040	2.1000E+02	7.0000E+01
5270	2.8000E+02	7.0000E+01
6940	3.5000E+02	7.0000E+01
8290	3.8500E+02	3.5000E+01
10630	4.2000E+02	3.5000E+01
13210	4.5500E+02	3.5000E+01
18470	4.9000E+02	3.5000E+01
20860	5.0680E+02	1.6800E+01
25180	5.2500E+02	1.8200E+01
34520	5.4180E+02	1.6800E+01
52880	5.6000E+02	1.8200E+01
69550	5.7680E+02	1.6800E+01
95350	5.9500E+02	1.8200E+01
121790	6.1180E+02	1.6800E+01
183930	6.3000E+02	1.8200E+01
250910	6.4400E+02	1.4000E+01
503020	6.5800E+02	1.4000E+01
1000000	6.6920E+02	1.1200E+01



Output Curve

2.39E-02		specific discharge (m/day)
5.4538E-02	v	groundwater velocity (km/yr)
1.6000E+01	L	path length (km)
1.0000E-01	D	Dispersion Coefficient (km)
5.4538E-03	Disp	Dispersivity (sq km/yr)
1.0100E+02	K	Retardation Factor (no units)
2.9631E+04	td	arrival time of the mid-point =TL (yr)
8.0000E+00	Kd	distribution coefficient =Kd (mL/gm)
1.6000E-01	ε	porosity
2.0000E+00	ρ	bulk density of solid (gm/mL)
0.0000E+00	λ	decay constant (1/yr)
NA	t1/2	halflife (yr)

Note: When λ is set to zero this is either a stable contaminant or a member of a decay chain. Decay and growth of radionuclides in decay chain members is adjusted in a separate work sheet.

Composite Curves

Time (yrs)	Arg 1	Curve 1	Arg 2	Curve 2	Arg 3	Curve 3	Arg 4	Curve 4	Arg 5	Curve 5	Arg 6	Curve 6
250	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
2000	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
4000	2.5747E+01	0.0000E+00	3.3445E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
6000	1.5940E+01	0.0000E+00	1.7901E+01	0.0000E+00	2.2964E+01	0.0000E+00	3.9301E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
8000	1.1799E+01	0.0000E+00	1.2816E+01	0.0000E+00	1.4988E+01	0.0000E+00	1.8917E+01	0.0000E+00	3.2242E+01	0.0000E+00	0.0000E+00	0.0000E+00
10000	9.2850E+00	0.0000E+00	9.9497E+00	0.0000E+00	1.1265E+01	0.0000E+00	1.3303E+01	0.0000E+00	1.7648E+01	0.0000E+00	2.4808E+01	0.0000E+00
12000	7.5114E+00	0.0000E+00	7.9984E+00	0.0000E+00	8.9244E+00	0.0000E+00	1.0257E+01	0.0000E+00	1.2691E+01	0.0000E+00	1.5636E+01	0.0000E+00
14000	6.1510E+00	0.0000E+00	6.5332E+00	0.0000E+00	7.2419E+00	0.0000E+00	8.2189E+00	0.0000E+00	9.8697E+00	0.0000E+00	1.1631E+01	0.0000E+00
16000	5.0506E+00	3.0760E-11	5.3645E+00	1.1502E-12	5.9368E+00	0.0000E+00	6.7041E+00	0.0000E+00	7.9405E+00	0.0000E+00	9.1725E+00	0.0000E+00
18000	4.1274E+00	1.7853E-07	4.3936E+00	1.8134E-08	4.8731E+00	1.9305E-10	5.5037E+00	2.4869E-13	6.4880E+00	0.0000E+00	7.4277E+00	0.0000E+00
20000	3.3319E+00	8.2393E-05	3.5632E+00	1.6372E-05	3.9759E+00	6.5769E-07	4.5109E+00	6.2214E-09	5.3276E+00	8.5876E-13	6.0847E+00	0.0000E+00
22000	2.6325E+00	6.6175E-03	2.8371E+00	2.1052E-03	3.1997E+00	2.1136E-04	3.6646E+00	7.6613E-06	4.3624E+00	1.1995E-08	4.9958E+00	2.8084E-11
24000	2.0077E+00	1.5193E-01	2.1913E+00	6.7962E-02	2.5150E+00	1.3141E-02	2.9265E+00	1.2225E-03	3.5362E+00	9.9869E-06	4.0807E+00	1.3792E-07
26000	1.4424E+00	1.3900E+00	1.6092E+00	8.0014E-01	1.9019E+00	2.5033E-01	2.2714E+00	4.6103E-02	2.8132E+00	1.2136E-03	3.2912E+00	5.6845E-05
28000	9.2561E-01	6.4018E+00	1.0786E+00	4.4506E+00	1.3460E+00	1.9937E+00	1.6817E+00	6.0869E-01	2.1700E+00	3.7614E-02	2.5963E+00	4.2152E-03
30000	4.4913E-01	1.7651E+01	5.9060E-01	1.4126E+01	8.3708E-01	8.2771E+00	1.1450E+00	3.6884E+00	1.5898E+00	4.2970E-01	1.9751E+00	9.1312E-02
32000	6.5778E-03	3.3351E+01	1.3828E-01	2.9574E+01	3.6713E-01	2.1127E+01	6.5189E-01	1.2480E+01	1.0609E+00	2.3369E+00	1.4128E+00	8.0011E-01
34000	-4.0701E-01	4.8220E+01	-2.8368E-01	4.5910E+01	-6.9879E-02	3.7755E+01	1.9526E-01	2.7385E+01	5.7420E-01	7.2934E+00	8.9843E-01	3.5680E+00
36000	-7.9559E-01	5.8446E+01	-6.7952E-01	5.8220E+01	-4.7870E-01	5.2555E+01	-2.3038E-01	4.3940E+01	1.2303E-01	1.5083E+01	4.2396E-01	9.6039E+00
38000	-1.1624E+00	6.3833E+01	-1.0527E+00	6.5220E+01	-8.6314E-01	6.2223E+01	-6.2941E-01	5.6931E+01	-2.9795E-01	2.3214E+01	-1.6882E-02	1.7833E+01
40000	-1.5100E+00	6.6101E+01	-1.4059E+00	6.8362E+01	-1.2263E+00	6.7099E+01	-1.0053E+00	6.4572E+01	-6.9295E-01	2.9276E+01	-4.2900E-01	2.5479E+01
42000	-1.8406E+00	6.6890E+01	-1.7415E+00	6.9518E+01	-1.5707E+00	6.9079E+01	-1.3610E+00	6.8101E+01	-1.0653E+00	3.2692E+01	-8.1631E-01	3.0654E+01
44000	-2.1561E+00	6.7123E+01	-2.0614E+00	6.9876E+01	-1.8985E+00	6.9746E+01	-1.6988E+00	6.9430E+01	-1.4179E+00	3.4214E+01	-1.1820E+00	3.3344E+01
46000	-2.4580E+00	6.7183E+01	-2.3673E+00	6.9971E+01	-2.2114E+00	6.9938E+01	-2.0207E+00	6.9851E+01	-1.7529E+00	3.4769E+01	-1.5286E+00	3.4464E+01
48000	-2.7476E+00	6.7197E+01	-2.6605E+00	6.9994E+01	-2.5110E+00	6.9987E+01	-2.3283E+00	6.9965E+01	-2.0724E+00	3.4941E+01	-1.8584E+00	3.4850E+01
50000	-3.0261E+00	6.7199E+01	-2.9423E+00	6.9999E+01	-2.7986E+00	6.9997E+01	-2.6231E+00	6.9993E+01	-2.3778E+00	3.4986E+01	-2.1731E+00	3.4963E+01
52000	-3.2944E+00	6.7200E+01	-3.2136E+00	7.0000E+01	-3.0751E+00	7.0000E+01	-2.9063E+00	6.9999E+01	-2.6706E+00	3.4997E+01	-2.4743E+00	3.4992E+01
54000	-3.5534E+00	6.7200E+01	-3.4754E+00	7.0000E+01	-3.3417E+00	7.0000E+01	-3.1789E+00	7.0000E+01	-2.9520E+00	3.4999E+01	-2.7632E+00	3.4998E+01
56000	-3.8039E+00	6.7200E+01	-3.7284E+00	7.0000E+01	-3.5991E+00	7.0000E+01	-3.4418E+00	7.0000E+01	-3.2229E+00	3.5000E+01	-3.0411E+00	3.5000E+01
58000	-4.0465E+00	6.7200E+01	-3.9733E+00	7.0000E+01	-3.8481E+00	7.0000E+01	-3.6960E+00	7.0000E+01	-3.4844E+00	3.5000E+01	-3.3089E+00	3.5000E+01
60000	-4.2818E+00	6.7200E+01	-4.2108E+00	7.0000E+01	-4.0894E+00	7.0000E+01	-3.9419E+00	7.0000E+01	-3.7371E+00	3.5000E+01	-3.5674E+00	3.5000E+01
62000	-4.5104E+00	6.7200E+01	-4.4413E+00	7.0000E+01	-4.3234E+00	7.0000E+01	-4.1803E+00	7.0000E+01	-3.9817E+00	3.5000E+01	-3.8174E+00	3.5000E+01
64000	-4.7326E+00	6.7200E+01	-4.6655E+00	7.0000E+01	-4.5508E+00	7.0000E+01	-4.4117E+00	7.0000E+01	-4.2190E+00	3.5000E+01	-4.0596E+00	3.5000E+01
66000	-4.9490E+00	6.7200E+01	-4.8836E+00	7.0000E+01	-4.7720E+00	7.0000E+01	-4.6367E+00	7.0000E+01	-4.4493E+00	3.5000E+01	-4.2945E+00	3.5000E+01
68000	-5.1599E+00	6.7200E+01	-5.0961E+00	7.0000E+01	-4.9873E+00	7.0000E+01	-4.8555E+00	7.0000E+01	-4.6732E+00	3.5000E+01	-4.5227E+00	3.5000E+01
70000	-5.3656E+00	6.7200E+01	-5.3034E+00	7.0000E+01	-5.1973E+00	7.0000E+01	-5.0688E+00	7.0000E+01	-4.8911E+00	3.5000E+01	-4.7446E+00	3.5000E+01
72000	-5.5665E+00	6.7200E+01	-5.5057E+00	7.0000E+01	-5.4021E+00	7.0000E+01	-5.2767E+00	7.0000E+01	-5.1034E+00	3.5000E+01	-4.9607E+00	3.5000E+01
74000	-5.7628E+00	6.7200E+01	-5.7034E+00	7.0000E+01	-5.6021E+00	7.0000E+01	-5.4797E+00	7.0000E+01	-5.3105E+00	3.5000E+01	-5.1713E+00	3.5000E+01
76000	-5.9548E+00	6.7200E+01	-5.8967E+00	7.0000E+01	-5.7977E+00	7.0000E+01	-5.6779E+00	7.0000E+01	-5.5127E+00	3.5000E+01	-5.3767E+00	3.5000E+01
78000	-6.1428E+00	6.7200E+01	-6.0859E+00	7.0000E+01	-5.9889E+00	7.0000E+01	-5.8718E+00	7.0000E+01	-5.7102E+00	3.5000E+01	-5.5774E+00	3.5000E+01
80000	-6.3269E+00	6.7200E+01	-6.2711E+00	7.0000E+01	-6.1762E+00	7.0000E+01	-6.0615E+00	7.0000E+01	-5.9034E+00	3.5000E+01	-5.7735E+00	3.5000E+01
82000	-6.5073E+00	6.7200E+01	-6.4527E+00	7.0000E+01	-6.3596E+00	7.0000E+01	-6.2473E+00	7.0000E+01	-6.0924E+00	3.5000E+01	-5.9653E+00	3.5000E+01
84000	-6.6844E+00	6.7200E+01	-6.6307E+00	7.0000E+01	-6.5395E+00	7.0000E+01	-6.4293E+00	7.0000E+01	-6.2775E+00	3.5000E+01	-6.1530E+00	3.5000E+01
86000	-6.8581E+00	6.7200E+01	-6.8054E+00	7.0000E+01	-6.7159E+00	7.0000E+01	-6.6078E+00	7.0000E+01	-6.4590E+00	3.5000E+01	-6.3369E+00	3.5000E+01
88000	-7.0286E+00	6.7200E+01	-6.9769E+00	7.0000E+01	-6.8890E+00	7.0000E+01	-6.7829E+00	7.0000E+01	-6.6369E+00	3.5000E+01	-6.5172E+00	3.5000E+01
90000	-7.1962E+00	6.7200E+01	-7.1454E+00	7.0000E+01	-7.0590E+00	7.0000E+01	-6.9548E+00	7.0000E+01	-6.8115E+00	3.5000E+01	-6.6940E+00	3.5000E+01
92000	-7.3609E+00	6.7200E+01	-7.3110E+00	7.0000E+01	-7.2261E+00	7.0000E+01	-7.1237E+00	7.0000E+01	-6.9829E+00	3.5000E+01	-6.8675E+00	3.5000E+01
94000	-7.5229E+00	6.7200E+01	-7.4738E+00	7.0000E+01	-7.3903E+00	7.0000E+01	-7.2896E+00	7.0000E+01	-7.1512E+00	3.5000E+01	-7.0379E+00	3.5000E+01
96000	-7.6823E+00	6.7200E+01	-7.6340E+00	7.0000E+01	-7.5518E+00	7.0000E+01	-7.4528E+00	7.0000E+01	-7.3167E+00	3.5000E+01	-7.2053E+00	3.5000E+01
98000	-7.8392E+00	6.7200E+01	-7.7916E+00	7.0000E+01	-7.7107E+00	7.0000E+01	-7.6133E+00	7.0000E+01	-7.4794E+00	3.5000E+01	-7.3699E+00	3.5000E+01
100000	-7.9937E+00	6.7200E+01	-7.9468E+00	7.0000E+01	-7.8672E+00	7.0000E+01	-7.7712E+00	7.0000E+01	-7.6395E+00	3.5000E+01	-7.5318E+00	3.5000E+01
102000	-8.1458E+00	6.7200E+01	-8.0997E+00	7.0000E+01	-8.0212E+00	7.0000E+01	-7.9267E+00	7.0000E+01	-7.7971E+00	3.5000E+01	-7.6910E+00	3.5000E+01

Time (yrs)	Arg 1	Curve 1	Arg 2	Curve 2	Arg 3	Curve 3	Arg 4	Curve 4	Arg 5	Curve 5	Arg 6	Curve 6
104000	-8.2958E+00	6.7200E+01	-8.2503E+00	7.0000E+01	-8.1730E+00	7.0000E+01	-8.0799E+00	7.0000E+01	-7.9522E+00	3.5000E+01	-7.8477E+00	3.5000E+01
106000	-8.4436E+00	6.7200E+01	-8.3988E+00	7.0000E+01	-8.3226E+00	7.0000E+01	-8.2308E+00	7.0000E+01	-8.1050E+00	3.5000E+01	-8.0021E+00	3.5000E+01
108000	-8.5894E+00	6.7200E+01	-8.5452E+00	7.0000E+01	-8.4700E+00	7.0000E+01	-8.3796E+00	7.0000E+01	-8.2555E+00	3.5000E+01	-8.1541E+00	3.5000E+01
110000	-8.7332E+00	6.7200E+01	-8.6896E+00	7.0000E+01	-8.6155E+00	7.0000E+01	-8.5262E+00	7.0000E+01	-8.4039E+00	3.5000E+01	-8.3040E+00	3.5000E+01
112000	-8.8752E+00	6.7200E+01	-8.8321E+00	7.0000E+01	-8.7589E+00	7.0000E+01	-8.6709E+00	7.0000E+01	-8.5503E+00	3.5000E+01	-8.4517E+00	3.5000E+01
114000	-9.0152E+00	6.7200E+01	-8.9727E+00	7.0000E+01	-8.9005E+00	7.0000E+01	-8.8136E+00	7.0000E+01	-8.6946E+00	3.5000E+01	-8.5974E+00	3.5000E+01
116000	-9.1535E+00	6.7200E+01	-9.1115E+00	7.0000E+01	-9.0403E+00	7.0000E+01	-8.9545E+00	7.0000E+01	-8.8370E+00	3.5000E+01	-8.7411E+00	3.5000E+01
118000	-9.2901E+00	6.7200E+01	-9.2487E+00	7.0000E+01	-9.1783E+00	7.0000E+01	-9.0936E+00	7.0000E+01	-8.9776E+00	3.5000E+01	-8.8829E+00	3.5000E+01
120000	-9.4251E+00	6.7200E+01	-9.3841E+00	7.0000E+01	-9.3146E+00	7.0000E+01	-9.2309E+00	7.0000E+01	-9.1164E+00	3.5000E+01	-9.0229E+00	3.5000E+01
122000	-9.5584E+00	6.7200E+01	-9.5179E+00	7.0000E+01	-9.4492E+00	7.0000E+01	-9.3666E+00	7.0000E+01	-9.2534E+00	3.5000E+01	-9.1611E+00	3.5000E+01
124000	-9.6902E+00	6.7200E+01	-9.6502E+00	7.0000E+01	-9.5823E+00	7.0000E+01	-9.5006E+00	7.0000E+01	-9.3888E+00	3.5000E+01	-9.2976E+00	3.5000E+01
126000	-9.8205E+00	6.7200E+01	-9.7809E+00	7.0000E+01	-9.7138E+00	7.0000E+01	-9.6331E+00	7.0000E+01	-9.5226E+00	3.5000E+01	-9.4325E+00	3.5000E+01
128000	-9.9494E+00	6.7200E+01	-9.9102E+00	7.0000E+01	-9.8438E+00	7.0000E+01	-9.7640E+00	7.0000E+01	-9.6548E+00	3.5000E+01	-9.5657E+00	3.5000E+01
130000	-1.0077E+01	6.7200E+01	-1.0038E+01	7.0000E+01	-9.9724E+00	7.0000E+01	-9.8935E+00	7.0000E+01	-9.7855E+00	3.5000E+01	-9.6974E+00	3.5000E+01
132000	-1.0203E+01	6.7200E+01	-1.0165E+01	7.0000E+01	-1.0100E+01	7.0000E+01	-1.0022E+01	7.0000E+01	-9.9147E+00	3.5000E+01	-9.8276E+00	3.5000E+01
134000	-1.0328E+01	6.7200E+01	-1.0290E+01	7.0000E+01	-1.0225E+01	7.0000E+01	-1.0148E+01	7.0000E+01	-1.0043E+01	3.5000E+01	-9.9564E+00	3.5000E+01
136000	-1.0451E+01	6.7200E+01	-1.0414E+01	7.0000E+01	-1.0350E+01	7.0000E+01	-1.0273E+01	7.0000E+01	-1.0169E+01	3.5000E+01	-1.0084E+01	3.5000E+01
138000	-1.0573E+01	6.7200E+01	-1.0536E+01	7.0000E+01	-1.0473E+01	7.0000E+01	-1.0398E+01	7.0000E+01	-1.0294E+01	3.5000E+01	-1.0210E+01	3.5000E+01
140000	-1.0694E+01	6.7200E+01	-1.0657E+01	7.0000E+01	-1.0595E+01	7.0000E+01	-1.0520E+01	7.0000E+01	-1.0418E+01	3.5000E+01	-1.0334E+01	3.5000E+01
142000	-1.0814E+01	6.7200E+01	-1.0778E+01	7.0000E+01	-1.0716E+01	7.0000E+01	-1.0642E+01	7.0000E+01	-1.0540E+01	3.5000E+01	-1.0458E+01	3.5000E+01
144000	-1.0933E+01	6.7200E+01	-1.0897E+01	7.0000E+01	-1.0835E+01	7.0000E+01	-1.0762E+01	7.0000E+01	-1.0662E+01	3.5000E+01	-1.0580E+01	3.5000E+01
146000	-1.1050E+01	6.7200E+01	-1.1014E+01	7.0000E+01	-1.0954E+01	7.0000E+01	-1.0881E+01	7.0000E+01	-1.0782E+01	3.5000E+01	-1.0701E+01	3.5000E+01
148000	-1.1167E+01	6.7200E+01	-1.1131E+01	7.0000E+01	-1.1071E+01	7.0000E+01	-1.0999E+01	7.0000E+01	-1.0901E+01	3.5000E+01	-1.0821E+01	3.5000E+01
150000	-1.1282E+01	6.7200E+01	-1.1247E+01	7.0000E+01	-1.1187E+01	7.0000E+01	-1.1116E+01	7.0000E+01	-1.1019E+01	3.5000E+01	-1.0939E+01	3.5000E+01
152000	-1.1396E+01	6.7200E+01	-1.1361E+01	7.0000E+01	-1.1303E+01	7.0000E+01	-1.1232E+01	7.0000E+01	-1.1135E+01	3.5000E+01	-1.1057E+01	3.5000E+01
154000	-1.1510E+01	6.7200E+01	-1.1475E+01	7.0000E+01	-1.1417E+01	7.0000E+01	-1.1347E+01	7.0000E+01	-1.1251E+01	3.5000E+01	-1.1173E+01	3.5000E+01
156000	-1.1622E+01	6.7200E+01	-1.1588E+01	7.0000E+01	-1.1530E+01	7.0000E+01	-1.1460E+01	7.0000E+01	-1.1365E+01	3.5000E+01	-1.1288E+01	3.5000E+01
158000	-1.1733E+01	6.7200E+01	-1.1699E+01	7.0000E+01	-1.1642E+01	7.0000E+01	-1.1573E+01	7.0000E+01	-1.1479E+01	3.5000E+01	-1.1403E+01	3.5000E+01
160000	-1.1844E+01	6.7200E+01	-1.1810E+01	7.0000E+01	-1.1753E+01	7.0000E+01	-1.1685E+01	7.0000E+01	-1.1592E+01	3.5000E+01	-1.1516E+01	3.5000E+01
162000	-1.1953E+01	6.7200E+01	-1.1920E+01	7.0000E+01	-1.1863E+01	7.0000E+01	-1.1796E+01	7.0000E+01	-1.1703E+01	3.5000E+01	-1.1628E+01	3.5000E+01
164000	-1.2062E+01	6.7200E+01	-1.2029E+01	7.0000E+01	-1.1973E+01	7.0000E+01	-1.1906E+01	7.0000E+01	-1.1814E+01	3.5000E+01	-1.1739E+01	3.5000E+01
166000	-1.2169E+01	6.7200E+01	-1.2137E+01	7.0000E+01	-1.2081E+01	7.0000E+01	-1.2015E+01	7.0000E+01	-1.1924E+01	3.5000E+01	-1.1850E+01	3.5000E+01
168000	-1.2276E+01	6.7200E+01	-1.2244E+01	7.0000E+01	-1.2189E+01	7.0000E+01	-1.2123E+01	7.0000E+01	-1.2033E+01	3.5000E+01	-1.1959E+01	3.5000E+01
170000	-1.2382E+01	6.7200E+01	-1.2350E+01	7.0000E+01	-1.2295E+01	7.0000E+01	-1.2230E+01	7.0000E+01	-1.2140E+01	3.5000E+01	-1.2068E+01	3.5000E+01
172000	-1.2488E+01	6.7200E+01	-1.2456E+01	7.0000E+01	-1.2401E+01	7.0000E+01	-1.2336E+01	7.0000E+01	-1.2248E+01	3.5000E+01	-1.2175E+01	3.5000E+01
174000	-1.2592E+01	6.7200E+01	-1.2560E+01	7.0000E+01	-1.2506E+01	7.0000E+01	-1.2442E+01	7.0000E+01	-1.2354E+01	3.5000E+01	-1.2282E+01	3.5000E+01
176000	-1.2696E+01	6.7200E+01	-1.2664E+01	7.0000E+01	-1.2611E+01	7.0000E+01	-1.2547E+01	7.0000E+01	-1.2459E+01	3.5000E+01	-1.2388E+01	3.5000E+01
178000	-1.2798E+01	6.7200E+01	-1.2767E+01	7.0000E+01	-1.2714E+01	7.0000E+01	-1.2651E+01	7.0000E+01	-1.2564E+01	3.5000E+01	-1.2493E+01	3.5000E+01
180000	-1.2901E+01	6.7200E+01	-1.2869E+01	7.0000E+01	-1.2817E+01	7.0000E+01	-1.2754E+01	7.0000E+01	-1.2668E+01	3.5000E+01	-1.2598E+01	3.5000E+01
182000	-1.3002E+01	6.7200E+01	-1.2971E+01	7.0000E+01	-1.2919E+01	7.0000E+01	-1.2856E+01	7.0000E+01	-1.2771E+01	3.5000E+01	-1.2701E+01	3.5000E+01
184000	-1.3103E+01	6.7200E+01	-1.3072E+01	7.0000E+01	-1.3020E+01	7.0000E+01	-1.2958E+01	7.0000E+01	-1.2873E+01	3.5000E+01	-1.2804E+01	3.5000E+01
186000	-1.3202E+01	6.7200E+01	-1.3172E+01	7.0000E+01	-1.3121E+01	7.0000E+01	-1.3059E+01	7.0000E+01	-1.2975E+01	3.5000E+01	-1.2906E+01	3.5000E+01
188000	-1.3302E+01	6.7200E+01	-1.3272E+01	7.0000E+01	-1.3220E+01	7.0000E+01	-1.3159E+01	7.0000E+01	-1.3075E+01	3.5000E+01	-1.3007E+01	3.5000E+01
190000	-1.3400E+01	6.7200E+01	-1.3370E+01	7.0000E+01	-1.3320E+01	7.0000E+01	-1.3259E+01	7.0000E+01	-1.3176E+01	3.5000E+01	-1.3108E+01	3.5000E+01
192000	-1.3498E+01	6.7200E+01	-1.3468E+01	7.0000E+01	-1.3418E+01	7.0000E+01	-1.3358E+01	7.0000E+01	-1.3275E+01	3.5000E+01	-1.3208E+01	3.5000E+01
194000	-1.3595E+01	6.7200E+01	-1.3566E+01	7.0000E+01	-1.3516E+01	7.0000E+01	-1.3456E+01	7.0000E+01	-1.3374E+01	3.5000E+01	-1.3307E+01	3.5000E+01
196000	-1.3692E+01	6.7200E+01	-1.3663E+01	7.0000E+01	-1.3613E+01	7.0000E+01	-1.3553E+01	7.0000E+01	-1.3472E+01	3.5000E+01	-1.3406E+01	3.5000E+01
198000	-1.3788E+01	6.7200E+01	-1.3759E+01	7.0000E+01	-1.3709E+01	7.0000E+01	-1.3650E+01	7.0000E+01	-1.3569E+01	3.5000E+01	-1.3504E+01	3.5000E+01
200000	-1.3883E+01	6.7200E+01	-1.3854E+01	7.0000E+01	-1.3805E+01	7.0000E+01	-1.3746E+01	7.0000E+01	-1.3666E+01	3.5000E+01	-1.3601E+01	3.5000E+01
202000	-1.3978E+01	6.7200E+01	-1.3949E+01	7.0000E+01	-1.3900E+01	7.0000E+01	-1.3842E+01	7.0000E+01	-1.3762E+01	3.5000E+01	-1.3697E+01	3.5000E+01
204000	-1.4072E+01	6.7200E+01	-1.4044E+01	7.0000E+01	-1.3995E+01	7.0000E+01	-1.3937E+01	7.0000E+01	-1.3858E+01	3.5000E+01	-1.3793E+01	3.5000E+01
206000	-1.4166E+01	6.7200E+01	-1.4137E+01	7.0000E+01	-1.4089E+01	7.0000E+01	-1.4031E+01	7.0000E+01	-1.3953E+01	3.5000E+01	-1.3889E+01	3.5000E+01

Time (yrs)	Arg 1	Curve 1	Arg 2	Curve 2	Arg 3	Curve 3	Arg 4	Curve 4	Arg 5	Curve 5	Arg 6	Curve 6
208000	-1.4259E+01	6.7200E+01	-1.4231E+01	7.0000E+01	-1.4183E+01	7.0000E+01	-1.4125E+01	7.0000E+01	-1.4047E+01	3.5000E+01	-1.3983E+01	3.5000E+01
210000	-1.4351E+01	6.7200E+01	-1.4323E+01	7.0000E+01	-1.4275E+01	7.0000E+01	-1.4218E+01	7.0000E+01	-1.4141E+01	3.5000E+01	-1.4077E+01	3.5000E+01
212000	-1.4443E+01	6.7200E+01	-1.4415E+01	7.0000E+01	-1.4368E+01	7.0000E+01	-1.4311E+01	7.0000E+01	-1.4234E+01	3.5000E+01	-1.4171E+01	3.5000E+01
214000	-1.4534E+01	6.7200E+01	-1.4507E+01	7.0000E+01	-1.4460E+01	7.0000E+01	-1.4403E+01	7.0000E+01	-1.4326E+01	3.5000E+01	-1.4264E+01	3.5000E+01
216000	-1.4625E+01	6.7200E+01	-1.4598E+01	7.0000E+01	-1.4551E+01	7.0000E+01	-1.4495E+01	7.0000E+01	-1.4418E+01	3.5000E+01	-1.4356E+01	3.5000E+01
218000	-1.4715E+01	6.7200E+01	-1.4688E+01	7.0000E+01	-1.4642E+01	7.0000E+01	-1.4586E+01	7.0000E+01	-1.4510E+01	3.5000E+01	-1.4448E+01	3.5000E+01
220000	-1.4805E+01	6.7200E+01	-1.4778E+01	7.0000E+01	-1.4732E+01	7.0000E+01	-1.4676E+01	7.0000E+01	-1.4601E+01	3.5000E+01	-1.4539E+01	3.5000E+01
222000	-1.4894E+01	6.7200E+01	-1.4867E+01	7.0000E+01	-1.4821E+01	7.0000E+01	-1.4766E+01	7.0000E+01	-1.4691E+01	3.5000E+01	-1.4630E+01	3.5000E+01
224000	-1.4983E+01	6.7200E+01	-1.4956E+01	7.0000E+01	-1.4910E+01	7.0000E+01	-1.4856E+01	7.0000E+01	-1.4781E+01	3.5000E+01	-1.4720E+01	3.5000E+01
226000	-1.5071E+01	6.7200E+01	-1.5045E+01	7.0000E+01	-1.4999E+01	7.0000E+01	-1.4945E+01	7.0000E+01	-1.4870E+01	3.5000E+01	-1.4810E+01	3.5000E+01
228000	-1.5159E+01	6.7200E+01	-1.5132E+01	7.0000E+01	-1.5087E+01	7.0000E+01	-1.5033E+01	7.0000E+01	-1.4959E+01	3.5000E+01	-1.4899E+01	3.5000E+01
230000	-1.5246E+01	6.7200E+01	-1.5220E+01	7.0000E+01	-1.5175E+01	7.0000E+01	-1.5121E+01	7.0000E+01	-1.5048E+01	3.5000E+01	-1.4988E+01	3.5000E+01
232000	-1.5333E+01	6.7200E+01	-1.5307E+01	7.0000E+01	-1.5262E+01	7.0000E+01	-1.5209E+01	7.0000E+01	-1.5136E+01	3.5000E+01	-1.5076E+01	3.5000E+01
234000	-1.5420E+01	6.7200E+01	-1.5393E+01	7.0000E+01	-1.5349E+01	7.0000E+01	-1.5296E+01	7.0000E+01	-1.5223E+01	3.5000E+01	-1.5164E+01	3.5000E+01
236000	-1.5506E+01	6.7200E+01	-1.5479E+01	7.0000E+01	-1.5435E+01	7.0000E+01	-1.5382E+01	7.0000E+01	-1.5310E+01	3.5000E+01	-1.5251E+01	3.5000E+01
238000	-1.5591E+01	6.7200E+01	-1.5565E+01	7.0000E+01	-1.5521E+01	7.0000E+01	-1.5468E+01	7.0000E+01	-1.5396E+01	3.5000E+01	-1.5338E+01	3.5000E+01
240000	-1.5676E+01	6.7200E+01	-1.5650E+01	7.0000E+01	-1.5606E+01	7.0000E+01	-1.5554E+01	7.0000E+01	-1.5482E+01	3.5000E+01	-1.5424E+01	3.5000E+01
242000	-1.5761E+01	6.7200E+01	-1.5735E+01	7.0000E+01	-1.5691E+01	7.0000E+01	-1.5639E+01	7.0000E+01	-1.5568E+01	3.5000E+01	-1.5510E+01	3.5000E+01
244000	-1.5845E+01	6.7200E+01	-1.5819E+01	7.0000E+01	-1.5776E+01	7.0000E+01	-1.5724E+01	7.0000E+01	-1.5653E+01	3.5000E+01	-1.5596E+01	3.5000E+01
246000	-1.5928E+01	6.7200E+01	-1.5903E+01	7.0000E+01	-1.5860E+01	7.0000E+01	-1.5808E+01	7.0000E+01	-1.5738E+01	3.5000E+01	-1.5681E+01	3.5000E+01
248000	-1.6012E+01	6.7200E+01	-1.5986E+01	7.0000E+01	-1.5943E+01	7.0000E+01	-1.5892E+01	7.0000E+01	-1.5822E+01	3.5000E+01	-1.5765E+01	3.5000E+01
250000	-1.6095E+01	6.7200E+01	-1.6069E+01	7.0000E+01	-1.6027E+01	7.0000E+01	-1.5975E+01	7.0000E+01	-1.5906E+01	3.5000E+01	-1.5849E+01	3.5000E+01
252000	-1.6177E+01	6.7200E+01	-1.6152E+01	7.0000E+01	-1.6109E+01	7.0000E+01	-1.6059E+01	7.0000E+01	-1.5989E+01	3.5000E+01	-1.5933E+01	3.5000E+01
254000	-1.6259E+01	6.7200E+01	-1.6234E+01	7.0000E+01	-1.6192E+01	7.0000E+01	-1.6141E+01	7.0000E+01	-1.6072E+01	3.5000E+01	-1.6016E+01	3.5000E+01
256000	-1.6341E+01	6.7200E+01	-1.6316E+01	7.0000E+01	-1.6274E+01	7.0000E+01	-1.6223E+01	7.0000E+01	-1.6155E+01	3.5000E+01	-1.6099E+01	3.5000E+01
258000	-1.6422E+01	6.7200E+01	-1.6397E+01	7.0000E+01	-1.6355E+01	7.0000E+01	-1.6305E+01	7.0000E+01	-1.6237E+01	3.5000E+01	-1.6182E+01	3.5000E+01
260000	-1.6503E+01	6.7200E+01	-1.6478E+01	7.0000E+01	-1.6437E+01	7.0000E+01	-1.6387E+01	7.0000E+01	-1.6319E+01	3.5000E+01	-1.6264E+01	3.5000E+01
262000	-1.6583E+01	6.7200E+01	-1.6559E+01	7.0000E+01	-1.6517E+01	7.0000E+01	-1.6468E+01	7.0000E+01	-1.6400E+01	3.5000E+01	-1.6345E+01	3.5000E+01
264000	-1.6664E+01	6.7200E+01	-1.6639E+01	7.0000E+01	-1.6598E+01	7.0000E+01	-1.6548E+01	7.0000E+01	-1.6481E+01	3.5000E+01	-1.6427E+01	3.5000E+01
266000	-1.6743E+01	6.7200E+01	-1.6719E+01	7.0000E+01	-1.6678E+01	7.0000E+01	-1.6629E+01	7.0000E+01	-1.6562E+01	3.5000E+01	-1.6507E+01	3.5000E+01
268000	-1.6823E+01	6.7200E+01	-1.6799E+01	7.0000E+01	-1.6758E+01	7.0000E+01	-1.6709E+01	7.0000E+01	-1.6642E+01	3.5000E+01	-1.6588E+01	3.5000E+01
270000	-1.6902E+01	6.7200E+01	-1.6878E+01	7.0000E+01	-1.6837E+01	7.0000E+01	-1.6788E+01	7.0000E+01	-1.6722E+01	3.5000E+01	-1.6668E+01	3.5000E+01
272000	-1.6981E+01	6.7200E+01	-1.6957E+01	7.0000E+01	-1.6916E+01	7.0000E+01	-1.6868E+01	7.0000E+01	-1.6801E+01	3.5000E+01	-1.6748E+01	3.5000E+01
274000	-1.7059E+01	6.7200E+01	-1.7035E+01	7.0000E+01	-1.6995E+01	7.0000E+01	-1.6946E+01	7.0000E+01	-1.6881E+01	3.5000E+01	-1.6827E+01	3.5000E+01
276000	-1.7137E+01	6.7200E+01	-1.7113E+01	7.0000E+01	-1.7073E+01	7.0000E+01	-1.7025E+01	7.0000E+01	-1.6959E+01	3.5000E+01	-1.6906E+01	3.5000E+01
278000	-1.7215E+01	6.7200E+01	-1.7191E+01	7.0000E+01	-1.7151E+01	7.0000E+01	-1.7103E+01	7.0000E+01	-1.7038E+01	3.5000E+01	-1.6985E+01	3.5000E+01
280000	-1.7292E+01	6.7200E+01	-1.7268E+01	7.0000E+01	-1.7229E+01	7.0000E+01	-1.7181E+01	7.0000E+01	-1.7116E+01	3.5000E+01	-1.7063E+01	3.5000E+01
282000	-1.7369E+01	6.7200E+01	-1.7346E+01	7.0000E+01	-1.7306E+01	7.0000E+01	-1.7258E+01	7.0000E+01	-1.7194E+01	3.5000E+01	-1.7141E+01	3.5000E+01
284000	-1.7446E+01	6.7200E+01	-1.7422E+01	7.0000E+01	-1.7383E+01	7.0000E+01	-1.7336E+01	7.0000E+01	-1.7271E+01	3.5000E+01	-1.7219E+01	3.5000E+01
286000	-1.7522E+01	6.7200E+01	-1.7499E+01	7.0000E+01	-1.7460E+01	7.0000E+01	-1.7412E+01	7.0000E+01	-1.7348E+01	3.5000E+01	-1.7296E+01	3.5000E+01
288000	-1.7598E+01	6.7200E+01	-1.7575E+01	7.0000E+01	-1.7536E+01	7.0000E+01	-1.7489E+01	7.0000E+01	-1.7425E+01	3.5000E+01	-1.7373E+01	3.5000E+01
290000	-1.7674E+01	6.7200E+01	-1.7651E+01	7.0000E+01	-1.7612E+01	7.0000E+01	-1.7565E+01	7.0000E+01	-1.7502E+01	3.5000E+01	-1.7450E+01	3.5000E+01
292000	-1.7749E+01	6.7200E+01	-1.7726E+01	7.0000E+01	-1.7687E+01	7.0000E+01	-1.7641E+01	7.0000E+01	-1.7578E+01	3.5000E+01	-1.7526E+01	3.5000E+01
294000	-1.7824E+01	6.7200E+01	-1.7802E+01	7.0000E+01	-1.7763E+01	7.0000E+01	-1.7717E+01	7.0000E+01	-1.7653E+01	3.5000E+01	-1.7602E+01	3.5000E+01
296000	-1.7899E+01	6.7200E+01	-1.7876E+01	7.0000E+01	-1.7838E+01	7.0000E+01	-1.7792E+01	7.0000E+01	-1.7729E+01	3.5000E+01	-1.7678E+01	3.5000E+01
298000	-1.7974E+01	6.7200E+01	-1.7951E+01	7.0000E+01	-1.7913E+01	7.0000E+01	-1.7867E+01	7.0000E+01	-1.7804E+01	3.5000E+01	-1.7753E+01	3.5000E+01
300000	-1.8048E+01	6.7200E+01	-1.8025E+01	7.0000E+01	-1.7987E+01	7.0000E+01	-1.7941E+01	7.0000E+01	-1.7879E+01	3.5000E+01	-1.7829E+01	3.5000E+01
302000	-1.8122E+01	6.7200E+01	-1.8099E+01	7.0000E+01	-1.8061E+01	7.0000E+01	-1.8016E+01	7.0000E+01	-1.7954E+01	3.5000E+01	-1.7903E+01	3.5000E+01
304000	-1.8195E+01	6.7200E+01	-1.8173E+01	7.0000E+01	-1.8135E+01	7.0000E+01	-1.8090E+01	7.0000E+01	-1.8028E+01	3.5000E+01	-1.7978E+01	3.5000E+01
306000	-1.8269E+01	6.7200E+01	-1.8246E+01	7.0000E+01	-1.8209E+01	7.0000E+01	-1.8163E+01	7.0000E+01	-1.8102E+01	3.5000E+01	-1.8052E+01	3.5000E+01
308000	-1.8342E+01	6.7200E+01	-1.8320E+01	7.0000E+01	-1.8282E+01	7.0000E+01	-1.8237E+01	7.0000E+01	-1.8176E+01	3.5000E+01	-1.8126E+01	3.5000E+01
310000	-1.8415E+01	6.7200E+01	-1.8392E+01	7.0000E+01	-1.8355E+01	7.0000E+01	-1.8310E+01	7.0000E+01	-1.8249E+01	3.5000E+01	-1.8199E+01	3.5000E+01

Time (yrs)	Arg 1	Curve 1	Arg 2	Curve 2	Arg 3	Curve 3	Arg 4	Curve 4	Arg 5	Curve 5	Arg 6	Curve 6
312000	-1.8487E+01	6.7200E+01	-1.8465E+01	7.0000E+01	-1.8428E+01	7.0000E+01	-1.8383E+01	7.0000E+01	-1.8322E+01	3.5000E+01	-1.8273E+01	3.5000E+01
314000	-1.8559E+01	6.7200E+01	-1.8537E+01	7.0000E+01	-1.8500E+01	7.0000E+01	-1.8456E+01	7.0000E+01	-1.8395E+01	3.5000E+01	-1.8346E+01	3.5000E+01
316000	-1.8631E+01	6.7200E+01	-1.8609E+01	7.0000E+01	-1.8572E+01	7.0000E+01	-1.8528E+01	7.0000E+01	-1.8468E+01	3.5000E+01	-1.8419E+01	3.5000E+01
318000	-1.8703E+01	6.7200E+01	-1.8681E+01	7.0000E+01	-1.8644E+01	7.0000E+01	-1.8600E+01	7.0000E+01	-1.8540E+01	3.5000E+01	-1.8491E+01	3.5000E+01
320000	-1.8774E+01	6.7200E+01	-1.8753E+01	7.0000E+01	-1.8716E+01	7.0000E+01	-1.8672E+01	7.0000E+01	-1.8612E+01	3.5000E+01	-1.8563E+01	3.5000E+01
322000	-1.8845E+01	6.7200E+01	-1.8824E+01	7.0000E+01	-1.8787E+01	7.0000E+01	-1.8743E+01	7.0000E+01	-1.8684E+01	3.5000E+01	-1.8635E+01	3.5000E+01
324000	-1.8916E+01	6.7200E+01	-1.8895E+01	7.0000E+01	-1.8858E+01	7.0000E+01	-1.8815E+01	7.0000E+01	-1.8755E+01	3.5000E+01	-1.8707E+01	3.5000E+01
326000	-1.8987E+01	6.7200E+01	-1.8965E+01	7.0000E+01	-1.8929E+01	7.0000E+01	-1.8886E+01	7.0000E+01	-1.8826E+01	3.5000E+01	-1.8778E+01	3.5000E+01
328000	-1.9057E+01	6.7200E+01	-1.9036E+01	7.0000E+01	-1.9000E+01	7.0000E+01	-1.8956E+01	7.0000E+01	-1.8897E+01	3.5000E+01	-1.8849E+01	3.5000E+01
330000	-1.9127E+01	6.7200E+01	-1.9106E+01	7.0000E+01	-1.9070E+01	7.0000E+01	-1.9027E+01	7.0000E+01	-1.8968E+01	3.5000E+01	-1.8920E+01	3.5000E+01
332000	-1.9197E+01	6.7200E+01	-1.9176E+01	7.0000E+01	-1.9140E+01	7.0000E+01	-1.9097E+01	7.0000E+01	-1.9038E+01	3.5000E+01	-1.8991E+01	3.5000E+01
334000	-1.9267E+01	6.7200E+01	-1.9246E+01	7.0000E+01	-1.9210E+01	7.0000E+01	-1.9167E+01	7.0000E+01	-1.9109E+01	3.5000E+01	-1.9061E+01	3.5000E+01
336000	-1.9336E+01	6.7200E+01	-1.9315E+01	7.0000E+01	-1.9279E+01	7.0000E+01	-1.9237E+01	7.0000E+01	-1.9179E+01	3.5000E+01	-1.9131E+01	3.5000E+01
338000	-1.9406E+01	6.7200E+01	-1.9384E+01	7.0000E+01	-1.9349E+01	7.0000E+01	-1.9306E+01	7.0000E+01	-1.9248E+01	3.5000E+01	-1.9201E+01	3.5000E+01
340000	-1.9474E+01	6.7200E+01	-1.9453E+01	7.0000E+01	-1.9418E+01	7.0000E+01	-1.9375E+01	7.0000E+01	-1.9318E+01	3.5000E+01	-1.9271E+01	3.5000E+01
342000	-1.9543E+01	6.7200E+01	-1.9522E+01	7.0000E+01	-1.9487E+01	7.0000E+01	-1.9444E+01	7.0000E+01	-1.9387E+01	3.5000E+01	-1.9340E+01	3.5000E+01
344000	-1.9612E+01	6.7200E+01	-1.9591E+01	7.0000E+01	-1.9555E+01	7.0000E+01	-1.9513E+01	7.0000E+01	-1.9456E+01	3.5000E+01	-1.9409E+01	3.5000E+01
346000	-1.9680E+01	6.7200E+01	-1.9659E+01	7.0000E+01	-1.9624E+01	7.0000E+01	-1.9582E+01	7.0000E+01	-1.9525E+01	3.5000E+01	-1.9478E+01	3.5000E+01
348000	-1.9748E+01	6.7200E+01	-1.9727E+01	7.0000E+01	-1.9692E+01	7.0000E+01	-1.9650E+01	7.0000E+01	-1.9593E+01	3.5000E+01	-1.9547E+01	3.5000E+01
350000	-1.9815E+01	6.7200E+01	-1.9795E+01	7.0000E+01	-1.9760E+01	7.0000E+01	-1.9718E+01	7.0000E+01	-1.9661E+01	3.5000E+01	-1.9615E+01	3.5000E+01
352000	-1.9883E+01	6.7200E+01	-1.9862E+01	7.0000E+01	-1.9828E+01	7.0000E+01	-1.9786E+01	7.0000E+01	-1.9729E+01	3.5000E+01	-1.9683E+01	3.5000E+01
354000	-1.9950E+01	6.7200E+01	-1.9930E+01	7.0000E+01	-1.9895E+01	7.0000E+01	-1.9854E+01	7.0000E+01	-1.9797E+01	3.5000E+01	-1.9751E+01	3.5000E+01
356000	-2.0017E+01	6.7200E+01	-1.9997E+01	7.0000E+01	-1.9962E+01	7.0000E+01	-1.9921E+01	7.0000E+01	-1.9865E+01	3.5000E+01	-1.9819E+01	3.5000E+01
358000	-2.0084E+01	6.7200E+01	-2.0064E+01	7.0000E+01	-2.0029E+01	7.0000E+01	-1.9988E+01	7.0000E+01	-1.9932E+01	3.5000E+01	-1.9887E+01	3.5000E+01
360000	-2.0151E+01	6.7200E+01	-2.0131E+01	7.0000E+01	-2.0096E+01	7.0000E+01	-2.0055E+01	7.0000E+01	-1.9999E+01	3.5000E+01	-1.9954E+01	3.5000E+01
362000	-2.0217E+01	6.7200E+01	-2.0197E+01	7.0000E+01	-2.0163E+01	7.0000E+01	-2.0122E+01	7.0000E+01	-2.0066E+01	3.5000E+01	-2.0021E+01	3.5000E+01
364000	-2.0283E+01	6.7200E+01	-2.0263E+01	7.0000E+01	-2.0229E+01	7.0000E+01	-2.0188E+01	7.0000E+01	-2.0133E+01	3.5000E+01	-2.0088E+01	3.5000E+01
366000	-2.0349E+01	6.7200E+01	-2.0329E+01	7.0000E+01	-2.0295E+01	7.0000E+01	-2.0255E+01	7.0000E+01	-2.0199E+01	3.5000E+01	-2.0154E+01	3.5000E+01
368000	-2.0415E+01	6.7200E+01	-2.0395E+01	7.0000E+01	-2.0361E+01	7.0000E+01	-2.0321E+01	7.0000E+01	-2.0266E+01	3.5000E+01	-2.0221E+01	3.5000E+01
370000	-2.0481E+01	6.7200E+01	-2.0461E+01	7.0000E+01	-2.0427E+01	7.0000E+01	-2.0387E+01	7.0000E+01	-2.0332E+01	3.5000E+01	-2.0287E+01	3.5000E+01
372000	-2.0546E+01	6.7200E+01	-2.0526E+01	7.0000E+01	-2.0493E+01	7.0000E+01	-2.0452E+01	7.0000E+01	-2.0398E+01	3.5000E+01	-2.0353E+01	3.5000E+01
374000	-2.0611E+01	6.7200E+01	-2.0592E+01	7.0000E+01	-2.0558E+01	7.0000E+01	-2.0518E+01	7.0000E+01	-2.0463E+01	3.5000E+01	-2.0419E+01	3.5000E+01
376000	-2.0676E+01	6.7200E+01	-2.0657E+01	7.0000E+01	-2.0623E+01	7.0000E+01	-2.0583E+01	7.0000E+01	-2.0529E+01	3.5000E+01	-2.0484E+01	3.5000E+01
378000	-2.0741E+01	6.7200E+01	-2.0721E+01	7.0000E+01	-2.0688E+01	7.0000E+01	-2.0648E+01	7.0000E+01	-2.0594E+01	3.5000E+01	-2.0550E+01	3.5000E+01
380000	-2.0806E+01	6.7200E+01	-2.0786E+01	7.0000E+01	-2.0753E+01	7.0000E+01	-2.0713E+01	7.0000E+01	-2.0659E+01	3.5000E+01	-2.0615E+01	3.5000E+01
382000	-2.0870E+01	6.7200E+01	-2.0851E+01	7.0000E+01	-2.0817E+01	7.0000E+01	-2.0778E+01	7.0000E+01	-2.0724E+01	3.5000E+01	-2.0680E+01	3.5000E+01
384000	-2.0934E+01	6.7200E+01	-2.0915E+01	7.0000E+01	-2.0882E+01	7.0000E+01	-2.0842E+01	7.0000E+01	-2.0788E+01	3.5000E+01	-2.0745E+01	3.5000E+01
386000	-2.0998E+01	6.7200E+01	-2.0979E+01	7.0000E+01	-2.0946E+01	7.0000E+01	-2.0906E+01	7.0000E+01	-2.0853E+01	3.5000E+01	-2.0809E+01	3.5000E+01
388000	-2.1062E+01	6.7200E+01	-2.1043E+01	7.0000E+01	-2.1010E+01	7.0000E+01	-2.0970E+01	7.0000E+01	-2.0917E+01	3.5000E+01	-2.0874E+01	3.5000E+01
390000	-2.1126E+01	6.7200E+01	-2.1106E+01	7.0000E+01	-2.1074E+01	7.0000E+01	-2.1034E+01	7.0000E+01	-2.0981E+01	3.5000E+01	-2.0938E+01	3.5000E+01
392000	-2.1189E+01	6.7200E+01	-2.1170E+01	7.0000E+01	-2.1137E+01	7.0000E+01	-2.1098E+01	7.0000E+01	-2.1045E+01	3.5000E+01	-2.1002E+01	3.5000E+01
394000	-2.1252E+01	6.7200E+01	-2.1233E+01	7.0000E+01	-2.1201E+01	7.0000E+01	-2.1162E+01	7.0000E+01	-2.1109E+01	3.5000E+01	-2.1066E+01	3.5000E+01
396000	-2.1315E+01	6.7200E+01	-2.1296E+01	7.0000E+01	-2.1264E+01	7.0000E+01	-2.1225E+01	7.0000E+01	-2.1172E+01	3.5000E+01	-2.1129E+01	3.5000E+01
398000	-2.1378E+01	6.7200E+01	-2.1359E+01	7.0000E+01	-2.1327E+01	7.0000E+01	-2.1288E+01	7.0000E+01	-2.1235E+01	3.5000E+01	-2.1193E+01	3.5000E+01
400000	-2.1441E+01	6.7200E+01	-2.1422E+01	7.0000E+01	-2.1390E+01	7.0000E+01	-2.1351E+01	7.0000E+01	-2.1298E+01	3.5000E+01	-2.1256E+01	3.5000E+01
402000	-2.1504E+01	6.7200E+01	-2.1485E+01	7.0000E+01	-2.1452E+01	7.0000E+01	-2.1414E+01	7.0000E+01	-2.1361E+01	3.5000E+01	-2.1319E+01	3.5000E+01
404000	-2.1566E+01	6.7200E+01	-2.1547E+01	7.0000E+01	-2.1515E+01	7.0000E+01	-2.1476E+01	7.0000E+01	-2.1424E+01	3.5000E+01	-2.1382E+01	3.5000E+01
406000	-2.1628E+01	6.7200E+01	-2.1609E+01	7.0000E+01	-2.1577E+01	7.0000E+01	-2.1539E+01	7.0000E+01	-2.1487E+01	3.5000E+01	-2.1445E+01	3.5000E+01
408000	-2.1690E+01	6.7200E+01	-2.1671E+01	7.0000E+01	-2.1639E+01	7.0000E+01	-2.1601E+01	7.0000E+01	-2.1549E+01	3.5000E+01	-2.1507E+01	3.5000E+01
410000	-2.1752E+01	6.7200E+01	-2.1733E+01	7.0000E+01	-2.1701E+01	7.0000E+01	-2.1663E+01	7.0000E+01	-2.1611E+01	3.5000E+01	-2.1569E+01	3.5000E+01
412000	-2.1814E+01	6.7200E+01	-2.1795E+01	7.0000E+01	-2.1763E+01	7.0000E+01	-2.1725E+01	7.0000E+01	-2.1673E+01	3.5000E+01	-2.1632E+01	3.5000E+01
414000	-2.1875E+01	6.7200E+01	-2.1856E+01	7.0000E+01	-2.1825E+01	7.0000E+01	-2.1787E+01	7.0000E+01	-2.1735E+01	3.5000E+01	-2.1694E+01	3.5000E+01

Time (yrs)	Arg 1	Curve 1	Arg 2	Curve 2	Arg 3	Curve 3	Arg 4	Curve 4	Arg 5	Curve 5	Arg 6	Curve 6
416000	-2.1936E+01	6.7200E+01	-2.1918E+01	7.0000E+01	-2.1886E+01	7.0000E+01	-2.1848E+01	7.0000E+01	-2.1797E+01	3.5000E+01	-2.1755E+01	3.5000E+01
418000	-2.1997E+01	6.7200E+01	-2.1979E+01	7.0000E+01	-2.1947E+01	7.0000E+01	-2.1910E+01	7.0000E+01	-2.1858E+01	3.5000E+01	-2.1817E+01	3.5000E+01
420000	-2.2058E+01	6.7200E+01	-2.2040E+01	7.0000E+01	-2.2008E+01	7.0000E+01	-2.1971E+01	7.0000E+01	-2.1920E+01	3.5000E+01	-2.1878E+01	3.5000E+01
422000	-2.2119E+01	6.7200E+01	-2.2101E+01	7.0000E+01	-2.2069E+01	7.0000E+01	-2.2032E+01	7.0000E+01	-2.1981E+01	3.5000E+01	-2.1940E+01	3.5000E+01
424000	-2.2180E+01	6.7200E+01	-2.2161E+01	7.0000E+01	-2.2130E+01	7.0000E+01	-2.2093E+01	7.0000E+01	-2.2042E+01	3.5000E+01	-2.2001E+01	3.5000E+01
426000	-2.2240E+01	6.7200E+01	-2.2222E+01	7.0000E+01	-2.2191E+01	7.0000E+01	-2.2154E+01	7.0000E+01	-2.2103E+01	3.5000E+01	-2.2062E+01	3.5000E+01
428000	-2.2301E+01	6.7200E+01	-2.2282E+01	7.0000E+01	-2.2251E+01	7.0000E+01	-2.2214E+01	7.0000E+01	-2.2164E+01	3.5000E+01	-2.2123E+01	3.5000E+01
430000	-2.2361E+01	6.7200E+01	-2.2343E+01	7.0000E+01	-2.2312E+01	7.0000E+01	-2.2275E+01	7.0000E+01	-2.2224E+01	3.5000E+01	-2.2183E+01	3.5000E+01
432000	-2.2421E+01	6.7200E+01	-2.2403E+01	7.0000E+01	-2.2372E+01	7.0000E+01	-2.2335E+01	7.0000E+01	-2.2284E+01	3.5000E+01	-2.2244E+01	3.5000E+01
434000	-2.2481E+01	6.7200E+01	-2.2462E+01	7.0000E+01	-2.2432E+01	7.0000E+01	-2.2395E+01	7.0000E+01	-2.2345E+01	3.5000E+01	-2.2304E+01	3.5000E+01
436000	-2.2540E+01	6.7200E+01	-2.2522E+01	7.0000E+01	-2.2491E+01	7.0000E+01	-2.2455E+01	7.0000E+01	-2.2405E+01	3.5000E+01	-2.2364E+01	3.5000E+01
438000	-2.2600E+01	6.7200E+01	-2.2582E+01	7.0000E+01	-2.2551E+01	7.0000E+01	-2.2514E+01	7.0000E+01	-2.2465E+01	3.5000E+01	-2.2424E+01	3.5000E+01
440000	-2.2659E+01	6.7200E+01	-2.2641E+01	7.0000E+01	-2.2611E+01	7.0000E+01	-2.2574E+01	7.0000E+01	-2.2524E+01	3.5000E+01	-2.2484E+01	3.5000E+01
442000	-2.2719E+01	6.7200E+01	-2.2701E+01	7.0000E+01	-2.2670E+01	7.0000E+01	-2.2634E+01	7.0000E+01	-2.2584E+01	3.5000E+01	-2.2544E+01	3.5000E+01
444000	-2.2778E+01	6.7200E+01	-2.2760E+01	7.0000E+01	-2.2729E+01	7.0000E+01	-2.2693E+01	7.0000E+01	-2.2643E+01	3.5000E+01	-2.2603E+01	3.5000E+01
446000	-2.2837E+01	6.7200E+01	-2.2819E+01	7.0000E+01	-2.2788E+01	7.0000E+01	-2.2752E+01	7.0000E+01	-2.2703E+01	3.5000E+01	-2.2663E+01	3.5000E+01
448000	-2.2895E+01	6.7200E+01	-2.2877E+01	7.0000E+01	-2.2847E+01	7.0000E+01	-2.2811E+01	7.0000E+01	-2.2762E+01	3.5000E+01	-2.2722E+01	3.5000E+01
450000	-2.2954E+01	6.7200E+01	-2.2936E+01	7.0000E+01	-2.2906E+01	7.0000E+01	-2.2870E+01	7.0000E+01	-2.2821E+01	3.5000E+01	-2.2781E+01	3.5000E+01
452000	-2.3012E+01	6.7200E+01	-2.2995E+01	7.0000E+01	-2.2964E+01	7.0000E+01	-2.2928E+01	7.0000E+01	-2.2879E+01	3.5000E+01	-2.2840E+01	3.5000E+01
454000	-2.3071E+01	6.7200E+01	-2.3053E+01	7.0000E+01	-2.3023E+01	7.0000E+01	-2.2987E+01	7.0000E+01	-2.2938E+01	3.5000E+01	-2.2899E+01	3.5000E+01
456000	-2.3129E+01	6.7200E+01	-2.3111E+01	7.0000E+01	-2.3081E+01	7.0000E+01	-2.3045E+01	7.0000E+01	-2.2997E+01	3.5000E+01	-2.2957E+01	3.5000E+01
458000	-2.3187E+01	6.7200E+01	-2.3169E+01	7.0000E+01	-2.3139E+01	7.0000E+01	-2.3104E+01	7.0000E+01	-2.3055E+01	3.5000E+01	-2.3016E+01	3.5000E+01
460000	-2.3245E+01	6.7200E+01	-2.3227E+01	7.0000E+01	-2.3197E+01	7.0000E+01	-2.3162E+01	7.0000E+01	-2.3113E+01	3.5000E+01	-2.3074E+01	3.5000E+01
462000	-2.3303E+01	6.7200E+01	-2.3285E+01	7.0000E+01	-2.3255E+01	7.0000E+01	-2.3220E+01	7.0000E+01	-2.3171E+01	3.5000E+01	-2.3132E+01	3.5000E+01
464000	-2.3360E+01	6.7200E+01	-2.3343E+01	7.0000E+01	-2.3313E+01	7.0000E+01	-2.3278E+01	7.0000E+01	-2.3229E+01	3.5000E+01	-2.3190E+01	3.5000E+01
466000	-2.3418E+01	6.7200E+01	-2.3400E+01	7.0000E+01	-2.3371E+01	7.0000E+01	-2.3335E+01	7.0000E+01	-2.3287E+01	3.5000E+01	-2.3248E+01	3.5000E+01
468000	-2.3475E+01	6.7200E+01	-2.3458E+01	7.0000E+01	-2.3428E+01	7.0000E+01	-2.3393E+01	7.0000E+01	-2.3345E+01	3.5000E+01	-2.3306E+01	3.5000E+01
470000	-2.3532E+01	6.7200E+01	-2.3515E+01	7.0000E+01	-2.3485E+01	7.0000E+01	-2.3450E+01	7.0000E+01	-2.3402E+01	3.5000E+01	-2.3363E+01	3.5000E+01
472000	-2.3589E+01	6.7200E+01	-2.3572E+01	7.0000E+01	-2.3543E+01	7.0000E+01	-2.3507E+01	7.0000E+01	-2.3460E+01	3.5000E+01	-2.3421E+01	3.5000E+01
474000	-2.3646E+01	6.7200E+01	-2.3629E+01	7.0000E+01	-2.3600E+01	7.0000E+01	-2.3565E+01	7.0000E+01	-2.3517E+01	3.5000E+01	-2.3478E+01	3.5000E+01
476000	-2.3703E+01	6.7200E+01	-2.3686E+01	7.0000E+01	-2.3657E+01	7.0000E+01	-2.3622E+01	7.0000E+01	-2.3574E+01	3.5000E+01	-2.3535E+01	3.5000E+01
478000	-2.3760E+01	6.7200E+01	-2.3743E+01	7.0000E+01	-2.3713E+01	7.0000E+01	-2.3678E+01	7.0000E+01	-2.3631E+01	3.5000E+01	-2.3593E+01	3.5000E+01
480000	-2.3816E+01	6.7200E+01	-2.3799E+01	7.0000E+01	-2.3770E+01	7.0000E+01	-2.3735E+01	7.0000E+01	-2.3688E+01	3.5000E+01	-2.3649E+01	3.5000E+01
482000	-2.3873E+01	6.7200E+01	-2.3856E+01	7.0000E+01	-2.3826E+01	7.0000E+01	-2.3792E+01	7.0000E+01	-2.3744E+01	3.5000E+01	-2.3706E+01	3.5000E+01
484000	-2.3929E+01	6.7200E+01	-2.3912E+01	7.0000E+01	-2.3883E+01	7.0000E+01	-2.3848E+01	7.0000E+01	-2.3801E+01	3.5000E+01	-2.3763E+01	3.5000E+01
486000	-2.3985E+01	6.7200E+01	-2.3968E+01	7.0000E+01	-2.3939E+01	7.0000E+01	-2.3905E+01	7.0000E+01	-2.3857E+01	3.5000E+01	-2.3819E+01	3.5000E+01
488000	-2.4041E+01	6.7200E+01	-2.4024E+01	7.0000E+01	-2.3995E+01	7.0000E+01	-2.3961E+01	7.0000E+01	-2.3914E+01	3.5000E+01	-2.3876E+01	3.5000E+01
490000	-2.4097E+01	6.7200E+01	-2.4080E+01	7.0000E+01	-2.4051E+01	7.0000E+01	-2.4017E+01	7.0000E+01	-2.3970E+01	3.5000E+01	-2.3932E+01	3.5000E+01
492000	-2.4153E+01	6.7200E+01	-2.4136E+01	7.0000E+01	-2.4107E+01	7.0000E+01	-2.4073E+01	7.0000E+01	-2.4026E+01	3.5000E+01	-2.3988E+01	3.5000E+01
494000	-2.4208E+01	6.7200E+01	-2.4191E+01	7.0000E+01	-2.4163E+01	7.0000E+01	-2.4129E+01	7.0000E+01	-2.4082E+01	3.5000E+01	-2.4044E+01	3.5000E+01
496000	-2.4264E+01	6.7200E+01	-2.4247E+01	7.0000E+01	-2.4218E+01	7.0000E+01	-2.4184E+01	7.0000E+01	-2.4138E+01	3.5000E+01	-2.4100E+01	3.5000E+01
498000	-2.4319E+01	6.7200E+01	-2.4302E+01	7.0000E+01	-2.4274E+01	7.0000E+01	-2.4240E+01	7.0000E+01	-2.4193E+01	3.5000E+01	-2.4156E+01	3.5000E+01
500000	-2.4374E+01	6.7200E+01	-2.4358E+01	7.0000E+01	-2.4329E+01	7.0000E+01	-2.4295E+01	7.0000E+01	-2.4249E+01	3.5000E+01	-2.4211E+01	3.5000E+01
502000	-2.4430E+01	6.7200E+01	-2.4413E+01	7.0000E+01	-2.4384E+01	7.0000E+01	-2.4350E+01	7.0000E+01	-2.4304E+01	3.5000E+01	-2.4267E+01	3.5000E+01
504000	-2.4485E+01	6.7200E+01	-2.4468E+01	7.0000E+01	-2.4440E+01	7.0000E+01	-2.4406E+01	7.0000E+01	-2.4360E+01	3.5000E+01	-2.4322E+01	3.5000E+01
506000	-2.4539E+01	6.7200E+01	-2.4523E+01	7.0000E+01	-2.4494E+01	7.0000E+01	-2.4461E+01	7.0000E+01	-2.4415E+01	3.5000E+01	-2.4378E+01	3.5000E+01
508000	-2.4594E+01	6.7200E+01	-2.4578E+01	7.0000E+01	-2.4549E+01	7.0000E+01	-2.4516E+01	7.0000E+01	-2.4470E+01	3.5000E+01	-2.4433E+01	3.5000E+01
510000	-2.4649E+01	6.7200E+01	-2.4632E+01	7.0000E+01	-2.4604E+01	7.0000E+01	-2.4570E+01	7.0000E+01	-2.4525E+01	3.5000E+01	-2.4488E+01	3.5000E+01
512000	-2.4703E+01	6.7200E+01	-2.4687E+01	7.0000E+01	-2.4659E+01	7.0000E+01	-2.4625E+01	7.0000E+01	-2.4579E+01	3.5000E+01	-2.4543E+01	3.5000E+01
514000	-2.4758E+01	6.7200E+01	-2.4741E+01	7.0000E+01	-2.4713E+01	7.0000E+01	-2.4680E+01	7.0000E+01	-2.4634E+01	3.5000E+01	-2.4597E+01	3.5000E+01
516000	-2.4812E+01	6.7200E+01	-2.4796E+01	7.0000E+01	-2.4768E+01	7.0000E+01	-2.4734E+01	7.0000E+01	-2.4689E+01	3.5000E+01	-2.4652E+01	3.5000E+01
518000	-2.4866E+01	6.7200E+01	-2.4850E+01	7.0000E+01	-2.4822E+01	7.0000E+01	-2.4789E+01	7.0000E+01	-2.4743E+01	3.5000E+01	-2.4706E+01	3.5000E+01

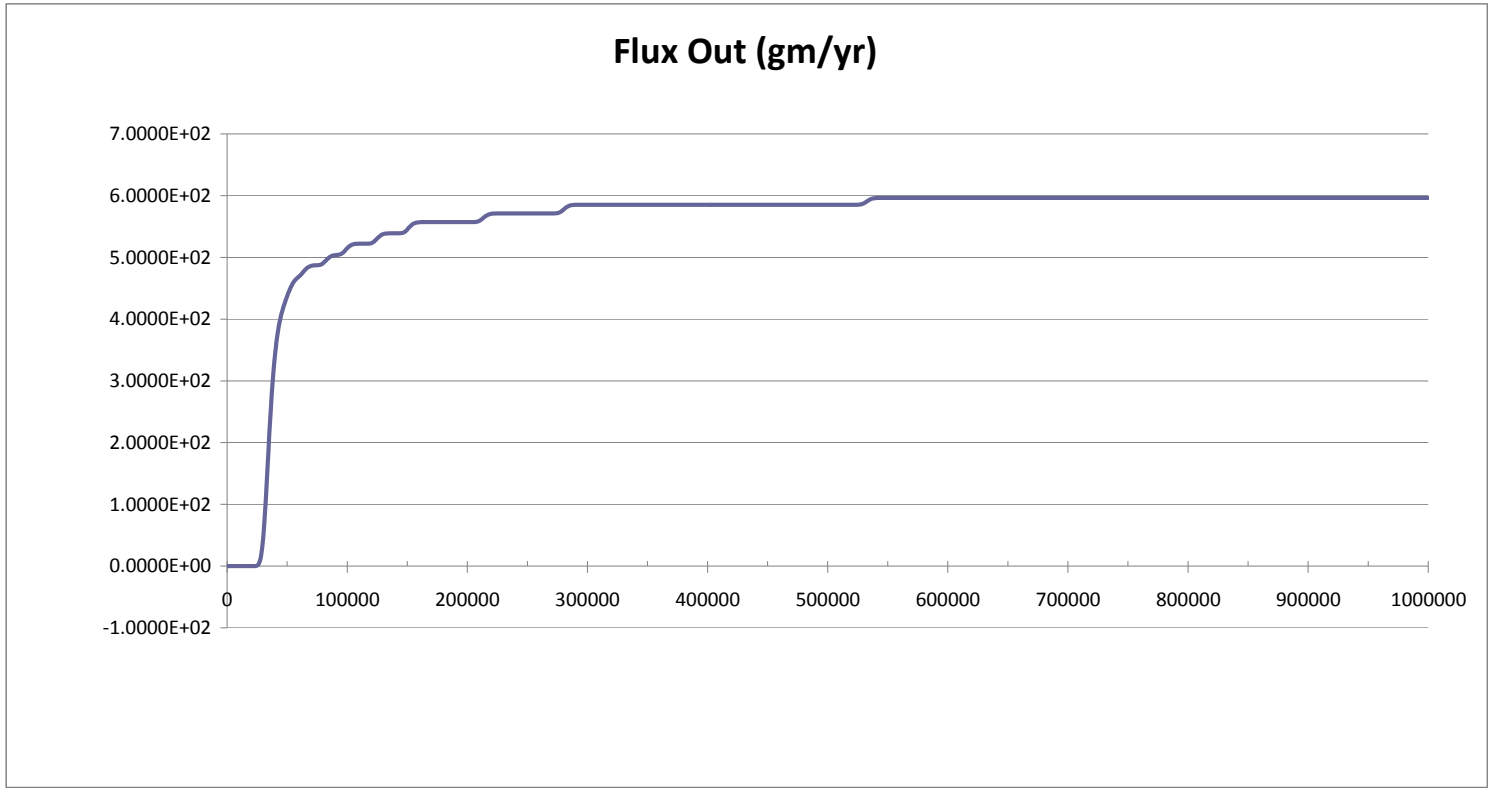
Time (yrs)	Arg 1	Curve 1	Arg 2	Curve 2	Arg 3	Curve 3	Arg 4	Curve 4	Arg 5	Curve 5	Arg 6	Curve 6
520000	-2.4920E+01	6.7200E+01	-2.4904E+01	7.0000E+01	-2.4876E+01	7.0000E+01	-2.4843E+01	7.0000E+01	-2.4797E+01	3.5000E+01	-2.4761E+01	3.5000E+01
522000	-2.4974E+01	6.7200E+01	-2.4958E+01	7.0000E+01	-2.4930E+01	7.0000E+01	-2.4897E+01	7.0000E+01	-2.4852E+01	3.5000E+01	-2.4815E+01	3.5000E+01
524000	-2.5028E+01	6.7200E+01	-2.5012E+01	7.0000E+01	-2.4984E+01	7.0000E+01	-2.4951E+01	7.0000E+01	-2.4906E+01	3.5000E+01	-2.4869E+01	3.5000E+01
526000	-2.5082E+01	6.7200E+01	-2.5065E+01	7.0000E+01	-2.5038E+01	7.0000E+01	-2.5005E+01	7.0000E+01	-2.4960E+01	3.5000E+01	-2.4923E+01	3.5000E+01
528000	-2.5135E+01	6.7200E+01	-2.5119E+01	7.0000E+01	-2.5091E+01	7.0000E+01	-2.5058E+01	7.0000E+01	-2.5014E+01	3.5000E+01	-2.4977E+01	3.5000E+01
530000	-2.5189E+01	6.7200E+01	-2.5173E+01	7.0000E+01	-2.5145E+01	7.0000E+01	-2.5112E+01	7.0000E+01	-2.5067E+01	3.5000E+01	-2.5031E+01	3.5000E+01
532000	-2.5242E+01	6.7200E+01	-2.5226E+01	7.0000E+01	-2.5198E+01	7.0000E+01	-2.5166E+01	7.0000E+01	-2.5121E+01	3.5000E+01	-2.5085E+01	3.5000E+01
534000	-2.5295E+01	6.7200E+01	-2.5279E+01	7.0000E+01	-2.5252E+01	7.0000E+01	-2.5219E+01	7.0000E+01	-2.5174E+01	3.5000E+01	-2.5138E+01	3.5000E+01
536000	-2.5349E+01	6.7200E+01	-2.5332E+01	7.0000E+01	-2.5305E+01	7.0000E+01	-2.5272E+01	7.0000E+01	-2.5228E+01	3.5000E+01	-2.5192E+01	3.5000E+01
538000	-2.5402E+01	6.7200E+01	-2.5385E+01	7.0000E+01	-2.5358E+01	7.0000E+01	-2.5326E+01	7.0000E+01	-2.5281E+01	3.5000E+01	-2.5245E+01	3.5000E+01
540000	-2.5455E+01	6.7200E+01	-2.5438E+01	7.0000E+01	-2.5411E+01	7.0000E+01	-2.5379E+01	7.0000E+01	-2.5334E+01	3.5000E+01	-2.5298E+01	3.5000E+01
542000	-2.5507E+01	6.7200E+01	-2.5491E+01	7.0000E+01	-2.5464E+01	7.0000E+01	-2.5432E+01	7.0000E+01	-2.5387E+01	3.5000E+01	-2.5352E+01	3.5000E+01
544000	-2.5560E+01	6.7200E+01	-2.5544E+01	7.0000E+01	-2.5517E+01	7.0000E+01	-2.5484E+01	7.0000E+01	-2.5440E+01	3.5000E+01	-2.5405E+01	3.5000E+01
546000	-2.5613E+01	6.7200E+01	-2.5597E+01	7.0000E+01	-2.5570E+01	7.0000E+01	-2.5537E+01	7.0000E+01	-2.5493E+01	3.5000E+01	-2.5457E+01	3.5000E+01
548000	-2.5665E+01	6.7200E+01	-2.5649E+01	7.0000E+01	-2.5622E+01	7.0000E+01	-2.5590E+01	7.0000E+01	-2.5546E+01	3.5000E+01	-2.5510E+01	3.5000E+01
550000	-2.5718E+01	6.7200E+01	-2.5702E+01	7.0000E+01	-2.5675E+01	7.0000E+01	-2.5642E+01	7.0000E+01	-2.5599E+01	3.5000E+01	-2.5563E+01	3.5000E+01
552000	-2.5770E+01	6.7200E+01	-2.5754E+01	7.0000E+01	-2.5727E+01	7.0000E+01	-2.5695E+01	7.0000E+01	-2.5651E+01	3.5000E+01	-2.5616E+01	3.5000E+01
554000	-2.5822E+01	6.7200E+01	-2.5806E+01	7.0000E+01	-2.5779E+01	7.0000E+01	-2.5747E+01	7.0000E+01	-2.5703E+01	3.5000E+01	-2.5668E+01	3.5000E+01
556000	-2.5874E+01	6.7200E+01	-2.5858E+01	7.0000E+01	-2.5831E+01	7.0000E+01	-2.5799E+01	7.0000E+01	-2.5756E+01	3.5000E+01	-2.5720E+01	3.5000E+01
558000	-2.5926E+01	6.7200E+01	-2.5910E+01	7.0000E+01	-2.5884E+01	7.0000E+01	-2.5852E+01	7.0000E+01	-2.5808E+01	3.5000E+01	-2.5773E+01	3.5000E+01
560000	-2.5978E+01	6.7200E+01	-2.5962E+01	7.0000E+01	-2.5935E+01	7.0000E+01	-2.5904E+01	7.0000E+01	-2.5860E+01	3.5000E+01	-2.5825E+01	3.5000E+01
562000	-2.6030E+01	6.7200E+01	-2.6014E+01	7.0000E+01	-2.5987E+01	7.0000E+01	-2.5955E+01	7.0000E+01	-2.5912E+01	3.5000E+01	-2.5877E+01	3.5000E+01
564000	-2.6081E+01	6.7200E+01	-2.6066E+01	7.0000E+01	-2.6039E+01	7.0000E+01	-2.6007E+01	7.0000E+01	-2.5964E+01	3.5000E+01	-2.5929E+01	3.5000E+01
566000	-2.6133E+01	6.7200E+01	-2.6117E+01	7.0000E+01	-2.6091E+01	7.0000E+01	-2.6059E+01	7.0000E+01	-2.6016E+01	3.5000E+01	-2.5981E+01	3.5000E+01
568000	-2.6184E+01	6.7200E+01	-2.6169E+01	7.0000E+01	-2.6142E+01	7.0000E+01	-2.6111E+01	7.0000E+01	-2.6067E+01	3.5000E+01	-2.6033E+01	3.5000E+01
570000	-2.6236E+01	6.7200E+01	-2.6220E+01	7.0000E+01	-2.6194E+01	7.0000E+01	-2.6162E+01	7.0000E+01	-2.6119E+01	3.5000E+01	-2.6084E+01	3.5000E+01
572000	-2.6287E+01	6.7200E+01	-2.6271E+01	7.0000E+01	-2.6245E+01	7.0000E+01	-2.6213E+01	7.0000E+01	-2.6171E+01	3.5000E+01	-2.6136E+01	3.5000E+01
574000	-2.6338E+01	6.7200E+01	-2.6323E+01	7.0000E+01	-2.6296E+01	7.0000E+01	-2.6265E+01	7.0000E+01	-2.6222E+01	3.5000E+01	-2.6187E+01	3.5000E+01
576000	-2.6389E+01	6.7200E+01	-2.6374E+01	7.0000E+01	-2.6347E+01	7.0000E+01	-2.6316E+01	7.0000E+01	-2.6273E+01	3.5000E+01	-2.6239E+01	3.5000E+01
578000	-2.6440E+01	6.7200E+01	-2.6425E+01	7.0000E+01	-2.6398E+01	7.0000E+01	-2.6367E+01	7.0000E+01	-2.6324E+01	3.5000E+01	-2.6290E+01	3.5000E+01
580000	-2.6491E+01	6.7200E+01	-2.6476E+01	7.0000E+01	-2.6449E+01	7.0000E+01	-2.6418E+01	7.0000E+01	-2.6376E+01	3.5000E+01	-2.6341E+01	3.5000E+01
582000	-2.6542E+01	6.7200E+01	-2.6526E+01	7.0000E+01	-2.6500E+01	7.0000E+01	-2.6469E+01	7.0000E+01	-2.6427E+01	3.5000E+01	-2.6392E+01	3.5000E+01
584000	-2.6593E+01	6.7200E+01	-2.6577E+01	7.0000E+01	-2.6551E+01	7.0000E+01	-2.6520E+01	7.0000E+01	-2.6477E+01	3.5000E+01	-2.6443E+01	3.5000E+01
586000	-2.6643E+01	6.7200E+01	-2.6628E+01	7.0000E+01	-2.6602E+01	7.0000E+01	-2.6571E+01	7.0000E+01	-2.6528E+01	3.5000E+01	-2.6494E+01	3.5000E+01
588000	-2.6694E+01	6.7200E+01	-2.6678E+01	7.0000E+01	-2.6652E+01	7.0000E+01	-2.6621E+01	7.0000E+01	-2.6579E+01	3.5000E+01	-2.6545E+01	3.5000E+01
590000	-2.6744E+01	6.7200E+01	-2.6729E+01	7.0000E+01	-2.6703E+01	7.0000E+01	-2.6672E+01	7.0000E+01	-2.6630E+01	3.5000E+01	-2.6595E+01	3.5000E+01
592000	-2.6794E+01	6.7200E+01	-2.6779E+01	7.0000E+01	-2.6753E+01	7.0000E+01	-2.6722E+01	7.0000E+01	-2.6680E+01	3.5000E+01	-2.6646E+01	3.5000E+01
594000	-2.6845E+01	6.7200E+01	-2.6829E+01	7.0000E+01	-2.6803E+01	7.0000E+01	-2.6773E+01	7.0000E+01	-2.6730E+01	3.5000E+01	-2.6696E+01	3.5000E+01
596000	-2.6895E+01	6.7200E+01	-2.6879E+01	7.0000E+01	-2.6854E+01	7.0000E+01	-2.6823E+01	7.0000E+01	-2.6781E+01	3.5000E+01	-2.6747E+01	3.5000E+01
598000	-2.6945E+01	6.7200E+01	-2.6929E+01	7.0000E+01	-2.6904E+01	7.0000E+01	-2.6873E+01	7.0000E+01	-2.6831E+01	3.5000E+01	-2.6797E+01	3.5000E+01
600000	-2.6995E+01	6.7200E+01	-2.6979E+01	7.0000E+01	-2.6954E+01	7.0000E+01	-2.6923E+01	7.0000E+01	-2.6881E+01	3.5000E+01	-2.6847E+01	3.5000E+01
602000	-2.7044E+01	6.7200E+01	-2.7029E+01	7.0000E+01	-2.7004E+01	7.0000E+01	-2.6973E+01	7.0000E+01	-2.6931E+01	3.5000E+01	-2.6897E+01	3.5000E+01
604000	-2.7094E+01	6.7200E+01	-2.7079E+01	7.0000E+01	-2.7053E+01	7.0000E+01	-2.7023E+01	7.0000E+01	-2.6981E+01	3.5000E+01	-2.6947E+01	3.5000E+01
606000	-2.7144E+01	6.7200E+01	-2.7129E+01	7.0000E+01	-2.7103E+01	7.0000E+01	-2.7073E+01	7.0000E+01	-2.7031E+01	3.5000E+01	-2.6997E+01	3.5000E+01
608000	-2.7193E+01	6.7200E+01	-2.7178E+01	7.0000E+01	-2.7153E+01	7.0000E+01	-2.7122E+01	7.0000E+01	-2.7081E+01	3.5000E+01	-2.7047E+01	3.5000E+01
610000	-2.7243E+01	6.7200E+01	-2.7228E+01	7.0000E+01	-2.7202E+01	7.0000E+01	-2.7172E+01	7.0000E+01	-2.7131E+01	3.5000E+01	-2.7097E+01	3.5000E+01
612000	-2.7292E+01	6.7200E+01	-2.7277E+01	7.0000E+01	-2.7252E+01	7.0000E+01	-2.7221E+01	7.0000E+01	-2.7180E+01	3.5000E+01	-2.7147E+01	3.5000E+01
614000	-2.7342E+01	6.7200E+01	-2.7327E+01	7.0000E+01	-2.7301E+01	7.0000E+01	-2.7271E+01	7.0000E+01	-2.7230E+01	3.5000E+01	-2.7196E+01	3.5000E+01
616000	-2.7391E+01	6.7200E+01	-2.7376E+01	7.0000E+01	-2.7351E+01	7.0000E+01	-2.7320E+01	7.0000E+01	-2.7279E+01	3.5000E+01	-2.7246E+01	3.5000E+01
618000	-2.7440E+01	6.7200E+01	-2.7425E+01	7.0000E+01	-2.7400E+01	7.0000E+01	-2.7369E+01	7.0000E+01	-2.7328E+01	3.5000E+01	-2.7295E+01	3.5000E+01
620000	-2.7489E+01	6.7200E+01	-2.7474E+01	7.0000E+01	-2.7449E+01	7.0000E+01	-2.7419E+01	7.0000E+01	-2.7378E+01	3.5000E+01	-2.7344E+01	3.5000E+01
622000	-2.7538E+01	6.7200E+01	-2.7523E+01	7.0000E+01	-2.7498E+01	7.0000E+01	-2.7468E+01	7.0000E+01	-2.7427E+01	3.5000E+01	-2.7394E+01	3.5000E+01

Time (yrs)	Arg 1	Curve 1	Arg 2	Curve 2	Arg 3	Curve 3	Arg 4	Curve 4	Arg 5	Curve 5	Arg 6	Curve 6
624000	-2.7587E+01	6.7200E+01	-2.7572E+01	7.0000E+01	-2.7547E+01	7.0000E+01	-2.7517E+01	7.0000E+01	-2.7476E+01	3.5000E+01	-2.7443E+01	3.5000E+01
626000	-2.7636E+01	6.7200E+01	-2.7621E+01	7.0000E+01	-2.7596E+01	7.0000E+01	-2.7566E+01	7.0000E+01	-2.7525E+01	3.5000E+01	-2.7492E+01	3.5000E+01
628000	-2.7684E+01	6.7200E+01	-2.7669E+01	7.0000E+01	-2.7644E+01	7.0000E+01	-2.7614E+01	7.0000E+01	-2.7574E+01	3.5000E+01	-2.7541E+01	3.5000E+01
630000	-2.7733E+01	6.7200E+01	-2.7718E+01	7.0000E+01	-2.7693E+01	7.0000E+01	-2.7663E+01	7.0000E+01	-2.7622E+01	3.5000E+01	-2.7590E+01	3.5000E+01
632000	-2.7781E+01	6.7200E+01	-2.7767E+01	7.0000E+01	-2.7742E+01	7.0000E+01	-2.7712E+01	7.0000E+01	-2.7671E+01	3.5000E+01	-2.7638E+01	3.5000E+01
634000	-2.7830E+01	6.7200E+01	-2.7815E+01	7.0000E+01	-2.7790E+01	7.0000E+01	-2.7760E+01	7.0000E+01	-2.7720E+01	3.5000E+01	-2.7687E+01	3.5000E+01
636000	-2.7878E+01	6.7200E+01	-2.7864E+01	7.0000E+01	-2.7839E+01	7.0000E+01	-2.7809E+01	7.0000E+01	-2.7768E+01	3.5000E+01	-2.7736E+01	3.5000E+01
638000	-2.7927E+01	6.7200E+01	-2.7912E+01	7.0000E+01	-2.7887E+01	7.0000E+01	-2.7857E+01	7.0000E+01	-2.7817E+01	3.5000E+01	-2.7784E+01	3.5000E+01
640000	-2.7975E+01	6.7200E+01	-2.7960E+01	7.0000E+01	-2.7935E+01	7.0000E+01	-2.7906E+01	7.0000E+01	-2.7865E+01	3.5000E+01	-2.7833E+01	3.5000E+01
642000	-2.8023E+01	6.7200E+01	-2.8008E+01	7.0000E+01	-2.7983E+01	7.0000E+01	-2.7954E+01	7.0000E+01	-2.7913E+01	3.5000E+01	-2.7881E+01	3.5000E+01
644000	-2.8071E+01	6.7200E+01	-2.8056E+01	7.0000E+01	-2.8031E+01	7.0000E+01	-2.8002E+01	7.0000E+01	-2.7962E+01	3.5000E+01	-2.7929E+01	3.5000E+01
646000	-2.8119E+01	6.7200E+01	-2.8104E+01	7.0000E+01	-2.8079E+01	7.0000E+01	-2.8050E+01	7.0000E+01	-2.8010E+01	3.5000E+01	-2.7977E+01	3.5000E+01
648000	-2.8167E+01	6.7200E+01	-2.8152E+01	7.0000E+01	-2.8127E+01	7.0000E+01	-2.8098E+01	7.0000E+01	-2.8058E+01	3.5000E+01	-2.8025E+01	3.5000E+01
650000	-2.8214E+01	6.7200E+01	-2.8200E+01	7.0000E+01	-2.8175E+01	7.0000E+01	-2.8146E+01	7.0000E+01	-2.8106E+01	3.5000E+01	-2.8073E+01	3.5000E+01
652000	-2.8262E+01	6.7200E+01	-2.8248E+01	7.0000E+01	-2.8223E+01	7.0000E+01	-2.8194E+01	7.0000E+01	-2.8154E+01	3.5000E+01	-2.8121E+01	3.5000E+01
654000	-2.8310E+01	6.7200E+01	-2.8295E+01	7.0000E+01	-2.8271E+01	7.0000E+01	-2.8241E+01	7.0000E+01	-2.8202E+01	3.5000E+01	-2.8169E+01	3.5000E+01
656000	-2.8357E+01	6.7200E+01	-2.8343E+01	7.0000E+01	-2.8318E+01	7.0000E+01	-2.8289E+01	7.0000E+01	-2.8249E+01	3.5000E+01	-2.8217E+01	3.5000E+01
658000	-2.8405E+01	6.7200E+01	-2.8390E+01	7.0000E+01	-2.8366E+01	7.0000E+01	-2.8337E+01	7.0000E+01	-2.8297E+01	3.5000E+01	-2.8265E+01	3.5000E+01
660000	-2.8452E+01	6.7200E+01	-2.8438E+01	7.0000E+01	-2.8413E+01	7.0000E+01	-2.8384E+01	7.0000E+01	-2.8345E+01	3.5000E+01	-2.8312E+01	3.5000E+01
662000	-2.8500E+01	6.7200E+01	-2.8485E+01	7.0000E+01	-2.8461E+01	7.0000E+01	-2.8432E+01	7.0000E+01	-2.8392E+01	3.5000E+01	-2.8360E+01	3.5000E+01
664000	-2.8547E+01	6.7200E+01	-2.8532E+01	7.0000E+01	-2.8508E+01	7.0000E+01	-2.8479E+01	7.0000E+01	-2.8439E+01	3.5000E+01	-2.8407E+01	3.5000E+01
666000	-2.8594E+01	6.7200E+01	-2.8580E+01	7.0000E+01	-2.8555E+01	7.0000E+01	-2.8526E+01	7.0000E+01	-2.8487E+01	3.5000E+01	-2.8455E+01	3.5000E+01
668000	-2.8641E+01	6.7200E+01	-2.8627E+01	7.0000E+01	-2.8602E+01	7.0000E+01	-2.8573E+01	7.0000E+01	-2.8534E+01	3.5000E+01	-2.8502E+01	3.5000E+01
670000	-2.8688E+01	6.7200E+01	-2.8674E+01	7.0000E+01	-2.8649E+01	7.0000E+01	-2.8621E+01	7.0000E+01	-2.8581E+01	3.5000E+01	-2.8549E+01	3.5000E+01
672000	-2.8735E+01	6.7200E+01	-2.8721E+01	7.0000E+01	-2.8696E+01	7.0000E+01	-2.8668E+01	7.0000E+01	-2.8628E+01	3.5000E+01	-2.8596E+01	3.5000E+01
674000	-2.8782E+01	6.7200E+01	-2.8767E+01	7.0000E+01	-2.8743E+01	7.0000E+01	-2.8714E+01	7.0000E+01	-2.8675E+01	3.5000E+01	-2.8644E+01	3.5000E+01
676000	-2.8829E+01	6.7200E+01	-2.8814E+01	7.0000E+01	-2.8790E+01	7.0000E+01	-2.8761E+01	7.0000E+01	-2.8722E+01	3.5000E+01	-2.8691E+01	3.5000E+01
678000	-2.8875E+01	6.7200E+01	-2.8861E+01	7.0000E+01	-2.8837E+01	7.0000E+01	-2.8808E+01	7.0000E+01	-2.8769E+01	3.5000E+01	-2.8737E+01	3.5000E+01
680000	-2.8922E+01	6.7200E+01	-2.8908E+01	7.0000E+01	-2.8884E+01	7.0000E+01	-2.8855E+01	7.0000E+01	-2.8816E+01	3.5000E+01	-2.8784E+01	3.5000E+01
682000	-2.8968E+01	6.7200E+01	-2.8954E+01	7.0000E+01	-2.8930E+01	7.0000E+01	-2.8902E+01	7.0000E+01	-2.8863E+01	3.5000E+01	-2.8831E+01	3.5000E+01
684000	-2.9015E+01	6.7200E+01	-2.9001E+01	7.0000E+01	-2.8977E+01	7.0000E+01	-2.8948E+01	7.0000E+01	-2.8909E+01	3.5000E+01	-2.8878E+01	3.5000E+01
686000	-2.9061E+01	6.7200E+01	-2.9047E+01	7.0000E+01	-2.9023E+01	7.0000E+01	-2.8995E+01	7.0000E+01	-2.8956E+01	3.5000E+01	-2.8924E+01	3.5000E+01
688000	-2.9108E+01	6.7200E+01	-2.9093E+01	7.0000E+01	-2.9070E+01	7.0000E+01	-2.9041E+01	7.0000E+01	-2.9002E+01	3.5000E+01	-2.8971E+01	3.5000E+01
690000	-2.9154E+01	6.7200E+01	-2.9140E+01	7.0000E+01	-2.9116E+01	7.0000E+01	-2.9087E+01	7.0000E+01	-2.9049E+01	3.5000E+01	-2.9017E+01	3.5000E+01
692000	-2.9200E+01	6.7200E+01	-2.9186E+01	7.0000E+01	-2.9162E+01	7.0000E+01	-2.9134E+01	7.0000E+01	-2.9095E+01	3.5000E+01	-2.9064E+01	3.5000E+01
694000	-2.9246E+01	6.7200E+01	-2.9232E+01	7.0000E+01	-2.9208E+01	7.0000E+01	-2.9180E+01	7.0000E+01	-2.9141E+01	3.5000E+01	-2.9110E+01	3.5000E+01
696000	-2.9292E+01	6.7200E+01	-2.9278E+01	7.0000E+01	-2.9254E+01	7.0000E+01	-2.9226E+01	7.0000E+01	-2.9188E+01	3.5000E+01	-2.9156E+01	3.5000E+01
698000	-2.9338E+01	6.7200E+01	-2.9324E+01	7.0000E+01	-2.9300E+01	7.0000E+01	-2.9272E+01	7.0000E+01	-2.9234E+01	3.5000E+01	-2.9203E+01	3.5000E+01
700000	-2.9384E+01	6.7200E+01	-2.9370E+01	7.0000E+01	-2.9346E+01	7.0000E+01	-2.9318E+01	7.0000E+01	-2.9280E+01	3.5000E+01	-2.9249E+01	3.5000E+01
702000	-2.9430E+01	6.7200E+01	-2.9416E+01	7.0000E+01	-2.9392E+01	7.0000E+01	-2.9364E+01	7.0000E+01	-2.9326E+01	3.5000E+01	-2.9295E+01	3.5000E+01
704000	-2.9476E+01	6.7200E+01	-2.9462E+01	7.0000E+01	-2.9438E+01	7.0000E+01	-2.9410E+01	7.0000E+01	-2.9372E+01	3.5000E+01	-2.9341E+01	3.5000E+01
706000	-2.9521E+01	6.7200E+01	-2.9507E+01	7.0000E+01	-2.9484E+01	7.0000E+01	-2.9456E+01	7.0000E+01	-2.9417E+01	3.5000E+01	-2.9387E+01	3.5000E+01
708000	-2.9567E+01	6.7200E+01	-2.9553E+01	7.0000E+01	-2.9530E+01	7.0000E+01	-2.9501E+01	7.0000E+01	-2.9463E+01	3.5000E+01	-2.9432E+01	3.5000E+01
710000	-2.9612E+01	6.7200E+01	-2.9599E+01	7.0000E+01	-2.9575E+01	7.0000E+01	-2.9547E+01	7.0000E+01	-2.9509E+01	3.5000E+01	-2.9478E+01	3.5000E+01
712000	-2.9658E+01	6.7200E+01	-2.9644E+01	7.0000E+01	-2.9621E+01	7.0000E+01	-2.9593E+01	7.0000E+01	-2.9555E+01	3.5000E+01	-2.9524E+01	3.5000E+01
714000	-2.9703E+01	6.7200E+01	-2.9689E+01	7.0000E+01	-2.9666E+01	7.0000E+01	-2.9638E+01	7.0000E+01	-2.9600E+01	3.5000E+01	-2.9569E+01	3.5000E+01
716000	-2.9749E+01	6.7200E+01	-2.9735E+01	7.0000E+01	-2.9711E+01	7.0000E+01	-2.9684E+01	7.0000E+01	-2.9646E+01	3.5000E+01	-2.9615E+01	3.5000E+01
718000	-2.9794E+01	6.7200E+01	-2.9780E+01	7.0000E+01	-2.9757E+01	7.0000E+01	-2.9729E+01	7.0000E+01	-2.9691E+01	3.5000E+01	-2.9660E+01	3.5000E+01
720000	-2.9839E+01	6.7200E+01	-2.9825E+01	7.0000E+01	-2.9802E+01	7.0000E+01	-2.9774E+01	7.0000E+01	-2.9736E+01	3.5000E+01	-2.9706E+01	3.5000E+01
722000	-2.9884E+01	6.7200E+01	-2.9870E+01	7.0000E+01	-2.9847E+01	7.0000E+01	-2.9819E+01	7.0000E+01	-2.9782E+01	3.5000E+01	-2.9751E+01	3.5000E+01
724000	-2.9929E+01	6.7200E+01	-2.9916E+01	7.0000E+01	-2.9892E+01	7.0000E+01	-2.9865E+01	7.0000E+01	-2.9827E+01	3.5000E+01	-2.9796E+01	3.5000E+01
726000	-2.9974E+01	6.7200E+01	-2.9961E+01	7.0000E+01	-2.9937E+01	7.0000E+01	-2.9910E+01	7.0000E+01	-2.9872E+01	3.5000E+01	-2.9842E+01	3.5000E+01

Time (yrs)	Arg 1	Curve 1	Arg 2	Curve 2	Arg 3	Curve 3	Arg 4	Curve 4	Arg 5	Curve 5	Arg 6	Curve 6
728000	-3.0019E+01	6.7200E+01	-3.0006E+01	7.0000E+01	-2.9982E+01	7.0000E+01	-2.9955E+01	7.0000E+01	-2.9917E+01	3.5000E+01	-2.9887E+01	3.5000E+01
730000	-3.0064E+01	6.7200E+01	-3.0050E+01	7.0000E+01	-3.0027E+01	7.0000E+01	-3.0000E+01	7.0000E+01	-2.9962E+01	3.5000E+01	-2.9932E+01	3.5000E+01
732000	-3.0109E+01	6.7200E+01	-3.0095E+01	7.0000E+01	-3.0072E+01	7.0000E+01	-3.0045E+01	7.0000E+01	-3.0007E+01	3.5000E+01	-2.9977E+01	3.5000E+01
734000	-3.0154E+01	6.7200E+01	-3.0140E+01	7.0000E+01	-3.0117E+01	7.0000E+01	-3.0089E+01	7.0000E+01	-3.0052E+01	3.5000E+01	-3.0022E+01	3.5000E+01
736000	-3.0198E+01	6.7200E+01	-3.0185E+01	7.0000E+01	-3.0162E+01	7.0000E+01	-3.0134E+01	7.0000E+01	-3.0097E+01	3.5000E+01	-3.0067E+01	3.5000E+01
738000	-3.0243E+01	6.7200E+01	-3.0229E+01	7.0000E+01	-3.0206E+01	7.0000E+01	-3.0179E+01	7.0000E+01	-3.0142E+01	3.5000E+01	-3.0111E+01	3.5000E+01
740000	-3.0287E+01	6.7200E+01	-3.0274E+01	7.0000E+01	-3.0251E+01	7.0000E+01	-3.0223E+01	7.0000E+01	-3.0186E+01	3.5000E+01	-3.0156E+01	3.5000E+01
742000	-3.0332E+01	6.7200E+01	-3.0318E+01	7.0000E+01	-3.0295E+01	7.0000E+01	-3.0268E+01	7.0000E+01	-3.0231E+01	3.5000E+01	-3.0201E+01	3.5000E+01
744000	-3.0376E+01	6.7200E+01	-3.0363E+01	7.0000E+01	-3.0340E+01	7.0000E+01	-3.0313E+01	7.0000E+01	-3.0275E+01	3.5000E+01	-3.0245E+01	3.5000E+01
746000	-3.0421E+01	6.7200E+01	-3.0407E+01	7.0000E+01	-3.0384E+01	7.0000E+01	-3.0357E+01	7.0000E+01	-3.0320E+01	3.5000E+01	-3.0290E+01	3.5000E+01
748000	-3.0465E+01	6.7200E+01	-3.0451E+01	7.0000E+01	-3.0429E+01	7.0000E+01	-3.0401E+01	7.0000E+01	-3.0364E+01	3.5000E+01	-3.0334E+01	3.5000E+01
750000	-3.0509E+01	6.7200E+01	-3.0496E+01	7.0000E+01	-3.0473E+01	7.0000E+01	-3.0446E+01	7.0000E+01	-3.0409E+01	3.5000E+01	-3.0379E+01	3.5000E+01
752000	-3.0553E+01	6.7200E+01	-3.0540E+01	7.0000E+01	-3.0517E+01	7.0000E+01	-3.0490E+01	7.0000E+01	-3.0453E+01	3.5000E+01	-3.0423E+01	3.5000E+01
754000	-3.0597E+01	6.7200E+01	-3.0584E+01	7.0000E+01	-3.0561E+01	7.0000E+01	-3.0534E+01	7.0000E+01	-3.0497E+01	3.5000E+01	-3.0467E+01	3.5000E+01
756000	-3.0641E+01	6.7200E+01	-3.0628E+01	7.0000E+01	-3.0605E+01	7.0000E+01	-3.0578E+01	7.0000E+01	-3.0541E+01	3.5000E+01	-3.0512E+01	3.5000E+01
758000	-3.0685E+01	6.7200E+01	-3.0672E+01	7.0000E+01	-3.0649E+01	7.0000E+01	-3.0622E+01	7.0000E+01	-3.0585E+01	3.5000E+01	-3.0556E+01	3.5000E+01
760000	-3.0729E+01	6.7200E+01	-3.0716E+01	7.0000E+01	-3.0693E+01	7.0000E+01	-3.0666E+01	7.0000E+01	-3.0629E+01	3.5000E+01	-3.0600E+01	3.5000E+01
762000	-3.0773E+01	6.7200E+01	-3.0760E+01	7.0000E+01	-3.0737E+01	7.0000E+01	-3.0710E+01	7.0000E+01	-3.0673E+01	3.5000E+01	-3.0644E+01	3.5000E+01
764000	-3.0817E+01	6.7200E+01	-3.0803E+01	7.0000E+01	-3.0781E+01	7.0000E+01	-3.0754E+01	7.0000E+01	-3.0717E+01	3.5000E+01	-3.0688E+01	3.5000E+01
766000	-3.0861E+01	6.7200E+01	-3.0847E+01	7.0000E+01	-3.0825E+01	7.0000E+01	-3.0798E+01	7.0000E+01	-3.0761E+01	3.5000E+01	-3.0732E+01	3.5000E+01
768000	-3.0904E+01	6.7200E+01	-3.0891E+01	7.0000E+01	-3.0868E+01	7.0000E+01	-3.0842E+01	7.0000E+01	-3.0805E+01	3.5000E+01	-3.0775E+01	3.5000E+01
770000	-3.0948E+01	6.7200E+01	-3.0934E+01	7.0000E+01	-3.0912E+01	7.0000E+01	-3.0885E+01	7.0000E+01	-3.0849E+01	3.5000E+01	-3.0819E+01	3.5000E+01
772000	-3.0991E+01	6.7200E+01	-3.0978E+01	7.0000E+01	-3.0956E+01	7.0000E+01	-3.0929E+01	7.0000E+01	-3.0892E+01	3.5000E+01	-3.0863E+01	3.5000E+01
774000	-3.1035E+01	6.7200E+01	-3.1021E+01	7.0000E+01	-3.0999E+01	7.0000E+01	-3.0972E+01	7.0000E+01	-3.0936E+01	3.5000E+01	-3.0907E+01	3.5000E+01
776000	-3.1078E+01	6.7200E+01	-3.1065E+01	7.0000E+01	-3.1043E+01	7.0000E+01	-3.1016E+01	7.0000E+01	-3.0980E+01	3.5000E+01	-3.0950E+01	3.5000E+01
778000	-3.1121E+01	6.7200E+01	-3.1108E+01	7.0000E+01	-3.1086E+01	7.0000E+01	-3.1059E+01	7.0000E+01	-3.1023E+01	3.5000E+01	-3.0994E+01	3.5000E+01
780000	-3.1165E+01	6.7200E+01	-3.1152E+01	7.0000E+01	-3.1129E+01	7.0000E+01	-3.1103E+01	7.0000E+01	-3.1066E+01	3.5000E+01	-3.1037E+01	3.5000E+01
782000	-3.1208E+01	6.7200E+01	-3.1195E+01	7.0000E+01	-3.1173E+01	7.0000E+01	-3.1146E+01	7.0000E+01	-3.1110E+01	3.5000E+01	-3.1081E+01	3.5000E+01
784000	-3.1251E+01	6.7200E+01	-3.1238E+01	7.0000E+01	-3.1216E+01	7.0000E+01	-3.1189E+01	7.0000E+01	-3.1153E+01	3.5000E+01	-3.1124E+01	3.5000E+01
786000	-3.1294E+01	6.7200E+01	-3.1281E+01	7.0000E+01	-3.1259E+01	7.0000E+01	-3.1232E+01	7.0000E+01	-3.1196E+01	3.5000E+01	-3.1167E+01	3.5000E+01
788000	-3.1337E+01	6.7200E+01	-3.1324E+01	7.0000E+01	-3.1302E+01	7.0000E+01	-3.1276E+01	7.0000E+01	-3.1240E+01	3.5000E+01	-3.1210E+01	3.5000E+01
790000	-3.1380E+01	6.7200E+01	-3.1367E+01	7.0000E+01	-3.1345E+01	7.0000E+01	-3.1319E+01	7.0000E+01	-3.1283E+01	3.5000E+01	-3.1254E+01	3.5000E+01
792000	-3.1423E+01	6.7200E+01	-3.1410E+01	7.0000E+01	-3.1388E+01	7.0000E+01	-3.1362E+01	7.0000E+01	-3.1326E+01	3.5000E+01	-3.1297E+01	3.5000E+01
794000	-3.1466E+01	6.7200E+01	-3.1453E+01	7.0000E+01	-3.1431E+01	7.0000E+01	-3.1405E+01	7.0000E+01	-3.1369E+01	3.5000E+01	-3.1340E+01	3.5000E+01
796000	-3.1509E+01	6.7200E+01	-3.1496E+01	7.0000E+01	-3.1474E+01	7.0000E+01	-3.1447E+01	7.0000E+01	-3.1412E+01	3.5000E+01	-3.1383E+01	3.5000E+01
798000	-3.1552E+01	6.7200E+01	-3.1539E+01	7.0000E+01	-3.1517E+01	7.0000E+01	-3.1490E+01	7.0000E+01	-3.1455E+01	3.5000E+01	-3.1426E+01	3.5000E+01
800000	-3.1594E+01	6.7200E+01	-3.1581E+01	7.0000E+01	-3.1559E+01	7.0000E+01	-3.1533E+01	7.0000E+01	-3.1497E+01	3.5000E+01	-3.1468E+01	3.5000E+01
802000	-3.1637E+01	6.7200E+01	-3.1624E+01	7.0000E+01	-3.1602E+01	7.0000E+01	-3.1576E+01	7.0000E+01	-3.1540E+01	3.5000E+01	-3.1511E+01	3.5000E+01
804000	-3.1680E+01	6.7200E+01	-3.1667E+01	7.0000E+01	-3.1645E+01	7.0000E+01	-3.1618E+01	7.0000E+01	-3.1583E+01	3.5000E+01	-3.1554E+01	3.5000E+01
806000	-3.1722E+01	6.7200E+01	-3.1709E+01	7.0000E+01	-3.1687E+01	7.0000E+01	-3.1661E+01	7.0000E+01	-3.1625E+01	3.5000E+01	-3.1597E+01	3.5000E+01
808000	-3.1765E+01	6.7200E+01	-3.1752E+01	7.0000E+01	-3.1730E+01	7.0000E+01	-3.1704E+01	7.0000E+01	-3.1668E+01	3.5000E+01	-3.1639E+01	3.5000E+01
810000	-3.1807E+01	6.7200E+01	-3.1794E+01	7.0000E+01	-3.1772E+01	7.0000E+01	-3.1746E+01	7.0000E+01	-3.1711E+01	3.5000E+01	-3.1682E+01	3.5000E+01
812000	-3.1849E+01	6.7200E+01	-3.1836E+01	7.0000E+01	-3.1815E+01	7.0000E+01	-3.1789E+01	7.0000E+01	-3.1753E+01	3.5000E+01	-3.1724E+01	3.5000E+01
814000	-3.1892E+01	6.7200E+01	-3.1879E+01	7.0000E+01	-3.1857E+01	7.0000E+01	-3.1831E+01	7.0000E+01	-3.1796E+01	3.5000E+01	-3.1767E+01	3.5000E+01
816000	-3.1934E+01	6.7200E+01	-3.1921E+01	7.0000E+01	-3.1899E+01	7.0000E+01	-3.1873E+01	7.0000E+01	-3.1838E+01	3.5000E+01	-3.1809E+01	3.5000E+01
818000	-3.1976E+01	6.7200E+01	-3.1963E+01	7.0000E+01	-3.1941E+01	7.0000E+01	-3.1916E+01	7.0000E+01	-3.1880E+01	3.5000E+01	-3.1852E+01	3.5000E+01
820000	-3.2018E+01	6.7200E+01	-3.2005E+01	7.0000E+01	-3.1984E+01	7.0000E+01	-3.1958E+01	7.0000E+01	-3.1922E+01	3.5000E+01	-3.1894E+01	3.5000E+01
822000	-3.2060E+01	6.7200E+01	-3.2047E+01	7.0000E+01	-3.2026E+01	7.0000E+01	-3.2000E+01	7.0000E+01	-3.1965E+01	3.5000E+01	-3.1936E+01	3.5000E+01
824000	-3.2102E+01	6.7200E+01	-3.2090E+01	7.0000E+01	-3.2068E+01	7.0000E+01	-3.2042E+01	7.0000E+01	-3.2007E+01	3.5000E+01	-3.1978E+01	3.5000E+01
826000	-3.2144E+01	6.7200E+01	-3.2131E+01	7.0000E+01	-3.2110E+01	7.0000E+01	-3.2084E+01	7.0000E+01	-3.2049E+01	3.5000E+01	-3.2021E+01	3.5000E+01
828000	-3.2186E+01	6.7200E+01	-3.2173E+01	7.0000E+01	-3.2152E+01	7.0000E+01	-3.2126E+01	7.0000E+01	-3.2091E+01	3.5000E+01	-3.2063E+01	3.5000E+01
830000	-3.2228E+01	6.7200E+01	-3.2215E+01	7.0000E+01	-3.2194E+01	7.0000E+01	-3.2168E+01	7.0000E+01	-3.2133E+01	3.5000E+01	-3.2105E+01	3.5000E+01

Time (yrs)	Arg 1	Curve 1	Arg 2	Curve 2	Arg 3	Curve 3	Arg 4	Curve 4	Arg 5	Curve 5	Arg 6	Curve 6
832000	-3.2270E+01	6.7200E+01	-3.2257E+01	7.0000E+01	-3.2236E+01	7.0000E+01	-3.2210E+01	7.0000E+01	-3.2175E+01	3.5000E+01	-3.2147E+01	3.5000E+01
834000	-3.2312E+01	6.7200E+01	-3.2299E+01	7.0000E+01	-3.2277E+01	7.0000E+01	-3.2252E+01	7.0000E+01	-3.2217E+01	3.5000E+01	-3.2189E+01	3.5000E+01
836000	-3.2353E+01	6.7200E+01	-3.2341E+01	7.0000E+01	-3.2319E+01	7.0000E+01	-3.2293E+01	7.0000E+01	-3.2259E+01	3.5000E+01	-3.2230E+01	3.5000E+01
838000	-3.2395E+01	6.7200E+01	-3.2382E+01	7.0000E+01	-3.2361E+01	7.0000E+01	-3.2335E+01	7.0000E+01	-3.2300E+01	3.5000E+01	-3.2272E+01	3.5000E+01
840000	-3.2437E+01	6.7200E+01	-3.2424E+01	7.0000E+01	-3.2402E+01	7.0000E+01	-3.2377E+01	7.0000E+01	-3.2342E+01	3.5000E+01	-3.2314E+01	3.5000E+01
842000	-3.2478E+01	6.7200E+01	-3.2465E+01	7.0000E+01	-3.2444E+01	7.0000E+01	-3.2418E+01	7.0000E+01	-3.2384E+01	3.5000E+01	-3.2356E+01	3.5000E+01
844000	-3.2520E+01	6.7200E+01	-3.2507E+01	7.0000E+01	-3.2486E+01	7.0000E+01	-3.2460E+01	7.0000E+01	-3.2425E+01	3.5000E+01	-3.2397E+01	3.5000E+01
846000	-3.2561E+01	6.7200E+01	-3.2548E+01	7.0000E+01	-3.2527E+01	7.0000E+01	-3.2502E+01	7.0000E+01	-3.2467E+01	3.5000E+01	-3.2439E+01	3.5000E+01
848000	-3.2602E+01	6.7200E+01	-3.2590E+01	7.0000E+01	-3.2568E+01	7.0000E+01	-3.2543E+01	7.0000E+01	-3.2508E+01	3.5000E+01	-3.2480E+01	3.5000E+01
850000	-3.2644E+01	6.7200E+01	-3.2631E+01	7.0000E+01	-3.2610E+01	7.0000E+01	-3.2584E+01	7.0000E+01	-3.2550E+01	3.5000E+01	-3.2522E+01	3.5000E+01
852000	-3.2685E+01	6.7200E+01	-3.2672E+01	7.0000E+01	-3.2651E+01	7.0000E+01	-3.2626E+01	7.0000E+01	-3.2591E+01	3.5000E+01	-3.2563E+01	3.5000E+01
854000	-3.2726E+01	6.7200E+01	-3.2714E+01	7.0000E+01	-3.2692E+01	7.0000E+01	-3.2667E+01	7.0000E+01	-3.2633E+01	3.5000E+01	-3.2605E+01	3.5000E+01
856000	-3.2767E+01	6.7200E+01	-3.2755E+01	7.0000E+01	-3.2734E+01	7.0000E+01	-3.2708E+01	7.0000E+01	-3.2674E+01	3.5000E+01	-3.2646E+01	3.5000E+01
858000	-3.2809E+01	6.7200E+01	-3.2796E+01	7.0000E+01	-3.2775E+01	7.0000E+01	-3.2750E+01	7.0000E+01	-3.2715E+01	3.5000E+01	-3.2687E+01	3.5000E+01
860000	-3.2850E+01	6.7200E+01	-3.2837E+01	7.0000E+01	-3.2816E+01	7.0000E+01	-3.2791E+01	7.0000E+01	-3.2756E+01	3.5000E+01	-3.2728E+01	3.5000E+01
862000	-3.2891E+01	6.7200E+01	-3.2878E+01	7.0000E+01	-3.2857E+01	7.0000E+01	-3.2832E+01	7.0000E+01	-3.2797E+01	3.5000E+01	-3.2770E+01	3.5000E+01
864000	-3.2932E+01	6.7200E+01	-3.2919E+01	7.0000E+01	-3.2898E+01	7.0000E+01	-3.2873E+01	7.0000E+01	-3.2839E+01	3.5000E+01	-3.2811E+01	3.5000E+01
866000	-3.2973E+01	6.7200E+01	-3.2960E+01	7.0000E+01	-3.2939E+01	7.0000E+01	-3.2914E+01	7.0000E+01	-3.2880E+01	3.5000E+01	-3.2852E+01	3.5000E+01
868000	-3.3013E+01	6.7200E+01	-3.3001E+01	7.0000E+01	-3.2980E+01	7.0000E+01	-3.2955E+01	7.0000E+01	-3.2921E+01	3.5000E+01	-3.2893E+01	3.5000E+01
870000	-3.3054E+01	6.7200E+01	-3.3042E+01	7.0000E+01	-3.3021E+01	7.0000E+01	-3.2996E+01	7.0000E+01	-3.2961E+01	3.5000E+01	-3.2934E+01	3.5000E+01
872000	-3.3095E+01	6.7200E+01	-3.3083E+01	7.0000E+01	-3.3062E+01	7.0000E+01	-3.3036E+01	7.0000E+01	-3.3002E+01	3.5000E+01	-3.2975E+01	3.5000E+01
874000	-3.3136E+01	6.7200E+01	-3.3123E+01	7.0000E+01	-3.3102E+01	7.0000E+01	-3.3077E+01	7.0000E+01	-3.3043E+01	3.5000E+01	-3.3016E+01	3.5000E+01
876000	-3.3176E+01	6.7200E+01	-3.3164E+01	7.0000E+01	-3.3143E+01	7.0000E+01	-3.3118E+01	7.0000E+01	-3.3084E+01	3.5000E+01	-3.3056E+01	3.5000E+01
878000	-3.3217E+01	6.7200E+01	-3.3205E+01	7.0000E+01	-3.3184E+01	7.0000E+01	-3.3159E+01	7.0000E+01	-3.3125E+01	3.5000E+01	-3.3097E+01	3.5000E+01
880000	-3.3258E+01	6.7200E+01	-3.3245E+01	7.0000E+01	-3.3224E+01	7.0000E+01	-3.3199E+01	7.0000E+01	-3.3165E+01	3.5000E+01	-3.3138E+01	3.5000E+01
882000	-3.3298E+01	6.7200E+01	-3.3286E+01	7.0000E+01	-3.3265E+01	7.0000E+01	-3.3240E+01	7.0000E+01	-3.3206E+01	3.5000E+01	-3.3179E+01	3.5000E+01
884000	-3.3339E+01	6.7200E+01	-3.3326E+01	7.0000E+01	-3.3305E+01	7.0000E+01	-3.3280E+01	7.0000E+01	-3.3247E+01	3.5000E+01	-3.3219E+01	3.5000E+01
886000	-3.3379E+01	6.7200E+01	-3.3367E+01	7.0000E+01	-3.3346E+01	7.0000E+01	-3.3321E+01	7.0000E+01	-3.3287E+01	3.5000E+01	-3.3260E+01	3.5000E+01
888000	-3.3419E+01	6.7200E+01	-3.3407E+01	7.0000E+01	-3.3386E+01	7.0000E+01	-3.3361E+01	7.0000E+01	-3.3328E+01	3.5000E+01	-3.3300E+01	3.5000E+01
890000	-3.3460E+01	6.7200E+01	-3.3447E+01	7.0000E+01	-3.3427E+01	7.0000E+01	-3.3402E+01	7.0000E+01	-3.3368E+01	3.5000E+01	-3.3341E+01	3.5000E+01
892000	-3.3500E+01	6.7200E+01	-3.3488E+01	7.0000E+01	-3.3467E+01	7.0000E+01	-3.3442E+01	7.0000E+01	-3.3408E+01	3.5000E+01	-3.3381E+01	3.5000E+01
894000	-3.3540E+01	6.7200E+01	-3.3528E+01	7.0000E+01	-3.3507E+01	7.0000E+01	-3.3482E+01	7.0000E+01	-3.3449E+01	3.5000E+01	-3.3422E+01	3.5000E+01
896000	-3.3580E+01	6.7200E+01	-3.3568E+01	7.0000E+01	-3.3547E+01	7.0000E+01	-3.3523E+01	7.0000E+01	-3.3489E+01	3.5000E+01	-3.3462E+01	3.5000E+01
898000	-3.3620E+01	6.7200E+01	-3.3608E+01	7.0000E+01	-3.3588E+01	7.0000E+01	-3.3563E+01	7.0000E+01	-3.3529E+01	3.5000E+01	-3.3502E+01	3.5000E+01
900000	-3.3661E+01	6.7200E+01	-3.3648E+01	7.0000E+01	-3.3628E+01	7.0000E+01	-3.3603E+01	7.0000E+01	-3.3569E+01	3.5000E+01	-3.3542E+01	3.5000E+01
902000	-3.3701E+01	6.7200E+01	-3.3688E+01	7.0000E+01	-3.3668E+01	7.0000E+01	-3.3643E+01	7.0000E+01	-3.3610E+01	3.5000E+01	-3.3583E+01	3.5000E+01
904000	-3.3741E+01	6.7200E+01	-3.3728E+01	7.0000E+01	-3.3708E+01	7.0000E+01	-3.3683E+01	7.0000E+01	-3.3650E+01	3.5000E+01	-3.3623E+01	3.5000E+01
906000	-3.3781E+01	6.7200E+01	-3.3768E+01	7.0000E+01	-3.3748E+01	7.0000E+01	-3.3723E+01	7.0000E+01	-3.3690E+01	3.5000E+01	-3.3663E+01	3.5000E+01
908000	-3.3820E+01	6.7200E+01	-3.3808E+01	7.0000E+01	-3.3788E+01	7.0000E+01	-3.3763E+01	7.0000E+01	-3.3730E+01	3.5000E+01	-3.3703E+01	3.5000E+01
910000	-3.3860E+01	6.7200E+01	-3.3848E+01	7.0000E+01	-3.3828E+01	7.0000E+01	-3.3803E+01	7.0000E+01	-3.3770E+01	3.5000E+01	-3.3743E+01	3.5000E+01
912000	-3.3900E+01	6.7200E+01	-3.3888E+01	7.0000E+01	-3.3867E+01	7.0000E+01	-3.3843E+01	7.0000E+01	-3.3810E+01	3.5000E+01	-3.3783E+01	3.5000E+01
914000	-3.3940E+01	6.7200E+01	-3.3928E+01	7.0000E+01	-3.3907E+01	7.0000E+01	-3.3883E+01	7.0000E+01	-3.3850E+01	3.5000E+01	-3.3823E+01	3.5000E+01
916000	-3.3980E+01	6.7200E+01	-3.3967E+01	7.0000E+01	-3.3947E+01	7.0000E+01	-3.3923E+01	7.0000E+01	-3.3889E+01	3.5000E+01	-3.3862E+01	3.5000E+01
918000	-3.4019E+01	6.7200E+01	-3.4007E+01	7.0000E+01	-3.3987E+01	7.0000E+01	-3.3962E+01	7.0000E+01	-3.3929E+01	3.5000E+01	-3.3902E+01	3.5000E+01
920000	-3.4059E+01	6.7200E+01	-3.4047E+01	7.0000E+01	-3.4026E+01	7.0000E+01	-3.4002E+01	7.0000E+01	-3.3969E+01	3.5000E+01	-3.3942E+01	3.5000E+01
922000	-3.4098E+01	6.7200E+01	-3.4086E+01	7.0000E+01	-3.4066E+01	7.0000E+01	-3.4042E+01	7.0000E+01	-3.4008E+01	3.5000E+01	-3.3982E+01	3.5000E+01
924000	-3.4138E+01	6.7200E+01	-3.4126E+01	7.0000E+01	-3.4106E+01	7.0000E+01	-3.4081E+01	7.0000E+01	-3.4048E+01	3.5000E+01	-3.4021E+01	3.5000E+01
926000	-3.4177E+01	6.7200E+01	-3.4165E+01	7.0000E+01	-3.4145E+01	7.0000E+01	-3.4121E+01	7.0000E+01	-3.4088E+01	3.5000E+01	-3.4061E+01	3.5000E+01
928000	-3.4217E+01	6.7200E+01	-3.4205E+01	7.0000E+01	-3.4184E+01	7.0000E+01	-3.4160E+01	7.0000E+01	-3.4127E+01	3.5000E+01	-3.4101E+01	3.5000E+01
930000	-3.4256E+01	6.7200E+01	-3.4244E+01	7.0000E+01	-3.4224E+01	7.0000E+01	-3.4200E+01	7.0000E+01	-3.4167E+01	3.5000E+01	-3.4140E+01	3.5000E+01
932000	-3.4296E+01	6.7200E+01	-3.4284E+01	7.0000E+01	-3.4263E+01	7.0000E+01	-3.4239E+01	7.0000E+01	-3.4206E+01	3.5000E+01	-3.4180E+01	3.5000E+01
934000	-3.4335E+01	6.7200E+01	-3.4323E+01	7.0000E+01	-3.4303E+01	7.0000E+01	-3.4278E+01	7.0000E+01	-3.4246E+01	3.5000E+01	-3.4219E+01	3.5000E+01

Time (yrs)	Arg 1	Curve 1	Arg 2	Curve 2	Arg 3	Curve 3	Arg 4	Curve 4	Arg 5	Curve 5	Arg 6	Curve 6
936000	-3.4374E+01	6.7200E+01	-3.4362E+01	7.0000E+01	-3.4342E+01	7.0000E+01	-3.4318E+01	7.0000E+01	-3.4285E+01	3.5000E+01	-3.4258E+01	3.5000E+01
938000	-3.4413E+01	6.7200E+01	-3.4401E+01	7.0000E+01	-3.4381E+01	7.0000E+01	-3.4357E+01	7.0000E+01	-3.4324E+01	3.5000E+01	-3.4298E+01	3.5000E+01
940000	-3.4452E+01	6.7200E+01	-3.4441E+01	7.0000E+01	-3.4420E+01	7.0000E+01	-3.4396E+01	7.0000E+01	-3.4364E+01	3.5000E+01	-3.4337E+01	3.5000E+01
942000	-3.4492E+01	6.7200E+01	-3.4480E+01	7.0000E+01	-3.4460E+01	7.0000E+01	-3.4435E+01	7.0000E+01	-3.4403E+01	3.5000E+01	-3.4376E+01	3.5000E+01
944000	-3.4531E+01	6.7200E+01	-3.4519E+01	7.0000E+01	-3.4499E+01	7.0000E+01	-3.4475E+01	7.0000E+01	-3.4442E+01	3.5000E+01	-3.4415E+01	3.5000E+01
946000	-3.4570E+01	6.7200E+01	-3.4558E+01	7.0000E+01	-3.4538E+01	7.0000E+01	-3.4514E+01	7.0000E+01	-3.4481E+01	3.5000E+01	-3.4455E+01	3.5000E+01
948000	-3.4609E+01	6.7200E+01	-3.4597E+01	7.0000E+01	-3.4577E+01	7.0000E+01	-3.4553E+01	7.0000E+01	-3.4520E+01	3.5000E+01	-3.4494E+01	3.5000E+01
950000	-3.4648E+01	6.7200E+01	-3.4636E+01	7.0000E+01	-3.4616E+01	7.0000E+01	-3.4592E+01	7.0000E+01	-3.4559E+01	3.5000E+01	-3.4533E+01	3.5000E+01
952000	-3.4687E+01	6.7200E+01	-3.4675E+01	7.0000E+01	-3.4655E+01	7.0000E+01	-3.4631E+01	7.0000E+01	-3.4598E+01	3.5000E+01	-3.4572E+01	3.5000E+01
954000	-3.4725E+01	6.7200E+01	-3.4714E+01	7.0000E+01	-3.4694E+01	7.0000E+01	-3.4670E+01	7.0000E+01	-3.4637E+01	3.5000E+01	-3.4611E+01	3.5000E+01
956000	-3.4764E+01	6.7200E+01	-3.4752E+01	7.0000E+01	-3.4732E+01	7.0000E+01	-3.4709E+01	7.0000E+01	-3.4676E+01	3.5000E+01	-3.4650E+01	3.5000E+01
958000	-3.4803E+01	6.7200E+01	-3.4791E+01	7.0000E+01	-3.4771E+01	7.0000E+01	-3.4747E+01	7.0000E+01	-3.4715E+01	3.5000E+01	-3.4689E+01	3.5000E+01
960000	-3.4842E+01	6.7200E+01	-3.4830E+01	7.0000E+01	-3.4810E+01	7.0000E+01	-3.4786E+01	7.0000E+01	-3.4754E+01	3.5000E+01	-3.4728E+01	3.5000E+01
962000	-3.4880E+01	6.7200E+01	-3.4869E+01	7.0000E+01	-3.4849E+01	7.0000E+01	-3.4825E+01	7.0000E+01	-3.4793E+01	3.5000E+01	-3.4766E+01	3.5000E+01
964000	-3.4919E+01	6.7200E+01	-3.4907E+01	7.0000E+01	-3.4887E+01	7.0000E+01	-3.4864E+01	7.0000E+01	-3.4831E+01	3.5000E+01	-3.4805E+01	3.5000E+01
966000	-3.4958E+01	6.7200E+01	-3.4946E+01	7.0000E+01	-3.4926E+01	7.0000E+01	-3.4902E+01	7.0000E+01	-3.4870E+01	3.5000E+01	-3.4844E+01	3.5000E+01
968000	-3.4996E+01	6.7200E+01	-3.4984E+01	7.0000E+01	-3.4965E+01	7.0000E+01	-3.4941E+01	7.0000E+01	-3.4909E+01	3.5000E+01	-3.4883E+01	3.5000E+01
970000	-3.5035E+01	6.7200E+01	-3.5023E+01	7.0000E+01	-3.5003E+01	7.0000E+01	-3.4979E+01	7.0000E+01	-3.4947E+01	3.5000E+01	-3.4921E+01	3.5000E+01
972000	-3.5073E+01	6.7200E+01	-3.5061E+01	7.0000E+01	-3.5042E+01	7.0000E+01	-3.5018E+01	7.0000E+01	-3.4986E+01	3.5000E+01	-3.4960E+01	3.5000E+01
974000	-3.5112E+01	6.7200E+01	-3.5100E+01	7.0000E+01	-3.5080E+01	7.0000E+01	-3.5056E+01	7.0000E+01	-3.5024E+01	3.5000E+01	-3.4998E+01	3.5000E+01
976000	-3.5150E+01	6.7200E+01	-3.5138E+01	7.0000E+01	-3.5119E+01	7.0000E+01	-3.5095E+01	7.0000E+01	-3.5063E+01	3.5000E+01	-3.5037E+01	3.5000E+01
978000	-3.5188E+01	6.7200E+01	-3.5177E+01	7.0000E+01	-3.5157E+01	7.0000E+01	-3.5133E+01	7.0000E+01	-3.5101E+01	3.5000E+01	-3.5075E+01	3.5000E+01
980000	-3.5227E+01	6.7200E+01	-3.5215E+01	7.0000E+01	-3.5195E+01	7.0000E+01	-3.5172E+01	7.0000E+01	-3.5140E+01	3.5000E+01	-3.5114E+01	3.5000E+01
982000	-3.5265E+01	6.7200E+01	-3.5253E+01	7.0000E+01	-3.5234E+01	7.0000E+01	-3.5210E+01	7.0000E+01	-3.5178E+01	3.5000E+01	-3.5152E+01	3.5000E+01
984000	-3.5303E+01	6.7200E+01	-3.5292E+01	7.0000E+01	-3.5272E+01	7.0000E+01	-3.5248E+01	7.0000E+01	-3.5216E+01	3.5000E+01	-3.5190E+01	3.5000E+01
986000	-3.5341E+01	6.7200E+01	-3.5330E+01	7.0000E+01	-3.5310E+01	7.0000E+01	-3.5287E+01	7.0000E+01	-3.5255E+01	3.5000E+01	-3.5229E+01	3.5000E+01
988000	-3.5380E+01	6.7200E+01	-3.5368E+01	7.0000E+01	-3.5348E+01	7.0000E+01	-3.5325E+01	7.0000E+01	-3.5293E+01	3.5000E+01	-3.5267E+01	3.5000E+01
990000	-3.5418E+01	6.7200E+01	-3.5406E+01	7.0000E+01	-3.5386E+01	7.0000E+01	-3.5363E+01	7.0000E+01	-3.5331E+01	3.5000E+01	-3.5305E+01	3.5000E+01
992000	-3.5456E+01	6.7200E+01	-3.5444E+01	7.0000E+01	-3.5424E+01	7.0000E+01	-3.5401E+01	7.0000E+01	-3.5369E+01	3.5000E+01	-3.5343E+01	3.5000E+01
994000	-3.5494E+01	6.7200E+01	-3.5482E+01	7.0000E+01	-3.5463E+01	7.0000E+01	-3.5439E+01	7.0000E+01	-3.5407E+01	3.5000E+01	-3.5382E+01	3.5000E+01
996000	-3.5532E+01	6.7200E+01	-3.5520E+01	7.0000E+01	-3.5501E+01	7.0000E+01	-3.5477E+01	7.0000E+01	-3.5445E+01	3.5000E+01	-3.5420E+01	3.5000E+01
998000	-3.5570E+01	6.7200E+01	-3.5558E+01	7.0000E+01	-3.5539E+01	7.0000E+01	-3.5515E+01	7.0000E+01	-3.5483E+01	3.5000E+01	-3.5458E+01	3.5000E+01
1000000	-3.5608E+01	6.7200E+01	-3.5596E+01	7.0000E+01	-3.5576E+01	7.0000E+01	-3.5553E+01	7.0000E+01	-3.5521E+01	3.5000E+01	-3.5496E+01	3.5000E+01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1000000

Arg 7	Curve 7	Arg 8	Curve 8	Arg 9	Curve 9	Arg 10	Curve 10	Arg 11	Curve 11	Arg 12	Curve 12	Arg 13
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7.6903E+00	0.0000E+00	1.0184E+01	0.0000E+00	2.6396E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
6.2921E+00	0.0000E+00	8.1673E+00	0.0000E+00	1.6141E+01	0.0000E+00	3.1003E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
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4.2263E+00	3.9785E-08	5.4712E+00	1.7680E-13	9.3577E+00	0.0000E+00	1.2551E+01	0.0000E+00	3.6966E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
3.4180E+00	2.3437E-05	4.4836E+00	3.9991E-09	7.5653E+00	0.0000E+00	9.7794E+00	0.0000E+00	1.8550E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
2.7088E+00	2.2352E-03	3.6410E+00	4.5779E-06	6.1936E+00	0.0000E+00	7.8749E+00	0.0000E+00	1.3130E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
2.0762E+00	5.8136E-02	2.9057E+00	6.9441E-04	5.0858E+00	5.3493E-12	6.4368E+00	0.0000E+00	1.0149E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.5047E+00	5.8338E-01	2.2528E+00	2.5250E-02	4.1573E+00	3.4592E-08	5.2857E+00	7.0216E-13	8.1417E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
9.8285E-01	2.8794E+00	1.6649E+00	3.2454E-01	3.3580E+00	1.7177E-05	4.3270E+00	8.5521E-09	6.6443E+00	0.0000E+00	2.6886E+01	0.0000E+00	0.0000E+00
5.0209E-01	8.3591E+00	1.1296E+00	1.9275E+00	2.6556E+00	1.4527E-03	3.5054E+00	6.4997E-06	5.4551E+00	1.0165E-13	1.6287E+01	0.0000E+00	0.0000E+00
5.5913E-02	1.6397E+01	6.3769E-01	6.4250E+00	2.0284E+00	3.4626E-02	2.7861E+00	7.4107E-04	4.4701E+00	2.1743E-09	1.1987E+01	0.0000E+00	0.0000E+00
-3.6079E-01	2.4327E+01	1.8207E-01	1.3944E+01	1.4613E+00	3.2571E-01	2.1456E+00	2.1934E-02	3.6293E+00	2.4006E-06	9.4102E+00	0.0000E+00	0.0000E+00
-7.5207E-01	2.9968E+01	-2.4272E-01	2.2200E+01	9.4298E-01	1.5317E+00	1.5677E+00	2.4219E-01	2.8954E+00	3.5509E-04	7.6041E+00	0.0000E+00	0.0000E+00
-1.1212E+00	3.3026E+01	-6.4101E-01	2.8618E+01	4.6520E-01	4.2891E+00	1.0406E+00	1.2841E+00	2.2435E+00	1.2680E-02	6.2242E+00	0.0000E+00	0.0000E+00
-1.4709E+00	3.4344E+01	-1.0163E+00	3.2364E+01	2.1552E-02	8.1958E+00	5.5551E-01	3.9321E+00	1.6565E+00	1.6082E-01	5.1110E+00	4.4585E-12	0.0000E+00
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-2.4240E+00	3.4989E+01	-2.0301E+00	3.4928E+01	-1.1499E+00	1.5927E+01	-7.0826E-01	1.5320E+01	1.7548E-01	6.7537E+00	2.6722E+00	1.4328E-03	3.1301E+01
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-2.9946E+00	3.5000E+01	-2.6317E+00	3.4997E+01	-1.8293E+00	1.6719E+01	-1.4316E+00	1.7810E+01	-6.4680E-01	1.3773E+01	1.4748E+00	3.3674E-01	1.2586E+01
-3.2640E+00	3.5000E+01	-2.9146E+00	3.4999E+01	-2.1453E+00	1.6780E+01	-1.7660E+00	1.8086E+01	-1.0217E+00	1.5553E+01	9.5541E-01	1.6075E+00	9.8019E+00
-3.5241E+00	3.5000E+01	-3.1869E+00	3.5000E+01	-2.4477E+00	1.6795E+01	-2.0848E+00	1.8171E+01	-1.3766E+00	1.6367E+01	4.7671E-01	4.5519E+00	7.8912E+00
-3.7755E+00	3.5000E+01	-3.4496E+00	3.5000E+01	-2.7377E+00	1.6799E+01	-2.3897E+00	1.8193E+01	-1.7136E+00	1.6671E+01	3.2270E-02	8.7688E+00	6.4496E+00
-4.0190E+00	3.5000E+01	-3.7034E+00	3.5000E+01	-3.0165E+00	1.6800E+01	-2.6821E+00	1.8199E+01	-2.0348E+00	1.6766E+01	-3.8293E-01	1.2848E+01	5.2961E+00
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-4.4844E+00	3.5000E+01	-4.1874E+00	3.5000E+01	-3.5445E+00	1.6800E+01	-3.2336E+00	1.8200E+01	-2.6361E+00	1.6798E+01	-1.1409E+00	1.7230E+01	3.5131E+00
-4.7073E+00	3.5000E+01	-4.4186E+00	3.5000E+01	-3.7953E+00	1.6800E+01	-3.4946E+00	1.8200E+01	-2.9188E+00	1.6800E+01	-1.4896E+00	1.7880E+01	2.7929E+00
-4.9244E+00	3.5000E+01	-4.6433E+00	3.5000E+01	-4.0381E+00	1.6800E+01	-3.7470E+00	1.8200E+01	-3.1909E+00	1.6800E+01	-1.8213E+00	1.8109E+01	2.1517E+00
-5.1359E+00	3.5000E+01	-4.8620E+00	3.5000E+01	-4.2737E+00	1.6800E+01	-3.9914E+00	1.8200E+01	-3.4535E+00	1.6800E+01	-2.1376E+00	1.8177E+01	1.5733E+00
-5.3422E+00	3.5000E+01	-5.0751E+00	3.5000E+01	-4.5025E+00	1.6800E+01	-4.2283E+00	1.8200E+01	-3.7072E+00	1.6800E+01	-2.4403E+00	1.8195E+01	1.0457E+00
-5.5436E+00	3.5000E+01	-5.2829E+00	3.5000E+01	-4.7249E+00	1.6800E+01	-4.4584E+00	1.8200E+01	-3.9528E+00	1.6800E+01	-2.7306E+00	1.8199E+01	5.6018E-01
-5.7404E+00	3.5000E+01	-5.4857E+00	3.5000E+01	-4.9415E+00	1.6800E+01	-4.6820E+00	1.8200E+01	-4.1909E+00	1.6800E+01	-3.0097E+00	1.8200E+01	1.0998E-01
-5.9329E+00	3.5000E+01	-5.6838E+00	3.5000E+01	-5.1526E+00	1.6800E+01	-4.8997E+00	1.8200E+01	-4.4220E+00	1.6800E+01	-3.2786E+00	1.8200E+01	-3.1016E-01
-6.1214E+00	3.5000E+01	-5.8775E+00	3.5000E+01	-5.3585E+00	1.6800E+01	-5.1118E+00	1.8200E+01	-4.6466E+00	1.6800E+01	-3.5381E+00	1.8200E+01	-7.0443E-01
-6.3059E+00	3.5000E+01	-6.0671E+00	3.5000E+01	-5.5595E+00	1.6800E+01	-5.3187E+00	1.8200E+01	-4.8653E+00	1.6800E+01	-3.7891E+00	1.8200E+01	-1.0762E+00
-6.4868E+00	3.5000E+01	-6.2528E+00	3.5000E+01	-5.7560E+00	1.6800E+01	-5.5207E+00	1.8200E+01	-5.0782E+00	1.6800E+01	-4.0322E+00	1.8200E+01	-1.4282E+00
-6.6642E+00	3.5000E+01	-6.4347E+00	3.5000E+01	-5.9482E+00	1.6800E+01	-5.7180E+00	1.8200E+01	-5.2859E+00	1.6800E+01	-4.2679E+00	1.8200E+01	-1.7627E+00
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-7.0092E+00	3.5000E+01	-6.7881E+00	3.5000E+01	-6.3205E+00	1.6800E+01	-6.0999E+00	1.8200E+01	-5.6867E+00	1.6800E+01	-4.7194E+00	1.8200E+01	-2.3867E+00
-7.1771E+00	3.5000E+01	-6.9599E+00	3.5000E+01	-6.5011E+00	1.6800E+01	-6.2849E+00	1.8200E+01	-5.8804E+00	1.6800E+01	-4.9361E+00	1.8200E+01	-2.6792E+00
-7.3421E+00	3.5000E+01	-7.1287E+00	3.5000E+01	-6.6782E+00	1.6800E+01	-6.4662E+00	1.8200E+01	-6.0699E+00	1.6800E+01	-5.1473E+00	1.8200E+01	-2.9602E+00
-7.5044E+00	3.5000E+01	-7.2946E+00	3.5000E+01	-6.8520E+00	1.6800E+01	-6.6439E+00	1.8200E+01	-6.2555E+00	1.6800E+01	-5.3534E+00	1.8200E+01	-3.2309E+00

Arg 7	Curve 7	Arg 8	Curve 8	Arg 9	Curve 9	Arg 10	Curve 10	Arg 11	Curve 11	Arg 12	Curve 12	Arg 13
-7.6641E+00	3.5000E+01	-7.4576E+00	3.5000E+01	-7.0227E+00	1.6800E+01	-6.8184E+00	1.8200E+01	-6.4374E+00	1.6800E+01	-5.5545E+00	1.8200E+01	-3.4921E+00
-7.8213E+00	3.5000E+01	-7.6181E+00	3.5000E+01	-7.1904E+00	1.6800E+01	-6.9897E+00	1.8200E+01	-6.6157E+00	1.6800E+01	-5.7511E+00	1.8200E+01	-3.7445E+00
-7.9760E+00	3.5000E+01	-7.7759E+00	3.5000E+01	-7.3552E+00	1.6800E+01	-7.1579E+00	1.8200E+01	-6.7907E+00	1.6800E+01	-5.9434E+00	1.8200E+01	-3.9890E+00
-8.1284E+00	3.5000E+01	-7.9314E+00	3.5000E+01	-7.5173E+00	1.6800E+01	-7.3233E+00	1.8200E+01	-6.9625E+00	1.6800E+01	-6.1316E+00	1.8200E+01	-4.2260E+00
-8.2787E+00	3.5000E+01	-8.0845E+00	3.5000E+01	-7.6768E+00	1.6800E+01	-7.4859E+00	1.8200E+01	-7.1312E+00	1.6800E+01	-6.3159E+00	1.8200E+01	-4.4561E+00
-8.4267E+00	3.5000E+01	-8.2353E+00	3.5000E+01	-7.8337E+00	1.6800E+01	-7.6459E+00	1.8200E+01	-7.2970E+00	1.6800E+01	-6.4966E+00	1.8200E+01	-4.6798E+00
-8.5728E+00	3.5000E+01	-8.3840E+00	3.5000E+01	-7.9883E+00	1.6800E+01	-7.8033E+00	1.8200E+01	-7.4601E+00	1.6800E+01	-6.6738E+00	1.8200E+01	-4.8976E+00
-8.7168E+00	3.5000E+01	-8.5306E+00	3.5000E+01	-8.1405E+00	1.6800E+01	-7.9583E+00	1.8200E+01	-7.6204E+00	1.6800E+01	-6.8477E+00	1.8200E+01	-5.1097E+00
-8.8589E+00	3.5000E+01	-8.6752E+00	3.5000E+01	-8.2906E+00	1.6800E+01	-8.1110E+00	1.8200E+01	-7.7783E+00	1.6800E+01	-7.0185E+00	1.8200E+01	-5.3167E+00
-8.9992E+00	3.5000E+01	-8.8179E+00	3.5000E+01	-8.4385E+00	1.6800E+01	-8.2615E+00	1.8200E+01	-7.9337E+00	1.6800E+01	-7.1862E+00	1.8200E+01	-5.5187E+00
-9.1377E+00	3.5000E+01	-8.9587E+00	3.5000E+01	-8.5844E+00	1.6800E+01	-8.4098E+00	1.8200E+01	-8.0868E+00	1.6800E+01	-7.3511E+00	1.8200E+01	-5.7161E+00
-9.2745E+00	3.5000E+01	-9.0977E+00	3.5000E+01	-8.7282E+00	1.6800E+01	-8.5561E+00	1.8200E+01	-8.2376E+00	1.6800E+01	-7.5133E+00	1.8200E+01	-5.9091E+00
-9.4096E+00	3.5000E+01	-9.2350E+00	3.5000E+01	-8.8702E+00	1.6800E+01	-8.7003E+00	1.8200E+01	-8.3862E+00	1.6800E+01	-7.6728E+00	1.8200E+01	-6.0980E+00
-9.5432E+00	3.5000E+01	-9.3706E+00	3.5000E+01	-9.0104E+00	1.6800E+01	-8.8427E+00	1.8200E+01	-8.5328E+00	1.6800E+01	-7.8298E+00	1.8200E+01	-6.2830E+00
-9.6751E+00	3.5000E+01	-9.5046E+00	3.5000E+01	-9.1487E+00	1.6800E+01	-8.9832E+00	1.8200E+01	-8.6774E+00	1.6800E+01	-7.9845E+00	1.8200E+01	-6.4644E+00
-9.8056E+00	3.5000E+01	-9.6370E+00	3.5000E+01	-9.2854E+00	1.6800E+01	-9.1219E+00	1.8200E+01	-8.8200E+00	1.6800E+01	-8.1368E+00	1.8200E+01	-6.6422E+00
-9.9346E+00	3.5000E+01	-9.7679E+00	3.5000E+01	-9.4204E+00	1.6800E+01	-9.2589E+00	1.8200E+01	-8.9608E+00	1.6800E+01	-8.2869E+00	1.8200E+01	-6.8167E+00
-1.0062E+01	3.5000E+01	-9.8974E+00	3.5000E+01	-9.5538E+00	1.6800E+01	-9.3942E+00	1.8200E+01	-9.0998E+00	1.6800E+01	-8.4348E+00	1.8200E+01	-6.9880E+00
-1.0188E+01	3.5000E+01	-1.0025E+01	3.5000E+01	-9.6856E+00	1.6800E+01	-9.5279E+00	1.8200E+01	-9.2371E+00	1.6800E+01	-8.5807E+00	1.8200E+01	-7.1563E+00
-1.0313E+01	3.5000E+01	-1.0152E+01	3.5000E+01	-9.8160E+00	1.6800E+01	-9.6600E+00	1.8200E+01	-9.3726E+00	1.6800E+01	-8.7247E+00	1.8200E+01	-7.3216E+00
-1.0437E+01	3.5000E+01	-1.0277E+01	3.5000E+01	-9.9449E+00	1.6800E+01	-9.7907E+00	1.8200E+01	-9.5066E+00	1.6800E+01	-8.8667E+00	1.8200E+01	-7.4843E+00
-1.0559E+01	3.5000E+01	-1.0401E+01	3.5000E+01	-1.0072E+01	1.6800E+01	-9.9199E+00	1.8200E+01	-9.6390E+00	1.6800E+01	-9.0069E+00	1.8200E+01	-7.6443E+00
-1.0680E+01	3.5000E+01	-1.0524E+01	3.5000E+01	-1.0198E+01	1.6800E+01	-1.0048E+01	1.8200E+01	-9.7699E+00	1.6800E+01	-9.1453E+00	1.8200E+01	-7.8018E+00
-1.0800E+01	3.5000E+01	-1.0645E+01	3.5000E+01	-1.0323E+01	1.6800E+01	-1.0174E+01	1.8200E+01	-9.8993E+00	1.6800E+01	-9.2820E+00	1.8200E+01	-7.9568E+00
-1.0919E+01	3.5000E+01	-1.0766E+01	3.5000E+01	-1.0447E+01	1.6800E+01	-1.0299E+01	1.8200E+01	-1.0027E+01	1.6800E+01	-9.4170E+00	1.8200E+01	-8.1095E+00
-1.1037E+01	3.5000E+01	-1.0885E+01	3.5000E+01	-1.0569E+01	1.6800E+01	-1.0423E+01	1.8200E+01	-1.0154E+01	1.6800E+01	-9.5505E+00	1.8200E+01	-8.2600E+00
-1.1153E+01	3.5000E+01	-1.1003E+01	3.5000E+01	-1.0690E+01	1.6800E+01	-1.0545E+01	1.8200E+01	-1.0279E+01	1.6800E+01	-9.6824E+00	1.8200E+01	-8.4083E+00
-1.1269E+01	3.5000E+01	-1.1120E+01	3.5000E+01	-1.0810E+01	1.6800E+01	-1.0666E+01	1.8200E+01	-1.0403E+01	1.6800E+01	-9.8127E+00	1.8200E+01	-8.5546E+00
-1.1383E+01	3.5000E+01	-1.1235E+01	3.5000E+01	-1.0929E+01	1.6800E+01	-1.0787E+01	1.8200E+01	-1.0526E+01	1.6800E+01	-9.9417E+00	1.8200E+01	-8.6989E+00
-1.1497E+01	3.5000E+01	-1.1350E+01	3.5000E+01	-1.1046E+01	1.6800E+01	-1.0905E+01	1.8200E+01	-1.0647E+01	1.6800E+01	-1.0069E+01	1.8200E+01	-8.8413E+00
-1.1609E+01	3.5000E+01	-1.1464E+01	3.5000E+01	-1.1163E+01	1.6800E+01	-1.1023E+01	1.8200E+01	-1.0767E+01	1.6800E+01	-1.0195E+01	1.8200E+01	-8.9818E+00
-1.1720E+01	3.5000E+01	-1.1577E+01	3.5000E+01	-1.1278E+01	1.6800E+01	-1.1140E+01	1.8200E+01	-1.0887E+01	1.6800E+01	-1.0320E+01	1.8200E+01	-9.1205E+00
-1.1831E+01	3.5000E+01	-1.1688E+01	3.5000E+01	-1.1392E+01	1.6800E+01	-1.1255E+01	1.8200E+01	-1.1004E+01	1.6800E+01	-1.0444E+01	1.8200E+01	-9.2575E+00
-1.1941E+01	3.5000E+01	-1.1799E+01	3.5000E+01	-1.1506E+01	1.6800E+01	-1.1370E+01	1.8200E+01	-1.1121E+01	1.6800E+01	-1.0566E+01	1.8200E+01	-9.3928E+00
-1.2049E+01	3.5000E+01	-1.1909E+01	3.5000E+01	-1.1618E+01	1.6800E+01	-1.1484E+01	1.8200E+01	-1.1237E+01	1.6800E+01	-1.0687E+01	1.8200E+01	-9.5266E+00
-1.2157E+01	3.5000E+01	-1.2018E+01	3.5000E+01	-1.1729E+01	1.6800E+01	-1.1596E+01	1.8200E+01	-1.1352E+01	1.6800E+01	-1.0807E+01	1.8200E+01	-9.6587E+00
-1.2264E+01	3.5000E+01	-1.2126E+01	3.5000E+01	-1.1840E+01	1.6800E+01	-1.1708E+01	1.8200E+01	-1.1465E+01	1.6800E+01	-1.0926E+01	1.8200E+01	-9.7894E+00
-1.2370E+01	3.5000E+01	-1.2233E+01	3.5000E+01	-1.1949E+01	1.6800E+01	-1.1818E+01	1.8200E+01	-1.1578E+01	1.6800E+01	-1.1043E+01	1.8200E+01	-9.9186E+00
-1.2476E+01	3.5000E+01	-1.2340E+01	3.5000E+01	-1.2058E+01	1.6800E+01	-1.1928E+01	1.8200E+01	-1.1690E+01	1.6800E+01	-1.1160E+01	1.8200E+01	-1.0046E+01
-1.2580E+01	3.5000E+01	-1.2445E+01	3.5000E+01	-1.2166E+01	1.6800E+01	-1.2037E+01	1.8200E+01	-1.1801E+01	1.6800E+01	-1.1275E+01	1.8200E+01	-1.0173E+01
-1.2684E+01	3.5000E+01	-1.2550E+01	3.5000E+01	-1.2273E+01	1.6800E+01	-1.2145E+01	1.8200E+01	-1.1911E+01	1.6800E+01	-1.1389E+01	1.8200E+01	-1.0298E+01
-1.2787E+01	3.5000E+01	-1.2654E+01	3.5000E+01	-1.2379E+01	1.6800E+01	-1.2252E+01	1.8200E+01	-1.2019E+01	1.6800E+01	-1.1503E+01	1.8200E+01	-1.0422E+01
-1.2889E+01	3.5000E+01	-1.2757E+01	3.5000E+01	-1.2484E+01	1.6800E+01	-1.2358E+01	1.8200E+01	-1.2128E+01	1.6800E+01	-1.1615E+01	1.8200E+01	-1.0544E+01
-1.2990E+01	3.5000E+01	-1.2859E+01	3.5000E+01	-1.2588E+01	1.6800E+01	-1.2463E+01	1.8200E+01	-1.2235E+01	1.6800E+01	-1.1727E+01	1.8200E+01	-1.0665E+01
-1.3091E+01	3.5000E+01	-1.2961E+01	3.5000E+01	-1.2692E+01	1.6800E+01	-1.2568E+01	1.8200E+01	-1.2341E+01	1.6800E+01	-1.1837E+01	1.8200E+01	-1.0785E+01
-1.3191E+01	3.5000E+01	-1.3062E+01	3.5000E+01	-1.2795E+01	1.6800E+01	-1.2672E+01	1.8200E+01	-1.2447E+01	1.6800E+01	-1.1947E+01	1.8200E+01	-1.0904E+01
-1.3290E+01	3.5000E+01	-1.3162E+01	3.5000E+01	-1.2897E+01	1.6800E+01	-1.2775E+01	1.8200E+01	-1.2551E+01	1.6800E+01	-1.2055E+01	1.8200E+01	-1.1022E+01
-1.3389E+01	3.5000E+01	-1.3262E+01	3.5000E+01	-1.2998E+01	1.6800E+01	-1.2877E+01	1.8200E+01	-1.2655E+01	1.6800E+01	-1.2163E+01	1.8200E+01	-1.1139E+01
-1.3487E+01	3.5000E+01	-1.3360E+01	3.5000E+01	-1.3099E+01	1.6800E+01	-1.2979E+01	1.8200E+01	-1.2758E+01	1.6800E+01	-1.2270E+01	1.8200E+01	-1.1254E+01
-1.3584E+01	3.5000E+01	-1.3459E+01	3.5000E+01	-1.3199E+01	1.6800E+01	-1.3079E+01	1.8200E+01	-1.2861E+01	1.6800E+01	-1.2376E+01	1.8200E+01	-1.1369E+01
-1.3681E+01	3.5000E+01	-1.3556E+01	3.5000E+01	-1.3298E+01	1.6800E+01	-1.3180E+01	1.8200E+01	-1.2962E+01	1.6800E+01	-1.2481E+01	1.8200E+01	-1.1482E+01
-1.3777E+01	3.5000E+01	-1.3653E+01	3.5000E+01	-1.3397E+01	1.6800E+01	-1.3279E+01	1.8200E+01	-1.3063E+01	1.6800E+01	-1.2586E+01	1.8200E+01	-1.1595E+01

Arg 7	Curve 7	Arg 8	Curve 8	Arg 9	Curve 9	Arg 10	Curve 10	Arg 11	Curve 11	Arg 12	Curve 12	Arg 13
-1.3872E+01	3.5000E+01	-1.3749E+01	3.5000E+01	-1.3495E+01	1.6800E+01	-1.3378E+01	1.8200E+01	-1.3164E+01	1.6800E+01	-1.2689E+01	1.8200E+01	-1.1707E+01
-1.3967E+01	3.5000E+01	-1.3845E+01	3.5000E+01	-1.3592E+01	1.6800E+01	-1.3476E+01	1.8200E+01	-1.3263E+01	1.6800E+01	-1.2792E+01	1.8200E+01	-1.1817E+01
-1.4061E+01	3.5000E+01	-1.3940E+01	3.5000E+01	-1.3689E+01	1.6800E+01	-1.3573E+01	1.8200E+01	-1.3362E+01	1.6800E+01	-1.2894E+01	1.8200E+01	-1.1927E+01
-1.4155E+01	3.5000E+01	-1.4034E+01	3.5000E+01	-1.3785E+01	1.6800E+01	-1.3670E+01	1.8200E+01	-1.3460E+01	1.6800E+01	-1.2996E+01	1.8200E+01	-1.2036E+01
-1.4248E+01	3.5000E+01	-1.4128E+01	3.5000E+01	-1.3880E+01	1.6800E+01	-1.3766E+01	1.8200E+01	-1.3558E+01	1.6800E+01	-1.3097E+01	1.8200E+01	-1.2144E+01
-1.4341E+01	3.5000E+01	-1.4221E+01	3.5000E+01	-1.3975E+01	1.6800E+01	-1.3861E+01	1.8200E+01	-1.3654E+01	1.6800E+01	-1.3197E+01	1.8200E+01	-1.2251E+01
-1.4433E+01	3.5000E+01	-1.4314E+01	3.5000E+01	-1.4069E+01	1.6800E+01	-1.3956E+01	1.8200E+01	-1.3751E+01	1.6800E+01	-1.3296E+01	1.8200E+01	-1.2357E+01
-1.4524E+01	3.5000E+01	-1.4406E+01	3.5000E+01	-1.4163E+01	1.6800E+01	-1.4051E+01	1.8200E+01	-1.3846E+01	1.6800E+01	-1.3394E+01	1.8200E+01	-1.2462E+01
-1.4615E+01	3.5000E+01	-1.4498E+01	3.5000E+01	-1.4256E+01	1.6800E+01	-1.4144E+01	1.8200E+01	-1.3941E+01	1.6800E+01	-1.3492E+01	1.8200E+01	-1.2567E+01
-1.4705E+01	3.5000E+01	-1.4589E+01	3.5000E+01	-1.4348E+01	1.6800E+01	-1.4237E+01	1.8200E+01	-1.4036E+01	1.6800E+01	-1.3590E+01	1.8200E+01	-1.2671E+01
-1.4795E+01	3.5000E+01	-1.4679E+01	3.5000E+01	-1.4440E+01	1.6800E+01	-1.4330E+01	1.8200E+01	-1.4129E+01	1.6800E+01	-1.3686E+01	1.8200E+01	-1.2774E+01
-1.4884E+01	3.5000E+01	-1.4769E+01	3.5000E+01	-1.4531E+01	1.6800E+01	-1.4422E+01	1.8200E+01	-1.4223E+01	1.6800E+01	-1.3782E+01	1.8200E+01	-1.2876E+01
-1.4973E+01	3.5000E+01	-1.4858E+01	3.5000E+01	-1.4622E+01	1.6800E+01	-1.4513E+01	1.8200E+01	-1.4315E+01	1.6800E+01	-1.3878E+01	1.8200E+01	-1.2978E+01
-1.5061E+01	3.5000E+01	-1.4947E+01	3.5000E+01	-1.4712E+01	1.6800E+01	-1.4604E+01	1.8200E+01	-1.4407E+01	1.6800E+01	-1.3972E+01	1.8200E+01	-1.3078E+01
-1.5149E+01	3.5000E+01	-1.5036E+01	3.5000E+01	-1.4802E+01	1.6800E+01	-1.4695E+01	1.8200E+01	-1.4499E+01	1.6800E+01	-1.4067E+01	1.8200E+01	-1.3179E+01
-1.5236E+01	3.5000E+01	-1.5124E+01	3.5000E+01	-1.4891E+01	1.6800E+01	-1.4785E+01	1.8200E+01	-1.4590E+01	1.6800E+01	-1.4160E+01	1.8200E+01	-1.3278E+01
-1.5323E+01	3.5000E+01	-1.5211E+01	3.5000E+01	-1.4980E+01	1.6800E+01	-1.4874E+01	1.8200E+01	-1.4680E+01	1.6800E+01	-1.4253E+01	1.8200E+01	-1.3377E+01
-1.5410E+01	3.5000E+01	-1.5298E+01	3.5000E+01	-1.5068E+01	1.6800E+01	-1.4963E+01	1.8200E+01	-1.4770E+01	1.6800E+01	-1.4346E+01	1.8200E+01	-1.3475E+01
-1.5496E+01	3.5000E+01	-1.5385E+01	3.5000E+01	-1.5156E+01	1.6800E+01	-1.5051E+01	1.8200E+01	-1.4860E+01	1.6800E+01	-1.4438E+01	1.8200E+01	-1.3572E+01
-1.5581E+01	3.5000E+01	-1.5471E+01	3.5000E+01	-1.5243E+01	1.6800E+01	-1.5139E+01	1.8200E+01	-1.4949E+01	1.6800E+01	-1.4529E+01	1.8200E+01	-1.3669E+01
-1.5666E+01	3.5000E+01	-1.5556E+01	3.5000E+01	-1.5330E+01	1.6800E+01	-1.5226E+01	1.8200E+01	-1.5037E+01	1.6800E+01	-1.4620E+01	1.8200E+01	-1.3765E+01
-1.5751E+01	3.5000E+01	-1.5642E+01	3.5000E+01	-1.5417E+01	1.6800E+01	-1.5313E+01	1.8200E+01	-1.5125E+01	1.6800E+01	-1.4710E+01	1.8200E+01	-1.3861E+01
-1.5835E+01	3.5000E+01	-1.5726E+01	3.5000E+01	-1.5503E+01	1.6800E+01	-1.5400E+01	1.8200E+01	-1.5213E+01	1.6800E+01	-1.4800E+01	1.8200E+01	-1.3955E+01
-1.5919E+01	3.5000E+01	-1.5811E+01	3.5000E+01	-1.5588E+01	1.6800E+01	-1.5486E+01	1.8200E+01	-1.5299E+01	1.6800E+01	-1.4889E+01	1.8200E+01	-1.4050E+01
-1.6002E+01	3.5000E+01	-1.5895E+01	3.5000E+01	-1.5673E+01	1.6800E+01	-1.5571E+01	1.8200E+01	-1.5386E+01	1.6800E+01	-1.4978E+01	1.8200E+01	-1.4143E+01
-1.6085E+01	3.5000E+01	-1.5978E+01	3.5000E+01	-1.5758E+01	1.6800E+01	-1.5656E+01	1.8200E+01	-1.5472E+01	1.6800E+01	-1.5066E+01	1.8200E+01	-1.4237E+01
-1.6168E+01	3.5000E+01	-1.6061E+01	3.5000E+01	-1.5842E+01	1.6800E+01	-1.5741E+01	1.8200E+01	-1.5558E+01	1.6800E+01	-1.5154E+01	1.8200E+01	-1.4329E+01
-1.6250E+01	3.5000E+01	-1.6144E+01	3.5000E+01	-1.5925E+01	1.6800E+01	-1.5825E+01	1.8200E+01	-1.5643E+01	1.6800E+01	-1.5241E+01	1.8200E+01	-1.4421E+01
-1.6331E+01	3.5000E+01	-1.6226E+01	3.5000E+01	-1.6009E+01	1.6800E+01	-1.5909E+01	1.8200E+01	-1.5728E+01	1.6800E+01	-1.5328E+01	1.8200E+01	-1.4513E+01
-1.6413E+01	3.5000E+01	-1.6308E+01	3.5000E+01	-1.6092E+01	1.6800E+01	-1.5993E+01	1.8200E+01	-1.5812E+01	1.6800E+01	-1.5414E+01	1.8200E+01	-1.4603E+01
-1.6494E+01	3.5000E+01	-1.6389E+01	3.5000E+01	-1.6174E+01	1.6800E+01	-1.6075E+01	1.8200E+01	-1.5896E+01	1.6800E+01	-1.5500E+01	1.8200E+01	-1.4694E+01
-1.6574E+01	3.5000E+01	-1.6470E+01	3.5000E+01	-1.6256E+01	1.6800E+01	-1.6158E+01	1.8200E+01	-1.5979E+01	1.6800E+01	-1.5586E+01	1.8200E+01	-1.4784E+01
-1.6654E+01	3.5000E+01	-1.6551E+01	3.5000E+01	-1.6338E+01	1.6800E+01	-1.6240E+01	1.8200E+01	-1.6062E+01	1.6800E+01	-1.5671E+01	1.8200E+01	-1.4873E+01
-1.6734E+01	3.5000E+01	-1.6631E+01	3.5000E+01	-1.6419E+01	1.6800E+01	-1.6322E+01	1.8200E+01	-1.6145E+01	1.6800E+01	-1.5755E+01	1.8200E+01	-1.4962E+01
-1.6814E+01	3.5000E+01	-1.6711E+01	3.5000E+01	-1.6500E+01	1.6800E+01	-1.6403E+01	1.8200E+01	-1.6227E+01	1.6800E+01	-1.5840E+01	1.8200E+01	-1.5050E+01
-1.6893E+01	3.5000E+01	-1.6791E+01	3.5000E+01	-1.6581E+01	1.6800E+01	-1.6484E+01	1.8200E+01	-1.6309E+01	1.6800E+01	-1.5923E+01	1.8200E+01	-1.5138E+01
-1.6972E+01	3.5000E+01	-1.6870E+01	3.5000E+01	-1.6661E+01	1.6800E+01	-1.6565E+01	1.8200E+01	-1.6390E+01	1.6800E+01	-1.6007E+01	1.8200E+01	-1.5226E+01
-1.7050E+01	3.5000E+01	-1.6949E+01	3.5000E+01	-1.6741E+01	1.6800E+01	-1.6645E+01	1.8200E+01	-1.6471E+01	1.6800E+01	-1.6090E+01	1.8200E+01	-1.5313E+01
-1.7128E+01	3.5000E+01	-1.7027E+01	3.5000E+01	-1.6820E+01	1.6800E+01	-1.6725E+01	1.8200E+01	-1.6552E+01	1.6800E+01	-1.6172E+01	1.8200E+01	-1.5399E+01
-1.7206E+01	3.5000E+01	-1.7105E+01	3.5000E+01	-1.6899E+01	1.6800E+01	-1.6805E+01	1.8200E+01	-1.6632E+01	1.6800E+01	-1.6254E+01	1.8200E+01	-1.5485E+01
-1.7283E+01	3.5000E+01	-1.7183E+01	3.5000E+01	-1.6978E+01	1.6800E+01	-1.6884E+01	1.8200E+01	-1.6712E+01	1.6800E+01	-1.6336E+01	1.8200E+01	-1.5570E+01
-1.7360E+01	3.5000E+01	-1.7261E+01	3.5000E+01	-1.7056E+01	1.6800E+01	-1.6963E+01	1.8200E+01	-1.6792E+01	1.6800E+01	-1.6417E+01	1.8200E+01	-1.5656E+01
-1.7437E+01	3.5000E+01	-1.7338E+01	3.5000E+01	-1.7134E+01	1.6800E+01	-1.7041E+01	1.8200E+01	-1.6871E+01	1.6800E+01	-1.6498E+01	1.8200E+01	-1.5740E+01
-1.7513E+01	3.5000E+01	-1.7415E+01	3.5000E+01	-1.7212E+01	1.6800E+01	-1.7119E+01	1.8200E+01	-1.6950E+01	1.6800E+01	-1.6579E+01	1.8200E+01	-1.5824E+01
-1.7589E+01	3.5000E+01	-1.7491E+01	3.5000E+01	-1.7289E+01	1.6800E+01	-1.7197E+01	1.8200E+01	-1.7028E+01	1.6800E+01	-1.6659E+01	1.8200E+01	-1.5908E+01
-1.7665E+01	3.5000E+01	-1.7567E+01	3.5000E+01	-1.7366E+01	1.6800E+01	-1.7274E+01	1.8200E+01	-1.7107E+01	1.6800E+01	-1.6739E+01	1.8200E+01	-1.5992E+01
-1.7741E+01	3.5000E+01	-1.7643E+01	3.5000E+01	-1.7443E+01	1.6800E+01	-1.7351E+01	1.8200E+01	-1.7184E+01	1.6800E+01	-1.6818E+01	1.8200E+01	-1.6075E+01
-1.7816E+01	3.5000E+01	-1.7719E+01	3.5000E+01	-1.7519E+01	1.6800E+01	-1.7428E+01	1.8200E+01	-1.7262E+01	1.6800E+01	-1.6897E+01	1.8200E+01	-1.6157E+01
-1.7891E+01	3.5000E+01	-1.7794E+01	3.5000E+01	-1.7595E+01	1.6800E+01	-1.7505E+01	1.8200E+01	-1.7339E+01	1.6800E+01	-1.6976E+01	1.8200E+01	-1.6239E+01
-1.7965E+01	3.5000E+01	-1.7869E+01	3.5000E+01	-1.7671E+01	1.6800E+01	-1.7581E+01	1.8200E+01	-1.7416E+01	1.6800E+01	-1.7054E+01	1.8200E+01	-1.6321E+01
-1.8039E+01	3.5000E+01	-1.7944E+01	3.5000E+01	-1.7747E+01	1.6800E+01	-1.7656E+01	1.8200E+01	-1.7492E+01	1.6800E+01	-1.7132E+01	1.8200E+01	-1.6403E+01
-1.8113E+01	3.5000E+01	-1.8018E+01	3.5000E+01	-1.7822E+01	1.6800E+01	-1.7732E+01	1.8200E+01	-1.7569E+01	1.6800E+01	-1.7210E+01	1.8200E+01	-1.6484E+01

Arg 7	Curve 7	Arg 8	Curve 8	Arg 9	Curve 9	Arg 10	Curve 10	Arg 11	Curve 11	Arg 12	Curve 12	Arg 13
-1.8187E+01	3.5000E+01	-1.8092E+01	3.5000E+01	-1.7897E+01	1.6800E+01	-1.7807E+01	1.8200E+01	-1.7644E+01	1.6800E+01	-1.7287E+01	1.8200E+01	-1.6564E+01
-1.8260E+01	3.5000E+01	-1.8166E+01	3.5000E+01	-1.7971E+01	1.6800E+01	-1.7882E+01	1.8200E+01	-1.7720E+01	1.6800E+01	-1.7364E+01	1.8200E+01	-1.6644E+01
-1.8333E+01	3.5000E+01	-1.8239E+01	3.5000E+01	-1.8045E+01	1.6800E+01	-1.7957E+01	1.8200E+01	-1.7795E+01	1.6800E+01	-1.7441E+01	1.8200E+01	-1.6724E+01
-1.8406E+01	3.5000E+01	-1.8312E+01	3.5000E+01	-1.8119E+01	1.6800E+01	-1.8031E+01	1.8200E+01	-1.7870E+01	1.6800E+01	-1.7518E+01	1.8200E+01	-1.6804E+01
-1.8479E+01	3.5000E+01	-1.8385E+01	3.5000E+01	-1.8193E+01	1.6800E+01	-1.8105E+01	1.8200E+01	-1.7945E+01	1.6800E+01	-1.7594E+01	1.8200E+01	-1.6883E+01
-1.8551E+01	3.5000E+01	-1.8458E+01	3.5000E+01	-1.8266E+01	1.6800E+01	-1.8179E+01	1.8200E+01	-1.8019E+01	1.6800E+01	-1.7669E+01	1.8200E+01	-1.6962E+01
-1.8623E+01	3.5000E+01	-1.8530E+01	3.5000E+01	-1.8339E+01	1.6800E+01	-1.8252E+01	1.8200E+01	-1.8093E+01	1.6800E+01	-1.7745E+01	1.8200E+01	-1.7040E+01
-1.8695E+01	3.5000E+01	-1.8602E+01	3.5000E+01	-1.8412E+01	1.6800E+01	-1.8325E+01	1.8200E+01	-1.8167E+01	1.6800E+01	-1.7820E+01	1.8200E+01	-1.7118E+01
-1.8766E+01	3.5000E+01	-1.8674E+01	3.5000E+01	-1.8485E+01	1.6800E+01	-1.8398E+01	1.8200E+01	-1.8240E+01	1.6800E+01	-1.7895E+01	1.8200E+01	-1.7196E+01
-1.8837E+01	3.5000E+01	-1.8745E+01	3.5000E+01	-1.8557E+01	1.6800E+01	-1.8470E+01	1.8200E+01	-1.8313E+01	1.6800E+01	-1.7969E+01	1.8200E+01	-1.7274E+01
-1.8908E+01	3.5000E+01	-1.8817E+01	3.5000E+01	-1.8629E+01	1.6800E+01	-1.8543E+01	1.8200E+01	-1.8386E+01	1.6800E+01	-1.8043E+01	1.8200E+01	-1.7351E+01
-1.8979E+01	3.5000E+01	-1.8888E+01	3.5000E+01	-1.8700E+01	1.6800E+01	-1.8615E+01	1.8200E+01	-1.8459E+01	1.6800E+01	-1.8117E+01	1.8200E+01	-1.7427E+01
-1.9049E+01	3.5000E+01	-1.8958E+01	3.5000E+01	-1.8772E+01	1.6800E+01	-1.8686E+01	1.8200E+01	-1.8531E+01	1.6800E+01	-1.8191E+01	1.8200E+01	-1.7504E+01
-1.9119E+01	3.5000E+01	-1.9029E+01	3.5000E+01	-1.8843E+01	1.6800E+01	-1.8758E+01	1.8200E+01	-1.8603E+01	1.6800E+01	-1.8264E+01	1.8200E+01	-1.7580E+01
-1.9189E+01	3.5000E+01	-1.9099E+01	3.5000E+01	-1.8914E+01	1.6800E+01	-1.8829E+01	1.8200E+01	-1.8675E+01	1.6800E+01	-1.8337E+01	1.8200E+01	-1.7656E+01
-1.9259E+01	3.5000E+01	-1.9169E+01	3.5000E+01	-1.8985E+01	1.6800E+01	-1.8900E+01	1.8200E+01	-1.8746E+01	1.6800E+01	-1.8410E+01	1.8200E+01	-1.7731E+01
-1.9328E+01	3.5000E+01	-1.9239E+01	3.5000E+01	-1.9055E+01	1.6800E+01	-1.8971E+01	1.8200E+01	-1.8818E+01	1.6800E+01	-1.8483E+01	1.8200E+01	-1.7806E+01
-1.9398E+01	3.5000E+01	-1.9308E+01	3.5000E+01	-1.9125E+01	1.6800E+01	-1.9041E+01	1.8200E+01	-1.8889E+01	1.6800E+01	-1.8555E+01	1.8200E+01	-1.7881E+01
-1.9467E+01	3.5000E+01	-1.9378E+01	3.5000E+01	-1.9195E+01	1.6800E+01	-1.9111E+01	1.8200E+01	-1.8959E+01	1.6800E+01	-1.8627E+01	1.8200E+01	-1.7956E+01
-1.9535E+01	3.5000E+01	-1.9447E+01	3.5000E+01	-1.9265E+01	1.6800E+01	-1.9181E+01	1.8200E+01	-1.9030E+01	1.6800E+01	-1.8699E+01	1.8200E+01	-1.8030E+01
-1.9604E+01	3.5000E+01	-1.9515E+01	3.5000E+01	-1.9334E+01	1.6800E+01	-1.9251E+01	1.8200E+01	-1.9100E+01	1.6800E+01	-1.8770E+01	1.8200E+01	-1.8104E+01
-1.9672E+01	3.5000E+01	-1.9584E+01	3.5000E+01	-1.9403E+01	1.6800E+01	-1.9320E+01	1.8200E+01	-1.9170E+01	1.6800E+01	-1.8841E+01	1.8200E+01	-1.8178E+01
-1.9740E+01	3.5000E+01	-1.9652E+01	3.5000E+01	-1.9472E+01	1.6800E+01	-1.9390E+01	1.8200E+01	-1.9240E+01	1.6800E+01	-1.8912E+01	1.8200E+01	-1.8251E+01
-1.9808E+01	3.5000E+01	-1.9720E+01	3.5000E+01	-1.9541E+01	1.6800E+01	-1.9459E+01	1.8200E+01	-1.9309E+01	1.6800E+01	-1.8983E+01	1.8200E+01	-1.8324E+01
-1.9875E+01	3.5000E+01	-1.9788E+01	3.5000E+01	-1.9609E+01	1.6800E+01	-1.9527E+01	1.8200E+01	-1.9379E+01	1.6800E+01	-1.9053E+01	1.8200E+01	-1.8397E+01
-1.9943E+01	3.5000E+01	-1.9856E+01	3.5000E+01	-1.9677E+01	1.6800E+01	-1.9596E+01	1.8200E+01	-1.9448E+01	1.6800E+01	-1.9123E+01	1.8200E+01	-1.8470E+01
-2.0010E+01	3.5000E+01	-1.9923E+01	3.5000E+01	-1.9745E+01	1.6800E+01	-1.9664E+01	1.8200E+01	-1.9516E+01	1.6800E+01	-1.9193E+01	1.8200E+01	-1.8542E+01
-2.0076E+01	3.5000E+01	-1.9990E+01	3.5000E+01	-1.9813E+01	1.6800E+01	-1.9732E+01	1.8200E+01	-1.9585E+01	1.6800E+01	-1.9263E+01	1.8200E+01	-1.8614E+01
-2.0143E+01	3.5000E+01	-2.0057E+01	3.5000E+01	-1.9881E+01	1.6800E+01	-1.9800E+01	1.8200E+01	-1.9653E+01	1.6800E+01	-1.9332E+01	1.8200E+01	-1.8686E+01
-2.0210E+01	3.5000E+01	-2.0124E+01	3.5000E+01	-1.9948E+01	1.6800E+01	-1.9867E+01	1.8200E+01	-1.9721E+01	1.6800E+01	-1.9401E+01	1.8200E+01	-1.8757E+01
-2.0276E+01	3.5000E+01	-2.0190E+01	3.5000E+01	-2.0015E+01	1.6800E+01	-1.9935E+01	1.8200E+01	-1.9789E+01	1.6800E+01	-1.9470E+01	1.8200E+01	-1.8828E+01
-2.0342E+01	3.5000E+01	-2.0257E+01	3.5000E+01	-2.0082E+01	1.6800E+01	-2.0002E+01	1.8200E+01	-1.9857E+01	1.6800E+01	-1.9539E+01	1.8200E+01	-1.8899E+01
-2.0408E+01	3.5000E+01	-2.0323E+01	3.5000E+01	-2.0148E+01	1.6800E+01	-2.0069E+01	1.8200E+01	-1.9924E+01	1.6800E+01	-1.9607E+01	1.8200E+01	-1.8970E+01
-2.0473E+01	3.5000E+01	-2.0389E+01	3.5000E+01	-2.0215E+01	1.6800E+01	-2.0136E+01	1.8200E+01	-1.9991E+01	1.6800E+01	-1.9676E+01	1.8200E+01	-1.9040E+01
-2.0539E+01	3.5000E+01	-2.0454E+01	3.5000E+01	-2.0281E+01	1.6800E+01	-2.0202E+01	1.8200E+01	-2.0058E+01	1.6800E+01	-1.9744E+01	1.8200E+01	-1.9111E+01
-2.0604E+01	3.5000E+01	-2.0520E+01	3.5000E+01	-2.0347E+01	1.6800E+01	-2.0268E+01	1.8200E+01	-2.0125E+01	1.6800E+01	-1.9811E+01	1.8200E+01	-1.9181E+01
-2.0669E+01	3.5000E+01	-2.0585E+01	3.5000E+01	-2.0413E+01	1.6800E+01	-2.0334E+01	1.8200E+01	-2.0191E+01	1.6800E+01	-1.9879E+01	1.8200E+01	-1.9250E+01
-2.0734E+01	3.5000E+01	-2.0650E+01	3.5000E+01	-2.0479E+01	1.6800E+01	-2.0400E+01	1.8200E+01	-2.0258E+01	1.6800E+01	-1.9946E+01	1.8200E+01	-1.9320E+01
-2.0798E+01	3.5000E+01	-2.0715E+01	3.5000E+01	-2.0544E+01	1.6800E+01	-2.0466E+01	1.8200E+01	-2.0324E+01	1.6800E+01	-2.0013E+01	1.8200E+01	-1.9389E+01
-2.0863E+01	3.5000E+01	-2.0780E+01	3.5000E+01	-2.0609E+01	1.6800E+01	-2.0531E+01	1.8200E+01	-2.0390E+01	1.6800E+01	-2.0080E+01	1.8200E+01	-1.9458E+01
-2.0927E+01	3.5000E+01	-2.0844E+01	3.5000E+01	-2.0674E+01	1.6800E+01	-2.0596E+01	1.8200E+01	-2.0455E+01	1.6800E+01	-2.0147E+01	1.8200E+01	-1.9527E+01
-2.0991E+01	3.5000E+01	-2.0908E+01	3.5000E+01	-2.0739E+01	1.6800E+01	-2.0661E+01	1.8200E+01	-2.0521E+01	1.6800E+01	-2.0213E+01	1.8200E+01	-1.9595E+01
-2.1055E+01	3.5000E+01	-2.0972E+01	3.5000E+01	-2.0803E+01	1.6800E+01	-2.0726E+01	1.8200E+01	-2.0586E+01	1.6800E+01	-2.0279E+01	1.8200E+01	-1.9663E+01
-2.1118E+01	3.5000E+01	-2.1036E+01	3.5000E+01	-2.0868E+01	1.6800E+01	-2.0791E+01	1.8200E+01	-2.0651E+01	1.6800E+01	-2.0346E+01	1.8200E+01	-1.9731E+01
-2.1182E+01	3.5000E+01	-2.1100E+01	3.5000E+01	-2.0932E+01	1.6800E+01	-2.0855E+01	1.8200E+01	-2.0716E+01	1.6800E+01	-2.0411E+01	1.8200E+01	-1.9799E+01
-2.1245E+01	3.5000E+01	-2.1164E+01	3.5000E+01	-2.0996E+01	1.6800E+01	-2.0920E+01	1.8200E+01	-2.0781E+01	1.6800E+01	-2.0477E+01	1.8200E+01	-1.9867E+01
-2.1308E+01	3.5000E+01	-2.1227E+01	3.5000E+01	-2.1060E+01	1.6800E+01	-2.0984E+01	1.8200E+01	-2.0845E+01	1.6800E+01	-2.0542E+01	1.8200E+01	-1.9934E+01
-2.1371E+01	3.5000E+01	-2.1290E+01	3.5000E+01	-2.1124E+01	1.6800E+01	-2.1047E+01	1.8200E+01	-2.0909E+01	1.6800E+01	-2.0607E+01	1.8200E+01	-2.0001E+01
-2.1434E+01	3.5000E+01	-2.1353E+01	3.5000E+01	-2.1187E+01	1.6800E+01	-2.1111E+01	1.8200E+01	-2.0973E+01	1.6800E+01	-2.0672E+01	1.8200E+01	-2.0068E+01
-2.1496E+01	3.5000E+01	-2.1416E+01	3.5000E+01	-2.1250E+01	1.6800E+01	-2.1175E+01	1.8200E+01	-2.1037E+01	1.6800E+01	-2.0737E+01	1.8200E+01	-2.0135E+01
-2.1559E+01	3.5000E+01	-2.1478E+01	3.5000E+01	-2.1313E+01	1.6800E+01	-2.1238E+01	1.8200E+01	-2.1101E+01	1.6800E+01	-2.0802E+01	1.8200E+01	-2.0201E+01
-2.1621E+01	3.5000E+01	-2.1541E+01	3.5000E+01	-2.1376E+01	1.6800E+01	-2.1301E+01	1.8200E+01	-2.1164E+01	1.6800E+01	-2.0866E+01	1.8200E+01	-2.0268E+01

Arg 7	Curve 7	Arg 8	Curve 8	Arg 9	Curve 9	Arg 10	Curve 10	Arg 11	Curve 11	Arg 12	Curve 12	Arg 13
-2.1683E+01	3.5000E+01	-2.1603E+01	3.5000E+01	-2.1439E+01	1.6800E+01	-2.1364E+01	1.8200E+01	-2.1228E+01	1.6800E+01	-2.0930E+01	1.8200E+01	-2.0334E+01
-2.1745E+01	3.5000E+01	-2.1665E+01	3.5000E+01	-2.1501E+01	1.6800E+01	-2.1427E+01	1.8200E+01	-2.1291E+01	1.6800E+01	-2.0994E+01	1.8200E+01	-2.0399E+01
-2.1806E+01	3.5000E+01	-2.1727E+01	3.5000E+01	-2.1564E+01	1.6800E+01	-2.1489E+01	1.8200E+01	-2.1354E+01	1.6800E+01	-2.1058E+01	1.8200E+01	-2.0465E+01
-2.1868E+01	3.5000E+01	-2.1789E+01	3.5000E+01	-2.1626E+01	1.6800E+01	-2.1552E+01	1.8200E+01	-2.1417E+01	1.6800E+01	-2.1122E+01	1.8200E+01	-2.0531E+01
-2.1929E+01	3.5000E+01	-2.1850E+01	3.5000E+01	-2.1688E+01	1.6800E+01	-2.1614E+01	1.8200E+01	-2.1479E+01	1.6800E+01	-2.1185E+01	1.8200E+01	-2.0596E+01
-2.1990E+01	3.5000E+01	-2.1912E+01	3.5000E+01	-2.1750E+01	1.6800E+01	-2.1676E+01	1.8200E+01	-2.1542E+01	1.6800E+01	-2.1249E+01	1.8200E+01	-2.0661E+01
-2.2051E+01	3.5000E+01	-2.1973E+01	3.5000E+01	-2.1811E+01	1.6800E+01	-2.1738E+01	1.8200E+01	-2.1604E+01	1.6800E+01	-2.1312E+01	1.8200E+01	-2.0726E+01
-2.2112E+01	3.5000E+01	-2.2034E+01	3.5000E+01	-2.1873E+01	1.6800E+01	-2.1799E+01	1.8200E+01	-2.1666E+01	1.6800E+01	-2.1375E+01	1.8200E+01	-2.0790E+01
-2.2173E+01	3.5000E+01	-2.2095E+01	3.5000E+01	-2.1934E+01	1.6800E+01	-2.1861E+01	1.8200E+01	-2.1728E+01	1.6800E+01	-2.1437E+01	1.8200E+01	-2.0855E+01
-2.2233E+01	3.5000E+01	-2.2155E+01	3.5000E+01	-2.1995E+01	1.6800E+01	-2.1922E+01	1.8200E+01	-2.1790E+01	1.6800E+01	-2.1500E+01	1.8200E+01	-2.0919E+01
-2.2294E+01	3.5000E+01	-2.2216E+01	3.5000E+01	-2.2056E+01	1.6800E+01	-2.1983E+01	1.8200E+01	-2.1851E+01	1.6800E+01	-2.1562E+01	1.8200E+01	-2.0983E+01
-2.2354E+01	3.5000E+01	-2.2276E+01	3.5000E+01	-2.2117E+01	1.6800E+01	-2.2044E+01	1.8200E+01	-2.1912E+01	1.6800E+01	-2.1624E+01	1.8200E+01	-2.1047E+01
-2.2414E+01	3.5000E+01	-2.2337E+01	3.5000E+01	-2.2178E+01	1.6800E+01	-2.2105E+01	1.8200E+01	-2.1974E+01	1.6800E+01	-2.1686E+01	1.8200E+01	-2.1110E+01
-2.2474E+01	3.5000E+01	-2.2397E+01	3.5000E+01	-2.2238E+01	1.6800E+01	-2.2166E+01	1.8200E+01	-2.2035E+01	1.6800E+01	-2.1748E+01	1.8200E+01	-2.1174E+01
-2.2534E+01	3.5000E+01	-2.2457E+01	3.5000E+01	-2.2299E+01	1.6800E+01	-2.2227E+01	1.8200E+01	-2.2096E+01	1.6800E+01	-2.1810E+01	1.8200E+01	-2.1237E+01
-2.2593E+01	3.5000E+01	-2.2516E+01	3.5000E+01	-2.2359E+01	1.6800E+01	-2.2287E+01	1.8200E+01	-2.2156E+01	1.6800E+01	-2.1871E+01	1.8200E+01	-2.1300E+01
-2.2653E+01	3.5000E+01	-2.2576E+01	3.5000E+01	-2.2419E+01	1.6800E+01	-2.2347E+01	1.8200E+01	-2.2217E+01	1.6800E+01	-2.1933E+01	1.8200E+01	-2.1363E+01
-2.2712E+01	3.5000E+01	-2.2635E+01	3.5000E+01	-2.2479E+01	1.6800E+01	-2.2407E+01	1.8200E+01	-2.2277E+01	1.6800E+01	-2.1994E+01	1.8200E+01	-2.1426E+01
-2.2771E+01	3.5000E+01	-2.2695E+01	3.5000E+01	-2.2538E+01	1.6800E+01	-2.2467E+01	1.8200E+01	-2.2337E+01	1.6800E+01	-2.2055E+01	1.8200E+01	-2.1489E+01
-2.2830E+01	3.5000E+01	-2.2754E+01	3.5000E+01	-2.2598E+01	1.6800E+01	-2.2527E+01	1.8200E+01	-2.2398E+01	1.6800E+01	-2.2116E+01	1.8200E+01	-2.1551E+01
-2.2889E+01	3.5000E+01	-2.2813E+01	3.5000E+01	-2.2657E+01	1.6800E+01	-2.2586E+01	1.8200E+01	-2.2457E+01	1.6800E+01	-2.2176E+01	1.8200E+01	-2.1613E+01
-2.2947E+01	3.5000E+01	-2.2872E+01	3.5000E+01	-2.2716E+01	1.6800E+01	-2.2646E+01	1.8200E+01	-2.2517E+01	1.6800E+01	-2.2237E+01	1.8200E+01	-2.1675E+01
-2.3006E+01	3.5000E+01	-2.2930E+01	3.5000E+01	-2.2776E+01	1.6800E+01	-2.2705E+01	1.8200E+01	-2.2577E+01	1.6800E+01	-2.2297E+01	1.8200E+01	-2.1737E+01
-2.3064E+01	3.5000E+01	-2.2989E+01	3.5000E+01	-2.2834E+01	1.6800E+01	-2.2764E+01	1.8200E+01	-2.2636E+01	1.6800E+01	-2.2357E+01	1.8200E+01	-2.1799E+01
-2.3122E+01	3.5000E+01	-2.3047E+01	3.5000E+01	-2.2893E+01	1.6800E+01	-2.2823E+01	1.8200E+01	-2.2695E+01	1.6800E+01	-2.2417E+01	1.8200E+01	-2.1860E+01
-2.3180E+01	3.5000E+01	-2.3105E+01	3.5000E+01	-2.2952E+01	1.6800E+01	-2.2882E+01	1.8200E+01	-2.2755E+01	1.6800E+01	-2.2477E+01	1.8200E+01	-2.1922E+01
-2.3238E+01	3.5000E+01	-2.3164E+01	3.5000E+01	-2.3010E+01	1.6800E+01	-2.2940E+01	1.8200E+01	-2.2814E+01	1.6800E+01	-2.2537E+01	1.8200E+01	-2.1983E+01
-2.3296E+01	3.5000E+01	-2.3221E+01	3.5000E+01	-2.3069E+01	1.6800E+01	-2.2999E+01	1.8200E+01	-2.2872E+01	1.6800E+01	-2.2596E+01	1.8200E+01	-2.2044E+01
-2.3354E+01	3.5000E+01	-2.3279E+01	3.5000E+01	-2.3127E+01	1.6800E+01	-2.3057E+01	1.8200E+01	-2.2931E+01	1.6800E+01	-2.2656E+01	1.8200E+01	-2.2105E+01
-2.3411E+01	3.5000E+01	-2.3337E+01	3.5000E+01	-2.3185E+01	1.6800E+01	-2.3116E+01	1.8200E+01	-2.2990E+01	1.6800E+01	-2.2715E+01	1.8200E+01	-2.2165E+01
-2.3469E+01	3.5000E+01	-2.3395E+01	3.5000E+01	-2.3243E+01	1.6800E+01	-2.3174E+01	1.8200E+01	-2.3048E+01	1.6800E+01	-2.2774E+01	1.8200E+01	-2.2226E+01
-2.3526E+01	3.5000E+01	-2.3452E+01	3.5000E+01	-2.3301E+01	1.6800E+01	-2.3232E+01	1.8200E+01	-2.3106E+01	1.6800E+01	-2.2833E+01	1.8200E+01	-2.2286E+01
-2.3583E+01	3.5000E+01	-2.3509E+01	3.5000E+01	-2.3358E+01	1.6800E+01	-2.3289E+01	1.8200E+01	-2.3164E+01	1.6800E+01	-2.2892E+01	1.8200E+01	-2.2346E+01
-2.3640E+01	3.5000E+01	-2.3566E+01	3.5000E+01	-2.3416E+01	1.6800E+01	-2.3347E+01	1.8200E+01	-2.3222E+01	1.6800E+01	-2.2950E+01	1.8200E+01	-2.2406E+01
-2.3697E+01	3.5000E+01	-2.3623E+01	3.5000E+01	-2.3473E+01	1.6800E+01	-2.3405E+01	1.8200E+01	-2.3280E+01	1.6800E+01	-2.3009E+01	1.8200E+01	-2.2466E+01
-2.3753E+01	3.5000E+01	-2.3680E+01	3.5000E+01	-2.3530E+01	1.6800E+01	-2.3462E+01	1.8200E+01	-2.3338E+01	1.6800E+01	-2.3067E+01	1.8200E+01	-2.2526E+01
-2.3810E+01	3.5000E+01	-2.3737E+01	3.5000E+01	-2.3587E+01	1.6800E+01	-2.3519E+01	1.8200E+01	-2.3395E+01	1.6800E+01	-2.3125E+01	1.8200E+01	-2.2586E+01
-2.3866E+01	3.5000E+01	-2.3793E+01	3.5000E+01	-2.3644E+01	1.6800E+01	-2.3576E+01	1.8200E+01	-2.3453E+01	1.6800E+01	-2.3184E+01	1.8200E+01	-2.2645E+01
-2.3923E+01	3.5000E+01	-2.3850E+01	3.5000E+01	-2.3701E+01	1.6800E+01	-2.3633E+01	1.8200E+01	-2.3510E+01	1.6800E+01	-2.3241E+01	1.8200E+01	-2.2704E+01
-2.3979E+01	3.5000E+01	-2.3906E+01	3.5000E+01	-2.3758E+01	1.6800E+01	-2.3690E+01	1.8200E+01	-2.3567E+01	1.6800E+01	-2.3299E+01	1.8200E+01	-2.2763E+01
-2.4035E+01	3.5000E+01	-2.3962E+01	3.5000E+01	-2.3814E+01	1.6800E+01	-2.3747E+01	1.8200E+01	-2.3624E+01	1.6800E+01	-2.3357E+01	1.8200E+01	-2.2822E+01
-2.4091E+01	3.5000E+01	-2.4018E+01	3.5000E+01	-2.3871E+01	1.6800E+01	-2.3803E+01	1.8200E+01	-2.3681E+01	1.6800E+01	-2.3414E+01	1.8200E+01	-2.2881E+01
-2.4146E+01	3.5000E+01	-2.4074E+01	3.5000E+01	-2.3927E+01	1.6800E+01	-2.3860E+01	1.8200E+01	-2.3738E+01	1.6800E+01	-2.3472E+01	1.8200E+01	-2.2940E+01
-2.4202E+01	3.5000E+01	-2.4130E+01	3.5000E+01	-2.3983E+01	1.6800E+01	-2.3916E+01	1.8200E+01	-2.3794E+01	1.6800E+01	-2.3529E+01	1.8200E+01	-2.2998E+01
-2.4257E+01	3.5000E+01	-2.4186E+01	3.5000E+01	-2.4039E+01	1.6800E+01	-2.3972E+01	1.8200E+01	-2.3851E+01	1.6800E+01	-2.3586E+01	1.8200E+01	-2.3057E+01
-2.4313E+01	3.5000E+01	-2.4241E+01	3.5000E+01	-2.4095E+01	1.6800E+01	-2.4028E+01	1.8200E+01	-2.3907E+01	1.6800E+01	-2.3643E+01	1.8200E+01	-2.3115E+01
-2.4368E+01	3.5000E+01	-2.4297E+01	3.5000E+01	-2.4151E+01	1.6800E+01	-2.4084E+01	1.8200E+01	-2.3963E+01	1.6800E+01	-2.3700E+01	1.8200E+01	-2.3173E+01
-2.4423E+01	3.5000E+01	-2.4352E+01	3.5000E+01	-2.4206E+01	1.6800E+01	-2.4140E+01	1.8200E+01	-2.4019E+01	1.6800E+01	-2.3756E+01	1.8200E+01	-2.3231E+01
-2.4478E+01	3.5000E+01	-2.4407E+01	3.5000E+01	-2.4262E+01	1.6800E+01	-2.4196E+01	1.8200E+01	-2.4075E+01	1.6800E+01	-2.3813E+01	1.8200E+01	-2.3289E+01
-2.4533E+01	3.5000E+01	-2.4462E+01	3.5000E+01	-2.4317E+01	1.6800E+01	-2.4251E+01	1.8200E+01	-2.4131E+01	1.6800E+01	-2.3869E+01	1.8200E+01	-2.3346E+01
-2.4588E+01	3.5000E+01	-2.4517E+01	3.5000E+01	-2.4373E+01	1.6800E+01	-2.4307E+01	1.8200E+01	-2.4187E+01	1.6800E+01	-2.3926E+01	1.8200E+01	-2.3404E+01
-2.4643E+01	3.5000E+01	-2.4572E+01	3.5000E+01	-2.4428E+01	1.6800E+01	-2.4362E+01	1.8200E+01	-2.4242E+01	1.6800E+01	-2.3982E+01	1.8200E+01	-2.3461E+01

Arg 7	Curve 7	Arg 8	Curve 8	Arg 9	Curve 9	Arg 10	Curve 10	Arg 11	Curve 11	Arg 12	Curve 12	Arg 13
-2.4697E+01	3.5000E+01	-2.4627E+01	3.5000E+01	-2.4483E+01	1.6800E+01	-2.4417E+01	1.8200E+01	-2.4298E+01	1.6800E+01	-2.4038E+01	1.8200E+01	-2.3519E+01
-2.4752E+01	3.5000E+01	-2.4681E+01	3.5000E+01	-2.4538E+01	1.6800E+01	-2.4472E+01	1.8200E+01	-2.4353E+01	1.6800E+01	-2.4094E+01	1.8200E+01	-2.3576E+01
-2.4806E+01	3.5000E+01	-2.4736E+01	3.5000E+01	-2.4592E+01	1.6800E+01	-2.4527E+01	1.8200E+01	-2.4408E+01	1.6800E+01	-2.4149E+01	1.8200E+01	-2.3633E+01
-2.4860E+01	3.5000E+01	-2.4790E+01	3.5000E+01	-2.4647E+01	1.6800E+01	-2.4582E+01	1.8200E+01	-2.4463E+01	1.6800E+01	-2.4205E+01	1.8200E+01	-2.3689E+01
-2.4914E+01	3.5000E+01	-2.4844E+01	3.5000E+01	-2.4702E+01	1.6800E+01	-2.4636E+01	1.8200E+01	-2.4518E+01	1.6800E+01	-2.4261E+01	1.8200E+01	-2.3746E+01
-2.4968E+01	3.5000E+01	-2.4898E+01	3.5000E+01	-2.4756E+01	1.6800E+01	-2.4691E+01	1.8200E+01	-2.4573E+01	1.6800E+01	-2.4316E+01	1.8200E+01	-2.3803E+01
-2.5022E+01	3.5000E+01	-2.4952E+01	3.5000E+01	-2.4810E+01	1.6800E+01	-2.4745E+01	1.8200E+01	-2.4628E+01	1.6800E+01	-2.4371E+01	1.8200E+01	-2.3859E+01
-2.5076E+01	3.5000E+01	-2.5006E+01	3.5000E+01	-2.4864E+01	1.6800E+01	-2.4800E+01	1.8200E+01	-2.4682E+01	1.6800E+01	-2.4426E+01	1.8200E+01	-2.3915E+01
-2.5129E+01	3.5000E+01	-2.5060E+01	3.5000E+01	-2.4918E+01	1.6800E+01	-2.4854E+01	1.8200E+01	-2.4737E+01	1.6800E+01	-2.4481E+01	1.8200E+01	-2.3972E+01
-2.5183E+01	3.5000E+01	-2.5114E+01	3.5000E+01	-2.4972E+01	1.6800E+01	-2.4908E+01	1.8200E+01	-2.4791E+01	1.6800E+01	-2.4536E+01	1.8200E+01	-2.4028E+01
-2.5236E+01	3.5000E+01	-2.5167E+01	3.5000E+01	-2.5026E+01	1.6800E+01	-2.4962E+01	1.8200E+01	-2.4845E+01	1.6800E+01	-2.4591E+01	1.8200E+01	-2.4084E+01
-2.5289E+01	3.5000E+01	-2.5221E+01	3.5000E+01	-2.5080E+01	1.6800E+01	-2.5016E+01	1.8200E+01	-2.4899E+01	1.6800E+01	-2.4646E+01	1.8200E+01	-2.4139E+01
-2.5343E+01	3.5000E+01	-2.5274E+01	3.5000E+01	-2.5133E+01	1.6800E+01	-2.5069E+01	1.8200E+01	-2.4953E+01	1.6800E+01	-2.4700E+01	1.8200E+01	-2.4195E+01
-2.5396E+01	3.5000E+01	-2.5327E+01	3.5000E+01	-2.5187E+01	1.6800E+01	-2.5123E+01	1.8200E+01	-2.5007E+01	1.6800E+01	-2.4755E+01	1.8200E+01	-2.4251E+01
-2.5449E+01	3.5000E+01	-2.5380E+01	3.5000E+01	-2.5240E+01	1.6800E+01	-2.5177E+01	1.8200E+01	-2.5061E+01	1.6800E+01	-2.4809E+01	1.8200E+01	-2.4306E+01
-2.5501E+01	3.5000E+01	-2.5433E+01	3.5000E+01	-2.5294E+01	1.6800E+01	-2.5230E+01	1.8200E+01	-2.5114E+01	1.6800E+01	-2.4863E+01	1.8200E+01	-2.4361E+01
-2.5554E+01	3.5000E+01	-2.5486E+01	3.5000E+01	-2.5347E+01	1.6800E+01	-2.5283E+01	1.8200E+01	-2.5168E+01	1.6800E+01	-2.4917E+01	1.8200E+01	-2.4416E+01
-2.5607E+01	3.5000E+01	-2.5539E+01	3.5000E+01	-2.5400E+01	1.6800E+01	-2.5336E+01	1.8200E+01	-2.5221E+01	1.6800E+01	-2.4971E+01	1.8200E+01	-2.4471E+01
-2.5659E+01	3.5000E+01	-2.5591E+01	3.5000E+01	-2.5453E+01	1.6800E+01	-2.5389E+01	1.8200E+01	-2.5275E+01	1.6800E+01	-2.5025E+01	1.8200E+01	-2.4526E+01
-2.5712E+01	3.5000E+01	-2.5644E+01	3.5000E+01	-2.5506E+01	1.6800E+01	-2.5442E+01	1.8200E+01	-2.5328E+01	1.6800E+01	-2.5079E+01	1.8200E+01	-2.4581E+01
-2.5764E+01	3.5000E+01	-2.5696E+01	3.5000E+01	-2.5558E+01	1.6800E+01	-2.5495E+01	1.8200E+01	-2.5381E+01	1.6800E+01	-2.5132E+01	1.8200E+01	-2.4636E+01
-2.5816E+01	3.5000E+01	-2.5749E+01	3.5000E+01	-2.5611E+01	1.6800E+01	-2.5548E+01	1.8200E+01	-2.5434E+01	1.6800E+01	-2.5186E+01	1.8200E+01	-2.4690E+01
-2.5868E+01	3.5000E+01	-2.5801E+01	3.5000E+01	-2.5663E+01	1.6800E+01	-2.5601E+01	1.8200E+01	-2.5487E+01	1.6800E+01	-2.5239E+01	1.8200E+01	-2.4745E+01
-2.5920E+01	3.5000E+01	-2.5853E+01	3.5000E+01	-2.5716E+01	1.6800E+01	-2.5653E+01	1.8200E+01	-2.5540E+01	1.6800E+01	-2.5292E+01	1.8200E+01	-2.4799E+01
-2.5972E+01	3.5000E+01	-2.5905E+01	3.5000E+01	-2.5768E+01	1.6800E+01	-2.5706E+01	1.8200E+01	-2.5592E+01	1.6800E+01	-2.5345E+01	1.8200E+01	-2.4853E+01
-2.6024E+01	3.5000E+01	-2.5957E+01	3.5000E+01	-2.5820E+01	1.6800E+01	-2.5758E+01	1.8200E+01	-2.5645E+01	1.6800E+01	-2.5398E+01	1.8200E+01	-2.4907E+01
-2.6075E+01	3.5000E+01	-2.6009E+01	3.5000E+01	-2.5872E+01	1.6800E+01	-2.5810E+01	1.8200E+01	-2.5697E+01	1.6800E+01	-2.5451E+01	1.8200E+01	-2.4961E+01
-2.6127E+01	3.5000E+01	-2.6061E+01	3.5000E+01	-2.5924E+01	1.6800E+01	-2.5862E+01	1.8200E+01	-2.5750E+01	1.6800E+01	-2.5504E+01	1.8200E+01	-2.5015E+01
-2.6179E+01	3.5000E+01	-2.6112E+01	3.5000E+01	-2.5976E+01	1.6800E+01	-2.5914E+01	1.8200E+01	-2.5802E+01	1.6800E+01	-2.5557E+01	1.8200E+01	-2.5069E+01
-2.6230E+01	3.5000E+01	-2.6164E+01	3.5000E+01	-2.6028E+01	1.6800E+01	-2.5966E+01	1.8200E+01	-2.5854E+01	1.6800E+01	-2.5610E+01	1.8200E+01	-2.5123E+01
-2.6281E+01	3.5000E+01	-2.6215E+01	3.5000E+01	-2.6080E+01	1.6800E+01	-2.6018E+01	1.8200E+01	-2.5906E+01	1.6800E+01	-2.5662E+01	1.8200E+01	-2.5176E+01
-2.6332E+01	3.5000E+01	-2.6266E+01	3.5000E+01	-2.6131E+01	1.6800E+01	-2.6070E+01	1.8200E+01	-2.5958E+01	1.6800E+01	-2.5714E+01	1.8200E+01	-2.5229E+01
-2.6383E+01	3.5000E+01	-2.6318E+01	3.5000E+01	-2.6183E+01	1.6800E+01	-2.6121E+01	1.8200E+01	-2.6010E+01	1.6800E+01	-2.5767E+01	1.8200E+01	-2.5283E+01
-2.6434E+01	3.5000E+01	-2.6369E+01	3.5000E+01	-2.6234E+01	1.6800E+01	-2.6173E+01	1.8200E+01	-2.6061E+01	1.6800E+01	-2.5819E+01	1.8200E+01	-2.5336E+01
-2.6485E+01	3.5000E+01	-2.6420E+01	3.5000E+01	-2.6285E+01	1.6800E+01	-2.6224E+01	1.8200E+01	-2.6113E+01	1.6800E+01	-2.5871E+01	1.8200E+01	-2.5389E+01
-2.6536E+01	3.5000E+01	-2.6471E+01	3.5000E+01	-2.6336E+01	1.6800E+01	-2.6275E+01	1.8200E+01	-2.6164E+01	1.6800E+01	-2.5923E+01	1.8200E+01	-2.5442E+01
-2.6587E+01	3.5000E+01	-2.6521E+01	3.5000E+01	-2.6388E+01	1.6800E+01	-2.6326E+01	1.8200E+01	-2.6216E+01	1.6800E+01	-2.5975E+01	1.8200E+01	-2.5495E+01
-2.6637E+01	3.5000E+01	-2.6572E+01	3.5000E+01	-2.6438E+01	1.6800E+01	-2.6378E+01	1.8200E+01	-2.6267E+01	1.6800E+01	-2.6027E+01	1.8200E+01	-2.5547E+01
-2.6688E+01	3.5000E+01	-2.6623E+01	3.5000E+01	-2.6489E+01	1.6800E+01	-2.6429E+01	1.8200E+01	-2.6318E+01	1.6800E+01	-2.6078E+01	1.8200E+01	-2.5600E+01
-2.6738E+01	3.5000E+01	-2.6673E+01	3.5000E+01	-2.6540E+01	1.6800E+01	-2.6479E+01	1.8200E+01	-2.6369E+01	1.6800E+01	-2.6130E+01	1.8200E+01	-2.5653E+01
-2.6789E+01	3.5000E+01	-2.6724E+01	3.5000E+01	-2.6591E+01	1.6800E+01	-2.6530E+01	1.8200E+01	-2.6420E+01	1.6800E+01	-2.6181E+01	1.8200E+01	-2.5705E+01
-2.6839E+01	3.5000E+01	-2.6774E+01	3.5000E+01	-2.6641E+01	1.6800E+01	-2.6581E+01	1.8200E+01	-2.6471E+01	1.6800E+01	-2.6233E+01	1.8200E+01	-2.5757E+01
-2.6889E+01	3.5000E+01	-2.6824E+01	3.5000E+01	-2.6692E+01	1.6800E+01	-2.6632E+01	1.8200E+01	-2.6522E+01	1.6800E+01	-2.6284E+01	1.8200E+01	-2.5810E+01
-2.6939E+01	3.5000E+01	-2.6874E+01	3.5000E+01	-2.6742E+01	1.6800E+01	-2.6682E+01	1.8200E+01	-2.6573E+01	1.6800E+01	-2.6335E+01	1.8200E+01	-2.5862E+01
-2.6989E+01	3.5000E+01	-2.6924E+01	3.5000E+01	-2.6793E+01	1.6800E+01	-2.6732E+01	1.8200E+01	-2.6623E+01	1.6800E+01	-2.6386E+01	1.8200E+01	-2.5914E+01
-2.7039E+01	3.5000E+01	-2.6974E+01	3.5000E+01	-2.6843E+01	1.6800E+01	-2.6783E+01	1.8200E+01	-2.6674E+01	1.6800E+01	-2.6437E+01	1.8200E+01	-2.5966E+01
-2.7089E+01	3.5000E+01	-2.7024E+01	3.5000E+01	-2.6893E+01	1.6800E+01	-2.6833E+01	1.8200E+01	-2.6724E+01	1.6800E+01	-2.6488E+01	1.8200E+01	-2.6017E+01
-2.7138E+01	3.5000E+01	-2.7074E+01	3.5000E+01	-2.6943E+01	1.6800E+01	-2.6883E+01	1.8200E+01	-2.6775E+01	1.6800E+01	-2.6539E+01	1.8200E+01	-2.6069E+01
-2.7188E+01	3.5000E+01	-2.7124E+01	3.5000E+01	-2.6993E+01	1.6800E+01	-2.6933E+01	1.8200E+01	-2.6825E+01	1.6800E+01	-2.6590E+01	1.8200E+01	-2.6121E+01
-2.7237E+01	3.5000E+01	-2.7173E+01	3.5000E+01	-2.7043E+01	1.6800E+01	-2.6983E+01	1.8200E+01	-2.6875E+01	1.6800E+01	-2.6640E+01	1.8200E+01	-2.6172E+01
-2.7287E+01	3.5000E+01	-2.7223E+01	3.5000E+01	-2.7093E+01	1.6800E+01	-2.7033E+01	1.8200E+01	-2.6925E+01	1.6800E+01	-2.6691E+01	1.8200E+01	-2.6223E+01
-2.7336E+01	3.5000E+01	-2.7272E+01	3.5000E+01	-2.7142E+01	1.6800E+01	-2.7083E+01	1.8200E+01	-2.6975E+01	1.6800E+01	-2.6741E+01	1.8200E+01	-2.6275E+01

Arg 7	Curve 7	Arg 8	Curve 8	Arg 9	Curve 9	Arg 10	Curve 10	Arg 11	Curve 11	Arg 12	Curve 12	Arg 13
-2.7385E+01	3.5000E+01	-2.7322E+01	3.5000E+01	-2.7192E+01	1.6800E+01	-2.7132E+01	1.8200E+01	-2.7025E+01	1.6800E+01	-2.6791E+01	1.8200E+01	-2.6326E+01
-2.7434E+01	3.5000E+01	-2.7371E+01	3.5000E+01	-2.7241E+01	1.6800E+01	-2.7182E+01	1.8200E+01	-2.7075E+01	1.6800E+01	-2.6842E+01	1.8200E+01	-2.6377E+01
-2.7483E+01	3.5000E+01	-2.7420E+01	3.5000E+01	-2.7291E+01	1.6800E+01	-2.7232E+01	1.8200E+01	-2.7125E+01	1.6800E+01	-2.6892E+01	1.8200E+01	-2.6428E+01
-2.7532E+01	3.5000E+01	-2.7469E+01	3.5000E+01	-2.7340E+01	1.6800E+01	-2.7281E+01	1.8200E+01	-2.7174E+01	1.6800E+01	-2.6942E+01	1.8200E+01	-2.6479E+01
-2.7581E+01	3.5000E+01	-2.7518E+01	3.5000E+01	-2.7389E+01	1.6800E+01	-2.7330E+01	1.8200E+01	-2.7224E+01	1.6800E+01	-2.6992E+01	1.8200E+01	-2.6530E+01
-2.7630E+01	3.5000E+01	-2.7567E+01	3.5000E+01	-2.7438E+01	1.6800E+01	-2.7380E+01	1.8200E+01	-2.7273E+01	1.6800E+01	-2.7042E+01	1.8200E+01	-2.6580E+01
-2.7679E+01	3.5000E+01	-2.7616E+01	3.5000E+01	-2.7487E+01	1.6800E+01	-2.7429E+01	1.8200E+01	-2.7322E+01	1.6800E+01	-2.7091E+01	1.8200E+01	-2.6631E+01
-2.7727E+01	3.5000E+01	-2.7665E+01	3.5000E+01	-2.7536E+01	1.6800E+01	-2.7478E+01	1.8200E+01	-2.7372E+01	1.6800E+01	-2.7141E+01	1.8200E+01	-2.6682E+01
-2.7776E+01	3.5000E+01	-2.7713E+01	3.5000E+01	-2.7585E+01	1.6800E+01	-2.7527E+01	1.8200E+01	-2.7421E+01	1.6800E+01	-2.7190E+01	1.8200E+01	-2.6732E+01
-2.7824E+01	3.5000E+01	-2.7762E+01	3.5000E+01	-2.7634E+01	1.6800E+01	-2.7576E+01	1.8200E+01	-2.7470E+01	1.6800E+01	-2.7240E+01	1.8200E+01	-2.6782E+01
-2.7873E+01	3.5000E+01	-2.7810E+01	3.5000E+01	-2.7683E+01	1.6800E+01	-2.7624E+01	1.8200E+01	-2.7519E+01	1.6800E+01	-2.7289E+01	1.8200E+01	-2.6833E+01
-2.7921E+01	3.5000E+01	-2.7859E+01	3.5000E+01	-2.7731E+01	1.6800E+01	-2.7673E+01	1.8200E+01	-2.7568E+01	1.6800E+01	-2.7339E+01	1.8200E+01	-2.6883E+01
-2.7969E+01	3.5000E+01	-2.7907E+01	3.5000E+01	-2.7780E+01	1.6800E+01	-2.7722E+01	1.8200E+01	-2.7617E+01	1.6800E+01	-2.7388E+01	1.8200E+01	-2.6933E+01
-2.8017E+01	3.5000E+01	-2.7955E+01	3.5000E+01	-2.7828E+01	1.6800E+01	-2.7770E+01	1.8200E+01	-2.7665E+01	1.6800E+01	-2.7437E+01	1.8200E+01	-2.6983E+01
-2.8065E+01	3.5000E+01	-2.8003E+01	3.5000E+01	-2.7877E+01	1.6800E+01	-2.7819E+01	1.8200E+01	-2.7714E+01	1.6800E+01	-2.7486E+01	1.8200E+01	-2.7033E+01
-2.8113E+01	3.5000E+01	-2.8051E+01	3.5000E+01	-2.7925E+01	1.6800E+01	-2.7867E+01	1.8200E+01	-2.7763E+01	1.6800E+01	-2.7535E+01	1.8200E+01	-2.7082E+01
-2.8161E+01	3.5000E+01	-2.8099E+01	3.5000E+01	-2.7973E+01	1.6800E+01	-2.7915E+01	1.8200E+01	-2.7811E+01	1.6800E+01	-2.7584E+01	1.8200E+01	-2.7132E+01
-2.8209E+01	3.5000E+01	-2.8147E+01	3.5000E+01	-2.8021E+01	1.6800E+01	-2.7964E+01	1.8200E+01	-2.7859E+01	1.6800E+01	-2.7633E+01	1.8200E+01	-2.7182E+01
-2.8257E+01	3.5000E+01	-2.8195E+01	3.5000E+01	-2.8069E+01	1.6800E+01	-2.8012E+01	1.8200E+01	-2.7908E+01	1.6800E+01	-2.7681E+01	1.8200E+01	-2.7231E+01
-2.8304E+01	3.5000E+01	-2.8243E+01	3.5000E+01	-2.8117E+01	1.6800E+01	-2.8060E+01	1.8200E+01	-2.7956E+01	1.6800E+01	-2.7730E+01	1.8200E+01	-2.7280E+01
-2.8352E+01	3.5000E+01	-2.8291E+01	3.5000E+01	-2.8165E+01	1.6800E+01	-2.8108E+01	1.8200E+01	-2.8004E+01	1.6800E+01	-2.7779E+01	1.8200E+01	-2.7330E+01
-2.8399E+01	3.5000E+01	-2.8338E+01	3.5000E+01	-2.8213E+01	1.6800E+01	-2.8156E+01	1.8200E+01	-2.8052E+01	1.6800E+01	-2.7827E+01	1.8200E+01	-2.7379E+01
-2.8447E+01	3.5000E+01	-2.8386E+01	3.5000E+01	-2.8260E+01	1.6800E+01	-2.8203E+01	1.8200E+01	-2.8100E+01	1.6800E+01	-2.7875E+01	1.8200E+01	-2.7428E+01
-2.8494E+01	3.5000E+01	-2.8433E+01	3.5000E+01	-2.8308E+01	1.6800E+01	-2.8251E+01	1.8200E+01	-2.8148E+01	1.6800E+01	-2.7924E+01	1.8200E+01	-2.7477E+01
-2.8541E+01	3.5000E+01	-2.8480E+01	3.5000E+01	-2.8356E+01	1.6800E+01	-2.8299E+01	1.8200E+01	-2.8196E+01	1.6800E+01	-2.7972E+01	1.8200E+01	-2.7526E+01
-2.8588E+01	3.5000E+01	-2.8528E+01	3.5000E+01	-2.8403E+01	1.6800E+01	-2.8346E+01	1.8200E+01	-2.8244E+01	1.6800E+01	-2.8020E+01	1.8200E+01	-2.7575E+01
-2.8636E+01	3.5000E+01	-2.8575E+01	3.5000E+01	-2.8451E+01	1.6800E+01	-2.8394E+01	1.8200E+01	-2.8291E+01	1.6800E+01	-2.8068E+01	1.8200E+01	-2.7624E+01
-2.8683E+01	3.5000E+01	-2.8622E+01	3.5000E+01	-2.8498E+01	1.6800E+01	-2.8441E+01	1.8200E+01	-2.8339E+01	1.6800E+01	-2.8116E+01	1.8200E+01	-2.7673E+01
-2.8730E+01	3.5000E+01	-2.8669E+01	3.5000E+01	-2.8545E+01	1.6800E+01	-2.8489E+01	1.8200E+01	-2.8386E+01	1.6800E+01	-2.8164E+01	1.8200E+01	-2.7721E+01
-2.8776E+01	3.5000E+01	-2.8716E+01	3.5000E+01	-2.8592E+01	1.6800E+01	-2.8536E+01	1.8200E+01	-2.8434E+01	1.6800E+01	-2.8212E+01	1.8200E+01	-2.7770E+01
-2.8823E+01	3.5000E+01	-2.8763E+01	3.5000E+01	-2.8639E+01	1.6800E+01	-2.8583E+01	1.8200E+01	-2.8481E+01	1.6800E+01	-2.8259E+01	1.8200E+01	-2.7818E+01
-2.8870E+01	3.5000E+01	-2.8810E+01	3.5000E+01	-2.8686E+01	1.6800E+01	-2.8630E+01	1.8200E+01	-2.8528E+01	1.6800E+01	-2.8307E+01	1.8200E+01	-2.7867E+01
-2.8916E+01	3.5000E+01	-2.8856E+01	3.5000E+01	-2.8733E+01	1.6800E+01	-2.8677E+01	1.8200E+01	-2.8576E+01	1.6800E+01	-2.8354E+01	1.8200E+01	-2.7915E+01
-2.8963E+01	3.5000E+01	-2.8903E+01	3.5000E+01	-2.8780E+01	1.6800E+01	-2.8724E+01	1.8200E+01	-2.8623E+01	1.6800E+01	-2.8402E+01	1.8200E+01	-2.7963E+01
-2.9010E+01	3.5000E+01	-2.8950E+01	3.5000E+01	-2.8827E+01	1.6800E+01	-2.8771E+01	1.8200E+01	-2.8670E+01	1.6800E+01	-2.8449E+01	1.8200E+01	-2.8011E+01
-2.9056E+01	3.5000E+01	-2.8996E+01	3.5000E+01	-2.8874E+01	1.6800E+01	-2.8818E+01	1.8200E+01	-2.8717E+01	1.6800E+01	-2.8497E+01	1.8200E+01	-2.8059E+01
-2.9102E+01	3.5000E+01	-2.9042E+01	3.5000E+01	-2.8920E+01	1.6800E+01	-2.8864E+01	1.8200E+01	-2.8763E+01	1.6800E+01	-2.8544E+01	1.8200E+01	-2.8107E+01
-2.9149E+01	3.5000E+01	-2.9089E+01	3.5000E+01	-2.8967E+01	1.6800E+01	-2.8911E+01	1.8200E+01	-2.8810E+01	1.6800E+01	-2.8591E+01	1.8200E+01	-2.8155E+01
-2.9195E+01	3.5000E+01	-2.9135E+01	3.5000E+01	-2.9013E+01	1.6800E+01	-2.8958E+01	1.8200E+01	-2.8857E+01	1.6800E+01	-2.8638E+01	1.8200E+01	-2.8203E+01
-2.9241E+01	3.5000E+01	-2.9181E+01	3.5000E+01	-2.9060E+01	1.6800E+01	-2.9004E+01	1.8200E+01	-2.8904E+01	1.6800E+01	-2.8685E+01	1.8200E+01	-2.8251E+01
-2.9287E+01	3.5000E+01	-2.9227E+01	3.5000E+01	-2.9106E+01	1.6800E+01	-2.9051E+01	1.8200E+01	-2.8950E+01	1.6800E+01	-2.8732E+01	1.8200E+01	-2.8298E+01
-2.9333E+01	3.5000E+01	-2.9274E+01	3.5000E+01	-2.9152E+01	1.6800E+01	-2.9097E+01	1.8200E+01	-2.8997E+01	1.6800E+01	-2.8779E+01	1.8200E+01	-2.8346E+01
-2.9379E+01	3.5000E+01	-2.9320E+01	3.5000E+01	-2.9198E+01	1.6800E+01	-2.9143E+01	1.8200E+01	-2.9043E+01	1.6800E+01	-2.8826E+01	1.8200E+01	-2.8393E+01
-2.9425E+01	3.5000E+01	-2.9365E+01	3.5000E+01	-2.9245E+01	1.6800E+01	-2.9189E+01	1.8200E+01	-2.9090E+01	1.6800E+01	-2.8872E+01	1.8200E+01	-2.8441E+01
-2.9470E+01	3.5000E+01	-2.9411E+01	3.5000E+01	-2.9291E+01	1.6800E+01	-2.9236E+01	1.8200E+01	-2.9136E+01	1.6800E+01	-2.8919E+01	1.8200E+01	-2.8488E+01
-2.9516E+01	3.5000E+01	-2.9457E+01	3.5000E+01	-2.9337E+01	1.6800E+01	-2.9282E+01	1.8200E+01	-2.9182E+01	1.6800E+01	-2.8966E+01	1.8200E+01	-2.8535E+01
-2.9562E+01	3.5000E+01	-2.9503E+01	3.5000E+01	-2.9382E+01	1.6800E+01	-2.9328E+01	1.8200E+01	-2.9228E+01	1.6800E+01	-2.9012E+01	1.8200E+01	-2.8583E+01
-2.9607E+01	3.5000E+01	-2.9548E+01	3.5000E+01	-2.9428E+01	1.6800E+01	-2.9373E+01	1.8200E+01	-2.9274E+01	1.6800E+01	-2.9058E+01	1.8200E+01	-2.8630E+01
-2.9653E+01	3.5000E+01	-2.9594E+01	3.5000E+01	-2.9474E+01	1.6800E+01	-2.9419E+01	1.8200E+01	-2.9320E+01	1.6800E+01	-2.9105E+01	1.8200E+01	-2.8677E+01
-2.9698E+01	3.5000E+01	-2.9640E+01	3.5000E+01	-2.9520E+01	1.6800E+01	-2.9465E+01	1.8200E+01	-2.9366E+01	1.6800E+01	-2.9151E+01	1.8200E+01	-2.8724E+01
-2.9743E+01	3.5000E+01	-2.9685E+01	3.5000E+01	-2.9565E+01	1.6800E+01	-2.9511E+01	1.8200E+01	-2.9412E+01	1.6800E+01	-2.9197E+01	1.8200E+01	-2.8771E+01
-2.9789E+01	3.5000E+01	-2.9730E+01	3.5000E+01	-2.9611E+01	1.6800E+01	-2.9556E+01	1.8200E+01	-2.9458E+01	1.6800E+01	-2.9243E+01	1.8200E+01	-2.8817E+01

Arg 7	Curve 7	Arg 8	Curve 8	Arg 9	Curve 9	Arg 10	Curve 10	Arg 11	Curve 11	Arg 12	Curve 12	Arg 13
-2.9834E+01	3.5000E+01	-2.9776E+01	3.5000E+01	-2.9656E+01	1.6800E+01	-2.9602E+01	1.8200E+01	-2.9503E+01	1.6800E+01	-2.9289E+01	1.8200E+01	-2.8864E+01
-2.9879E+01	3.5000E+01	-2.9821E+01	3.5000E+01	-2.9702E+01	1.6800E+01	-2.9647E+01	1.8200E+01	-2.9549E+01	1.6800E+01	-2.9335E+01	1.8200E+01	-2.8911E+01
-2.9924E+01	3.5000E+01	-2.9866E+01	3.5000E+01	-2.9747E+01	1.6800E+01	-2.9693E+01	1.8200E+01	-2.9595E+01	1.6800E+01	-2.9381E+01	1.8200E+01	-2.8957E+01
-2.9969E+01	3.5000E+01	-2.9911E+01	3.5000E+01	-2.9792E+01	1.6800E+01	-2.9738E+01	1.8200E+01	-2.9640E+01	1.6800E+01	-2.9427E+01	1.8200E+01	-2.9004E+01
-3.0014E+01	3.5000E+01	-2.9956E+01	3.5000E+01	-2.9838E+01	1.6800E+01	-2.9784E+01	1.8200E+01	-2.9686E+01	1.6800E+01	-2.9473E+01	1.8200E+01	-2.9050E+01
-3.0059E+01	3.5000E+01	-3.0001E+01	3.5000E+01	-2.9883E+01	1.6800E+01	-2.9829E+01	1.8200E+01	-2.9731E+01	1.6800E+01	-2.9519E+01	1.8200E+01	-2.9096E+01
-3.0104E+01	3.5000E+01	-3.0046E+01	3.5000E+01	-2.9928E+01	1.6800E+01	-2.9874E+01	1.8200E+01	-2.9776E+01	1.6800E+01	-2.9564E+01	1.8200E+01	-2.9143E+01
-3.0148E+01	3.5000E+01	-3.0091E+01	3.5000E+01	-2.9973E+01	1.6800E+01	-2.9919E+01	1.8200E+01	-2.9822E+01	1.6800E+01	-2.9610E+01	1.8200E+01	-2.9189E+01
-3.0193E+01	3.5000E+01	-3.0136E+01	3.5000E+01	-3.0018E+01	1.6800E+01	-2.9964E+01	1.8200E+01	-2.9867E+01	1.6800E+01	-2.9655E+01	1.8200E+01	-2.9235E+01
-3.0238E+01	3.5000E+01	-3.0180E+01	3.5000E+01	-3.0063E+01	1.6800E+01	-3.0009E+01	1.8200E+01	-2.9912E+01	1.6800E+01	-2.9701E+01	1.8200E+01	-2.9281E+01
-3.0282E+01	3.5000E+01	-3.0225E+01	3.5000E+01	-3.0107E+01	1.6800E+01	-3.0054E+01	1.8200E+01	-2.9957E+01	1.6800E+01	-2.9746E+01	1.8200E+01	-2.9327E+01
-3.0327E+01	3.5000E+01	-3.0269E+01	3.5000E+01	-3.0152E+01	1.6800E+01	-3.0099E+01	1.8200E+01	-3.0002E+01	1.6800E+01	-2.9791E+01	1.8200E+01	-2.9373E+01
-3.0371E+01	3.5000E+01	-3.0314E+01	3.5000E+01	-3.0197E+01	1.6800E+01	-3.0143E+01	1.8200E+01	-3.0047E+01	1.6800E+01	-2.9836E+01	1.8200E+01	-2.9419E+01
-3.0416E+01	3.5000E+01	-3.0358E+01	3.5000E+01	-3.0241E+01	1.6800E+01	-3.0188E+01	1.8200E+01	-3.0091E+01	1.6800E+01	-2.9882E+01	1.8200E+01	-2.9465E+01
-3.0460E+01	3.5000E+01	-3.0403E+01	3.5000E+01	-3.0286E+01	1.6800E+01	-3.0233E+01	1.8200E+01	-3.0136E+01	1.6800E+01	-2.9927E+01	1.8200E+01	-2.9510E+01
-3.0504E+01	3.5000E+01	-3.0447E+01	3.5000E+01	-3.0330E+01	1.6800E+01	-3.0277E+01	1.8200E+01	-3.0181E+01	1.6800E+01	-2.9972E+01	1.8200E+01	-2.9556E+01
-3.0548E+01	3.5000E+01	-3.0491E+01	3.5000E+01	-3.0375E+01	1.6800E+01	-3.0322E+01	1.8200E+01	-3.0225E+01	1.6800E+01	-3.0017E+01	1.8200E+01	-2.9602E+01
-3.0592E+01	3.5000E+01	-3.0535E+01	3.5000E+01	-3.0419E+01	1.6800E+01	-3.0366E+01	1.8200E+01	-3.0270E+01	1.6800E+01	-3.0061E+01	1.8200E+01	-2.9647E+01
-3.0636E+01	3.5000E+01	-3.0579E+01	3.5000E+01	-3.0463E+01	1.6800E+01	-3.0410E+01	1.8200E+01	-3.0315E+01	1.6800E+01	-3.0106E+01	1.8200E+01	-2.9692E+01
-3.0680E+01	3.5000E+01	-3.0624E+01	3.5000E+01	-3.0508E+01	1.6800E+01	-3.0455E+01	1.8200E+01	-3.0359E+01	1.6800E+01	-3.0151E+01	1.8200E+01	-2.9738E+01
-3.0724E+01	3.5000E+01	-3.0668E+01	3.5000E+01	-3.0552E+01	1.6800E+01	-3.0499E+01	1.8200E+01	-3.0403E+01	1.6800E+01	-3.0196E+01	1.8200E+01	-2.9783E+01
-3.0768E+01	3.5000E+01	-3.0711E+01	3.5000E+01	-3.0596E+01	1.6800E+01	-3.0543E+01	1.8200E+01	-3.0448E+01	1.6800E+01	-3.0240E+01	1.8200E+01	-2.9828E+01
-3.0812E+01	3.5000E+01	-3.0755E+01	3.5000E+01	-3.0640E+01	1.6800E+01	-3.0587E+01	1.8200E+01	-3.0492E+01	1.6800E+01	-3.0285E+01	1.8200E+01	-2.9873E+01
-3.0855E+01	3.5000E+01	-3.0799E+01	3.5000E+01	-3.0684E+01	1.6800E+01	-3.0631E+01	1.8200E+01	-3.0536E+01	1.6800E+01	-3.0329E+01	1.8200E+01	-2.9919E+01
-3.0899E+01	3.5000E+01	-3.0843E+01	3.5000E+01	-3.0728E+01	1.6800E+01	-3.0675E+01	1.8200E+01	-3.0580E+01	1.6800E+01	-3.0374E+01	1.8200E+01	-2.9964E+01
-3.0943E+01	3.5000E+01	-3.0886E+01	3.5000E+01	-3.0772E+01	1.6800E+01	-3.0719E+01	1.8200E+01	-3.0624E+01	1.6800E+01	-3.0418E+01	1.8200E+01	-3.0008E+01
-3.0986E+01	3.5000E+01	-3.0930E+01	3.5000E+01	-3.0815E+01	1.6800E+01	-3.0763E+01	1.8200E+01	-3.0668E+01	1.6800E+01	-3.0462E+01	1.8200E+01	-3.0053E+01
-3.1030E+01	3.5000E+01	-3.0974E+01	3.5000E+01	-3.0859E+01	1.6800E+01	-3.0807E+01	1.8200E+01	-3.0712E+01	1.6800E+01	-3.0506E+01	1.8200E+01	-3.0098E+01
-3.1073E+01	3.5000E+01	-3.1017E+01	3.5000E+01	-3.0903E+01	1.6800E+01	-3.0850E+01	1.8200E+01	-3.0756E+01	1.6800E+01	-3.0551E+01	1.8200E+01	-3.0143E+01
-3.1117E+01	3.5000E+01	-3.1061E+01	3.5000E+01	-3.0946E+01	1.6800E+01	-3.0894E+01	1.8200E+01	-3.0800E+01	1.6800E+01	-3.0595E+01	1.8200E+01	-3.0188E+01
-3.1160E+01	3.5000E+01	-3.1104E+01	3.5000E+01	-3.0990E+01	1.6800E+01	-3.0938E+01	1.8200E+01	-3.0843E+01	1.6800E+01	-3.0639E+01	1.8200E+01	-3.0232E+01
-3.1203E+01	3.5000E+01	-3.1147E+01	3.5000E+01	-3.1033E+01	1.6800E+01	-3.0981E+01	1.8200E+01	-3.0887E+01	1.6800E+01	-3.0683E+01	1.8200E+01	-3.0277E+01
-3.1246E+01	3.5000E+01	-3.1190E+01	3.5000E+01	-3.1077E+01	1.6800E+01	-3.1025E+01	1.8200E+01	-3.0931E+01	1.6800E+01	-3.0727E+01	1.8200E+01	-3.0321E+01
-3.1289E+01	3.5000E+01	-3.1234E+01	3.5000E+01	-3.1120E+01	1.6800E+01	-3.1068E+01	1.8200E+01	-3.0974E+01	1.6800E+01	-3.0770E+01	1.8200E+01	-3.0366E+01
-3.1332E+01	3.5000E+01	-3.1277E+01	3.5000E+01	-3.1163E+01	1.6800E+01	-3.1112E+01	1.8200E+01	-3.1018E+01	1.6800E+01	-3.0814E+01	1.8200E+01	-3.0410E+01
-3.1375E+01	3.5000E+01	-3.1320E+01	3.5000E+01	-3.1206E+01	1.6800E+01	-3.1155E+01	1.8200E+01	-3.1061E+01	1.6800E+01	-3.0858E+01	1.8200E+01	-3.0454E+01
-3.1418E+01	3.5000E+01	-3.1363E+01	3.5000E+01	-3.1250E+01	1.6800E+01	-3.1198E+01	1.8200E+01	-3.1105E+01	1.6800E+01	-3.0902E+01	1.8200E+01	-3.0499E+01
-3.1461E+01	3.5000E+01	-3.1406E+01	3.5000E+01	-3.1293E+01	1.6800E+01	-3.1241E+01	1.8200E+01	-3.1148E+01	1.6800E+01	-3.0945E+01	1.8200E+01	-3.0543E+01
-3.1504E+01	3.5000E+01	-3.1449E+01	3.5000E+01	-3.1336E+01	1.6800E+01	-3.1284E+01	1.8200E+01	-3.1191E+01	1.6800E+01	-3.0989E+01	1.8200E+01	-3.0587E+01
-3.1547E+01	3.5000E+01	-3.1492E+01	3.5000E+01	-3.1379E+01	1.6800E+01	-3.1327E+01	1.8200E+01	-3.1234E+01	1.6800E+01	-3.1032E+01	1.8200E+01	-3.0631E+01
-3.1589E+01	3.5000E+01	-3.1534E+01	3.5000E+01	-3.1422E+01	1.6800E+01	-3.1370E+01	1.8200E+01	-3.1277E+01	1.6800E+01	-3.1076E+01	1.8200E+01	-3.0675E+01
-3.1632E+01	3.5000E+01	-3.1577E+01	3.5000E+01	-3.1465E+01	1.6800E+01	-3.1413E+01	1.8200E+01	-3.1321E+01	1.6800E+01	-3.1119E+01	1.8200E+01	-3.0719E+01
-3.1675E+01	3.5000E+01	-3.1620E+01	3.5000E+01	-3.1507E+01	1.6800E+01	-3.1456E+01	1.8200E+01	-3.1364E+01	1.6800E+01	-3.1162E+01	1.8200E+01	-3.0763E+01
-3.1717E+01	3.5000E+01	-3.1662E+01	3.5000E+01	-3.1550E+01	1.6800E+01	-3.1499E+01	1.8200E+01	-3.1406E+01	1.6800E+01	-3.1205E+01	1.8200E+01	-3.0806E+01
-3.1760E+01	3.5000E+01	-3.1705E+01	3.5000E+01	-3.1593E+01	1.6800E+01	-3.1542E+01	1.8200E+01	-3.1449E+01	1.6800E+01	-3.1249E+01	1.8200E+01	-3.0850E+01
-3.1802E+01	3.5000E+01	-3.1747E+01	3.5000E+01	-3.1636E+01	1.6800E+01	-3.1585E+01	1.8200E+01	-3.1492E+01	1.6800E+01	-3.1292E+01	1.8200E+01	-3.0894E+01
-3.1844E+01	3.5000E+01	-3.1790E+01	3.5000E+01	-3.1678E+01	1.6800E+01	-3.1627E+01	1.8200E+01	-3.1535E+01	1.6800E+01	-3.1335E+01	1.8200E+01	-3.0937E+01
-3.1887E+01	3.5000E+01	-3.1832E+01	3.5000E+01	-3.1721E+01	1.6800E+01	-3.1670E+01	1.8200E+01	-3.1578E+01	1.6800E+01	-3.1378E+01	1.8200E+01	-3.0981E+01
-3.1929E+01	3.5000E+01	-3.1875E+01	3.5000E+01	-3.1763E+01	1.6800E+01	-3.1712E+01	1.8200E+01	-3.1620E+01	1.6800E+01	-3.1421E+01	1.8200E+01	-3.1024E+01
-3.1971E+01	3.5000E+01	-3.1917E+01	3.5000E+01	-3.1806E+01	1.6800E+01	-3.1755E+01	1.8200E+01	-3.1663E+01	1.6800E+01	-3.1464E+01	1.8200E+01	-3.1068E+01
-3.2013E+01	3.5000E+01	-3.1959E+01	3.5000E+01	-3.1848E+01	1.6800E+01	-3.1797E+01	1.8200E+01	-3.1706E+01	1.6800E+01	-3.1506E+01	1.8200E+01	-3.1111E+01
-3.2055E+01	3.5000E+01	-3.2001E+01	3.5000E+01	-3.1890E+01	1.6800E+01	-3.1840E+01	1.8200E+01	-3.1748E+01	1.6800E+01	-3.1549E+01	1.8200E+01	-3.1154E+01

Arg 7	Curve 7	Arg 8	Curve 8	Arg 9	Curve 9	Arg 10	Curve 10	Arg 11	Curve 11	Arg 12	Curve 12	Arg 13
-3.2097E+01	3.5000E+01	-3.2043E+01	3.5000E+01	-3.1932E+01	1.6800E+01	-3.1882E+01	1.8200E+01	-3.1790E+01	1.6800E+01	-3.1592E+01	1.8200E+01	-3.1198E+01
-3.2139E+01	3.5000E+01	-3.2085E+01	3.5000E+01	-3.1975E+01	1.6800E+01	-3.1924E+01	1.8200E+01	-3.1833E+01	1.6800E+01	-3.1634E+01	1.8200E+01	-3.1241E+01
-3.2181E+01	3.5000E+01	-3.2127E+01	3.5000E+01	-3.2017E+01	1.6800E+01	-3.1966E+01	1.8200E+01	-3.1875E+01	1.6800E+01	-3.1677E+01	1.8200E+01	-3.1284E+01
-3.2223E+01	3.5000E+01	-3.2169E+01	3.5000E+01	-3.2059E+01	1.6800E+01	-3.2009E+01	1.8200E+01	-3.1917E+01	1.6800E+01	-3.1720E+01	1.8200E+01	-3.1327E+01
-3.2265E+01	3.5000E+01	-3.2211E+01	3.5000E+01	-3.2101E+01	1.6800E+01	-3.2051E+01	1.8200E+01	-3.1960E+01	1.6800E+01	-3.1762E+01	1.8200E+01	-3.1370E+01
-3.2307E+01	3.5000E+01	-3.2253E+01	3.5000E+01	-3.2143E+01	1.6800E+01	-3.2093E+01	1.8200E+01	-3.2002E+01	1.6800E+01	-3.1804E+01	1.8200E+01	-3.1413E+01
-3.2349E+01	3.5000E+01	-3.2295E+01	3.5000E+01	-3.2185E+01	1.6800E+01	-3.2135E+01	1.8200E+01	-3.2044E+01	1.6800E+01	-3.1847E+01	1.8200E+01	-3.1456E+01
-3.2390E+01	3.5000E+01	-3.2336E+01	3.5000E+01	-3.2227E+01	1.6800E+01	-3.2177E+01	1.8200E+01	-3.2086E+01	1.6800E+01	-3.1889E+01	1.8200E+01	-3.1499E+01
-3.2432E+01	3.5000E+01	-3.2378E+01	3.5000E+01	-3.2268E+01	1.6800E+01	-3.2218E+01	1.8200E+01	-3.2128E+01	1.6800E+01	-3.1931E+01	1.8200E+01	-3.1541E+01
-3.2473E+01	3.5000E+01	-3.2420E+01	3.5000E+01	-3.2310E+01	1.6800E+01	-3.2260E+01	1.8200E+01	-3.2170E+01	1.6800E+01	-3.1974E+01	1.8200E+01	-3.1584E+01
-3.2515E+01	3.5000E+01	-3.2461E+01	3.5000E+01	-3.2352E+01	1.6800E+01	-3.2302E+01	1.8200E+01	-3.2212E+01	1.6800E+01	-3.2016E+01	1.8200E+01	-3.1627E+01
-3.2556E+01	3.5000E+01	-3.2503E+01	3.5000E+01	-3.2394E+01	1.6800E+01	-3.2344E+01	1.8200E+01	-3.2254E+01	1.6800E+01	-3.2058E+01	1.8200E+01	-3.1669E+01
-3.2598E+01	3.5000E+01	-3.2544E+01	3.5000E+01	-3.2435E+01	1.6800E+01	-3.2385E+01	1.8200E+01	-3.2295E+01	1.6800E+01	-3.2100E+01	1.8200E+01	-3.1712E+01
-3.2639E+01	3.5000E+01	-3.2586E+01	3.5000E+01	-3.2477E+01	1.6800E+01	-3.2427E+01	1.8200E+01	-3.2337E+01	1.6800E+01	-3.2142E+01	1.8200E+01	-3.1754E+01
-3.2680E+01	3.5000E+01	-3.2627E+01	3.5000E+01	-3.2518E+01	1.6800E+01	-3.2469E+01	1.8200E+01	-3.2379E+01	1.6800E+01	-3.2184E+01	1.8200E+01	-3.1797E+01
-3.2721E+01	3.5000E+01	-3.2668E+01	3.5000E+01	-3.2560E+01	1.6800E+01	-3.2510E+01	1.8200E+01	-3.2420E+01	1.6800E+01	-3.2226E+01	1.8200E+01	-3.1839E+01
-3.2763E+01	3.5000E+01	-3.2710E+01	3.5000E+01	-3.2601E+01	1.6800E+01	-3.2551E+01	1.8200E+01	-3.2462E+01	1.6800E+01	-3.2267E+01	1.8200E+01	-3.1881E+01
-3.2804E+01	3.5000E+01	-3.2751E+01	3.5000E+01	-3.2642E+01	1.6800E+01	-3.2593E+01	1.8200E+01	-3.2503E+01	1.6800E+01	-3.2309E+01	1.8200E+01	-3.1924E+01
-3.2845E+01	3.5000E+01	-3.2792E+01	3.5000E+01	-3.2684E+01	1.6800E+01	-3.2634E+01	1.8200E+01	-3.2545E+01	1.6800E+01	-3.2351E+01	1.8200E+01	-3.1966E+01
-3.2886E+01	3.5000E+01	-3.2833E+01	3.5000E+01	-3.2725E+01	1.6800E+01	-3.2676E+01	1.8200E+01	-3.2586E+01	1.6800E+01	-3.2392E+01	1.8200E+01	-3.2008E+01
-3.2927E+01	3.5000E+01	-3.2874E+01	3.5000E+01	-3.2766E+01	1.6800E+01	-3.2717E+01	1.8200E+01	-3.2628E+01	1.6800E+01	-3.2434E+01	1.8200E+01	-3.2050E+01
-3.2968E+01	3.5000E+01	-3.2915E+01	3.5000E+01	-3.2807E+01	1.6800E+01	-3.2758E+01	1.8200E+01	-3.2669E+01	1.6800E+01	-3.2476E+01	1.8200E+01	-3.2092E+01
-3.3009E+01	3.5000E+01	-3.2956E+01	3.5000E+01	-3.2848E+01	1.6800E+01	-3.2799E+01	1.8200E+01	-3.2710E+01	1.6800E+01	-3.2517E+01	1.8200E+01	-3.2134E+01
-3.3050E+01	3.5000E+01	-3.2997E+01	3.5000E+01	-3.2889E+01	1.6800E+01	-3.2840E+01	1.8200E+01	-3.2751E+01	1.6800E+01	-3.2559E+01	1.8200E+01	-3.2176E+01
-3.3090E+01	3.5000E+01	-3.3038E+01	3.5000E+01	-3.2930E+01	1.6800E+01	-3.2881E+01	1.8200E+01	-3.2792E+01	1.6800E+01	-3.2600E+01	1.8200E+01	-3.2218E+01
-3.3131E+01	3.5000E+01	-3.3078E+01	3.5000E+01	-3.2971E+01	1.6800E+01	-3.2922E+01	1.8200E+01	-3.2834E+01	1.6800E+01	-3.2641E+01	1.8200E+01	-3.2260E+01
-3.3172E+01	3.5000E+01	-3.3119E+01	3.5000E+01	-3.3012E+01	1.6800E+01	-3.2963E+01	1.8200E+01	-3.2875E+01	1.6800E+01	-3.2683E+01	1.8200E+01	-3.2302E+01
-3.3212E+01	3.5000E+01	-3.3160E+01	3.5000E+01	-3.3053E+01	1.6800E+01	-3.3004E+01	1.8200E+01	-3.2916E+01	1.6800E+01	-3.2724E+01	1.8200E+01	-3.2343E+01
-3.3253E+01	3.5000E+01	-3.3201E+01	3.5000E+01	-3.3094E+01	1.6800E+01	-3.3045E+01	1.8200E+01	-3.2957E+01	1.6800E+01	-3.2765E+01	1.8200E+01	-3.2385E+01
-3.3293E+01	3.5000E+01	-3.3241E+01	3.5000E+01	-3.3134E+01	1.6800E+01	-3.3086E+01	1.8200E+01	-3.2997E+01	1.6800E+01	-3.2806E+01	1.8200E+01	-3.2427E+01
-3.3334E+01	3.5000E+01	-3.3282E+01	3.5000E+01	-3.3175E+01	1.6800E+01	-3.3126E+01	1.8200E+01	-3.3038E+01	1.6800E+01	-3.2847E+01	1.8200E+01	-3.2468E+01
-3.3374E+01	3.5000E+01	-3.3322E+01	3.5000E+01	-3.3216E+01	1.6800E+01	-3.3167E+01	1.8200E+01	-3.3079E+01	1.6800E+01	-3.2888E+01	1.8200E+01	-3.2510E+01
-3.3415E+01	3.5000E+01	-3.3363E+01	3.5000E+01	-3.3256E+01	1.6800E+01	-3.3208E+01	1.8200E+01	-3.3120E+01	1.6800E+01	-3.2929E+01	1.8200E+01	-3.2551E+01
-3.3455E+01	3.5000E+01	-3.3403E+01	3.5000E+01	-3.3297E+01	1.6800E+01	-3.3248E+01	1.8200E+01	-3.3160E+01	1.6800E+01	-3.2970E+01	1.8200E+01	-3.2592E+01
-3.3495E+01	3.5000E+01	-3.3443E+01	3.5000E+01	-3.3337E+01	1.6800E+01	-3.3289E+01	1.8200E+01	-3.3201E+01	1.6800E+01	-3.3011E+01	1.8200E+01	-3.2634E+01
-3.3536E+01	3.5000E+01	-3.3484E+01	3.5000E+01	-3.3378E+01	1.6800E+01	-3.3329E+01	1.8200E+01	-3.3242E+01	1.6800E+01	-3.3052E+01	1.8200E+01	-3.2675E+01
-3.3576E+01	3.5000E+01	-3.3524E+01	3.5000E+01	-3.3418E+01	1.6800E+01	-3.3370E+01	1.8200E+01	-3.3282E+01	1.6800E+01	-3.3093E+01	1.8200E+01	-3.2716E+01
-3.3616E+01	3.5000E+01	-3.3564E+01	3.5000E+01	-3.3458E+01	1.6800E+01	-3.3410E+01	1.8200E+01	-3.3323E+01	1.6800E+01	-3.3133E+01	1.8200E+01	-3.2758E+01
-3.3656E+01	3.5000E+01	-3.3604E+01	3.5000E+01	-3.3499E+01	1.6800E+01	-3.3450E+01	1.8200E+01	-3.3363E+01	1.6800E+01	-3.3174E+01	1.8200E+01	-3.2799E+01
-3.3696E+01	3.5000E+01	-3.3644E+01	3.5000E+01	-3.3539E+01	1.6800E+01	-3.3491E+01	1.8200E+01	-3.3404E+01	1.6800E+01	-3.3215E+01	1.8200E+01	-3.2840E+01
-3.3736E+01	3.5000E+01	-3.3684E+01	3.5000E+01	-3.3579E+01	1.6800E+01	-3.3531E+01	1.8200E+01	-3.3444E+01	1.6800E+01	-3.3255E+01	1.8200E+01	-3.2881E+01
-3.3776E+01	3.5000E+01	-3.3724E+01	3.5000E+01	-3.3619E+01	1.6800E+01	-3.3571E+01	1.8200E+01	-3.3484E+01	1.6800E+01	-3.3296E+01	1.8200E+01	-3.2922E+01
-3.3816E+01	3.5000E+01	-3.3764E+01	3.5000E+01	-3.3659E+01	1.6800E+01	-3.3611E+01	1.8200E+01	-3.3524E+01	1.6800E+01	-3.3336E+01	1.8200E+01	-3.2963E+01
-3.3856E+01	3.5000E+01	-3.3804E+01	3.5000E+01	-3.3699E+01	1.6800E+01	-3.3651E+01	1.8200E+01	-3.3565E+01	1.6800E+01	-3.3377E+01	1.8200E+01	-3.3004E+01
-3.3895E+01	3.5000E+01	-3.3844E+01	3.5000E+01	-3.3739E+01	1.6800E+01	-3.3691E+01	1.8200E+01	-3.3605E+01	1.6800E+01	-3.3417E+01	1.8200E+01	-3.3044E+01
-3.3935E+01	3.5000E+01	-3.3884E+01	3.5000E+01	-3.3779E+01	1.6800E+01	-3.3731E+01	1.8200E+01	-3.3645E+01	1.6800E+01	-3.3457E+01	1.8200E+01	-3.3085E+01
-3.3975E+01	3.5000E+01	-3.3924E+01	3.5000E+01	-3.3819E+01	1.6800E+01	-3.3771E+01	1.8200E+01	-3.3685E+01	1.6800E+01	-3.3498E+01	1.8200E+01	-3.3126E+01
-3.4015E+01	3.5000E+01	-3.3963E+01	3.5000E+01	-3.3859E+01	1.6800E+01	-3.3811E+01	1.8200E+01	-3.3725E+01	1.6800E+01	-3.3538E+01	1.8200E+01	-3.3167E+01
-3.4054E+01	3.5000E+01	-3.4003E+01	3.5000E+01	-3.3899E+01	1.6800E+01	-3.3851E+01	1.8200E+01	-3.3765E+01	1.6800E+01	-3.3578E+01	1.8200E+01	-3.3207E+01
-3.4094E+01	3.5000E+01	-3.4043E+01	3.5000E+01	-3.3938E+01	1.6800E+01	-3.3891E+01	1.8200E+01	-3.3805E+01	1.6800E+01	-3.3618E+01	1.8200E+01	-3.3248E+01
-3.4133E+01	3.5000E+01	-3.4082E+01	3.5000E+01	-3.3978E+01	1.6800E+01	-3.3931E+01	1.8200E+01	-3.3845E+01	1.6800E+01	-3.3658E+01	1.8200E+01	-3.3288E+01
-3.4173E+01	3.5000E+01	-3.4122E+01	3.5000E+01	-3.4018E+01	1.6800E+01	-3.3970E+01	1.8200E+01	-3.3885E+01	1.6800E+01	-3.3698E+01	1.8200E+01	-3.3329E+01

Arg 7	Curve 7	Arg 8	Curve 8	Arg 9	Curve 9	Arg 10	Curve 10	Arg 11	Curve 11	Arg 12	Curve 12	Arg 13
-3.4212E+01	3.5000E+01	-3.4161E+01	3.5000E+01	-3.4057E+01	1.6800E+01	-3.4010E+01	1.8200E+01	-3.3924E+01	1.6800E+01	-3.3738E+01	1.8200E+01	-3.3369E+01
-3.4252E+01	3.5000E+01	-3.4201E+01	3.5000E+01	-3.4097E+01	1.6800E+01	-3.4050E+01	1.8200E+01	-3.3964E+01	1.6800E+01	-3.3778E+01	1.8200E+01	-3.3410E+01
-3.4291E+01	3.5000E+01	-3.4240E+01	3.5000E+01	-3.4137E+01	1.6800E+01	-3.4089E+01	1.8200E+01	-3.4004E+01	1.6800E+01	-3.3818E+01	1.8200E+01	-3.3450E+01
-3.4330E+01	3.5000E+01	-3.4280E+01	3.5000E+01	-3.4176E+01	1.6800E+01	-3.4129E+01	1.8200E+01	-3.4043E+01	1.6800E+01	-3.3858E+01	1.8200E+01	-3.3490E+01
-3.4370E+01	3.5000E+01	-3.4319E+01	3.5000E+01	-3.4215E+01	1.6800E+01	-3.4168E+01	1.8200E+01	-3.4083E+01	1.6800E+01	-3.3898E+01	1.8200E+01	-3.3531E+01
-3.4409E+01	3.5000E+01	-3.4358E+01	3.5000E+01	-3.4255E+01	1.6800E+01	-3.4208E+01	1.8200E+01	-3.4122E+01	1.6800E+01	-3.3937E+01	1.8200E+01	-3.3571E+01
-3.4448E+01	3.5000E+01	-3.4397E+01	3.5000E+01	-3.4294E+01	1.6800E+01	-3.4247E+01	1.8200E+01	-3.4162E+01	1.6800E+01	-3.3977E+01	1.8200E+01	-3.3611E+01
-3.4487E+01	3.5000E+01	-3.4437E+01	3.5000E+01	-3.4333E+01	1.6800E+01	-3.4287E+01	1.8200E+01	-3.4201E+01	1.6800E+01	-3.4017E+01	1.8200E+01	-3.3651E+01
-3.4526E+01	3.5000E+01	-3.4476E+01	3.5000E+01	-3.4373E+01	1.6800E+01	-3.4326E+01	1.8200E+01	-3.4241E+01	1.6800E+01	-3.4056E+01	1.8200E+01	-3.3691E+01
-3.4565E+01	3.5000E+01	-3.4515E+01	3.5000E+01	-3.4412E+01	1.6800E+01	-3.4365E+01	1.8200E+01	-3.4280E+01	1.6800E+01	-3.4096E+01	1.8200E+01	-3.3731E+01
-3.4604E+01	3.5000E+01	-3.4554E+01	3.5000E+01	-3.4451E+01	1.6800E+01	-3.4404E+01	1.8200E+01	-3.4320E+01	1.6800E+01	-3.4136E+01	1.8200E+01	-3.3771E+01
-3.4643E+01	3.5000E+01	-3.4593E+01	3.5000E+01	-3.4490E+01	1.6800E+01	-3.4443E+01	1.8200E+01	-3.4359E+01	1.6800E+01	-3.4175E+01	1.8200E+01	-3.3811E+01
-3.4682E+01	3.5000E+01	-3.4632E+01	3.5000E+01	-3.4529E+01	1.6800E+01	-3.4483E+01	1.8200E+01	-3.4398E+01	1.6800E+01	-3.4214E+01	1.8200E+01	-3.3851E+01
-3.4721E+01	3.5000E+01	-3.4671E+01	3.5000E+01	-3.4568E+01	1.6800E+01	-3.4522E+01	1.8200E+01	-3.4437E+01	1.6800E+01	-3.4254E+01	1.8200E+01	-3.3891E+01
-3.4760E+01	3.5000E+01	-3.4710E+01	3.5000E+01	-3.4607E+01	1.6800E+01	-3.4561E+01	1.8200E+01	-3.4476E+01	1.6800E+01	-3.4293E+01	1.8200E+01	-3.3930E+01
-3.4799E+01	3.5000E+01	-3.4749E+01	3.5000E+01	-3.4646E+01	1.6800E+01	-3.4600E+01	1.8200E+01	-3.4515E+01	1.6800E+01	-3.4333E+01	1.8200E+01	-3.3970E+01
-3.4837E+01	3.5000E+01	-3.4787E+01	3.5000E+01	-3.4685E+01	1.6800E+01	-3.4639E+01	1.8200E+01	-3.4555E+01	1.6800E+01	-3.4372E+01	1.8200E+01	-3.4010E+01
-3.4876E+01	3.5000E+01	-3.4826E+01	3.5000E+01	-3.4724E+01	1.6800E+01	-3.4678E+01	1.8200E+01	-3.4594E+01	1.6800E+01	-3.4411E+01	1.8200E+01	-3.4049E+01
-3.4915E+01	3.5000E+01	-3.4865E+01	3.5000E+01	-3.4763E+01	1.6800E+01	-3.4716E+01	1.8200E+01	-3.4632E+01	1.6800E+01	-3.4450E+01	1.8200E+01	-3.4089E+01
-3.4953E+01	3.5000E+01	-3.4903E+01	3.5000E+01	-3.4802E+01	1.6800E+01	-3.4755E+01	1.8200E+01	-3.4671E+01	1.6800E+01	-3.4489E+01	1.8200E+01	-3.4128E+01
-3.4992E+01	3.5000E+01	-3.4942E+01	3.5000E+01	-3.4840E+01	1.6800E+01	-3.4794E+01	1.8200E+01	-3.4710E+01	1.6800E+01	-3.4528E+01	1.8200E+01	-3.4168E+01
-3.5030E+01	3.5000E+01	-3.4981E+01	3.5000E+01	-3.4879E+01	1.6800E+01	-3.4833E+01	1.8200E+01	-3.4749E+01	1.6800E+01	-3.4567E+01	1.8200E+01	-3.4207E+01
-3.5069E+01	3.5000E+01	-3.5019E+01	3.5000E+01	-3.4918E+01	1.6800E+01	-3.4872E+01	1.8200E+01	-3.4788E+01	1.6800E+01	-3.4606E+01	1.8200E+01	-3.4247E+01
-3.5107E+01	3.5000E+01	-3.5058E+01	3.5000E+01	-3.4956E+01	1.6800E+01	-3.4910E+01	1.8200E+01	-3.4827E+01	1.6800E+01	-3.4645E+01	1.8200E+01	-3.4286E+01
-3.5146E+01	3.5000E+01	-3.5096E+01	3.5000E+01	-3.4995E+01	1.6800E+01	-3.4949E+01	1.8200E+01	-3.4865E+01	1.6800E+01	-3.4684E+01	1.8200E+01	-3.4325E+01
-3.5184E+01	3.5000E+01	-3.5134E+01	3.5000E+01	-3.5033E+01	1.6800E+01	-3.4987E+01	1.8200E+01	-3.4904E+01	1.6800E+01	-3.4723E+01	1.8200E+01	-3.4365E+01
-3.5222E+01	3.5000E+01	-3.5173E+01	3.5000E+01	-3.5072E+01	1.6800E+01	-3.5026E+01	1.8200E+01	-3.4943E+01	1.6800E+01	-3.4762E+01	1.8200E+01	-3.4404E+01
-3.5261E+01	3.5000E+01	-3.5211E+01	3.5000E+01	-3.5110E+01	1.6800E+01	-3.5064E+01	1.8200E+01	-3.4981E+01	1.6800E+01	-3.4801E+01	1.8200E+01	-3.4443E+01
-3.5299E+01	3.5000E+01	-3.5249E+01	3.5000E+01	-3.5149E+01	1.6800E+01	-3.5103E+01	1.8200E+01	-3.5020E+01	1.6800E+01	-3.4839E+01	1.8200E+01	-3.4482E+01
-3.5337E+01	3.5000E+01	-3.5288E+01	3.5000E+01	-3.5187E+01	1.6800E+01	-3.5141E+01	1.8200E+01	-3.5058E+01	1.6800E+01	-3.4878E+01	1.8200E+01	-3.4521E+01
-3.5375E+01	3.5000E+01	-3.5326E+01	3.5000E+01	-3.5225E+01	1.6800E+01	-3.5180E+01	1.8200E+01	-3.5097E+01	1.6800E+01	-3.4917E+01	1.8200E+01	-3.4560E+01
-3.5413E+01	3.5000E+01	-3.5364E+01	3.5000E+01	-3.5264E+01	1.6800E+01	-3.5218E+01	1.8200E+01	-3.5135E+01	1.6800E+01	-3.4955E+01	1.8200E+01	-3.4599E+01
-3.5451E+01	3.5000E+01	-3.5402E+01	3.5000E+01	-3.5302E+01	1.6800E+01	-3.5256E+01	1.8200E+01	-3.5173E+01	1.6800E+01	-3.4994E+01	1.8200E+01	-3.4638E+01

Curve 13	Arg 14	Curve 14	Arg 15	Curve 15	Arg 16	Curve 16	Arg 17	Curve 17	Arg 18	Curve 18	Arg 19	Curve 19
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00

Curve 13	Arg 14	Curve 14	Arg 15	Curve 15	Arg 16	Curve 16	Arg 17	Curve 17	Arg 18	Curve 18	Arg 19	Curve 19
1.6800E+01	-9.5398E-01	1.6587E+01	8.2884E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6800E+01	-1.3123E+00	1.7622E+01	6.7577E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6800E+01	-1.6525E+00	1.8023E+01	5.5472E+00	3.6371E-14	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6800E+01	-1.9765E+00	1.8153E+01	4.5475E+00	1.0637E-09	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6800E+01	-2.2860E+00	1.8189E+01	3.6962E+00	1.4457E-06	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6800E+01	-2.5825E+00	1.8198E+01	2.9543E+00	2.4704E-04	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6800E+01	-2.8673E+00	1.8200E+01	2.2962E+00	9.7849E-03	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6800E+01	-3.1413E+00	1.8200E+01	1.7042E+00	1.3395E-01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6800E+01	-3.4056E+00	1.8200E+01	1.1656E+00	8.3386E-01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6800E+01	-3.6609E+00	1.8200E+01	6.7088E-01	2.8790E+00	7.4594E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6800E+01	-3.9079E+00	1.8200E+01	2.1290E-01	6.4121E+00	2.1431E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6800E+01	-4.1474E+00	1.8200E+01	-2.1390E-01	1.0397E+01	1.4395E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6800E+01	-4.3797E+00	1.8200E+01	-6.1392E-01	1.3564E+01	1.0920E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6800E+01	-4.6055E+00	1.8200E+01	-9.9070E-01	1.5446E+01	8.6861E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6800E+01	-4.8253E+00	1.8200E+01	-1.3471E+00	1.6323E+01	7.0618E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6800E+01	-5.0392E+00	1.8200E+01	-1.6856E+00	1.6656E+01	5.7925E+00	2.0206E-15	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6800E+01	-5.2479E+00	1.8200E+01	-2.0081E+00	1.6762E+01	4.7530E+00	1.6338E-10	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6800E+01	-5.4515E+00	1.8200E+01	-2.3162E+00	1.6791E+01	3.8730E+00	3.9317E-07	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6800E+01	-5.6504E+00	1.8200E+01	-2.6115E+00	1.6798E+01	3.1096E+00	9.9607E-05	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6800E+01	-5.8449E+00	1.8200E+01	-2.8952E+00	1.6800E+01	2.4348E+00	5.2289E-03	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6800E+01	-6.0352E+00	1.8200E+01	-3.1682E+00	1.6800E+01	1.8295E+00	8.8021E-02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6800E+01	-6.2215E+00	1.8200E+01	-3.4315E+00	1.6800E+01	1.2800E+00	6.3933E-01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6800E+01	-6.4040E+00	1.8200E+01	-3.6859E+00	1.6800E+01	7.7634E-01	2.4774E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6800E+01	-6.5830E+00	1.8200E+01	-3.9322E+00	1.6800E+01	3.1081E-01	6.0084E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6800E+01	-6.7586E+00	1.8200E+01	-4.1709E+00	1.6800E+01	-1.2244E-01	1.0351E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6800E+01	-6.9309E+00	1.8200E+01	-4.4026E+00	1.6800E+01	-5.2802E-01	1.4057E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6800E+01	-7.1002E+00	1.8200E+01	-4.6278E+00	1.6800E+01	-9.0964E-01	1.6396E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6800E+01	-7.2666E+00	1.8200E+01	-4.8469E+00	1.6800E+01	-1.2703E+00	1.7541E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6800E+01	-7.4301E+00	1.8200E+01	-5.0603E+00	1.6800E+01	-1.6126E+00	1.7995E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6800E+01	-7.5910E+00	1.8200E+01	-5.2685E+00	1.6800E+01	-1.9384E+00	1.8144E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6800E+01	-7.7493E+00	1.8200E+01	-5.4716E+00	1.6800E+01	-2.2496E+00	1.8187E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6800E+01	-7.9051E+00	1.8200E+01	-5.6701E+00	1.6800E+01	-2.5476E+00	1.8197E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6800E+01	-8.0586E+00	1.8200E+01	-5.8641E+00	1.6800E+01	-2.8337E+00	1.8199E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6800E+01	-8.2098E+00	1.8200E+01	-6.0540E+00	1.6800E+01	-3.1090E+00	1.8200E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6800E+01	-8.3589E+00	1.8200E+01	-6.2399E+00	1.6800E+01	-3.3744E+00	1.8200E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6800E+01	-8.5058E+00	1.8200E+01	-6.4221E+00	1.6800E+01	-3.6307E+00	1.8200E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6800E+01	-8.6508E+00	1.8200E+01	-6.6007E+00	1.6800E+01	-3.8787E+00	1.8200E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6800E+01	-8.7938E+00	1.8200E+01	-6.7759E+00	1.6800E+01	-4.1190E+00	1.8200E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6800E+01	-8.9349E+00	1.8200E+01	-6.9480E+00	1.6800E+01	-4.3522E+00	1.8200E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6800E+01	-9.0742E+00	1.8200E+01	-7.1170E+00	1.6800E+01	-4.5788E+00	1.8200E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6800E+01	-9.2118E+00	1.8200E+01	-7.2830E+00	1.6800E+01	-4.7992E+00	1.8200E+01	1.2982E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6800E+01	-9.3477E+00	1.8200E+01	-7.4463E+00	1.6800E+01	-5.0139E+00	1.8200E+01	2.2257E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6800E+01	-9.4819E+00	1.8200E+01	-7.6069E+00	1.6800E+01	-5.2231E+00	1.8200E+01	1.4721E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6800E+01	-9.6146E+00	1.8200E+01	-7.7650E+00	1.6800E+01	-5.4273E+00	1.8200E+01	1.1111E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6800E+01	-9.7458E+00	1.8200E+01	-7.9206E+00	1.6800E+01	-5.6268E+00	1.8200E+01	8.8183E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6800E+01	-9.8755E+00	1.8200E+01	-8.0738E+00	1.6800E+01	-5.8218E+00	1.8200E+01	7.1619E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6800E+01	-1.0004E+01	1.8200E+01	-8.2248E+00	1.6800E+01	-6.0126E+00	1.8200E+01	5.8729E+00	7.7716E-16	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6800E+01	-1.0131E+01	1.8200E+01	-8.3737E+00	1.6800E+01	-6.1993E+00	1.8200E+01	4.8200E+00	6.5323E-11	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6800E+01	-1.0256E+01	1.8200E+01	-8.5204E+00	1.6800E+01	-6.3823E+00	1.8200E+01	3.9304E+00	1.9057E-07	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6800E+01	-1.0380E+01	1.8200E+01	-8.6652E+00	1.6800E+01	-6.5617E+00	1.8200E+01	3.1599E+00	5.5085E-05	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6800E+01	-1.0503E+01	1.8200E+01	-8.8080E+00	1.6800E+01	-6.7377E+00	1.8200E+01	2.4796E+00	3.1764E-03	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6800E+01	-1.0625E+01	1.8200E+01	-8.9489E+00	1.6800E+01	-6.9104E+00	1.8200E+01	1.8699E+00	5.7272E-02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00

Curve 13	Arg 14	Curve 14	Arg 15	Curve 15	Arg 16	Curve 16	Arg 17	Curve 17	Arg 18	Curve 18	Arg 19	Curve 19
1.6800E+01	-1.0745E+01	1.8200E+01	-9.0881E+00	1.6800E+01	-7.0800E+00	1.8200E+01	1.3169E+00	4.3783E-01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6800E+01	-1.0865E+01	1.8200E+01	-9.2255E+00	1.6800E+01	-7.2467E+00	1.8200E+01	8.1028E-01	1.7628E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6800E+01	-1.0983E+01	1.8200E+01	-9.3612E+00	1.6800E+01	-7.4106E+00	1.8200E+01	3.4228E-01	4.3984E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6800E+01	-1.1100E+01	1.8200E+01	-9.4953E+00	1.6800E+01	-7.5718E+00	1.8200E+01	-9.3058E-02	7.7329E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6800E+01	-1.1216E+01	1.8200E+01	-9.6278E+00	1.6800E+01	-7.7304E+00	1.8200E+01	-5.0044E-01	1.0646E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6800E+01	-1.1331E+01	1.8200E+01	-9.7588E+00	1.6800E+01	-7.8865E+00	1.8200E+01	-8.8364E-01	1.2520E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6800E+01	-1.1445E+01	1.8200E+01	-9.8883E+00	1.6800E+01	-8.0403E+00	1.8200E+01	-1.2457E+00	1.3453E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6800E+01	-1.1557E+01	1.8200E+01	-1.0016E+01	1.6800E+01	-8.1918E+00	1.8200E+01	-1.5892E+00	1.3828E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6800E+01	-1.1669E+01	1.8200E+01	-1.0143E+01	1.6800E+01	-8.3411E+00	1.8200E+01	-1.9161E+00	1.3953E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6800E+01	-1.1780E+01	1.8200E+01	-1.0269E+01	1.6800E+01	-8.4883E+00	1.8200E+01	-2.2283E+00	1.3989E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6800E+01	-1.1890E+01	1.8200E+01	-1.0393E+01	1.6800E+01	-8.6335E+00	1.8200E+01	-2.5271E+00	1.3998E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6800E+01	-1.1999E+01	1.8200E+01	-1.0515E+01	1.6800E+01	-8.7767E+00	1.8200E+01	-2.8140E+00	1.4000E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6800E+01	-1.2108E+01	1.8200E+01	-1.0637E+01	1.6800E+01	-8.9181E+00	1.8200E+01	-3.0900E+00	1.4000E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6800E+01	-1.2215E+01	1.8200E+01	-1.0757E+01	1.6800E+01	-9.0576E+00	1.8200E+01	-3.3561E+00	1.4000E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6800E+01	-1.2321E+01	1.8200E+01	-1.0876E+01	1.6800E+01	-9.1954E+00	1.8200E+01	-3.6130E+00	1.4000E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6800E+01	-1.2427E+01	1.8200E+01	-1.0994E+01	1.6800E+01	-9.3315E+00	1.8200E+01	-3.8616E+00	1.4000E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6800E+01	-1.2532E+01	1.8200E+01	-1.1111E+01	1.6800E+01	-9.4659E+00	1.8200E+01	-4.1024E+00	1.4000E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6800E+01	-1.2636E+01	1.8200E+01	-1.1227E+01	1.6800E+01	-9.5988E+00	1.8200E+01	-4.3361E+00	1.4000E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6800E+01	-1.2739E+01	1.8200E+01	-1.1342E+01	1.6800E+01	-9.7301E+00	1.8200E+01	-4.5631E+00	1.4000E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6800E+01	-1.2842E+01	1.8200E+01	-1.1456E+01	1.6800E+01	-9.8600E+00	1.8200E+01	-4.7840E+00	1.4000E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6800E+01	-1.2944E+01	1.8200E+01	-1.1569E+01	1.6800E+01	-9.9884E+00	1.8200E+01	-4.9990E+00	1.4000E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6800E+01	-1.3045E+01	1.8200E+01	-1.1680E+01	1.6800E+01	-1.0115E+01	1.8200E+01	-5.2086E+00	1.4000E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6800E+01	-1.3145E+01	1.8200E+01	-1.1791E+01	1.6800E+01	-1.0241E+01	1.8200E+01	-5.4132E+00	1.4000E+01	3.1762E+01	0.0000E+00	0.0000E+00	0.0000E+00
1.6800E+01	-1.3245E+01	1.8200E+01	-1.1901E+01	1.6800E+01	-1.0365E+01	1.8200E+01	-5.6130E+00	1.4000E+01	1.7543E+01	0.0000E+00	0.0000E+00	0.0000E+00
1.6800E+01	-1.3344E+01	1.8200E+01	-1.2010E+01	1.6800E+01	-1.0488E+01	1.8200E+01	-5.8083E+00	1.4000E+01	1.2638E+01	0.0000E+00	0.0000E+00	0.0000E+00
1.6800E+01	-1.3442E+01	1.8200E+01	-1.2118E+01	1.6800E+01	-1.0610E+01	1.8200E+01	-5.9993E+00	1.4000E+01	9.8357E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6800E+01	-1.3540E+01	1.8200E+01	-1.2226E+01	1.6800E+01	-1.0731E+01	1.8200E+01	-6.1864E+00	1.4000E+01	7.9158E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6800E+01	-1.3637E+01	1.8200E+01	-1.2332E+01	1.6800E+01	-1.0850E+01	1.8200E+01	-6.3696E+00	1.4000E+01	6.4688E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6800E+01	-1.3733E+01	1.8200E+01	-1.2438E+01	1.6800E+01	-1.0969E+01	1.8200E+01	-6.5492E+00	1.4000E+01	5.3118E+00	4.0723E-13	0.0000E+00	0.0000E+00
1.6800E+01	-1.3829E+01	1.8200E+01	-1.2542E+01	1.6800E+01	-1.1086E+01	1.8200E+01	-6.7255E+00	1.4000E+01	4.3491E+00	5.4036E-09	0.0000E+00	0.0000E+00
1.6800E+01	-1.3924E+01	1.8200E+01	-1.2646E+01	1.6800E+01	-1.1202E+01	1.8200E+01	-6.8984E+00	1.4000E+01	3.5246E+00	4.3470E-06	0.0000E+00	0.0000E+00
1.6800E+01	-1.4018E+01	1.8200E+01	-1.2750E+01	1.6800E+01	-1.1317E+01	1.8200E+01	-7.0683E+00	1.4000E+01	2.8030E+00	5.1573E-04	0.0000E+00	0.0000E+00
1.6800E+01	-1.4112E+01	1.8200E+01	-1.2852E+01	1.6800E+01	-1.1431E+01	1.8200E+01	-7.2352E+00	1.4000E+01	2.1608E+00	1.5709E-02	0.0000E+00	0.0000E+00
1.6800E+01	-1.4205E+01	1.8200E+01	-1.2954E+01	1.6800E+01	-1.1544E+01	1.8200E+01	-7.3992E+00	1.4000E+01	1.5815E+00	1.7718E-01	0.0000E+00	0.0000E+00
1.6800E+01	-1.4298E+01	1.8200E+01	-1.3055E+01	1.6800E+01	-1.1656E+01	1.8200E+01	-7.5606E+00	1.4000E+01	1.0533E+00	9.5440E-01	0.0000E+00	0.0000E+00
1.6800E+01	-1.4390E+01	1.8200E+01	-1.3155E+01	1.6800E+01	-1.1767E+01	1.8200E+01	-7.7194E+00	1.4000E+01	5.6718E-01	2.9574E+00	0.0000E+00	0.0000E+00
1.6800E+01	-1.4482E+01	1.8200E+01	-1.3255E+01	1.6800E+01	-1.1877E+01	1.8200E+01	-7.8757E+00	1.4000E+01	1.1650E-01	6.0840E+00	0.0000E+00	0.0000E+00
1.6800E+01	-1.4573E+01	1.8200E+01	-1.3354E+01	1.6800E+01	-1.1986E+01	1.8200E+01	-8.0296E+00	1.4000E+01	-3.0406E-01	9.3297E+00	0.0000E+00	0.0000E+00
1.6800E+01	-1.4664E+01	1.8200E+01	-1.3452E+01	1.6800E+01	-1.2095E+01	1.8200E+01	-8.1813E+00	1.4000E+01	-6.9869E-01	1.1738E+01	0.0000E+00	0.0000E+00
1.6800E+01	-1.4754E+01	1.8200E+01	-1.3549E+01	1.6800E+01	-1.2202E+01	1.8200E+01	-8.3307E+00	1.4000E+01	-1.0708E+00	1.3090E+01	0.0000E+00	0.0000E+00
1.6800E+01	-1.4843E+01	1.8200E+01	-1.3646E+01	1.6800E+01	-1.2309E+01	1.8200E+01	-8.4781E+00	1.4000E+01	-1.4231E+00	1.3691E+01	0.0000E+00	0.0000E+00
1.6800E+01	-1.4932E+01	1.8200E+01	-1.3742E+01	1.6800E+01	-1.2415E+01	1.8200E+01	-8.6234E+00	1.4000E+01	-1.7578E+00	1.3910E+01	0.0000E+00	0.0000E+00
1.6800E+01	-1.5021E+01	1.8200E+01	-1.3838E+01	1.6800E+01	-1.2519E+01	1.8200E+01	-8.7668E+00	1.4000E+01	-2.0770E+00	1.3977E+01	0.0000E+00	0.0000E+00
1.6800E+01	-1.5109E+01	1.8200E+01	-1.3933E+01	1.6800E+01	-1.2624E+01	1.8200E+01	-8.9082E+00	1.4000E+01	-2.3823E+00	1.3995E+01	0.0000E+00	0.0000E+00
1.6800E+01	-1.5196E+01	1.8200E+01	-1.4028E+01	1.6800E+01	-1.2727E+01	1.8200E+01	-9.0479E+00	1.4000E+01	-2.6749E+00	1.3999E+01	0.0000E+00	0.0000E+00
1.6800E+01	-1.5283E+01	1.8200E+01	-1.4121E+01	1.6800E+01	-1.2830E+01	1.8200E+01	-9.1858E+00	1.4000E+01	-2.9561E+00	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-1.5370E+01	1.8200E+01	-1.4215E+01	1.6800E+01	-1.2932E+01	1.8200E+01	-9.3220E+00	1.4000E+01	-3.2269E+00	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-1.5456E+01	1.8200E+01	-1.4307E+01	1.6800E+01	-1.3033E+01	1.8200E+01	-9.4566E+00	1.4000E+01	-3.4882E+00	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-1.5542E+01	1.8200E+01	-1.4400E+01	1.6800E+01	-1.3133E+01	1.8200E+01	-9.5895E+00	1.4000E+01	-3.7408E+00	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-1.5627E+01	1.8200E+01	-1.4491E+01	1.6800E+01	-1.3233E+01	1.8200E+01	-9.7210E+00	1.4000E+01	-3.9854E+00	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-1.5712E+01	1.8200E+01	-1.4582E+01	1.6800E+01	-1.3332E+01	1.8200E+01	-9.8509E+00	1.4000E+01	-4.2225E+00	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-1.5796E+01	1.8200E+01	-1.4673E+01	1.6800E+01	-1.3430E+01	1.8200E+01	-9.9794E+00	1.4000E+01	-4.4527E+00	1.4000E+01	0.0000E+00	0.0000E+00

Curve 13	Arg 14	Curve 14	Arg 15	Curve 15	Arg 16	Curve 16	Arg 17	Curve 17	Arg 18	Curve 18	Arg 19	Curve 19
1.6800E+01	-1.5880E+01	1.8200E+01	-1.4763E+01	1.6800E+01	-1.3528E+01	1.8200E+01	-1.0107E+01	1.4000E+01	-4.6765E+00	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-1.5964E+01	1.8200E+01	-1.4852E+01	1.6800E+01	-1.3625E+01	1.8200E+01	-1.0232E+01	1.4000E+01	-4.8943E+00	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-1.6047E+01	1.8200E+01	-1.4941E+01	1.6800E+01	-1.3721E+01	1.8200E+01	-1.0357E+01	1.4000E+01	-5.1066E+00	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-1.6130E+01	1.8200E+01	-1.5030E+01	1.6800E+01	-1.3817E+01	1.8200E+01	-1.0480E+01	1.4000E+01	-5.3136E+00	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-1.6212E+01	1.8200E+01	-1.5118E+01	1.6800E+01	-1.3912E+01	1.8200E+01	-1.0602E+01	1.4000E+01	-5.5157E+00	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-1.6294E+01	1.8200E+01	-1.5205E+01	1.6800E+01	-1.4007E+01	1.8200E+01	-1.0722E+01	1.4000E+01	-5.7131E+00	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-1.6375E+01	1.8200E+01	-1.5292E+01	1.6800E+01	-1.4101E+01	1.8200E+01	-1.0842E+01	1.4000E+01	-5.9062E+00	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-1.6456E+01	1.8200E+01	-1.5379E+01	1.6800E+01	-1.4194E+01	1.8200E+01	-1.0960E+01	1.4000E+01	-6.0952E+00	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-1.6537E+01	1.8200E+01	-1.5465E+01	1.6800E+01	-1.4287E+01	1.8200E+01	-1.1078E+01	1.4000E+01	-6.2803E+00	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-1.6618E+01	1.8200E+01	-1.5550E+01	1.6800E+01	-1.4379E+01	1.8200E+01	-1.1194E+01	1.4000E+01	-6.4617E+00	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-1.6698E+01	1.8200E+01	-1.5636E+01	1.6800E+01	-1.4471E+01	1.8200E+01	-1.1309E+01	1.4000E+01	-6.6395E+00	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-1.6777E+01	1.8200E+01	-1.5720E+01	1.6800E+01	-1.4562E+01	1.8200E+01	-1.1423E+01	1.4000E+01	-6.8141E+00	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-1.6856E+01	1.8200E+01	-1.5805E+01	1.6800E+01	-1.4653E+01	1.8200E+01	-1.1536E+01	1.4000E+01	-6.9854E+00	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-1.6935E+01	1.8200E+01	-1.5889E+01	1.6800E+01	-1.4743E+01	1.8200E+01	-1.1648E+01	1.4000E+01	-7.1537E+00	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-1.7014E+01	1.8200E+01	-1.5972E+01	1.6800E+01	-1.4833E+01	1.8200E+01	-1.1759E+01	1.4000E+01	-7.3192E+00	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-1.7092E+01	1.8200E+01	-1.6055E+01	1.6800E+01	-1.4922E+01	1.8200E+01	-1.1869E+01	1.4000E+01	-7.4819E+00	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-1.7170E+01	1.8200E+01	-1.6138E+01	1.6800E+01	-1.5010E+01	1.8200E+01	-1.1979E+01	1.4000E+01	-7.6419E+00	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-1.7248E+01	1.8200E+01	-1.6220E+01	1.6800E+01	-1.5098E+01	1.8200E+01	-1.2087E+01	1.4000E+01	-7.7994E+00	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-1.7325E+01	1.8200E+01	-1.6302E+01	1.6800E+01	-1.5186E+01	1.8200E+01	-1.2195E+01	1.4000E+01	-7.9545E+00	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-1.7402E+01	1.8200E+01	-1.6383E+01	1.6800E+01	-1.5273E+01	1.8200E+01	-1.2301E+01	1.4000E+01	-8.1072E+00	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-1.7478E+01	1.8200E+01	-1.6465E+01	1.6800E+01	-1.5360E+01	1.8200E+01	-1.2407E+01	1.4000E+01	-8.2578E+00	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-1.7554E+01	1.8200E+01	-1.6545E+01	1.6800E+01	-1.5446E+01	1.8200E+01	-1.2512E+01	1.4000E+01	-8.4061E+00	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-1.7630E+01	1.8200E+01	-1.6626E+01	1.6800E+01	-1.5532E+01	1.8200E+01	-1.2616E+01	1.4000E+01	-8.5524E+00	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-1.7706E+01	1.8200E+01	-1.6706E+01	1.6800E+01	-1.5617E+01	1.8200E+01	-1.2720E+01	1.4000E+01	-8.6967E+00	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-1.7781E+01	1.8200E+01	-1.6785E+01	1.6800E+01	-1.5702E+01	1.8200E+01	-1.2823E+01	1.4000E+01	-8.8391E+00	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-1.7856E+01	1.8200E+01	-1.6864E+01	1.6800E+01	-1.5786E+01	1.8200E+01	-1.2924E+01	1.4000E+01	-8.9797E+00	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-1.7931E+01	1.8200E+01	-1.6943E+01	1.6800E+01	-1.5870E+01	1.8200E+01	-1.3026E+01	1.4000E+01	-9.1184E+00	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-1.8005E+01	1.8200E+01	-1.7022E+01	1.6800E+01	-1.5954E+01	1.8200E+01	-1.3126E+01	1.4000E+01	-9.2555E+00	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-1.8079E+01	1.8200E+01	-1.7100E+01	1.6800E+01	-1.6037E+01	1.8200E+01	-1.3226E+01	1.4000E+01	-9.3908E+00	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-1.8153E+01	1.8200E+01	-1.7178E+01	1.6800E+01	-1.6120E+01	1.8200E+01	-1.3325E+01	1.4000E+01	-9.5246E+00	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-1.8227E+01	1.8200E+01	-1.7255E+01	1.6800E+01	-1.6202E+01	1.8200E+01	-1.3423E+01	1.4000E+01	-9.6568E+00	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-1.8300E+01	1.8200E+01	-1.7333E+01	1.6800E+01	-1.6284E+01	1.8200E+01	-1.3521E+01	1.4000E+01	-9.7874E+00	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-1.8373E+01	1.8200E+01	-1.7409E+01	1.6800E+01	-1.6366E+01	1.8200E+01	-1.3618E+01	1.4000E+01	-9.9166E+00	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-1.8445E+01	1.8200E+01	-1.7486E+01	1.6800E+01	-1.6447E+01	1.8200E+01	-1.3715E+01	1.4000E+01	-1.0044E+01	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-1.8518E+01	1.8200E+01	-1.7562E+01	1.6800E+01	-1.6528E+01	1.8200E+01	-1.3810E+01	1.4000E+01	-1.0171E+01	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-1.8590E+01	1.8200E+01	-1.7638E+01	1.6800E+01	-1.6608E+01	1.8200E+01	-1.3906E+01	1.4000E+01	-1.0296E+01	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-1.8662E+01	1.8200E+01	-1.7714E+01	1.6800E+01	-1.6688E+01	1.8200E+01	-1.4000E+01	1.4000E+01	-1.0420E+01	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-1.8733E+01	1.8200E+01	-1.7789E+01	1.6800E+01	-1.6768E+01	1.8200E+01	-1.4094E+01	1.4000E+01	-1.0542E+01	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-1.8805E+01	1.8200E+01	-1.7864E+01	1.6800E+01	-1.6847E+01	1.8200E+01	-1.4188E+01	1.4000E+01	-1.0663E+01	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-1.8876E+01	1.8200E+01	-1.7938E+01	1.6800E+01	-1.6926E+01	1.8200E+01	-1.4281E+01	1.4000E+01	-1.0784E+01	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-1.8946E+01	1.8200E+01	-1.8013E+01	1.6800E+01	-1.7005E+01	1.8200E+01	-1.4373E+01	1.4000E+01	-1.0903E+01	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-1.9017E+01	1.8200E+01	-1.8087E+01	1.6800E+01	-1.7083E+01	1.8200E+01	-1.4465E+01	1.4000E+01	-1.1020E+01	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-1.9087E+01	1.8200E+01	-1.8160E+01	1.6800E+01	-1.7161E+01	1.8200E+01	-1.4556E+01	1.4000E+01	-1.1137E+01	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-1.9157E+01	1.8200E+01	-1.8234E+01	1.6800E+01	-1.7238E+01	1.8200E+01	-1.4646E+01	1.4000E+01	-1.1253E+01	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-1.9227E+01	1.8200E+01	-1.8307E+01	1.6800E+01	-1.7316E+01	1.8200E+01	-1.4737E+01	1.4000E+01	-1.1367E+01	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-1.9296E+01	1.8200E+01	-1.8380E+01	1.6800E+01	-1.7392E+01	1.8200E+01	-1.4826E+01	1.4000E+01	-1.1481E+01	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-1.9366E+01	1.8200E+01	-1.8453E+01	1.6800E+01	-1.7469E+01	1.8200E+01	-1.4915E+01	1.4000E+01	-1.1593E+01	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-1.9435E+01	1.8200E+01	-1.8525E+01	1.6800E+01	-1.7545E+01	1.8200E+01	-1.5004E+01	1.4000E+01	-1.1705E+01	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-1.9504E+01	1.8200E+01	-1.8597E+01	1.6800E+01	-1.7621E+01	1.8200E+01	-1.5092E+01	1.4000E+01	-1.1816E+01	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-1.9572E+01	1.8200E+01	-1.8669E+01	1.6800E+01	-1.7697E+01	1.8200E+01	-1.5180E+01	1.4000E+01	-1.1925E+01	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-1.9641E+01	1.8200E+01	-1.8740E+01	1.6800E+01	-1.7772E+01	1.8200E+01	-1.5267E+01	1.4000E+01	-1.2034E+01	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-1.9709E+01	1.8200E+01	-1.8812E+01	1.6800E+01	-1.7847E+01	1.8200E+01	-1.5354E+01	1.4000E+01	-1.2142E+01	1.4000E+01	0.0000E+00	0.0000E+00

Curve 13	Arg 14	Curve 14	Arg 15	Curve 15	Arg 16	Curve 16	Arg 17	Curve 17	Arg 18	Curve 18	Arg 19	Curve 19
1.6800E+01	-1.9777E+01	1.8200E+01	-1.8883E+01	1.6800E+01	-1.7922E+01	1.8200E+01	-1.5440E+01	1.4000E+01	-1.2249E+01	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-1.9844E+01	1.8200E+01	-1.8953E+01	1.6800E+01	-1.7996E+01	1.8200E+01	-1.5526E+01	1.4000E+01	-1.2355E+01	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-1.9912E+01	1.8200E+01	-1.9024E+01	1.6800E+01	-1.8070E+01	1.8200E+01	-1.5611E+01	1.4000E+01	-1.2461E+01	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-1.9979E+01	1.8200E+01	-1.9094E+01	1.6800E+01	-1.8144E+01	1.8200E+01	-1.5696E+01	1.4000E+01	-1.2565E+01	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-2.0046E+01	1.8200E+01	-1.9164E+01	1.6800E+01	-1.8218E+01	1.8200E+01	-1.5780E+01	1.4000E+01	-1.2669E+01	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-2.0113E+01	1.8200E+01	-1.9234E+01	1.6800E+01	-1.8291E+01	1.8200E+01	-1.5864E+01	1.4000E+01	-1.2772E+01	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-2.0179E+01	1.8200E+01	-1.9303E+01	1.6800E+01	-1.8364E+01	1.8200E+01	-1.5948E+01	1.4000E+01	-1.2875E+01	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-2.0245E+01	1.8200E+01	-1.9373E+01	1.6800E+01	-1.8437E+01	1.8200E+01	-1.6031E+01	1.4000E+01	-1.2976E+01	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-2.0312E+01	1.8200E+01	-1.9442E+01	1.6800E+01	-1.8509E+01	1.8200E+01	-1.6114E+01	1.4000E+01	-1.3077E+01	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-2.0377E+01	1.8200E+01	-1.9510E+01	1.6800E+01	-1.8581E+01	1.8200E+01	-1.6196E+01	1.4000E+01	-1.3177E+01	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-2.0443E+01	1.8200E+01	-1.9579E+01	1.6800E+01	-1.8653E+01	1.8200E+01	-1.6278E+01	1.4000E+01	-1.3276E+01	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-2.0509E+01	1.8200E+01	-1.9647E+01	1.6800E+01	-1.8725E+01	1.8200E+01	-1.6360E+01	1.4000E+01	-1.3375E+01	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-2.0574E+01	1.8200E+01	-1.9715E+01	1.6800E+01	-1.8796E+01	1.8200E+01	-1.6441E+01	1.4000E+01	-1.3473E+01	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-2.0639E+01	1.8200E+01	-1.9783E+01	1.6800E+01	-1.8867E+01	1.8200E+01	-1.6522E+01	1.4000E+01	-1.3571E+01	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-2.0704E+01	1.8200E+01	-1.9851E+01	1.6800E+01	-1.8938E+01	1.8200E+01	-1.6602E+01	1.4000E+01	-1.3667E+01	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-2.0769E+01	1.8200E+01	-1.9918E+01	1.6800E+01	-1.9008E+01	1.8200E+01	-1.6682E+01	1.4000E+01	-1.3764E+01	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-2.0833E+01	1.8200E+01	-1.9985E+01	1.6800E+01	-1.9079E+01	1.8200E+01	-1.6762E+01	1.4000E+01	-1.3859E+01	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-2.0897E+01	1.8200E+01	-2.0052E+01	1.6800E+01	-1.9149E+01	1.8200E+01	-1.6841E+01	1.4000E+01	-1.3954E+01	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-2.0962E+01	1.8200E+01	-2.0119E+01	1.6800E+01	-1.9219E+01	1.8200E+01	-1.6920E+01	1.4000E+01	-1.4048E+01	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-2.1025E+01	1.8200E+01	-2.0186E+01	1.6800E+01	-1.9288E+01	1.8200E+01	-1.6999E+01	1.4000E+01	-1.4142E+01	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-2.1089E+01	1.8200E+01	-2.0252E+01	1.6800E+01	-1.9357E+01	1.8200E+01	-1.7077E+01	1.4000E+01	-1.4235E+01	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-2.1153E+01	1.8200E+01	-2.0318E+01	1.6800E+01	-1.9427E+01	1.8200E+01	-1.7155E+01	1.4000E+01	-1.4328E+01	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-2.1216E+01	1.8200E+01	-2.0384E+01	1.6800E+01	-1.9495E+01	1.8200E+01	-1.7233E+01	1.4000E+01	-1.4420E+01	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-2.1279E+01	1.8200E+01	-2.0450E+01	1.6800E+01	-1.9564E+01	1.8200E+01	-1.7310E+01	1.4000E+01	-1.4511E+01	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-2.1342E+01	1.8200E+01	-2.0515E+01	1.6800E+01	-1.9632E+01	1.8200E+01	-1.7387E+01	1.4000E+01	-1.4602E+01	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-2.1405E+01	1.8200E+01	-2.0580E+01	1.6800E+01	-1.9700E+01	1.8200E+01	-1.7464E+01	1.4000E+01	-1.4693E+01	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-2.1468E+01	1.8200E+01	-2.0646E+01	1.6800E+01	-1.9768E+01	1.8200E+01	-1.7540E+01	1.4000E+01	-1.4782E+01	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-2.1530E+01	1.8200E+01	-2.0710E+01	1.6800E+01	-1.9836E+01	1.8200E+01	-1.7616E+01	1.4000E+01	-1.4872E+01	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-2.1592E+01	1.8200E+01	-2.0775E+01	1.6800E+01	-1.9903E+01	1.8200E+01	-1.7692E+01	1.4000E+01	-1.4961E+01	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-2.1654E+01	1.8200E+01	-2.0840E+01	1.6800E+01	-1.9971E+01	1.8200E+01	-1.7767E+01	1.4000E+01	-1.5049E+01	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-2.1716E+01	1.8200E+01	-2.0904E+01	1.6800E+01	-2.0038E+01	1.8200E+01	-1.7842E+01	1.4000E+01	-1.5137E+01	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-2.1778E+01	1.8200E+01	-2.0968E+01	1.6800E+01	-2.0105E+01	1.8200E+01	-1.7917E+01	1.4000E+01	-1.5224E+01	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-2.1840E+01	1.8200E+01	-2.1032E+01	1.6800E+01	-2.0171E+01	1.8200E+01	-1.7991E+01	1.4000E+01	-1.5311E+01	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-2.1901E+01	1.8200E+01	-2.1096E+01	1.6800E+01	-2.0237E+01	1.8200E+01	-1.8065E+01	1.4000E+01	-1.5398E+01	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-2.1962E+01	1.8200E+01	-2.1159E+01	1.6800E+01	-2.0304E+01	1.8200E+01	-1.8139E+01	1.4000E+01	-1.5484E+01	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-2.2023E+01	1.8200E+01	-2.1222E+01	1.6800E+01	-2.0370E+01	1.8200E+01	-1.8213E+01	1.4000E+01	-1.5569E+01	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-2.2084E+01	1.8200E+01	-2.1286E+01	1.6800E+01	-2.0435E+01	1.8200E+01	-1.8286E+01	1.4000E+01	-1.5654E+01	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-2.2145E+01	1.8200E+01	-2.1349E+01	1.6800E+01	-2.0501E+01	1.8200E+01	-1.8359E+01	1.4000E+01	-1.5739E+01	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-2.2206E+01	1.8200E+01	-2.1411E+01	1.6800E+01	-2.0566E+01	1.8200E+01	-1.8432E+01	1.4000E+01	-1.5823E+01	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-2.2266E+01	1.8200E+01	-2.1474E+01	1.6800E+01	-2.0631E+01	1.8200E+01	-1.8504E+01	1.4000E+01	-1.5907E+01	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-2.2326E+01	1.8200E+01	-2.1536E+01	1.6800E+01	-2.0696E+01	1.8200E+01	-1.8576E+01	1.4000E+01	-1.5990E+01	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-2.2386E+01	1.8200E+01	-2.1599E+01	1.6800E+01	-2.0761E+01	1.8200E+01	-1.8648E+01	1.4000E+01	-1.6073E+01	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-2.2446E+01	1.8200E+01	-2.1661E+01	1.6800E+01	-2.0825E+01	1.8200E+01	-1.8720E+01	1.4000E+01	-1.6156E+01	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-2.2506E+01	1.8200E+01	-2.1723E+01	1.6800E+01	-2.0890E+01	1.8200E+01	-1.8791E+01	1.4000E+01	-1.6238E+01	1.4000E+01	0.0000E+00	0.0000E+00
1.6800E+01	-2.2566E+01	1.8200E+01	-2.1784E+01	1.6800E+01	-2.0954E+01	1.8200E+01	-1.8862E+01	1.4000E+01	-1.6320E+01	1.4000E+01	3.3627E+01	0.0000E+00
1.6800E+01	-2.2625E+01	1.8200E+01	-2.1846E+01	1.6800E+01	-2.1018E+01	1.8200E+01	-1.8933E+01	1.4000E+01	-1.6401E+01	1.4000E+01	1.7937E+01	0.0000E+00
1.6800E+01	-2.2685E+01	1.8200E+01	-2.1907E+01	1.6800E+01	-2.1082E+01	1.8200E+01	-1.9004E+01	1.4000E+01	-1.6482E+01	1.4000E+01	1.2834E+01	0.0000E+00
1.6800E+01	-2.2744E+01	1.8200E+01	-2.1968E+01	1.6800E+01	-2.1145E+01	1.8200E+01	-1.9074E+01	1.4000E+01	-1.6563E+01	1.4000E+01	9.9613E+00	0.0000E+00
1.6800E+01	-2.2803E+01	1.8200E+01	-2.2030E+01	1.6800E+01	-2.1208E+01	1.8200E+01	-1.9144E+01	1.4000E+01	-1.6643E+01	1.4000E+01	8.0068E+00	0.0000E+00
1.6800E+01	-2.2862E+01	1.8200E+01	-2.2090E+01	1.6800E+01	-2.1272E+01	1.8200E+01	-1.9214E+01	1.4000E+01	-1.6723E+01	1.4000E+01	6.5397E+00	0.0000E+00
1.6800E+01	-2.2920E+01	1.8200E+01	-2.2151E+01	1.6800E+01	-2.1335E+01	1.8200E+01	-1.9283E+01	1.4000E+01	-1.6803E+01	1.4000E+01	5.3698E+00	1.7346E-13
1.6800E+01	-2.2979E+01	1.8200E+01	-2.2212E+01	1.6800E+01	-2.1398E+01	1.8200E+01	-1.9353E+01	1.4000E+01	-1.6882E+01	1.4000E+01	4.3981E+00	2.7870E-09

Curve 13	Arg 14	Curve 14	Arg 15	Curve 15	Arg 16	Curve 16	Arg 17	Curve 17	Arg 18	Curve 18	Arg 19	Curve 19
1.6800E+01	-2.3037E+01	1.8200E+01	-2.2272E+01	1.6800E+01	-2.1460E+01	1.8200E+01	-1.9422E+01	1.4000E+01	-1.6961E+01	1.4000E+01	3.5670E+00	2.5457E-06
1.6800E+01	-2.3096E+01	1.8200E+01	-2.2332E+01	1.6800E+01	-2.1523E+01	1.8200E+01	-1.9491E+01	1.4000E+01	-1.7039E+01	1.4000E+01	2.8405E+00	3.3001E-04
1.6800E+01	-2.3154E+01	1.8200E+01	-2.2392E+01	1.6800E+01	-2.1585E+01	1.8200E+01	-1.9559E+01	1.4000E+01	-1.7117E+01	1.4000E+01	2.1944E+00	1.0716E-02
1.6800E+01	-2.3212E+01	1.8200E+01	-2.2452E+01	1.6800E+01	-2.1647E+01	1.8200E+01	-1.9628E+01	1.4000E+01	-1.7195E+01	1.4000E+01	1.6120E+00	1.2671E-01
1.6800E+01	-2.3269E+01	1.8200E+01	-2.2512E+01	1.6800E+01	-2.1709E+01	1.8200E+01	-1.9696E+01	1.4000E+01	-1.7272E+01	1.4000E+01	1.0812E+00	7.0709E-01
1.6800E+01	-2.3327E+01	1.8200E+01	-2.2572E+01	1.6800E+01	-2.1771E+01	1.8200E+01	-1.9764E+01	1.4000E+01	-1.7349E+01	1.4000E+01	5.9295E-01	2.2496E+00
1.6800E+01	-2.3385E+01	1.8200E+01	-2.2631E+01	1.6800E+01	-2.1832E+01	1.8200E+01	-1.9831E+01	1.4000E+01	-1.7426E+01	1.4000E+01	1.4046E-01	4.7182E+00
1.6800E+01	-2.3442E+01	1.8200E+01	-2.2690E+01	1.6800E+01	-2.1894E+01	1.8200E+01	-1.9899E+01	1.4000E+01	-1.7503E+01	1.4000E+01	-2.8164E-01	7.3337E+00
1.6800E+01	-2.3499E+01	1.8200E+01	-2.2750E+01	1.6800E+01	-2.1955E+01	1.8200E+01	-1.9966E+01	1.4000E+01	-1.7579E+01	1.4000E+01	-6.7760E-01	9.3076E+00
1.6800E+01	-2.3557E+01	1.8200E+01	-2.2809E+01	1.6800E+01	-2.2016E+01	1.8200E+01	-2.0033E+01	1.4000E+01	-1.7655E+01	1.4000E+01	-1.0508E+00	1.0431E+01
1.6800E+01	-2.3614E+01	1.8200E+01	-2.2867E+01	1.6800E+01	-2.2077E+01	1.8200E+01	-2.0100E+01	1.4000E+01	-1.7730E+01	1.4000E+01	-1.4042E+00	1.0936E+01
1.6800E+01	-2.3670E+01	1.8200E+01	-2.2926E+01	1.6800E+01	-2.2138E+01	1.8200E+01	-2.0166E+01	1.4000E+01	-1.7805E+01	1.4000E+01	-1.7398E+00	1.1122E+01
1.6800E+01	-2.3727E+01	1.8200E+01	-2.2985E+01	1.6800E+01	-2.2198E+01	1.8200E+01	-2.0233E+01	1.4000E+01	-1.7880E+01	1.4000E+01	-2.0599E+00	1.1180E+01
1.6800E+01	-2.3784E+01	1.8200E+01	-2.3043E+01	1.6800E+01	-2.2259E+01	1.8200E+01	-2.0299E+01	1.4000E+01	-1.7955E+01	1.4000E+01	-2.3658E+00	1.1195E+01
1.6800E+01	-2.3840E+01	1.8200E+01	-2.3101E+01	1.6800E+01	-2.2319E+01	1.8200E+01	-2.0365E+01	1.4000E+01	-1.8029E+01	1.4000E+01	-2.6591E+00	1.1199E+01
1.6800E+01	-2.3897E+01	1.8200E+01	-2.3159E+01	1.6800E+01	-2.2379E+01	1.8200E+01	-2.0431E+01	1.4000E+01	-1.8103E+01	1.4000E+01	-2.9409E+00	1.1200E+01
1.6800E+01	-2.3953E+01	1.8200E+01	-2.3217E+01	1.6800E+01	-2.2439E+01	1.8200E+01	-2.0496E+01	1.4000E+01	-1.8177E+01	1.4000E+01	-3.2123E+00	1.1200E+01
1.6800E+01	-2.4009E+01	1.8200E+01	-2.3275E+01	1.6800E+01	-2.2499E+01	1.8200E+01	-2.0562E+01	1.4000E+01	-1.8250E+01	1.4000E+01	-3.4741E+00	1.1200E+01
1.6800E+01	-2.4065E+01	1.8200E+01	-2.3333E+01	1.6800E+01	-2.2559E+01	1.8200E+01	-2.0627E+01	1.4000E+01	-1.8323E+01	1.4000E+01	-3.7271E+00	1.1200E+01
1.6800E+01	-2.4121E+01	1.8200E+01	-2.3390E+01	1.6800E+01	-2.2618E+01	1.8200E+01	-2.0692E+01	1.4000E+01	-1.8396E+01	1.4000E+01	-3.9721E+00	1.1200E+01
1.6800E+01	-2.4176E+01	1.8200E+01	-2.3448E+01	1.6800E+01	-2.2677E+01	1.8200E+01	-2.0756E+01	1.4000E+01	-1.8469E+01	1.4000E+01	-4.2096E+00	1.1200E+01
1.6800E+01	-2.4232E+01	1.8200E+01	-2.3505E+01	1.6800E+01	-2.2737E+01	1.8200E+01	-2.0821E+01	1.4000E+01	-1.8541E+01	1.4000E+01	-4.4402E+00	1.1200E+01
1.6800E+01	-2.4287E+01	1.8200E+01	-2.3562E+01	1.6800E+01	-2.2796E+01	1.8200E+01	-2.0885E+01	1.4000E+01	-1.8613E+01	1.4000E+01	-4.6643E+00	1.1200E+01
1.6800E+01	-2.4343E+01	1.8200E+01	-2.3619E+01	1.6800E+01	-2.2854E+01	1.8200E+01	-2.0949E+01	1.4000E+01	-1.8685E+01	1.4000E+01	-4.8825E+00	1.1200E+01
1.6800E+01	-2.4398E+01	1.8200E+01	-2.3676E+01	1.6800E+01	-2.2913E+01	1.8200E+01	-2.1013E+01	1.4000E+01	-1.8756E+01	1.4000E+01	-5.0950E+00	1.1200E+01
1.6800E+01	-2.4453E+01	1.8200E+01	-2.3733E+01	1.6800E+01	-2.2972E+01	1.8200E+01	-2.1077E+01	1.4000E+01	-1.8827E+01	1.4000E+01	-5.3023E+00	1.1200E+01
1.6800E+01	-2.4508E+01	1.8200E+01	-2.3789E+01	1.6800E+01	-2.3030E+01	1.8200E+01	-2.1141E+01	1.4000E+01	-1.8898E+01	1.4000E+01	-5.5047E+00	1.1200E+01
1.6800E+01	-2.4563E+01	1.8200E+01	-2.3846E+01	1.6800E+01	-2.3089E+01	1.8200E+01	-2.1204E+01	1.4000E+01	-1.8969E+01	1.4000E+01	-5.7024E+00	1.1200E+01
1.6800E+01	-2.4617E+01	1.8200E+01	-2.3902E+01	1.6800E+01	-2.3147E+01	1.8200E+01	-2.1267E+01	1.4000E+01	-1.9039E+01	1.4000E+01	-5.8957E+00	1.1200E+01
1.6800E+01	-2.4672E+01	1.8200E+01	-2.3958E+01	1.6800E+01	-2.3205E+01	1.8200E+01	-2.1330E+01	1.4000E+01	-1.9110E+01	1.4000E+01	-6.0849E+00	1.1200E+01
1.6800E+01	-2.4727E+01	1.8200E+01	-2.4015E+01	1.6800E+01	-2.3263E+01	1.8200E+01	-2.1393E+01	1.4000E+01	-1.9180E+01	1.4000E+01	-6.2702E+00	1.1200E+01
1.6800E+01	-2.4781E+01	1.8200E+01	-2.4070E+01	1.6800E+01	-2.3320E+01	1.8200E+01	-2.1456E+01	1.4000E+01	-1.9249E+01	1.4000E+01	-6.4518E+00	1.1200E+01
1.6800E+01	-2.4835E+01	1.8200E+01	-2.4126E+01	1.6800E+01	-2.3378E+01	1.8200E+01	-2.1518E+01	1.4000E+01	-1.9319E+01	1.4000E+01	-6.6298E+00	1.1200E+01
1.6800E+01	-2.4889E+01	1.8200E+01	-2.4182E+01	1.6800E+01	-2.3435E+01	1.8200E+01	-2.1581E+01	1.4000E+01	-1.9388E+01	1.4000E+01	-6.8046E+00	1.1200E+01
1.6800E+01	-2.4943E+01	1.8200E+01	-2.4238E+01	1.6800E+01	-2.3493E+01	1.8200E+01	-2.1643E+01	1.4000E+01	-1.9457E+01	1.4000E+01	-6.9761E+00	1.1200E+01
1.6800E+01	-2.4997E+01	1.8200E+01	-2.4293E+01	1.6800E+01	-2.3550E+01	1.8200E+01	-2.1705E+01	1.4000E+01	-1.9526E+01	1.4000E+01	-7.1446E+00	1.1200E+01
1.6800E+01	-2.5051E+01	1.8200E+01	-2.4348E+01	1.6800E+01	-2.3607E+01	1.8200E+01	-2.1766E+01	1.4000E+01	-1.9594E+01	1.4000E+01	-7.3102E+00	1.1200E+01
1.6800E+01	-2.5105E+01	1.8200E+01	-2.4403E+01	1.6800E+01	-2.3664E+01	1.8200E+01	-2.1828E+01	1.4000E+01	-1.9662E+01	1.4000E+01	-7.4730E+00	1.1200E+01
1.6800E+01	-2.5158E+01	1.8200E+01	-2.4458E+01	1.6800E+01	-2.3720E+01	1.8200E+01	-2.1889E+01	1.4000E+01	-1.9730E+01	1.4000E+01	-7.6332E+00	1.1200E+01
1.6800E+01	-2.5212E+01	1.8200E+01	-2.4513E+01	1.6800E+01	-2.3777E+01	1.8200E+01	-2.1951E+01	1.4000E+01	-1.9798E+01	1.4000E+01	-7.7908E+00	1.1200E+01
1.6800E+01	-2.5265E+01	1.8200E+01	-2.4568E+01	1.6800E+01	-2.3834E+01	1.8200E+01	-2.2012E+01	1.4000E+01	-1.9866E+01	1.4000E+01	-7.9460E+00	1.1200E+01
1.6800E+01	-2.5318E+01	1.8200E+01	-2.4623E+01	1.6800E+01	-2.3890E+01	1.8200E+01	-2.2073E+01	1.4000E+01	-1.9933E+01	1.4000E+01	-8.0989E+00	1.1200E+01
1.6800E+01	-2.5371E+01	1.8200E+01	-2.4678E+01	1.6800E+01	-2.3946E+01	1.8200E+01	-2.2134E+01	1.4000E+01	-2.0000E+01	1.4000E+01	-8.2495E+00	1.1200E+01
1.6800E+01	-2.5424E+01	1.8200E+01	-2.4732E+01	1.6800E+01	-2.4002E+01	1.8200E+01	-2.2194E+01	1.4000E+01	-2.0067E+01	1.4000E+01	-8.3980E+00	1.1200E+01
1.6800E+01	-2.5477E+01	1.8200E+01	-2.4786E+01	1.6800E+01	-2.4058E+01	1.8200E+01	-2.2255E+01	1.4000E+01	-2.0134E+01	1.4000E+01	-8.5444E+00	1.1200E+01
1.6800E+01	-2.5530E+01	1.8200E+01	-2.4841E+01	1.6800E+01	-2.4114E+01	1.8200E+01	-2.2315E+01	1.4000E+01	-2.0200E+01	1.4000E+01	-8.6889E+00	1.1200E+01
1.6800E+01	-2.5582E+01	1.8200E+01	-2.4895E+01	1.6800E+01	-2.4170E+01	1.8200E+01	-2.2375E+01	1.4000E+01	-2.0267E+01	1.4000E+01	-8.8314E+00	1.1200E+01
1.6800E+01	-2.5635E+01	1.8200E+01	-2.4949E+01	1.6800E+01	-2.4225E+01	1.8200E+01	-2.2435E+01	1.4000E+01	-2.0333E+01	1.4000E+01	-8.9720E+00	1.1200E+01
1.6800E+01	-2.5687E+01	1.8200E+01	-2.5003E+01	1.6800E+01	-2.4281E+01	1.8200E+01	-2.2495E+01	1.4000E+01	-2.0398E+01	1.4000E+01	-9.1109E+00	1.1200E+01
1.6800E+01	-2.5740E+01	1.8200E+01	-2.5056E+01	1.6800E+01	-2.4336E+01	1.8200E+01	-2.2554E+01	1.4000E+01	-2.0464E+01	1.4000E+01	-9.2480E+00	1.1200E+01
1.6800E+01	-2.5792E+01	1.8200E+01	-2.5110E+01	1.6800E+01	-2.4391E+01	1.8200E+01	-2.2614E+01	1.4000E+01	-2.0530E+01	1.4000E+01	-9.3834E+00	1.1200E+01
1.6800E+01	-2.5844E+01	1.8200E+01	-2.5163E+01	1.6800E+01	-2.4446E+01	1.8200E+01	-2.2673E+01	1.4000E+01	-2.0595E+01	1.4000E+01	-9.5173E+00	1.1200E+01

Curve 13	Arg 14	Curve 14	Arg 15	Curve 15	Arg 16	Curve 16	Arg 17	Curve 17	Arg 18	Curve 18	Arg 19	Curve 19
1.6800E+01	-2.5896E+01	1.8200E+01	-2.5217E+01	1.6800E+01	-2.4501E+01	1.8200E+01	-2.2732E+01	1.4000E+01	-2.0660E+01	1.4000E+01	-9.6495E+00	1.1200E+01
1.6800E+01	-2.5948E+01	1.8200E+01	-2.5270E+01	1.6800E+01	-2.4556E+01	1.8200E+01	-2.2791E+01	1.4000E+01	-2.0725E+01	1.4000E+01	-9.7803E+00	1.1200E+01
1.6800E+01	-2.6000E+01	1.8200E+01	-2.5323E+01	1.6800E+01	-2.4611E+01	1.8200E+01	-2.2850E+01	1.4000E+01	-2.0789E+01	1.4000E+01	-9.9096E+00	1.1200E+01
1.6800E+01	-2.6052E+01	1.8200E+01	-2.5376E+01	1.6800E+01	-2.4666E+01	1.8200E+01	-2.2909E+01	1.4000E+01	-2.0854E+01	1.4000E+01	-1.0037E+01	1.1200E+01
1.6800E+01	-2.6103E+01	1.8200E+01	-2.5429E+01	1.6800E+01	-2.4720E+01	1.8200E+01	-2.2968E+01	1.4000E+01	-2.0918E+01	1.4000E+01	-1.0164E+01	1.1200E+01
1.6800E+01	-2.6155E+01	1.8200E+01	-2.5482E+01	1.6800E+01	-2.4774E+01	1.8200E+01	-2.3026E+01	1.4000E+01	-2.0982E+01	1.4000E+01	-1.0289E+01	1.1200E+01
1.6800E+01	-2.6206E+01	1.8200E+01	-2.5535E+01	1.6800E+01	-2.4829E+01	1.8200E+01	-2.3084E+01	1.4000E+01	-2.1046E+01	1.4000E+01	-1.0413E+01	1.1200E+01
1.6800E+01	-2.6258E+01	1.8200E+01	-2.5588E+01	1.6800E+01	-2.4883E+01	1.8200E+01	-2.3143E+01	1.4000E+01	-2.1110E+01	1.4000E+01	-1.0535E+01	1.1200E+01
1.6800E+01	-2.6309E+01	1.8200E+01	-2.5640E+01	1.6800E+01	-2.4937E+01	1.8200E+01	-2.3201E+01	1.4000E+01	-2.1173E+01	1.4000E+01	-1.0657E+01	1.1200E+01
1.6800E+01	-2.6360E+01	1.8200E+01	-2.5693E+01	1.6800E+01	-2.4991E+01	1.8200E+01	-2.3258E+01	1.4000E+01	-2.1236E+01	1.4000E+01	-1.0777E+01	1.1200E+01
1.6800E+01	-2.6411E+01	1.8200E+01	-2.5745E+01	1.6800E+01	-2.5044E+01	1.8200E+01	-2.3316E+01	1.4000E+01	-2.1299E+01	1.4000E+01	-1.0896E+01	1.1200E+01
1.6800E+01	-2.6462E+01	1.8200E+01	-2.5797E+01	1.6800E+01	-2.5098E+01	1.8200E+01	-2.3374E+01	1.4000E+01	-2.1362E+01	1.4000E+01	-1.1014E+01	1.1200E+01
1.6800E+01	-2.6513E+01	1.8200E+01	-2.5849E+01	1.6800E+01	-2.5152E+01	1.8200E+01	-2.3431E+01	1.4000E+01	-2.1425E+01	1.4000E+01	-1.1131E+01	1.1200E+01
1.6800E+01	-2.6563E+01	1.8200E+01	-2.5901E+01	1.6800E+01	-2.5205E+01	1.8200E+01	-2.3489E+01	1.4000E+01	-2.1488E+01	1.4000E+01	-1.1246E+01	1.1200E+01
1.6800E+01	-2.6614E+01	1.8200E+01	-2.5953E+01	1.6800E+01	-2.5258E+01	1.8200E+01	-2.3546E+01	1.4000E+01	-2.1550E+01	1.4000E+01	-1.1361E+01	1.1200E+01
1.6800E+01	-2.6665E+01	1.8200E+01	-2.6005E+01	1.6800E+01	-2.5312E+01	1.8200E+01	-2.3603E+01	1.4000E+01	-2.1612E+01	1.4000E+01	-1.1475E+01	1.1200E+01
1.6800E+01	-2.6715E+01	1.8200E+01	-2.6057E+01	1.6800E+01	-2.5365E+01	1.8200E+01	-2.3660E+01	1.4000E+01	-2.1674E+01	1.4000E+01	-1.1587E+01	1.1200E+01
1.6800E+01	-2.6765E+01	1.8200E+01	-2.6109E+01	1.6800E+01	-2.5418E+01	1.8200E+01	-2.3716E+01	1.4000E+01	-2.1736E+01	1.4000E+01	-1.1699E+01	1.1200E+01
1.6800E+01	-2.6816E+01	1.8200E+01	-2.6160E+01	1.6800E+01	-2.5471E+01	1.8200E+01	-2.3773E+01	1.4000E+01	-2.1798E+01	1.4000E+01	-1.1810E+01	1.1200E+01
1.6800E+01	-2.6866E+01	1.8200E+01	-2.6211E+01	1.6800E+01	-2.5523E+01	1.8200E+01	-2.3830E+01	1.4000E+01	-2.1859E+01	1.4000E+01	-1.1919E+01	1.1200E+01
1.6800E+01	-2.6916E+01	1.8200E+01	-2.6263E+01	1.6800E+01	-2.5576E+01	1.8200E+01	-2.3886E+01	1.4000E+01	-2.1921E+01	1.4000E+01	-1.2028E+01	1.1200E+01
1.6800E+01	-2.6966E+01	1.8200E+01	-2.6314E+01	1.6800E+01	-2.5629E+01	1.8200E+01	-2.3942E+01	1.4000E+01	-2.1982E+01	1.4000E+01	-1.2136E+01	1.1200E+01
1.6800E+01	-2.7016E+01	1.8200E+01	-2.6365E+01	1.6800E+01	-2.5681E+01	1.8200E+01	-2.3998E+01	1.4000E+01	-2.2043E+01	1.4000E+01	-1.2243E+01	1.1200E+01
1.6800E+01	-2.7066E+01	1.8200E+01	-2.6416E+01	1.6800E+01	-2.5734E+01	1.8200E+01	-2.4054E+01	1.4000E+01	-2.2104E+01	1.4000E+01	-1.2350E+01	1.1200E+01
1.6800E+01	-2.7115E+01	1.8200E+01	-2.6467E+01	1.6800E+01	-2.5786E+01	1.8200E+01	-2.4110E+01	1.4000E+01	-2.2164E+01	1.4000E+01	-1.2455E+01	1.1200E+01
1.6800E+01	-2.7165E+01	1.8200E+01	-2.6518E+01	1.6800E+01	-2.5838E+01	1.8200E+01	-2.4166E+01	1.4000E+01	-2.2225E+01	1.4000E+01	-1.2560E+01	1.1200E+01
1.6800E+01	-2.7215E+01	1.8200E+01	-2.6569E+01	1.6800E+01	-2.5890E+01	1.8200E+01	-2.4221E+01	1.4000E+01	-2.2285E+01	1.4000E+01	-1.2664E+01	1.1200E+01
1.6800E+01	-2.7264E+01	1.8200E+01	-2.6619E+01	1.6800E+01	-2.5942E+01	1.8200E+01	-2.4277E+01	1.4000E+01	-2.2346E+01	1.4000E+01	-1.2767E+01	1.1200E+01
1.6800E+01	-2.7313E+01	1.8200E+01	-2.6670E+01	1.6800E+01	-2.5994E+01	1.8200E+01	-2.4332E+01	1.4000E+01	-2.2406E+01	1.4000E+01	-1.2869E+01	1.1200E+01
1.6800E+01	-2.7363E+01	1.8200E+01	-2.6720E+01	1.6800E+01	-2.6046E+01	1.8200E+01	-2.4387E+01	1.4000E+01	-2.2465E+01	1.4000E+01	-1.2971E+01	1.1200E+01
1.6800E+01	-2.7412E+01	1.8200E+01	-2.6770E+01	1.6800E+01	-2.6097E+01	1.8200E+01	-2.4443E+01	1.4000E+01	-2.2525E+01	1.4000E+01	-1.3071E+01	1.1200E+01
1.6800E+01	-2.7461E+01	1.8200E+01	-2.6821E+01	1.6800E+01	-2.6149E+01	1.8200E+01	-2.4498E+01	1.4000E+01	-2.2585E+01	1.4000E+01	-1.3172E+01	1.1200E+01
1.6800E+01	-2.7510E+01	1.8200E+01	-2.6871E+01	1.6800E+01	-2.6200E+01	1.8200E+01	-2.4552E+01	1.4000E+01	-2.2644E+01	1.4000E+01	-1.3271E+01	1.1200E+01
1.6800E+01	-2.7559E+01	1.8200E+01	-2.6921E+01	1.6800E+01	-2.6251E+01	1.8200E+01	-2.4607E+01	1.4000E+01	-2.2703E+01	1.4000E+01	-1.3370E+01	1.1200E+01
1.6800E+01	-2.7608E+01	1.8200E+01	-2.6971E+01	1.6800E+01	-2.6303E+01	1.8200E+01	-2.4662E+01	1.4000E+01	-2.2763E+01	1.4000E+01	-1.3468E+01	1.1200E+01
1.6800E+01	-2.7656E+01	1.8200E+01	-2.7021E+01	1.6800E+01	-2.6354E+01	1.8200E+01	-2.4716E+01	1.4000E+01	-2.2822E+01	1.4000E+01	-1.3565E+01	1.1200E+01
1.6800E+01	-2.7705E+01	1.8200E+01	-2.7071E+01	1.6800E+01	-2.6405E+01	1.8200E+01	-2.4771E+01	1.4000E+01	-2.2880E+01	1.4000E+01	-1.3662E+01	1.1200E+01
1.6800E+01	-2.7754E+01	1.8200E+01	-2.7120E+01	1.6800E+01	-2.6456E+01	1.8200E+01	-2.4825E+01	1.4000E+01	-2.2939E+01	1.4000E+01	-1.3758E+01	1.1200E+01
1.6800E+01	-2.7802E+01	1.8200E+01	-2.7170E+01	1.6800E+01	-2.6507E+01	1.8200E+01	-2.4879E+01	1.4000E+01	-2.2998E+01	1.4000E+01	-1.3854E+01	1.1200E+01
1.6800E+01	-2.7850E+01	1.8200E+01	-2.7219E+01	1.6800E+01	-2.6557E+01	1.8200E+01	-2.4933E+01	1.4000E+01	-2.3056E+01	1.4000E+01	-1.3949E+01	1.1200E+01
1.6800E+01	-2.7899E+01	1.8200E+01	-2.7269E+01	1.6800E+01	-2.6608E+01	1.8200E+01	-2.4987E+01	1.4000E+01	-2.3114E+01	1.4000E+01	-1.4043E+01	1.1200E+01
1.6800E+01	-2.7947E+01	1.8200E+01	-2.7318E+01	1.6800E+01	-2.6659E+01	1.8200E+01	-2.5041E+01	1.4000E+01	-2.3172E+01	1.4000E+01	-1.4137E+01	1.1200E+01
1.6800E+01	-2.7995E+01	1.8200E+01	-2.7367E+01	1.6800E+01	-2.6709E+01	1.8200E+01	-2.5094E+01	1.4000E+01	-2.3230E+01	1.4000E+01	-1.4230E+01	1.1200E+01
1.6800E+01	-2.8043E+01	1.8200E+01	-2.7417E+01	1.6800E+01	-2.6759E+01	1.8200E+01	-2.5148E+01	1.4000E+01	-2.3288E+01	1.4000E+01	-1.4323E+01	1.1200E+01
1.6800E+01	-2.8091E+01	1.8200E+01	-2.7466E+01	1.6800E+01	-2.6810E+01	1.8200E+01	-2.5201E+01	1.4000E+01	-2.3346E+01	1.4000E+01	-1.4415E+01	1.1200E+01
1.6800E+01	-2.8139E+01	1.8200E+01	-2.7515E+01	1.6800E+01	-2.6860E+01	1.8200E+01	-2.5255E+01	1.4000E+01	-2.3403E+01	1.4000E+01	-1.4506E+01	1.1200E+01
1.6800E+01	-2.8187E+01	1.8200E+01	-2.7564E+01	1.6800E+01	-2.6910E+01	1.8200E+01	-2.5308E+01	1.4000E+01	-2.3461E+01	1.4000E+01	-1.4597E+01	1.1200E+01
1.6800E+01	-2.8235E+01	1.8200E+01	-2.7612E+01	1.6800E+01	-2.6960E+01	1.8200E+01	-2.5361E+01	1.4000E+01	-2.3518E+01	1.4000E+01	-1.4688E+01	1.1200E+01
1.6800E+01	-2.8282E+01	1.8200E+01	-2.7661E+01	1.6800E+01	-2.7010E+01	1.8200E+01	-2.5414E+01	1.4000E+01	-2.3575E+01	1.4000E+01	-1.4777E+01	1.1200E+01
1.6800E+01	-2.8330E+01	1.8200E+01	-2.7710E+01	1.6800E+01	-2.7060E+01	1.8200E+01	-2.5467E+01	1.4000E+01	-2.3632E+01	1.4000E+01	-1.4867E+01	1.1200E+01
1.6800E+01	-2.8378E+01	1.8200E+01	-2.7758E+01	1.6800E+01	-2.7109E+01	1.8200E+01	-2.5520E+01	1.4000E+01	-2.3689E+01	1.4000E+01	-1.4956E+01	1.1200E+01
1.6800E+01	-2.8425E+01	1.8200E+01	-2.7807E+01	1.6800E+01	-2.7159E+01	1.8200E+01	-2.5572E+01	1.4000E+01	-2.3745E+01	1.4000E+01	-1.5044E+01	1.1200E+01

Curve 13	Arg 14	Curve 14	Arg 15	Curve 15	Arg 16	Curve 16	Arg 17	Curve 17	Arg 18	Curve 18	Arg 19	Curve 19
1.6800E+01	-2.8472E+01	1.8200E+01	-2.7855E+01	1.6800E+01	-2.7209E+01	1.8200E+01	-2.5625E+01	1.4000E+01	-2.3802E+01	1.4000E+01	-1.5132E+01	1.1200E+01
1.6800E+01	-2.8520E+01	1.8200E+01	-2.7904E+01	1.6800E+01	-2.7258E+01	1.8200E+01	-2.5678E+01	1.4000E+01	-2.3858E+01	1.4000E+01	-1.5219E+01	1.1200E+01
1.6800E+01	-2.8567E+01	1.8200E+01	-2.7952E+01	1.6800E+01	-2.7307E+01	1.8200E+01	-2.5730E+01	1.4000E+01	-2.3915E+01	1.4000E+01	-1.5306E+01	1.1200E+01
1.6800E+01	-2.8614E+01	1.8200E+01	-2.8000E+01	1.6800E+01	-2.7357E+01	1.8200E+01	-2.5782E+01	1.4000E+01	-2.3971E+01	1.4000E+01	-1.5393E+01	1.1200E+01
1.6800E+01	-2.8661E+01	1.8200E+01	-2.8048E+01	1.6800E+01	-2.7406E+01	1.8200E+01	-2.5834E+01	1.4000E+01	-2.4027E+01	1.4000E+01	-1.5479E+01	1.1200E+01
1.6800E+01	-2.8708E+01	1.8200E+01	-2.8096E+01	1.6800E+01	-2.7455E+01	1.8200E+01	-2.5886E+01	1.4000E+01	-2.4083E+01	1.4000E+01	-1.5565E+01	1.1200E+01
1.6800E+01	-2.8755E+01	1.8200E+01	-2.8144E+01	1.6800E+01	-2.7504E+01	1.8200E+01	-2.5938E+01	1.4000E+01	-2.4139E+01	1.4000E+01	-1.5650E+01	1.1200E+01
1.6800E+01	-2.8802E+01	1.8200E+01	-2.8192E+01	1.6800E+01	-2.7553E+01	1.8200E+01	-2.5990E+01	1.4000E+01	-2.4194E+01	1.4000E+01	-1.5734E+01	1.1200E+01
1.6800E+01	-2.8848E+01	1.8200E+01	-2.8240E+01	1.6800E+01	-2.7602E+01	1.8200E+01	-2.6042E+01	1.4000E+01	-2.4250E+01	1.4000E+01	-1.5819E+01	1.1200E+01
1.6800E+01	-2.8895E+01	1.8200E+01	-2.8287E+01	1.6800E+01	-2.7650E+01	1.8200E+01	-2.6094E+01	1.4000E+01	-2.4305E+01	1.4000E+01	-1.5902E+01	1.1200E+01
1.6800E+01	-2.8942E+01	1.8200E+01	-2.8335E+01	1.6800E+01	-2.7699E+01	1.8200E+01	-2.6145E+01	1.4000E+01	-2.4360E+01	1.4000E+01	-1.5986E+01	1.1200E+01
1.6800E+01	-2.8988E+01	1.8200E+01	-2.8382E+01	1.6800E+01	-2.7748E+01	1.8200E+01	-2.6197E+01	1.4000E+01	-2.4416E+01	1.4000E+01	-1.6069E+01	1.1200E+01
1.6800E+01	-2.9035E+01	1.8200E+01	-2.8430E+01	1.6800E+01	-2.7796E+01	1.8200E+01	-2.6248E+01	1.4000E+01	-2.4471E+01	1.4000E+01	-1.6151E+01	1.1200E+01
1.6800E+01	-2.9081E+01	1.8200E+01	-2.8477E+01	1.6800E+01	-2.7845E+01	1.8200E+01	-2.6299E+01	1.4000E+01	-2.4526E+01	1.4000E+01	-1.6234E+01	1.1200E+01
1.6800E+01	-2.9127E+01	1.8200E+01	-2.8524E+01	1.6800E+01	-2.7893E+01	1.8200E+01	-2.6350E+01	1.4000E+01	-2.4580E+01	1.4000E+01	-1.6315E+01	1.1200E+01
1.6800E+01	-2.9173E+01	1.8200E+01	-2.8572E+01	1.6800E+01	-2.7941E+01	1.8200E+01	-2.6401E+01	1.4000E+01	-2.4635E+01	1.4000E+01	-1.6397E+01	1.1200E+01
1.6800E+01	-2.9220E+01	1.8200E+01	-2.8619E+01	1.6800E+01	-2.7989E+01	1.8200E+01	-2.6452E+01	1.4000E+01	-2.4690E+01	1.4000E+01	-1.6478E+01	1.1200E+01
1.6800E+01	-2.9266E+01	1.8200E+01	-2.8666E+01	1.6800E+01	-2.8037E+01	1.8200E+01	-2.6503E+01	1.4000E+01	-2.4744E+01	1.4000E+01	-1.6559E+01	1.1200E+01
1.6800E+01	-2.9312E+01	1.8200E+01	-2.8713E+01	1.6800E+01	-2.8085E+01	1.8200E+01	-2.6554E+01	1.4000E+01	-2.4798E+01	1.4000E+01	-1.6639E+01	1.1200E+01
1.6800E+01	-2.9358E+01	1.8200E+01	-2.8760E+01	1.6800E+01	-2.8133E+01	1.8200E+01	-2.6605E+01	1.4000E+01	-2.4852E+01	1.4000E+01	-1.6719E+01	1.1200E+01
1.6800E+01	-2.9404E+01	1.8200E+01	-2.8806E+01	1.6800E+01	-2.8181E+01	1.8200E+01	-2.6655E+01	1.4000E+01	-2.4907E+01	1.4000E+01	-1.6798E+01	1.1200E+01
1.6800E+01	-2.9449E+01	1.8200E+01	-2.8853E+01	1.6800E+01	-2.8229E+01	1.8200E+01	-2.6706E+01	1.4000E+01	-2.4961E+01	1.4000E+01	-1.6877E+01	1.1200E+01
1.6800E+01	-2.9495E+01	1.8200E+01	-2.8900E+01	1.6800E+01	-2.8277E+01	1.8200E+01	-2.6756E+01	1.4000E+01	-2.5014E+01	1.4000E+01	-1.6956E+01	1.1200E+01
1.6800E+01	-2.9541E+01	1.8200E+01	-2.8946E+01	1.6800E+01	-2.8324E+01	1.8200E+01	-2.6806E+01	1.4000E+01	-2.5068E+01	1.4000E+01	-1.7035E+01	1.1200E+01
1.6800E+01	-2.9586E+01	1.8200E+01	-2.8993E+01	1.6800E+01	-2.8372E+01	1.8200E+01	-2.6856E+01	1.4000E+01	-2.5122E+01	1.4000E+01	-1.7113E+01	1.1200E+01
1.6800E+01	-2.9632E+01	1.8200E+01	-2.9039E+01	1.6800E+01	-2.8419E+01	1.8200E+01	-2.6906E+01	1.4000E+01	-2.5175E+01	1.4000E+01	-1.7191E+01	1.1200E+01
1.6800E+01	-2.9677E+01	1.8200E+01	-2.9086E+01	1.6800E+01	-2.8467E+01	1.8200E+01	-2.6956E+01	1.4000E+01	-2.5229E+01	1.4000E+01	-1.7268E+01	1.1200E+01
1.6800E+01	-2.9723E+01	1.8200E+01	-2.9132E+01	1.6800E+01	-2.8514E+01	1.8200E+01	-2.7006E+01	1.4000E+01	-2.5282E+01	1.4000E+01	-1.7345E+01	1.1200E+01
1.6800E+01	-2.9768E+01	1.8200E+01	-2.9178E+01	1.6800E+01	-2.8561E+01	1.8200E+01	-2.7056E+01	1.4000E+01	-2.5335E+01	1.4000E+01	-1.7422E+01	1.1200E+01
1.6800E+01	-2.9813E+01	1.8200E+01	-2.9224E+01	1.6800E+01	-2.8608E+01	1.8200E+01	-2.7106E+01	1.4000E+01	-2.5388E+01	1.4000E+01	-1.7498E+01	1.1200E+01
1.6800E+01	-2.9858E+01	1.8200E+01	-2.9270E+01	1.6800E+01	-2.8655E+01	1.8200E+01	-2.7156E+01	1.4000E+01	-2.5441E+01	1.4000E+01	-1.7575E+01	1.1200E+01
1.6800E+01	-2.9903E+01	1.8200E+01	-2.9316E+01	1.6800E+01	-2.8702E+01	1.8200E+01	-2.7205E+01	1.4000E+01	-2.5494E+01	1.4000E+01	-1.7650E+01	1.1200E+01
1.6800E+01	-2.9948E+01	1.8200E+01	-2.9362E+01	1.6800E+01	-2.8749E+01	1.8200E+01	-2.7255E+01	1.4000E+01	-2.5547E+01	1.4000E+01	-1.7726E+01	1.1200E+01
1.6800E+01	-2.9993E+01	1.8200E+01	-2.9408E+01	1.6800E+01	-2.8796E+01	1.8200E+01	-2.7304E+01	1.4000E+01	-2.5599E+01	1.4000E+01	-1.7801E+01	1.1200E+01
1.6800E+01	-3.0038E+01	1.8200E+01	-2.9454E+01	1.6800E+01	-2.8843E+01	1.8200E+01	-2.7353E+01	1.4000E+01	-2.5652E+01	1.4000E+01	-1.7876E+01	1.1200E+01
1.6800E+01	-3.0083E+01	1.8200E+01	-2.9500E+01	1.6800E+01	-2.8889E+01	1.8200E+01	-2.7402E+01	1.4000E+01	-2.5704E+01	1.4000E+01	-1.7951E+01	1.1200E+01
1.6800E+01	-3.0128E+01	1.8200E+01	-2.9545E+01	1.6800E+01	-2.8936E+01	1.8200E+01	-2.7452E+01	1.4000E+01	-2.5757E+01	1.4000E+01	-1.8025E+01	1.1200E+01
1.6800E+01	-3.0173E+01	1.8200E+01	-2.9591E+01	1.6800E+01	-2.8983E+01	1.8200E+01	-2.7501E+01	1.4000E+01	-2.5809E+01	1.4000E+01	-1.8099E+01	1.1200E+01
1.6800E+01	-3.0217E+01	1.8200E+01	-2.9636E+01	1.6800E+01	-2.9029E+01	1.8200E+01	-2.7549E+01	1.4000E+01	-2.5861E+01	1.4000E+01	-1.8173E+01	1.1200E+01
1.6800E+01	-3.0262E+01	1.8200E+01	-2.9682E+01	1.6800E+01	-2.9075E+01	1.8200E+01	-2.7598E+01	1.4000E+01	-2.5913E+01	1.4000E+01	-1.8246E+01	1.1200E+01
1.6800E+01	-3.0306E+01	1.8200E+01	-2.9727E+01	1.6800E+01	-2.9122E+01	1.8200E+01	-2.7647E+01	1.4000E+01	-2.5965E+01	1.4000E+01	-1.8319E+01	1.1200E+01
1.6800E+01	-3.0351E+01	1.8200E+01	-2.9772E+01	1.6800E+01	-2.9168E+01	1.8200E+01	-2.7696E+01	1.4000E+01	-2.6017E+01	1.4000E+01	-1.8392E+01	1.1200E+01
1.6800E+01	-3.0395E+01	1.8200E+01	-2.9818E+01	1.6800E+01	-2.9214E+01	1.8200E+01	-2.7744E+01	1.4000E+01	-2.6068E+01	1.4000E+01	-1.8465E+01	1.1200E+01
1.6800E+01	-3.0439E+01	1.8200E+01	-2.9863E+01	1.6800E+01	-2.9260E+01	1.8200E+01	-2.7793E+01	1.4000E+01	-2.6120E+01	1.4000E+01	-1.8537E+01	1.1200E+01
1.6800E+01	-3.0484E+01	1.8200E+01	-2.9908E+01	1.6800E+01	-2.9306E+01	1.8200E+01	-2.7841E+01	1.4000E+01	-2.6171E+01	1.4000E+01	-1.8609E+01	1.1200E+01
1.6800E+01	-3.0528E+01	1.8200E+01	-2.9953E+01	1.6800E+01	-2.9352E+01	1.8200E+01	-2.7890E+01	1.4000E+01	-2.6223E+01	1.4000E+01	-1.8681E+01	1.1200E+01
1.6800E+01	-3.0572E+01	1.8200E+01	-2.9998E+01	1.6800E+01	-2.9398E+01	1.8200E+01	-2.7938E+01	1.4000E+01	-2.6274E+01	1.4000E+01	-1.8752E+01	1.1200E+01
1.6800E+01	-3.0616E+01	1.8200E+01	-3.0043E+01	1.6800E+01	-2.9444E+01	1.8200E+01	-2.7986E+01	1.4000E+01	-2.6325E+01	1.4000E+01	-1.8823E+01	1.1200E+01
1.6800E+01	-3.0660E+01	1.8200E+01	-3.0088E+01	1.6800E+01	-2.9490E+01	1.8200E+01	-2.8034E+01	1.4000E+01	-2.6376E+01	1.4000E+01	-1.8894E+01	1.1200E+01
1.6800E+01	-3.0704E+01	1.8200E+01	-3.0132E+01	1.6800E+01	-2.9535E+01	1.8200E+01	-2.8082E+01	1.4000E+01	-2.6427E+01	1.4000E+01	-1.8965E+01	1.1200E+01
1.6800E+01	-3.0748E+01	1.8200E+01	-3.0177E+01	1.6800E+01	-2.9581E+01	1.8200E+01	-2.8130E+01	1.4000E+01	-2.6478E+01	1.4000E+01	-1.9036E+01	1.1200E+01
1.6800E+01	-3.0792E+01	1.8200E+01	-3.0222E+01	1.6800E+01	-2.9626E+01	1.8200E+01	-2.8178E+01	1.4000E+01	-2.6529E+01	1.4000E+01	-1.9106E+01	1.1200E+01

Curve 13	Arg 14	Curve 14	Arg 15	Curve 15	Arg 16	Curve 16	Arg 17	Curve 17	Arg 18	Curve 18	Arg 19	Curve 19
1.6800E+01	-3.0835E+01	1.8200E+01	-3.0266E+01	1.6800E+01	-2.9672E+01	1.8200E+01	-2.8226E+01	1.4000E+01	-2.6580E+01	1.4000E+01	-1.9176E+01	1.1200E+01
1.6800E+01	-3.0879E+01	1.8200E+01	-3.0311E+01	1.6800E+01	-2.9717E+01	1.8200E+01	-2.8273E+01	1.4000E+01	-2.6630E+01	1.4000E+01	-1.9245E+01	1.1200E+01
1.6800E+01	-3.0923E+01	1.8200E+01	-3.0355E+01	1.6800E+01	-2.9762E+01	1.8200E+01	-2.8321E+01	1.4000E+01	-2.6681E+01	1.4000E+01	-1.9315E+01	1.1200E+01
1.6800E+01	-3.0966E+01	1.8200E+01	-3.0400E+01	1.6800E+01	-2.9808E+01	1.8200E+01	-2.8368E+01	1.4000E+01	-2.6731E+01	1.4000E+01	-1.9384E+01	1.1200E+01
1.6800E+01	-3.1010E+01	1.8200E+01	-3.0444E+01	1.6800E+01	-2.9853E+01	1.8200E+01	-2.8416E+01	1.4000E+01	-2.6782E+01	1.4000E+01	-1.9453E+01	1.1200E+01
1.6800E+01	-3.1053E+01	1.8200E+01	-3.0488E+01	1.6800E+01	-2.9898E+01	1.8200E+01	-2.8463E+01	1.4000E+01	-2.6832E+01	1.4000E+01	-1.9522E+01	1.1200E+01
1.6800E+01	-3.1097E+01	1.8200E+01	-3.0532E+01	1.6800E+01	-2.9943E+01	1.8200E+01	-2.8511E+01	1.4000E+01	-2.6882E+01	1.4000E+01	-1.9590E+01	1.1200E+01
1.6800E+01	-3.1140E+01	1.8200E+01	-3.0576E+01	1.6800E+01	-2.9988E+01	1.8200E+01	-2.8558E+01	1.4000E+01	-2.6932E+01	1.4000E+01	-1.9659E+01	1.1200E+01
1.6800E+01	-3.1183E+01	1.8200E+01	-3.0620E+01	1.6800E+01	-3.0033E+01	1.8200E+01	-2.8605E+01	1.4000E+01	-2.6982E+01	1.4000E+01	-1.9727E+01	1.1200E+01
1.6800E+01	-3.1226E+01	1.8200E+01	-3.0664E+01	1.6800E+01	-3.0078E+01	1.8200E+01	-2.8652E+01	1.4000E+01	-2.7032E+01	1.4000E+01	-1.9794E+01	1.1200E+01
1.6800E+01	-3.1269E+01	1.8200E+01	-3.0708E+01	1.6800E+01	-3.0123E+01	1.8200E+01	-2.8699E+01	1.4000E+01	-2.7082E+01	1.4000E+01	-1.9862E+01	1.1200E+01
1.6800E+01	-3.1313E+01	1.8200E+01	-3.0752E+01	1.6800E+01	-3.0167E+01	1.8200E+01	-2.8746E+01	1.4000E+01	-2.7131E+01	1.4000E+01	-1.9929E+01	1.1200E+01
1.6800E+01	-3.1356E+01	1.8200E+01	-3.0796E+01	1.6800E+01	-3.0212E+01	1.8200E+01	-2.8793E+01	1.4000E+01	-2.7181E+01	1.4000E+01	-1.9997E+01	1.1200E+01
1.6800E+01	-3.1399E+01	1.8200E+01	-3.0840E+01	1.6800E+01	-3.0256E+01	1.8200E+01	-2.8840E+01	1.4000E+01	-2.7230E+01	1.4000E+01	-2.0063E+01	1.1200E+01
1.6800E+01	-3.1441E+01	1.8200E+01	-3.0883E+01	1.6800E+01	-3.0301E+01	1.8200E+01	-2.8886E+01	1.4000E+01	-2.7280E+01	1.4000E+01	-2.0130E+01	1.1200E+01
1.6800E+01	-3.1484E+01	1.8200E+01	-3.0927E+01	1.6800E+01	-3.0345E+01	1.8200E+01	-2.8933E+01	1.4000E+01	-2.7329E+01	1.4000E+01	-2.0197E+01	1.1200E+01
1.6800E+01	-3.1527E+01	1.8200E+01	-3.0971E+01	1.6800E+01	-3.0390E+01	1.8200E+01	-2.8979E+01	1.4000E+01	-2.7378E+01	1.4000E+01	-2.0263E+01	1.1200E+01
1.6800E+01	-3.1570E+01	1.8200E+01	-3.1014E+01	1.6800E+01	-3.0434E+01	1.8200E+01	-2.9026E+01	1.4000E+01	-2.7427E+01	1.4000E+01	-2.0329E+01	1.1200E+01
1.6800E+01	-3.1612E+01	1.8200E+01	-3.1058E+01	1.6800E+01	-3.0478E+01	1.8200E+01	-2.9072E+01	1.4000E+01	-2.7477E+01	1.4000E+01	-2.0395E+01	1.1200E+01
1.6800E+01	-3.1655E+01	1.8200E+01	-3.1101E+01	1.6800E+01	-3.0523E+01	1.8200E+01	-2.9118E+01	1.4000E+01	-2.7525E+01	1.4000E+01	-2.0461E+01	1.1200E+01
1.6800E+01	-3.1698E+01	1.8200E+01	-3.1144E+01	1.6800E+01	-3.0567E+01	1.8200E+01	-2.9165E+01	1.4000E+01	-2.7574E+01	1.4000E+01	-2.0526E+01	1.1200E+01
1.6800E+01	-3.1740E+01	1.8200E+01	-3.1187E+01	1.6800E+01	-3.0611E+01	1.8200E+01	-2.9211E+01	1.4000E+01	-2.7623E+01	1.4000E+01	-2.0591E+01	1.1200E+01
1.6800E+01	-3.1783E+01	1.8200E+01	-3.1231E+01	1.6800E+01	-3.0655E+01	1.8200E+01	-2.9257E+01	1.4000E+01	-2.7672E+01	1.4000E+01	-2.0656E+01	1.1200E+01
1.6800E+01	-3.1825E+01	1.8200E+01	-3.1274E+01	1.6800E+01	-3.0699E+01	1.8200E+01	-2.9303E+01	1.4000E+01	-2.7721E+01	1.4000E+01	-2.0721E+01	1.1200E+01
1.6800E+01	-3.1867E+01	1.8200E+01	-3.1317E+01	1.6800E+01	-3.0743E+01	1.8200E+01	-2.9349E+01	1.4000E+01	-2.7769E+01	1.4000E+01	-2.0786E+01	1.1200E+01
1.6800E+01	-3.1910E+01	1.8200E+01	-3.1360E+01	1.6800E+01	-3.0786E+01	1.8200E+01	-2.9395E+01	1.4000E+01	-2.7818E+01	1.4000E+01	-2.0850E+01	1.1200E+01
1.6800E+01	-3.1952E+01	1.8200E+01	-3.1403E+01	1.6800E+01	-3.0830E+01	1.8200E+01	-2.9441E+01	1.4000E+01	-2.7866E+01	1.4000E+01	-2.0914E+01	1.1200E+01
1.6800E+01	-3.1994E+01	1.8200E+01	-3.1446E+01	1.6800E+01	-3.0874E+01	1.8200E+01	-2.9486E+01	1.4000E+01	-2.7914E+01	1.4000E+01	-2.0978E+01	1.1200E+01
1.6800E+01	-3.2036E+01	1.8200E+01	-3.1489E+01	1.6800E+01	-3.0917E+01	1.8200E+01	-2.9532E+01	1.4000E+01	-2.7962E+01	1.4000E+01	-2.1042E+01	1.1200E+01
1.6800E+01	-3.2078E+01	1.8200E+01	-3.1531E+01	1.6800E+01	-3.0961E+01	1.8200E+01	-2.9578E+01	1.4000E+01	-2.8011E+01	1.4000E+01	-2.1106E+01	1.1200E+01
1.6800E+01	-3.2120E+01	1.8200E+01	-3.1574E+01	1.6800E+01	-3.1005E+01	1.8200E+01	-2.9623E+01	1.4000E+01	-2.8059E+01	1.4000E+01	-2.1170E+01	1.1200E+01
1.6800E+01	-3.2162E+01	1.8200E+01	-3.1617E+01	1.6800E+01	-3.1048E+01	1.8200E+01	-2.9669E+01	1.4000E+01	-2.8107E+01	1.4000E+01	-2.1233E+01	1.1200E+01
1.6800E+01	-3.2204E+01	1.8200E+01	-3.1659E+01	1.6800E+01	-3.1091E+01	1.8200E+01	-2.9714E+01	1.4000E+01	-2.8154E+01	1.4000E+01	-2.1296E+01	1.1200E+01
1.6800E+01	-3.2246E+01	1.8200E+01	-3.1702E+01	1.6800E+01	-3.1135E+01	1.8200E+01	-2.9759E+01	1.4000E+01	-2.8202E+01	1.4000E+01	-2.1359E+01	1.1200E+01
1.6800E+01	-3.2288E+01	1.8200E+01	-3.1744E+01	1.6800E+01	-3.1178E+01	1.8200E+01	-2.9805E+01	1.4000E+01	-2.8250E+01	1.4000E+01	-2.1422E+01	1.1200E+01
1.6800E+01	-3.2329E+01	1.8200E+01	-3.1787E+01	1.6800E+01	-3.1221E+01	1.8200E+01	-2.9850E+01	1.4000E+01	-2.8298E+01	1.4000E+01	-2.1484E+01	1.1200E+01
1.6800E+01	-3.2371E+01	1.8200E+01	-3.1829E+01	1.6800E+01	-3.1264E+01	1.8200E+01	-2.9895E+01	1.4000E+01	-2.8345E+01	1.4000E+01	-2.1547E+01	1.1200E+01
1.6800E+01	-3.2413E+01	1.8200E+01	-3.1872E+01	1.6800E+01	-3.1307E+01	1.8200E+01	-2.9940E+01	1.4000E+01	-2.8393E+01	1.4000E+01	-2.1609E+01	1.1200E+01
1.6800E+01	-3.2454E+01	1.8200E+01	-3.1914E+01	1.6800E+01	-3.1350E+01	1.8200E+01	-2.9985E+01	1.4000E+01	-2.8440E+01	1.4000E+01	-2.1671E+01	1.1200E+01
1.6800E+01	-3.2496E+01	1.8200E+01	-3.1956E+01	1.6800E+01	-3.1393E+01	1.8200E+01	-3.0030E+01	1.4000E+01	-2.8487E+01	1.4000E+01	-2.1733E+01	1.1200E+01
1.6800E+01	-3.2537E+01	1.8200E+01	-3.1998E+01	1.6800E+01	-3.1436E+01	1.8200E+01	-3.0075E+01	1.4000E+01	-2.8535E+01	1.4000E+01	-2.1794E+01	1.1200E+01
1.6800E+01	-3.2579E+01	1.8200E+01	-3.2040E+01	1.6800E+01	-3.1479E+01	1.8200E+01	-3.0119E+01	1.4000E+01	-2.8582E+01	1.4000E+01	-2.1856E+01	1.1200E+01
1.6800E+01	-3.2620E+01	1.8200E+01	-3.2082E+01	1.6800E+01	-3.1522E+01	1.8200E+01	-3.0164E+01	1.4000E+01	-2.8629E+01	1.4000E+01	-2.1917E+01	1.1200E+01
1.6800E+01	-3.2661E+01	1.8200E+01	-3.2124E+01	1.6800E+01	-3.1565E+01	1.8200E+01	-3.0209E+01	1.4000E+01	-2.8676E+01	1.4000E+01	-2.1979E+01	1.1200E+01
1.6800E+01	-3.2703E+01	1.8200E+01	-3.2166E+01	1.6800E+01	-3.1607E+01	1.8200E+01	-3.0253E+01	1.4000E+01	-2.8723E+01	1.4000E+01	-2.2040E+01	1.1200E+01
1.6800E+01	-3.2744E+01	1.8200E+01	-3.2208E+01	1.6800E+01	-3.1650E+01	1.8200E+01	-3.0298E+01	1.4000E+01	-2.8770E+01	1.4000E+01	-2.2100E+01	1.1200E+01
1.6800E+01	-3.2785E+01	1.8200E+01	-3.2250E+01	1.6800E+01	-3.1693E+01	1.8200E+01	-3.0342E+01	1.4000E+01	-2.8817E+01	1.4000E+01	-2.2161E+01	1.1200E+01
1.6800E+01	-3.2826E+01	1.8200E+01	-3.2292E+01	1.6800E+01	-3.1735E+01	1.8200E+01	-3.0387E+01	1.4000E+01	-2.8863E+01	1.4000E+01	-2.2222E+01	1.1200E+01
1.6800E+01	-3.2867E+01	1.8200E+01	-3.2334E+01	1.6800E+01	-3.1778E+01	1.8200E+01	-3.0431E+01	1.4000E+01	-2.8910E+01	1.4000E+01	-2.2282E+01	1.1200E+01
1.6800E+01	-3.2908E+01	1.8200E+01	-3.2375E+01	1.6800E+01	-3.1820E+01	1.8200E+01	-3.0475E+01	1.4000E+01	-2.8957E+01	1.4000E+01	-2.2342E+01	1.1200E+01
1.6800E+01	-3.2949E+01	1.8200E+01	-3.2417E+01	1.6800E+01	-3.1862E+01	1.8200E+01	-3.0519E+01	1.4000E+01	-2.9003E+01	1.4000E+01	-2.2402E+01	1.1200E+01
1.6800E+01	-3.2990E+01	1.8200E+01	-3.2458E+01	1.6800E+01	-3.1905E+01	1.8200E+01	-3.0564E+01	1.4000E+01	-2.9049E+01	1.4000E+01	-2.2462E+01	1.1200E+01

Curve 13	Arg 14	Curve 14	Arg 15	Curve 15	Arg 16	Curve 16	Arg 17	Curve 17	Arg 18	Curve 18	Arg 19	Curve 19
1.6800E+01	-3.3031E+01	1.8200E+01	-3.2500E+01	1.6800E+01	-3.1947E+01	1.8200E+01	-3.0608E+01	1.4000E+01	-2.9096E+01	1.4000E+01	-2.2522E+01	1.1200E+01
1.6800E+01	-3.3072E+01	1.8200E+01	-3.2541E+01	1.6800E+01	-3.1989E+01	1.8200E+01	-3.0652E+01	1.4000E+01	-2.9142E+01	1.4000E+01	-2.2582E+01	1.1200E+01
1.6800E+01	-3.3112E+01	1.8200E+01	-3.2583E+01	1.6800E+01	-3.2031E+01	1.8200E+01	-3.0696E+01	1.4000E+01	-2.9188E+01	1.4000E+01	-2.2641E+01	1.1200E+01
1.6800E+01	-3.3153E+01	1.8200E+01	-3.2624E+01	1.6800E+01	-3.2073E+01	1.8200E+01	-3.0740E+01	1.4000E+01	-2.9234E+01	1.4000E+01	-2.2700E+01	1.1200E+01
1.6800E+01	-3.3194E+01	1.8200E+01	-3.2665E+01	1.6800E+01	-3.2115E+01	1.8200E+01	-3.0783E+01	1.4000E+01	-2.9280E+01	1.4000E+01	-2.2759E+01	1.1200E+01
1.6800E+01	-3.3234E+01	1.8200E+01	-3.2707E+01	1.6800E+01	-3.2157E+01	1.8200E+01	-3.0827E+01	1.4000E+01	-2.9326E+01	1.4000E+01	-2.2818E+01	1.1200E+01
1.6800E+01	-3.3275E+01	1.8200E+01	-3.2748E+01	1.6800E+01	-3.2199E+01	1.8200E+01	-3.0871E+01	1.4000E+01	-2.9372E+01	1.4000E+01	-2.2877E+01	1.1200E+01
1.6800E+01	-3.3315E+01	1.8200E+01	-3.2789E+01	1.6800E+01	-3.2241E+01	1.8200E+01	-3.0914E+01	1.4000E+01	-2.9418E+01	1.4000E+01	-2.2936E+01	1.1200E+01
1.6800E+01	-3.3356E+01	1.8200E+01	-3.2830E+01	1.6800E+01	-3.2283E+01	1.8200E+01	-3.0958E+01	1.4000E+01	-2.9464E+01	1.4000E+01	-2.2994E+01	1.1200E+01
1.6800E+01	-3.3396E+01	1.8200E+01	-3.2871E+01	1.6800E+01	-3.2324E+01	1.8200E+01	-3.1001E+01	1.4000E+01	-2.9510E+01	1.4000E+01	-2.3053E+01	1.1200E+01
1.6800E+01	-3.3436E+01	1.8200E+01	-3.2912E+01	1.6800E+01	-3.2366E+01	1.8200E+01	-3.1045E+01	1.4000E+01	-2.9555E+01	1.4000E+01	-2.3111E+01	1.1200E+01
1.6800E+01	-3.3477E+01	1.8200E+01	-3.2953E+01	1.6800E+01	-3.2408E+01	1.8200E+01	-3.1088E+01	1.4000E+01	-2.9601E+01	1.4000E+01	-2.3169E+01	1.1200E+01
1.6800E+01	-3.3517E+01	1.8200E+01	-3.2994E+01	1.6800E+01	-3.2449E+01	1.8200E+01	-3.1132E+01	1.4000E+01	-2.9646E+01	1.4000E+01	-2.3227E+01	1.1200E+01
1.6800E+01	-3.3557E+01	1.8200E+01	-3.3035E+01	1.6800E+01	-3.2491E+01	1.8200E+01	-3.1175E+01	1.4000E+01	-2.9692E+01	1.4000E+01	-2.3285E+01	1.1200E+01
1.6800E+01	-3.3597E+01	1.8200E+01	-3.3076E+01	1.6800E+01	-3.2532E+01	1.8200E+01	-3.1218E+01	1.4000E+01	-2.9737E+01	1.4000E+01	-2.3342E+01	1.1200E+01
1.6800E+01	-3.3638E+01	1.8200E+01	-3.3116E+01	1.6800E+01	-3.2574E+01	1.8200E+01	-3.1261E+01	1.4000E+01	-2.9782E+01	1.4000E+01	-2.3400E+01	1.1200E+01
1.6800E+01	-3.3678E+01	1.8200E+01	-3.3157E+01	1.6800E+01	-3.2615E+01	1.8200E+01	-3.1304E+01	1.4000E+01	-2.9828E+01	1.4000E+01	-2.3457E+01	1.1200E+01
1.6800E+01	-3.3718E+01	1.8200E+01	-3.3198E+01	1.6800E+01	-3.2656E+01	1.8200E+01	-3.1347E+01	1.4000E+01	-2.9873E+01	1.4000E+01	-2.3515E+01	1.1200E+01
1.6800E+01	-3.3758E+01	1.8200E+01	-3.3238E+01	1.6800E+01	-3.2698E+01	1.8200E+01	-3.1390E+01	1.4000E+01	-2.9918E+01	1.4000E+01	-2.3572E+01	1.1200E+01
1.6800E+01	-3.3797E+01	1.8200E+01	-3.3279E+01	1.6800E+01	-3.2739E+01	1.8200E+01	-3.1433E+01	1.4000E+01	-2.9963E+01	1.4000E+01	-2.3629E+01	1.1200E+01
1.6800E+01	-3.3837E+01	1.8200E+01	-3.3319E+01	1.6800E+01	-3.2780E+01	1.8200E+01	-3.1476E+01	1.4000E+01	-3.0008E+01	1.4000E+01	-2.3686E+01	1.1200E+01
1.6800E+01	-3.3877E+01	1.8200E+01	-3.3360E+01	1.6800E+01	-3.2821E+01	1.8200E+01	-3.1519E+01	1.4000E+01	-3.0053E+01	1.4000E+01	-2.3742E+01	1.1200E+01
1.6800E+01	-3.3917E+01	1.8200E+01	-3.3400E+01	1.6800E+01	-3.2862E+01	1.8200E+01	-3.1562E+01	1.4000E+01	-3.0097E+01	1.4000E+01	-2.3799E+01	1.1200E+01
1.6800E+01	-3.3957E+01	1.8200E+01	-3.3440E+01	1.6800E+01	-3.2903E+01	1.8200E+01	-3.1604E+01	1.4000E+01	-3.0142E+01	1.4000E+01	-2.3855E+01	1.1200E+01
1.6800E+01	-3.3996E+01	1.8200E+01	-3.3481E+01	1.6800E+01	-3.2944E+01	1.8200E+01	-3.1647E+01	1.4000E+01	-3.0187E+01	1.4000E+01	-2.3912E+01	1.1200E+01
1.6800E+01	-3.4036E+01	1.8200E+01	-3.3521E+01	1.6800E+01	-3.2985E+01	1.8200E+01	-3.1690E+01	1.4000E+01	-3.0232E+01	1.4000E+01	-2.3968E+01	1.1200E+01
1.6800E+01	-3.4076E+01	1.8200E+01	-3.3561E+01	1.6800E+01	-3.3026E+01	1.8200E+01	-3.1732E+01	1.4000E+01	-3.0276E+01	1.4000E+01	-2.4024E+01	1.1200E+01
1.6800E+01	-3.4115E+01	1.8200E+01	-3.3601E+01	1.6800E+01	-3.3067E+01	1.8200E+01	-3.1775E+01	1.4000E+01	-3.0321E+01	1.4000E+01	-2.4080E+01	1.1200E+01
1.6800E+01	-3.4155E+01	1.8200E+01	-3.3642E+01	1.6800E+01	-3.3107E+01	1.8200E+01	-3.1817E+01	1.4000E+01	-3.0365E+01	1.4000E+01	-2.4135E+01	1.1200E+01
1.6800E+01	-3.4194E+01	1.8200E+01	-3.3682E+01	1.6800E+01	-3.3148E+01	1.8200E+01	-3.1859E+01	1.4000E+01	-3.0409E+01	1.4000E+01	-2.4191E+01	1.1200E+01
1.6800E+01	-3.4234E+01	1.8200E+01	-3.3722E+01	1.6800E+01	-3.3189E+01	1.8200E+01	-3.1902E+01	1.4000E+01	-3.0454E+01	1.4000E+01	-2.4247E+01	1.1200E+01
1.6800E+01	-3.4273E+01	1.8200E+01	-3.3762E+01	1.6800E+01	-3.3229E+01	1.8200E+01	-3.1944E+01	1.4000E+01	-3.0498E+01	1.4000E+01	-2.4302E+01	1.1200E+01
1.6800E+01	-3.4312E+01	1.8200E+01	-3.3801E+01	1.6800E+01	-3.3270E+01	1.8200E+01	-3.1986E+01	1.4000E+01	-3.0542E+01	1.4000E+01	-2.4357E+01	1.1200E+01

Soil Parameters	
Kd (mL/g)	8
Moisture content	0.2
Erosion Rate (0.2 kg/sq m-yr)	0.2
Bulk Density (g/cc)	1.5
Over watering Rate (m/yr)	0.079
Affected Depth (m)	0.25
Lamda effective (1/yr)	0.026434973

Intake (mg/kg body wt./day) Soil

Flux Out (gm/yr)	No Recycle	Recycle	0.86 Concentration (gm/sq m)
0.0000E+00	0.0000E+00	0.0000E+00	0.00E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.00E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.00E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.00E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.00E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.00E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.00E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.00E+00
3.1911E-11	4.3941E-20	3.2310E-19	3.38E-17
1.9685E-07	2.7107E-16	1.9932E-15	2.08E-13
9.9429E-05	1.3691E-13	1.0067E-12	1.05E-10
8.9418E-03	1.2313E-11	9.0536E-11	9.47E-09
2.3427E-01	3.2259E-10	2.3720E-09	2.48E-07
2.4878E+00	3.4257E-09	2.5189E-08	2.63E-06
1.3497E+01	1.8585E-08	1.3665E-07	1.43E-05
4.4265E+01	6.0953E-08	4.4819E-07	4.69E-05
9.9727E+01	1.3732E-07	1.0097E-06	1.06E-04
1.7074E+02	2.3511E-07	1.7288E-06	1.81E-04
2.4105E+02	3.3193E-07	2.4407E-06	2.55E-04
2.9954E+02	4.1247E-07	3.0329E-06	3.17E-04
3.4375E+02	4.7334E-07	3.4804E-06	3.64E-04
3.7555E+02	5.1714E-07	3.8025E-06	3.98E-04
3.9768E+02	5.4760E-07	4.0265E-06	4.21E-04
4.1341E+02	5.6926E-07	4.1858E-06	4.38E-04
4.2593E+02	5.8651E-07	4.3126E-06	4.51E-04
4.3694E+02	6.0167E-07	4.4240E-06	4.63E-04
4.4676E+02	6.1519E-07	4.5235E-06	4.73E-04
4.5512E+02	6.2670E-07	4.6081E-06	4.82E-04
4.6149E+02	6.3547E-07	4.6726E-06	4.89E-04
4.6583E+02	6.4146E-07	4.7166E-06	4.93E-04
4.6923E+02	6.4613E-07	4.7509E-06	4.97E-04
4.7309E+02	6.5144E-07	4.7900E-06	5.01E-04
4.7763E+02	6.5770E-07	4.8361E-06	5.06E-04
4.8181E+02	6.6346E-07	4.8784E-06	5.10E-04
4.8470E+02	6.6743E-07	4.9076E-06	5.13E-04
4.8623E+02	6.6954E-07	4.9231E-06	5.15E-04
4.8688E+02	6.7044E-07	4.9297E-06	5.16E-04
4.8713E+02	6.7078E-07	4.9322E-06	5.16E-04
4.8740E+02	6.7115E-07	4.9349E-06	5.16E-04
4.8836E+02	6.7248E-07	4.9447E-06	5.17E-04
4.9080E+02	6.7583E-07	4.9693E-06	5.20E-04
4.9456E+02	6.8102E-07	5.0075E-06	5.24E-04
4.9845E+02	6.8637E-07	5.0468E-06	5.28E-04
5.0132E+02	6.9032E-07	5.0759E-06	5.31E-04
5.0292E+02	6.9253E-07	5.0921E-06	5.33E-04
5.0364E+02	6.9352E-07	5.0994E-06	5.33E-04
5.0401E+02	6.9403E-07	5.1031E-06	5.34E-04
5.0475E+02	6.9504E-07	5.1106E-06	5.35E-04
5.0681E+02	6.9788E-07	5.1315E-06	5.37E-04
5.1051E+02	7.0298E-07	5.1690E-06	5.41E-04
5.1485E+02	7.0896E-07	5.2129E-06	5.45E-04
5.1841E+02	7.1386E-07	5.2490E-06	5.49E-04

Flux Out (gm/yr)	No Recycle	Recycle	0.86 Concentration (gm/sq m)
5.2059E+02	7.1685E-07	5.2710E-06	5.51E-04
5.2162E+02	7.1828E-07	5.2815E-06	5.52E-04
5.2202E+02	7.1883E-07	5.2855E-06	5.53E-04
5.2215E+02	7.1901E-07	5.2868E-06	5.53E-04
5.2219E+02	7.1906E-07	5.2872E-06	5.53E-04
5.2220E+02	7.1907E-07	5.2873E-06	5.53E-04
5.2221E+02	7.1909E-07	5.2874E-06	5.53E-04
5.2233E+02	7.1926E-07	5.2887E-06	5.53E-04
5.2303E+02	7.2022E-07	5.2957E-06	5.54E-04
5.2508E+02	7.2304E-07	5.3165E-06	5.56E-04
5.2861E+02	7.2790E-07	5.3522E-06	5.60E-04
5.3260E+02	7.3339E-07	5.3926E-06	5.64E-04
5.3576E+02	7.3775E-07	5.4246E-06	5.67E-04
5.3765E+02	7.4034E-07	5.4437E-06	5.69E-04
5.3852E+02	7.4155E-07	5.4526E-06	5.70E-04
5.3886E+02	7.4201E-07	5.4559E-06	5.71E-04
5.3896E+02	7.4215E-07	5.4570E-06	5.71E-04
5.3899E+02	7.4219E-07	5.4573E-06	5.71E-04
5.3900E+02	7.4220E-07	5.4574E-06	5.71E-04
5.3900E+02	7.4221E-07	5.4575E-06	5.71E-04
5.3909E+02	7.4233E-07	5.4583E-06	5.71E-04
5.3964E+02	7.4309E-07	5.4639E-06	5.72E-04
5.4148E+02	7.4562E-07	5.4825E-06	5.73E-04
5.4501E+02	7.5048E-07	5.5182E-06	5.77E-04
5.4935E+02	7.5646E-07	5.5622E-06	5.82E-04
5.5306E+02	7.6156E-07	5.5997E-06	5.86E-04
5.5540E+02	7.6478E-07	5.6234E-06	5.88E-04
5.5654E+02	7.6636E-07	5.6350E-06	5.89E-04
5.5699E+02	7.6699E-07	5.6396E-06	5.90E-04
5.5714E+02	7.6719E-07	5.6411E-06	5.90E-04
5.5719E+02	7.6725E-07	5.6415E-06	5.90E-04
5.5720E+02	7.6726E-07	5.6417E-06	5.90E-04
5.5720E+02	7.6727E-07	5.6417E-06	5.90E-04
5.5720E+02	7.6727E-07	5.6417E-06	5.90E-04
5.5720E+02	7.6727E-07	5.6417E-06	5.90E-04
5.5720E+02	7.6727E-07	5.6417E-06	5.90E-04
5.5720E+02	7.6727E-07	5.6417E-06	5.90E-04
5.5720E+02	7.6727E-07	5.6417E-06	5.90E-04
5.5720E+02	7.6727E-07	5.6417E-06	5.90E-04
5.5720E+02	7.6727E-07	5.6417E-06	5.90E-04
5.5720E+02	7.6727E-07	5.6417E-06	5.90E-04
5.5720E+02	7.6727E-07	5.6417E-06	5.90E-04
5.5720E+02	7.6727E-07	5.6417E-06	5.90E-04
5.5720E+02	7.6727E-07	5.6417E-06	5.90E-04
5.5720E+02	7.6727E-07	5.6417E-06	5.90E-04
5.5720E+02	7.6727E-07	5.6417E-06	5.90E-04
5.5720E+02	7.6727E-07	5.6417E-06	5.90E-04
5.5720E+02	7.6727E-07	5.6417E-06	5.90E-04
5.5726E+02	7.6735E-07	5.6423E-06	5.90E-04

Flux Out (gm/yr)	No Recycle	Recycle	0.86 Concentration (gm/sq m)
5.5764E+02	7.6787E-07	5.6461E-06	5.91E-04
5.5896E+02	7.6970E-07	5.6595E-06	5.92E-04
5.6160E+02	7.7333E-07	5.6862E-06	5.95E-04
5.6493E+02	7.7792E-07	5.7200E-06	5.98E-04
5.6785E+02	7.8193E-07	5.7495E-06	6.01E-04
5.6972E+02	7.8451E-07	5.7684E-06	6.03E-04
5.7065E+02	7.8579E-07	5.7779E-06	6.04E-04
5.7103E+02	7.8631E-07	5.7817E-06	6.05E-04
5.7115E+02	7.8648E-07	5.7830E-06	6.05E-04
5.7119E+02	7.8653E-07	5.7833E-06	6.05E-04
5.7120E+02	7.8654E-07	5.7834E-06	6.05E-04
5.7120E+02	7.8655E-07	5.7834E-06	6.05E-04
5.7120E+02	7.8655E-07	5.7834E-06	6.05E-04
5.7120E+02	7.8655E-07	5.7834E-06	6.05E-04
5.7120E+02	7.8655E-07	5.7834E-06	6.05E-04
5.7120E+02	7.8655E-07	5.7834E-06	6.05E-04
5.7120E+02	7.8655E-07	5.7834E-06	6.05E-04
5.7120E+02	7.8655E-07	5.7834E-06	6.05E-04
5.7120E+02	7.8655E-07	5.7834E-06	6.05E-04
5.7120E+02	7.8655E-07	5.7834E-06	6.05E-04
5.7120E+02	7.8655E-07	5.7834E-06	6.05E-04
5.7120E+02	7.8655E-07	5.7834E-06	6.05E-04
5.7120E+02	7.8655E-07	5.7834E-06	6.05E-04
5.7120E+02	7.8655E-07	5.7834E-06	6.05E-04
5.7120E+02	7.8655E-07	5.7834E-06	6.05E-04
5.7120E+02	7.8655E-07	5.7834E-06	6.05E-04
5.7120E+02	7.8655E-07	5.7834E-06	6.05E-04
5.7120E+02	7.8655E-07	5.7834E-06	6.05E-04
5.7120E+02	7.8655E-07	5.7834E-06	6.05E-04
5.7120E+02	7.8655E-07	5.7834E-06	6.05E-04
5.7122E+02	7.8657E-07	5.7836E-06	6.05E-04
5.7138E+02	7.8679E-07	5.7852E-06	6.05E-04
5.7215E+02	7.8786E-07	5.7931E-06	6.06E-04
5.7416E+02	7.9062E-07	5.8134E-06	6.08E-04
5.7728E+02	7.9492E-07	5.8450E-06	6.11E-04
5.8053E+02	7.9939E-07	5.8779E-06	6.15E-04
5.8294E+02	8.0271E-07	5.9023E-06	6.17E-04
5.8429E+02	8.0457E-07	5.9160E-06	6.19E-04
5.8489E+02	8.0540E-07	5.9221E-06	6.19E-04
5.8511E+02	8.0570E-07	5.9243E-06	6.20E-04
5.8518E+02	8.0579E-07	5.9249E-06	6.20E-04
5.8519E+02	8.0582E-07	5.9251E-06	6.20E-04
5.8520E+02	8.0582E-07	5.9252E-06	6.20E-04
5.8520E+02	8.0582E-07	5.9252E-06	6.20E-04
5.8520E+02	8.0582E-07	5.9252E-06	6.20E-04
5.8520E+02	8.0582E-07	5.9252E-06	6.20E-04
5.8520E+02	8.0582E-07	5.9252E-06	6.20E-04
5.8520E+02	8.0582E-07	5.9252E-06	6.20E-04
5.8520E+02	8.0582E-07	5.9252E-06	6.20E-04

Flux Out (gm/yr)	No Recycle	Recycle	0.86 Concentration (gm/sq m)
5.8520E+02	8.0582E-07	5.9252E-06	6.20E-04

Flux Out (gm/yr)	No Recycle	Recycle	0.86 Concentration (gm/sq m)
5.8520E+02	8.0582E-07	5.9252E-06	6.20E-04

Flux Out (gm/yr)	No Recycle	Recycle	0.86 Concentration (gm/sq m)
5.8520E+02	8.0582E-07	5.9252E-06	6.20E-04
5.8520E+02	8.0583E-07	5.9252E-06	6.20E-04
5.8521E+02	8.0584E-07	5.9253E-06	6.20E-04
5.8533E+02	8.0600E-07	5.9265E-06	6.20E-04
5.8591E+02	8.0680E-07	5.9323E-06	6.21E-04
5.8745E+02	8.0892E-07	5.9480E-06	6.22E-04
5.8992E+02	8.1232E-07	5.9730E-06	6.25E-04
5.9253E+02	8.1592E-07	5.9994E-06	6.28E-04
5.9451E+02	8.1864E-07	6.0194E-06	6.30E-04
5.9563E+02	8.2019E-07	6.0308E-06	6.31E-04
5.9614E+02	8.2088E-07	6.0359E-06	6.31E-04
5.9632E+02	8.2114E-07	6.0378E-06	6.32E-04
5.9638E+02	8.2122E-07	6.0384E-06	6.32E-04
5.9640E+02	8.2124E-07	6.0385E-06	6.32E-04
5.9640E+02	8.2125E-07	6.0386E-06	6.32E-04
5.9640E+02	8.2125E-07	6.0386E-06	6.32E-04
5.9640E+02	8.2125E-07	6.0386E-06	6.32E-04
5.9640E+02	8.2125E-07	6.0386E-06	6.32E-04
5.9640E+02	8.2125E-07	6.0386E-06	6.32E-04
5.9640E+02	8.2125E-07	6.0386E-06	6.32E-04
5.9640E+02	8.2125E-07	6.0386E-06	6.32E-04
5.9640E+02	8.2125E-07	6.0386E-06	6.32E-04
5.9640E+02	8.2125E-07	6.0386E-06	6.32E-04
5.9640E+02	8.2125E-07	6.0386E-06	6.32E-04
5.9640E+02	8.2125E-07	6.0386E-06	6.32E-04
5.9640E+02	8.2125E-07	6.0386E-06	6.32E-04
5.9640E+02	8.2125E-07	6.0386E-06	6.32E-04
5.9640E+02	8.2125E-07	6.0386E-06	6.32E-04
5.9640E+02	8.2125E-07	6.0386E-06	6.32E-04
5.9640E+02	8.2125E-07	6.0386E-06	6.32E-04
5.9640E+02	8.2125E-07	6.0386E-06	6.32E-04
5.9640E+02	8.2125E-07	6.0386E-06	6.32E-04
5.9640E+02	8.2125E-07	6.0386E-06	6.32E-04
5.9640E+02	8.2125E-07	6.0386E-06	6.32E-04
5.9640E+02	8.2125E-07	6.0386E-06	6.32E-04
5.9640E+02	8.2125E-07	6.0386E-06	6.32E-04
5.9640E+02	8.2125E-07	6.0386E-06	6.32E-04
5.9640E+02	8.2125E-07	6.0386E-06	6.32E-04
5.9640E+02	8.2125E-07	6.0386E-06	6.32E-04
5.9640E+02	8.2125E-07	6.0386E-06	6.32E-04
5.9640E+02	8.2125E-07	6.0386E-06	6.32E-04
5.9640E+02	8.2125E-07	6.0386E-06	6.32E-04
5.9640E+02	8.2125E-07	6.0386E-06	6.32E-04
5.9640E+02	8.2125E-07	6.0386E-06	6.32E-04
5.9640E+02	8.2125E-07	6.0386E-06	6.32E-04

Flux Out (gm/yr)	No Recycle	Recycle	0.86 Concentration (gm/sq m)
5.9640E+02	8.2125E-07	6.0386E-06	6.32E-04

Flux Out (gm/yr)	No Recycle	Recycle	0.86 Concentration (gm/sq m)
5.9640E+02	8.2125E-07	6.0386E-06	6.32E-04

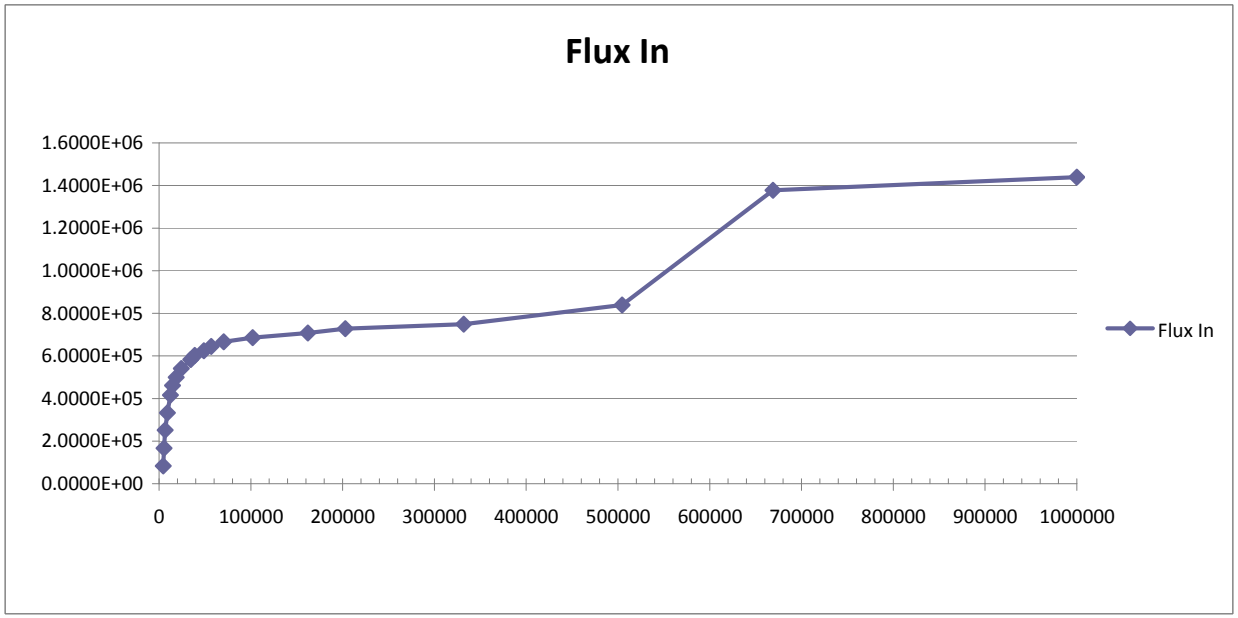
Flux Out (gm/yr)	No Recycle	Recycle	0.86 Concentration (gm/sq m)
5.9640E+02	8.2125E-07	6.0386E-06	6.32E-04

Flux Out (gm/yr)	No Recycle	Recycle	0.86 Concentration (gm/sq m)
5.9640E+02	8.2125E-07	6.0386E-06	6.32E-04
5.9640E+02	8.2125E-07	6.0386E-06	6.32E-04
5.9640E+02	8.2125E-07	6.0386E-06	6.32E-04
5.9640E+02	8.2125E-07	6.0386E-06	6.32E-04
5.9640E+02	8.2125E-07	6.0386E-06	6.32E-04
5.9640E+02	8.2125E-07	6.0386E-06	6.32E-04
5.9640E+02	8.2125E-07	6.0386E-06	6.32E-04
5.9640E+02	8.2125E-07	6.0386E-06	6.32E-04
5.9640E+02	8.2125E-07	6.0386E-06	6.32E-04
5.9640E+02	8.2125E-07	6.0386E-06	6.32E-04
5.9640E+02	8.2125E-07	6.0386E-06	6.32E-04
5.9640E+02	8.2125E-07	6.0386E-06	6.32E-04
5.9640E+02	8.2125E-07	6.0386E-06	6.32E-04
5.9640E+02	8.2125E-07	6.0386E-06	6.32E-04
5.9640E+02	8.2125E-07	6.0386E-06	6.32E-04
5.9640E+02	8.2125E-07	6.0386E-06	6.32E-04
5.9640E+02	8.2125E-07	6.0386E-06	6.32E-04
5.9640E+02	8.2125E-07	6.0386E-06	6.32E-04
5.9640E+02	8.2125E-07	6.0386E-06	6.32E-04
5.9640E+02	8.2125E-07	6.0386E-06	6.32E-04
5.9640E+02	8.2125E-07	6.0386E-06	6.32E-04
5.9640E+02	8.2125E-07	6.0386E-06	6.32E-04
5.9640E+02	8.2125E-07	6.0386E-06	6.32E-04
5.9640E+02	8.2125E-07	6.0386E-06	6.32E-04
5.9640E+02	8.2125E-07	6.0386E-06	6.32E-04
5.9640E+02	8.2125E-07	6.0386E-06	6.32E-04
5.9640E+02	8.2125E-07	6.0386E-06	6.32E-04
5.9640E+02	8.2125E-07	6.0386E-06	6.32E-04
5.9640E+02	8.2125E-07	6.0386E-06	6.32E-04
5.9640E+02	8.2125E-07	6.0386E-06	6.32E-04

Combined TSPA Case, 2003 Pumping Rates, Wet Climate
Non-Radiologic Metals Transport from 18 km to Amargosa Farms
Contaminant: Nickel
Oral Ref dose =2E-02 mg/kg body wt./day
Pump Rate= 16828 acre-ft/yr 20748924000 liters/yr

Input Curve

Time (yr)	Flux In	Del R
4500	8.3250E+04	
5450	1.6650E+05	8.3250E+04
6670	2.5142E+05	8.4915E+04
9010	3.3300E+05	8.1585E+04
12440	4.1625E+05	8.3250E+04
14700	4.6121E+05	4.4955E+04
18600	4.9950E+05	3.8295E+04
24290	5.4113E+05	4.1625E+04
34490	5.8275E+05	4.1625E+04
38830	6.0273E+05	1.9980E+04
48770	6.2438E+05	2.1645E+04
56800	6.4436E+05	1.9980E+04
70380	6.6600E+05	2.1645E+04
101940	6.8598E+05	1.9980E+04
162170	7.0763E+05	2.1645E+04
202990	7.2761E+05	1.9980E+04
331880	7.4925E+05	2.1645E+04
504500	8.3924E+05	8.9987E+04
668970	1.3776E+06	5.3837E+05
1000000	1.4394E+06	6.1795E+04



Output Curve

2.39E-02		specific discharge (m/day)
5.4538E-02	v	groundwater velocity (km/yr)
1.6000E+01	L	path length (km)
1.0000E-01	D	Dispersion Coefficient (km)
5.4538E-03	Disp	Dispersivity (sq km/yr)
1.8850E+02	K	Retardation Factor (no units)
5.5301E+04	td	arrival time of the mid-point =TL (yr)
1.5000E+01	Kd	distribution coefficient =Kd (mL/gm)
1.6000E-01	ε	porosity
2.0000E+00	ρ	bulk density of solid (gm/mL)
0.0000E+00	λ	decay constant (1/yr)
NA	t1/2	halflife (yr)

Note: When λ is set to zero this is either a stable contaminant or a member of a decay chain. Decay and growth of radionuclides in decay chain members is adjusted in a separate work sheet.

Composite Curves

Time (yrs)	Arg 1	Curve 1	Arg 2	Curve 2	Arg 3	Curve 3	Arg 4	Curve 4	Arg 5	Curve 5	Arg 6	Curve 6
250	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
2000	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
4000	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
6000	3.7360E+01	0.0000E+00	6.2788E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
8000	2.3549E+01	0.0000E+00	2.8095E+01	0.0000E+00	3.9801E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
10000	1.8060E+01	0.0000E+00	2.0235E+01	0.0000E+00	2.4222E+01	0.0000E+00	4.6423E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
12000	1.4845E+01	0.0000E+00	1.6200E+01	0.0000E+00	1.8408E+01	0.0000E+00	2.5729E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
14000	1.2638E+01	0.0000E+00	1.3598E+01	0.0000E+00	1.5069E+01	0.0000E+00	1.9155E+01	0.0000E+00	3.6594E+01	0.0000E+00	0.0000E+00	0.0000E+00
16000	1.0985E+01	0.0000E+00	1.1718E+01	0.0000E+00	1.2800E+01	0.0000E+00	1.5541E+01	0.0000E+00	2.3322E+01	0.0000E+00	4.0280E+01	0.0000E+00
18000	9.6757E+00	0.0000E+00	1.0263E+01	0.0000E+00	1.1110E+01	0.0000E+00	1.3136E+01	0.0000E+00	1.7941E+01	0.0000E+00	2.4345E+01	0.0000E+00
20000	8.5979E+00	0.0000E+00	9.0860E+00	0.0000E+00	9.7768E+00	0.0000E+00	1.1368E+01	0.0000E+00	1.4767E+01	0.0000E+00	1.8472E+01	0.0000E+00
22000	7.6851E+00	0.0000E+00	8.1012E+00	0.0000E+00	8.6824E+00	0.0000E+00	9.9842E+00	0.0000E+00	1.2582E+01	0.0000E+00	1.5110E+01	0.0000E+00
24000	6.8951E+00	0.0000E+00	7.2571E+00	0.0000E+00	7.7574E+00	0.0000E+00	8.8550E+00	0.0000E+00	1.0941E+01	0.0000E+00	1.2829E+01	0.0000E+00
26000	6.1998E+00	0.0000E+00	6.5197E+00	0.0000E+00	6.9583E+00	0.0000E+00	7.9048E+00	0.0000E+00	9.6404E+00	0.0000E+00	1.1132E+01	0.0000E+00
28000	5.5792E+00	1.2478E-10	5.8656E+00	4.7138E-12	6.2557E+00	0.0000E+00	7.0866E+00	0.0000E+00	8.5684E+00	0.0000E+00	9.7948E+00	0.0000E+00
30000	5.0191E+00	5.2665E-08	5.2783E+00	3.5447E-09	5.6294E+00	6.7933E-11	6.3693E+00	0.0000E+00	7.6598E+00	0.0000E+00	8.6974E+00	0.0000E+00
32000	4.5088E+00	7.5483E-06	4.7455E+00	8.1960E-07	5.0646E+00	3.2323E-08	5.7312E+00	2.3107E-11	6.8730E+00	0.0000E+00	7.7703E+00	0.0000E+00
34000	4.0401E+00	4.6060E-04	4.2580E+00	7.3299E-05	4.5504E+00	5.0276E-06	5.1568E+00	1.2635E-08	6.1801E+00	0.0000E+00	6.9695E+00	0.0000E+00
36000	3.6067E+00	1.4095E-02	3.8085E+00	3.0588E-03	4.0785E+00	3.2758E-04	4.6347E+00	2.3255E-06	5.5616E+00	8.2352E-11	6.2656E+00	0.0000E+00
38000	3.2035E+00	2.4510E-01	3.3915E+00	6.8629E-02	3.6423E+00	1.0574E-02	4.1560E+00	1.7338E-04	5.0031E+00	3.3482E-08	5.6383E+00	2.9761E-11
40000	2.8264E+00	2.6684E+00	3.0025E+00	9.2339E-01	3.2367E+00	1.9212E-01	3.7141E+00	6.2437E-03	4.4941E+00	4.6644E-06	5.0727E+00	1.3958E-08
42000	2.4723E+00	1.9637E+01	2.6378E+00	8.1156E+00	2.8575E+00	2.1695E+00	3.3036E+00	1.2413E-01	4.0266E+00	2.7819E-04	4.5578E+00	2.2030E-06
44000	2.1382E+00	1.0388E+02	2.2945E+00	4.9875E+01	2.5015E+00	1.6464E+01	2.9203E+00	1.5107E+00	3.5941E+00	8.3562E-03	4.0853E+00	1.4523E-04
46000	1.8220E+00	4.1519E+02	1.9701E+00	2.2646E+02	2.1659E+00	8.9383E+01	2.5606E+00	1.2207E+01	3.1918E+00	1.4309E-01	3.6486E+00	4.7325E-03
48000	1.5217E+00	1.3067E+03	1.6625E+00	7.9468E+02	1.8482E+00	3.6525E+02	2.2216E+00	6.9885E+01	2.8155E+00	1.5381E+00	3.2425E+00	8.6663E-02
50000	1.2357E+00	3.3521E+03	1.3699E+00	2.2377E+03	1.5467E+00	1.1715E+03	1.9011E+00	2.9876E+02	2.4620E+00	1.1198E+01	2.8630E+00	9.8505E-01
52000	9.6265E-01	7.2173E+03	1.0908E+00	5.2183E+03	1.2595E+00	3.0542E+03	1.5969E+00	9.9586E+02	2.1285E+00	5.8699E+01	2.5067E+00	7.5163E+00
54000	7.0124E-01	1.3376E+04	8.2402E-01	1.0355E+04	9.8540E-01	6.6676E+03	1.3074E+00	2.6834E+03	1.8128E+00	2.3281E+02	2.1708E+00	4.0995E+01
56000	4.5047E-01	2.1815E+04	5.6832E-01	1.7898E+04	7.2303E-01	1.2504E+04	1.0311E+00	6.0262E+03	1.5130E+00	7.2791E+02	1.8529E+00	1.6818E+02
58000	2.0942E-01	3.1931E+04	3.2276E-01	2.7516E+04	4.7139E-01	2.0600E+04	7.6685E-01	1.1578E+04	1.2274E+00	1.8568E+03	1.5511E+00	5.4122E+02
60000	-2.2712E-02	4.2692E+04	8.6484E-02	3.8325E+04	2.2955E-01	3.0409E+04	5.1346E-01	1.9470E+04	9.5465E-01	3.9784E+03	1.2637E+00	1.4151E+03
62000	-2.4663E-01	5.2978E+04	-1.4125E-01	4.9180E+04	-3.3101E-03	4.0945E+04	2.7001E-01	2.9245E+04	6.9357E-01	7.3427E+03	9.8942E-01	3.0969E+03
64000	-4.6296E-01	6.1912E+04	-3.6111E-01	5.9035E+04	-2.2790E-01	5.1104E+04	3.5674E-02	3.9950E+04	4.4310E-01	1.1933E+04	7.2689E-01	5.8201E+03
66000	-6.7227E-01	6.9025E+04	-5.7369E-01	6.7203E+04	-4.4485E-01	5.9995E+04	-1.9027E-01	5.0456E+04	2.0233E-01	1.7415E+04	4.7509E-01	9.6055E+03
68000	-8.7505E-01	7.4264E+04	-7.7952E-01	7.3440E+04	-6.5474E-01	6.7125E+04	-4.0849E-01	5.9796E+04	-2.9546E-02	2.3227E+04	2.3311E-01	1.4201E+04
70000	-1.0718E+00	7.7856E+04	-9.7906E-01	7.7860E+04	-8.5806E-01	7.2409E+04	-6.1954E-01	6.7393E+04	-2.5323E-01	2.8766E+04	1.2003E-04	1.9145E+04
72000	-1.2628E+00	8.0165E+04	-1.1727E+00	8.0788E+04	-1.0553E+00	7.6054E+04	-8.2394E-01	7.3097E+04	-4.6934E-01	3.3562E+04	-2.2459E-01	2.3920E+04
74000	-1.4485E+00	8.1564E+04	-1.3609E+00	8.2611E+04	-1.2468E+00	7.8409E+04	-1.0222E+00	7.7077E+04	-6.7845E-01	3.7373E+04	-4.4165E-01	2.8104E+04
76000	-1.6293E+00	8.2367E+04	-1.5440E+00	8.3684E+04	-1.4329E+00	7.9843E+04	-1.2146E+00	7.9677E+04	-8.8104E-01	4.0173E+04	-6.5164E-01	3.1464E+04
78000	-1.8054E+00	8.2806E+04	-1.7223E+00	8.4284E+04	-1.6141E+00	8.0670E+04	-1.4017E+00	8.1275E+04	-1.0776E+00	4.2089E+04	-8.5506E-01	3.3957E+04
80000	-1.9771E+00	8.3035E+04	-1.8960E+00	8.4604E+04	-1.7906E+00	8.1123E+04	-1.5836E+00	8.2205E+04	-1.2684E+00	4.3318E+04	-1.0524E+00	3.5678E+04
82000	-2.1446E+00	8.3150E+04	-2.0655E+00	8.4767E+04	-1.9626E+00	8.1361E+04	-1.7609E+00	8.2719E+04	-1.4540E+00	4.4062E+04	-1.2439E+00	3.6791E+04
84000	-2.3082E+00	8.3205E+04	-2.2310E+00	8.4847E+04	-2.1305E+00	8.1480E+04	-1.9337E+00	8.2990E+04	-1.6346E+00	4.4488E+04	-1.4302E+00	3.7470E+04
86000	-2.4681E+00	8.3230E+04	-2.3926E+00	8.4885E+04	-2.2945E+00	8.1537E+04	-2.1023E+00	8.3128E+04	-1.8106E+00	4.4720E+04	-1.6114E+00	3.7861E+04
88000	-2.6245E+00	8.3242E+04	-2.5507E+00	8.4902E+04	-2.4547E+00	8.1564E+04	-2.2669E+00	8.3194E+04	-1.9821E+00	4.4841E+04	-1.7880E+00	3.8076E+04
90000	-2.7776E+00	8.3247E+04	-2.7053E+00	8.4910E+04	-2.6114E+00	8.1576E+04	-2.4277E+00	8.3226E+04	-2.1496E+00	4.4902E+04	-1.9601E+00	3.8188E+04
92000	-2.9275E+00	8.3249E+04	-2.8567E+00	8.4913E+04	-2.7647E+00	8.1582E+04	-2.5850E+00	8.3240E+04	-2.3131E+00	4.4931E+04	-2.1280E+00	3.8245E+04
94000	-3.0744E+00	8.3250E+04	-3.0050E+00	8.4914E+04	-2.9149E+00	8.1584E+04	-2.7389E+00	8.3246E+04	-2.4729E+00	4.4945E+04	-2.2920E+00	3.8272E+04
96000	-3.2185E+00	8.3250E+04	-3.1504E+00	8.4915E+04	-3.0621E+00	8.1585E+04	-2.8896E+00	8.3249E+04	-2.6292E+00	4.4951E+04	-2.4523E+00	3.8285E+04
98000	-3.3598E+00	8.3250E+04	-3.2930E+00	8.4915E+04	-3.2063E+00	8.1585E+04	-3.0372E+00	8.3250E+04	-2.7822E+00	4.4953E+04	-2.6091E+00	3.8291E+04
100000	-3.4985E+00	8.3250E+04	-3.4329E+00	8.4915E+04	-3.3479E+00	8.1585E+04	-3.1820E+00	8.3250E+04	-2.9320E+00	4.4954E+04	-2.7625E+00	3.8293E+04
102000	-3.6347E+00	8.3250E+04	-3.5703E+00	8.4915E+04	-3.4868E+00	8.1585E+04	-3.3240E+00	8.3250E+04	-3.0788E+00	4.4955E+04	-2.9127E+00	3.8294E+04

Time (yrs)	Arg 1	Curve 1	Arg 2	Curve 2	Arg 3	Curve 3	Arg 4	Curve 4	Arg 5	Curve 5	Arg 6	Curve 6
104000	-3.7685E+00	8.3250E+04	-3.7052E+00	8.4915E+04	-3.6232E+00	8.1585E+04	-3.4633E+00	8.3250E+04	-3.2227E+00	4.4955E+04	-3.0599E+00	3.8295E+04
106000	-3.9000E+00	8.3250E+04	-3.8378E+00	8.4915E+04	-3.7572E+00	8.1585E+04	-3.6002E+00	8.3250E+04	-3.3640E+00	4.4955E+04	-3.2042E+00	3.8295E+04
108000	-4.0293E+00	8.3250E+04	-3.9681E+00	8.4915E+04	-3.8889E+00	8.1585E+04	-3.7346E+00	8.3250E+04	-3.5026E+00	4.4955E+04	-3.3458E+00	3.8295E+04
110000	-4.1565E+00	8.3250E+04	-4.0964E+00	8.4915E+04	-4.0184E+00	8.1585E+04	-3.8667E+00	8.3250E+04	-3.6387E+00	4.4955E+04	-3.4847E+00	3.8295E+04
112000	-4.2817E+00	8.3250E+04	-4.2225E+00	8.4915E+04	-4.1458E+00	8.1585E+04	-3.9965E+00	8.3250E+04	-3.7724E+00	4.4955E+04	-3.6211E+00	3.8295E+04
114000	-4.4050E+00	8.3250E+04	-4.3467E+00	8.4915E+04	-4.2712E+00	8.1585E+04	-4.1243E+00	8.3250E+04	-3.9039E+00	4.4955E+04	-3.7552E+00	3.8295E+04
116000	-4.5264E+00	8.3250E+04	-4.4690E+00	8.4915E+04	-4.3946E+00	8.1585E+04	-4.2500E+00	8.3250E+04	-4.0332E+00	4.4955E+04	-3.8869E+00	3.8295E+04
118000	-4.6460E+00	8.3250E+04	-4.5894E+00	8.4915E+04	-4.5162E+00	8.1585E+04	-4.3738E+00	8.3250E+04	-4.1603E+00	4.4955E+04	-4.0165E+00	3.8295E+04
120000	-4.7639E+00	8.3250E+04	-4.7081E+00	8.4915E+04	-4.6359E+00	8.1585E+04	-4.4956E+00	8.3250E+04	-4.2855E+00	4.4955E+04	-4.1439E+00	3.8295E+04
122000	-4.8801E+00	8.3250E+04	-4.8251E+00	8.4915E+04	-4.7539E+00	8.1585E+04	-4.6157E+00	8.3250E+04	-4.4087E+00	4.4955E+04	-4.2693E+00	3.8295E+04
124000	-4.9947E+00	8.3250E+04	-4.9404E+00	8.4915E+04	-4.8703E+00	8.1585E+04	-4.7340E+00	8.3250E+04	-4.5300E+00	4.4955E+04	-4.3928E+00	3.8295E+04
126000	-5.1077E+00	8.3250E+04	-5.0542E+00	8.4915E+04	-4.9850E+00	8.1585E+04	-4.8506E+00	8.3250E+04	-4.6496E+00	4.4955E+04	-4.5144E+00	3.8295E+04
128000	-5.2192E+00	8.3250E+04	-5.1664E+00	8.4915E+04	-5.0982E+00	8.1585E+04	-4.9656E+00	8.3250E+04	-4.7674E+00	4.4955E+04	-4.6341E+00	3.8295E+04
130000	-5.3293E+00	8.3250E+04	-5.2772E+00	8.4915E+04	-5.2098E+00	8.1585E+04	-5.0790E+00	8.3250E+04	-4.8835E+00	4.4955E+04	-4.7522E+00	3.8295E+04
132000	-5.4380E+00	8.3250E+04	-5.3866E+00	8.4915E+04	-5.3200E+00	8.1585E+04	-5.1909E+00	8.3250E+04	-4.9981E+00	4.4955E+04	-4.8685E+00	3.8295E+04
134000	-5.5453E+00	8.3250E+04	-5.4945E+00	8.4915E+04	-5.4288E+00	8.1585E+04	-5.3014E+00	8.3250E+04	-5.1111E+00	4.4955E+04	-4.9833E+00	3.8295E+04
136000	-5.6513E+00	8.3250E+04	-5.6011E+00	8.4915E+04	-5.5362E+00	8.1585E+04	-5.4104E+00	8.3250E+04	-5.2226E+00	4.4955E+04	-5.0965E+00	3.8295E+04
138000	-5.7560E+00	8.3250E+04	-5.7065E+00	8.4915E+04	-5.6424E+00	8.1585E+04	-5.5181E+00	8.3250E+04	-5.3326E+00	4.4955E+04	-5.2082E+00	3.8295E+04
140000	-5.8595E+00	8.3250E+04	-5.8105E+00	8.4915E+04	-5.7472E+00	8.1585E+04	-5.6244E+00	8.3250E+04	-5.4412E+00	4.4955E+04	-5.3184E+00	3.8295E+04
142000	-5.9618E+00	8.3250E+04	-5.9134E+00	8.4915E+04	-5.8508E+00	8.1585E+04	-5.7295E+00	8.3250E+04	-5.5485E+00	4.4955E+04	-5.4272E+00	3.8295E+04
144000	-6.0629E+00	8.3250E+04	-6.0150E+00	8.4915E+04	-5.9532E+00	8.1585E+04	-5.8333E+00	8.3250E+04	-5.6545E+00	4.4955E+04	-5.5346E+00	3.8295E+04
146000	-6.1629E+00	8.3250E+04	-6.1156E+00	8.4915E+04	-6.0544E+00	8.1585E+04	-5.9358E+00	8.3250E+04	-5.7592E+00	4.4955E+04	-5.6408E+00	3.8295E+04
148000	-6.2618E+00	8.3250E+04	-6.2150E+00	8.4915E+04	-6.1545E+00	8.1585E+04	-6.0373E+00	8.3250E+04	-5.8626E+00	4.4955E+04	-5.7456E+00	3.8295E+04
150000	-6.3597E+00	8.3250E+04	-6.3133E+00	8.4915E+04	-6.2535E+00	8.1585E+04	-6.1375E+00	8.3250E+04	-5.9649E+00	4.4955E+04	-5.8492E+00	3.8295E+04
152000	-6.4564E+00	8.3250E+04	-6.4106E+00	8.4915E+04	-6.3514E+00	8.1585E+04	-6.2367E+00	8.3250E+04	-6.0660E+00	4.4955E+04	-5.9516E+00	3.8295E+04
154000	-6.5522E+00	8.3250E+04	-6.5069E+00	8.4915E+04	-6.4483E+00	8.1585E+04	-6.3348E+00	8.3250E+04	-6.1659E+00	4.4955E+04	-6.0529E+00	3.8295E+04
156000	-6.6470E+00	8.3250E+04	-6.6021E+00	8.4915E+04	-6.5441E+00	8.1585E+04	-6.4319E+00	8.3250E+04	-6.2648E+00	4.4955E+04	-6.1530E+00	3.8295E+04
158000	-6.7409E+00	8.3250E+04	-6.6964E+00	8.4915E+04	-6.6390E+00	8.1585E+04	-6.5279E+00	8.3250E+04	-6.3626E+00	4.4955E+04	-6.2520E+00	3.8295E+04
160000	-6.8338E+00	8.3250E+04	-6.7898E+00	8.4915E+04	-6.7329E+00	8.1585E+04	-6.6229E+00	8.3250E+04	-6.4593E+00	4.4955E+04	-6.3499E+00	3.8295E+04
162000	-6.9258E+00	8.3250E+04	-6.8822E+00	8.4915E+04	-6.8259E+00	8.1585E+04	-6.7170E+00	8.3250E+04	-6.5551E+00	4.4955E+04	-6.4468E+00	3.8295E+04
164000	-7.0169E+00	8.3250E+04	-6.9737E+00	8.4915E+04	-6.9180E+00	8.1585E+04	-6.8102E+00	8.3250E+04	-6.6499E+00	4.4955E+04	-6.5427E+00	3.8295E+04
166000	-7.1072E+00	8.3250E+04	-7.0644E+00	8.4915E+04	-7.0092E+00	8.1585E+04	-6.9024E+00	8.3250E+04	-6.7437E+00	4.4955E+04	-6.6376E+00	3.8295E+04
168000	-7.1966E+00	8.3250E+04	-7.1542E+00	8.4915E+04	-7.0995E+00	8.1585E+04	-6.9938E+00	8.3250E+04	-6.8366E+00	4.4955E+04	-6.7315E+00	3.8295E+04
170000	-7.2852E+00	8.3250E+04	-7.2432E+00	8.4915E+04	-7.1890E+00	8.1585E+04	-7.0842E+00	8.3250E+04	-6.9285E+00	4.4955E+04	-6.8245E+00	3.8295E+04
172000	-7.3730E+00	8.3250E+04	-7.3314E+00	8.4915E+04	-7.2777E+00	8.1585E+04	-7.1739E+00	8.3250E+04	-7.0196E+00	4.4955E+04	-6.9166E+00	3.8295E+04
174000	-7.4600E+00	8.3250E+04	-7.4188E+00	8.4915E+04	-7.3656E+00	8.1585E+04	-7.2627E+00	8.3250E+04	-7.1099E+00	4.4955E+04	-7.0078E+00	3.8295E+04
176000	-7.5463E+00	8.3250E+04	-7.5054E+00	8.4915E+04	-7.4527E+00	8.1585E+04	-7.3507E+00	8.3250E+04	-7.1993E+00	4.4955E+04	-7.0982E+00	3.8295E+04
178000	-7.6318E+00	8.3250E+04	-7.5913E+00	8.4915E+04	-7.5390E+00	8.1585E+04	-7.4379E+00	8.3250E+04	-7.2879E+00	4.4955E+04	-7.1877E+00	3.8295E+04
180000	-7.7166E+00	8.3250E+04	-7.6764E+00	8.4915E+04	-7.6246E+00	8.1585E+04	-7.5244E+00	8.3250E+04	-7.3756E+00	4.4955E+04	-7.2764E+00	3.8295E+04
182000	-7.8007E+00	8.3250E+04	-7.7608E+00	8.4915E+04	-7.7094E+00	8.1585E+04	-7.6101E+00	8.3250E+04	-7.4626E+00	4.4955E+04	-7.3643E+00	3.8295E+04
184000	-7.8840E+00	8.3250E+04	-7.8445E+00	8.4915E+04	-7.7935E+00	8.1585E+04	-7.6950E+00	8.3250E+04	-7.5489E+00	4.4955E+04	-7.4514E+00	3.8295E+04
186000	-7.9667E+00	8.3250E+04	-7.9275E+00	8.4915E+04	-7.8770E+00	8.1585E+04	-7.7793E+00	8.3250E+04	-7.6344E+00	4.4955E+04	-7.5377E+00	3.8295E+04
188000	-8.0488E+00	8.3250E+04	-8.0099E+00	8.4915E+04	-7.9597E+00	8.1585E+04	-7.8628E+00	8.3250E+04	-7.7191E+00	4.4955E+04	-7.6233E+00	3.8295E+04
190000	-8.1302E+00	8.3250E+04	-8.0916E+00	8.4915E+04	-8.0418E+00	8.1585E+04	-7.9457E+00	8.3250E+04	-7.8032E+00	4.4955E+04	-7.7081E+00	3.8295E+04
192000	-8.2109E+00	8.3250E+04	-8.1726E+00	8.4915E+04	-8.1233E+00	8.1585E+04	-8.0279E+00	8.3250E+04	-7.8865E+00	4.4955E+04	-7.7923E+00	3.8295E+04
194000	-8.2910E+00	8.3250E+04	-8.2530E+00	8.4915E+04	-8.2041E+00	8.1585E+04	-8.1095E+00	8.3250E+04	-7.9692E+00	4.4955E+04	-7.8757E+00	3.8295E+04
196000	-8.3705E+00	8.3250E+04	-8.3328E+00	8.4915E+04	-8.2842E+00	8.1585E+04	-8.1904E+00	8.3250E+04	-8.0512E+00	4.4955E+04	-7.9585E+00	3.8295E+04
198000	-8.4494E+00	8.3250E+04	-8.4120E+00	8.4915E+04	-8.3638E+00	8.1585E+04	-8.2706E+00	8.3250E+04	-8.1326E+00	4.4955E+04	-8.0406E+00	3.8295E+04
200000	-8.5278E+00	8.3250E+04	-8.4906E+00	8.4915E+04	-8.4427E+00	8.1585E+04	-8.3503E+00	8.3250E+04	-8.2133E+00	4.4955E+04	-8.1220E+00	3.8295E+04
202000	-8.6055E+00	8.3250E+04	-8.5686E+00	8.4915E+04	-8.5211E+00	8.1585E+04	-8.4294E+00	8.3250E+04	-8.2934E+00	4.4955E+04	-8.2029E+00	3.8295E+04
204000	-8.6827E+00	8.3250E+04	-8.6461E+00	8.4915E+04	-8.5989E+00	8.1585E+04	-8.5078E+00	8.3250E+04	-8.3729E+00	4.4955E+04	-8.2830E+00	3.8295E+04
206000	-8.7593E+00	8.3250E+04	-8.7230E+00	8.4915E+04	-8.6761E+00	8.1585E+04	-8.5857E+00	8.3250E+04	-8.4518E+00	4.4955E+04	-8.3626E+00	3.8295E+04

Time (yrs)	Arg 1	Curve 1	Arg 2	Curve 2	Arg 3	Curve 3	Arg 4	Curve 4	Arg 5	Curve 5	Arg 6	Curve 6
208000	-8.8354E+00	8.3250E+04	-8.7993E+00	8.4915E+04	-8.7528E+00	8.1585E+04	-8.6631E+00	8.3250E+04	-8.5301E+00	4.4955E+04	-8.4416E+00	3.8295E+04
210000	-8.9110E+00	8.3250E+04	-8.8751E+00	8.4915E+04	-8.8290E+00	8.1585E+04	-8.7398E+00	8.3250E+04	-8.6078E+00	4.4955E+04	-8.5199E+00	3.8295E+04
212000	-8.9860E+00	8.3250E+04	-8.9504E+00	8.4915E+04	-8.9046E+00	8.1585E+04	-8.8160E+00	8.3250E+04	-8.6850E+00	4.4955E+04	-8.5978E+00	3.8295E+04
214000	-9.0605E+00	8.3250E+04	-9.0252E+00	8.4915E+04	-8.9796E+00	8.1585E+04	-8.8917E+00	8.3250E+04	-8.7616E+00	4.4955E+04	-8.6750E+00	3.8295E+04
216000	-9.1345E+00	8.3250E+04	-9.0994E+00	8.4915E+04	-9.0542E+00	8.1585E+04	-8.9669E+00	8.3250E+04	-8.8377E+00	4.4955E+04	-8.7517E+00	3.8295E+04
218000	-9.2081E+00	8.3250E+04	-9.1732E+00	8.4915E+04	-9.1283E+00	8.1585E+04	-9.0416E+00	8.3250E+04	-8.9132E+00	4.4955E+04	-8.8278E+00	3.8295E+04
220000	-9.2811E+00	8.3250E+04	-9.2465E+00	8.4915E+04	-9.2018E+00	8.1585E+04	-9.1157E+00	8.3250E+04	-8.9882E+00	4.4955E+04	-8.9034E+00	3.8295E+04
222000	-9.3537E+00	8.3250E+04	-9.3193E+00	8.4915E+04	-9.2749E+00	8.1585E+04	-9.1894E+00	8.3250E+04	-9.0627E+00	4.4955E+04	-8.9785E+00	3.8295E+04
224000	-9.4258E+00	8.3250E+04	-9.3916E+00	8.4915E+04	-9.3475E+00	8.1585E+04	-9.2625E+00	8.3250E+04	-9.1367E+00	4.4955E+04	-9.0531E+00	3.8295E+04
226000	-9.4974E+00	8.3250E+04	-9.4634E+00	8.4915E+04	-9.4197E+00	8.1585E+04	-9.3352E+00	8.3250E+04	-9.2103E+00	4.4955E+04	-9.1272E+00	3.8295E+04
228000	-9.5686E+00	8.3250E+04	-9.5348E+00	8.4915E+04	-9.4913E+00	8.1585E+04	-9.4074E+00	8.3250E+04	-9.2833E+00	4.4955E+04	-9.2007E+00	3.8295E+04
230000	-9.6393E+00	8.3250E+04	-9.6058E+00	8.4915E+04	-9.5626E+00	8.1585E+04	-9.4792E+00	8.3250E+04	-9.3558E+00	4.4955E+04	-9.2738E+00	3.8295E+04
232000	-9.7096E+00	8.3250E+04	-9.6763E+00	8.4915E+04	-9.6333E+00	8.1585E+04	-9.5505E+00	8.3250E+04	-9.4279E+00	4.4955E+04	-9.3464E+00	3.8295E+04
234000	-9.7795E+00	8.3250E+04	-9.7464E+00	8.4915E+04	-9.7037E+00	8.1585E+04	-9.6213E+00	8.3250E+04	-9.4995E+00	4.4955E+04	-9.4186E+00	3.8295E+04
236000	-9.8490E+00	8.3250E+04	-9.8160E+00	8.4915E+04	-9.7736E+00	8.1585E+04	-9.6918E+00	8.3250E+04	-9.5707E+00	4.4955E+04	-9.4903E+00	3.8295E+04
238000	-9.9180E+00	8.3250E+04	-9.8853E+00	8.4915E+04	-9.8431E+00	8.1585E+04	-9.7617E+00	8.3250E+04	-9.6414E+00	4.4955E+04	-9.5615E+00	3.8295E+04
240000	-9.9867E+00	8.3250E+04	-9.9541E+00	8.4915E+04	-9.9122E+00	8.1585E+04	-9.8313E+00	8.3250E+04	-9.7117E+00	4.4955E+04	-9.6323E+00	3.8295E+04
242000	-1.0055E+01	8.3250E+04	-1.0023E+01	8.4915E+04	-9.9808E+00	8.1585E+04	-9.9005E+00	8.3250E+04	-9.7816E+00	4.4955E+04	-9.7026E+00	3.8295E+04
244000	-1.0123E+01	8.3250E+04	-1.0091E+01	8.4915E+04	-1.0049E+01	8.1585E+04	-9.9692E+00	8.3250E+04	-9.8511E+00	4.4955E+04	-9.7726E+00	3.8295E+04
246000	-1.0190E+01	8.3250E+04	-1.0158E+01	8.4915E+04	-1.0117E+01	8.1585E+04	-1.0038E+01	8.3250E+04	-9.9201E+00	4.4955E+04	-9.8421E+00	3.8295E+04
248000	-1.0257E+01	8.3250E+04	-1.0225E+01	8.4915E+04	-1.0184E+01	8.1585E+04	-1.0105E+01	8.3250E+04	-9.9887E+00	4.4955E+04	-9.9111E+00	3.8295E+04
250000	-1.0324E+01	8.3250E+04	-1.0292E+01	8.4915E+04	-1.0252E+01	8.1585E+04	-1.0173E+01	8.3250E+04	-1.0057E+01	4.4955E+04	-9.9798E+00	3.8295E+04
252000	-1.0390E+01	8.3250E+04	-1.0359E+01	8.4915E+04	-1.0318E+01	8.1585E+04	-1.0240E+01	8.3250E+04	-1.0125E+01	4.4955E+04	-1.0048E+01	3.8295E+04
254000	-1.0456E+01	8.3250E+04	-1.0425E+01	8.4915E+04	-1.0385E+01	8.1585E+04	-1.0307E+01	8.3250E+04	-1.0192E+01	4.4955E+04	-1.0116E+01	3.8295E+04
256000	-1.0522E+01	8.3250E+04	-1.0491E+01	8.4915E+04	-1.0451E+01	8.1585E+04	-1.0373E+01	8.3250E+04	-1.0259E+01	4.4955E+04	-1.0183E+01	3.8295E+04
258000	-1.0587E+01	8.3250E+04	-1.0556E+01	8.4915E+04	-1.0516E+01	8.1585E+04	-1.0439E+01	8.3250E+04	-1.0326E+01	4.4955E+04	-1.0251E+01	3.8295E+04
260000	-1.0652E+01	8.3250E+04	-1.0621E+01	8.4915E+04	-1.0582E+01	8.1585E+04	-1.0505E+01	8.3250E+04	-1.0392E+01	4.4955E+04	-1.0317E+01	3.8295E+04
262000	-1.0717E+01	8.3250E+04	-1.0686E+01	8.4915E+04	-1.0646E+01	8.1585E+04	-1.0570E+01	8.3250E+04	-1.0458E+01	4.4955E+04	-1.0384E+01	3.8295E+04
264000	-1.0781E+01	8.3250E+04	-1.0750E+01	8.4915E+04	-1.0711E+01	8.1585E+04	-1.0635E+01	8.3250E+04	-1.0524E+01	4.4955E+04	-1.0450E+01	3.8295E+04
266000	-1.0845E+01	8.3250E+04	-1.0814E+01	8.4915E+04	-1.0775E+01	8.1585E+04	-1.0700E+01	8.3250E+04	-1.0589E+01	4.4955E+04	-1.0515E+01	3.8295E+04
268000	-1.0908E+01	8.3250E+04	-1.0878E+01	8.4915E+04	-1.0839E+01	8.1585E+04	-1.0764E+01	8.3250E+04	-1.0654E+01	4.4955E+04	-1.0581E+01	3.8295E+04
270000	-1.0971E+01	8.3250E+04	-1.0941E+01	8.4915E+04	-1.0903E+01	8.1585E+04	-1.0828E+01	8.3250E+04	-1.0718E+01	4.4955E+04	-1.0645E+01	3.8295E+04
272000	-1.1034E+01	8.3250E+04	-1.1004E+01	8.4915E+04	-1.0966E+01	8.1585E+04	-1.0892E+01	8.3250E+04	-1.0783E+01	4.4955E+04	-1.0710E+01	3.8295E+04
274000	-1.1097E+01	8.3250E+04	-1.1067E+01	8.4915E+04	-1.1029E+01	8.1585E+04	-1.0955E+01	8.3250E+04	-1.0847E+01	4.4955E+04	-1.0774E+01	3.8295E+04
276000	-1.1159E+01	8.3250E+04	-1.1130E+01	8.4915E+04	-1.1092E+01	8.1585E+04	-1.1018E+01	8.3250E+04	-1.0910E+01	4.4955E+04	-1.0838E+01	3.8295E+04
278000	-1.1221E+01	8.3250E+04	-1.1192E+01	8.4915E+04	-1.1154E+01	8.1585E+04	-1.1081E+01	8.3250E+04	-1.0973E+01	4.4955E+04	-1.0902E+01	3.8295E+04
280000	-1.1283E+01	8.3250E+04	-1.1254E+01	8.4915E+04	-1.1216E+01	8.1585E+04	-1.1143E+01	8.3250E+04	-1.1036E+01	4.4955E+04	-1.0965E+01	3.8295E+04
282000	-1.1344E+01	8.3250E+04	-1.1315E+01	8.4915E+04	-1.1278E+01	8.1585E+04	-1.1205E+01	8.3250E+04	-1.1099E+01	4.4955E+04	-1.1028E+01	3.8295E+04
284000	-1.1405E+01	8.3250E+04	-1.1376E+01	8.4915E+04	-1.1339E+01	8.1585E+04	-1.1267E+01	8.3250E+04	-1.1161E+01	4.4955E+04	-1.1091E+01	3.8295E+04
286000	-1.1466E+01	8.3250E+04	-1.1437E+01	8.4915E+04	-1.1400E+01	8.1585E+04	-1.1329E+01	8.3250E+04	-1.1223E+01	4.4955E+04	-1.1153E+01	3.8295E+04
288000	-1.1527E+01	8.3250E+04	-1.1498E+01	8.4915E+04	-1.1461E+01	8.1585E+04	-1.1390E+01	8.3250E+04	-1.1285E+01	4.4955E+04	-1.1215E+01	3.8295E+04
290000	-1.1587E+01	8.3250E+04	-1.1558E+01	8.4915E+04	-1.1521E+01	8.1585E+04	-1.1451E+01	8.3250E+04	-1.1346E+01	4.4955E+04	-1.1277E+01	3.8295E+04
292000	-1.1647E+01	8.3250E+04	-1.1618E+01	8.4915E+04	-1.1582E+01	8.1585E+04	-1.1511E+01	8.3250E+04	-1.1407E+01	4.4955E+04	-1.1338E+01	3.8295E+04
294000	-1.1706E+01	8.3250E+04	-1.1678E+01	8.4915E+04	-1.1642E+01	8.1585E+04	-1.1571E+01	8.3250E+04	-1.1468E+01	4.4955E+04	-1.1399E+01	3.8295E+04
296000	-1.1766E+01	8.3250E+04	-1.1738E+01	8.4915E+04	-1.1701E+01	8.1585E+04	-1.1631E+01	8.3250E+04	-1.1528E+01	4.4955E+04	-1.1460E+01	3.8295E+04
298000	-1.1825E+01	8.3250E+04	-1.1797E+01	8.4915E+04	-1.1761E+01	8.1585E+04	-1.1691E+01	8.3250E+04	-1.1589E+01	4.4955E+04	-1.1521E+01	3.8295E+04
300000	-1.1884E+01	8.3250E+04	-1.1856E+01	8.4915E+04	-1.1820E+01	8.1585E+04	-1.1751E+01	8.3250E+04	-1.1649E+01	4.4955E+04	-1.1581E+01	3.8295E+04
302000	-1.1942E+01	8.3250E+04	-1.1915E+01	8.4915E+04	-1.1879E+01	8.1585E+04	-1.1810E+01	8.3250E+04	-1.1708E+01	4.4955E+04	-1.1641E+01	3.8295E+04
304000	-1.2001E+01	8.3250E+04	-1.1973E+01	8.4915E+04	-1.1937E+01	8.1585E+04	-1.1869E+01	8.3250E+04	-1.1768E+01	4.4955E+04	-1.1700E+01	3.8295E+04
306000	-1.2059E+01	8.3250E+04	-1.2031E+01	8.4915E+04	-1.1996E+01	8.1585E+04	-1.1927E+01	8.3250E+04	-1.1827E+01	4.4955E+04	-1.1760E+01	3.8295E+04
308000	-1.2117E+01	8.3250E+04	-1.2089E+01	8.4915E+04	-1.2054E+01	8.1585E+04	-1.1986E+01	8.3250E+04	-1.1886E+01	4.4955E+04	-1.1819E+01	3.8295E+04
310000	-1.2174E+01	8.3250E+04	-1.2147E+01	8.4915E+04	-1.2112E+01	8.1585E+04	-1.2044E+01	8.3250E+04	-1.1944E+01	4.4955E+04	-1.1878E+01	3.8295E+04

Time (yrs)	Arg 1	Curve 1	Arg 2	Curve 2	Arg 3	Curve 3	Arg 4	Curve 4	Arg 5	Curve 5	Arg 6	Curve 6
312000	-1.2232E+01	8.3250E+04	-1.2204E+01	8.4915E+04	-1.2169E+01	8.1585E+04	-1.2102E+01	8.3250E+04	-1.2003E+01	4.4955E+04	-1.1937E+01	3.8295E+04
314000	-1.2289E+01	8.3250E+04	-1.2262E+01	8.4915E+04	-1.2227E+01	8.1585E+04	-1.2160E+01	8.3250E+04	-1.2061E+01	4.4955E+04	-1.1995E+01	3.8295E+04
316000	-1.2346E+01	8.3250E+04	-1.2319E+01	8.4915E+04	-1.2284E+01	8.1585E+04	-1.2217E+01	8.3250E+04	-1.2118E+01	4.4955E+04	-1.2053E+01	3.8295E+04
318000	-1.2402E+01	8.3250E+04	-1.2375E+01	8.4915E+04	-1.2341E+01	8.1585E+04	-1.2274E+01	8.3250E+04	-1.2176E+01	4.4955E+04	-1.2111E+01	3.8295E+04
320000	-1.2459E+01	8.3250E+04	-1.2432E+01	8.4915E+04	-1.2397E+01	8.1585E+04	-1.2331E+01	8.3250E+04	-1.2233E+01	4.4955E+04	-1.2169E+01	3.8295E+04
322000	-1.2515E+01	8.3250E+04	-1.2488E+01	8.4915E+04	-1.2454E+01	8.1585E+04	-1.2388E+01	8.3250E+04	-1.2290E+01	4.4955E+04	-1.2226E+01	3.8295E+04
324000	-1.2571E+01	8.3250E+04	-1.2544E+01	8.4915E+04	-1.2510E+01	8.1585E+04	-1.2444E+01	8.3250E+04	-1.2347E+01	4.4955E+04	-1.2283E+01	3.8295E+04
326000	-1.2626E+01	8.3250E+04	-1.2600E+01	8.4915E+04	-1.2566E+01	8.1585E+04	-1.2500E+01	8.3250E+04	-1.2404E+01	4.4955E+04	-1.2340E+01	3.8295E+04
328000	-1.2682E+01	8.3250E+04	-1.2656E+01	8.4915E+04	-1.2622E+01	8.1585E+04	-1.2556E+01	8.3250E+04	-1.2460E+01	4.4955E+04	-1.2397E+01	3.8295E+04
330000	-1.2737E+01	8.3250E+04	-1.2711E+01	8.4915E+04	-1.2677E+01	8.1585E+04	-1.2612E+01	8.3250E+04	-1.2516E+01	4.4955E+04	-1.2453E+01	3.8295E+04
332000	-1.2792E+01	8.3250E+04	-1.2766E+01	8.4915E+04	-1.2732E+01	8.1585E+04	-1.2668E+01	8.3250E+04	-1.2572E+01	4.4955E+04	-1.2509E+01	3.8295E+04
334000	-1.2847E+01	8.3250E+04	-1.2821E+01	8.4915E+04	-1.2787E+01	8.1585E+04	-1.2723E+01	8.3250E+04	-1.2628E+01	4.4955E+04	-1.2565E+01	3.8295E+04
336000	-1.2902E+01	8.3250E+04	-1.2876E+01	8.4915E+04	-1.2842E+01	8.1585E+04	-1.2778E+01	8.3250E+04	-1.2684E+01	4.4955E+04	-1.2621E+01	3.8295E+04
338000	-1.2956E+01	8.3250E+04	-1.2930E+01	8.4915E+04	-1.2897E+01	8.1585E+04	-1.2833E+01	8.3250E+04	-1.2739E+01	4.4955E+04	-1.2676E+01	3.8295E+04
340000	-1.3010E+01	8.3250E+04	-1.2984E+01	8.4915E+04	-1.2951E+01	8.1585E+04	-1.2888E+01	8.3250E+04	-1.2794E+01	4.4955E+04	-1.2732E+01	3.8295E+04
342000	-1.3064E+01	8.3250E+04	-1.3039E+01	8.4915E+04	-1.3006E+01	8.1585E+04	-1.2942E+01	8.3250E+04	-1.2849E+01	4.4955E+04	-1.2787E+01	3.8295E+04
344000	-1.3118E+01	8.3250E+04	-1.3092E+01	8.4915E+04	-1.3060E+01	8.1585E+04	-1.2996E+01	8.3250E+04	-1.2903E+01	4.4955E+04	-1.2842E+01	3.8295E+04
346000	-1.3172E+01	8.3250E+04	-1.3146E+01	8.4915E+04	-1.3113E+01	8.1585E+04	-1.3050E+01	8.3250E+04	-1.2958E+01	4.4955E+04	-1.2896E+01	3.8295E+04
348000	-1.3225E+01	8.3250E+04	-1.3200E+01	8.4915E+04	-1.3167E+01	8.1585E+04	-1.3104E+01	8.3250E+04	-1.3012E+01	4.4955E+04	-1.2951E+01	3.8295E+04
350000	-1.3278E+01	8.3250E+04	-1.3253E+01	8.4915E+04	-1.3220E+01	8.1585E+04	-1.3158E+01	8.3250E+04	-1.3066E+01	4.4955E+04	-1.3005E+01	3.8295E+04
352000	-1.3331E+01	8.3250E+04	-1.3306E+01	8.4915E+04	-1.3274E+01	8.1585E+04	-1.3211E+01	8.3250E+04	-1.3120E+01	4.4955E+04	-1.3059E+01	3.8295E+04
354000	-1.3384E+01	8.3250E+04	-1.3359E+01	8.4915E+04	-1.3327E+01	8.1585E+04	-1.3265E+01	8.3250E+04	-1.3173E+01	4.4955E+04	-1.3113E+01	3.8295E+04
356000	-1.3436E+01	8.3250E+04	-1.3411E+01	8.4915E+04	-1.3379E+01	8.1585E+04	-1.3318E+01	8.3250E+04	-1.3226E+01	4.4955E+04	-1.3166E+01	3.8295E+04
358000	-1.3489E+01	8.3250E+04	-1.3464E+01	8.4915E+04	-1.3432E+01	8.1585E+04	-1.3370E+01	8.3250E+04	-1.3280E+01	4.4955E+04	-1.3220E+01	3.8295E+04
360000	-1.3541E+01	8.3250E+04	-1.3516E+01	8.4915E+04	-1.3484E+01	8.1585E+04	-1.3423E+01	8.3250E+04	-1.3333E+01	4.4955E+04	-1.3273E+01	3.8295E+04
362000	-1.3593E+01	8.3250E+04	-1.3568E+01	8.4915E+04	-1.3537E+01	8.1585E+04	-1.3475E+01	8.3250E+04	-1.3385E+01	4.4955E+04	-1.3326E+01	3.8295E+04
364000	-1.3645E+01	8.3250E+04	-1.3620E+01	8.4915E+04	-1.3589E+01	8.1585E+04	-1.3528E+01	8.3250E+04	-1.3438E+01	4.4955E+04	-1.3379E+01	3.8295E+04
366000	-1.3697E+01	8.3250E+04	-1.3672E+01	8.4915E+04	-1.3641E+01	8.1585E+04	-1.3580E+01	8.3250E+04	-1.3490E+01	4.4955E+04	-1.3431E+01	3.8295E+04
368000	-1.3748E+01	8.3250E+04	-1.3724E+01	8.4915E+04	-1.3692E+01	8.1585E+04	-1.3632E+01	8.3250E+04	-1.3543E+01	4.4955E+04	-1.3484E+01	3.8295E+04
370000	-1.3799E+01	8.3250E+04	-1.3775E+01	8.4915E+04	-1.3744E+01	8.1585E+04	-1.3683E+01	8.3250E+04	-1.3595E+01	4.4955E+04	-1.3536E+01	3.8295E+04
372000	-1.3851E+01	8.3250E+04	-1.3826E+01	8.4915E+04	-1.3795E+01	8.1585E+04	-1.3735E+01	8.3250E+04	-1.3646E+01	4.4955E+04	-1.3588E+01	3.8295E+04
374000	-1.3901E+01	8.3250E+04	-1.3877E+01	8.4915E+04	-1.3846E+01	8.1585E+04	-1.3786E+01	8.3250E+04	-1.3698E+01	4.4955E+04	-1.3640E+01	3.8295E+04
376000	-1.3952E+01	8.3250E+04	-1.3928E+01	8.4915E+04	-1.3897E+01	8.1585E+04	-1.3837E+01	8.3250E+04	-1.3750E+01	4.4955E+04	-1.3691E+01	3.8295E+04
378000	-1.4003E+01	8.3250E+04	-1.3979E+01	8.4915E+04	-1.3948E+01	8.1585E+04	-1.3888E+01	8.3250E+04	-1.3801E+01	4.4955E+04	-1.3743E+01	3.8295E+04
380000	-1.4053E+01	8.3250E+04	-1.4029E+01	8.4915E+04	-1.3999E+01	8.1585E+04	-1.3939E+01	8.3250E+04	-1.3852E+01	4.4955E+04	-1.3794E+01	3.8295E+04
382000	-1.4104E+01	8.3250E+04	-1.4080E+01	8.4915E+04	-1.4049E+01	8.1585E+04	-1.3990E+01	8.3250E+04	-1.3903E+01	4.4955E+04	-1.3845E+01	3.8295E+04
384000	-1.4154E+01	8.3250E+04	-1.4130E+01	8.4915E+04	-1.4099E+01	8.1585E+04	-1.4040E+01	8.3250E+04	-1.3954E+01	4.4955E+04	-1.3896E+01	3.8295E+04
386000	-1.4204E+01	8.3250E+04	-1.4180E+01	8.4915E+04	-1.4149E+01	8.1585E+04	-1.4091E+01	8.3250E+04	-1.4004E+01	4.4955E+04	-1.3947E+01	3.8295E+04
388000	-1.4253E+01	8.3250E+04	-1.4230E+01	8.4915E+04	-1.4199E+01	8.1585E+04	-1.4141E+01	8.3250E+04	-1.4055E+01	4.4955E+04	-1.3998E+01	3.8295E+04
390000	-1.4303E+01	8.3250E+04	-1.4279E+01	8.4915E+04	-1.4249E+01	8.1585E+04	-1.4191E+01	8.3250E+04	-1.4105E+01	4.4955E+04	-1.4048E+01	3.8295E+04
392000	-1.4352E+01	8.3250E+04	-1.4329E+01	8.4915E+04	-1.4299E+01	8.1585E+04	-1.4241E+01	8.3250E+04	-1.4155E+01	4.4955E+04	-1.4099E+01	3.8295E+04
394000	-1.4402E+01	8.3250E+04	-1.4378E+01	8.4915E+04	-1.4348E+01	8.1585E+04	-1.4290E+01	8.3250E+04	-1.4205E+01	4.4955E+04	-1.4149E+01	3.8295E+04
396000	-1.4451E+01	8.3250E+04	-1.4428E+01	8.4915E+04	-1.4398E+01	8.1585E+04	-1.4340E+01	8.3250E+04	-1.4255E+01	4.4955E+04	-1.4199E+01	3.8295E+04
398000	-1.4500E+01	8.3250E+04	-1.4477E+01	8.4915E+04	-1.4447E+01	8.1585E+04	-1.4389E+01	8.3250E+04	-1.4304E+01	4.4955E+04	-1.4248E+01	3.8295E+04
400000	-1.4549E+01	8.3250E+04	-1.4525E+01	8.4915E+04	-1.4496E+01	8.1585E+04	-1.4438E+01	8.3250E+04	-1.4354E+01	4.4955E+04	-1.4298E+01	3.8295E+04
402000	-1.4597E+01	8.3250E+04	-1.4574E+01	8.4915E+04	-1.4545E+01	8.1585E+04	-1.4487E+01	8.3250E+04	-1.4403E+01	4.4955E+04	-1.4348E+01	3.8295E+04
404000	-1.4646E+01	8.3250E+04	-1.4623E+01	8.4915E+04	-1.4593E+01	8.1585E+04	-1.4536E+01	8.3250E+04	-1.4452E+01	4.4955E+04	-1.4397E+01	3.8295E+04
406000	-1.4694E+01	8.3250E+04	-1.4671E+01	8.4915E+04	-1.4642E+01	8.1585E+04	-1.4585E+01	8.3250E+04	-1.4501E+01	4.4955E+04	-1.4446E+01	3.8295E+04
408000	-1.4742E+01	8.3250E+04	-1.4720E+01	8.4915E+04	-1.4690E+01	8.1585E+04	-1.4633E+01	8.3250E+04	-1.4550E+01	4.4955E+04	-1.4495E+01	3.8295E+04
410000	-1.4790E+01	8.3250E+04	-1.4768E+01	8.4915E+04	-1.4738E+01	8.1585E+04	-1.4682E+01	8.3250E+04	-1.4599E+01	4.4955E+04	-1.4544E+01	3.8295E+04
412000	-1.4838E+01	8.3250E+04	-1.4816E+01	8.4915E+04	-1.4786E+01	8.1585E+04	-1.4730E+01	8.3250E+04	-1.4647E+01	4.4955E+04	-1.4592E+01	3.8295E+04
414000	-1.4886E+01	8.3250E+04	-1.4864E+01	8.4915E+04	-1.4834E+01	8.1585E+04	-1.4778E+01	8.3250E+04	-1.4696E+01	4.4955E+04	-1.4641E+01	3.8295E+04

Time (yrs)	Arg 1	Curve 1	Arg 2	Curve 2	Arg 3	Curve 3	Arg 4	Curve 4	Arg 5	Curve 5	Arg 6	Curve 6
416000	-1.4934E+01	8.3250E+04	-1.4911E+01	8.4915E+04	-1.4882E+01	8.1585E+04	-1.4826E+01	8.3250E+04	-1.4744E+01	4.4955E+04	-1.4689E+01	3.8295E+04
418000	-1.4981E+01	8.3250E+04	-1.4959E+01	8.4915E+04	-1.4930E+01	8.1585E+04	-1.4874E+01	8.3250E+04	-1.4792E+01	4.4955E+04	-1.4738E+01	3.8295E+04
420000	-1.5029E+01	8.3250E+04	-1.5006E+01	8.4915E+04	-1.4977E+01	8.1585E+04	-1.4922E+01	8.3250E+04	-1.4840E+01	4.4955E+04	-1.4786E+01	3.8295E+04
422000	-1.5076E+01	8.3250E+04	-1.5053E+01	8.4915E+04	-1.5025E+01	8.1585E+04	-1.4969E+01	8.3250E+04	-1.4888E+01	4.4955E+04	-1.4834E+01	3.8295E+04
424000	-1.5123E+01	8.3250E+04	-1.5101E+01	8.4915E+04	-1.5072E+01	8.1585E+04	-1.5017E+01	8.3250E+04	-1.4935E+01	4.4955E+04	-1.4881E+01	3.8295E+04
426000	-1.5170E+01	8.3250E+04	-1.5148E+01	8.4915E+04	-1.5119E+01	8.1585E+04	-1.5064E+01	8.3250E+04	-1.4983E+01	4.4955E+04	-1.4929E+01	3.8295E+04
428000	-1.5217E+01	8.3250E+04	-1.5194E+01	8.4915E+04	-1.5166E+01	8.1585E+04	-1.5111E+01	8.3250E+04	-1.5030E+01	4.4955E+04	-1.4977E+01	3.8295E+04
430000	-1.5263E+01	8.3250E+04	-1.5241E+01	8.4915E+04	-1.5213E+01	8.1585E+04	-1.5158E+01	8.3250E+04	-1.5077E+01	4.4955E+04	-1.5024E+01	3.8295E+04
432000	-1.5310E+01	8.3250E+04	-1.5288E+01	8.4915E+04	-1.5259E+01	8.1585E+04	-1.5205E+01	8.3250E+04	-1.5124E+01	4.4955E+04	-1.5071E+01	3.8295E+04
434000	-1.5356E+01	8.3250E+04	-1.5334E+01	8.4915E+04	-1.5306E+01	8.1585E+04	-1.5251E+01	8.3250E+04	-1.5171E+01	4.4955E+04	-1.5118E+01	3.8295E+04
436000	-1.5402E+01	8.3250E+04	-1.5381E+01	8.4915E+04	-1.5352E+01	8.1585E+04	-1.5298E+01	8.3250E+04	-1.5218E+01	4.4955E+04	-1.5165E+01	3.8295E+04
438000	-1.5449E+01	8.3250E+04	-1.5427E+01	8.4915E+04	-1.5399E+01	8.1585E+04	-1.5344E+01	8.3250E+04	-1.5265E+01	4.4955E+04	-1.5212E+01	3.8295E+04
440000	-1.5495E+01	8.3250E+04	-1.5473E+01	8.4915E+04	-1.5445E+01	8.1585E+04	-1.5391E+01	8.3250E+04	-1.5311E+01	4.4955E+04	-1.5259E+01	3.8295E+04
442000	-1.5540E+01	8.3250E+04	-1.5519E+01	8.4915E+04	-1.5491E+01	8.1585E+04	-1.5437E+01	8.3250E+04	-1.5358E+01	4.4955E+04	-1.5305E+01	3.8295E+04
444000	-1.5586E+01	8.3250E+04	-1.5564E+01	8.4915E+04	-1.5537E+01	8.1585E+04	-1.5483E+01	8.3250E+04	-1.5404E+01	4.4955E+04	-1.5352E+01	3.8295E+04
446000	-1.5632E+01	8.3250E+04	-1.5610E+01	8.4915E+04	-1.5582E+01	8.1585E+04	-1.5529E+01	8.3250E+04	-1.5450E+01	4.4955E+04	-1.5398E+01	3.8295E+04
448000	-1.5677E+01	8.3250E+04	-1.5656E+01	8.4915E+04	-1.5628E+01	8.1585E+04	-1.5575E+01	8.3250E+04	-1.5496E+01	4.4955E+04	-1.5444E+01	3.8295E+04
450000	-1.5723E+01	8.3250E+04	-1.5701E+01	8.4915E+04	-1.5673E+01	8.1585E+04	-1.5620E+01	8.3250E+04	-1.5542E+01	4.4955E+04	-1.5490E+01	3.8295E+04
452000	-1.5768E+01	8.3250E+04	-1.5746E+01	8.4915E+04	-1.5719E+01	8.1585E+04	-1.5666E+01	8.3250E+04	-1.5588E+01	4.4955E+04	-1.5536E+01	3.8295E+04
454000	-1.5813E+01	8.3250E+04	-1.5792E+01	8.4915E+04	-1.5764E+01	8.1585E+04	-1.5711E+01	8.3250E+04	-1.5633E+01	4.4955E+04	-1.5582E+01	3.8295E+04
456000	-1.5858E+01	8.3250E+04	-1.5837E+01	8.4915E+04	-1.5809E+01	8.1585E+04	-1.5756E+01	8.3250E+04	-1.5679E+01	4.4955E+04	-1.5627E+01	3.8295E+04
458000	-1.5903E+01	8.3250E+04	-1.5882E+01	8.4915E+04	-1.5854E+01	8.1585E+04	-1.5801E+01	8.3250E+04	-1.5724E+01	4.4955E+04	-1.5673E+01	3.8295E+04
460000	-1.5948E+01	8.3250E+04	-1.5926E+01	8.4915E+04	-1.5899E+01	8.1585E+04	-1.5847E+01	8.3250E+04	-1.5769E+01	4.4955E+04	-1.5718E+01	3.8295E+04
462000	-1.5992E+01	8.3250E+04	-1.5971E+01	8.4915E+04	-1.5944E+01	8.1585E+04	-1.5891E+01	8.3250E+04	-1.5814E+01	4.4955E+04	-1.5763E+01	3.8295E+04
464000	-1.6037E+01	8.3250E+04	-1.6016E+01	8.4915E+04	-1.5988E+01	8.1585E+04	-1.5936E+01	8.3250E+04	-1.5859E+01	4.4955E+04	-1.5808E+01	3.8295E+04
466000	-1.6081E+01	8.3250E+04	-1.6060E+01	8.4915E+04	-1.6033E+01	8.1585E+04	-1.5981E+01	8.3250E+04	-1.5904E+01	4.4955E+04	-1.5853E+01	3.8295E+04
468000	-1.6125E+01	8.3250E+04	-1.6104E+01	8.4915E+04	-1.6077E+01	8.1585E+04	-1.6025E+01	8.3250E+04	-1.5949E+01	4.4955E+04	-1.5898E+01	3.8295E+04
470000	-1.6170E+01	8.3250E+04	-1.6149E+01	8.4915E+04	-1.6122E+01	8.1585E+04	-1.6070E+01	8.3250E+04	-1.5994E+01	4.4955E+04	-1.5943E+01	3.8295E+04
472000	-1.6214E+01	8.3250E+04	-1.6193E+01	8.4915E+04	-1.6166E+01	8.1585E+04	-1.6114E+01	8.3250E+04	-1.6038E+01	4.4955E+04	-1.5988E+01	3.8295E+04
474000	-1.6258E+01	8.3250E+04	-1.6237E+01	8.4915E+04	-1.6210E+01	8.1585E+04	-1.6158E+01	8.3250E+04	-1.6082E+01	4.4955E+04	-1.6032E+01	3.8295E+04
476000	-1.6301E+01	8.3250E+04	-1.6281E+01	8.4915E+04	-1.6254E+01	8.1585E+04	-1.6202E+01	8.3250E+04	-1.6127E+01	4.4955E+04	-1.6077E+01	3.8295E+04
478000	-1.6345E+01	8.3250E+04	-1.6324E+01	8.4915E+04	-1.6298E+01	8.1585E+04	-1.6246E+01	8.3250E+04	-1.6171E+01	4.4955E+04	-1.6121E+01	3.8295E+04
480000	-1.6389E+01	8.3250E+04	-1.6368E+01	8.4915E+04	-1.6341E+01	8.1585E+04	-1.6290E+01	8.3250E+04	-1.6215E+01	4.4955E+04	-1.6165E+01	3.8295E+04
482000	-1.6432E+01	8.3250E+04	-1.6411E+01	8.4915E+04	-1.6385E+01	8.1585E+04	-1.6334E+01	8.3250E+04	-1.6259E+01	4.4955E+04	-1.6209E+01	3.8295E+04
484000	-1.6475E+01	8.3250E+04	-1.6455E+01	8.4915E+04	-1.6428E+01	8.1585E+04	-1.6378E+01	8.3250E+04	-1.6303E+01	4.4955E+04	-1.6253E+01	3.8295E+04
486000	-1.6519E+01	8.3250E+04	-1.6498E+01	8.4915E+04	-1.6472E+01	8.1585E+04	-1.6421E+01	8.3250E+04	-1.6346E+01	4.4955E+04	-1.6297E+01	3.8295E+04
488000	-1.6562E+01	8.3250E+04	-1.6541E+01	8.4915E+04	-1.6515E+01	8.1585E+04	-1.6464E+01	8.3250E+04	-1.6390E+01	4.4955E+04	-1.6341E+01	3.8295E+04
490000	-1.6605E+01	8.3250E+04	-1.6585E+01	8.4915E+04	-1.6558E+01	8.1585E+04	-1.6508E+01	8.3250E+04	-1.6433E+01	4.4955E+04	-1.6384E+01	3.8295E+04
492000	-1.6648E+01	8.3250E+04	-1.6628E+01	8.4915E+04	-1.6601E+01	8.1585E+04	-1.6551E+01	8.3250E+04	-1.6477E+01	4.4955E+04	-1.6428E+01	3.8295E+04
494000	-1.6691E+01	8.3250E+04	-1.6670E+01	8.4915E+04	-1.6644E+01	8.1585E+04	-1.6594E+01	8.3250E+04	-1.6520E+01	4.4955E+04	-1.6471E+01	3.8295E+04
496000	-1.6733E+01	8.3250E+04	-1.6713E+01	8.4915E+04	-1.6687E+01	8.1585E+04	-1.6637E+01	8.3250E+04	-1.6563E+01	4.4955E+04	-1.6514E+01	3.8295E+04
498000	-1.6776E+01	8.3250E+04	-1.6756E+01	8.4915E+04	-1.6730E+01	8.1585E+04	-1.6680E+01	8.3250E+04	-1.6606E+01	4.4955E+04	-1.6558E+01	3.8295E+04
500000	-1.6819E+01	8.3250E+04	-1.6798E+01	8.4915E+04	-1.6772E+01	8.1585E+04	-1.6723E+01	8.3250E+04	-1.6649E+01	4.4955E+04	-1.6601E+01	3.8295E+04
502000	-1.6861E+01	8.3250E+04	-1.6841E+01	8.4915E+04	-1.6815E+01	8.1585E+04	-1.6765E+01	8.3250E+04	-1.6692E+01	4.4955E+04	-1.6644E+01	3.8295E+04
504000	-1.6903E+01	8.3250E+04	-1.6883E+01	8.4915E+04	-1.6857E+01	8.1585E+04	-1.6808E+01	8.3250E+04	-1.6735E+01	4.4955E+04	-1.6686E+01	3.8295E+04
506000	-1.6946E+01	8.3250E+04	-1.6926E+01	8.4915E+04	-1.6900E+01	8.1585E+04	-1.6850E+01	8.3250E+04	-1.6777E+01	4.4955E+04	-1.6729E+01	3.8295E+04
508000	-1.6988E+01	8.3250E+04	-1.6968E+01	8.4915E+04	-1.6942E+01	8.1585E+04	-1.6893E+01	8.3250E+04	-1.6820E+01	4.4955E+04	-1.6772E+01	3.8295E+04
510000	-1.7030E+01	8.3250E+04	-1.7010E+01	8.4915E+04	-1.6984E+01	8.1585E+04	-1.6935E+01	8.3250E+04	-1.6862E+01	4.4955E+04	-1.6814E+01	3.8295E+04
512000	-1.7072E+01	8.3250E+04	-1.7052E+01	8.4915E+04	-1.7026E+01	8.1585E+04	-1.6977E+01	8.3250E+04	-1.6905E+01	4.4955E+04	-1.6857E+01	3.8295E+04
514000	-1.7113E+01	8.3250E+04	-1.7094E+01	8.4915E+04	-1.7068E+01	8.1585E+04	-1.7019E+01	8.3250E+04	-1.6947E+01	4.4955E+04	-1.6899E+01	3.8295E+04
516000	-1.7155E+01	8.3250E+04	-1.7135E+01	8.4915E+04	-1.7110E+01	8.1585E+04	-1.7061E+01	8.3250E+04	-1.6989E+01	4.4955E+04	-1.6941E+01	3.8295E+04
518000	-1.7197E+01	8.3250E+04	-1.7177E+01	8.4915E+04	-1.7152E+01	8.1585E+04	-1.7103E+01	8.3250E+04	-1.7031E+01	4.4955E+04	-1.6983E+01	3.8295E+04

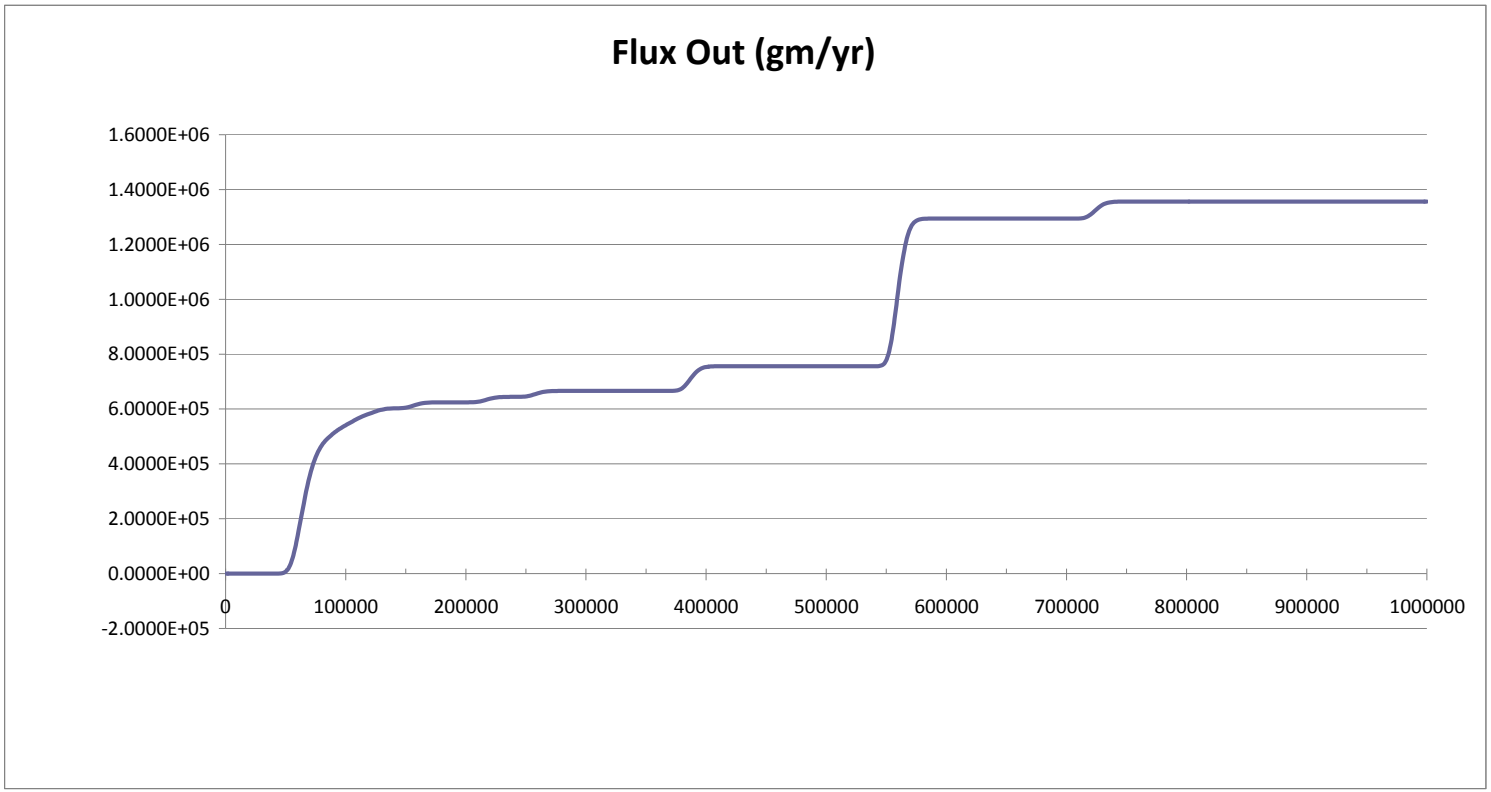
Time (yrs)	Arg 1	Curve 1	Arg 2	Curve 2	Arg 3	Curve 3	Arg 4	Curve 4	Arg 5	Curve 5	Arg 6	Curve 6
520000	-1.7238E+01	8.3250E+04	-1.7219E+01	8.4915E+04	-1.7193E+01	8.1585E+04	-1.7145E+01	8.3250E+04	-1.7073E+01	4.4955E+04	-1.7026E+01	3.8295E+04
522000	-1.7280E+01	8.3250E+04	-1.7260E+01	8.4915E+04	-1.7235E+01	8.1585E+04	-1.7186E+01	8.3250E+04	-1.7115E+01	4.4955E+04	-1.7067E+01	3.8295E+04
524000	-1.7321E+01	8.3250E+04	-1.7301E+01	8.4915E+04	-1.7276E+01	8.1585E+04	-1.7228E+01	8.3250E+04	-1.7156E+01	4.4955E+04	-1.7109E+01	3.8295E+04
526000	-1.7362E+01	8.3250E+04	-1.7343E+01	8.4915E+04	-1.7318E+01	8.1585E+04	-1.7269E+01	8.3250E+04	-1.7198E+01	4.4955E+04	-1.7151E+01	3.8295E+04
528000	-1.7403E+01	8.3250E+04	-1.7384E+01	8.4915E+04	-1.7359E+01	8.1585E+04	-1.7311E+01	8.3250E+04	-1.7240E+01	4.4955E+04	-1.7193E+01	3.8295E+04
530000	-1.7445E+01	8.3250E+04	-1.7425E+01	8.4915E+04	-1.7400E+01	8.1585E+04	-1.7352E+01	8.3250E+04	-1.7281E+01	4.4955E+04	-1.7234E+01	3.8295E+04
532000	-1.7485E+01	8.3250E+04	-1.7466E+01	8.4915E+04	-1.7441E+01	8.1585E+04	-1.7393E+01	8.3250E+04	-1.7322E+01	4.4955E+04	-1.7276E+01	3.8295E+04
534000	-1.7526E+01	8.3250E+04	-1.7507E+01	8.4915E+04	-1.7482E+01	8.1585E+04	-1.7434E+01	8.3250E+04	-1.7364E+01	4.4955E+04	-1.7317E+01	3.8295E+04
536000	-1.7567E+01	8.3250E+04	-1.7548E+01	8.4915E+04	-1.7523E+01	8.1585E+04	-1.7475E+01	8.3250E+04	-1.7405E+01	4.4955E+04	-1.7358E+01	3.8295E+04
538000	-1.7608E+01	8.3250E+04	-1.7588E+01	8.4915E+04	-1.7564E+01	8.1585E+04	-1.7516E+01	8.3250E+04	-1.7446E+01	4.4955E+04	-1.7399E+01	3.8295E+04
540000	-1.7648E+01	8.3250E+04	-1.7629E+01	8.4915E+04	-1.7604E+01	8.1585E+04	-1.7557E+01	8.3250E+04	-1.7487E+01	4.4955E+04	-1.7440E+01	3.8295E+04
542000	-1.7689E+01	8.3250E+04	-1.7670E+01	8.4915E+04	-1.7645E+01	8.1585E+04	-1.7597E+01	8.3250E+04	-1.7528E+01	4.4955E+04	-1.7481E+01	3.8295E+04
544000	-1.7729E+01	8.3250E+04	-1.7710E+01	8.4915E+04	-1.7685E+01	8.1585E+04	-1.7638E+01	8.3250E+04	-1.7568E+01	4.4955E+04	-1.7522E+01	3.8295E+04
546000	-1.7770E+01	8.3250E+04	-1.7750E+01	8.4915E+04	-1.7726E+01	8.1585E+04	-1.7679E+01	8.3250E+04	-1.7609E+01	4.4955E+04	-1.7563E+01	3.8295E+04
548000	-1.7810E+01	8.3250E+04	-1.7791E+01	8.4915E+04	-1.7766E+01	8.1585E+04	-1.7719E+01	8.3250E+04	-1.7650E+01	4.4955E+04	-1.7604E+01	3.8295E+04
550000	-1.7850E+01	8.3250E+04	-1.7831E+01	8.4915E+04	-1.7806E+01	8.1585E+04	-1.7759E+01	8.3250E+04	-1.7690E+01	4.4955E+04	-1.7644E+01	3.8295E+04
552000	-1.7890E+01	8.3250E+04	-1.7871E+01	8.4915E+04	-1.7847E+01	8.1585E+04	-1.7800E+01	8.3250E+04	-1.7731E+01	4.4955E+04	-1.7685E+01	3.8295E+04
554000	-1.7930E+01	8.3250E+04	-1.7911E+01	8.4915E+04	-1.7887E+01	8.1585E+04	-1.7840E+01	8.3250E+04	-1.7771E+01	4.4955E+04	-1.7725E+01	3.8295E+04
556000	-1.7970E+01	8.3250E+04	-1.7951E+01	8.4915E+04	-1.7927E+01	8.1585E+04	-1.7880E+01	8.3250E+04	-1.7811E+01	4.4955E+04	-1.7766E+01	3.8295E+04
558000	-1.8010E+01	8.3250E+04	-1.7991E+01	8.4915E+04	-1.7967E+01	8.1585E+04	-1.7920E+01	8.3250E+04	-1.7851E+01	4.4955E+04	-1.7806E+01	3.8295E+04
560000	-1.8049E+01	8.3250E+04	-1.8031E+01	8.4915E+04	-1.8006E+01	8.1585E+04	-1.7960E+01	8.3250E+04	-1.7891E+01	4.4955E+04	-1.7846E+01	3.8295E+04
562000	-1.8089E+01	8.3250E+04	-1.8070E+01	8.4915E+04	-1.8046E+01	8.1585E+04	-1.8000E+01	8.3250E+04	-1.7931E+01	4.4955E+04	-1.7886E+01	3.8295E+04
564000	-1.8129E+01	8.3250E+04	-1.8110E+01	8.4915E+04	-1.8086E+01	8.1585E+04	-1.8039E+01	8.3250E+04	-1.7971E+01	4.4955E+04	-1.7926E+01	3.8295E+04
566000	-1.8168E+01	8.3250E+04	-1.8149E+01	8.4915E+04	-1.8125E+01	8.1585E+04	-1.8079E+01	8.3250E+04	-1.8011E+01	4.4955E+04	-1.7966E+01	3.8295E+04
568000	-1.8207E+01	8.3250E+04	-1.8189E+01	8.4915E+04	-1.8165E+01	8.1585E+04	-1.8119E+01	8.3250E+04	-1.8051E+01	4.4955E+04	-1.8006E+01	3.8295E+04
570000	-1.8247E+01	8.3250E+04	-1.8228E+01	8.4915E+04	-1.8204E+01	8.1585E+04	-1.8158E+01	8.3250E+04	-1.8090E+01	4.4955E+04	-1.8045E+01	3.8295E+04
572000	-1.8286E+01	8.3250E+04	-1.8267E+01	8.4915E+04	-1.8243E+01	8.1585E+04	-1.8197E+01	8.3250E+04	-1.8130E+01	4.4955E+04	-1.8085E+01	3.8295E+04
574000	-1.8325E+01	8.3250E+04	-1.8307E+01	8.4915E+04	-1.8283E+01	8.1585E+04	-1.8237E+01	8.3250E+04	-1.8169E+01	4.4955E+04	-1.8125E+01	3.8295E+04
576000	-1.8364E+01	8.3250E+04	-1.8346E+01	8.4915E+04	-1.8322E+01	8.1585E+04	-1.8276E+01	8.3250E+04	-1.8209E+01	4.4955E+04	-1.8164E+01	3.8295E+04
578000	-1.8403E+01	8.3250E+04	-1.8385E+01	8.4915E+04	-1.8361E+01	8.1585E+04	-1.8315E+01	8.3250E+04	-1.8248E+01	4.4955E+04	-1.8204E+01	3.8295E+04
580000	-1.8442E+01	8.3250E+04	-1.8424E+01	8.4915E+04	-1.8400E+01	8.1585E+04	-1.8354E+01	8.3250E+04	-1.8287E+01	4.4955E+04	-1.8243E+01	3.8295E+04
582000	-1.8481E+01	8.3250E+04	-1.8462E+01	8.4915E+04	-1.8439E+01	8.1585E+04	-1.8393E+01	8.3250E+04	-1.8326E+01	4.4955E+04	-1.8282E+01	3.8295E+04
584000	-1.8520E+01	8.3250E+04	-1.8501E+01	8.4915E+04	-1.8478E+01	8.1585E+04	-1.8432E+01	8.3250E+04	-1.8365E+01	4.4955E+04	-1.8321E+01	3.8295E+04
586000	-1.8558E+01	8.3250E+04	-1.8540E+01	8.4915E+04	-1.8516E+01	8.1585E+04	-1.8471E+01	8.3250E+04	-1.8404E+01	4.4955E+04	-1.8360E+01	3.8295E+04
588000	-1.8597E+01	8.3250E+04	-1.8579E+01	8.4915E+04	-1.8555E+01	8.1585E+04	-1.8510E+01	8.3250E+04	-1.8443E+01	4.4955E+04	-1.8399E+01	3.8295E+04
590000	-1.8635E+01	8.3250E+04	-1.8617E+01	8.4915E+04	-1.8594E+01	8.1585E+04	-1.8548E+01	8.3250E+04	-1.8482E+01	4.4955E+04	-1.8438E+01	3.8295E+04
592000	-1.8674E+01	8.3250E+04	-1.8656E+01	8.4915E+04	-1.8632E+01	8.1585E+04	-1.8587E+01	8.3250E+04	-1.8521E+01	4.4955E+04	-1.8477E+01	3.8295E+04
594000	-1.8712E+01	8.3250E+04	-1.8694E+01	8.4915E+04	-1.8671E+01	8.1585E+04	-1.8626E+01	8.3250E+04	-1.8559E+01	4.4955E+04	-1.8516E+01	3.8295E+04
596000	-1.8750E+01	8.3250E+04	-1.8732E+01	8.4915E+04	-1.8709E+01	8.1585E+04	-1.8664E+01	8.3250E+04	-1.8598E+01	4.4955E+04	-1.8554E+01	3.8295E+04
598000	-1.8789E+01	8.3250E+04	-1.8771E+01	8.4915E+04	-1.8747E+01	8.1585E+04	-1.8702E+01	8.3250E+04	-1.8637E+01	4.4955E+04	-1.8593E+01	3.8295E+04
600000	-1.8827E+01	8.3250E+04	-1.8809E+01	8.4915E+04	-1.8785E+01	8.1585E+04	-1.8741E+01	8.3250E+04	-1.8675E+01	4.4955E+04	-1.8632E+01	3.8295E+04
602000	-1.8865E+01	8.3250E+04	-1.8847E+01	8.4915E+04	-1.8824E+01	8.1585E+04	-1.8779E+01	8.3250E+04	-1.8713E+01	4.4955E+04	-1.8670E+01	3.8295E+04
604000	-1.8903E+01	8.3250E+04	-1.8885E+01	8.4915E+04	-1.8862E+01	8.1585E+04	-1.8817E+01	8.3250E+04	-1.8752E+01	4.4955E+04	-1.8708E+01	3.8295E+04
606000	-1.8941E+01	8.3250E+04	-1.8923E+01	8.4915E+04	-1.8900E+01	8.1585E+04	-1.8855E+01	8.3250E+04	-1.8790E+01	4.4955E+04	-1.8747E+01	3.8295E+04
608000	-1.8979E+01	8.3250E+04	-1.8961E+01	8.4915E+04	-1.8937E+01	8.1585E+04	-1.8893E+01	8.3250E+04	-1.8828E+01	4.4955E+04	-1.8785E+01	3.8295E+04
610000	-1.9016E+01	8.3250E+04	-1.8998E+01	8.4915E+04	-1.8975E+01	8.1585E+04	-1.8931E+01	8.3250E+04	-1.8866E+01	4.4955E+04	-1.8823E+01	3.8295E+04
612000	-1.9054E+01	8.3250E+04	-1.9036E+01	8.4915E+04	-1.9013E+01	8.1585E+04	-1.8969E+01	8.3250E+04	-1.8904E+01	4.4955E+04	-1.8861E+01	3.8295E+04
614000	-1.9092E+01	8.3250E+04	-1.9074E+01	8.4915E+04	-1.9051E+01	8.1585E+04	-1.9007E+01	8.3250E+04	-1.8942E+01	4.4955E+04	-1.8899E+01	3.8295E+04
616000	-1.9129E+01	8.3250E+04	-1.9111E+01	8.4915E+04	-1.9088E+01	8.1585E+04	-1.9044E+01	8.3250E+04	-1.8980E+01	4.4955E+04	-1.8937E+01	3.8295E+04
618000	-1.9167E+01	8.3250E+04	-1.9149E+01	8.4915E+04	-1.9126E+01	8.1585E+04	-1.9082E+01	8.3250E+04	-1.9017E+01	4.4955E+04	-1.8975E+01	3.8295E+04
620000	-1.9204E+01	8.3250E+04	-1.9186E+01	8.4915E+04	-1.9163E+01	8.1585E+04	-1.9120E+01	8.3250E+04	-1.9055E+01	4.4955E+04	-1.9013E+01	3.8295E+04
622000	-1.9241E+01	8.3250E+04	-1.9224E+01	8.4915E+04	-1.9201E+01	8.1585E+04	-1.9157E+01	8.3250E+04	-1.9093E+01	4.4955E+04	-1.9050E+01	3.8295E+04

Time (yrs)	Arg 1	Curve 1	Arg 2	Curve 2	Arg 3	Curve 3	Arg 4	Curve 4	Arg 5	Curve 5	Arg 6	Curve 6
624000	-1.9279E+01	8.3250E+04	-1.9261E+01	8.4915E+04	-1.9238E+01	8.1585E+04	-1.9194E+01	8.3250E+04	-1.9130E+01	4.4955E+04	-1.9088E+01	3.8295E+04
626000	-1.9316E+01	8.3250E+04	-1.9298E+01	8.4915E+04	-1.9275E+01	8.1585E+04	-1.9232E+01	8.3250E+04	-1.9168E+01	4.4955E+04	-1.9125E+01	3.8295E+04
628000	-1.9353E+01	8.3250E+04	-1.9335E+01	8.4915E+04	-1.9313E+01	8.1585E+04	-1.9269E+01	8.3250E+04	-1.9205E+01	4.4955E+04	-1.9163E+01	3.8295E+04
630000	-1.9390E+01	8.3250E+04	-1.9372E+01	8.4915E+04	-1.9350E+01	8.1585E+04	-1.9306E+01	8.3250E+04	-1.9242E+01	4.4955E+04	-1.9200E+01	3.8295E+04
632000	-1.9427E+01	8.3250E+04	-1.9409E+01	8.4915E+04	-1.9387E+01	8.1585E+04	-1.9343E+01	8.3250E+04	-1.9280E+01	4.4955E+04	-1.9238E+01	3.8295E+04
634000	-1.9464E+01	8.3250E+04	-1.9446E+01	8.4915E+04	-1.9424E+01	8.1585E+04	-1.9380E+01	8.3250E+04	-1.9317E+01	4.4955E+04	-1.9275E+01	3.8295E+04
636000	-1.9501E+01	8.3250E+04	-1.9483E+01	8.4915E+04	-1.9461E+01	8.1585E+04	-1.9417E+01	8.3250E+04	-1.9354E+01	4.4955E+04	-1.9312E+01	3.8295E+04
638000	-1.9537E+01	8.3250E+04	-1.9520E+01	8.4915E+04	-1.9498E+01	8.1585E+04	-1.9454E+01	8.3250E+04	-1.9391E+01	4.4955E+04	-1.9349E+01	3.8295E+04
640000	-1.9574E+01	8.3250E+04	-1.9557E+01	8.4915E+04	-1.9534E+01	8.1585E+04	-1.9491E+01	8.3250E+04	-1.9428E+01	4.4955E+04	-1.9386E+01	3.8295E+04
642000	-1.9611E+01	8.3250E+04	-1.9593E+01	8.4915E+04	-1.9571E+01	8.1585E+04	-1.9528E+01	8.3250E+04	-1.9465E+01	4.4955E+04	-1.9423E+01	3.8295E+04
644000	-1.9647E+01	8.3250E+04	-1.9630E+01	8.4915E+04	-1.9608E+01	8.1585E+04	-1.9565E+01	8.3250E+04	-1.9502E+01	4.4955E+04	-1.9460E+01	3.8295E+04
646000	-1.9684E+01	8.3250E+04	-1.9667E+01	8.4915E+04	-1.9644E+01	8.1585E+04	-1.9601E+01	8.3250E+04	-1.9539E+01	4.4955E+04	-1.9497E+01	3.8295E+04
648000	-1.9720E+01	8.3250E+04	-1.9703E+01	8.4915E+04	-1.9681E+01	8.1585E+04	-1.9638E+01	8.3250E+04	-1.9575E+01	4.4955E+04	-1.9534E+01	3.8295E+04
650000	-1.9757E+01	8.3250E+04	-1.9739E+01	8.4915E+04	-1.9717E+01	8.1585E+04	-1.9675E+01	8.3250E+04	-1.9612E+01	4.4955E+04	-1.9570E+01	3.8295E+04
652000	-1.9793E+01	8.3250E+04	-1.9776E+01	8.4915E+04	-1.9754E+01	8.1585E+04	-1.9711E+01	8.3250E+04	-1.9648E+01	4.4955E+04	-1.9607E+01	3.8295E+04
654000	-1.9829E+01	8.3250E+04	-1.9812E+01	8.4915E+04	-1.9790E+01	8.1585E+04	-1.9747E+01	8.3250E+04	-1.9685E+01	4.4955E+04	-1.9644E+01	3.8295E+04
656000	-1.9865E+01	8.3250E+04	-1.9848E+01	8.4915E+04	-1.9826E+01	8.1585E+04	-1.9784E+01	8.3250E+04	-1.9721E+01	4.4955E+04	-1.9680E+01	3.8295E+04
658000	-1.9902E+01	8.3250E+04	-1.9884E+01	8.4915E+04	-1.9862E+01	8.1585E+04	-1.9820E+01	8.3250E+04	-1.9758E+01	4.4955E+04	-1.9717E+01	3.8295E+04
660000	-1.9938E+01	8.3250E+04	-1.9920E+01	8.4915E+04	-1.9898E+01	8.1585E+04	-1.9856E+01	8.3250E+04	-1.9794E+01	4.4955E+04	-1.9753E+01	3.8295E+04
662000	-1.9974E+01	8.3250E+04	-1.9956E+01	8.4915E+04	-1.9935E+01	8.1585E+04	-1.9892E+01	8.3250E+04	-1.9830E+01	4.4955E+04	-1.9789E+01	3.8295E+04
664000	-2.0009E+01	8.3250E+04	-1.9992E+01	8.4915E+04	-1.9971E+01	8.1585E+04	-1.9928E+01	8.3250E+04	-1.9866E+01	4.4955E+04	-1.9826E+01	3.8295E+04
666000	-2.0045E+01	8.3250E+04	-2.0028E+01	8.4915E+04	-2.0006E+01	8.1585E+04	-1.9964E+01	8.3250E+04	-1.9903E+01	4.4955E+04	-1.9862E+01	3.8295E+04
668000	-2.0081E+01	8.3250E+04	-2.0064E+01	8.4915E+04	-2.0042E+01	8.1585E+04	-2.0000E+01	8.3250E+04	-1.9939E+01	4.4955E+04	-1.9898E+01	3.8295E+04
670000	-2.0117E+01	8.3250E+04	-2.0100E+01	8.4915E+04	-2.0078E+01	8.1585E+04	-2.0036E+01	8.3250E+04	-1.9975E+01	4.4955E+04	-1.9934E+01	3.8295E+04
672000	-2.0153E+01	8.3250E+04	-2.0136E+01	8.4915E+04	-2.0114E+01	8.1585E+04	-2.0072E+01	8.3250E+04	-2.0011E+01	4.4955E+04	-1.9970E+01	3.8295E+04
674000	-2.0188E+01	8.3250E+04	-2.0171E+01	8.4915E+04	-2.0150E+01	8.1585E+04	-2.0108E+01	8.3250E+04	-2.0046E+01	4.4955E+04	-2.0006E+01	3.8295E+04
676000	-2.0224E+01	8.3250E+04	-2.0207E+01	8.4915E+04	-2.0185E+01	8.1585E+04	-2.0143E+01	8.3250E+04	-2.0082E+01	4.4955E+04	-2.0042E+01	3.8295E+04
678000	-2.0259E+01	8.3250E+04	-2.0242E+01	8.4915E+04	-2.0221E+01	8.1585E+04	-2.0179E+01	8.3250E+04	-2.0118E+01	4.4955E+04	-2.0078E+01	3.8295E+04
680000	-2.0295E+01	8.3250E+04	-2.0278E+01	8.4915E+04	-2.0256E+01	8.1585E+04	-2.0215E+01	8.3250E+04	-2.0154E+01	4.4955E+04	-2.0113E+01	3.8295E+04
682000	-2.0330E+01	8.3250E+04	-2.0313E+01	8.4915E+04	-2.0292E+01	8.1585E+04	-2.0250E+01	8.3250E+04	-2.0189E+01	4.4955E+04	-2.0149E+01	3.8295E+04
684000	-2.0365E+01	8.3250E+04	-2.0349E+01	8.4915E+04	-2.0327E+01	8.1585E+04	-2.0286E+01	8.3250E+04	-2.0225E+01	4.4955E+04	-2.0185E+01	3.8295E+04
686000	-2.0401E+01	8.3250E+04	-2.0384E+01	8.4915E+04	-2.0362E+01	8.1585E+04	-2.0321E+01	8.3250E+04	-2.0260E+01	4.4955E+04	-2.0220E+01	3.8295E+04
688000	-2.0436E+01	8.3250E+04	-2.0419E+01	8.4915E+04	-2.0398E+01	8.1585E+04	-2.0356E+01	8.3250E+04	-2.0296E+01	4.4955E+04	-2.0256E+01	3.8295E+04
690000	-2.0471E+01	8.3250E+04	-2.0454E+01	8.4915E+04	-2.0433E+01	8.1585E+04	-2.0392E+01	8.3250E+04	-2.0331E+01	4.4955E+04	-2.0291E+01	3.8295E+04
692000	-2.0506E+01	8.3250E+04	-2.0489E+01	8.4915E+04	-2.0468E+01	8.1585E+04	-2.0427E+01	8.3250E+04	-2.0366E+01	4.4955E+04	-2.0326E+01	3.8295E+04
694000	-2.0541E+01	8.3250E+04	-2.0524E+01	8.4915E+04	-2.0503E+01	8.1585E+04	-2.0462E+01	8.3250E+04	-2.0402E+01	4.4955E+04	-2.0362E+01	3.8295E+04
696000	-2.0576E+01	8.3250E+04	-2.0559E+01	8.4915E+04	-2.0538E+01	8.1585E+04	-2.0497E+01	8.3250E+04	-2.0437E+01	4.4955E+04	-2.0397E+01	3.8295E+04
698000	-2.0611E+01	8.3250E+04	-2.0594E+01	8.4915E+04	-2.0573E+01	8.1585E+04	-2.0532E+01	8.3250E+04	-2.0472E+01	4.4955E+04	-2.0432E+01	3.8295E+04
700000	-2.0646E+01	8.3250E+04	-2.0629E+01	8.4915E+04	-2.0608E+01	8.1585E+04	-2.0567E+01	8.3250E+04	-2.0507E+01	4.4955E+04	-2.0467E+01	3.8295E+04
702000	-2.0680E+01	8.3250E+04	-2.0664E+01	8.4915E+04	-2.0643E+01	8.1585E+04	-2.0602E+01	8.3250E+04	-2.0542E+01	4.4955E+04	-2.0502E+01	3.8295E+04
704000	-2.0715E+01	8.3250E+04	-2.0699E+01	8.4915E+04	-2.0678E+01	8.1585E+04	-2.0637E+01	8.3250E+04	-2.0577E+01	4.4955E+04	-2.0538E+01	3.8295E+04
706000	-2.0750E+01	8.3250E+04	-2.0733E+01	8.4915E+04	-2.0712E+01	8.1585E+04	-2.0672E+01	8.3250E+04	-2.0612E+01	4.4955E+04	-2.0572E+01	3.8295E+04
708000	-2.0784E+01	8.3250E+04	-2.0768E+01	8.4915E+04	-2.0747E+01	8.1585E+04	-2.0706E+01	8.3250E+04	-2.0647E+01	4.4955E+04	-2.0607E+01	3.8295E+04
710000	-2.0819E+01	8.3250E+04	-2.0803E+01	8.4915E+04	-2.0782E+01	8.1585E+04	-2.0741E+01	8.3250E+04	-2.0682E+01	4.4955E+04	-2.0642E+01	3.8295E+04
712000	-2.0854E+01	8.3250E+04	-2.0837E+01	8.4915E+04	-2.0816E+01	8.1585E+04	-2.0776E+01	8.3250E+04	-2.0716E+01	4.4955E+04	-2.0677E+01	3.8295E+04
714000	-2.0888E+01	8.3250E+04	-2.0872E+01	8.4915E+04	-2.0851E+01	8.1585E+04	-2.0810E+01	8.3250E+04	-2.0751E+01	4.4955E+04	-2.0712E+01	3.8295E+04
716000	-2.0922E+01	8.3250E+04	-2.0906E+01	8.4915E+04	-2.0885E+01	8.1585E+04	-2.0845E+01	8.3250E+04	-2.0786E+01	4.4955E+04	-2.0746E+01	3.8295E+04
718000	-2.0957E+01	8.3250E+04	-2.0940E+01	8.4915E+04	-2.0919E+01	8.1585E+04	-2.0879E+01	8.3250E+04	-2.0820E+01	4.4955E+04	-2.0781E+01	3.8295E+04
720000	-2.0991E+01	8.3250E+04	-2.0975E+01	8.4915E+04	-2.0954E+01	8.1585E+04	-2.0914E+01	8.3250E+04	-2.0855E+01	4.4955E+04	-2.0816E+01	3.8295E+04
722000	-2.1025E+01	8.3250E+04	-2.1009E+01	8.4915E+04	-2.0988E+01	8.1585E+04	-2.0948E+01	8.3250E+04	-2.0889E+01	4.4955E+04	-2.0850E+01	3.8295E+04
724000	-2.1059E+01	8.3250E+04	-2.1043E+01	8.4915E+04	-2.1022E+01	8.1585E+04	-2.0982E+01	8.3250E+04	-2.0923E+01	4.4955E+04	-2.0885E+01	3.8295E+04
726000	-2.1094E+01	8.3250E+04	-2.1077E+01	8.4915E+04	-2.1057E+01	8.1585E+04	-2.1017E+01	8.3250E+04	-2.0958E+01	4.4955E+04	-2.0919E+01	3.8295E+04

Time (yrs)	Arg 1	Curve 1	Arg 2	Curve 2	Arg 3	Curve 3	Arg 4	Curve 4	Arg 5	Curve 5	Arg 6	Curve 6
728000	-2.1128E+01	8.3250E+04	-2.1111E+01	8.4915E+04	-2.1091E+01	8.1585E+04	-2.1051E+01	8.3250E+04	-2.0992E+01	4.4955E+04	-2.0953E+01	3.8295E+04
730000	-2.1162E+01	8.3250E+04	-2.1145E+01	8.4915E+04	-2.1125E+01	8.1585E+04	-2.1085E+01	8.3250E+04	-2.1026E+01	4.4955E+04	-2.0988E+01	3.8295E+04
732000	-2.1196E+01	8.3250E+04	-2.1179E+01	8.4915E+04	-2.1159E+01	8.1585E+04	-2.1119E+01	8.3250E+04	-2.1060E+01	4.4955E+04	-2.1022E+01	3.8295E+04
734000	-2.1229E+01	8.3250E+04	-2.1213E+01	8.4915E+04	-2.1193E+01	8.1585E+04	-2.1153E+01	8.3250E+04	-2.1095E+01	4.4955E+04	-2.1056E+01	3.8295E+04
736000	-2.1263E+01	8.3250E+04	-2.1247E+01	8.4915E+04	-2.1227E+01	8.1585E+04	-2.1187E+01	8.3250E+04	-2.1129E+01	4.4955E+04	-2.1090E+01	3.8295E+04
738000	-2.1297E+01	8.3250E+04	-2.1281E+01	8.4915E+04	-2.1260E+01	8.1585E+04	-2.1221E+01	8.3250E+04	-2.1163E+01	4.4955E+04	-2.1124E+01	3.8295E+04
740000	-2.1331E+01	8.3250E+04	-2.1315E+01	8.4915E+04	-2.1294E+01	8.1585E+04	-2.1255E+01	8.3250E+04	-2.1197E+01	4.4955E+04	-2.1158E+01	3.8295E+04
742000	-2.1365E+01	8.3250E+04	-2.1349E+01	8.4915E+04	-2.1328E+01	8.1585E+04	-2.1288E+01	8.3250E+04	-2.1230E+01	4.4955E+04	-2.1192E+01	3.8295E+04
744000	-2.1398E+01	8.3250E+04	-2.1382E+01	8.4915E+04	-2.1362E+01	8.1585E+04	-2.1322E+01	8.3250E+04	-2.1264E+01	4.4955E+04	-2.1226E+01	3.8295E+04
746000	-2.1432E+01	8.3250E+04	-2.1416E+01	8.4915E+04	-2.1395E+01	8.1585E+04	-2.1356E+01	8.3250E+04	-2.1298E+01	4.4955E+04	-2.1260E+01	3.8295E+04
748000	-2.1465E+01	8.3250E+04	-2.1449E+01	8.4915E+04	-2.1429E+01	8.1585E+04	-2.1390E+01	8.3250E+04	-2.1332E+01	4.4955E+04	-2.1294E+01	3.8295E+04
750000	-2.1499E+01	8.3250E+04	-2.1483E+01	8.4915E+04	-2.1462E+01	8.1585E+04	-2.1423E+01	8.3250E+04	-2.1366E+01	4.4955E+04	-2.1327E+01	3.8295E+04
752000	-2.1532E+01	8.3250E+04	-2.1516E+01	8.4915E+04	-2.1496E+01	8.1585E+04	-2.1457E+01	8.3250E+04	-2.1399E+01	4.4955E+04	-2.1361E+01	3.8295E+04
754000	-2.1566E+01	8.3250E+04	-2.1550E+01	8.4915E+04	-2.1529E+01	8.1585E+04	-2.1490E+01	8.3250E+04	-2.1433E+01	4.4955E+04	-2.1395E+01	3.8295E+04
756000	-2.1599E+01	8.3250E+04	-2.1583E+01	8.4915E+04	-2.1563E+01	8.1585E+04	-2.1524E+01	8.3250E+04	-2.1466E+01	4.4955E+04	-2.1428E+01	3.8295E+04
758000	-2.1632E+01	8.3250E+04	-2.1616E+01	8.4915E+04	-2.1596E+01	8.1585E+04	-2.1557E+01	8.3250E+04	-2.1500E+01	4.4955E+04	-2.1462E+01	3.8295E+04
760000	-2.1665E+01	8.3250E+04	-2.1650E+01	8.4915E+04	-2.1629E+01	8.1585E+04	-2.1590E+01	8.3250E+04	-2.1533E+01	4.4955E+04	-2.1495E+01	3.8295E+04
762000	-2.1699E+01	8.3250E+04	-2.1683E+01	8.4915E+04	-2.1663E+01	8.1585E+04	-2.1624E+01	8.3250E+04	-2.1567E+01	4.4955E+04	-2.1529E+01	3.8295E+04
764000	-2.1732E+01	8.3250E+04	-2.1716E+01	8.4915E+04	-2.1696E+01	8.1585E+04	-2.1657E+01	8.3250E+04	-2.1600E+01	4.4955E+04	-2.1562E+01	3.8295E+04
766000	-2.1765E+01	8.3250E+04	-2.1749E+01	8.4915E+04	-2.1729E+01	8.1585E+04	-2.1690E+01	8.3250E+04	-2.1633E+01	4.4955E+04	-2.1596E+01	3.8295E+04
768000	-2.1798E+01	8.3250E+04	-2.1782E+01	8.4915E+04	-2.1762E+01	8.1585E+04	-2.1723E+01	8.3250E+04	-2.1666E+01	4.4955E+04	-2.1629E+01	3.8295E+04
770000	-2.1831E+01	8.3250E+04	-2.1815E+01	8.4915E+04	-2.1795E+01	8.1585E+04	-2.1756E+01	8.3250E+04	-2.1700E+01	4.4955E+04	-2.1662E+01	3.8295E+04
772000	-2.1864E+01	8.3250E+04	-2.1848E+01	8.4915E+04	-2.1828E+01	8.1585E+04	-2.1789E+01	8.3250E+04	-2.1733E+01	4.4955E+04	-2.1695E+01	3.8295E+04
774000	-2.1897E+01	8.3250E+04	-2.1881E+01	8.4915E+04	-2.1861E+01	8.1585E+04	-2.1822E+01	8.3250E+04	-2.1766E+01	4.4955E+04	-2.1728E+01	3.8295E+04
776000	-2.1930E+01	8.3250E+04	-2.1914E+01	8.4915E+04	-2.1894E+01	8.1585E+04	-2.1855E+01	8.3250E+04	-2.1799E+01	4.4955E+04	-2.1762E+01	3.8295E+04
778000	-2.1962E+01	8.3250E+04	-2.1947E+01	8.4915E+04	-2.1927E+01	8.1585E+04	-2.1888E+01	8.3250E+04	-2.1832E+01	4.4955E+04	-2.1795E+01	3.8295E+04
780000	-2.1995E+01	8.3250E+04	-2.1980E+01	8.4915E+04	-2.1960E+01	8.1585E+04	-2.1921E+01	8.3250E+04	-2.1865E+01	4.4955E+04	-2.1828E+01	3.8295E+04
782000	-2.2028E+01	8.3250E+04	-2.2012E+01	8.4915E+04	-2.1992E+01	8.1585E+04	-2.1954E+01	8.3250E+04	-2.1898E+01	4.4955E+04	-2.1860E+01	3.8295E+04
784000	-2.2060E+01	8.3250E+04	-2.2045E+01	8.4915E+04	-2.2025E+01	8.1585E+04	-2.1987E+01	8.3250E+04	-2.1930E+01	4.4955E+04	-2.1893E+01	3.8295E+04
786000	-2.2093E+01	8.3250E+04	-2.2078E+01	8.4915E+04	-2.2058E+01	8.1585E+04	-2.2019E+01	8.3250E+04	-2.1963E+01	4.4955E+04	-2.1926E+01	3.8295E+04
788000	-2.2126E+01	8.3250E+04	-2.2110E+01	8.4915E+04	-2.2090E+01	8.1585E+04	-2.2052E+01	8.3250E+04	-2.1996E+01	4.4955E+04	-2.1959E+01	3.8295E+04
790000	-2.2158E+01	8.3250E+04	-2.2143E+01	8.4915E+04	-2.2123E+01	8.1585E+04	-2.2085E+01	8.3250E+04	-2.2029E+01	4.4955E+04	-2.1992E+01	3.8295E+04
792000	-2.2191E+01	8.3250E+04	-2.2175E+01	8.4915E+04	-2.2155E+01	8.1585E+04	-2.2117E+01	8.3250E+04	-2.2061E+01	4.4955E+04	-2.2024E+01	3.8295E+04
794000	-2.2223E+01	8.3250E+04	-2.2208E+01	8.4915E+04	-2.2188E+01	8.1585E+04	-2.2150E+01	8.3250E+04	-2.2094E+01	4.4955E+04	-2.2057E+01	3.8295E+04
796000	-2.2255E+01	8.3250E+04	-2.2240E+01	8.4915E+04	-2.2220E+01	8.1585E+04	-2.2182E+01	8.3250E+04	-2.2127E+01	4.4955E+04	-2.2090E+01	3.8295E+04
798000	-2.2288E+01	8.3250E+04	-2.2272E+01	8.4915E+04	-2.2253E+01	8.1585E+04	-2.2215E+01	8.3250E+04	-2.2159E+01	4.4955E+04	-2.2122E+01	3.8295E+04
800000	-2.2320E+01	8.3250E+04	-2.2305E+01	8.4915E+04	-2.2285E+01	8.1585E+04	-2.2247E+01	8.3250E+04	-2.2191E+01	4.4955E+04	-2.2155E+01	3.8295E+04
802000	-2.2352E+01	8.3250E+04	-2.2337E+01	8.4915E+04	-2.2317E+01	8.1585E+04	-2.2279E+01	8.3250E+04	-2.2224E+01	4.4955E+04	-2.2187E+01	3.8295E+04
804000	-2.2384E+01	8.3250E+04	-2.2369E+01	8.4915E+04	-2.2349E+01	8.1585E+04	-2.2312E+01	8.3250E+04	-2.2256E+01	4.4955E+04	-2.2220E+01	3.8295E+04
806000	-2.2416E+01	8.3250E+04	-2.2401E+01	8.4915E+04	-2.2382E+01	8.1585E+04	-2.2344E+01	8.3250E+04	-2.2289E+01	4.4955E+04	-2.2252E+01	3.8295E+04
808000	-2.2449E+01	8.3250E+04	-2.2433E+01	8.4915E+04	-2.2414E+01	8.1585E+04	-2.2376E+01	8.3250E+04	-2.2321E+01	4.4955E+04	-2.2284E+01	3.8295E+04
810000	-2.2481E+01	8.3250E+04	-2.2465E+01	8.4915E+04	-2.2446E+01	8.1585E+04	-2.2408E+01	8.3250E+04	-2.2353E+01	4.4955E+04	-2.2317E+01	3.8295E+04
812000	-2.2513E+01	8.3250E+04	-2.2497E+01	8.4915E+04	-2.2478E+01	8.1585E+04	-2.2440E+01	8.3250E+04	-2.2385E+01	4.4955E+04	-2.2349E+01	3.8295E+04
814000	-2.2545E+01	8.3250E+04	-2.2529E+01	8.4915E+04	-2.2510E+01	8.1585E+04	-2.2472E+01	8.3250E+04	-2.2417E+01	4.4955E+04	-2.2381E+01	3.8295E+04
816000	-2.2576E+01	8.3250E+04	-2.2561E+01	8.4915E+04	-2.2542E+01	8.1585E+04	-2.2504E+01	8.3250E+04	-2.2449E+01	4.4955E+04	-2.2413E+01	3.8295E+04
818000	-2.2608E+01	8.3250E+04	-2.2593E+01	8.4915E+04	-2.2574E+01	8.1585E+04	-2.2536E+01	8.3250E+04	-2.2482E+01	4.4955E+04	-2.2445E+01	3.8295E+04
820000	-2.2640E+01	8.3250E+04	-2.2625E+01	8.4915E+04	-2.2606E+01	8.1585E+04	-2.2568E+01	8.3250E+04	-2.2514E+01	4.4955E+04	-2.2477E+01	3.8295E+04
822000	-2.2672E+01	8.3250E+04	-2.2657E+01	8.4915E+04	-2.2637E+01	8.1585E+04	-2.2600E+01	8.3250E+04	-2.2545E+01	4.4955E+04	-2.2509E+01	3.8295E+04
824000	-2.2704E+01	8.3250E+04	-2.2689E+01	8.4915E+04	-2.2669E+01	8.1585E+04	-2.2632E+01	8.3250E+04	-2.2577E+01	4.4955E+04	-2.2541E+01	3.8295E+04
826000	-2.2735E+01	8.3250E+04	-2.2720E+01	8.4915E+04	-2.2701E+01	8.1585E+04	-2.2664E+01	8.3250E+04	-2.2609E+01	4.4955E+04	-2.2573E+01	3.8295E+04
828000	-2.2767E+01	8.3250E+04	-2.2752E+01	8.4915E+04	-2.2733E+01	8.1585E+04	-2.2696E+01	8.3250E+04	-2.2641E+01	4.4955E+04	-2.2605E+01	3.8295E+04
830000	-2.2799E+01	8.3250E+04	-2.2784E+01	8.4915E+04	-2.2764E+01	8.1585E+04	-2.2727E+01	8.3250E+04	-2.2673E+01	4.4955E+04	-2.2637E+01	3.8295E+04

Time (yrs)	Arg 1	Curve 1	Arg 2	Curve 2	Arg 3	Curve 3	Arg 4	Curve 4	Arg 5	Curve 5	Arg 6	Curve 6
832000	-2.2830E+01	8.3250E+04	-2.2815E+01	8.4915E+04	-2.2796E+01	8.1585E+04	-2.2759E+01	8.3250E+04	-2.2705E+01	4.4955E+04	-2.2669E+01	3.8295E+04
834000	-2.2862E+01	8.3250E+04	-2.2847E+01	8.4915E+04	-2.2827E+01	8.1585E+04	-2.2791E+01	8.3250E+04	-2.2736E+01	4.4955E+04	-2.2700E+01	3.8295E+04
836000	-2.2893E+01	8.3250E+04	-2.2878E+01	8.4915E+04	-2.2859E+01	8.1585E+04	-2.2822E+01	8.3250E+04	-2.2768E+01	4.4955E+04	-2.2732E+01	3.8295E+04
838000	-2.2925E+01	8.3250E+04	-2.2910E+01	8.4915E+04	-2.2890E+01	8.1585E+04	-2.2854E+01	8.3250E+04	-2.2800E+01	4.4955E+04	-2.2764E+01	3.8295E+04
840000	-2.2956E+01	8.3250E+04	-2.2941E+01	8.4915E+04	-2.2922E+01	8.1585E+04	-2.2885E+01	8.3250E+04	-2.2831E+01	4.4955E+04	-2.2795E+01	3.8295E+04
842000	-2.2987E+01	8.3250E+04	-2.2972E+01	8.4915E+04	-2.2953E+01	8.1585E+04	-2.2917E+01	8.3250E+04	-2.2863E+01	4.4955E+04	-2.2827E+01	3.8295E+04
844000	-2.3019E+01	8.3250E+04	-2.3004E+01	8.4915E+04	-2.2985E+01	8.1585E+04	-2.2948E+01	8.3250E+04	-2.2894E+01	4.4955E+04	-2.2859E+01	3.8295E+04
846000	-2.3050E+01	8.3250E+04	-2.3035E+01	8.4915E+04	-2.3016E+01	8.1585E+04	-2.2979E+01	8.3250E+04	-2.2926E+01	4.4955E+04	-2.2890E+01	3.8295E+04
848000	-2.3081E+01	8.3250E+04	-2.3066E+01	8.4915E+04	-2.3047E+01	8.1585E+04	-2.3011E+01	8.3250E+04	-2.2957E+01	4.4955E+04	-2.2921E+01	3.8295E+04
850000	-2.3112E+01	8.3250E+04	-2.3097E+01	8.4915E+04	-2.3078E+01	8.1585E+04	-2.3042E+01	8.3250E+04	-2.2988E+01	4.4955E+04	-2.2953E+01	3.8295E+04
852000	-2.3143E+01	8.3250E+04	-2.3129E+01	8.4915E+04	-2.3110E+01	8.1585E+04	-2.3073E+01	8.3250E+04	-2.3020E+01	4.4955E+04	-2.2984E+01	3.8295E+04
854000	-2.3175E+01	8.3250E+04	-2.3160E+01	8.4915E+04	-2.3141E+01	8.1585E+04	-2.3104E+01	8.3250E+04	-2.3051E+01	4.4955E+04	-2.3015E+01	3.8295E+04
856000	-2.3206E+01	8.3250E+04	-2.3191E+01	8.4915E+04	-2.3172E+01	8.1585E+04	-2.3135E+01	8.3250E+04	-2.3082E+01	4.4955E+04	-2.3047E+01	3.8295E+04
858000	-2.3237E+01	8.3250E+04	-2.3222E+01	8.4915E+04	-2.3203E+01	8.1585E+04	-2.3167E+01	8.3250E+04	-2.3113E+01	4.4955E+04	-2.3078E+01	3.8295E+04
860000	-2.3268E+01	8.3250E+04	-2.3253E+01	8.4915E+04	-2.3234E+01	8.1585E+04	-2.3198E+01	8.3250E+04	-2.3144E+01	4.4955E+04	-2.3109E+01	3.8295E+04
862000	-2.3299E+01	8.3250E+04	-2.3284E+01	8.4915E+04	-2.3265E+01	8.1585E+04	-2.3229E+01	8.3250E+04	-2.3175E+01	4.4955E+04	-2.3140E+01	3.8295E+04
864000	-2.3329E+01	8.3250E+04	-2.3315E+01	8.4915E+04	-2.3296E+01	8.1585E+04	-2.3260E+01	8.3250E+04	-2.3207E+01	4.4955E+04	-2.3171E+01	3.8295E+04
866000	-2.3360E+01	8.3250E+04	-2.3346E+01	8.4915E+04	-2.3327E+01	8.1585E+04	-2.3291E+01	8.3250E+04	-2.3238E+01	4.4955E+04	-2.3202E+01	3.8295E+04
868000	-2.3391E+01	8.3250E+04	-2.3376E+01	8.4915E+04	-2.3358E+01	8.1585E+04	-2.3322E+01	8.3250E+04	-2.3269E+01	4.4955E+04	-2.3234E+01	3.8295E+04
870000	-2.3422E+01	8.3250E+04	-2.3407E+01	8.4915E+04	-2.3388E+01	8.1585E+04	-2.3352E+01	8.3250E+04	-2.3299E+01	4.4955E+04	-2.3264E+01	3.8295E+04
872000	-2.3453E+01	8.3250E+04	-2.3438E+01	8.4915E+04	-2.3419E+01	8.1585E+04	-2.3383E+01	8.3250E+04	-2.3330E+01	4.4955E+04	-2.3295E+01	3.8295E+04
874000	-2.3483E+01	8.3250E+04	-2.3469E+01	8.4915E+04	-2.3450E+01	8.1585E+04	-2.3414E+01	8.3250E+04	-2.3361E+01	4.4955E+04	-2.3326E+01	3.8295E+04
876000	-2.3514E+01	8.3250E+04	-2.3499E+01	8.4915E+04	-2.3481E+01	8.1585E+04	-2.3445E+01	8.3250E+04	-2.3392E+01	4.4955E+04	-2.3357E+01	3.8295E+04
878000	-2.3545E+01	8.3250E+04	-2.3530E+01	8.4915E+04	-2.3511E+01	8.1585E+04	-2.3475E+01	8.3250E+04	-2.3423E+01	4.4955E+04	-2.3388E+01	3.8295E+04
880000	-2.3575E+01	8.3250E+04	-2.3561E+01	8.4915E+04	-2.3542E+01	8.1585E+04	-2.3506E+01	8.3250E+04	-2.3454E+01	4.4955E+04	-2.3419E+01	3.8295E+04
882000	-2.3606E+01	8.3250E+04	-2.3591E+01	8.4915E+04	-2.3573E+01	8.1585E+04	-2.3537E+01	8.3250E+04	-2.3484E+01	4.4955E+04	-2.3450E+01	3.8295E+04
884000	-2.3636E+01	8.3250E+04	-2.3622E+01	8.4915E+04	-2.3603E+01	8.1585E+04	-2.3567E+01	8.3250E+04	-2.3515E+01	4.4955E+04	-2.3480E+01	3.8295E+04
886000	-2.3667E+01	8.3250E+04	-2.3652E+01	8.4915E+04	-2.3634E+01	8.1585E+04	-2.3598E+01	8.3250E+04	-2.3545E+01	4.4955E+04	-2.3511E+01	3.8295E+04
888000	-2.3697E+01	8.3250E+04	-2.3683E+01	8.4915E+04	-2.3664E+01	8.1585E+04	-2.3628E+01	8.3250E+04	-2.3576E+01	4.4955E+04	-2.3542E+01	3.8295E+04
890000	-2.3727E+01	8.3250E+04	-2.3713E+01	8.4915E+04	-2.3694E+01	8.1585E+04	-2.3659E+01	8.3250E+04	-2.3607E+01	4.4955E+04	-2.3572E+01	3.8295E+04
892000	-2.3758E+01	8.3250E+04	-2.3743E+01	8.4915E+04	-2.3725E+01	8.1585E+04	-2.3689E+01	8.3250E+04	-2.3637E+01	4.4955E+04	-2.3603E+01	3.8295E+04
894000	-2.3788E+01	8.3250E+04	-2.3774E+01	8.4915E+04	-2.3755E+01	8.1585E+04	-2.3720E+01	8.3250E+04	-2.3668E+01	4.4955E+04	-2.3633E+01	3.8295E+04
896000	-2.3818E+01	8.3250E+04	-2.3804E+01	8.4915E+04	-2.3786E+01	8.1585E+04	-2.3750E+01	8.3250E+04	-2.3698E+01	4.4955E+04	-2.3664E+01	3.8295E+04
898000	-2.3849E+01	8.3250E+04	-2.3834E+01	8.4915E+04	-2.3816E+01	8.1585E+04	-2.3780E+01	8.3250E+04	-2.3728E+01	4.4955E+04	-2.3694E+01	3.8295E+04
900000	-2.3879E+01	8.3250E+04	-2.3864E+01	8.4915E+04	-2.3846E+01	8.1585E+04	-2.3811E+01	8.3250E+04	-2.3759E+01	4.4955E+04	-2.3724E+01	3.8295E+04
902000	-2.3909E+01	8.3250E+04	-2.3895E+01	8.4915E+04	-2.3876E+01	8.1585E+04	-2.3841E+01	8.3250E+04	-2.3789E+01	4.4955E+04	-2.3755E+01	3.8295E+04
904000	-2.3939E+01	8.3250E+04	-2.3925E+01	8.4915E+04	-2.3906E+01	8.1585E+04	-2.3871E+01	8.3250E+04	-2.3819E+01	4.4955E+04	-2.3785E+01	3.8295E+04
906000	-2.3969E+01	8.3250E+04	-2.3955E+01	8.4915E+04	-2.3937E+01	8.1585E+04	-2.3901E+01	8.3250E+04	-2.3850E+01	4.4955E+04	-2.3815E+01	3.8295E+04
908000	-2.3999E+01	8.3250E+04	-2.3985E+01	8.4915E+04	-2.3967E+01	8.1585E+04	-2.3931E+01	8.3250E+04	-2.3880E+01	4.4955E+04	-2.3846E+01	3.8295E+04
910000	-2.4029E+01	8.3250E+04	-2.4015E+01	8.4915E+04	-2.3997E+01	8.1585E+04	-2.3961E+01	8.3250E+04	-2.3910E+01	4.4955E+04	-2.3876E+01	3.8295E+04
912000	-2.4059E+01	8.3250E+04	-2.4045E+01	8.4915E+04	-2.4027E+01	8.1585E+04	-2.3992E+01	8.3250E+04	-2.3940E+01	4.4955E+04	-2.3906E+01	3.8295E+04
914000	-2.4089E+01	8.3250E+04	-2.4075E+01	8.4915E+04	-2.4057E+01	8.1585E+04	-2.4022E+01	8.3250E+04	-2.3970E+01	4.4955E+04	-2.3936E+01	3.8295E+04
916000	-2.4119E+01	8.3250E+04	-2.4105E+01	8.4915E+04	-2.4087E+01	8.1585E+04	-2.4052E+01	8.3250E+04	-2.4000E+01	4.4955E+04	-2.3966E+01	3.8295E+04
918000	-2.4149E+01	8.3250E+04	-2.4135E+01	8.4915E+04	-2.4116E+01	8.1585E+04	-2.4081E+01	8.3250E+04	-2.4030E+01	4.4955E+04	-2.3996E+01	3.8295E+04
920000	-2.4179E+01	8.3250E+04	-2.4165E+01	8.4915E+04	-2.4146E+01	8.1585E+04	-2.4111E+01	8.3250E+04	-2.4060E+01	4.4955E+04	-2.4026E+01	3.8295E+04
922000	-2.4208E+01	8.3250E+04	-2.4194E+01	8.4915E+04	-2.4176E+01	8.1585E+04	-2.4141E+01	8.3250E+04	-2.4090E+01	4.4955E+04	-2.4056E+01	3.8295E+04
924000	-2.4238E+01	8.3250E+04	-2.4224E+01	8.4915E+04	-2.4206E+01	8.1585E+04	-2.4171E+01	8.3250E+04	-2.4120E+01	4.4955E+04	-2.4086E+01	3.8295E+04
926000	-2.4268E+01	8.3250E+04	-2.4254E+01	8.4915E+04	-2.4236E+01	8.1585E+04	-2.4201E+01	8.3250E+04	-2.4150E+01	4.4955E+04	-2.4116E+01	3.8295E+04
928000	-2.4298E+01	8.3250E+04	-2.4284E+01	8.4915E+04	-2.4265E+01	8.1585E+04	-2.4231E+01	8.3250E+04	-2.4180E+01	4.4955E+04	-2.4146E+01	3.8295E+04
930000	-2.4327E+01	8.3250E+04	-2.4313E+01	8.4915E+04	-2.4295E+01	8.1585E+04	-2.4260E+01	8.3250E+04	-2.4209E+01	4.4955E+04	-2.4176E+01	3.8295E+04
932000	-2.4357E+01	8.3250E+04	-2.4343E+01	8.4915E+04	-2.4325E+01	8.1585E+04	-2.4290E+01	8.3250E+04	-2.4239E+01	4.4955E+04	-2.4206E+01	3.8295E+04
934000	-2.4386E+01	8.3250E+04	-2.4372E+01	8.4915E+04	-2.4354E+01	8.1585E+04	-2.4320E+01	8.3250E+04	-2.4269E+01	4.4955E+04	-2.4235E+01	3.8295E+04

Time (yrs)	Arg 1	Curve 1	Arg 2	Curve 2	Arg 3	Curve 3	Arg 4	Curve 4	Arg 5	Curve 5	Arg 6	Curve 6
936000	-2.4416E+01	8.3250E+04	-2.4402E+01	8.4915E+04	-2.4384E+01	8.1585E+04	-2.4349E+01	8.3250E+04	-2.4299E+01	4.4955E+04	-2.4265E+01	3.8295E+04
938000	-2.4446E+01	8.3250E+04	-2.4431E+01	8.4915E+04	-2.4413E+01	8.1585E+04	-2.4379E+01	8.3250E+04	-2.4328E+01	4.4955E+04	-2.4295E+01	3.8295E+04
940000	-2.4475E+01	8.3250E+04	-2.4461E+01	8.4915E+04	-2.4443E+01	8.1585E+04	-2.4408E+01	8.3250E+04	-2.4358E+01	4.4955E+04	-2.4324E+01	3.8295E+04
942000	-2.4504E+01	8.3250E+04	-2.4490E+01	8.4915E+04	-2.4472E+01	8.1585E+04	-2.4438E+01	8.3250E+04	-2.4387E+01	4.4955E+04	-2.4354E+01	3.8295E+04
944000	-2.4534E+01	8.3250E+04	-2.4520E+01	8.4915E+04	-2.4502E+01	8.1585E+04	-2.4467E+01	8.3250E+04	-2.4417E+01	4.4955E+04	-2.4384E+01	3.8295E+04
946000	-2.4563E+01	8.3250E+04	-2.4549E+01	8.4915E+04	-2.4531E+01	8.1585E+04	-2.4497E+01	8.3250E+04	-2.4446E+01	4.4955E+04	-2.4413E+01	3.8295E+04
948000	-2.4592E+01	8.3250E+04	-2.4579E+01	8.4915E+04	-2.4561E+01	8.1585E+04	-2.4526E+01	8.3250E+04	-2.4476E+01	4.4955E+04	-2.4443E+01	3.8295E+04
950000	-2.4622E+01	8.3250E+04	-2.4608E+01	8.4915E+04	-2.4590E+01	8.1585E+04	-2.4556E+01	8.3250E+04	-2.4505E+01	4.4955E+04	-2.4472E+01	3.8295E+04
952000	-2.4651E+01	8.3250E+04	-2.4637E+01	8.4915E+04	-2.4619E+01	8.1585E+04	-2.4585E+01	8.3250E+04	-2.4535E+01	4.4955E+04	-2.4501E+01	3.8295E+04
954000	-2.4680E+01	8.3250E+04	-2.4666E+01	8.4915E+04	-2.4649E+01	8.1585E+04	-2.4614E+01	8.3250E+04	-2.4564E+01	4.4955E+04	-2.4531E+01	3.8295E+04
956000	-2.4709E+01	8.3250E+04	-2.4696E+01	8.4915E+04	-2.4678E+01	8.1585E+04	-2.4644E+01	8.3250E+04	-2.4593E+01	4.4955E+04	-2.4560E+01	3.8295E+04
958000	-2.4739E+01	8.3250E+04	-2.4725E+01	8.4915E+04	-2.4707E+01	8.1585E+04	-2.4673E+01	8.3250E+04	-2.4623E+01	4.4955E+04	-2.4590E+01	3.8295E+04
960000	-2.4768E+01	8.3250E+04	-2.4754E+01	8.4915E+04	-2.4736E+01	8.1585E+04	-2.4702E+01	8.3250E+04	-2.4652E+01	4.4955E+04	-2.4619E+01	3.8295E+04
962000	-2.4797E+01	8.3250E+04	-2.4783E+01	8.4915E+04	-2.4765E+01	8.1585E+04	-2.4731E+01	8.3250E+04	-2.4681E+01	4.4955E+04	-2.4648E+01	3.8295E+04
964000	-2.4826E+01	8.3250E+04	-2.4812E+01	8.4915E+04	-2.4794E+01	8.1585E+04	-2.4760E+01	8.3250E+04	-2.4710E+01	4.4955E+04	-2.4677E+01	3.8295E+04
966000	-2.4855E+01	8.3250E+04	-2.4841E+01	8.4915E+04	-2.4823E+01	8.1585E+04	-2.4789E+01	8.3250E+04	-2.4739E+01	4.4955E+04	-2.4707E+01	3.8295E+04
968000	-2.4884E+01	8.3250E+04	-2.4870E+01	8.4915E+04	-2.4852E+01	8.1585E+04	-2.4818E+01	8.3250E+04	-2.4769E+01	4.4955E+04	-2.4736E+01	3.8295E+04
970000	-2.4913E+01	8.3250E+04	-2.4899E+01	8.4915E+04	-2.4881E+01	8.1585E+04	-2.4848E+01	8.3250E+04	-2.4798E+01	4.4955E+04	-2.4765E+01	3.8295E+04
972000	-2.4942E+01	8.3250E+04	-2.4928E+01	8.4915E+04	-2.4910E+01	8.1585E+04	-2.4877E+01	8.3250E+04	-2.4827E+01	4.4955E+04	-2.4794E+01	3.8295E+04
974000	-2.4971E+01	8.3250E+04	-2.4957E+01	8.4915E+04	-2.4939E+01	8.1585E+04	-2.4905E+01	8.3250E+04	-2.4856E+01	4.4955E+04	-2.4823E+01	3.8295E+04
976000	-2.5000E+01	8.3250E+04	-2.4986E+01	8.4915E+04	-2.4968E+01	8.1585E+04	-2.4934E+01	8.3250E+04	-2.4885E+01	4.4955E+04	-2.4852E+01	3.8295E+04
978000	-2.5028E+01	8.3250E+04	-2.5015E+01	8.4915E+04	-2.4997E+01	8.1585E+04	-2.4963E+01	8.3250E+04	-2.4914E+01	4.4955E+04	-2.4881E+01	3.8295E+04
980000	-2.5057E+01	8.3250E+04	-2.5043E+01	8.4915E+04	-2.5026E+01	8.1585E+04	-2.4992E+01	8.3250E+04	-2.4943E+01	4.4955E+04	-2.4910E+01	3.8295E+04
982000	-2.5086E+01	8.3250E+04	-2.5072E+01	8.4915E+04	-2.5055E+01	8.1585E+04	-2.5021E+01	8.3250E+04	-2.4972E+01	4.4955E+04	-2.4939E+01	3.8295E+04
984000	-2.5115E+01	8.3250E+04	-2.5101E+01	8.4915E+04	-2.5083E+01	8.1585E+04	-2.5050E+01	8.3250E+04	-2.5000E+01	4.4955E+04	-2.4968E+01	3.8295E+04
986000	-2.5143E+01	8.3250E+04	-2.5130E+01	8.4915E+04	-2.5112E+01	8.1585E+04	-2.5079E+01	8.3250E+04	-2.5029E+01	4.4955E+04	-2.4997E+01	3.8295E+04
988000	-2.5172E+01	8.3250E+04	-2.5158E+01	8.4915E+04	-2.5141E+01	8.1585E+04	-2.5107E+01	8.3250E+04	-2.5058E+01	4.4955E+04	-2.5025E+01	3.8295E+04
990000	-2.5201E+01	8.3250E+04	-2.5187E+01	8.4915E+04	-2.5170E+01	8.1585E+04	-2.5136E+01	8.3250E+04	-2.5087E+01	4.4955E+04	-2.5054E+01	3.8295E+04
992000	-2.5229E+01	8.3250E+04	-2.5216E+01	8.4915E+04	-2.5198E+01	8.1585E+04	-2.5165E+01	8.3250E+04	-2.5115E+01	4.4955E+04	-2.5083E+01	3.8295E+04
994000	-2.5258E+01	8.3250E+04	-2.5244E+01	8.4915E+04	-2.5227E+01	8.1585E+04	-2.5193E+01	8.3250E+04	-2.5144E+01	4.4955E+04	-2.5112E+01	3.8295E+04
996000	-2.5286E+01	8.3250E+04	-2.5273E+01	8.4915E+04	-2.5255E+01	8.1585E+04	-2.5222E+01	8.3250E+04	-2.5173E+01	4.4955E+04	-2.5140E+01	3.8295E+04
998000	-2.5315E+01	8.3250E+04	-2.5301E+01	8.4915E+04	-2.5284E+01	8.1585E+04	-2.5250E+01	8.3250E+04	-2.5201E+01	4.4955E+04	-2.5169E+01	3.8295E+04
1000000	-2.5343E+01	8.3250E+04	-2.5330E+01	8.4915E+04	-2.5312E+01	8.1585E+04	-2.5279E+01	8.3250E+04	-2.5230E+01	4.4955E+04	-2.5198E+01	3.8295E+04


Flux Out (gm/yr)
1.6000E+06
1.4000E+06
1.2000E+06
1.0000E+06
8.0000E+05
6.0000E+05
4.0000E+05
2.0000E+05
0.0000E+00
-2.0000E+05
0
100000
200000
300000
400000
500000
600000
700000
800000
900000
1000000

Arg 7	Curve 7	Arg 8	Curve 8	Arg 9	Curve 9	Arg 10	Curve 10	Arg 11	Curve 11	Arg 12	Curve 12	Arg 13
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
3.8743E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
2.3939E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.8263E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.4976E+01	0.0000E+00	3.4854E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.2733E+01	0.0000E+00	2.2780E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.1058E+01	0.0000E+00	1.7650E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
9.7350E+00	0.0000E+00	1.4577E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
8.6474E+00	0.0000E+00	1.2443E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
7.7275E+00	0.0000E+00	1.0834E+01	0.0000E+00	3.7229E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
6.9322E+00	0.0000E+00	9.5531E+00	0.0000E+00	2.3511E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
6.2326E+00	0.0000E+00	8.4952E+00	0.0000E+00	1.8040E+01	0.0000E+00	4.2561E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
5.6087E+00	4.3903E-11	7.5969E+00	0.0000E+00	1.4832E+01	0.0000E+00	2.4902E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
5.0458E+00	2.0015E-08	6.8181E+00	0.0000E+00	1.2629E+01	0.0000E+00	1.8751E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
4.5332E+00	3.0095E-06	6.1314E+00	0.0000E+00	1.0978E+01	0.0000E+00	1.5287E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
4.0626E+00	1.9083E-04	5.5177E+00	1.2478E-10	9.6698E+00	0.0000E+00	1.2956E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
3.6276E+00	6.0253E-03	4.9633E+00	4.6442E-08	8.5930E+00	0.0000E+00	1.1230E+01	0.0000E+00	4.1464E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
3.2230E+00	1.0751E-01	4.4577E+00	6.0301E-06	7.6808E+00	0.0000E+00	9.8735E+00	0.0000E+00	2.4641E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
2.8447E+00	1.1958E+00	3.9930E+00	3.3988E-04	6.8914E+00	0.0000E+00	8.7630E+00	0.0000E+00	1.8621E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
2.4895E+00	8.9601E+00	3.5630E+00	9.7497E-03	6.1965E+00	0.0000E+00	7.8263E+00	0.0000E+00	1.5205E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
2.1545E+00	4.8124E+01	3.1627E+00	1.6073E-01	5.5762E+00	3.1055E-11	7.0183E+00	0.0000E+00	1.2897E+01	0.0000E+00	4.2003E+01	0.0000E+00	0.0000E+00
1.8374E+00	1.9486E+02	2.7882E+00	1.6739E+00	5.0164E+00	1.2989E-08	6.3089E+00	0.0000E+00	1.1185E+01	0.0000E+00	2.4771E+01	0.0000E+00	0.0000E+00
1.5364E+00	6.2013E+02	2.4363E+00	1.1867E+01	4.5063E+00	1.8529E-06	5.6771E+00	1.0814E-11	9.8371E+00	0.0000E+00	1.8686E+01	0.0000E+00	0.0000E+00
1.2497E+00	1.6060E+03	2.1042E+00	6.0820E+01	4.0378E+00	1.1263E-04	5.1078E+00	5.4814E-09	8.7326E+00	0.0000E+00	1.5246E+01	0.0000E+00	0.0000E+00
9.7602E-01	3.4860E+03	1.7898E+00	2.3664E+02	3.6046E+00	3.4360E-03	4.5899E+00	9.2211E-07	7.8004E+00	0.0000E+00	1.2926E+01	0.0000E+00	0.0000E+00
7.1405E-01	6.5056E+03	1.4911E+00	7.2786E+02	3.2015E+00	5.9595E-02	4.1148E+00	6.3975E-05	6.9957E+00	0.0000E+00	1.1207E+01	0.0000E+00	0.0000E+00
4.6277E-01	1.0673E+04	1.2065E+00	1.8308E+03	2.8246E+00	6.4743E-01	3.6760E+00	2.1732E-03	6.2889E+00	0.0000E+00	9.8553E+00	0.0000E+00	0.0000E+00
2.2125E-01	1.5700E+04	9.3467E-01	3.8758E+03	2.4705E+00	4.7560E+00	3.2681E+00	4.1179E-02	5.6592E+00	1.2200E-11	8.7478E+00	0.0000E+00	3.5870E+01
-1.1306E-02	2.1078E+04	6.7443E-01	7.0803E+03	2.1366E+00	2.5120E+01	2.8870E+00	4.8156E-01	5.0916E+00	5.9892E-09	7.8133E+00	0.0000E+00	2.3102E+01
-2.3562E-01	2.6245E+04	4.2471E-01	1.1407E+04	1.8205E+00	1.0027E+02	2.5292E+00	3.7631E+00	4.5751E+00	9.7820E-07	7.0070E+00	0.0000E+00	1.7823E+01
-4.5232E-01	3.0753E+04	1.8464E-01	1.6525E+04	1.5203E+00	3.1525E+02	2.1920E+00	2.0943E+01	4.1012E+00	6.6278E-05	6.2989E+00	0.0000E+00	1.4690E+01
-6.6196E-01	3.4358E+04	-4.6598E-02	2.1906E+04	1.2344E+00	8.0793E+02	1.8730E+00	8.7402E+01	3.6633E+00	2.2085E-03	5.6681E+00	1.2015E-11	1.2526E+01
-8.6506E-01	3.7022E+04	-2.6969E-01	2.6996E+04	9.6132E-01	1.7381E+03	1.5703E+00	2.8542E+02	3.2563E+00	4.1192E-02	5.0997E+00	5.9645E-09	1.0898E+01
-1.0621E+00	3.8855E+04	-4.8526E-01	3.1374E+04	6.9996E-01	3.2190E+03	1.2820E+00	7.5569E+02	2.8759E+00	4.7541E-01	4.5825E+00	9.8862E-07	9.6054E+00
-1.2534E+00	4.0037E+04	-6.9386E-01	3.4831E+04	4.4924E-01	5.2470E+03	1.0069E+00	1.6717E+03	2.5188E+00	3.6743E+00	4.1080E+00	6.7781E-05	8.5390E+00
-1.4394E+00	4.0755E+04	-8.9599E-01	3.7356E+04	2.0823E-01	7.6762E+03	7.4361E-01	3.1707E+03	2.1822E+00	2.0258E+01	3.6696E+00	2.2804E-03	7.6345E+00
-1.6204E+00	4.1169E+04	-1.0921E+00	3.9076E+04	-2.3852E-02	1.0259E+04	4.9115E-01	5.2739E+03	1.8637E+00	8.3877E+01	3.2622E+00	4.2870E-02	6.8510E+00
-1.7967E+00	4.1395E+04	-1.2825E+00	4.0174E+04	-2.4773E-01	1.2727E+04	2.4856E-01	7.8486E+03	1.5614E+00	2.7206E+02	2.8814E+00	4.9803E-01	6.1606E+00
-1.9686E+00	4.1513E+04	-1.4677E+00	4.0836E+04	-4.6403E-01	1.4868E+04	1.5005E-02	1.0639E+04	1.2736E+00	7.1615E+02	2.5240E+00	3.8704E+00	5.5440E+00
-2.1363E+00	4.1573E+04	-1.6480E+00	4.1214E+04	-6.7330E-01	1.6573E+04	-2.1022E-01	1.3352E+04	9.9881E-01	1.5764E+03	2.1871E+00	2.1439E+01	4.9872E+00
-2.3001E+00	4.1601E+04	-1.8236E+00	4.1419E+04	-8.7605E-01	1.7829E+04	-4.2777E-01	1.5745E+04	7.3589E-01	2.9772E+03	1.8684E+00	8.9120E+01	4.4795E+00
-2.4602E+00	4.1615E+04	-1.9948E+00	4.1526E+04	-1.0727E+00	1.8689E+04	-6.3820E-01	1.7676E+04	4.8374E-01	4.9342E+03	1.5658E+00	2.9005E+02	4.0131E+00
-2.6168E+00	4.1621E+04	-2.1620E+00	4.1579E+04	-1.2637E+00	1.9242E+04	-8.4202E-01	1.9116E+04	2.4142E-01	7.3206E+03	1.2778E+00	7.6571E+02	3.5817E+00

Arg 7	Curve 7	Arg 8	Curve 8	Arg 9	Curve 9	Arg 10	Curve 10	Arg 11	Curve 11	Arg 12	Curve 12	Arg 13
-2.7700E+00	4.1623E+04	-2.3252E+00	4.1604E+04	-1.4494E+00	1.9577E+04	-1.0397E+00	2.0114E+04	8.1309E-03	9.8984E+03	1.0028E+00	1.6896E+03	3.1801E+00
-2.9201E+00	4.1624E+04	-2.4847E+00	4.1616E+04	-1.6302E+00	1.9769E+04	-1.2317E+00	2.0763E+04	-2.1686E-01	1.2397E+04	7.3975E-01	3.1979E+03	2.8046E+00
-3.0672E+00	4.1625E+04	-2.6408E+00	4.1621E+04	-1.8062E+00	1.9874E+04	-1.4182E+00	2.1159E+04	-4.3418E-01	1.4593E+04	4.8744E-01	5.3096E+03	2.4517E+00
-3.2113E+00	4.1625E+04	-2.7935E+00	4.1624E+04	-1.9779E+00	1.9929E+04	-1.5998E+00	2.1389E+04	-6.4441E-01	1.6362E+04	2.4499E-01	7.8896E+03	2.1188E+00
-3.3528E+00	4.1625E+04	-2.9431E+00	4.1625E+04	-2.1454E+00	1.9956E+04	-1.7766E+00	2.1515E+04	-8.4804E-01	1.7678E+04	1.1567E-02	1.0681E+04	1.8036E+00
-3.4916E+00	4.1625E+04	-3.0897E+00	4.1625E+04	-2.3090E+00	1.9969E+04	-1.9490E+00	2.1582E+04	-1.0455E+00	1.8589E+04	-2.1354E-01	1.3391E+04	1.5042E+00
-3.6279E+00	4.1625E+04	-3.2334E+00	4.1625E+04	-2.4689E+00	1.9975E+04	-2.1172E+00	2.1615E+04	-1.2373E+00	1.9179E+04	-4.3097E-01	1.5777E+04	1.2190E+00
-3.7618E+00	4.1625E+04	-3.3744E+00	4.1625E+04	-2.6253E+00	1.9978E+04	-2.2815E+00	2.1632E+04	-1.4238E+00	1.9540E+04	-6.4130E-01	1.7701E+04	9.4665E-01
-3.8935E+00	4.1625E+04	-3.5129E+00	4.1625E+04	-2.7784E+00	1.9979E+04	-2.4420E+00	2.1639E+04	-1.6052E+00	1.9748E+04	-8.4503E-01	1.9134E+04	6.8590E-01
-4.0229E+00	4.1625E+04	-3.6488E+00	4.1625E+04	-2.9283E+00	1.9980E+04	-2.5990E+00	2.1643E+04	-1.7819E+00	1.9863E+04	-1.0426E+00	2.0126E+04	4.3574E-01
-4.1502E+00	4.1625E+04	-3.7824E+00	4.1625E+04	-3.0752E+00	1.9980E+04	-2.7526E+00	2.1644E+04	-1.9541E+00	1.9923E+04	-1.2345E+00	2.0770E+04	1.9525E-01
-4.2755E+00	4.1625E+04	-3.9137E+00	4.1625E+04	-3.2192E+00	1.9980E+04	-2.9030E+00	2.1645E+04	-2.1222E+00	1.9953E+04	-1.4210E+00	2.1164E+04	-3.6372E-02
-4.3989E+00	4.1625E+04	-4.0428E+00	4.1625E+04	-3.3605E+00	1.9980E+04	-3.0504E+00	2.1645E+04	-2.2863E+00	1.9968E+04	-1.6025E+00	2.1391E+04	-2.5982E-01
-4.5204E+00	4.1625E+04	-4.1698E+00	4.1625E+04	-3.4991E+00	1.9980E+04	-3.1949E+00	2.1645E+04	-2.4468E+00	1.9975E+04	-1.7792E+00	2.1517E+04	-4.7571E-01
-4.6401E+00	4.1625E+04	-4.2948E+00	4.1625E+04	-3.6353E+00	1.9980E+04	-3.3366E+00	2.1645E+04	-2.6036E+00	1.9978E+04	-1.9516E+00	2.1583E+04	-6.8462E-01
-4.7580E+00	4.1625E+04	-4.4178E+00	4.1625E+04	-3.7691E+00	1.9980E+04	-3.4757E+00	2.1645E+04	-2.7571E+00	1.9979E+04	-2.1197E+00	2.1616E+04	-8.8702E-01
-4.8743E+00	4.1625E+04	-4.5391E+00	4.1625E+04	-3.9006E+00	1.9980E+04	-3.6123E+00	2.1645E+04	-2.9075E+00	1.9980E+04	-2.2839E+00	2.1632E+04	-1.0834E+00
-4.9890E+00	4.1625E+04	-4.6585E+00	4.1625E+04	-4.0300E+00	1.9980E+04	-3.7465E+00	2.1645E+04	-3.0548E+00	1.9980E+04	-2.4444E+00	2.1639E+04	-1.2741E+00
-5.1021E+00	4.1625E+04	-4.7762E+00	4.1625E+04	-4.1572E+00	1.9980E+04	-3.8784E+00	2.1645E+04	-3.1992E+00	1.9980E+04	-2.6013E+00	2.1643E+04	-1.4595E+00
-5.2137E+00	4.1625E+04	-4.8922E+00	4.1625E+04	-4.2824E+00	1.9980E+04	-4.0081E+00	2.1645E+04	-3.3408E+00	1.9980E+04	-2.7549E+00	2.1644E+04	-1.6400E+00
-5.3239E+00	4.1625E+04	-5.0066E+00	4.1625E+04	-4.4056E+00	1.9980E+04	-4.1357E+00	2.1645E+04	-3.4799E+00	1.9980E+04	-2.9052E+00	2.1645E+04	-1.8158E+00
-5.4326E+00	4.1625E+04	-5.1195E+00	4.1625E+04	-4.5270E+00	1.9980E+04	-4.2612E+00	2.1645E+04	-3.6164E+00	1.9980E+04	-3.0526E+00	2.1645E+04	-1.9872E+00
-5.5400E+00	4.1625E+04	-5.2309E+00	4.1625E+04	-4.6466E+00	1.9980E+04	-4.3848E+00	2.1645E+04	-3.7505E+00	1.9980E+04	-3.1970E+00	2.1645E+04	-2.1545E+00
-5.6460E+00	4.1625E+04	-5.3408E+00	4.1625E+04	-4.7645E+00	1.9980E+04	-4.5065E+00	2.1645E+04	-3.8824E+00	1.9980E+04	-3.3387E+00	2.1645E+04	-2.3179E+00
-5.7508E+00	4.1625E+04	-5.4493E+00	4.1625E+04	-4.8807E+00	1.9980E+04	-4.6264E+00	2.1645E+04	-4.0120E+00	1.9980E+04	-3.4778E+00	2.1645E+04	-2.4776E+00
-5.8544E+00	4.1625E+04	-5.5565E+00	4.1625E+04	-4.9952E+00	1.9980E+04	-4.7446E+00	2.1645E+04	-4.1395E+00	1.9980E+04	-3.6144E+00	2.1645E+04	-2.6338E+00
-5.9567E+00	4.1625E+04	-5.6624E+00	4.1625E+04	-5.1083E+00	1.9980E+04	-4.8610E+00	2.1645E+04	-4.2650E+00	1.9980E+04	-3.7485E+00	2.1645E+04	-2.7867E+00
-6.0579E+00	4.1625E+04	-5.7670E+00	4.1625E+04	-5.2198E+00	1.9980E+04	-4.9759E+00	2.1645E+04	-4.3885E+00	1.9980E+04	-3.8804E+00	2.1645E+04	-2.9364E+00
-6.1580E+00	4.1625E+04	-5.8703E+00	4.1625E+04	-5.3299E+00	1.9980E+04	-5.0892E+00	2.1645E+04	-4.5101E+00	1.9980E+04	-4.0100E+00	2.1645E+04	-3.0832E+00
-6.2569E+00	4.1625E+04	-5.9725E+00	4.1625E+04	-5.4385E+00	1.9980E+04	-5.2009E+00	2.1645E+04	-4.6300E+00	1.9980E+04	-4.1376E+00	2.1645E+04	-3.2270E+00
-6.3548E+00	4.1625E+04	-6.0735E+00	4.1625E+04	-5.5458E+00	1.9980E+04	-5.3113E+00	2.1645E+04	-4.7481E+00	1.9980E+04	-4.2631E+00	2.1645E+04	-3.3682E+00
-6.4516E+00	4.1625E+04	-6.1734E+00	4.1625E+04	-5.6518E+00	1.9980E+04	-5.4202E+00	2.1645E+04	-4.8645E+00	1.9980E+04	-4.3866E+00	2.1645E+04	-3.5067E+00
-6.5475E+00	4.1625E+04	-6.2721E+00	4.1625E+04	-5.7566E+00	1.9980E+04	-5.5277E+00	2.1645E+04	-4.9793E+00	1.9980E+04	-4.5083E+00	2.1645E+04	-3.6427E+00
-6.6423E+00	4.1625E+04	-6.3699E+00	4.1625E+04	-5.8600E+00	1.9980E+04	-5.6339E+00	2.1645E+04	-5.0925E+00	1.9980E+04	-4.6282E+00	2.1645E+04	-3.7764E+00
-6.7362E+00	4.1625E+04	-6.4665E+00	4.1625E+04	-5.9623E+00	1.9980E+04	-5.7388E+00	2.1645E+04	-5.2043E+00	1.9980E+04	-4.7463E+00	2.1645E+04	-3.9078E+00
-6.8292E+00	4.1625E+04	-6.5622E+00	4.1625E+04	-6.0634E+00	1.9980E+04	-5.8425E+00	2.1645E+04	-5.3145E+00	1.9980E+04	-4.8628E+00	2.1645E+04	-4.0370E+00
-6.9212E+00	4.1625E+04	-6.6569E+00	4.1625E+04	-6.1634E+00	1.9980E+04	-5.9450E+00	2.1645E+04	-5.4234E+00	1.9980E+04	-4.9776E+00	2.1645E+04	-4.1641E+00
-7.0124E+00	4.1625E+04	-6.7507E+00	4.1625E+04	-6.2623E+00	1.9980E+04	-6.0463E+00	2.1645E+04	-5.5309E+00	1.9980E+04	-5.0909E+00	2.1645E+04	-4.2892E+00
-7.1027E+00	4.1625E+04	-6.8435E+00	4.1625E+04	-6.3601E+00	1.9980E+04	-6.1465E+00	2.1645E+04	-5.6371E+00	1.9980E+04	-5.2026E+00	2.1645E+04	-4.4123E+00
-7.1922E+00	4.1625E+04	-6.9354E+00	4.1625E+04	-6.4569E+00	1.9980E+04	-6.2456E+00	2.1645E+04	-5.7420E+00	1.9980E+04	-5.3129E+00	2.1645E+04	-4.5336E+00
-7.2808E+00	4.1625E+04	-7.0264E+00	4.1625E+04	-6.5527E+00	1.9980E+04	-6.3436E+00	2.1645E+04	-5.8456E+00	1.9980E+04	-5.4218E+00	2.1645E+04	-4.6531E+00
-7.3686E+00	4.1625E+04	-7.1166E+00	4.1625E+04	-6.6475E+00	1.9980E+04	-6.4405E+00	2.1645E+04	-5.9481E+00	1.9980E+04	-5.5293E+00	2.1645E+04	-4.7709E+00
-7.4557E+00	4.1625E+04	-7.2059E+00	4.1625E+04	-6.7413E+00	1.9980E+04	-6.5365E+00	2.1645E+04	-6.0493E+00	1.9980E+04	-5.6355E+00	2.1645E+04	-4.8870E+00
-7.5420E+00	4.1625E+04	-7.2945E+00	4.1625E+04	-6.8342E+00	1.9980E+04	-6.6314E+00	2.1645E+04	-6.1495E+00	1.9980E+04	-5.7404E+00	2.1645E+04	-5.0015E+00
-7.6275E+00	4.1625E+04	-7.3822E+00	4.1625E+04	-6.9263E+00	1.9980E+04	-6.7255E+00	2.1645E+04	-6.2485E+00	1.9980E+04	-5.8441E+00	2.1645E+04	-5.1144E+00
-7.7124E+00	4.1625E+04	-7.4691E+00	4.1625E+04	-7.0174E+00	1.9980E+04	-6.8185E+00	2.1645E+04	-6.3465E+00	1.9980E+04	-5.9465E+00	2.1645E+04	-5.2259E+00
-7.7965E+00	4.1625E+04	-7.5553E+00	4.1625E+04	-7.1076E+00	1.9980E+04	-6.9107E+00	2.1645E+04	-6.4434E+00	1.9980E+04	-6.0478E+00	2.1645E+04	-5.3359E+00
-7.8799E+00	4.1625E+04	-7.6407E+00	4.1625E+04	-7.1970E+00	1.9980E+04	-7.0019E+00	2.1645E+04	-6.5394E+00	1.9980E+04	-6.1480E+00	2.1645E+04	-5.4445E+00
-7.9626E+00	4.1625E+04	-7.7255E+00	4.1625E+04	-7.2856E+00	1.9980E+04	-7.0923E+00	2.1645E+04	-6.6343E+00	1.9980E+04	-6.2471E+00	2.1645E+04	-5.5517E+00
-8.0447E+00	4.1625E+04	-7.8095E+00	4.1625E+04	-7.3734E+00	1.9980E+04	-7.1819E+00	2.1645E+04	-6.7283E+00	1.9980E+04	-6.3450E+00	2.1645E+04	-5.6576E+00
-8.1261E+00	4.1625E+04	-7.8928E+00	4.1625E+04	-7.4605E+00	1.9980E+04	-7.2706E+00	2.1645E+04	-6.8213E+00	1.9980E+04	-6.4420E+00	2.1645E+04	-5.7623E+00
-8.2069E+00	4.1625E+04	-7.9754E+00	4.1625E+04	-7.5467E+00	1.9980E+04	-7.3586E+00	2.1645E+04	-6.9134E+00	1.9980E+04	-6.5379E+00	2.1645E+04	-5.8657E+00

Arg 7	Curve 7	Arg 8	Curve 8	Arg 9	Curve 9	Arg 10	Curve 10	Arg 11	Curve 11	Arg 12	Curve 12	Arg 13
-8.2870E+00	4.1625E+04	-8.0573E+00	4.1625E+04	-7.6322E+00	1.9980E+04	-7.4457E+00	2.1645E+04	-7.0047E+00	1.9980E+04	-6.6329E+00	2.1645E+04	-5.9679E+00
-8.3666E+00	4.1625E+04	-8.1387E+00	4.1625E+04	-7.7170E+00	1.9980E+04	-7.5321E+00	2.1645E+04	-7.0950E+00	1.9980E+04	-6.7269E+00	2.1645E+04	-6.0690E+00
-8.4455E+00	4.1625E+04	-8.2193E+00	4.1625E+04	-7.8011E+00	1.9980E+04	-7.6177E+00	2.1645E+04	-7.1846E+00	1.9980E+04	-6.8199E+00	2.1645E+04	-6.1689E+00
-8.5239E+00	4.1625E+04	-8.2994E+00	4.1625E+04	-7.8845E+00	1.9980E+04	-7.7026E+00	2.1645E+04	-7.2733E+00	1.9980E+04	-6.9120E+00	2.1645E+04	-6.2677E+00
-8.6016E+00	4.1625E+04	-8.3788E+00	4.1625E+04	-7.9672E+00	1.9980E+04	-7.7868E+00	2.1645E+04	-7.3612E+00	1.9980E+04	-7.0033E+00	2.1645E+04	-6.3655E+00
-8.6788E+00	4.1625E+04	-8.4577E+00	4.1625E+04	-8.0492E+00	1.9980E+04	-7.8703E+00	2.1645E+04	-7.4483E+00	1.9980E+04	-7.0937E+00	2.1645E+04	-6.4622E+00
-8.7555E+00	4.1625E+04	-8.5359E+00	4.1625E+04	-8.1306E+00	1.9980E+04	-7.9531E+00	2.1645E+04	-7.5347E+00	1.9980E+04	-7.1832E+00	2.1645E+04	-6.5579E+00
-8.8316E+00	4.1625E+04	-8.6136E+00	4.1625E+04	-8.2113E+00	1.9980E+04	-8.0353E+00	2.1645E+04	-7.6203E+00	1.9980E+04	-7.2720E+00	2.1645E+04	-6.6527E+00
-8.9072E+00	4.1625E+04	-8.6908E+00	4.1625E+04	-8.2914E+00	1.9980E+04	-8.1168E+00	2.1645E+04	-7.7052E+00	1.9980E+04	-7.3599E+00	2.1645E+04	-6.7465E+00
-8.9823E+00	4.1625E+04	-8.7673E+00	4.1625E+04	-8.3709E+00	1.9980E+04	-8.1976E+00	2.1645E+04	-7.7894E+00	1.9980E+04	-7.4470E+00	2.1645E+04	-6.8393E+00
-9.0568E+00	4.1625E+04	-8.8434E+00	4.1625E+04	-8.4498E+00	1.9980E+04	-8.2778E+00	2.1645E+04	-7.8728E+00	1.9980E+04	-7.5334E+00	2.1645E+04	-6.9313E+00
-9.1308E+00	4.1625E+04	-8.9189E+00	4.1625E+04	-8.5281E+00	1.9980E+04	-8.3574E+00	2.1645E+04	-7.9556E+00	1.9980E+04	-7.6190E+00	2.1645E+04	-7.0224E+00
-9.2044E+00	4.1625E+04	-8.9938E+00	4.1625E+04	-8.6059E+00	1.9980E+04	-8.4365E+00	2.1645E+04	-8.0377E+00	1.9980E+04	-7.7039E+00	2.1645E+04	-7.1126E+00
-9.2775E+00	4.1625E+04	-9.0683E+00	4.1625E+04	-8.6831E+00	1.9980E+04	-8.5149E+00	2.1645E+04	-8.1192E+00	1.9980E+04	-7.7881E+00	2.1645E+04	-7.2019E+00
-9.3500E+00	4.1625E+04	-9.1423E+00	4.1625E+04	-8.7597E+00	1.9980E+04	-8.5927E+00	2.1645E+04	-8.2000E+00	1.9980E+04	-7.8716E+00	2.1645E+04	-7.2905E+00
-9.4222E+00	4.1625E+04	-9.2157E+00	4.1625E+04	-8.8358E+00	1.9980E+04	-8.6700E+00	2.1645E+04	-8.2802E+00	1.9980E+04	-7.9544E+00	2.1645E+04	-7.3783E+00
-9.4938E+00	4.1625E+04	-9.2887E+00	4.1625E+04	-8.9113E+00	1.9980E+04	-8.7467E+00	2.1645E+04	-8.3598E+00	1.9980E+04	-8.0365E+00	2.1645E+04	-7.4652E+00
-9.5650E+00	4.1625E+04	-9.3613E+00	4.1625E+04	-8.9864E+00	1.9980E+04	-8.8229E+00	2.1645E+04	-8.4388E+00	1.9980E+04	-8.1180E+00	2.1645E+04	-7.5514E+00
-9.6358E+00	4.1625E+04	-9.4333E+00	4.1625E+04	-9.0609E+00	1.9980E+04	-8.8985E+00	2.1645E+04	-8.5172E+00	1.9980E+04	-8.1988E+00	2.1645E+04	-7.6369E+00
-9.7061E+00	4.1625E+04	-9.5049E+00	4.1625E+04	-9.1349E+00	1.9980E+04	-8.9736E+00	2.1645E+04	-8.5950E+00	1.9980E+04	-8.2790E+00	2.1645E+04	-7.7217E+00
-9.7760E+00	4.1625E+04	-9.5760E+00	4.1625E+04	-9.2084E+00	1.9980E+04	-9.0483E+00	2.1645E+04	-8.6723E+00	1.9980E+04	-8.3586E+00	2.1645E+04	-7.8057E+00
-9.8455E+00	4.1625E+04	-9.6467E+00	4.1625E+04	-9.2815E+00	1.9980E+04	-9.1224E+00	2.1645E+04	-8.7490E+00	1.9980E+04	-8.4376E+00	2.1645E+04	-7.8890E+00
-9.9146E+00	4.1625E+04	-9.7170E+00	4.1625E+04	-9.3540E+00	1.9980E+04	-9.1960E+00	2.1645E+04	-8.8252E+00	1.9980E+04	-8.5160E+00	2.1645E+04	-7.9717E+00
-9.9832E+00	4.1625E+04	-9.7868E+00	4.1625E+04	-9.4261E+00	1.9980E+04	-9.2691E+00	2.1645E+04	-8.9008E+00	1.9980E+04	-8.5939E+00	2.1645E+04	-8.0537E+00
-1.0051E+01	4.1625E+04	-9.8562E+00	4.1625E+04	-9.4978E+00	1.9980E+04	-9.3417E+00	2.1645E+04	-8.9759E+00	1.9980E+04	-8.6711E+00	2.1645E+04	-8.1350E+00
-1.0119E+01	4.1625E+04	-9.9252E+00	4.1625E+04	-9.5689E+00	1.9980E+04	-9.4139E+00	2.1645E+04	-9.0505E+00	1.9980E+04	-8.7479E+00	2.1645E+04	-8.2157E+00
-1.0187E+01	4.1625E+04	-9.9938E+00	4.1625E+04	-9.6397E+00	1.9980E+04	-9.4856E+00	2.1645E+04	-9.1246E+00	1.9980E+04	-8.8240E+00	2.1645E+04	-8.2958E+00
-1.0254E+01	4.1625E+04	-1.0062E+01	4.1625E+04	-9.7100E+00	1.9980E+04	-9.5569E+00	2.1645E+04	-9.1982E+00	1.9980E+04	-8.8997E+00	2.1645E+04	-8.3753E+00
-1.0321E+01	4.1625E+04	-1.0130E+01	4.1625E+04	-9.7799E+00	1.9980E+04	-9.6277E+00	2.1645E+04	-9.2713E+00	1.9980E+04	-8.9748E+00	2.1645E+04	-8.4541E+00
-1.0387E+01	4.1625E+04	-1.0197E+01	4.1625E+04	-9.8493E+00	1.9980E+04	-9.6981E+00	2.1645E+04	-9.3439E+00	1.9980E+04	-9.0494E+00	2.1645E+04	-8.5324E+00
-1.0453E+01	4.1625E+04	-1.0264E+01	4.1625E+04	-9.9184E+00	1.9980E+04	-9.7680E+00	2.1645E+04	-9.4161E+00	1.9980E+04	-9.1235E+00	2.1645E+04	-8.6101E+00
-1.0519E+01	4.1625E+04	-1.0331E+01	4.1625E+04	-9.9870E+00	1.9980E+04	-9.8375E+00	2.1645E+04	-9.4878E+00	1.9980E+04	-9.1971E+00	2.1645E+04	-8.6873E+00
-1.0584E+01	4.1625E+04	-1.0397E+01	4.1625E+04	-1.0055E+01	1.9980E+04	-9.9067E+00	2.1645E+04	-9.5590E+00	1.9980E+04	-9.2702E+00	2.1645E+04	-8.7639E+00
-1.0649E+01	4.1625E+04	-1.0463E+01	4.1625E+04	-1.0123E+01	1.9980E+04	-9.9754E+00	2.1645E+04	-9.6298E+00	1.9980E+04	-9.3428E+00	2.1645E+04	-8.8399E+00
-1.0713E+01	4.1625E+04	-1.0529E+01	4.1625E+04	-1.0191E+01	1.9980E+04	-1.0044E+01	2.1645E+04	-9.7002E+00	1.9980E+04	-9.4150E+00	2.1645E+04	-8.9155E+00
-1.0778E+01	4.1625E+04	-1.0594E+01	4.1625E+04	-1.0258E+01	1.9980E+04	-1.0112E+01	2.1645E+04	-9.7701E+00	1.9980E+04	-9.4867E+00	2.1645E+04	-8.9905E+00
-1.0841E+01	4.1625E+04	-1.0659E+01	4.1625E+04	-1.0324E+01	1.9980E+04	-1.0179E+01	2.1645E+04	-9.8396E+00	1.9980E+04	-9.5579E+00	2.1645E+04	-9.0650E+00
-1.0905E+01	4.1625E+04	-1.0723E+01	4.1625E+04	-1.0391E+01	1.9980E+04	-1.0246E+01	2.1645E+04	-9.9087E+00	1.9980E+04	-9.6287E+00	2.1645E+04	-9.1390E+00
-1.0968E+01	4.1625E+04	-1.0787E+01	4.1625E+04	-1.0457E+01	1.9980E+04	-1.0313E+01	2.1645E+04	-9.9774E+00	1.9980E+04	-9.6991E+00	2.1645E+04	-9.2125E+00
-1.1031E+01	4.1625E+04	-1.0851E+01	4.1625E+04	-1.0522E+01	1.9980E+04	-1.0379E+01	2.1645E+04	-1.0046E+01	1.9980E+04	-9.7691E+00	2.1645E+04	-9.2855E+00
-1.1094E+01	4.1625E+04	-1.0915E+01	4.1625E+04	-1.0587E+01	1.9980E+04	-1.0445E+01	2.1645E+04	-1.0114E+01	1.9980E+04	-9.8386E+00	2.1645E+04	-9.3580E+00
-1.1156E+01	4.1625E+04	-1.0978E+01	4.1625E+04	-1.0652E+01	1.9980E+04	-1.0511E+01	2.1645E+04	-1.0181E+01	1.9980E+04	-9.9077E+00	2.1645E+04	-9.4301E+00
-1.1218E+01	4.1625E+04	-1.1041E+01	4.1625E+04	-1.0717E+01	1.9980E+04	-1.0576E+01	2.1645E+04	-1.0248E+01	1.9980E+04	-9.9764E+00	2.1645E+04	-9.5017E+00
-1.1280E+01	4.1625E+04	-1.1103E+01	4.1625E+04	-1.0781E+01	1.9980E+04	-1.0641E+01	2.1645E+04	-1.0315E+01	1.9980E+04	-1.0045E+01	2.1645E+04	-9.5728E+00
-1.1341E+01	4.1625E+04	-1.1166E+01	4.1625E+04	-1.0845E+01	1.9980E+04	-1.0706E+01	2.1645E+04	-1.0381E+01	1.9980E+04	-1.0113E+01	2.1645E+04	-9.6436E+00
-1.1402E+01	4.1625E+04	-1.1228E+01	4.1625E+04	-1.0908E+01	1.9980E+04	-1.0770E+01	2.1645E+04	-1.0447E+01	1.9980E+04	-1.0180E+01	2.1645E+04	-9.7138E+00
-1.1463E+01	4.1625E+04	-1.1289E+01	4.1625E+04	-1.0972E+01	1.9980E+04	-1.0834E+01	2.1645E+04	-1.0513E+01	1.9980E+04	-1.0247E+01	2.1645E+04	-9.7837E+00
-1.1524E+01	4.1625E+04	-1.1351E+01	4.1625E+04	-1.1035E+01	1.9980E+04	-1.0898E+01	2.1645E+04	-1.0578E+01	1.9980E+04	-1.0314E+01	2.1645E+04	-9.8531E+00
-1.1584E+01	4.1625E+04	-1.1412E+01	4.1625E+04	-1.1097E+01	1.9980E+04	-1.0961E+01	2.1645E+04	-1.0643E+01	1.9980E+04	-1.0380E+01	2.1645E+04	-9.9222E+00
-1.1644E+01	4.1625E+04	-1.1472E+01	4.1625E+04	-1.1159E+01	1.9980E+04	-1.1024E+01	2.1645E+04	-1.0708E+01	1.9980E+04	-1.0446E+01	2.1645E+04	-9.9908E+00
-1.1703E+01	4.1625E+04	-1.1533E+01	4.1625E+04	-1.1221E+01	1.9980E+04	-1.1087E+01	2.1645E+04	-1.0772E+01	1.9980E+04	-1.0512E+01	2.1645E+04	-1.0059E+01
-1.1763E+01	4.1625E+04	-1.1593E+01	4.1625E+04	-1.1283E+01	1.9980E+04	-1.1149E+01	2.1645E+04	-1.0836E+01	1.9980E+04	-1.0577E+01	2.1645E+04	-1.0127E+01

Arg 7	Curve 7	Arg 8	Curve 8	Arg 9	Curve 9	Arg 10	Curve 10	Arg 11	Curve 11	Arg 12	Curve 12	Arg 13
-1.1822E+01	4.1625E+04	-1.1653E+01	4.1625E+04	-1.1345E+01	1.9980E+04	-1.1211E+01	2.1645E+04	-1.0900E+01	1.9980E+04	-1.0642E+01	2.1645E+04	-1.0194E+01
-1.1881E+01	4.1625E+04	-1.1713E+01	4.1625E+04	-1.1406E+01	1.9980E+04	-1.1273E+01	2.1645E+04	-1.0963E+01	1.9980E+04	-1.0707E+01	2.1645E+04	-1.0261E+01
-1.1939E+01	4.1625E+04	-1.1772E+01	4.1625E+04	-1.1466E+01	1.9980E+04	-1.1334E+01	2.1645E+04	-1.1026E+01	1.9980E+04	-1.0771E+01	2.1645E+04	-1.0328E+01
-1.1998E+01	4.1625E+04	-1.1831E+01	4.1625E+04	-1.1527E+01	1.9980E+04	-1.1395E+01	2.1645E+04	-1.1088E+01	1.9980E+04	-1.0835E+01	2.1645E+04	-1.0394E+01
-1.2056E+01	4.1625E+04	-1.1890E+01	4.1625E+04	-1.1587E+01	1.9980E+04	-1.1456E+01	2.1645E+04	-1.1151E+01	1.9980E+04	-1.0899E+01	2.1645E+04	-1.0460E+01
-1.2114E+01	4.1625E+04	-1.1949E+01	4.1625E+04	-1.1647E+01	1.9980E+04	-1.1517E+01	2.1645E+04	-1.1213E+01	1.9980E+04	-1.0962E+01	2.1645E+04	-1.0526E+01
-1.2171E+01	4.1625E+04	-1.2007E+01	4.1625E+04	-1.1707E+01	1.9980E+04	-1.1577E+01	2.1645E+04	-1.1275E+01	1.9980E+04	-1.1025E+01	2.1645E+04	-1.0591E+01
-1.2229E+01	4.1625E+04	-1.2065E+01	4.1625E+04	-1.1766E+01	1.9980E+04	-1.1637E+01	2.1645E+04	-1.1336E+01	1.9980E+04	-1.1088E+01	2.1645E+04	-1.0656E+01
-1.2286E+01	4.1625E+04	-1.2123E+01	4.1625E+04	-1.1825E+01	1.9980E+04	-1.1697E+01	2.1645E+04	-1.1397E+01	1.9980E+04	-1.1150E+01	2.1645E+04	-1.0720E+01
-1.2343E+01	4.1625E+04	-1.2180E+01	4.1625E+04	-1.1884E+01	1.9980E+04	-1.1756E+01	2.1645E+04	-1.1458E+01	1.9980E+04	-1.1212E+01	2.1645E+04	-1.0785E+01
-1.2399E+01	4.1625E+04	-1.2238E+01	4.1625E+04	-1.1943E+01	1.9980E+04	-1.1815E+01	2.1645E+04	-1.1518E+01	1.9980E+04	-1.1274E+01	2.1645E+04	-1.0848E+01
-1.2456E+01	4.1625E+04	-1.2295E+01	4.1625E+04	-1.2001E+01	1.9980E+04	-1.1874E+01	2.1645E+04	-1.1579E+01	1.9980E+04	-1.1335E+01	2.1645E+04	-1.0912E+01
-1.2512E+01	4.1625E+04	-1.2352E+01	4.1625E+04	-1.2059E+01	1.9980E+04	-1.1933E+01	2.1645E+04	-1.1639E+01	1.9980E+04	-1.1396E+01	2.1645E+04	-1.0975E+01
-1.2568E+01	4.1625E+04	-1.2408E+01	4.1625E+04	-1.2117E+01	1.9980E+04	-1.1991E+01	2.1645E+04	-1.1698E+01	1.9980E+04	-1.1457E+01	2.1645E+04	-1.1038E+01
-1.2624E+01	4.1625E+04	-1.2465E+01	4.1625E+04	-1.2175E+01	1.9980E+04	-1.2049E+01	2.1645E+04	-1.1758E+01	1.9980E+04	-1.1518E+01	2.1645E+04	-1.1101E+01
-1.2679E+01	4.1625E+04	-1.2521E+01	4.1625E+04	-1.2232E+01	1.9980E+04	-1.2107E+01	2.1645E+04	-1.1817E+01	1.9980E+04	-1.1578E+01	2.1645E+04	-1.1163E+01
-1.2734E+01	4.1625E+04	-1.2577E+01	4.1625E+04	-1.2289E+01	1.9980E+04	-1.2165E+01	2.1645E+04	-1.1876E+01	1.9980E+04	-1.1638E+01	2.1645E+04	-1.1225E+01
-1.2789E+01	4.1625E+04	-1.2632E+01	4.1625E+04	-1.2346E+01	1.9980E+04	-1.2222E+01	2.1645E+04	-1.1935E+01	1.9980E+04	-1.1697E+01	2.1645E+04	-1.1287E+01
-1.2844E+01	4.1625E+04	-1.2688E+01	4.1625E+04	-1.2402E+01	1.9980E+04	-1.2279E+01	2.1645E+04	-1.1993E+01	1.9980E+04	-1.1757E+01	2.1645E+04	-1.1348E+01
-1.2899E+01	4.1625E+04	-1.2743E+01	4.1625E+04	-1.2459E+01	1.9980E+04	-1.2336E+01	2.1645E+04	-1.2051E+01	1.9980E+04	-1.1816E+01	2.1645E+04	-1.1409E+01
-1.2953E+01	4.1625E+04	-1.2798E+01	4.1625E+04	-1.2515E+01	1.9980E+04	-1.2393E+01	2.1645E+04	-1.2109E+01	1.9980E+04	-1.1875E+01	2.1645E+04	-1.1470E+01
-1.3007E+01	4.1625E+04	-1.2853E+01	4.1625E+04	-1.2571E+01	1.9980E+04	-1.2449E+01	2.1645E+04	-1.2167E+01	1.9980E+04	-1.1934E+01	2.1645E+04	-1.1530E+01
-1.3061E+01	4.1625E+04	-1.2907E+01	4.1625E+04	-1.2627E+01	1.9980E+04	-1.2506E+01	2.1645E+04	-1.2224E+01	1.9980E+04	-1.1992E+01	2.1645E+04	-1.1590E+01
-1.3115E+01	4.1625E+04	-1.2962E+01	4.1625E+04	-1.2682E+01	1.9980E+04	-1.2561E+01	2.1645E+04	-1.2281E+01	1.9980E+04	-1.2050E+01	2.1645E+04	-1.1650E+01
-1.3169E+01	4.1625E+04	-1.3016E+01	4.1625E+04	-1.2737E+01	1.9980E+04	-1.2617E+01	2.1645E+04	-1.2338E+01	1.9980E+04	-1.2108E+01	2.1645E+04	-1.1710E+01
-1.3222E+01	4.1625E+04	-1.3070E+01	4.1625E+04	-1.2792E+01	1.9980E+04	-1.2673E+01	2.1645E+04	-1.2395E+01	1.9980E+04	-1.2166E+01	2.1645E+04	-1.1769E+01
-1.3275E+01	4.1625E+04	-1.3124E+01	4.1625E+04	-1.2847E+01	1.9980E+04	-1.2728E+01	2.1645E+04	-1.2451E+01	1.9980E+04	-1.2223E+01	2.1645E+04	-1.1828E+01
-1.3328E+01	4.1625E+04	-1.3177E+01	4.1625E+04	-1.2902E+01	1.9980E+04	-1.2783E+01	2.1645E+04	-1.2507E+01	1.9980E+04	-1.2280E+01	2.1645E+04	-1.1887E+01
-1.3381E+01	4.1625E+04	-1.3230E+01	4.1625E+04	-1.2956E+01	1.9980E+04	-1.2838E+01	2.1645E+04	-1.2563E+01	1.9980E+04	-1.2337E+01	2.1645E+04	-1.1946E+01
-1.3434E+01	4.1625E+04	-1.3284E+01	4.1625E+04	-1.3010E+01	1.9980E+04	-1.2893E+01	2.1645E+04	-1.2619E+01	1.9980E+04	-1.2394E+01	2.1645E+04	-1.2004E+01
-1.3486E+01	4.1625E+04	-1.3337E+01	4.1625E+04	-1.3064E+01	1.9980E+04	-1.2947E+01	2.1645E+04	-1.2674E+01	1.9980E+04	-1.2450E+01	2.1645E+04	-1.2062E+01
-1.3538E+01	4.1625E+04	-1.3389E+01	4.1625E+04	-1.3118E+01	1.9980E+04	-1.3001E+01	2.1645E+04	-1.2730E+01	1.9980E+04	-1.2506E+01	2.1645E+04	-1.2120E+01
-1.3590E+01	4.1625E+04	-1.3442E+01	4.1625E+04	-1.3172E+01	1.9980E+04	-1.3055E+01	2.1645E+04	-1.2785E+01	1.9980E+04	-1.2562E+01	2.1645E+04	-1.2178E+01
-1.3642E+01	4.1625E+04	-1.3494E+01	4.1625E+04	-1.3225E+01	1.9980E+04	-1.3109E+01	2.1645E+04	-1.2840E+01	1.9980E+04	-1.2618E+01	2.1645E+04	-1.2235E+01
-1.3694E+01	4.1625E+04	-1.3547E+01	4.1625E+04	-1.3278E+01	1.9980E+04	-1.3163E+01	2.1645E+04	-1.2894E+01	1.9980E+04	-1.2674E+01	2.1645E+04	-1.2292E+01
-1.3746E+01	4.1625E+04	-1.3599E+01	4.1625E+04	-1.3331E+01	1.9980E+04	-1.3216E+01	2.1645E+04	-1.2949E+01	1.9980E+04	-1.2729E+01	2.1645E+04	-1.2349E+01
-1.3797E+01	4.1625E+04	-1.3650E+01	4.1625E+04	-1.3384E+01	1.9980E+04	-1.3269E+01	2.1645E+04	-1.3003E+01	1.9980E+04	-1.2784E+01	2.1645E+04	-1.2406E+01
-1.3848E+01	4.1625E+04	-1.3702E+01	4.1625E+04	-1.3437E+01	1.9980E+04	-1.3322E+01	2.1645E+04	-1.3057E+01	1.9980E+04	-1.2839E+01	2.1645E+04	-1.2462E+01
-1.3899E+01	4.1625E+04	-1.3753E+01	4.1625E+04	-1.3489E+01	1.9980E+04	-1.3375E+01	2.1645E+04	-1.3111E+01	1.9980E+04	-1.2893E+01	2.1645E+04	-1.2518E+01
-1.3950E+01	4.1625E+04	-1.3805E+01	4.1625E+04	-1.3541E+01	1.9980E+04	-1.3428E+01	2.1645E+04	-1.3164E+01	1.9980E+04	-1.2948E+01	2.1645E+04	-1.2574E+01
-1.4000E+01	4.1625E+04	-1.3856E+01	4.1625E+04	-1.3593E+01	1.9980E+04	-1.3480E+01	2.1645E+04	-1.3218E+01	1.9980E+04	-1.3002E+01	2.1645E+04	-1.2630E+01
-1.4051E+01	4.1625E+04	-1.3907E+01	4.1625E+04	-1.3645E+01	1.9980E+04	-1.3532E+01	2.1645E+04	-1.3271E+01	1.9980E+04	-1.3056E+01	2.1645E+04	-1.2685E+01
-1.4101E+01	4.1625E+04	-1.3958E+01	4.1625E+04	-1.3697E+01	1.9980E+04	-1.3585E+01	2.1645E+04	-1.3324E+01	1.9980E+04	-1.3110E+01	2.1645E+04	-1.2740E+01
-1.4151E+01	4.1625E+04	-1.4008E+01	4.1625E+04	-1.3748E+01	1.9980E+04	-1.3636E+01	2.1645E+04	-1.3377E+01	1.9980E+04	-1.3163E+01	2.1645E+04	-1.2795E+01
-1.4201E+01	4.1625E+04	-1.4059E+01	4.1625E+04	-1.3800E+01	1.9980E+04	-1.3688E+01	2.1645E+04	-1.3429E+01	1.9980E+04	-1.3217E+01	2.1645E+04	-1.2850E+01
-1.4251E+01	4.1625E+04	-1.4109E+01	4.1625E+04	-1.3851E+01	1.9980E+04	-1.3740E+01	2.1645E+04	-1.3482E+01	1.9980E+04	-1.3270E+01	2.1645E+04	-1.2905E+01
-1.4301E+01	4.1625E+04	-1.4159E+01	4.1625E+04	-1.3902E+01	1.9980E+04	-1.3791E+01	2.1645E+04	-1.3534E+01	1.9980E+04	-1.3323E+01	2.1645E+04	-1.2959E+01
-1.4350E+01	4.1625E+04	-1.4209E+01	4.1625E+04	-1.3953E+01	1.9980E+04	-1.3842E+01	2.1645E+04	-1.3586E+01	1.9980E+04	-1.3376E+01	2.1645E+04	-1.3013E+01
-1.4399E+01	4.1625E+04	-1.4259E+01	4.1625E+04	-1.4003E+01	1.9980E+04	-1.3893E+01	2.1645E+04	-1.3638E+01	1.9980E+04	-1.3429E+01	2.1645E+04	-1.3067E+01
-1.4448E+01	4.1625E+04	-1.4308E+01	4.1625E+04	-1.4054E+01	1.9980E+04	-1.3944E+01	2.1645E+04	-1.3690E+01	1.9980E+04	-1.3481E+01	2.1645E+04	-1.3121E+01
-1.4497E+01	4.1625E+04	-1.4358E+01	4.1625E+04	-1.4104E+01	1.9980E+04	-1.3995E+01	2.1645E+04	-1.3741E+01	1.9980E+04	-1.3533E+01	2.1645E+04	-1.3175E+01
-1.4546E+01	4.1625E+04	-1.4407E+01	4.1625E+04	-1.4154E+01	1.9980E+04	-1.4045E+01	2.1645E+04	-1.3792E+01	1.9980E+04	-1.3585E+01	2.1645E+04	-1.3228E+01

Arg 7	Curve 7	Arg 8	Curve 8	Arg 9	Curve 9	Arg 10	Curve 10	Arg 11	Curve 11	Arg 12	Curve 12	Arg 13
-1.4595E+01	4.1625E+04	-1.4456E+01	4.1625E+04	-1.4204E+01	1.9980E+04	-1.4095E+01	2.1645E+04	-1.3844E+01	1.9980E+04	-1.3637E+01	2.1645E+04	-1.3281E+01
-1.4643E+01	4.1625E+04	-1.4505E+01	4.1625E+04	-1.4254E+01	1.9980E+04	-1.4145E+01	2.1645E+04	-1.3895E+01	1.9980E+04	-1.3689E+01	2.1645E+04	-1.3334E+01
-1.4692E+01	4.1625E+04	-1.4554E+01	4.1625E+04	-1.4303E+01	1.9980E+04	-1.4195E+01	2.1645E+04	-1.3945E+01	1.9980E+04	-1.3740E+01	2.1645E+04	-1.3387E+01
-1.4740E+01	4.1625E+04	-1.4602E+01	4.1625E+04	-1.4353E+01	1.9980E+04	-1.4245E+01	2.1645E+04	-1.3996E+01	1.9980E+04	-1.3792E+01	2.1645E+04	-1.3440E+01
-1.4788E+01	4.1625E+04	-1.4651E+01	4.1625E+04	-1.4402E+01	1.9980E+04	-1.4295E+01	2.1645E+04	-1.4046E+01	1.9980E+04	-1.3843E+01	2.1645E+04	-1.3492E+01
-1.4836E+01	4.1625E+04	-1.4699E+01	4.1625E+04	-1.4451E+01	1.9980E+04	-1.4344E+01	2.1645E+04	-1.4097E+01	1.9980E+04	-1.3894E+01	2.1645E+04	-1.3544E+01
-1.4884E+01	4.1625E+04	-1.4747E+01	4.1625E+04	-1.4500E+01	1.9980E+04	-1.4394E+01	2.1645E+04	-1.4147E+01	1.9980E+04	-1.3945E+01	2.1645E+04	-1.3596E+01
-1.4931E+01	4.1625E+04	-1.4796E+01	4.1625E+04	-1.4549E+01	1.9980E+04	-1.4443E+01	2.1645E+04	-1.4197E+01	1.9980E+04	-1.3995E+01	2.1645E+04	-1.3648E+01
-1.4979E+01	4.1625E+04	-1.4843E+01	4.1625E+04	-1.4598E+01	1.9980E+04	-1.4492E+01	2.1645E+04	-1.4247E+01	1.9980E+04	-1.4046E+01	2.1645E+04	-1.3700E+01
-1.5026E+01	4.1625E+04	-1.4891E+01	4.1625E+04	-1.4646E+01	1.9980E+04	-1.4541E+01	2.1645E+04	-1.4296E+01	1.9980E+04	-1.4096E+01	2.1645E+04	-1.3751E+01
-1.5074E+01	4.1625E+04	-1.4939E+01	4.1625E+04	-1.4694E+01	1.9980E+04	-1.4589E+01	2.1645E+04	-1.4346E+01	1.9980E+04	-1.4146E+01	2.1645E+04	-1.3802E+01
-1.5121E+01	4.1625E+04	-1.4986E+01	4.1625E+04	-1.4743E+01	1.9980E+04	-1.4638E+01	2.1645E+04	-1.4395E+01	1.9980E+04	-1.4196E+01	2.1645E+04	-1.3854E+01
-1.5168E+01	4.1625E+04	-1.5034E+01	4.1625E+04	-1.4791E+01	1.9980E+04	-1.4686E+01	2.1645E+04	-1.4444E+01	1.9980E+04	-1.4246E+01	2.1645E+04	-1.3905E+01
-1.5214E+01	4.1625E+04	-1.5081E+01	4.1625E+04	-1.4839E+01	1.9980E+04	-1.4734E+01	2.1645E+04	-1.4493E+01	1.9980E+04	-1.4296E+01	2.1645E+04	-1.3955E+01
-1.5261E+01	4.1625E+04	-1.5128E+01	4.1625E+04	-1.4886E+01	1.9980E+04	-1.4783E+01	2.1645E+04	-1.4542E+01	1.9980E+04	-1.4345E+01	2.1645E+04	-1.4006E+01
-1.5308E+01	4.1625E+04	-1.5175E+01	4.1625E+04	-1.4934E+01	1.9980E+04	-1.4831E+01	2.1645E+04	-1.4591E+01	1.9980E+04	-1.4394E+01	2.1645E+04	-1.4056E+01
-1.5354E+01	4.1625E+04	-1.5222E+01	4.1625E+04	-1.4982E+01	1.9980E+04	-1.4878E+01	2.1645E+04	-1.4639E+01	1.9980E+04	-1.4444E+01	2.1645E+04	-1.4107E+01
-1.5400E+01	4.1625E+04	-1.5268E+01	4.1625E+04	-1.5029E+01	1.9980E+04	-1.4926E+01	2.1645E+04	-1.4688E+01	1.9980E+04	-1.4493E+01	2.1645E+04	-1.4157E+01
-1.5446E+01	4.1625E+04	-1.5315E+01	4.1625E+04	-1.5076E+01	1.9980E+04	-1.4973E+01	2.1645E+04	-1.4736E+01	1.9980E+04	-1.4541E+01	2.1645E+04	-1.4207E+01
-1.5492E+01	4.1625E+04	-1.5361E+01	4.1625E+04	-1.5123E+01	1.9980E+04	-1.5021E+01	2.1645E+04	-1.4784E+01	1.9980E+04	-1.4590E+01	2.1645E+04	-1.4256E+01
-1.5538E+01	4.1625E+04	-1.5407E+01	4.1625E+04	-1.5170E+01	1.9980E+04	-1.5068E+01	2.1645E+04	-1.4832E+01	1.9980E+04	-1.4639E+01	2.1645E+04	-1.4306E+01
-1.5584E+01	4.1625E+04	-1.5453E+01	4.1625E+04	-1.5217E+01	1.9980E+04	-1.5115E+01	2.1645E+04	-1.4880E+01	1.9980E+04	-1.4687E+01	2.1645E+04	-1.4355E+01
-1.5630E+01	4.1625E+04	-1.5499E+01	4.1625E+04	-1.5264E+01	1.9980E+04	-1.5162E+01	2.1645E+04	-1.4927E+01	1.9980E+04	-1.4735E+01	2.1645E+04	-1.4405E+01
-1.5675E+01	4.1625E+04	-1.5545E+01	4.1625E+04	-1.5310E+01	1.9980E+04	-1.5209E+01	2.1645E+04	-1.4975E+01	1.9980E+04	-1.4783E+01	2.1645E+04	-1.4454E+01
-1.5720E+01	4.1625E+04	-1.5591E+01	4.1625E+04	-1.5356E+01	1.9980E+04	-1.5256E+01	2.1645E+04	-1.5022E+01	1.9980E+04	-1.4831E+01	2.1645E+04	-1.4503E+01
-1.5766E+01	4.1625E+04	-1.5637E+01	4.1625E+04	-1.5403E+01	1.9980E+04	-1.5302E+01	2.1645E+04	-1.5070E+01	1.9980E+04	-1.4879E+01	2.1645E+04	-1.4552E+01
-1.5811E+01	4.1625E+04	-1.5682E+01	4.1625E+04	-1.5449E+01	1.9980E+04	-1.5349E+01	2.1645E+04	-1.5117E+01	1.9980E+04	-1.4927E+01	2.1645E+04	-1.4600E+01
-1.5856E+01	4.1625E+04	-1.5727E+01	4.1625E+04	-1.5495E+01	1.9980E+04	-1.5395E+01	2.1645E+04	-1.5164E+01	1.9980E+04	-1.4974E+01	2.1645E+04	-1.4649E+01
-1.5901E+01	4.1625E+04	-1.5773E+01	4.1625E+04	-1.5541E+01	1.9980E+04	-1.5441E+01	2.1645E+04	-1.5210E+01	1.9980E+04	-1.5022E+01	2.1645E+04	-1.4697E+01
-1.5945E+01	4.1625E+04	-1.5818E+01	4.1625E+04	-1.5586E+01	1.9980E+04	-1.5487E+01	2.1645E+04	-1.5257E+01	1.9980E+04	-1.5069E+01	2.1645E+04	-1.4745E+01
-1.5990E+01	4.1625E+04	-1.5863E+01	4.1625E+04	-1.5632E+01	1.9980E+04	-1.5533E+01	2.1645E+04	-1.5304E+01	1.9980E+04	-1.5116E+01	2.1645E+04	-1.4793E+01
-1.6035E+01	4.1625E+04	-1.5908E+01	4.1625E+04	-1.5678E+01	1.9980E+04	-1.5579E+01	2.1645E+04	-1.5350E+01	1.9980E+04	-1.5163E+01	2.1645E+04	-1.4841E+01
-1.6079E+01	4.1625E+04	-1.5952E+01	4.1625E+04	-1.5723E+01	1.9980E+04	-1.5624E+01	2.1645E+04	-1.5396E+01	1.9980E+04	-1.5210E+01	2.1645E+04	-1.4889E+01
-1.6123E+01	4.1625E+04	-1.5997E+01	4.1625E+04	-1.5768E+01	1.9980E+04	-1.5670E+01	2.1645E+04	-1.5442E+01	1.9980E+04	-1.5256E+01	2.1645E+04	-1.4937E+01
-1.6167E+01	4.1625E+04	-1.6041E+01	4.1625E+04	-1.5813E+01	1.9980E+04	-1.5715E+01	2.1645E+04	-1.5488E+01	1.9980E+04	-1.5303E+01	2.1645E+04	-1.4984E+01
-1.6211E+01	4.1625E+04	-1.6086E+01	4.1625E+04	-1.5858E+01	1.9980E+04	-1.5760E+01	2.1645E+04	-1.5534E+01	1.9980E+04	-1.5349E+01	2.1645E+04	-1.5031E+01
-1.6255E+01	4.1625E+04	-1.6130E+01	4.1625E+04	-1.5903E+01	1.9980E+04	-1.5806E+01	2.1645E+04	-1.5580E+01	1.9980E+04	-1.5396E+01	2.1645E+04	-1.5079E+01
-1.6299E+01	4.1625E+04	-1.6174E+01	4.1625E+04	-1.5948E+01	1.9980E+04	-1.5851E+01	2.1645E+04	-1.5626E+01	1.9980E+04	-1.5442E+01	2.1645E+04	-1.5126E+01
-1.6343E+01	4.1625E+04	-1.6218E+01	4.1625E+04	-1.5992E+01	1.9980E+04	-1.5895E+01	2.1645E+04	-1.5671E+01	1.9980E+04	-1.5488E+01	2.1645E+04	-1.5173E+01
-1.6386E+01	4.1625E+04	-1.6262E+01	4.1625E+04	-1.6037E+01	1.9980E+04	-1.5940E+01	2.1645E+04	-1.5717E+01	1.9980E+04	-1.5534E+01	2.1645E+04	-1.5219E+01
-1.6430E+01	4.1625E+04	-1.6306E+01	4.1625E+04	-1.6081E+01	1.9980E+04	-1.5985E+01	2.1645E+04	-1.5762E+01	1.9980E+04	-1.5579E+01	2.1645E+04	-1.5266E+01
-1.6473E+01	4.1625E+04	-1.6350E+01	4.1625E+04	-1.6126E+01	1.9980E+04	-1.6029E+01	2.1645E+04	-1.5807E+01	1.9980E+04	-1.5625E+01	2.1645E+04	-1.5313E+01
-1.6517E+01	4.1625E+04	-1.6393E+01	4.1625E+04	-1.6170E+01	1.9980E+04	-1.6074E+01	2.1645E+04	-1.5852E+01	1.9980E+04	-1.5670E+01	2.1645E+04	-1.5359E+01
-1.6560E+01	4.1625E+04	-1.6437E+01	4.1625E+04	-1.6214E+01	1.9980E+04	-1.6118E+01	2.1645E+04	-1.5897E+01	1.9980E+04	-1.5716E+01	2.1645E+04	-1.5405E+01
-1.6603E+01	4.1625E+04	-1.6480E+01	4.1625E+04	-1.6258E+01	1.9980E+04	-1.6162E+01	2.1645E+04	-1.5942E+01	1.9980E+04	-1.5761E+01	2.1645E+04	-1.5451E+01
-1.6646E+01	4.1625E+04	-1.6523E+01	4.1625E+04	-1.6302E+01	1.9980E+04	-1.6206E+01	2.1645E+04	-1.5986E+01	1.9980E+04	-1.5806E+01	2.1645E+04	-1.5497E+01
-1.6689E+01	4.1625E+04	-1.6566E+01	4.1625E+04	-1.6345E+01	1.9980E+04	-1.6250E+01	2.1645E+04	-1.6031E+01	1.9980E+04	-1.5851E+01	2.1645E+04	-1.5543E+01
-1.6731E+01	4.1625E+04	-1.6609E+01	4.1625E+04	-1.6389E+01	1.9980E+04	-1.6294E+01	2.1645E+04	-1.6075E+01	1.9980E+04	-1.5896E+01	2.1645E+04	-1.5589E+01
-1.6774E+01	4.1625E+04	-1.6652E+01	4.1625E+04	-1.6432E+01	1.9980E+04	-1.6338E+01	2.1645E+04	-1.6119E+01	1.9980E+04	-1.5941E+01	2.1645E+04	-1.5635E+01
-1.6817E+01	4.1625E+04	-1.6695E+01	4.1625E+04	-1.6476E+01	1.9980E+04	-1.6381E+01	2.1645E+04	-1.6164E+01	1.9980E+04	-1.5986E+01	2.1645E+04	-1.5680E+01
-1.6859E+01	4.1625E+04	-1.6738E+01	4.1625E+04	-1.6519E+01	1.9980E+04	-1.6425E+01	2.1645E+04	-1.6208E+01	1.9980E+04	-1.6030E+01	2.1645E+04	-1.5725E+01
-1.6901E+01	4.1625E+04	-1.6781E+01	4.1625E+04	-1.6562E+01	1.9980E+04	-1.6468E+01	2.1645E+04	-1.6252E+01	1.9980E+04	-1.6074E+01	2.1645E+04	-1.5771E+01

Arg 7	Curve 7	Arg 8	Curve 8	Arg 9	Curve 9	Arg 10	Curve 10	Arg 11	Curve 11	Arg 12	Curve 12	Arg 13
-1.6943E+01	4.1625E+04	-1.6823E+01	4.1625E+04	-1.6605E+01	1.9980E+04	-1.6512E+01	2.1645E+04	-1.6295E+01	1.9980E+04	-1.6119E+01	2.1645E+04	-1.5816E+01
-1.6986E+01	4.1625E+04	-1.6865E+01	4.1625E+04	-1.6648E+01	1.9980E+04	-1.6555E+01	2.1645E+04	-1.6339E+01	1.9980E+04	-1.6163E+01	2.1645E+04	-1.5861E+01
-1.7028E+01	4.1625E+04	-1.6908E+01	4.1625E+04	-1.6691E+01	1.9980E+04	-1.6598E+01	2.1645E+04	-1.6383E+01	1.9980E+04	-1.6207E+01	2.1645E+04	-1.5906E+01
-1.7070E+01	4.1625E+04	-1.6950E+01	4.1625E+04	-1.6734E+01	1.9980E+04	-1.6641E+01	2.1645E+04	-1.6426E+01	1.9980E+04	-1.6251E+01	2.1645E+04	-1.5950E+01
-1.7111E+01	4.1625E+04	-1.6992E+01	4.1625E+04	-1.6776E+01	1.9980E+04	-1.6684E+01	2.1645E+04	-1.6470E+01	1.9980E+04	-1.6295E+01	2.1645E+04	-1.5995E+01
-1.7153E+01	4.1625E+04	-1.7034E+01	4.1625E+04	-1.6819E+01	1.9980E+04	-1.6726E+01	2.1645E+04	-1.6513E+01	1.9980E+04	-1.6339E+01	2.1645E+04	-1.6039E+01
-1.7195E+01	4.1625E+04	-1.7076E+01	4.1625E+04	-1.6861E+01	1.9980E+04	-1.6769E+01	2.1645E+04	-1.6556E+01	1.9980E+04	-1.6382E+01	2.1645E+04	-1.6084E+01
-1.7236E+01	4.1625E+04	-1.7118E+01	4.1625E+04	-1.6904E+01	1.9980E+04	-1.6812E+01	2.1645E+04	-1.6599E+01	1.9980E+04	-1.6426E+01	2.1645E+04	-1.6128E+01
-1.7278E+01	4.1625E+04	-1.7160E+01	4.1625E+04	-1.6946E+01	1.9980E+04	-1.6854E+01	2.1645E+04	-1.6642E+01	1.9980E+04	-1.6469E+01	2.1645E+04	-1.6172E+01
-1.7319E+01	4.1625E+04	-1.7201E+01	4.1625E+04	-1.6988E+01	1.9980E+04	-1.6896E+01	2.1645E+04	-1.6685E+01	1.9980E+04	-1.6512E+01	2.1645E+04	-1.6216E+01
-1.7360E+01	4.1625E+04	-1.7243E+01	4.1625E+04	-1.7030E+01	1.9980E+04	-1.6939E+01	2.1645E+04	-1.6728E+01	1.9980E+04	-1.6555E+01	2.1645E+04	-1.6260E+01
-1.7401E+01	4.1625E+04	-1.7284E+01	4.1625E+04	-1.7072E+01	1.9980E+04	-1.6981E+01	2.1645E+04	-1.6770E+01	1.9980E+04	-1.6599E+01	2.1645E+04	-1.6304E+01
-1.7442E+01	4.1625E+04	-1.7325E+01	4.1625E+04	-1.7114E+01	1.9980E+04	-1.7023E+01	2.1645E+04	-1.6813E+01	1.9980E+04	-1.6641E+01	2.1645E+04	-1.6348E+01
-1.7483E+01	4.1625E+04	-1.7367E+01	4.1625E+04	-1.7155E+01	1.9980E+04	-1.7065E+01	2.1645E+04	-1.6855E+01	1.9980E+04	-1.6684E+01	2.1645E+04	-1.6391E+01
-1.7524E+01	4.1625E+04	-1.7408E+01	4.1625E+04	-1.7197E+01	1.9980E+04	-1.7107E+01	2.1645E+04	-1.6898E+01	1.9980E+04	-1.6727E+01	2.1645E+04	-1.6435E+01
-1.7565E+01	4.1625E+04	-1.7449E+01	4.1625E+04	-1.7239E+01	1.9980E+04	-1.7148E+01	2.1645E+04	-1.6940E+01	1.9980E+04	-1.6770E+01	2.1645E+04	-1.6478E+01
-1.7606E+01	4.1625E+04	-1.7490E+01	4.1625E+04	-1.7280E+01	1.9980E+04	-1.7190E+01	2.1645E+04	-1.6982E+01	1.9980E+04	-1.6812E+01	2.1645E+04	-1.6521E+01
-1.7646E+01	4.1625E+04	-1.7531E+01	4.1625E+04	-1.7321E+01	1.9980E+04	-1.7231E+01	2.1645E+04	-1.7024E+01	1.9980E+04	-1.6855E+01	2.1645E+04	-1.6565E+01
-1.7687E+01	4.1625E+04	-1.7571E+01	4.1625E+04	-1.7363E+01	1.9980E+04	-1.7273E+01	2.1645E+04	-1.7066E+01	1.9980E+04	-1.6897E+01	2.1645E+04	-1.6608E+01
-1.7727E+01	4.1625E+04	-1.7612E+01	4.1625E+04	-1.7404E+01	1.9980E+04	-1.7314E+01	2.1645E+04	-1.7108E+01	1.9980E+04	-1.6939E+01	2.1645E+04	-1.6650E+01
-1.7768E+01	4.1625E+04	-1.7653E+01	4.1625E+04	-1.7445E+01	1.9980E+04	-1.7356E+01	2.1645E+04	-1.7150E+01	1.9980E+04	-1.6981E+01	2.1645E+04	-1.6693E+01
-1.7808E+01	4.1625E+04	-1.7693E+01	4.1625E+04	-1.7486E+01	1.9980E+04	-1.7397E+01	2.1645E+04	-1.7191E+01	1.9980E+04	-1.7023E+01	2.1645E+04	-1.6736E+01
-1.7848E+01	4.1625E+04	-1.7734E+01	4.1625E+04	-1.7527E+01	1.9980E+04	-1.7438E+01	2.1645E+04	-1.7233E+01	1.9980E+04	-1.7065E+01	2.1645E+04	-1.6779E+01
-1.7888E+01	4.1625E+04	-1.7774E+01	4.1625E+04	-1.7567E+01	1.9980E+04	-1.7479E+01	2.1645E+04	-1.7274E+01	1.9980E+04	-1.7107E+01	2.1645E+04	-1.6821E+01
-1.7928E+01	4.1625E+04	-1.7814E+01	4.1625E+04	-1.7608E+01	1.9980E+04	-1.7520E+01	2.1645E+04	-1.7315E+01	1.9980E+04	-1.7149E+01	2.1645E+04	-1.6864E+01
-1.7968E+01	4.1625E+04	-1.7854E+01	4.1625E+04	-1.7649E+01	1.9980E+04	-1.7560E+01	2.1645E+04	-1.7357E+01	1.9980E+04	-1.7191E+01	2.1645E+04	-1.6906E+01
-1.8008E+01	4.1625E+04	-1.7894E+01	4.1625E+04	-1.7689E+01	1.9980E+04	-1.7601E+01	2.1645E+04	-1.7398E+01	1.9980E+04	-1.7232E+01	2.1645E+04	-1.6948E+01
-1.8047E+01	4.1625E+04	-1.7934E+01	4.1625E+04	-1.7729E+01	1.9980E+04	-1.7642E+01	2.1645E+04	-1.7439E+01	1.9980E+04	-1.7274E+01	2.1645E+04	-1.6990E+01
-1.8087E+01	4.1625E+04	-1.7974E+01	4.1625E+04	-1.7770E+01	1.9980E+04	-1.7682E+01	2.1645E+04	-1.7480E+01	1.9980E+04	-1.7315E+01	2.1645E+04	-1.7032E+01
-1.8127E+01	4.1625E+04	-1.8014E+01	4.1625E+04	-1.7810E+01	1.9980E+04	-1.7723E+01	2.1645E+04	-1.7521E+01	1.9980E+04	-1.7356E+01	2.1645E+04	-1.7074E+01
-1.8166E+01	4.1625E+04	-1.8054E+01	4.1625E+04	-1.7850E+01	1.9980E+04	-1.7763E+01	2.1645E+04	-1.7562E+01	1.9980E+04	-1.7397E+01	2.1645E+04	-1.7116E+01
-1.8206E+01	4.1625E+04	-1.8093E+01	4.1625E+04	-1.7890E+01	1.9980E+04	-1.7803E+01	2.1645E+04	-1.7602E+01	1.9980E+04	-1.7438E+01	2.1645E+04	-1.7158E+01
-1.8245E+01	4.1625E+04	-1.8133E+01	4.1625E+04	-1.7930E+01	1.9980E+04	-1.7843E+01	2.1645E+04	-1.7643E+01	1.9980E+04	-1.7479E+01	2.1645E+04	-1.7199E+01
-1.8284E+01	4.1625E+04	-1.8172E+01	4.1625E+04	-1.7970E+01	1.9980E+04	-1.7883E+01	2.1645E+04	-1.7683E+01	1.9980E+04	-1.7520E+01	2.1645E+04	-1.7241E+01
-1.8323E+01	4.1625E+04	-1.8212E+01	4.1625E+04	-1.8010E+01	1.9980E+04	-1.7923E+01	2.1645E+04	-1.7724E+01	1.9980E+04	-1.7561E+01	2.1645E+04	-1.7282E+01
-1.8362E+01	4.1625E+04	-1.8251E+01	4.1625E+04	-1.8050E+01	1.9980E+04	-1.7963E+01	2.1645E+04	-1.7764E+01	1.9980E+04	-1.7602E+01	2.1645E+04	-1.7324E+01
-1.8401E+01	4.1625E+04	-1.8290E+01	4.1625E+04	-1.8089E+01	1.9980E+04	-1.8003E+01	2.1645E+04	-1.7804E+01	1.9980E+04	-1.7642E+01	2.1645E+04	-1.7365E+01
-1.8440E+01	4.1625E+04	-1.8329E+01	4.1625E+04	-1.8129E+01	1.9980E+04	-1.8043E+01	2.1645E+04	-1.7845E+01	1.9980E+04	-1.7683E+01	2.1645E+04	-1.7406E+01
-1.8479E+01	4.1625E+04	-1.8368E+01	4.1625E+04	-1.8168E+01	1.9980E+04	-1.8083E+01	2.1645E+04	-1.7885E+01	1.9980E+04	-1.7723E+01	2.1645E+04	-1.7447E+01
-1.8518E+01	4.1625E+04	-1.8407E+01	4.1625E+04	-1.8208E+01	1.9980E+04	-1.8122E+01	2.1645E+04	-1.7925E+01	1.9980E+04	-1.7764E+01	2.1645E+04	-1.7488E+01
-1.8556E+01	4.1625E+04	-1.8446E+01	4.1625E+04	-1.8247E+01	1.9980E+04	-1.8162E+01	2.1645E+04	-1.7965E+01	1.9980E+04	-1.7804E+01	2.1645E+04	-1.7529E+01
-1.8595E+01	4.1625E+04	-1.8485E+01	4.1625E+04	-1.8286E+01	1.9980E+04	-1.8201E+01	2.1645E+04	-1.8004E+01	1.9980E+04	-1.7844E+01	2.1645E+04	-1.7570E+01
-1.8633E+01	4.1625E+04	-1.8524E+01	4.1625E+04	-1.8325E+01	1.9980E+04	-1.8240E+01	2.1645E+04	-1.8044E+01	1.9980E+04	-1.7884E+01	2.1645E+04	-1.7610E+01
-1.8672E+01	4.1625E+04	-1.8562E+01	4.1625E+04	-1.8364E+01	1.9980E+04	-1.8280E+01	2.1645E+04	-1.8084E+01	1.9980E+04	-1.7924E+01	2.1645E+04	-1.7651E+01
-1.8710E+01	4.1625E+04	-1.8601E+01	4.1625E+04	-1.8403E+01	1.9980E+04	-1.8319E+01	2.1645E+04	-1.8123E+01	1.9980E+04	-1.7964E+01	2.1645E+04	-1.7691E+01
-1.8749E+01	4.1625E+04	-1.8639E+01	4.1625E+04	-1.8442E+01	1.9980E+04	-1.8358E+01	2.1645E+04	-1.8163E+01	1.9980E+04	-1.8004E+01	2.1645E+04	-1.7732E+01
-1.8787E+01	4.1625E+04	-1.8678E+01	4.1625E+04	-1.8481E+01	1.9980E+04	-1.8397E+01	2.1645E+04	-1.8202E+01	1.9980E+04	-1.8044E+01	2.1645E+04	-1.7772E+01
-1.8825E+01	4.1625E+04	-1.8716E+01	4.1625E+04	-1.8520E+01	1.9980E+04	-1.8436E+01	2.1645E+04	-1.8241E+01	1.9980E+04	-1.8083E+01	2.1645E+04	-1.7812E+01
-1.8863E+01	4.1625E+04	-1.8754E+01	4.1625E+04	-1.8559E+01	1.9980E+04	-1.8475E+01	2.1645E+04	-1.8281E+01	1.9980E+04	-1.8123E+01	2.1645E+04	-1.7852E+01
-1.8901E+01	4.1625E+04	-1.8793E+01	4.1625E+04	-1.8597E+01	1.9980E+04	-1.8513E+01	2.1645E+04	-1.8320E+01	1.9980E+04	-1.8162E+01	2.1645E+04	-1.7892E+01
-1.8939E+01	4.1625E+04	-1.8831E+01	4.1625E+04	-1.8636E+01	1.9980E+04	-1.8552E+01	2.1645E+04	-1.8359E+01	1.9980E+04	-1.8202E+01	2.1645E+04	-1.7932E+01
-1.8977E+01	4.1625E+04	-1.8869E+01	4.1625E+04	-1.8674E+01	1.9980E+04	-1.8591E+01	2.1645E+04	-1.8398E+01	1.9980E+04	-1.8241E+01	2.1645E+04	-1.7972E+01

Arg 7	Curve 7	Arg 8	Curve 8	Arg 9	Curve 9	Arg 10	Curve 10	Arg 11	Curve 11	Arg 12	Curve 12	Arg 13
-1.9014E+01	4.1625E+04	-1.8907E+01	4.1625E+04	-1.8712E+01	1.9980E+04	-1.8629E+01	2.1645E+04	-1.8437E+01	1.9980E+04	-1.8280E+01	2.1645E+04	-1.8012E+01
-1.9052E+01	4.1625E+04	-1.8945E+01	4.1625E+04	-1.8751E+01	1.9980E+04	-1.8667E+01	2.1645E+04	-1.8476E+01	1.9980E+04	-1.8319E+01	2.1645E+04	-1.8052E+01
-1.9090E+01	4.1625E+04	-1.8983E+01	4.1625E+04	-1.8789E+01	1.9980E+04	-1.8706E+01	2.1645E+04	-1.8514E+01	1.9980E+04	-1.8358E+01	2.1645E+04	-1.8091E+01
-1.9127E+01	4.1625E+04	-1.9020E+01	4.1625E+04	-1.8827E+01	1.9980E+04	-1.8744E+01	2.1645E+04	-1.8553E+01	1.9980E+04	-1.8397E+01	2.1645E+04	-1.8131E+01
-1.9165E+01	4.1625E+04	-1.9058E+01	4.1625E+04	-1.8865E+01	1.9980E+04	-1.8782E+01	2.1645E+04	-1.8592E+01	1.9980E+04	-1.8436E+01	2.1645E+04	-1.8170E+01
-1.9202E+01	4.1625E+04	-1.9096E+01	4.1625E+04	-1.8903E+01	1.9980E+04	-1.8820E+01	2.1645E+04	-1.8630E+01	1.9980E+04	-1.8475E+01	2.1645E+04	-1.8210E+01
-1.9239E+01	4.1625E+04	-1.9133E+01	4.1625E+04	-1.8941E+01	1.9980E+04	-1.8859E+01	2.1645E+04	-1.8669E+01	1.9980E+04	-1.8514E+01	2.1645E+04	-1.8249E+01
-1.9277E+01	4.1625E+04	-1.9171E+01	4.1625E+04	-1.8979E+01	1.9980E+04	-1.8897E+01	2.1645E+04	-1.8707E+01	1.9980E+04	-1.8553E+01	2.1645E+04	-1.8288E+01
-1.9314E+01	4.1625E+04	-1.9208E+01	4.1625E+04	-1.9016E+01	1.9980E+04	-1.8934E+01	2.1645E+04	-1.8745E+01	1.9980E+04	-1.8591E+01	2.1645E+04	-1.8327E+01
-1.9351E+01	4.1625E+04	-1.9245E+01	4.1625E+04	-1.9054E+01	1.9980E+04	-1.8972E+01	2.1645E+04	-1.8784E+01	1.9980E+04	-1.8630E+01	2.1645E+04	-1.8367E+01
-1.9388E+01	4.1625E+04	-1.9282E+01	4.1625E+04	-1.9092E+01	1.9980E+04	-1.9010E+01	2.1645E+04	-1.8822E+01	1.9980E+04	-1.8668E+01	2.1645E+04	-1.8406E+01
-1.9425E+01	4.1625E+04	-1.9320E+01	4.1625E+04	-1.9129E+01	1.9980E+04	-1.9048E+01	2.1645E+04	-1.8860E+01	1.9980E+04	-1.8706E+01	2.1645E+04	-1.8444E+01
-1.9462E+01	4.1625E+04	-1.9357E+01	4.1625E+04	-1.9167E+01	1.9980E+04	-1.9085E+01	2.1645E+04	-1.8898E+01	1.9980E+04	-1.8745E+01	2.1645E+04	-1.8483E+01
-1.9499E+01	4.1625E+04	-1.9394E+01	4.1625E+04	-1.9204E+01	1.9980E+04	-1.9123E+01	2.1645E+04	-1.8936E+01	1.9980E+04	-1.8783E+01	2.1645E+04	-1.8522E+01
-1.9536E+01	4.1625E+04	-1.9431E+01	4.1625E+04	-1.9242E+01	1.9980E+04	-1.9160E+01	2.1645E+04	-1.8973E+01	1.9980E+04	-1.8821E+01	2.1645E+04	-1.8561E+01
-1.9572E+01	4.1625E+04	-1.9468E+01	4.1625E+04	-1.9279E+01	1.9980E+04	-1.9198E+01	2.1645E+04	-1.9011E+01	1.9980E+04	-1.8859E+01	2.1645E+04	-1.8599E+01
-1.9609E+01	4.1625E+04	-1.9505E+01	4.1625E+04	-1.9316E+01	1.9980E+04	-1.9235E+01	2.1645E+04	-1.9049E+01	1.9980E+04	-1.8897E+01	2.1645E+04	-1.8638E+01
-1.9646E+01	4.1625E+04	-1.9541E+01	4.1625E+04	-1.9353E+01	1.9980E+04	-1.9272E+01	2.1645E+04	-1.9087E+01	1.9980E+04	-1.8935E+01	2.1645E+04	-1.8676E+01
-1.9682E+01	4.1625E+04	-1.9578E+01	4.1625E+04	-1.9390E+01	1.9980E+04	-1.9310E+01	2.1645E+04	-1.9124E+01	1.9980E+04	-1.8973E+01	2.1645E+04	-1.8714E+01
-1.9718E+01	4.1625E+04	-1.9615E+01	4.1625E+04	-1.9427E+01	1.9980E+04	-1.9347E+01	2.1645E+04	-1.9162E+01	1.9980E+04	-1.9011E+01	2.1645E+04	-1.8753E+01
-1.9755E+01	4.1625E+04	-1.9651E+01	4.1625E+04	-1.9464E+01	1.9980E+04	-1.9384E+01	2.1645E+04	-1.9199E+01	1.9980E+04	-1.9048E+01	2.1645E+04	-1.8791E+01
-1.9791E+01	4.1625E+04	-1.9688E+01	4.1625E+04	-1.9501E+01	1.9980E+04	-1.9421E+01	2.1645E+04	-1.9236E+01	1.9980E+04	-1.9086E+01	2.1645E+04	-1.8829E+01
-1.9827E+01	4.1625E+04	-1.9724E+01	4.1625E+04	-1.9538E+01	1.9980E+04	-1.9458E+01	2.1645E+04	-1.9274E+01	1.9980E+04	-1.9124E+01	2.1645E+04	-1.8867E+01
-1.9864E+01	4.1625E+04	-1.9760E+01	4.1625E+04	-1.9574E+01	1.9980E+04	-1.9495E+01	2.1645E+04	-1.9311E+01	1.9980E+04	-1.9161E+01	2.1645E+04	-1.8905E+01
-1.9900E+01	4.1625E+04	-1.9797E+01	4.1625E+04	-1.9611E+01	1.9980E+04	-1.9531E+01	2.1645E+04	-1.9348E+01	1.9980E+04	-1.9198E+01	2.1645E+04	-1.8943E+01
-1.9936E+01	4.1625E+04	-1.9833E+01	4.1625E+04	-1.9648E+01	1.9980E+04	-1.9568E+01	2.1645E+04	-1.9385E+01	1.9980E+04	-1.9236E+01	2.1645E+04	-1.8981E+01
-1.9972E+01	4.1625E+04	-1.9869E+01	4.1625E+04	-1.9684E+01	1.9980E+04	-1.9605E+01	2.1645E+04	-1.9422E+01	1.9980E+04	-1.9273E+01	2.1645E+04	-1.9019E+01
-2.0008E+01	4.1625E+04	-1.9905E+01	4.1625E+04	-1.9720E+01	1.9980E+04	-1.9641E+01	2.1645E+04	-1.9459E+01	1.9980E+04	-1.9310E+01	2.1645E+04	-1.9056E+01
-2.0044E+01	4.1625E+04	-1.9941E+01	4.1625E+04	-1.9757E+01	1.9980E+04	-1.9678E+01	2.1645E+04	-1.9496E+01	1.9980E+04	-1.9347E+01	2.1645E+04	-1.9094E+01
-2.0079E+01	4.1625E+04	-1.9977E+01	4.1625E+04	-1.9793E+01	1.9980E+04	-1.9714E+01	2.1645E+04	-1.9532E+01	1.9980E+04	-1.9384E+01	2.1645E+04	-1.9131E+01
-2.0115E+01	4.1625E+04	-2.0013E+01	4.1625E+04	-1.9829E+01	1.9980E+04	-1.9751E+01	2.1645E+04	-1.9569E+01	1.9980E+04	-1.9421E+01	2.1645E+04	-1.9169E+01
-2.0151E+01	4.1625E+04	-2.0049E+01	4.1625E+04	-1.9866E+01	1.9980E+04	-1.9787E+01	2.1645E+04	-1.9606E+01	1.9980E+04	-1.9458E+01	2.1645E+04	-1.9206E+01
-2.0186E+01	4.1625E+04	-2.0085E+01	4.1625E+04	-1.9902E+01	1.9980E+04	-1.9823E+01	2.1645E+04	-1.9642E+01	1.9980E+04	-1.9495E+01	2.1645E+04	-1.9244E+01
-2.0222E+01	4.1625E+04	-2.0121E+01	4.1625E+04	-1.9938E+01	1.9980E+04	-1.9859E+01	2.1645E+04	-1.9679E+01	1.9980E+04	-1.9532E+01	2.1645E+04	-1.9281E+01
-2.0257E+01	4.1625E+04	-2.0156E+01	4.1625E+04	-1.9974E+01	1.9980E+04	-1.9896E+01	2.1645E+04	-1.9715E+01	1.9980E+04	-1.9569E+01	2.1645E+04	-1.9318E+01
-2.0293E+01	4.1625E+04	-2.0192E+01	4.1625E+04	-2.0010E+01	1.9980E+04	-1.9932E+01	2.1645E+04	-1.9752E+01	1.9980E+04	-1.9605E+01	2.1645E+04	-1.9355E+01
-2.0328E+01	4.1625E+04	-2.0227E+01	4.1625E+04	-2.0046E+01	1.9980E+04	-1.9968E+01	2.1645E+04	-1.9788E+01	1.9980E+04	-1.9642E+01	2.1645E+04	-1.9392E+01
-2.0364E+01	4.1625E+04	-2.0263E+01	4.1625E+04	-2.0081E+01	1.9980E+04	-2.0004E+01	2.1645E+04	-1.9824E+01	1.9980E+04	-1.9678E+01	2.1645E+04	-1.9429E+01
-2.0399E+01	4.1625E+04	-2.0298E+01	4.1625E+04	-2.0117E+01	1.9980E+04	-2.0039E+01	2.1645E+04	-1.9861E+01	1.9980E+04	-1.9715E+01	2.1645E+04	-1.9466E+01
-2.0434E+01	4.1625E+04	-2.0334E+01	4.1625E+04	-2.0153E+01	1.9980E+04	-2.0075E+01	2.1645E+04	-1.9897E+01	1.9980E+04	-1.9751E+01	2.1645E+04	-1.9503E+01
-2.0469E+01	4.1625E+04	-2.0369E+01	4.1625E+04	-2.0188E+01	1.9980E+04	-2.0111E+01	2.1645E+04	-1.9933E+01	1.9980E+04	-1.9788E+01	2.1645E+04	-1.9540E+01
-2.0504E+01	4.1625E+04	-2.0404E+01	4.1625E+04	-2.0224E+01	1.9980E+04	-2.0147E+01	2.1645E+04	-1.9969E+01	1.9980E+04	-1.9824E+01	2.1645E+04	-1.9576E+01
-2.0539E+01	4.1625E+04	-2.0439E+01	4.1625E+04	-2.0259E+01	1.9980E+04	-2.0182E+01	2.1645E+04	-2.0005E+01	1.9980E+04	-1.9860E+01	2.1645E+04	-1.9613E+01
-2.0574E+01	4.1625E+04	-2.0475E+01	4.1625E+04	-2.0295E+01	1.9980E+04	-2.0218E+01	2.1645E+04	-2.0041E+01	1.9980E+04	-1.9896E+01	2.1645E+04	-1.9650E+01
-2.0609E+01	4.1625E+04	-2.0510E+01	4.1625E+04	-2.0330E+01	1.9980E+04	-2.0253E+01	2.1645E+04	-2.0076E+01	1.9980E+04	-1.9932E+01	2.1645E+04	-1.9686E+01
-2.0644E+01	4.1625E+04	-2.0545E+01	4.1625E+04	-2.0366E+01	1.9980E+04	-2.0289E+01	2.1645E+04	-2.0112E+01	1.9980E+04	-1.9968E+01	2.1645E+04	-1.9722E+01
-2.0679E+01	4.1625E+04	-2.0580E+01	4.1625E+04	-2.0401E+01	1.9980E+04	-2.0324E+01	2.1645E+04	-2.0148E+01	1.9980E+04	-2.0004E+01	2.1645E+04	-1.9759E+01
-2.0713E+01	4.1625E+04	-2.0615E+01	4.1625E+04	-2.0436E+01	1.9980E+04	-2.0360E+01	2.1645E+04	-2.0183E+01	1.9980E+04	-2.0040E+01	2.1645E+04	-1.9795E+01
-2.0748E+01	4.1625E+04	-2.0649E+01	4.1625E+04	-2.0471E+01	1.9980E+04	-2.0395E+01	2.1645E+04	-2.0219E+01	1.9980E+04	-2.0076E+01	2.1645E+04	-1.9831E+01
-2.0783E+01	4.1625E+04	-2.0684E+01	4.1625E+04	-2.0506E+01	1.9980E+04	-2.0430E+01	2.1645E+04	-2.0254E+01	1.9980E+04	-2.0112E+01	2.1645E+04	-1.9868E+01
-2.0817E+01	4.1625E+04	-2.0719E+01	4.1625E+04	-2.0541E+01	1.9980E+04	-2.0465E+01	2.1645E+04	-2.0290E+01	1.9980E+04	-2.0147E+01	2.1645E+04	-1.9904E+01
-2.0852E+01	4.1625E+04	-2.0754E+01	4.1625E+04	-2.0576E+01	1.9980E+04	-2.0500E+01	2.1645E+04	-2.0325E+01	1.9980E+04	-2.0183E+01	2.1645E+04	-1.9940E+01

Arg 7	Curve 7	Arg 8	Curve 8	Arg 9	Curve 9	Arg 10	Curve 10	Arg 11	Curve 11	Arg 12	Curve 12	Arg 13
-2.0886E+01	4.1625E+04	-2.0788E+01	4.1625E+04	-2.0611E+01	1.9980E+04	-2.0535E+01	2.1645E+04	-2.0361E+01	1.9980E+04	-2.0218E+01	2.1645E+04	-1.9976E+01
-2.0921E+01	4.1625E+04	-2.0823E+01	4.1625E+04	-2.0646E+01	1.9980E+04	-2.0570E+01	2.1645E+04	-2.0396E+01	1.9980E+04	-2.0254E+01	2.1645E+04	-2.0012E+01
-2.0955E+01	4.1625E+04	-2.0857E+01	4.1625E+04	-2.0681E+01	1.9980E+04	-2.0605E+01	2.1645E+04	-2.0431E+01	1.9980E+04	-2.0289E+01	2.1645E+04	-2.0047E+01
-2.0989E+01	4.1625E+04	-2.0892E+01	4.1625E+04	-2.0715E+01	1.9980E+04	-2.0640E+01	2.1645E+04	-2.0466E+01	1.9980E+04	-2.0325E+01	2.1645E+04	-2.0083E+01
-2.1024E+01	4.1625E+04	-2.0926E+01	4.1625E+04	-2.0750E+01	1.9980E+04	-2.0675E+01	2.1645E+04	-2.0501E+01	1.9980E+04	-2.0360E+01	2.1645E+04	-2.0119E+01
-2.1058E+01	4.1625E+04	-2.0960E+01	4.1625E+04	-2.0785E+01	1.9980E+04	-2.0709E+01	2.1645E+04	-2.0536E+01	1.9980E+04	-2.0395E+01	2.1645E+04	-2.0155E+01
-2.1092E+01	4.1625E+04	-2.0995E+01	4.1625E+04	-2.0819E+01	1.9980E+04	-2.0744E+01	2.1645E+04	-2.0571E+01	1.9980E+04	-2.0431E+01	2.1645E+04	-2.0190E+01
-2.1126E+01	4.1625E+04	-2.1029E+01	4.1625E+04	-2.0854E+01	1.9980E+04	-2.0779E+01	2.1645E+04	-2.0606E+01	1.9980E+04	-2.0466E+01	2.1645E+04	-2.0226E+01
-2.1160E+01	4.1625E+04	-2.1063E+01	4.1625E+04	-2.0888E+01	1.9980E+04	-2.0813E+01	2.1645E+04	-2.0641E+01	1.9980E+04	-2.0501E+01	2.1645E+04	-2.0261E+01
-2.1194E+01	4.1625E+04	-2.1097E+01	4.1625E+04	-2.0923E+01	1.9980E+04	-2.0848E+01	2.1645E+04	-2.0676E+01	1.9980E+04	-2.0536E+01	2.1645E+04	-2.0297E+01
-2.1228E+01	4.1625E+04	-2.1131E+01	4.1625E+04	-2.0957E+01	1.9980E+04	-2.0882E+01	2.1645E+04	-2.0711E+01	1.9980E+04	-2.0571E+01	2.1645E+04	-2.0332E+01
-2.1262E+01	4.1625E+04	-2.1165E+01	4.1625E+04	-2.0991E+01	1.9980E+04	-2.0917E+01	2.1645E+04	-2.0745E+01	1.9980E+04	-2.0606E+01	2.1645E+04	-2.0367E+01
-2.1295E+01	4.1625E+04	-2.1199E+01	4.1625E+04	-2.1025E+01	1.9980E+04	-2.0951E+01	2.1645E+04	-2.0780E+01	1.9980E+04	-2.0640E+01	2.1645E+04	-2.0403E+01
-2.1329E+01	4.1625E+04	-2.1233E+01	4.1625E+04	-2.1060E+01	1.9980E+04	-2.0985E+01	2.1645E+04	-2.0814E+01	1.9980E+04	-2.0675E+01	2.1645E+04	-2.0438E+01
-2.1363E+01	4.1625E+04	-2.1267E+01	4.1625E+04	-2.1094E+01	1.9980E+04	-2.1020E+01	2.1645E+04	-2.0849E+01	1.9980E+04	-2.0710E+01	2.1645E+04	-2.0473E+01
-2.1396E+01	4.1625E+04	-2.1301E+01	4.1625E+04	-2.1128E+01	1.9980E+04	-2.1054E+01	2.1645E+04	-2.0883E+01	1.9980E+04	-2.0745E+01	2.1645E+04	-2.0508E+01
-2.1430E+01	4.1625E+04	-2.1334E+01	4.1625E+04	-2.1162E+01	1.9980E+04	-2.1088E+01	2.1645E+04	-2.0918E+01	1.9980E+04	-2.0779E+01	2.1645E+04	-2.0543E+01
-2.1464E+01	4.1625E+04	-2.1368E+01	4.1625E+04	-2.1196E+01	1.9980E+04	-2.1122E+01	2.1645E+04	-2.0952E+01	1.9980E+04	-2.0814E+01	2.1645E+04	-2.0578E+01
-2.1497E+01	4.1625E+04	-2.1402E+01	4.1625E+04	-2.1230E+01	1.9980E+04	-2.1156E+01	2.1645E+04	-2.0986E+01	1.9980E+04	-2.0848E+01	2.1645E+04	-2.0613E+01
-2.1531E+01	4.1625E+04	-2.1435E+01	4.1625E+04	-2.1263E+01	1.9980E+04	-2.1190E+01	2.1645E+04	-2.1021E+01	1.9980E+04	-2.0883E+01	2.1645E+04	-2.0648E+01
-2.1564E+01	4.1625E+04	-2.1469E+01	4.1625E+04	-2.1297E+01	1.9980E+04	-2.1224E+01	2.1645E+04	-2.1055E+01	1.9980E+04	-2.0917E+01	2.1645E+04	-2.0683E+01
-2.1597E+01	4.1625E+04	-2.1502E+01	4.1625E+04	-2.1331E+01	1.9980E+04	-2.1258E+01	2.1645E+04	-2.1089E+01	1.9980E+04	-2.0952E+01	2.1645E+04	-2.0717E+01
-2.1631E+01	4.1625E+04	-2.1536E+01	4.1625E+04	-2.1365E+01	1.9980E+04	-2.1292E+01	2.1645E+04	-2.1123E+01	1.9980E+04	-2.0986E+01	2.1645E+04	-2.0752E+01
-2.1664E+01	4.1625E+04	-2.1569E+01	4.1625E+04	-2.1398E+01	1.9980E+04	-2.1325E+01	2.1645E+04	-2.1157E+01	1.9980E+04	-2.1020E+01	2.1645E+04	-2.0787E+01
-2.1697E+01	4.1625E+04	-2.1602E+01	4.1625E+04	-2.1432E+01	1.9980E+04	-2.1359E+01	2.1645E+04	-2.1191E+01	1.9980E+04	-2.1054E+01	2.1645E+04	-2.0821E+01
-2.1730E+01	4.1625E+04	-2.1636E+01	4.1625E+04	-2.1465E+01	1.9980E+04	-2.1393E+01	2.1645E+04	-2.1225E+01	1.9980E+04	-2.1088E+01	2.1645E+04	-2.0856E+01
-2.1763E+01	4.1625E+04	-2.1669E+01	4.1625E+04	-2.1499E+01	1.9980E+04	-2.1426E+01	2.1645E+04	-2.1259E+01	1.9980E+04	-2.1122E+01	2.1645E+04	-2.0890E+01
-2.1796E+01	4.1625E+04	-2.1702E+01	4.1625E+04	-2.1532E+01	1.9980E+04	-2.1460E+01	2.1645E+04	-2.1293E+01	1.9980E+04	-2.1156E+01	2.1645E+04	-2.0924E+01
-2.1829E+01	4.1625E+04	-2.1735E+01	4.1625E+04	-2.1566E+01	1.9980E+04	-2.1493E+01	2.1645E+04	-2.1326E+01	1.9980E+04	-2.1190E+01	2.1645E+04	-2.0959E+01
-2.1862E+01	4.1625E+04	-2.1768E+01	4.1625E+04	-2.1599E+01	1.9980E+04	-2.1527E+01	2.1645E+04	-2.1360E+01	1.9980E+04	-2.1224E+01	2.1645E+04	-2.0993E+01
-2.1895E+01	4.1625E+04	-2.1801E+01	4.1625E+04	-2.1632E+01	1.9980E+04	-2.1560E+01	2.1645E+04	-2.1394E+01	1.9980E+04	-2.1258E+01	2.1645E+04	-2.1027E+01
-2.1928E+01	4.1625E+04	-2.1834E+01	4.1625E+04	-2.1666E+01	1.9980E+04	-2.1593E+01	2.1645E+04	-2.1427E+01	1.9980E+04	-2.1292E+01	2.1645E+04	-2.1061E+01
-2.1961E+01	4.1625E+04	-2.1867E+01	4.1625E+04	-2.1699E+01	1.9980E+04	-2.1627E+01	2.1645E+04	-2.1461E+01	1.9980E+04	-2.1326E+01	2.1645E+04	-2.1096E+01
-2.1993E+01	4.1625E+04	-2.1900E+01	4.1625E+04	-2.1732E+01	1.9980E+04	-2.1660E+01	2.1645E+04	-2.1494E+01	1.9980E+04	-2.1359E+01	2.1645E+04	-2.1130E+01
-2.2026E+01	4.1625E+04	-2.1933E+01	4.1625E+04	-2.1765E+01	1.9980E+04	-2.1693E+01	2.1645E+04	-2.1528E+01	1.9980E+04	-2.1393E+01	2.1645E+04	-2.1164E+01
-2.2059E+01	4.1625E+04	-2.1966E+01	4.1625E+04	-2.1798E+01	1.9980E+04	-2.1726E+01	2.1645E+04	-2.1561E+01	1.9980E+04	-2.1427E+01	2.1645E+04	-2.1198E+01
-2.2091E+01	4.1625E+04	-2.1998E+01	4.1625E+04	-2.1831E+01	1.9980E+04	-2.1759E+01	2.1645E+04	-2.1594E+01	1.9980E+04	-2.1460E+01	2.1645E+04	-2.1231E+01
-2.2124E+01	4.1625E+04	-2.2031E+01	4.1625E+04	-2.1864E+01	1.9980E+04	-2.1792E+01	2.1645E+04	-2.1628E+01	1.9980E+04	-2.1494E+01	2.1645E+04	-2.1265E+01
-2.2156E+01	4.1625E+04	-2.2064E+01	4.1625E+04	-2.1897E+01	1.9980E+04	-2.1825E+01	2.1645E+04	-2.1661E+01	1.9980E+04	-2.1527E+01	2.1645E+04	-2.1299E+01
-2.2189E+01	4.1625E+04	-2.2096E+01	4.1625E+04	-2.1930E+01	1.9980E+04	-2.1858E+01	2.1645E+04	-2.1694E+01	1.9980E+04	-2.1561E+01	2.1645E+04	-2.1333E+01
-2.2221E+01	4.1625E+04	-2.2129E+01	4.1625E+04	-2.1962E+01	1.9980E+04	-2.1891E+01	2.1645E+04	-2.1727E+01	1.9980E+04	-2.1594E+01	2.1645E+04	-2.1367E+01
-2.2254E+01	4.1625E+04	-2.2161E+01	4.1625E+04	-2.1995E+01	1.9980E+04	-2.1924E+01	2.1645E+04	-2.1760E+01	1.9980E+04	-2.1627E+01	2.1645E+04	-2.1400E+01
-2.2286E+01	4.1625E+04	-2.2194E+01	4.1625E+04	-2.2028E+01	1.9980E+04	-2.1957E+01	2.1645E+04	-2.1793E+01	1.9980E+04	-2.1660E+01	2.1645E+04	-2.1434E+01
-2.2318E+01	4.1625E+04	-2.2226E+01	4.1625E+04	-2.2061E+01	1.9980E+04	-2.1990E+01	2.1645E+04	-2.1826E+01	1.9980E+04	-2.1694E+01	2.1645E+04	-2.1467E+01
-2.2350E+01	4.1625E+04	-2.2259E+01	4.1625E+04	-2.2093E+01	1.9980E+04	-2.2022E+01	2.1645E+04	-2.1859E+01	1.9980E+04	-2.1727E+01	2.1645E+04	-2.1501E+01
-2.2383E+01	4.1625E+04	-2.2291E+01	4.1625E+04	-2.2126E+01	1.9980E+04	-2.2055E+01	2.1645E+04	-2.1892E+01	1.9980E+04	-2.1760E+01	2.1645E+04	-2.1534E+01
-2.2415E+01	4.1625E+04	-2.2323E+01	4.1625E+04	-2.2158E+01	1.9980E+04	-2.2088E+01	2.1645E+04	-2.1925E+01	1.9980E+04	-2.1793E+01	2.1645E+04	-2.1568E+01
-2.2447E+01	4.1625E+04	-2.2355E+01	4.1625E+04	-2.2191E+01	1.9980E+04	-2.2120E+01	2.1645E+04	-2.1958E+01	1.9980E+04	-2.1826E+01	2.1645E+04	-2.1601E+01
-2.2479E+01	4.1625E+04	-2.2388E+01	4.1625E+04	-2.2223E+01	1.9980E+04	-2.2153E+01	2.1645E+04	-2.1991E+01	1.9980E+04	-2.1859E+01	2.1645E+04	-2.1634E+01
-2.2511E+01	4.1625E+04	-2.2420E+01	4.1625E+04	-2.2255E+01	1.9980E+04	-2.2185E+01	2.1645E+04	-2.2023E+01	1.9980E+04	-2.1892E+01	2.1645E+04	-2.1667E+01
-2.2543E+01	4.1625E+04	-2.2452E+01	4.1625E+04	-2.2288E+01	1.9980E+04	-2.2218E+01	2.1645E+04	-2.2056E+01	1.9980E+04	-2.1925E+01	2.1645E+04	-2.1701E+01
-2.2575E+01	4.1625E+04	-2.2484E+01	4.1625E+04	-2.2320E+01	1.9980E+04	-2.2250E+01	2.1645E+04	-2.2089E+01	1.9980E+04	-2.1957E+01	2.1645E+04	-2.1734E+01

Arg 7	Curve 7	Arg 8	Curve 8	Arg 9	Curve 9	Arg 10	Curve 10	Arg 11	Curve 11	Arg 12	Curve 12	Arg 13
-2.2607E+01	4.1625E+04	-2.2516E+01	4.1625E+04	-2.2352E+01	1.9980E+04	-2.2282E+01	2.1645E+04	-2.2121E+01	1.9980E+04	-2.1990E+01	2.1645E+04	-2.1767E+01
-2.2639E+01	4.1625E+04	-2.2548E+01	4.1625E+04	-2.2384E+01	1.9980E+04	-2.2315E+01	2.1645E+04	-2.2154E+01	1.9980E+04	-2.2023E+01	2.1645E+04	-2.1800E+01
-2.2670E+01	4.1625E+04	-2.2580E+01	4.1625E+04	-2.2417E+01	1.9980E+04	-2.2347E+01	2.1645E+04	-2.2186E+01	1.9980E+04	-2.2055E+01	2.1645E+04	-2.1833E+01
-2.2702E+01	4.1625E+04	-2.2612E+01	4.1625E+04	-2.2449E+01	1.9980E+04	-2.2379E+01	2.1645E+04	-2.2219E+01	1.9980E+04	-2.2088E+01	2.1645E+04	-2.1866E+01
-2.2734E+01	4.1625E+04	-2.2643E+01	4.1625E+04	-2.2481E+01	1.9980E+04	-2.2411E+01	2.1645E+04	-2.2251E+01	1.9980E+04	-2.2121E+01	2.1645E+04	-2.1899E+01
-2.2765E+01	4.1625E+04	-2.2675E+01	4.1625E+04	-2.2513E+01	1.9980E+04	-2.2443E+01	2.1645E+04	-2.2283E+01	1.9980E+04	-2.2153E+01	2.1645E+04	-2.1931E+01
-2.2797E+01	4.1625E+04	-2.2707E+01	4.1625E+04	-2.2545E+01	1.9980E+04	-2.2475E+01	2.1645E+04	-2.2316E+01	1.9980E+04	-2.2186E+01	2.1645E+04	-2.1964E+01
-2.2829E+01	4.1625E+04	-2.2739E+01	4.1625E+04	-2.2577E+01	1.9980E+04	-2.2507E+01	2.1645E+04	-2.2348E+01	1.9980E+04	-2.2218E+01	2.1645E+04	-2.1997E+01
-2.2860E+01	4.1625E+04	-2.2770E+01	4.1625E+04	-2.2608E+01	1.9980E+04	-2.2539E+01	2.1645E+04	-2.2380E+01	1.9980E+04	-2.2250E+01	2.1645E+04	-2.2030E+01
-2.2892E+01	4.1625E+04	-2.2802E+01	4.1625E+04	-2.2640E+01	1.9980E+04	-2.2571E+01	2.1645E+04	-2.2412E+01	1.9980E+04	-2.2283E+01	2.1645E+04	-2.2062E+01
-2.2923E+01	4.1625E+04	-2.2833E+01	4.1625E+04	-2.2672E+01	1.9980E+04	-2.2603E+01	2.1645E+04	-2.2444E+01	1.9980E+04	-2.2315E+01	2.1645E+04	-2.2095E+01
-2.2954E+01	4.1625E+04	-2.2865E+01	4.1625E+04	-2.2704E+01	1.9980E+04	-2.2635E+01	2.1645E+04	-2.2476E+01	1.9980E+04	-2.2347E+01	2.1645E+04	-2.2127E+01
-2.2986E+01	4.1625E+04	-2.2896E+01	4.1625E+04	-2.2735E+01	1.9980E+04	-2.2667E+01	2.1645E+04	-2.2508E+01	1.9980E+04	-2.2379E+01	2.1645E+04	-2.2160E+01
-2.3017E+01	4.1625E+04	-2.2928E+01	4.1625E+04	-2.2767E+01	1.9980E+04	-2.2698E+01	2.1645E+04	-2.2540E+01	1.9980E+04	-2.2412E+01	2.1645E+04	-2.2192E+01
-2.3048E+01	4.1625E+04	-2.2959E+01	4.1625E+04	-2.2799E+01	1.9980E+04	-2.2730E+01	2.1645E+04	-2.2572E+01	1.9980E+04	-2.2444E+01	2.1645E+04	-2.2225E+01
-2.3080E+01	4.1625E+04	-2.2991E+01	4.1625E+04	-2.2830E+01	1.9980E+04	-2.2762E+01	2.1645E+04	-2.2604E+01	1.9980E+04	-2.2476E+01	2.1645E+04	-2.2257E+01
-2.3111E+01	4.1625E+04	-2.3022E+01	4.1625E+04	-2.2862E+01	1.9980E+04	-2.2793E+01	2.1645E+04	-2.2636E+01	1.9980E+04	-2.2508E+01	2.1645E+04	-2.2290E+01
-2.3142E+01	4.1625E+04	-2.3053E+01	4.1625E+04	-2.2893E+01	1.9980E+04	-2.2825E+01	2.1645E+04	-2.2668E+01	1.9980E+04	-2.2540E+01	2.1645E+04	-2.2322E+01
-2.3173E+01	4.1625E+04	-2.3084E+01	4.1625E+04	-2.2925E+01	1.9980E+04	-2.2856E+01	2.1645E+04	-2.2699E+01	1.9980E+04	-2.2572E+01	2.1645E+04	-2.2354E+01
-2.3204E+01	4.1625E+04	-2.3116E+01	4.1625E+04	-2.2956E+01	1.9980E+04	-2.2888E+01	2.1645E+04	-2.2731E+01	1.9980E+04	-2.2604E+01	2.1645E+04	-2.2386E+01
-2.3235E+01	4.1625E+04	-2.3147E+01	4.1625E+04	-2.2987E+01	1.9980E+04	-2.2919E+01	2.1645E+04	-2.2763E+01	1.9980E+04	-2.2635E+01	2.1645E+04	-2.2418E+01
-2.3266E+01	4.1625E+04	-2.3178E+01	4.1625E+04	-2.3019E+01	1.9980E+04	-2.2951E+01	2.1645E+04	-2.2794E+01	1.9980E+04	-2.2667E+01	2.1645E+04	-2.2450E+01
-2.3297E+01	4.1625E+04	-2.3209E+01	4.1625E+04	-2.3050E+01	1.9980E+04	-2.2982E+01	2.1645E+04	-2.2826E+01	1.9980E+04	-2.2699E+01	2.1645E+04	-2.2482E+01
-2.3328E+01	4.1625E+04	-2.3240E+01	4.1625E+04	-2.3081E+01	1.9980E+04	-2.3013E+01	2.1645E+04	-2.2857E+01	1.9980E+04	-2.2731E+01	2.1645E+04	-2.2514E+01
-2.3359E+01	4.1625E+04	-2.3271E+01	4.1625E+04	-2.3112E+01	1.9980E+04	-2.3045E+01	2.1645E+04	-2.2889E+01	1.9980E+04	-2.2762E+01	2.1645E+04	-2.2546E+01
-2.3390E+01	4.1625E+04	-2.3302E+01	4.1625E+04	-2.3144E+01	1.9980E+04	-2.3076E+01	2.1645E+04	-2.2920E+01	1.9980E+04	-2.2794E+01	2.1645E+04	-2.2578E+01
-2.3420E+01	4.1625E+04	-2.3333E+01	4.1625E+04	-2.3175E+01	1.9980E+04	-2.3107E+01	2.1645E+04	-2.2952E+01	1.9980E+04	-2.2825E+01	2.1645E+04	-2.2610E+01
-2.3451E+01	4.1625E+04	-2.3364E+01	4.1625E+04	-2.3206E+01	1.9980E+04	-2.3138E+01	2.1645E+04	-2.2983E+01	1.9980E+04	-2.2857E+01	2.1645E+04	-2.2642E+01
-2.3482E+01	4.1625E+04	-2.3394E+01	4.1625E+04	-2.3237E+01	1.9980E+04	-2.3169E+01	2.1645E+04	-2.3014E+01	1.9980E+04	-2.2888E+01	2.1645E+04	-2.2674E+01
-2.3512E+01	4.1625E+04	-2.3425E+01	4.1625E+04	-2.3268E+01	1.9980E+04	-2.3200E+01	2.1645E+04	-2.3046E+01	1.9980E+04	-2.2920E+01	2.1645E+04	-2.2706E+01
-2.3543E+01	4.1625E+04	-2.3456E+01	4.1625E+04	-2.3299E+01	1.9980E+04	-2.3231E+01	2.1645E+04	-2.3077E+01	1.9980E+04	-2.2951E+01	2.1645E+04	-2.2737E+01
-2.3574E+01	4.1625E+04	-2.3487E+01	4.1625E+04	-2.3330E+01	1.9980E+04	-2.3262E+01	2.1645E+04	-2.3108E+01	1.9980E+04	-2.2983E+01	2.1645E+04	-2.2769E+01
-2.3604E+01	4.1625E+04	-2.3517E+01	4.1625E+04	-2.3360E+01	1.9980E+04	-2.3293E+01	2.1645E+04	-2.3139E+01	1.9980E+04	-2.3014E+01	2.1645E+04	-2.2800E+01
-2.3635E+01	4.1625E+04	-2.3548E+01	4.1625E+04	-2.3391E+01	1.9980E+04	-2.3324E+01	2.1645E+04	-2.3170E+01	1.9980E+04	-2.3045E+01	2.1645E+04	-2.2832E+01
-2.3665E+01	4.1625E+04	-2.3578E+01	4.1625E+04	-2.3422E+01	1.9980E+04	-2.3355E+01	2.1645E+04	-2.3201E+01	1.9980E+04	-2.3076E+01	2.1645E+04	-2.2864E+01
-2.3696E+01	4.1625E+04	-2.3609E+01	4.1625E+04	-2.3453E+01	1.9980E+04	-2.3386E+01	2.1645E+04	-2.3232E+01	1.9980E+04	-2.3108E+01	2.1645E+04	-2.2895E+01
-2.3726E+01	4.1625E+04	-2.3639E+01	4.1625E+04	-2.3483E+01	1.9980E+04	-2.3417E+01	2.1645E+04	-2.3263E+01	1.9980E+04	-2.3139E+01	2.1645E+04	-2.2926E+01
-2.3756E+01	4.1625E+04	-2.3670E+01	4.1625E+04	-2.3514E+01	1.9980E+04	-2.3448E+01	2.1645E+04	-2.3294E+01	1.9980E+04	-2.3170E+01	2.1645E+04	-2.2958E+01
-2.3787E+01	4.1625E+04	-2.3700E+01	4.1625E+04	-2.3545E+01	1.9980E+04	-2.3478E+01	2.1645E+04	-2.3325E+01	1.9980E+04	-2.3201E+01	2.1645E+04	-2.2989E+01
-2.3817E+01	4.1625E+04	-2.3731E+01	4.1625E+04	-2.3575E+01	1.9980E+04	-2.3509E+01	2.1645E+04	-2.3356E+01	1.9980E+04	-2.3232E+01	2.1645E+04	-2.3020E+01
-2.3847E+01	4.1625E+04	-2.3761E+01	4.1625E+04	-2.3606E+01	1.9980E+04	-2.3540E+01	2.1645E+04	-2.3387E+01	1.9980E+04	-2.3263E+01	2.1645E+04	-2.3052E+01
-2.3877E+01	4.1625E+04	-2.3791E+01	4.1625E+04	-2.3636E+01	1.9980E+04	-2.3570E+01	2.1645E+04	-2.3418E+01	1.9980E+04	-2.3294E+01	2.1645E+04	-2.3083E+01
-2.3907E+01	4.1625E+04	-2.3822E+01	4.1625E+04	-2.3667E+01	1.9980E+04	-2.3601E+01	2.1645E+04	-2.3448E+01	1.9980E+04	-2.3325E+01	2.1645E+04	-2.3114E+01
-2.3938E+01	4.1625E+04	-2.3852E+01	4.1625E+04	-2.3697E+01	1.9980E+04	-2.3631E+01	2.1645E+04	-2.3479E+01	1.9980E+04	-2.3356E+01	2.1645E+04	-2.3145E+01
-2.3968E+01	4.1625E+04	-2.3882E+01	4.1625E+04	-2.3728E+01	1.9980E+04	-2.3662E+01	2.1645E+04	-2.3510E+01	1.9980E+04	-2.3386E+01	2.1645E+04	-2.3176E+01
-2.3998E+01	4.1625E+04	-2.3912E+01	4.1625E+04	-2.3758E+01	1.9980E+04	-2.3692E+01	2.1645E+04	-2.3540E+01	1.9980E+04	-2.3417E+01	2.1645E+04	-2.3207E+01
-2.4028E+01	4.1625E+04	-2.3942E+01	4.1625E+04	-2.3788E+01	1.9980E+04	-2.3722E+01	2.1645E+04	-2.3571E+01	1.9980E+04	-2.3448E+01	2.1645E+04	-2.3238E+01
-2.4058E+01	4.1625E+04	-2.3972E+01	4.1625E+04	-2.3819E+01	1.9980E+04	-2.3753E+01	2.1645E+04	-2.3602E+01	1.9980E+04	-2.3479E+01	2.1645E+04	-2.3269E+01
-2.4088E+01	4.1625E+04	-2.4002E+01	4.1625E+04	-2.3849E+01	1.9980E+04	-2.3783E+01	2.1645E+04	-2.3632E+01	1.9980E+04	-2.3509E+01	2.1645E+04	-2.3300E+01
-2.4118E+01	4.1625E+04	-2.4032E+01	4.1625E+04	-2.3879E+01	1.9980E+04	-2.3813E+01	2.1645E+04	-2.3663E+01	1.9980E+04	-2.3540E+01	2.1645E+04	-2.3331E+01
-2.4147E+01	4.1625E+04	-2.4062E+01	4.1625E+04	-2.3909E+01	1.9980E+04	-2.3844E+01	2.1645E+04	-2.3693E+01	1.9980E+04	-2.3571E+01	2.1645E+04	-2.3362E+01
-2.4177E+01	4.1625E+04	-2.4092E+01	4.1625E+04	-2.3939E+01	1.9980E+04	-2.3874E+01	2.1645E+04	-2.3723E+01	1.9980E+04	-2.3601E+01	2.1645E+04	-2.3393E+01

Arg 7	Curve 7	Arg 8	Curve 8	Arg 9	Curve 9	Arg 10	Curve 10	Arg 11	Curve 11	Arg 12	Curve 12	Arg 13
-2.4207E+01	4.1625E+04	-2.4122E+01	4.1625E+04	-2.3969E+01	1.9980E+04	-2.3904E+01	2.1645E+04	-2.3754E+01	1.9980E+04	-2.3632E+01	2.1645E+04	-2.3424E+01
-2.4237E+01	4.1625E+04	-2.4152E+01	4.1625E+04	-2.3999E+01	1.9980E+04	-2.3934E+01	2.1645E+04	-2.3784E+01	1.9980E+04	-2.3662E+01	2.1645E+04	-2.3454E+01
-2.4266E+01	4.1625E+04	-2.4182E+01	4.1625E+04	-2.4029E+01	1.9980E+04	-2.3964E+01	2.1645E+04	-2.3814E+01	1.9980E+04	-2.3693E+01	2.1645E+04	-2.3485E+01
-2.4296E+01	4.1625E+04	-2.4212E+01	4.1625E+04	-2.4059E+01	1.9980E+04	-2.3994E+01	2.1645E+04	-2.3845E+01	1.9980E+04	-2.3723E+01	2.1645E+04	-2.3516E+01
-2.4326E+01	4.1625E+04	-2.4241E+01	4.1625E+04	-2.4089E+01	1.9980E+04	-2.4024E+01	2.1645E+04	-2.3875E+01	1.9980E+04	-2.3753E+01	2.1645E+04	-2.3546E+01
-2.4355E+01	4.1625E+04	-2.4271E+01	4.1625E+04	-2.4119E+01	1.9980E+04	-2.4054E+01	2.1645E+04	-2.3905E+01	1.9980E+04	-2.3784E+01	2.1645E+04	-2.3577E+01
-2.4385E+01	4.1625E+04	-2.4301E+01	4.1625E+04	-2.4149E+01	1.9980E+04	-2.4084E+01	2.1645E+04	-2.3935E+01	1.9980E+04	-2.3814E+01	2.1645E+04	-2.3608E+01
-2.4415E+01	4.1625E+04	-2.4330E+01	4.1625E+04	-2.4179E+01	1.9980E+04	-2.4114E+01	2.1645E+04	-2.3965E+01	1.9980E+04	-2.3844E+01	2.1645E+04	-2.3638E+01
-2.4444E+01	4.1625E+04	-2.4360E+01	4.1625E+04	-2.4209E+01	1.9980E+04	-2.4144E+01	2.1645E+04	-2.3995E+01	1.9980E+04	-2.3874E+01	2.1645E+04	-2.3668E+01
-2.4474E+01	4.1625E+04	-2.4390E+01	4.1625E+04	-2.4238E+01	1.9980E+04	-2.4174E+01	2.1645E+04	-2.4025E+01	1.9980E+04	-2.3904E+01	2.1645E+04	-2.3699E+01
-2.4503E+01	4.1625E+04	-2.4419E+01	4.1625E+04	-2.4268E+01	1.9980E+04	-2.4204E+01	2.1645E+04	-2.4055E+01	1.9980E+04	-2.3935E+01	2.1645E+04	-2.3729E+01
-2.4532E+01	4.1625E+04	-2.4449E+01	4.1625E+04	-2.4298E+01	1.9980E+04	-2.4233E+01	2.1645E+04	-2.4085E+01	1.9980E+04	-2.3965E+01	2.1645E+04	-2.3760E+01
-2.4562E+01	4.1625E+04	-2.4478E+01	4.1625E+04	-2.4327E+01	1.9980E+04	-2.4263E+01	2.1645E+04	-2.4115E+01	1.9980E+04	-2.3995E+01	2.1645E+04	-2.3790E+01
-2.4591E+01	4.1625E+04	-2.4507E+01	4.1625E+04	-2.4357E+01	1.9980E+04	-2.4293E+01	2.1645E+04	-2.4145E+01	1.9980E+04	-2.4025E+01	2.1645E+04	-2.3820E+01
-2.4620E+01	4.1625E+04	-2.4537E+01	4.1625E+04	-2.4387E+01	1.9980E+04	-2.4322E+01	2.1645E+04	-2.4175E+01	1.9980E+04	-2.4055E+01	2.1645E+04	-2.3850E+01
-2.4650E+01	4.1625E+04	-2.4566E+01	4.1625E+04	-2.4416E+01	1.9980E+04	-2.4352E+01	2.1645E+04	-2.4204E+01	1.9980E+04	-2.4085E+01	2.1645E+04	-2.3881E+01
-2.4679E+01	4.1625E+04	-2.4596E+01	4.1625E+04	-2.4446E+01	1.9980E+04	-2.4382E+01	2.1645E+04	-2.4234E+01	1.9980E+04	-2.4115E+01	2.1645E+04	-2.3911E+01
-2.4708E+01	4.1625E+04	-2.4625E+01	4.1625E+04	-2.4475E+01	1.9980E+04	-2.4411E+01	2.1645E+04	-2.4264E+01	1.9980E+04	-2.4144E+01	2.1645E+04	-2.3941E+01
-2.4737E+01	4.1625E+04	-2.4654E+01	4.1625E+04	-2.4505E+01	1.9980E+04	-2.4441E+01	2.1645E+04	-2.4294E+01	1.9980E+04	-2.4174E+01	2.1645E+04	-2.3971E+01
-2.4766E+01	4.1625E+04	-2.4683E+01	4.1625E+04	-2.4534E+01	1.9980E+04	-2.4470E+01	2.1645E+04	-2.4323E+01	1.9980E+04	-2.4204E+01	2.1645E+04	-2.4001E+01
-2.4795E+01	4.1625E+04	-2.4713E+01	4.1625E+04	-2.4563E+01	1.9980E+04	-2.4500E+01	2.1645E+04	-2.4353E+01	1.9980E+04	-2.4234E+01	2.1645E+04	-2.4031E+01
-2.4824E+01	4.1625E+04	-2.4742E+01	4.1625E+04	-2.4593E+01	1.9980E+04	-2.4529E+01	2.1645E+04	-2.4382E+01	1.9980E+04	-2.4264E+01	2.1645E+04	-2.4061E+01
-2.4853E+01	4.1625E+04	-2.4771E+01	4.1625E+04	-2.4622E+01	1.9980E+04	-2.4558E+01	2.1645E+04	-2.4412E+01	1.9980E+04	-2.4293E+01	2.1645E+04	-2.4091E+01
-2.4882E+01	4.1625E+04	-2.4800E+01	4.1625E+04	-2.4651E+01	1.9980E+04	-2.4588E+01	2.1645E+04	-2.4442E+01	1.9980E+04	-2.4323E+01	2.1645E+04	-2.4121E+01
-2.4911E+01	4.1625E+04	-2.4829E+01	4.1625E+04	-2.4680E+01	1.9980E+04	-2.4617E+01	2.1645E+04	-2.4471E+01	1.9980E+04	-2.4352E+01	2.1645E+04	-2.4151E+01
-2.4940E+01	4.1625E+04	-2.4858E+01	4.1625E+04	-2.4710E+01	1.9980E+04	-2.4646E+01	2.1645E+04	-2.4500E+01	1.9980E+04	-2.4382E+01	2.1645E+04	-2.4180E+01
-2.4969E+01	4.1625E+04	-2.4887E+01	4.1625E+04	-2.4739E+01	1.9980E+04	-2.4675E+01	2.1645E+04	-2.4530E+01	1.9980E+04	-2.4412E+01	2.1645E+04	-2.4210E+01
-2.4998E+01	4.1625E+04	-2.4916E+01	4.1625E+04	-2.4768E+01	1.9980E+04	-2.4705E+01	2.1645E+04	-2.4559E+01	1.9980E+04	-2.4441E+01	2.1645E+04	-2.4240E+01
-2.5027E+01	4.1625E+04	-2.4945E+01	4.1625E+04	-2.4797E+01	1.9980E+04	-2.4734E+01	2.1645E+04	-2.4589E+01	1.9980E+04	-2.4471E+01	2.1645E+04	-2.4270E+01
-2.5056E+01	4.1625E+04	-2.4974E+01	4.1625E+04	-2.4826E+01	1.9980E+04	-2.4763E+01	2.1645E+04	-2.4618E+01	1.9980E+04	-2.4500E+01	2.1645E+04	-2.4299E+01
-2.5084E+01	4.1625E+04	-2.5003E+01	4.1625E+04	-2.4855E+01	1.9980E+04	-2.4792E+01	2.1645E+04	-2.4647E+01	1.9980E+04	-2.4529E+01	2.1645E+04	-2.4329E+01
-2.5113E+01	4.1625E+04	-2.5031E+01	4.1625E+04	-2.4884E+01	1.9980E+04	-2.4821E+01	2.1645E+04	-2.4676E+01	1.9980E+04	-2.4559E+01	2.1645E+04	-2.4359E+01
-2.5142E+01	4.1625E+04	-2.5060E+01	4.1625E+04	-2.4913E+01	1.9980E+04	-2.4850E+01	2.1645E+04	-2.4706E+01	1.9980E+04	-2.4588E+01	2.1645E+04	-2.4388E+01

Curve 13	Arg 14	Curve 14	Arg 15	Curve 15	Arg 16	Curve 16	Arg 17	Curve 17	Arg 18	Curve 18	Arg 19	Curve 19
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00

Curve 13	Arg 14	Curve 14	Arg 15	Curve 15	Arg 16	Curve 16	Arg 17	Curve 17	Arg 18	Curve 18	Arg 19	Curve 19
6.8727E-02	3.1548E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
7.2941E-01	2.1628E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
5.2542E+00	1.7012E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
2.7294E+01	1.4152E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.0742E+02	1.2131E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
3.3367E+02	1.0590E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
8.4634E+02	9.3541E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.8047E+03	8.3278E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
3.3171E+03	7.4529E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
5.3721E+03	6.6919E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
7.8168E+03	6.0192E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.0400E+04	5.4168E+00	2.0066E-10	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.2854E+04	4.8716E+00	6.0619E-08	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.4974E+04	4.3736E+00	6.7098E-06	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6654E+04	3.9154E+00	3.3260E-04	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.7885E+04	3.4909E+00	8.5913E-03	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.8726E+04	3.0954E+00	1.2989E-01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9265E+04	2.7251E+00	1.2584E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9590E+04	2.3768E+00	8.3957E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9777E+04	2.0480E+00	4.0870E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9878E+04	1.7364E+00	1.5220E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9931E+04	1.4403E+00	4.5090E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9957E+04	1.1580E+00	1.0983E+03	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9970E+04	8.8833E-01	2.2621E+03	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9976E+04	6.2999E-01	4.0364E+03	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9978E+04	3.8203E-01	6.3746E+03	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9979E+04	1.4355E-01	9.0815E+03	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-8.6209E-02	1.1873E+04	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-3.0794E-01	1.4468E+04	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-5.2225E-01	1.6665E+04	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-7.2969E-01	1.8376E+04	3.3617E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-9.3073E-01	1.9609E+04	2.2368E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-1.1258E+00	2.0440E+04	1.7425E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-1.3153E+00	2.0965E+04	1.4428E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-1.4996E+00	2.1278E+04	1.2334E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-1.6790E+00	2.1455E+04	1.0749E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-1.8539E+00	2.1550E+04	9.4841E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-2.0244E+00	2.1600E+04	8.4373E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-2.1908E+00	2.1624E+04	7.5472E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-2.3534E+00	2.1636E+04	6.7745E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-2.5123E+00	2.1641E+04	6.0926E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-2.6677E+00	2.1643E+04	5.4829E+00	8.8729E-11	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-2.8199E+00	2.1644E+04	4.9317E+00	3.0670E-08	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-2.9690E+00	2.1645E+04	4.4288E+00	3.7676E-06	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-3.1150E+00	2.1645E+04	3.9663E+00	2.0310E-04	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-3.2583E+00	2.1645E+04	3.5382E+00	5.6180E-03	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-3.3989E+00	2.1645E+04	3.1395E+00	8.9880E-02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-3.5368E+00	2.1645E+04	2.7665E+00	9.1289E-01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-3.6724E+00	2.1645E+04	2.4158E+00	6.3373E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-3.8055E+00	2.1645E+04	2.0849E+00	3.1906E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-3.9364E+00	2.1645E+04	1.7714E+00	1.2227E+02	4.5944E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-4.0651E+00	2.1645E+04	1.4736E+00	3.7124E+02	2.5633E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00

Curve 13	Arg 14	Curve 14	Arg 15	Curve 15	Arg 16	Curve 16	Arg 17	Curve 17	Arg 18	Curve 18	Arg 19	Curve 19
1.9980E+04	-4.1918E+00	2.1645E+04	1.1898E+00	9.2345E+02	1.9109E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-4.3165E+00	2.1645E+04	9.1874E-01	1.9365E+03	1.5512E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-4.4392E+00	2.1645E+04	6.5916E-01	3.5089E+03	1.3116E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-4.5601E+00	2.1645E+04	4.1005E-01	5.6143E+03	1.1352E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-4.6792E+00	2.1645E+04	1.7052E-01	8.0863E+03	9.9718E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-4.7966E+00	2.1645E+04	-6.0207E-02	1.0668E+04	8.8447E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-4.9123E+00	2.1645E+04	-2.8283E-01	1.3095E+04	7.8960E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-5.0265E+00	2.1645E+04	-4.9797E-01	1.5172E+04	7.0790E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-5.1391E+00	2.1645E+04	-7.0617E-01	1.6804E+04	6.3625E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-5.2502E+00	2.1645E+04	-9.0792E-01	1.7991E+04	5.7252E+00	6.0077E-12	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-5.3599E+00	2.1645E+04	-1.1037E+00	1.8796E+04	5.1513E+00	3.4785E-09	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-5.4682E+00	2.1645E+04	-1.2938E+00	1.9308E+04	4.6297E+00	6.3387E-07	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-5.5751E+00	2.1645E+04	-1.4787E+00	1.9615E+04	4.1514E+00	4.6879E-05	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-5.6808E+00	2.1645E+04	-1.6587E+00	1.9790E+04	3.7099E+00	1.6772E-03	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-5.7851E+00	2.1645E+04	-1.8340E+00	1.9885E+04	3.2997E+00	3.3166E-02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-5.8883E+00	2.1645E+04	-2.0050E+00	1.9934E+04	2.9166E+00	4.0185E-01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-5.9902E+00	2.1645E+04	-2.1719E+00	1.9959E+04	2.5571E+00	3.2350E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-6.0910E+00	2.1645E+04	-2.3349E+00	1.9971E+04	2.2183E+00	1.8461E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-6.1907E+00	2.1645E+04	-2.4942E+00	1.9976E+04	1.8979E+00	7.8709E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-6.2893E+00	2.1645E+04	-2.6500E+00	1.9978E+04	1.5939E+00	2.6176E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-6.3869E+00	2.1645E+04	-2.8026E+00	1.9979E+04	1.3046E+00	7.0396E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-6.4834E+00	2.1645E+04	-2.9520E+00	1.9980E+04	1.0284E+00	1.5782E+03	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-6.5789E+00	2.1645E+04	-3.0984E+00	1.9980E+04	7.6427E-01	3.0278E+03	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-6.6734E+00	2.1645E+04	-3.2420E+00	1.9980E+04	5.1097E-01	5.0856E+03	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-6.7670E+00	2.1645E+04	-3.3828E+00	1.9980E+04	2.6762E-01	7.6308E+03	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-6.8596E+00	2.1645E+04	-3.5211E+00	1.9980E+04	3.3374E-02	1.0415E+04	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-6.9514E+00	2.1645E+04	-3.6569E+00	1.9980E+04	-1.9249E-01	1.3145E+04	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-7.0423E+00	2.1645E+04	-3.7903E+00	1.9980E+04	-4.1063E-01	1.5569E+04	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-7.1323E+00	2.1645E+04	-3.9215E+00	1.9980E+04	-6.2161E-01	1.7540E+04	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-7.2215E+00	2.1645E+04	-4.0504E+00	1.9980E+04	-8.2595E-01	1.9018E+04	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-7.3099E+00	2.1645E+04	-4.1773E+00	1.9980E+04	-1.0241E+00	2.0048E+04	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-7.3975E+00	2.1645E+04	-4.3022E+00	1.9980E+04	-1.2165E+00	2.0721E+04	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-7.4843E+00	2.1645E+04	-4.4252E+00	1.9980E+04	-1.4035E+00	2.1135E+04	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-7.5703E+00	2.1645E+04	-4.5463E+00	1.9980E+04	-1.5854E+00	2.1375E+04	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-7.6556E+00	2.1645E+04	-4.6656E+00	1.9980E+04	-1.7626E+00	2.1508E+04	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-7.7402E+00	2.1645E+04	-4.7832E+00	1.9980E+04	-1.9354E+00	2.1578E+04	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-7.8241E+00	2.1645E+04	-4.8991E+00	1.9980E+04	-2.1039E+00	2.1613E+04	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-7.9073E+00	2.1645E+04	-5.0134E+00	1.9980E+04	-2.2685E+00	2.1631E+04	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-7.9898E+00	2.1645E+04	-5.1262E+00	1.9980E+04	-2.4293E+00	2.1639E+04	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-8.0716E+00	2.1645E+04	-5.2375E+00	1.9980E+04	-2.5865E+00	2.1642E+04	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-8.1528E+00	2.1645E+04	-5.3474E+00	1.9980E+04	-2.7404E+00	2.1644E+04	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-8.2334E+00	2.1645E+04	-5.4558E+00	1.9980E+04	-2.8911E+00	2.1645E+04	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-8.3133E+00	2.1645E+04	-5.5629E+00	1.9980E+04	-3.0387E+00	2.1645E+04	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-8.3927E+00	2.1645E+04	-5.6687E+00	1.9980E+04	-3.1834E+00	2.1645E+04	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-8.4714E+00	2.1645E+04	-5.7732E+00	1.9980E+04	-3.3254E+00	2.1645E+04	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-8.5496E+00	2.1645E+04	-5.8765E+00	1.9980E+04	-3.4647E+00	2.1645E+04	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-8.6272E+00	2.1645E+04	-5.9786E+00	1.9980E+04	-3.6015E+00	2.1645E+04	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-8.7042E+00	2.1645E+04	-6.0795E+00	1.9980E+04	-3.7359E+00	2.1645E+04	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-8.7807E+00	2.1645E+04	-6.1793E+00	1.9980E+04	-3.8680E+00	2.1645E+04	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-8.8566E+00	2.1645E+04	-6.2780E+00	1.9980E+04	-3.9978E+00	2.1645E+04	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-8.9320E+00	2.1645E+04	-6.3757E+00	1.9980E+04	-4.1256E+00	2.1645E+04	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-9.0069E+00	2.1645E+04	-6.4723E+00	1.9980E+04	-4.2513E+00	2.1645E+04	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00

Curve 13	Arg 14	Curve 14	Arg 15	Curve 15	Arg 16	Curve 16	Arg 17	Curve 17	Arg 18	Curve 18	Arg 19	Curve 19
1.9980E+04	-9.0813E+00	2.1645E+04	-6.5679E+00	1.9980E+04	-4.3750E+00	2.1645E+04	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-9.1552E+00	2.1645E+04	-6.6626E+00	1.9980E+04	-4.4968E+00	2.1645E+04	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-9.2286E+00	2.1645E+04	-6.7563E+00	1.9980E+04	-4.6169E+00	2.1645E+04	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-9.3015E+00	2.1645E+04	-6.8490E+00	1.9980E+04	-4.7352E+00	2.1645E+04	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-9.3739E+00	2.1645E+04	-6.9409E+00	1.9980E+04	-4.8518E+00	2.1645E+04	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-9.4459E+00	2.1645E+04	-7.0319E+00	1.9980E+04	-4.9667E+00	2.1645E+04	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-9.5174E+00	2.1645E+04	-7.1220E+00	1.9980E+04	-5.0802E+00	2.1645E+04	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-9.5884E+00	2.1645E+04	-7.2113E+00	1.9980E+04	-5.1921E+00	2.1645E+04	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-9.6591E+00	2.1645E+04	-7.2997E+00	1.9980E+04	-5.3025E+00	2.1645E+04	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-9.7292E+00	2.1645E+04	-7.3874E+00	1.9980E+04	-5.4115E+00	2.1645E+04	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-9.7990E+00	2.1645E+04	-7.4743E+00	1.9980E+04	-5.5191E+00	2.1645E+04	1.3548E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-9.8684E+00	2.1645E+04	-7.5605E+00	1.9980E+04	-5.6255E+00	2.1645E+04	3.1064E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-9.9373E+00	2.1645E+04	-7.6458E+00	1.9980E+04	-5.7305E+00	2.1645E+04	2.1445E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-1.0006E+01	2.1645E+04	-7.7305E+00	1.9980E+04	-5.8343E+00	2.1645E+04	1.6908E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-1.0074E+01	2.1645E+04	-7.8145E+00	1.9980E+04	-5.9369E+00	2.1645E+04	1.4082E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-1.0142E+01	2.1645E+04	-7.8977E+00	1.9980E+04	-6.0383E+00	2.1645E+04	1.2079E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-1.0209E+01	2.1645E+04	-7.9803E+00	1.9980E+04	-6.1385E+00	2.1645E+04	1.0549E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-1.0276E+01	2.1645E+04	-8.0622E+00	1.9980E+04	-6.2377E+00	2.1645E+04	9.3206E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-1.0343E+01	2.1645E+04	-8.1435E+00	1.9980E+04	-6.3358E+00	2.1645E+04	8.2996E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-1.0409E+01	2.1645E+04	-8.2242E+00	1.9980E+04	-6.4328E+00	2.1645E+04	7.4286E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-1.0475E+01	2.1645E+04	-8.3042E+00	1.9980E+04	-6.5288E+00	2.1645E+04	6.6705E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-1.0540E+01	2.1645E+04	-8.3836E+00	1.9980E+04	-6.6239E+00	2.1645E+04	6.0001E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-1.0605E+01	2.1645E+04	-8.4624E+00	1.9980E+04	-6.7180E+00	2.1645E+04	5.3996E+00	1.0041E-09	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-1.0670E+01	2.1645E+04	-8.5406E+00	1.9980E+04	-6.8111E+00	2.1645E+04	4.8560E+00	2.9417E-07	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-1.0735E+01	2.1645E+04	-8.6183E+00	1.9980E+04	-6.9033E+00	2.1645E+04	4.3594E+00	3.1702E-05	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-1.0799E+01	2.1645E+04	-8.6954E+00	1.9980E+04	-6.9947E+00	2.1645E+04	3.9022E+00	1.5380E-03	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-1.0862E+01	2.1645E+04	-8.7719E+00	1.9980E+04	-7.0851E+00	2.1645E+04	3.4786E+00	3.9033E-02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-1.0926E+01	2.1645E+04	-8.8479E+00	1.9980E+04	-7.1748E+00	2.1645E+04	3.0839E+00	5.8159E-01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-1.0989E+01	2.1645E+04	-8.9234E+00	1.9980E+04	-7.2636E+00	2.1645E+04	2.7143E+00	5.5666E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-1.1052E+01	2.1645E+04	-8.9983E+00	1.9980E+04	-7.3516E+00	2.1645E+04	2.3667E+00	3.6760E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-1.1114E+01	2.1645E+04	-9.0728E+00	1.9980E+04	-7.4388E+00	2.1645E+04	2.0384E+00	1.7740E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-1.1177E+01	2.1645E+04	-9.1467E+00	1.9980E+04	-7.5252E+00	2.1645E+04	1.7273E+00	6.5577E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-1.1238E+01	2.1645E+04	-9.2201E+00	1.9980E+04	-7.6109E+00	2.1645E+04	1.4316E+00	1.9305E+03	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-1.1300E+01	2.1645E+04	-9.2931E+00	1.9980E+04	-7.6959E+00	2.1645E+04	1.1498E+00	4.6769E+03	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-1.1361E+01	2.1645E+04	-9.3656E+00	1.9980E+04	-7.7801E+00	2.1645E+04	8.8042E-01	9.5880E+03	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-1.1422E+01	2.1645E+04	-9.4376E+00	1.9980E+04	-7.8637E+00	2.1645E+04	6.2241E-01	1.7041E+04	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-1.1483E+01	2.1645E+04	-9.5092E+00	1.9980E+04	-7.9465E+00	2.1645E+04	3.7474E-01	2.6822E+04	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-1.1543E+01	2.1645E+04	-9.5803E+00	1.9980E+04	-8.0287E+00	2.1645E+04	1.3654E-01	3.8104E+04	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-1.1604E+01	2.1645E+04	-9.6510E+00	1.9980E+04	-8.1103E+00	2.1645E+04	-9.2974E-02	4.9700E+04	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-1.1663E+01	2.1645E+04	-9.7212E+00	1.9980E+04	-8.1912E+00	2.1645E+04	-3.1448E-01	6.0448E+04	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-1.1723E+01	2.1645E+04	-9.7910E+00	1.9980E+04	-8.2714E+00	2.1645E+04	-5.2857E-01	6.9526E+04	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-1.1782E+01	2.1645E+04	-9.8604E+00	1.9980E+04	-8.3511E+00	2.1645E+04	-7.3581E-01	7.6576E+04	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-1.1841E+01	2.1645E+04	-9.9294E+00	1.9980E+04	-8.4302E+00	2.1645E+04	-9.3666E-01	8.1650E+04	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-1.1900E+01	2.1645E+04	-9.9979E+00	1.9980E+04	-8.5086E+00	2.1645E+04	-1.1316E+00	8.5059E+04	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-1.1959E+01	2.1645E+04	-1.0066E+01	1.9980E+04	-8.5865E+00	2.1645E+04	-1.3209E+00	8.7209E+04	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-1.2017E+01	2.1645E+04	-1.0134E+01	1.9980E+04	-8.6638E+00	2.1645E+04	-1.5051E+00	8.8489E+04	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-1.2075E+01	2.1645E+04	-1.0201E+01	1.9980E+04	-8.7406E+00	2.1645E+04	-1.6844E+00	8.9213E+04	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-1.2133E+01	2.1645E+04	-1.0268E+01	1.9980E+04	-8.8168E+00	2.1645E+04	-1.8590E+00	8.9602E+04	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-1.2190E+01	2.1645E+04	-1.0335E+01	1.9980E+04	-8.8925E+00	2.1645E+04	-2.0294E+00	8.9803E+04	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-1.2248E+01	2.1645E+04	-1.0401E+01	1.9980E+04	-8.9677E+00	2.1645E+04	-2.1957E+00	8.9902E+04	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-1.2305E+01	2.1645E+04	-1.0467E+01	1.9980E+04	-9.0423E+00	2.1645E+04	-2.3582E+00	8.9949E+04	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-1.2361E+01	2.1645E+04	-1.0533E+01	1.9980E+04	-9.1164E+00	2.1645E+04	-2.5170E+00	8.9970E+04	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00

Curve 13	Arg 14	Curve 14	Arg 15	Curve 15	Arg 16	Curve 16	Arg 17	Curve 17	Arg 18	Curve 18	Arg 19	Curve 19
1.9980E+04	-1.2418E+01	2.1645E+04	-1.0598E+01	1.9980E+04	-9.1901E+00	2.1645E+04	-2.6723E+00	8.9980E+04	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-1.2474E+01	2.1645E+04	-1.0663E+01	1.9980E+04	-9.2632E+00	2.1645E+04	-2.8244E+00	8.9984E+04	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-1.2530E+01	2.1645E+04	-1.0727E+01	1.9980E+04	-9.3359E+00	2.1645E+04	-2.9734E+00	8.9986E+04	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-1.2586E+01	2.1645E+04	-1.0791E+01	1.9980E+04	-9.4081E+00	2.1645E+04	-3.1194E+00	8.9987E+04	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-1.2642E+01	2.1645E+04	-1.0855E+01	1.9980E+04	-9.4799E+00	2.1645E+04	-3.2626E+00	8.9987E+04	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-1.2697E+01	2.1645E+04	-1.0919E+01	1.9980E+04	-9.5512E+00	2.1645E+04	-3.4030E+00	8.9987E+04	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-1.2753E+01	2.1645E+04	-1.0982E+01	1.9980E+04	-9.6220E+00	2.1645E+04	-3.5409E+00	8.9987E+04	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-1.2808E+01	2.1645E+04	-1.1045E+01	1.9980E+04	-9.6925E+00	2.1645E+04	-3.6764E+00	8.9987E+04	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-1.2862E+01	2.1645E+04	-1.1107E+01	1.9980E+04	-9.7624E+00	2.1645E+04	-3.8095E+00	8.9987E+04	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-1.2917E+01	2.1645E+04	-1.1169E+01	1.9980E+04	-9.8320E+00	2.1645E+04	-3.9403E+00	8.9987E+04	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-1.2971E+01	2.1645E+04	-1.1231E+01	1.9980E+04	-9.9011E+00	2.1645E+04	-4.0690E+00	8.9987E+04	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-1.3025E+01	2.1645E+04	-1.1293E+01	1.9980E+04	-9.9699E+00	2.1645E+04	-4.1956E+00	8.9987E+04	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-1.3079E+01	2.1645E+04	-1.1354E+01	1.9980E+04	-1.0038E+01	2.1645E+04	-4.3202E+00	8.9987E+04	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-1.3133E+01	2.1645E+04	-1.1415E+01	1.9980E+04	-1.0106E+01	2.1645E+04	-4.4428E+00	8.9987E+04	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-1.3186E+01	2.1645E+04	-1.1476E+01	1.9980E+04	-1.0174E+01	2.1645E+04	-4.5637E+00	8.9987E+04	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-1.3240E+01	2.1645E+04	-1.1537E+01	1.9980E+04	-1.0241E+01	2.1645E+04	-4.6827E+00	8.9987E+04	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-1.3293E+01	2.1645E+04	-1.1597E+01	1.9980E+04	-1.0308E+01	2.1645E+04	-4.8001E+00	8.9987E+04	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-1.3346E+01	2.1645E+04	-1.1657E+01	1.9980E+04	-1.0374E+01	2.1645E+04	-4.9158E+00	8.9987E+04	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-1.3399E+01	2.1645E+04	-1.1716E+01	1.9980E+04	-1.0440E+01	2.1645E+04	-5.0299E+00	8.9987E+04	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-1.3451E+01	2.1645E+04	-1.1776E+01	1.9980E+04	-1.0506E+01	2.1645E+04	-5.1424E+00	8.9987E+04	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-1.3503E+01	2.1645E+04	-1.1835E+01	1.9980E+04	-1.0571E+01	2.1645E+04	-5.2535E+00	8.9987E+04	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-1.3556E+01	2.1645E+04	-1.1893E+01	1.9980E+04	-1.0636E+01	2.1645E+04	-5.3632E+00	8.9987E+04	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-1.3608E+01	2.1645E+04	-1.1952E+01	1.9980E+04	-1.0701E+01	2.1645E+04	-5.4714E+00	8.9987E+04	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-1.3659E+01	2.1645E+04	-1.2010E+01	1.9980E+04	-1.0765E+01	2.1645E+04	-5.5783E+00	8.9987E+04	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-1.3711E+01	2.1645E+04	-1.2068E+01	1.9980E+04	-1.0829E+01	2.1645E+04	-5.6839E+00	8.9987E+04	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-1.3762E+01	2.1645E+04	-1.2126E+01	1.9980E+04	-1.0893E+01	2.1645E+04	-5.7882E+00	8.9987E+04	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-1.3814E+01	2.1645E+04	-1.2184E+01	1.9980E+04	-1.0956E+01	2.1645E+04	-5.8914E+00	8.9987E+04	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-1.3865E+01	2.1645E+04	-1.2241E+01	1.9980E+04	-1.1019E+01	2.1645E+04	-5.9933E+00	8.9987E+04	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-1.3916E+01	2.1645E+04	-1.2298E+01	1.9980E+04	-1.1082E+01	2.1645E+04	-6.0941E+00	8.9987E+04	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-1.3966E+01	2.1645E+04	-1.2355E+01	1.9980E+04	-1.1144E+01	2.1645E+04	-6.1937E+00	8.9987E+04	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-1.4017E+01	2.1645E+04	-1.2412E+01	1.9980E+04	-1.1206E+01	2.1645E+04	-6.2923E+00	8.9987E+04	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-1.4067E+01	2.1645E+04	-1.2468E+01	1.9980E+04	-1.1268E+01	2.1645E+04	-6.3898E+00	8.9987E+04	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-1.4118E+01	2.1645E+04	-1.2524E+01	1.9980E+04	-1.1329E+01	2.1645E+04	-6.4862E+00	8.9987E+04	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-1.4168E+01	2.1645E+04	-1.2580E+01	1.9980E+04	-1.1390E+01	2.1645E+04	-6.5817E+00	8.9987E+04	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-1.4218E+01	2.1645E+04	-1.2636E+01	1.9980E+04	-1.1451E+01	2.1645E+04	-6.6762E+00	8.9987E+04	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-1.4267E+01	2.1645E+04	-1.2691E+01	1.9980E+04	-1.1512E+01	2.1645E+04	-6.7698E+00	8.9987E+04	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-1.4317E+01	2.1645E+04	-1.2746E+01	1.9980E+04	-1.1572E+01	2.1645E+04	-6.8624E+00	8.9987E+04	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-1.4366E+01	2.1645E+04	-1.2801E+01	1.9980E+04	-1.1632E+01	2.1645E+04	-6.9541E+00	8.9987E+04	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-1.4416E+01	2.1645E+04	-1.2856E+01	1.9980E+04	-1.1692E+01	2.1645E+04	-7.0450E+00	8.9987E+04	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-1.4465E+01	2.1645E+04	-1.2911E+01	1.9980E+04	-1.1751E+01	2.1645E+04	-7.1350E+00	8.9987E+04	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-1.4514E+01	2.1645E+04	-1.2965E+01	1.9980E+04	-1.1810E+01	2.1645E+04	-7.2242E+00	8.9987E+04	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-1.4562E+01	2.1645E+04	-1.3019E+01	1.9980E+04	-1.1869E+01	2.1645E+04	-7.3125E+00	8.9987E+04	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-1.4611E+01	2.1645E+04	-1.3073E+01	1.9980E+04	-1.1928E+01	2.1645E+04	-7.4001E+00	8.9987E+04	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-1.4659E+01	2.1645E+04	-1.3127E+01	1.9980E+04	-1.1986E+01	2.1645E+04	-7.4869E+00	8.9987E+04	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-1.4708E+01	2.1645E+04	-1.3180E+01	1.9980E+04	-1.2045E+01	2.1645E+04	-7.5729E+00	8.9987E+04	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-1.4756E+01	2.1645E+04	-1.3234E+01	1.9980E+04	-1.2103E+01	2.1645E+04	-7.6582E+00	8.9987E+04	3.7360E+01	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-1.4804E+01	2.1645E+04	-1.3287E+01	1.9980E+04	-1.2160E+01	2.1645E+04	-7.7427E+00	8.9987E+04	2.3549E+01	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-1.4852E+01	2.1645E+04	-1.3340E+01	1.9980E+04	-1.2218E+01	2.1645E+04	-7.8266E+00	8.9987E+04	1.8060E+01	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-1.4900E+01	2.1645E+04	-1.3393E+01	1.9980E+04	-1.2275E+01	2.1645E+04	-7.9098E+00	8.9987E+04	1.4845E+01	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-1.4947E+01	2.1645E+04	-1.3445E+01	1.9980E+04	-1.2332E+01	2.1645E+04	-7.9922E+00	8.9987E+04	1.2638E+01	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-1.4995E+01	2.1645E+04	-1.3497E+01	1.9980E+04	-1.2388E+01	2.1645E+04	-8.0741E+00	8.9987E+04	1.0985E+01	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-1.5042E+01	2.1645E+04	-1.3550E+01	1.9980E+04	-1.2445E+01	2.1645E+04	-8.1553E+00	8.9987E+04	9.6757E+00	0.0000E+00	0.0000E+00	0.0000E+00

Curve 13	Arg 14	Curve 14	Arg 15	Curve 15	Arg 16	Curve 16	Arg 17	Curve 17	Arg 18	Curve 18	Arg 19	Curve 19
1.9980E+04	-1.5089E+01	2.1645E+04	-1.3602E+01	1.9980E+04	-1.2501E+01	2.1645E+04	-8.2358E+00	8.9987E+04	8.5979E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-1.5136E+01	2.1645E+04	-1.3653E+01	1.9980E+04	-1.2557E+01	2.1645E+04	-8.3157E+00	8.9987E+04	7.6851E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-1.5183E+01	2.1645E+04	-1.3705E+01	1.9980E+04	-1.2613E+01	2.1645E+04	-8.3950E+00	8.9987E+04	6.8951E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-1.5230E+01	2.1645E+04	-1.3757E+01	1.9980E+04	-1.2668E+01	2.1645E+04	-8.4738E+00	8.9987E+04	6.1998E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9980E+04	-1.5276E+01	2.1645E+04	-1.3808E+01	1.9980E+04	-1.2724E+01	2.1645E+04	-8.5519E+00	8.9987E+04	5.5792E+00	8.0691E-10	0.0000E+00	0.0000E+00
1.9980E+04	-1.5323E+01	2.1645E+04	-1.3859E+01	1.9980E+04	-1.2779E+01	2.1645E+04	-8.6295E+00	8.9987E+04	5.0191E+00	3.4058E-07	0.0000E+00	0.0000E+00
1.9980E+04	-1.5369E+01	2.1645E+04	-1.3910E+01	1.9980E+04	-1.2834E+01	2.1645E+04	-8.7065E+00	8.9987E+04	4.5088E+00	4.8815E-05	0.0000E+00	0.0000E+00
1.9980E+04	-1.5415E+01	2.1645E+04	-1.3961E+01	1.9980E+04	-1.2888E+01	2.1645E+04	-8.7830E+00	8.9987E+04	4.0401E+00	2.9787E-03	0.0000E+00	0.0000E+00
1.9980E+04	-1.5461E+01	2.1645E+04	-1.4011E+01	1.9980E+04	-1.2943E+01	2.1645E+04	-8.8589E+00	8.9987E+04	3.6067E+00	9.1153E-02	0.0000E+00	0.0000E+00
1.9980E+04	-1.5507E+01	2.1645E+04	-1.4062E+01	1.9980E+04	-1.2997E+01	2.1645E+04	-8.9343E+00	8.9987E+04	3.2035E+00	1.5850E+00	0.0000E+00	0.0000E+00
1.9980E+04	-1.5553E+01	2.1645E+04	-1.4112E+01	1.9980E+04	-1.3051E+01	2.1645E+04	-9.0091E+00	8.9987E+04	2.8264E+00	1.7256E+01	0.0000E+00	0.0000E+00
1.9980E+04	-1.5599E+01	2.1645E+04	-1.4162E+01	1.9980E+04	-1.3105E+01	2.1645E+04	-9.0835E+00	8.9987E+04	2.4723E+00	1.2699E+02	0.0000E+00	0.0000E+00
1.9980E+04	-1.5645E+01	2.1645E+04	-1.4212E+01	1.9980E+04	-1.3158E+01	2.1645E+04	-9.1574E+00	8.9987E+04	2.1382E+00	6.7175E+02	0.0000E+00	0.0000E+00
1.9980E+04	-1.5690E+01	2.1645E+04	-1.4262E+01	1.9980E+04	-1.3212E+01	2.1645E+04	-9.2308E+00	8.9987E+04	1.8220E+00	2.6850E+03	0.0000E+00	0.0000E+00
1.9980E+04	-1.5735E+01	2.1645E+04	-1.4311E+01	1.9980E+04	-1.3265E+01	2.1645E+04	-9.3036E+00	8.9987E+04	1.5217E+00	8.4505E+03	0.0000E+00	0.0000E+00
1.9980E+04	-1.5781E+01	2.1645E+04	-1.4361E+01	1.9980E+04	-1.3318E+01	2.1645E+04	-9.3761E+00	8.9987E+04	1.2357E+00	2.1678E+04	0.0000E+00	0.0000E+00
1.9980E+04	-1.5826E+01	2.1645E+04	-1.4410E+01	1.9980E+04	-1.3371E+01	2.1645E+04	-9.4480E+00	8.9987E+04	9.6265E-01	4.6674E+04	0.0000E+00	0.0000E+00
1.9980E+04	-1.5871E+01	2.1645E+04	-1.4459E+01	1.9980E+04	-1.3424E+01	2.1645E+04	-9.5195E+00	8.9987E+04	7.0124E-01	8.6501E+04	0.0000E+00	0.0000E+00
1.9980E+04	-1.5915E+01	2.1645E+04	-1.4508E+01	1.9980E+04	-1.3476E+01	2.1645E+04	-9.5906E+00	8.9987E+04	4.5047E-01	1.4108E+05	0.0000E+00	0.0000E+00
1.9980E+04	-1.5960E+01	2.1645E+04	-1.4557E+01	1.9980E+04	-1.3528E+01	2.1645E+04	-9.6612E+00	8.9987E+04	2.0942E-01	2.0650E+05	0.0000E+00	0.0000E+00
1.9980E+04	-1.6005E+01	2.1645E+04	-1.4605E+01	1.9980E+04	-1.3580E+01	2.1645E+04	-9.7313E+00	8.9987E+04	-2.2712E-02	2.7608E+05	0.0000E+00	0.0000E+00
1.9980E+04	-1.6049E+01	2.1645E+04	-1.4654E+01	1.9980E+04	-1.3632E+01	2.1645E+04	-9.8011E+00	8.9987E+04	-2.4663E-01	3.4261E+05	0.0000E+00	0.0000E+00
1.9980E+04	-1.6094E+01	2.1645E+04	-1.4702E+01	1.9980E+04	-1.3684E+01	2.1645E+04	-9.8704E+00	8.9987E+04	-4.6296E-01	4.0038E+05	0.0000E+00	0.0000E+00
1.9980E+04	-1.6138E+01	2.1645E+04	-1.4750E+01	1.9980E+04	-1.3735E+01	2.1645E+04	-9.9393E+00	8.9987E+04	-6.7227E-01	4.4638E+05	0.0000E+00	0.0000E+00
1.9980E+04	-1.6182E+01	2.1645E+04	-1.4798E+01	1.9980E+04	-1.3787E+01	2.1645E+04	-1.0008E+01	8.9987E+04	-8.7505E-01	4.8026E+05	0.0000E+00	0.0000E+00
1.9980E+04	-1.6226E+01	2.1645E+04	-1.4846E+01	1.9980E+04	-1.3838E+01	2.1645E+04	-1.0076E+01	8.9987E+04	-1.0718E+00	5.0349E+05	0.0000E+00	0.0000E+00
1.9980E+04	-1.6270E+01	2.1645E+04	-1.4894E+01	1.9980E+04	-1.3889E+01	2.1645E+04	-1.0144E+01	8.9987E+04	-1.2628E+00	5.1842E+05	0.0000E+00	0.0000E+00
1.9980E+04	-1.6314E+01	2.1645E+04	-1.4942E+01	1.9980E+04	-1.3940E+01	2.1645E+04	-1.0211E+01	8.9987E+04	-1.4485E+00	5.2747E+05	0.0000E+00	0.0000E+00
1.9980E+04	-1.6357E+01	2.1645E+04	-1.4989E+01	1.9980E+04	-1.3990E+01	2.1645E+04	-1.0278E+01	8.9987E+04	-1.6293E+00	5.3266E+05	0.0000E+00	0.0000E+00
1.9980E+04	-1.6401E+01	2.1645E+04	-1.5036E+01	1.9980E+04	-1.4041E+01	2.1645E+04	-1.0345E+01	8.9987E+04	-1.8054E+00	5.3550E+05	0.0000E+00	0.0000E+00
1.9980E+04	-1.6444E+01	2.1645E+04	-1.5084E+01	1.9980E+04	-1.4091E+01	2.1645E+04	-1.0411E+01	8.9987E+04	-1.9771E+00	5.3698E+05	0.0000E+00	0.0000E+00
1.9980E+04	-1.6488E+01	2.1645E+04	-1.5131E+01	1.9980E+04	-1.4141E+01	2.1645E+04	-1.0477E+01	8.9987E+04	-2.1446E+00	5.3772E+05	0.0000E+00	0.0000E+00
1.9980E+04	-1.6531E+01	2.1645E+04	-1.5178E+01	1.9980E+04	-1.4191E+01	2.1645E+04	-1.0542E+01	8.9987E+04	-2.3082E+00	5.3808E+05	0.0000E+00	0.0000E+00
1.9980E+04	-1.6574E+01	2.1645E+04	-1.5224E+01	1.9980E+04	-1.4241E+01	2.1645E+04	-1.0607E+01	8.9987E+04	-2.4681E+00	5.3824E+05	0.0000E+00	0.0000E+00
1.9980E+04	-1.6617E+01	2.1645E+04	-1.5271E+01	1.9980E+04	-1.4291E+01	2.1645E+04	-1.0672E+01	8.9987E+04	-2.6245E+00	5.3832E+05	0.0000E+00	0.0000E+00
1.9980E+04	-1.6660E+01	2.1645E+04	-1.5317E+01	1.9980E+04	-1.4340E+01	2.1645E+04	-1.0736E+01	8.9987E+04	-2.7776E+00	5.3835E+05	0.0000E+00	0.0000E+00
1.9980E+04	-1.6703E+01	2.1645E+04	-1.5364E+01	1.9980E+04	-1.4390E+01	2.1645E+04	-1.0801E+01	8.9987E+04	-2.9275E+00	5.3836E+05	0.0000E+00	0.0000E+00
1.9980E+04	-1.6745E+01	2.1645E+04	-1.5410E+01	1.9980E+04	-1.4439E+01	2.1645E+04	-1.0864E+01	8.9987E+04	-3.0744E+00	5.3837E+05	0.0000E+00	0.0000E+00
1.9980E+04	-1.6788E+01	2.1645E+04	-1.5456E+01	1.9980E+04	-1.4488E+01	2.1645E+04	-1.0928E+01	8.9987E+04	-3.2185E+00	5.3837E+05	0.0000E+00	0.0000E+00
1.9980E+04	-1.6831E+01	2.1645E+04	-1.5502E+01	1.9980E+04	-1.4537E+01	2.1645E+04	-1.0991E+01	8.9987E+04	-3.3598E+00	5.3837E+05	0.0000E+00	0.0000E+00
1.9980E+04	-1.6873E+01	2.1645E+04	-1.5548E+01	1.9980E+04	-1.4585E+01	2.1645E+04	-1.1054E+01	8.9987E+04	-3.4985E+00	5.3837E+05	0.0000E+00	0.0000E+00
1.9980E+04	-1.6915E+01	2.1645E+04	-1.5594E+01	1.9980E+04	-1.4634E+01	2.1645E+04	-1.1116E+01	8.9987E+04	-3.6347E+00	5.3837E+05	0.0000E+00	0.0000E+00
1.9980E+04	-1.6957E+01	2.1645E+04	-1.5639E+01	1.9980E+04	-1.4682E+01	2.1645E+04	-1.1178E+01	8.9987E+04	-3.7685E+00	5.3837E+05	0.0000E+00	0.0000E+00
1.9980E+04	-1.6999E+01	2.1645E+04	-1.5685E+01	1.9980E+04	-1.4731E+01	2.1645E+04	-1.1240E+01	8.9987E+04	-3.9000E+00	5.3837E+05	0.0000E+00	0.0000E+00
1.9980E+04	-1.7041E+01	2.1645E+04	-1.5730E+01	1.9980E+04	-1.4779E+01	2.1645E+04	-1.1302E+01	8.9987E+04	-4.0293E+00	5.3837E+05	0.0000E+00	0.0000E+00
1.9980E+04	-1.7083E+01	2.1645E+04	-1.5775E+01	1.9980E+04	-1.4827E+01	2.1645E+04	-1.1363E+01	8.9987E+04	-4.1565E+00	5.3837E+05	0.0000E+00	0.0000E+00
1.9980E+04	-1.7125E+01	2.1645E+04	-1.5820E+01	1.9980E+04	-1.4875E+01	2.1645E+04	-1.1424E+01	8.9987E+04	-4.2817E+00	5.3837E+05	0.0000E+00	0.0000E+00
1.9980E+04	-1.7167E+01	2.1645E+04	-1.5865E+01	1.9980E+04	-1.4922E+01	2.1645E+04	-1.1485E+01	8.9987E+04	-4.4050E+00	5.3837E+05	0.0000E+00	0.0000E+00
1.9980E+04	-1.7208E+01	2.1645E+04	-1.5910E+01	1.9980E+04	-1.4970E+01	2.1645E+04	-1.1545E+01	8.9987E+04	-4.5264E+00	5.3837E+05	0.0000E+00	0.0000E+00
1.9980E+04	-1.7250E+01	2.1645E+04	-1.5955E+01	1.9980E+04	-1.5017E+01	2.1645E+04	-1.1605E+01	8.9987E+04	-4.6460E+00	5.3837E+05	0.0000E+00	0.0000E+00
1.9980E+04	-1.7291E+01	2.1645E+04	-1.6000E+01	1.9980E+04	-1.5064E+01	2.1645E+04	-1.1665E+01	8.9987E+04	-4.7639E+00	5.3837E+05	0.0000E+00	0.0000E+00
1.9980E+04	-1.7333E+01	2.1645E+04	-1.6044E+01	1.9980E+04	-1.5111E+01	2.1645E+04	-1.1725E+01	8.9987E+04	-4.8801E+00	5.3837E+05	0.0000E+00	0.0000E+00

Curve 13	Arg 14	Curve 14	Arg 15	Curve 15	Arg 16	Curve 16	Arg 17	Curve 17	Arg 18	Curve 18	Arg 19	Curve 19
1.9980E+04	-1.7374E+01	2.1645E+04	-1.6088E+01	1.9980E+04	-1.5158E+01	2.1645E+04	-1.1784E+01	8.9987E+04	-4.9947E+00	5.3837E+05	0.0000E+00	0.0000E+00
1.9980E+04	-1.7415E+01	2.1645E+04	-1.6133E+01	1.9980E+04	-1.5205E+01	2.1645E+04	-1.1843E+01	8.9987E+04	-5.1077E+00	5.3837E+05	0.0000E+00	0.0000E+00
1.9980E+04	-1.7456E+01	2.1645E+04	-1.6177E+01	1.9980E+04	-1.5252E+01	2.1645E+04	-1.1902E+01	8.9987E+04	-5.2192E+00	5.3837E+05	0.0000E+00	0.0000E+00
1.9980E+04	-1.7497E+01	2.1645E+04	-1.6221E+01	1.9980E+04	-1.5298E+01	2.1645E+04	-1.1961E+01	8.9987E+04	-5.3293E+00	5.3837E+05	0.0000E+00	0.0000E+00
1.9980E+04	-1.7538E+01	2.1645E+04	-1.6265E+01	1.9980E+04	-1.5345E+01	2.1645E+04	-1.2019E+01	8.9987E+04	-5.4380E+00	5.3837E+05	0.0000E+00	0.0000E+00
1.9980E+04	-1.7579E+01	2.1645E+04	-1.6309E+01	1.9980E+04	-1.5391E+01	2.1645E+04	-1.2077E+01	8.9987E+04	-5.5453E+00	5.3837E+05	0.0000E+00	0.0000E+00
1.9980E+04	-1.7619E+01	2.1645E+04	-1.6352E+01	1.9980E+04	-1.5437E+01	2.1645E+04	-1.2135E+01	8.9987E+04	-5.6513E+00	5.3837E+05	0.0000E+00	0.0000E+00
1.9980E+04	-1.7660E+01	2.1645E+04	-1.6396E+01	1.9980E+04	-1.5483E+01	2.1645E+04	-1.2192E+01	8.9987E+04	-5.7560E+00	5.3837E+05	0.0000E+00	0.0000E+00
1.9980E+04	-1.7700E+01	2.1645E+04	-1.6439E+01	1.9980E+04	-1.5529E+01	2.1645E+04	-1.2249E+01	8.9987E+04	-5.8595E+00	5.3837E+05	0.0000E+00	0.0000E+00
1.9980E+04	-1.7741E+01	2.1645E+04	-1.6483E+01	1.9980E+04	-1.5575E+01	2.1645E+04	-1.2306E+01	8.9987E+04	-5.9618E+00	5.3837E+05	0.0000E+00	0.0000E+00
1.9980E+04	-1.7781E+01	2.1645E+04	-1.6526E+01	1.9980E+04	-1.5621E+01	2.1645E+04	-1.2363E+01	8.9987E+04	-6.0629E+00	5.3837E+05	0.0000E+00	0.0000E+00
1.9980E+04	-1.7821E+01	2.1645E+04	-1.6569E+01	1.9980E+04	-1.5666E+01	2.1645E+04	-1.2420E+01	8.9987E+04	-6.1629E+00	5.3837E+05	0.0000E+00	0.0000E+00
1.9980E+04	-1.7861E+01	2.1645E+04	-1.6612E+01	1.9980E+04	-1.5712E+01	2.1645E+04	-1.2476E+01	8.9987E+04	-6.2618E+00	5.3837E+05	0.0000E+00	0.0000E+00
1.9980E+04	-1.7901E+01	2.1645E+04	-1.6655E+01	1.9980E+04	-1.5757E+01	2.1645E+04	-1.2532E+01	8.9987E+04	-6.3597E+00	5.3837E+05	0.0000E+00	0.0000E+00
1.9980E+04	-1.7941E+01	2.1645E+04	-1.6698E+01	1.9980E+04	-1.5802E+01	2.1645E+04	-1.2588E+01	8.9987E+04	-6.4564E+00	5.3837E+05	0.0000E+00	0.0000E+00
1.9980E+04	-1.7981E+01	2.1645E+04	-1.6741E+01	1.9980E+04	-1.5847E+01	2.1645E+04	-1.2644E+01	8.9987E+04	-6.5522E+00	5.3837E+05	0.0000E+00	0.0000E+00
1.9980E+04	-1.8021E+01	2.1645E+04	-1.6783E+01	1.9980E+04	-1.5892E+01	2.1645E+04	-1.2699E+01	8.9987E+04	-6.6470E+00	5.3837E+05	0.0000E+00	0.0000E+00
1.9980E+04	-1.8061E+01	2.1645E+04	-1.6826E+01	1.9980E+04	-1.5937E+01	2.1645E+04	-1.2754E+01	8.9987E+04	-6.7409E+00	5.3837E+05	0.0000E+00	0.0000E+00
1.9980E+04	-1.8100E+01	2.1645E+04	-1.6868E+01	1.9980E+04	-1.5981E+01	2.1645E+04	-1.2809E+01	8.9987E+04	-6.8338E+00	5.3837E+05	0.0000E+00	0.0000E+00
1.9980E+04	-1.8140E+01	2.1645E+04	-1.6910E+01	1.9980E+04	-1.6026E+01	2.1645E+04	-1.2864E+01	8.9987E+04	-6.9258E+00	5.3837E+05	0.0000E+00	0.0000E+00
1.9980E+04	-1.8179E+01	2.1645E+04	-1.6953E+01	1.9980E+04	-1.6070E+01	2.1645E+04	-1.2918E+01	8.9987E+04	-7.0169E+00	5.3837E+05	0.0000E+00	0.0000E+00
1.9980E+04	-1.8219E+01	2.1645E+04	-1.6995E+01	1.9980E+04	-1.6115E+01	2.1645E+04	-1.2973E+01	8.9987E+04	-7.1072E+00	5.3837E+05	0.0000E+00	0.0000E+00
1.9980E+04	-1.8258E+01	2.1645E+04	-1.7037E+01	1.9980E+04	-1.6159E+01	2.1645E+04	-1.3027E+01	8.9987E+04	-7.1966E+00	5.3837E+05	0.0000E+00	0.0000E+00
1.9980E+04	-1.8297E+01	2.1645E+04	-1.7079E+01	1.9980E+04	-1.6203E+01	2.1645E+04	-1.3081E+01	8.9987E+04	-7.2852E+00	5.3837E+05	4.5479E+01	0.0000E+00
1.9980E+04	-1.8336E+01	2.1645E+04	-1.7120E+01	1.9980E+04	-1.6247E+01	2.1645E+04	-1.3135E+01	8.9987E+04	-7.3730E+00	5.3837E+05	2.5539E+01	0.0000E+00
1.9980E+04	-1.8375E+01	2.1645E+04	-1.7162E+01	1.9980E+04	-1.6291E+01	2.1645E+04	-1.3188E+01	8.9987E+04	-7.4600E+00	5.3837E+05	1.9063E+01	0.0000E+00
1.9980E+04	-1.8414E+01	2.1645E+04	-1.7204E+01	1.9980E+04	-1.6334E+01	2.1645E+04	-1.3241E+01	8.9987E+04	-7.5463E+00	5.3837E+05	1.5484E+01	0.0000E+00
1.9980E+04	-1.8453E+01	2.1645E+04	-1.7245E+01	1.9980E+04	-1.6378E+01	2.1645E+04	-1.3295E+01	8.9987E+04	-7.6318E+00	5.3837E+05	1.3096E+01	0.0000E+00
1.9980E+04	-1.8492E+01	2.1645E+04	-1.7287E+01	1.9980E+04	-1.6421E+01	2.1645E+04	-1.3347E+01	8.9987E+04	-7.7166E+00	5.3837E+05	1.1337E+01	0.0000E+00
1.9980E+04	-1.8530E+01	2.1645E+04	-1.7328E+01	1.9980E+04	-1.6465E+01	2.1645E+04	-1.3400E+01	8.9987E+04	-7.8007E+00	5.3837E+05	9.9594E+00	0.0000E+00
1.9980E+04	-1.8569E+01	2.1645E+04	-1.7369E+01	1.9980E+04	-1.6508E+01	2.1645E+04	-1.3453E+01	8.9987E+04	-7.8840E+00	5.3837E+05	8.8344E+00	0.0000E+00
1.9980E+04	-1.8608E+01	2.1645E+04	-1.7410E+01	1.9980E+04	-1.6551E+01	2.1645E+04	-1.3505E+01	8.9987E+04	-7.9667E+00	5.3837E+05	7.8873E+00	0.0000E+00
1.9980E+04	-1.8646E+01	2.1645E+04	-1.7451E+01	1.9980E+04	-1.6594E+01	2.1645E+04	-1.3557E+01	8.9987E+04	-8.0488E+00	5.3837E+05	7.0714E+00	0.0000E+00
1.9980E+04	-1.8685E+01	2.1645E+04	-1.7492E+01	1.9980E+04	-1.6637E+01	2.1645E+04	-1.3609E+01	8.9987E+04	-8.1302E+00	5.3837E+05	6.3558E+00	0.0000E+00
1.9980E+04	-1.8723E+01	2.1645E+04	-1.7533E+01	1.9980E+04	-1.6680E+01	2.1645E+04	-1.3661E+01	8.9987E+04	-8.2109E+00	5.3837E+05	5.7191E+00	1.7152E-11
1.9980E+04	-1.8761E+01	2.1645E+04	-1.7574E+01	1.9980E+04	-1.6723E+01	2.1645E+04	-1.3713E+01	8.9987E+04	-8.2910E+00	5.3837E+05	5.1459E+00	1.0517E-08
1.9980E+04	-1.8799E+01	2.1645E+04	-1.7614E+01	1.9980E+04	-1.6766E+01	2.1645E+04	-1.3764E+01	8.9987E+04	-8.3705E+00	5.3837E+05	4.6247E+00	1.8971E-06
1.9980E+04	-1.8837E+01	2.1645E+04	-1.7655E+01	1.9980E+04	-1.6808E+01	2.1645E+04	-1.3815E+01	8.9987E+04	-8.4494E+00	5.3837E+05	4.1468E+00	1.3918E-04
1.9980E+04	-1.8875E+01	2.1645E+04	-1.7696E+01	1.9980E+04	-1.6851E+01	2.1645E+04	-1.3866E+01	8.9987E+04	-8.5278E+00	5.3837E+05	3.7056E+00	4.9470E-03
1.9980E+04	-1.8913E+01	2.1645E+04	-1.7736E+01	1.9980E+04	-1.6893E+01	2.1645E+04	-1.3917E+01	8.9987E+04	-8.6055E+00	5.3837E+05	3.2957E+00	9.7301E-02
1.9980E+04	-1.8951E+01	2.1645E+04	-1.7776E+01	1.9980E+04	-1.6935E+01	2.1645E+04	-1.3968E+01	8.9987E+04	-8.6827E+00	5.3837E+05	2.9129E+00	1.1737E+00
1.9980E+04	-1.8989E+01	2.1645E+04	-1.7816E+01	1.9980E+04	-1.6977E+01	2.1645E+04	-1.4019E+01	8.9987E+04	-8.7593E+00	5.3837E+05	2.5536E+00	9.4130E+00
1.9980E+04	-1.9027E+01	2.1645E+04	-1.7857E+01	1.9980E+04	-1.7019E+01	2.1645E+04	-1.4069E+01	8.9987E+04	-8.8354E+00	5.3837E+05	2.2150E+00	5.3549E+01
1.9980E+04	-1.9065E+01	2.1645E+04	-1.7897E+01	1.9980E+04	-1.7061E+01	2.1645E+04	-1.4119E+01	8.9987E+04	-8.9110E+00	5.3837E+05	1.8948E+00	2.2769E+02
1.9980E+04	-1.9102E+01	2.1645E+04	-1.7937E+01	1.9980E+04	-1.7103E+01	2.1645E+04	-1.4169E+01	8.9987E+04	-8.9860E+00	5.3837E+05	1.5910E+00	7.5550E+02
1.9980E+04	-1.9140E+01	2.1645E+04	-1.7977E+01	1.9980E+04	-1.7145E+01	2.1645E+04	-1.4219E+01	8.9987E+04	-9.0605E+00	5.3837E+05	1.3017E+00	2.0278E+03
1.9980E+04	-1.9177E+01	2.1645E+04	-1.8016E+01	1.9980E+04	-1.7187E+01	2.1645E+04	-1.4269E+01	8.9987E+04	-9.1345E+00	5.3837E+05	1.0257E+00	4.5385E+03
1.9980E+04	-1.9214E+01	2.1645E+04	-1.8056E+01	1.9980E+04	-1.7228E+01	2.1645E+04	-1.4318E+01	8.9987E+04	-9.2081E+00	5.3837E+05	7.6168E-01	8.6946E+03
1.9980E+04	-1.9252E+01	2.1645E+04	-1.8096E+01	1.9980E+04	-1.7270E+01	2.1645E+04	-1.4368E+01	8.9987E+04	-9.2811E+00	5.3837E+05	5.0849E-01	1.4586E+04
1.9980E+04	-1.9289E+01	2.1645E+04	-1.8135E+01	1.9980E+04	-1.7311E+01	2.1645E+04	-1.4417E+01	8.9987E+04	-9.3537E+00	5.3837E+05	2.6523E-01	2.1863E+04
1.9980E+04	-1.9326E+01	2.1645E+04	-1.8175E+01	1.9980E+04	-1.7352E+01	2.1645E+04	-1.4466E+01	8.9987E+04	-9.4258E+00	5.3837E+05	3.1075E-02	2.9815E+04
1.9980E+04	-1.9363E+01	2.1645E+04	-1.8214E+01	1.9980E+04	-1.7393E+01	2.1645E+04	-1.4515E+01	8.9987E+04	-9.4974E+00	5.3837E+05	-1.9471E-01	3.7601E+04

Curve 13	Arg 14	Curve 14	Arg 15	Curve 15	Arg 16	Curve 16	Arg 17	Curve 17	Arg 18	Curve 18	Arg 19	Curve 19
1.9980E+04	-1.9400E+01	2.1645E+04	-1.8253E+01	1.9980E+04	-1.7434E+01	2.1645E+04	-1.4564E+01	8.9987E+04	-9.5686E+00	5.3837E+05	-4.1278E-01	4.4512E+04
1.9980E+04	-1.9437E+01	2.1645E+04	-1.8292E+01	1.9980E+04	-1.7475E+01	2.1645E+04	-1.4612E+01	8.9987E+04	-9.6393E+00	5.3837E+05	-6.2369E-01	5.0123E+04
1.9980E+04	-1.9474E+01	2.1645E+04	-1.8332E+01	1.9980E+04	-1.7516E+01	2.1645E+04	-1.4661E+01	8.9987E+04	-9.7096E+00	5.3837E+05	-8.2796E-01	5.4329E+04
1.9980E+04	-1.9511E+01	2.1645E+04	-1.8371E+01	1.9980E+04	-1.7557E+01	2.1645E+04	-1.4709E+01	8.9987E+04	-9.7795E+00	5.3837E+05	-1.0261E+00	5.7261E+04
1.9980E+04	-1.9548E+01	2.1645E+04	-1.8410E+01	1.9980E+04	-1.7598E+01	2.1645E+04	-1.4757E+01	8.9987E+04	-9.8490E+00	5.3837E+05	-1.2184E+00	5.9173E+04
1.9980E+04	-1.9584E+01	2.1645E+04	-1.8448E+01	1.9980E+04	-1.7638E+01	2.1645E+04	-1.4805E+01	8.9987E+04	-9.9180E+00	5.3837E+05	-1.4053E+00	6.0347E+04
1.9980E+04	-1.9621E+01	2.1645E+04	-1.8487E+01	1.9980E+04	-1.7679E+01	2.1645E+04	-1.4853E+01	8.9987E+04	-9.9867E+00	5.3837E+05	-1.5872E+00	6.1029E+04
1.9980E+04	-1.9658E+01	2.1645E+04	-1.8526E+01	1.9980E+04	-1.7719E+01	2.1645E+04	-1.4901E+01	8.9987E+04	-1.0055E+01	5.3837E+05	-1.7644E+00	6.1406E+04
1.9980E+04	-1.9694E+01	2.1645E+04	-1.8565E+01	1.9980E+04	-1.7760E+01	2.1645E+04	-1.4949E+01	8.9987E+04	-1.0123E+01	5.3837E+05	-1.9371E+00	6.1605E+04
1.9980E+04	-1.9730E+01	2.1645E+04	-1.8603E+01	1.9980E+04	-1.7800E+01	2.1645E+04	-1.4996E+01	8.9987E+04	-1.0190E+01	5.3837E+05	-2.1056E+00	6.1706E+04
1.9980E+04	-1.9767E+01	2.1645E+04	-1.8642E+01	1.9980E+04	-1.7840E+01	2.1645E+04	-1.5043E+01	8.9987E+04	-1.0257E+01	5.3837E+05	-2.2701E+00	6.1754E+04
1.9980E+04	-1.9803E+01	2.1645E+04	-1.8680E+01	1.9980E+04	-1.7880E+01	2.1645E+04	-1.5090E+01	8.9987E+04	-1.0324E+01	5.3837E+05	-2.4309E+00	6.1777E+04
1.9980E+04	-1.9839E+01	2.1645E+04	-1.8719E+01	1.9980E+04	-1.7920E+01	2.1645E+04	-1.5137E+01	8.9987E+04	-1.0390E+01	5.3837E+05	-2.5881E+00	6.1788E+04
1.9980E+04	-1.9876E+01	2.1645E+04	-1.8757E+01	1.9980E+04	-1.7960E+01	2.1645E+04	-1.5184E+01	8.9987E+04	-1.0456E+01	5.3837E+05	-2.7419E+00	6.1792E+04
1.9980E+04	-1.9912E+01	2.1645E+04	-1.8795E+01	1.9980E+04	-1.8000E+01	2.1645E+04	-1.5231E+01	8.9987E+04	-1.0522E+01	5.3837E+05	-2.8926E+00	6.1794E+04
1.9980E+04	-1.9948E+01	2.1645E+04	-1.8833E+01	1.9980E+04	-1.8040E+01	2.1645E+04	-1.5278E+01	8.9987E+04	-1.0587E+01	5.3837E+05	-3.0402E+00	6.1795E+04
1.9980E+04	-1.9984E+01	2.1645E+04	-1.8871E+01	1.9980E+04	-1.8079E+01	2.1645E+04	-1.5324E+01	8.9987E+04	-1.0652E+01	5.3837E+05	-3.1849E+00	6.1795E+04
1.9980E+04	-2.0020E+01	2.1645E+04	-1.8909E+01	1.9980E+04	-1.8119E+01	2.1645E+04	-1.5371E+01	8.9987E+04	-1.0717E+01	5.3837E+05	-3.3268E+00	6.1795E+04
1.9980E+04	-2.0055E+01	2.1645E+04	-1.8947E+01	1.9980E+04	-1.8158E+01	2.1645E+04	-1.5417E+01	8.9987E+04	-1.0781E+01	5.3837E+05	-3.4661E+00	6.1795E+04
1.9980E+04	-2.0091E+01	2.1645E+04	-1.8985E+01	1.9980E+04	-1.8198E+01	2.1645E+04	-1.5463E+01	8.9987E+04	-1.0845E+01	5.3837E+05	-3.6029E+00	6.1795E+04
1.9980E+04	-2.0127E+01	2.1645E+04	-1.9023E+01	1.9980E+04	-1.8237E+01	2.1645E+04	-1.5509E+01	8.9987E+04	-1.0908E+01	5.3837E+05	-3.7372E+00	6.1795E+04
1.9980E+04	-2.0163E+01	2.1645E+04	-1.9060E+01	1.9980E+04	-1.8276E+01	2.1645E+04	-1.5555E+01	8.9987E+04	-1.0971E+01	5.3837E+05	-3.8693E+00	6.1795E+04
1.9980E+04	-2.0198E+01	2.1645E+04	-1.9098E+01	1.9980E+04	-1.8316E+01	2.1645E+04	-1.5600E+01	8.9987E+04	-1.1034E+01	5.3837E+05	-3.9991E+00	6.1795E+04
1.9980E+04	-2.0234E+01	2.1645E+04	-1.9135E+01	1.9980E+04	-1.8355E+01	2.1645E+04	-1.5646E+01	8.9987E+04	-1.1097E+01	5.3837E+05	-4.1268E+00	6.1795E+04
1.9980E+04	-2.0269E+01	2.1645E+04	-1.9173E+01	1.9980E+04	-1.8394E+01	2.1645E+04	-1.5691E+01	8.9987E+04	-1.1159E+01	5.3837E+05	-4.2525E+00	6.1795E+04
1.9980E+04	-2.0305E+01	2.1645E+04	-1.9210E+01	1.9980E+04	-1.8433E+01	2.1645E+04	-1.5737E+01	8.9987E+04	-1.1221E+01	5.3837E+05	-4.3762E+00	6.1795E+04
1.9980E+04	-2.0340E+01	2.1645E+04	-1.9247E+01	1.9980E+04	-1.8471E+01	2.1645E+04	-1.5782E+01	8.9987E+04	-1.1283E+01	5.3837E+05	-4.4980E+00	6.1795E+04
1.9980E+04	-2.0375E+01	2.1645E+04	-1.9285E+01	1.9980E+04	-1.8510E+01	2.1645E+04	-1.5827E+01	8.9987E+04	-1.1344E+01	5.3837E+05	-4.6181E+00	6.1795E+04
1.9980E+04	-2.0410E+01	2.1645E+04	-1.9322E+01	1.9980E+04	-1.8549E+01	2.1645E+04	-1.5872E+01	8.9987E+04	-1.1405E+01	5.3837E+05	-4.7363E+00	6.1795E+04
1.9980E+04	-2.0446E+01	2.1645E+04	-1.9359E+01	1.9980E+04	-1.8587E+01	2.1645E+04	-1.5917E+01	8.9987E+04	-1.1466E+01	5.3837E+05	-4.8529E+00	6.1795E+04
1.9980E+04	-2.0481E+01	2.1645E+04	-1.9396E+01	1.9980E+04	-1.8626E+01	2.1645E+04	-1.5961E+01	8.9987E+04	-1.1527E+01	5.3837E+05	-4.9679E+00	6.1795E+04
1.9980E+04	-2.0516E+01	2.1645E+04	-1.9433E+01	1.9980E+04	-1.8664E+01	2.1645E+04	-1.6006E+01	8.9987E+04	-1.1587E+01	5.3837E+05	-5.0813E+00	6.1795E+04
1.9980E+04	-2.0551E+01	2.1645E+04	-1.9470E+01	1.9980E+04	-1.8703E+01	2.1645E+04	-1.6051E+01	8.9987E+04	-1.1647E+01	5.3837E+05	-5.1932E+00	6.1795E+04
1.9980E+04	-2.0586E+01	2.1645E+04	-1.9507E+01	1.9980E+04	-1.8741E+01	2.1645E+04	-1.6095E+01	8.9987E+04	-1.1706E+01	5.3837E+05	-5.3036E+00	6.1795E+04
1.9980E+04	-2.0621E+01	2.1645E+04	-1.9543E+01	1.9980E+04	-1.8779E+01	2.1645E+04	-1.6139E+01	8.9987E+04	-1.1766E+01	5.3837E+05	-5.4126E+00	6.1795E+04
1.9980E+04	-2.0655E+01	2.1645E+04	-1.9580E+01	1.9980E+04	-1.8817E+01	2.1645E+04	-1.6183E+01	8.9987E+04	-1.1825E+01	5.3837E+05	-5.5202E+00	6.1795E+04
1.9980E+04	-2.0690E+01	2.1645E+04	-1.9617E+01	1.9980E+04	-1.8856E+01	2.1645E+04	-1.6227E+01	8.9987E+04	-1.1884E+01	5.3837E+05	-5.6265E+00	6.1795E+04
1.9980E+04	-2.0725E+01	2.1645E+04	-1.9653E+01	1.9980E+04	-1.8894E+01	2.1645E+04	-1.6271E+01	8.9987E+04	-1.1942E+01	5.3837E+05	-5.7315E+00	6.1795E+04
1.9980E+04	-2.0760E+01	2.1645E+04	-1.9690E+01	1.9980E+04	-1.8931E+01	2.1645E+04	-1.6315E+01	8.9987E+04	-1.2001E+01	5.3837E+05	-5.8353E+00	6.1795E+04
1.9980E+04	-2.0794E+01	2.1645E+04	-1.9726E+01	1.9980E+04	-1.8969E+01	2.1645E+04	-1.6359E+01	8.9987E+04	-1.2059E+01	5.3837E+05	-5.9379E+00	6.1795E+04
1.9980E+04	-2.0829E+01	2.1645E+04	-1.9763E+01	1.9980E+04	-1.9007E+01	2.1645E+04	-1.6402E+01	8.9987E+04	-1.2117E+01	5.3837E+05	-6.0393E+00	6.1795E+04
1.9980E+04	-2.0863E+01	2.1645E+04	-1.9799E+01	1.9980E+04	-1.9045E+01	2.1645E+04	-1.6446E+01	8.9987E+04	-1.2174E+01	5.3837E+05	-6.1395E+00	6.1795E+04
1.9980E+04	-2.0898E+01	2.1645E+04	-1.9835E+01	1.9980E+04	-1.9082E+01	2.1645E+04	-1.6489E+01	8.9987E+04	-1.2232E+01	5.3837E+05	-6.2387E+00	6.1795E+04
1.9980E+04	-2.0932E+01	2.1645E+04	-1.9871E+01	1.9980E+04	-1.9120E+01	2.1645E+04	-1.6532E+01	8.9987E+04	-1.2289E+01	5.3837E+05	-6.3368E+00	6.1795E+04
1.9980E+04	-2.0966E+01	2.1645E+04	-1.9907E+01	1.9980E+04	-1.9157E+01	2.1645E+04	-1.6575E+01	8.9987E+04	-1.2346E+01	5.3837E+05	-6.4338E+00	6.1795E+04
1.9980E+04	-2.1001E+01	2.1645E+04	-1.9944E+01	1.9980E+04	-1.9195E+01	2.1645E+04	-1.6618E+01	8.9987E+04	-1.2402E+01	5.3837E+05	-6.5298E+00	6.1795E+04
1.9980E+04	-2.1035E+01	2.1645E+04	-1.9979E+01	1.9980E+04	-1.9232E+01	2.1645E+04	-1.6661E+01	8.9987E+04	-1.2459E+01	5.3837E+05	-6.6248E+00	6.1795E+04
1.9980E+04	-2.1069E+01	2.1645E+04	-2.0015E+01	1.9980E+04	-1.9269E+01	2.1645E+04	-1.6704E+01	8.9987E+04	-1.2515E+01	5.3837E+05	-6.7189E+00	6.1795E+04
1.9980E+04	-2.1103E+01	2.1645E+04	-2.0051E+01	1.9980E+04	-1.9307E+01	2.1645E+04	-1.6747E+01	8.9987E+04	-1.2571E+01	5.3837E+05	-6.8120E+00	6.1795E+04
1.9980E+04	-2.1137E+01	2.1645E+04	-2.0087E+01	1.9980E+04	-1.9344E+01	2.1645E+04	-1.6789E+01	8.9987E+04	-1.2626E+01	5.3837E+05	-6.9043E+00	6.1795E+04
1.9980E+04	-2.1171E+01	2.1645E+04	-2.0123E+01	1.9980E+04	-1.9381E+01	2.1645E+04	-1.6832E+01	8.9987E+04	-1.2682E+01	5.3837E+05	-6.9956E+00	6.1795E+04
1.9980E+04	-2.1205E+01	2.1645E+04	-2.0158E+01	1.9980E+04	-1.9418E+01	2.1645E+04	-1.6874E+01	8.9987E+04	-1.2737E+01	5.3837E+05	-7.0860E+00	6.1795E+04

Curve 13	Arg 14	Curve 14	Arg 15	Curve 15	Arg 16	Curve 16	Arg 17	Curve 17	Arg 18	Curve 18	Arg 19	Curve 19
1.9980E+04	-2.1239E+01	2.1645E+04	-2.0194E+01	1.9980E+04	-1.9455E+01	2.1645E+04	-1.6916E+01	8.9987E+04	-1.2792E+01	5.3837E+05	-7.1757E+00	6.1795E+04
1.9980E+04	-2.1273E+01	2.1645E+04	-2.0230E+01	1.9980E+04	-1.9492E+01	2.1645E+04	-1.6959E+01	8.9987E+04	-1.2847E+01	5.3837E+05	-7.2645E+00	6.1795E+04
1.9980E+04	-2.1307E+01	2.1645E+04	-2.0265E+01	1.9980E+04	-1.9528E+01	2.1645E+04	-1.7001E+01	8.9987E+04	-1.2902E+01	5.3837E+05	-7.3524E+00	6.1795E+04
1.9980E+04	-2.1340E+01	2.1645E+04	-2.0300E+01	1.9980E+04	-1.9565E+01	2.1645E+04	-1.7043E+01	8.9987E+04	-1.2956E+01	5.3837E+05	-7.4396E+00	6.1795E+04
1.9980E+04	-2.1374E+01	2.1645E+04	-2.0336E+01	1.9980E+04	-1.9602E+01	2.1645E+04	-1.7085E+01	8.9987E+04	-1.3010E+01	5.3837E+05	-7.5261E+00	6.1795E+04
1.9980E+04	-2.1408E+01	2.1645E+04	-2.0371E+01	1.9980E+04	-1.9638E+01	2.1645E+04	-1.7126E+01	8.9987E+04	-1.3064E+01	5.3837E+05	-7.6118E+00	6.1795E+04
1.9980E+04	-2.1441E+01	2.1645E+04	-2.0406E+01	1.9980E+04	-1.9675E+01	2.1645E+04	-1.7168E+01	8.9987E+04	-1.3118E+01	5.3837E+05	-7.6967E+00	6.1795E+04
1.9980E+04	-2.1475E+01	2.1645E+04	-2.0442E+01	1.9980E+04	-1.9711E+01	2.1645E+04	-1.7210E+01	8.9987E+04	-1.3172E+01	5.3837E+05	-7.7810E+00	6.1795E+04
1.9980E+04	-2.1508E+01	2.1645E+04	-2.0477E+01	1.9980E+04	-1.9748E+01	2.1645E+04	-1.7251E+01	8.9987E+04	-1.3225E+01	5.3837E+05	-7.8645E+00	6.1795E+04
1.9980E+04	-2.1542E+01	2.1645E+04	-2.0512E+01	1.9980E+04	-1.9784E+01	2.1645E+04	-1.7293E+01	8.9987E+04	-1.3278E+01	5.3837E+05	-7.9474E+00	6.1795E+04
1.9980E+04	-2.1575E+01	2.1645E+04	-2.0547E+01	1.9980E+04	-1.9820E+01	2.1645E+04	-1.7334E+01	8.9987E+04	-1.3331E+01	5.3837E+05	-8.0296E+00	6.1795E+04
1.9980E+04	-2.1608E+01	2.1645E+04	-2.0582E+01	1.9980E+04	-1.9857E+01	2.1645E+04	-1.7375E+01	8.9987E+04	-1.3384E+01	5.3837E+05	-8.1111E+00	6.1795E+04
1.9980E+04	-2.1642E+01	2.1645E+04	-2.0617E+01	1.9980E+04	-1.9893E+01	2.1645E+04	-1.7416E+01	8.9987E+04	-1.3436E+01	5.3837E+05	-8.1920E+00	6.1795E+04
1.9980E+04	-2.1675E+01	2.1645E+04	-2.0651E+01	1.9980E+04	-1.9929E+01	2.1645E+04	-1.7457E+01	8.9987E+04	-1.3489E+01	5.3837E+05	-8.2722E+00	6.1795E+04
1.9980E+04	-2.1708E+01	2.1645E+04	-2.0686E+01	1.9980E+04	-1.9965E+01	2.1645E+04	-1.7498E+01	8.9987E+04	-1.3541E+01	5.3837E+05	-8.3519E+00	6.1795E+04
1.9980E+04	-2.1741E+01	2.1645E+04	-2.0721E+01	1.9980E+04	-2.0001E+01	2.1645E+04	-1.7539E+01	8.9987E+04	-1.3593E+01	5.3837E+05	-8.4309E+00	6.1795E+04
1.9980E+04	-2.1774E+01	2.1645E+04	-2.0756E+01	1.9980E+04	-2.0037E+01	2.1645E+04	-1.7580E+01	8.9987E+04	-1.3645E+01	5.3837E+05	-8.5094E+00	6.1795E+04
1.9980E+04	-2.1807E+01	2.1645E+04	-2.0790E+01	1.9980E+04	-2.0072E+01	2.1645E+04	-1.7620E+01	8.9987E+04	-1.3697E+01	5.3837E+05	-8.5873E+00	6.1795E+04
1.9980E+04	-2.1840E+01	2.1645E+04	-2.0825E+01	1.9980E+04	-2.0108E+01	2.1645E+04	-1.7661E+01	8.9987E+04	-1.3748E+01	5.3837E+05	-8.6646E+00	6.1795E+04
1.9980E+04	-2.1873E+01	2.1645E+04	-2.0859E+01	1.9980E+04	-2.0144E+01	2.1645E+04	-1.7701E+01	8.9987E+04	-1.3799E+01	5.3837E+05	-8.7414E+00	6.1795E+04
1.9980E+04	-2.1906E+01	2.1645E+04	-2.0894E+01	1.9980E+04	-2.0179E+01	2.1645E+04	-1.7742E+01	8.9987E+04	-1.3851E+01	5.3837E+05	-8.8176E+00	6.1795E+04
1.9980E+04	-2.1939E+01	2.1645E+04	-2.0928E+01	1.9980E+04	-2.0215E+01	2.1645E+04	-1.7782E+01	8.9987E+04	-1.3901E+01	5.3837E+05	-8.8932E+00	6.1795E+04
1.9980E+04	-2.1971E+01	2.1645E+04	-2.0962E+01	1.9980E+04	-2.0251E+01	2.1645E+04	-1.7822E+01	8.9987E+04	-1.3952E+01	5.3837E+05	-8.9684E+00	6.1795E+04
1.9980E+04	-2.2004E+01	2.1645E+04	-2.0997E+01	1.9980E+04	-2.0286E+01	2.1645E+04	-1.7862E+01	8.9987E+04	-1.4003E+01	5.3837E+05	-9.0430E+00	6.1795E+04
1.9980E+04	-2.2037E+01	2.1645E+04	-2.1031E+01	1.9980E+04	-2.0321E+01	2.1645E+04	-1.7902E+01	8.9987E+04	-1.4053E+01	5.3837E+05	-9.1172E+00	6.1795E+04
1.9980E+04	-2.2070E+01	2.1645E+04	-2.1065E+01	1.9980E+04	-2.0357E+01	2.1645E+04	-1.7942E+01	8.9987E+04	-1.4104E+01	5.3837E+05	-9.1908E+00	6.1795E+04
1.9980E+04	-2.2102E+01	2.1645E+04	-2.1099E+01	1.9980E+04	-2.0392E+01	2.1645E+04	-1.7982E+01	8.9987E+04	-1.4154E+01	5.3837E+05	-9.2640E+00	6.1795E+04
1.9980E+04	-2.2135E+01	2.1645E+04	-2.1133E+01	1.9980E+04	-2.0427E+01	2.1645E+04	-1.8022E+01	8.9987E+04	-1.4204E+01	5.3837E+05	-9.3367E+00	6.1795E+04
1.9980E+04	-2.2167E+01	2.1645E+04	-2.1167E+01	1.9980E+04	-2.0462E+01	2.1645E+04	-1.8062E+01	8.9987E+04	-1.4253E+01	5.3837E+05	-9.4089E+00	6.1795E+04
1.9980E+04	-2.2200E+01	2.1645E+04	-2.1201E+01	1.9980E+04	-2.0497E+01	2.1645E+04	-1.8101E+01	8.9987E+04	-1.4303E+01	5.3837E+05	-9.4806E+00	6.1795E+04
1.9980E+04	-2.2232E+01	2.1645E+04	-2.1235E+01	1.9980E+04	-2.0532E+01	2.1645E+04	-1.8141E+01	8.9987E+04	-1.4352E+01	5.3837E+05	-9.5519E+00	6.1795E+04
1.9980E+04	-2.2264E+01	2.1645E+04	-2.1269E+01	1.9980E+04	-2.0567E+01	2.1645E+04	-1.8180E+01	8.9987E+04	-1.4402E+01	5.3837E+05	-9.6227E+00	6.1795E+04
1.9980E+04	-2.2297E+01	2.1645E+04	-2.1303E+01	1.9980E+04	-2.0602E+01	2.1645E+04	-1.8220E+01	8.9987E+04	-1.4451E+01	5.3837E+05	-9.6932E+00	6.1795E+04
1.9980E+04	-2.2329E+01	2.1645E+04	-2.1336E+01	1.9980E+04	-2.0637E+01	2.1645E+04	-1.8259E+01	8.9987E+04	-1.4500E+01	5.3837E+05	-9.7631E+00	6.1795E+04
1.9980E+04	-2.2361E+01	2.1645E+04	-2.1370E+01	1.9980E+04	-2.0672E+01	2.1645E+04	-1.8298E+01	8.9987E+04	-1.4549E+01	5.3837E+05	-9.8327E+00	6.1795E+04
1.9980E+04	-2.2393E+01	2.1645E+04	-2.1404E+01	1.9980E+04	-2.0707E+01	2.1645E+04	-1.8337E+01	8.9987E+04	-1.4597E+01	5.3837E+05	-9.9018E+00	6.1795E+04
1.9980E+04	-2.2425E+01	2.1645E+04	-2.1437E+01	1.9980E+04	-2.0741E+01	2.1645E+04	-1.8376E+01	8.9987E+04	-1.4646E+01	5.3837E+05	-9.9706E+00	6.1795E+04
1.9980E+04	-2.2457E+01	2.1645E+04	-2.1471E+01	1.9980E+04	-2.0776E+01	2.1645E+04	-1.8415E+01	8.9987E+04	-1.4694E+01	5.3837E+05	-1.0039E+01	6.1795E+04
1.9980E+04	-2.2490E+01	2.1645E+04	-2.1504E+01	1.9980E+04	-2.0811E+01	2.1645E+04	-1.8454E+01	8.9987E+04	-1.4742E+01	5.3837E+05	-1.0107E+01	6.1795E+04
1.9980E+04	-2.2522E+01	2.1645E+04	-2.1538E+01	1.9980E+04	-2.0845E+01	2.1645E+04	-1.8493E+01	8.9987E+04	-1.4790E+01	5.3837E+05	-1.0174E+01	6.1795E+04
1.9980E+04	-2.2553E+01	2.1645E+04	-2.1571E+01	1.9980E+04	-2.0880E+01	2.1645E+04	-1.8532E+01	8.9987E+04	-1.4838E+01	5.3837E+05	-1.0242E+01	6.1795E+04
1.9980E+04	-2.2585E+01	2.1645E+04	-2.1604E+01	1.9980E+04	-2.0914E+01	2.1645E+04	-1.8570E+01	8.9987E+04	-1.4886E+01	5.3837E+05	-1.0308E+01	6.1795E+04
1.9980E+04	-2.2617E+01	2.1645E+04	-2.1638E+01	1.9980E+04	-2.0948E+01	2.1645E+04	-1.8609E+01	8.9987E+04	-1.4934E+01	5.3837E+05	-1.0375E+01	6.1795E+04
1.9980E+04	-2.2649E+01	2.1645E+04	-2.1671E+01	1.9980E+04	-2.0983E+01	2.1645E+04	-1.8647E+01	8.9987E+04	-1.4981E+01	5.3837E+05	-1.0441E+01	6.1795E+04
1.9980E+04	-2.2681E+01	2.1645E+04	-2.1704E+01	1.9980E+04	-2.1017E+01	2.1645E+04	-1.8686E+01	8.9987E+04	-1.5029E+01	5.3837E+05	-1.0506E+01	6.1795E+04
1.9980E+04	-2.2713E+01	2.1645E+04	-2.1737E+01	1.9980E+04	-2.1051E+01	2.1645E+04	-1.8724E+01	8.9987E+04	-1.5076E+01	5.3837E+05	-1.0572E+01	6.1795E+04
1.9980E+04	-2.2744E+01	2.1645E+04	-2.1770E+01	1.9980E+04	-2.1085E+01	2.1645E+04	-1.8762E+01	8.9987E+04	-1.5123E+01	5.3837E+05	-1.0637E+01	6.1795E+04
1.9980E+04	-2.2776E+01	2.1645E+04	-2.1803E+01	1.9980E+04	-2.1119E+01	2.1645E+04	-1.8800E+01	8.9987E+04	-1.5170E+01	5.3837E+05	-1.0701E+01	6.1795E+04
1.9980E+04	-2.2807E+01	2.1645E+04	-2.1836E+01	1.9980E+04	-2.1153E+01	2.1645E+04	-1.8839E+01	8.9987E+04	-1.5217E+01	5.3837E+05	-1.0766E+01	6.1795E+04
1.9980E+04	-2.2839E+01	2.1645E+04	-2.1869E+01	1.9980E+04	-2.1187E+01	2.1645E+04	-1.8877E+01	8.9987E+04	-1.5263E+01	5.3837E+05	-1.0830E+01	6.1795E+04
1.9980E+04	-2.2870E+01	2.1645E+04	-2.1902E+01	1.9980E+04	-2.1221E+01	2.1645E+04	-1.8915E+01	8.9987E+04	-1.5310E+01	5.3837E+05	-1.0893E+01	6.1795E+04
1.9980E+04	-2.2902E+01	2.1645E+04	-2.1935E+01	1.9980E+04	-2.1255E+01	2.1645E+04	-1.8952E+01	8.9987E+04	-1.5356E+01	5.3837E+05	-1.0957E+01	6.1795E+04

Curve 13	Arg 14	Curve 14	Arg 15	Curve 15	Arg 16	Curve 16	Arg 17	Curve 17	Arg 18	Curve 18	Arg 19	Curve 19
1.9980E+04	-2.2933E+01	2.1645E+04	-2.1968E+01	1.9980E+04	-2.1289E+01	2.1645E+04	-1.8990E+01	8.9987E+04	-1.5402E+01	5.3837E+05	-1.1020E+01	6.1795E+04
1.9980E+04	-2.2965E+01	2.1645E+04	-2.2000E+01	1.9980E+04	-2.1323E+01	2.1645E+04	-1.9028E+01	8.9987E+04	-1.5449E+01	5.3837E+05	-1.1082E+01	6.1795E+04
1.9980E+04	-2.2996E+01	2.1645E+04	-2.2033E+01	1.9980E+04	-2.1356E+01	2.1645E+04	-1.9066E+01	8.9987E+04	-1.5495E+01	5.3837E+05	-1.1145E+01	6.1795E+04
1.9980E+04	-2.3027E+01	2.1645E+04	-2.2066E+01	1.9980E+04	-2.1390E+01	2.1645E+04	-1.9103E+01	8.9987E+04	-1.5540E+01	5.3837E+05	-1.1207E+01	6.1795E+04
1.9980E+04	-2.3059E+01	2.1645E+04	-2.2098E+01	1.9980E+04	-2.1424E+01	2.1645E+04	-1.9141E+01	8.9987E+04	-1.5586E+01	5.3837E+05	-1.1268E+01	6.1795E+04
1.9980E+04	-2.3090E+01	2.1645E+04	-2.2131E+01	1.9980E+04	-2.1457E+01	2.1645E+04	-1.9178E+01	8.9987E+04	-1.5632E+01	5.3837E+05	-1.1330E+01	6.1795E+04
1.9980E+04	-2.3121E+01	2.1645E+04	-2.2163E+01	1.9980E+04	-2.1491E+01	2.1645E+04	-1.9216E+01	8.9987E+04	-1.5677E+01	5.3837E+05	-1.1391E+01	6.1795E+04
1.9980E+04	-2.3152E+01	2.1645E+04	-2.2196E+01	1.9980E+04	-2.1524E+01	2.1645E+04	-1.9253E+01	8.9987E+04	-1.5723E+01	5.3837E+05	-1.1452E+01	6.1795E+04
1.9980E+04	-2.3183E+01	2.1645E+04	-2.2228E+01	1.9980E+04	-2.1557E+01	2.1645E+04	-1.9290E+01	8.9987E+04	-1.5768E+01	5.3837E+05	-1.1512E+01	6.1795E+04
1.9980E+04	-2.3214E+01	2.1645E+04	-2.2261E+01	1.9980E+04	-2.1591E+01	2.1645E+04	-1.9327E+01	8.9987E+04	-1.5813E+01	5.3837E+05	-1.1573E+01	6.1795E+04
1.9980E+04	-2.3245E+01	2.1645E+04	-2.2293E+01	1.9980E+04	-2.1624E+01	2.1645E+04	-1.9364E+01	8.9987E+04	-1.5858E+01	5.3837E+05	-1.1633E+01	6.1795E+04
1.9980E+04	-2.3276E+01	2.1645E+04	-2.2325E+01	1.9980E+04	-2.1657E+01	2.1645E+04	-1.9401E+01	8.9987E+04	-1.5903E+01	5.3837E+05	-1.1692E+01	6.1795E+04
1.9980E+04	-2.3307E+01	2.1645E+04	-2.2357E+01	1.9980E+04	-2.1690E+01	2.1645E+04	-1.9438E+01	8.9987E+04	-1.5948E+01	5.3837E+05	-1.1752E+01	6.1795E+04
1.9980E+04	-2.3338E+01	2.1645E+04	-2.2390E+01	1.9980E+04	-2.1724E+01	2.1645E+04	-1.9475E+01	8.9987E+04	-1.5992E+01	5.3837E+05	-1.1811E+01	6.1795E+04
1.9980E+04	-2.3369E+01	2.1645E+04	-2.2422E+01	1.9980E+04	-2.1757E+01	2.1645E+04	-1.9512E+01	8.9987E+04	-1.6037E+01	5.3837E+05	-1.1870E+01	6.1795E+04
1.9980E+04	-2.3400E+01	2.1645E+04	-2.2454E+01	1.9980E+04	-2.1790E+01	2.1645E+04	-1.9549E+01	8.9987E+04	-1.6081E+01	5.3837E+05	-1.1929E+01	6.1795E+04
1.9980E+04	-2.3430E+01	2.1645E+04	-2.2486E+01	1.9980E+04	-2.1823E+01	2.1645E+04	-1.9585E+01	8.9987E+04	-1.6125E+01	5.3837E+05	-1.1987E+01	6.1795E+04
1.9980E+04	-2.3461E+01	2.1645E+04	-2.2518E+01	1.9980E+04	-2.1856E+01	2.1645E+04	-1.9622E+01	8.9987E+04	-1.6170E+01	5.3837E+05	-1.2045E+01	6.1795E+04
1.9980E+04	-2.3492E+01	2.1645E+04	-2.2550E+01	1.9980E+04	-2.1889E+01	2.1645E+04	-1.9659E+01	8.9987E+04	-1.6214E+01	5.3837E+05	-1.2103E+01	6.1795E+04
1.9980E+04	-2.3523E+01	2.1645E+04	-2.2582E+01	1.9980E+04	-2.1921E+01	2.1645E+04	-1.9695E+01	8.9987E+04	-1.6258E+01	5.3837E+05	-1.2161E+01	6.1795E+04
1.9980E+04	-2.3553E+01	2.1645E+04	-2.2614E+01	1.9980E+04	-2.1954E+01	2.1645E+04	-1.9732E+01	8.9987E+04	-1.6301E+01	5.3837E+05	-1.2218E+01	6.1795E+04
1.9980E+04	-2.3584E+01	2.1645E+04	-2.2645E+01	1.9980E+04	-2.1987E+01	2.1645E+04	-1.9768E+01	8.9987E+04	-1.6345E+01	5.3837E+05	-1.2275E+01	6.1795E+04
1.9980E+04	-2.3614E+01	2.1645E+04	-2.2677E+01	1.9980E+04	-2.2020E+01	2.1645E+04	-1.9804E+01	8.9987E+04	-1.6389E+01	5.3837E+05	-1.2332E+01	6.1795E+04
1.9980E+04	-2.3645E+01	2.1645E+04	-2.2709E+01	1.9980E+04	-2.2052E+01	2.1645E+04	-1.9840E+01	8.9987E+04	-1.6432E+01	5.3837E+05	-1.2389E+01	6.1795E+04
1.9980E+04	-2.3675E+01	2.1645E+04	-2.2741E+01	1.9980E+04	-2.2085E+01	2.1645E+04	-1.9877E+01	8.9987E+04	-1.6475E+01	5.3837E+05	-1.2445E+01	6.1795E+04
1.9980E+04	-2.3706E+01	2.1645E+04	-2.2772E+01	1.9980E+04	-2.2118E+01	2.1645E+04	-1.9913E+01	8.9987E+04	-1.6519E+01	5.3837E+05	-1.2502E+01	6.1795E+04
1.9980E+04	-2.3736E+01	2.1645E+04	-2.2804E+01	1.9980E+04	-2.2150E+01	2.1645E+04	-1.9949E+01	8.9987E+04	-1.6562E+01	5.3837E+05	-1.2558E+01	6.1795E+04
1.9980E+04	-2.3766E+01	2.1645E+04	-2.2835E+01	1.9980E+04	-2.2183E+01	2.1645E+04	-1.9985E+01	8.9987E+04	-1.6605E+01	5.3837E+05	-1.2613E+01	6.1795E+04
1.9980E+04	-2.3797E+01	2.1645E+04	-2.2867E+01	1.9980E+04	-2.2215E+01	2.1645E+04	-2.0021E+01	8.9987E+04	-1.6648E+01	5.3837E+05	-1.2669E+01	6.1795E+04
1.9980E+04	-2.3827E+01	2.1645E+04	-2.2898E+01	1.9980E+04	-2.2247E+01	2.1645E+04	-2.0056E+01	8.9987E+04	-1.6691E+01	5.3837E+05	-1.2724E+01	6.1795E+04
1.9980E+04	-2.3857E+01	2.1645E+04	-2.2930E+01	1.9980E+04	-2.2280E+01	2.1645E+04	-2.0092E+01	8.9987E+04	-1.6733E+01	5.3837E+05	-1.2779E+01	6.1795E+04
1.9980E+04	-2.3887E+01	2.1645E+04	-2.2961E+01	1.9980E+04	-2.2312E+01	2.1645E+04	-2.0128E+01	8.9987E+04	-1.6776E+01	5.3837E+05	-1.2834E+01	6.1795E+04
1.9980E+04	-2.3917E+01	2.1645E+04	-2.2992E+01	1.9980E+04	-2.2344E+01	2.1645E+04	-2.0164E+01	8.9987E+04	-1.6819E+01	5.3837E+05	-1.2889E+01	6.1795E+04

Soil Parameters	
Kd (mL/g)	30
Moisture content	0.2
Erosion Rate (0.2 kg/sq m-yr)	0.2
Bulk Density (g/cc)	1.5
Over watering Rate (m/yr)	0.079
Affected Depth (m)	0.25
Lamda effective (1/yr)	0.007524484

Intake (mg/kg body wt./day) Soil

Flux Out (gm/yr)	No Recycle	Recycle	0.86 Concentration (gm/sq m)
0.0000E+00	0.0000E+00	0.0000E+00	0.00E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.00E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.00E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.00E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.00E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.00E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.00E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.00E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.00E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.00E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.00E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.00E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.00E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.00E+00
1.2949E-10	1.7831E-19	1.3111E-18	4.82E-16
5.6277E-08	7.7494E-17	5.6981E-16	2.09E-13
8.4003E-06	1.1567E-14	8.5053E-14	3.13E-11
5.3894E-04	7.4213E-13	5.4568E-12	2.01E-09
1.7484E-02	2.4076E-11	1.7703E-10	6.51E-08
3.2447E-01	4.4680E-10	3.2853E-09	1.21E-06
3.7901E+00	5.2191E-09	3.8375E-08	1.41E-05
3.0047E+01	4.1375E-08	3.0423E-07	1.12E-04
1.7173E+02	2.3648E-07	1.7388E-06	6.39E-04
7.4338E+02	1.0236E-06	7.5268E-06	2.77E-03
2.5382E+03	3.4951E-06	2.5699E-05	9.44E-03
7.0722E+03	9.7385E-06	7.1607E-05	2.63E-02
1.6552E+04	2.2792E-05	1.6759E-04	6.16E-02
3.3356E+04	4.5932E-05	3.3774E-04	1.24E-01
5.9149E+04	8.1449E-05	5.9889E-04	2.20E-01
9.4071E+04	1.2954E-04	9.5247E-04	3.50E-01
1.3649E+05	1.8794E-04	1.3819E-03	5.08E-01
1.8342E+05	2.5257E-04	1.8571E-03	6.82E-01
2.3142E+05	3.1867E-04	2.3431E-03	8.61E-01
2.7742E+05	3.8201E-04	2.8089E-03	1.03E+00
3.1929E+05	4.3966E-04	3.2328E-03	1.19E+00
3.5593E+05	4.9012E-04	3.6038E-03	1.32E+00
3.8717E+05	5.3313E-04	3.9201E-03	1.44E+00
4.1332E+05	5.6915E-04	4.1849E-03	1.54E+00
4.3496E+05	5.9895E-04	4.4040E-03	1.62E+00
4.5270E+05	6.2336E-04	4.5836E-03	1.68E+00
4.6712E+05	6.4323E-04	4.7296E-03	1.74E+00
4.7889E+05	6.5944E-04	4.8488E-03	1.78E+00
4.8868E+05	6.7292E-04	4.9480E-03	1.82E+00
4.9715E+05	6.8458E-04	5.0337E-03	1.85E+00
5.0480E+05	6.9511E-04	5.1111E-03	1.88E+00
5.1191E+05	7.0490E-04	5.1831E-03	1.90E+00
5.1858E+05	7.1408E-04	5.2506E-03	1.93E+00
5.2479E+05	7.2264E-04	5.3135E-03	1.95E+00
5.3054E+05	7.3056E-04	5.3718E-03	1.97E+00
5.3590E+05	7.3794E-04	5.4261E-03	1.99E+00
5.4098E+05	7.4493E-04	5.4774E-03	2.01E+00
5.4589E+05	7.5170E-04	5.5272E-03	2.03E+00

Flux Out (gm/yr)	No Recycle	Recycle	0.86 Concentration (gm/sq m)
5.5076E+05	7.5840E-04	5.5765E-03	2.05E+00
5.5562E+05	7.6509E-04	5.6257E-03	2.07E+00
5.6044E+05	7.7173E-04	5.6745E-03	2.09E+00
5.6510E+05	7.7814E-04	5.7216E-03	2.10E+00
5.6944E+05	7.8412E-04	5.7656E-03	2.12E+00
5.7337E+05	7.8953E-04	5.8054E-03	2.13E+00
5.7690E+05	7.9439E-04	5.8411E-03	2.15E+00
5.8016E+05	7.9888E-04	5.8741E-03	2.16E+00
5.8332E+05	8.0324E-04	5.9061E-03	2.17E+00
5.8649E+05	8.0760E-04	5.9382E-03	2.18E+00
5.8964E+05	8.1193E-04	5.9701E-03	2.19E+00
5.9264E+05	8.1608E-04	6.0006E-03	2.21E+00
5.9534E+05	8.1979E-04	6.0279E-03	2.22E+00
5.9759E+05	8.2289E-04	6.0507E-03	2.22E+00
5.9934E+05	8.2530E-04	6.0684E-03	2.23E+00
6.0061E+05	8.2704E-04	6.0812E-03	2.23E+00
6.0147E+05	8.2822E-04	6.0899E-03	2.24E+00
6.0201E+05	8.2898E-04	6.0954E-03	2.24E+00
6.0235E+05	8.2944E-04	6.0988E-03	2.24E+00
6.0257E+05	8.2974E-04	6.1010E-03	2.24E+00
6.0278E+05	8.3004E-04	6.1032E-03	2.24E+00
6.0313E+05	8.3052E-04	6.1068E-03	2.24E+00
6.0381E+05	8.3145E-04	6.1136E-03	2.25E+00
6.0498E+05	8.3307E-04	6.1255E-03	2.25E+00
6.0676E+05	8.3552E-04	6.1435E-03	2.26E+00
6.0911E+05	8.3874E-04	6.1672E-03	2.27E+00
6.1181E+05	8.4247E-04	6.1946E-03	2.28E+00
6.1461E+05	8.4632E-04	6.2229E-03	2.29E+00
6.1720E+05	8.4989E-04	6.2492E-03	2.30E+00
6.1940E+05	8.5292E-04	6.2714E-03	2.30E+00
6.2111E+05	8.5527E-04	6.2888E-03	2.31E+00
6.2234E+05	8.5697E-04	6.3013E-03	2.32E+00
6.2317E+05	8.5811E-04	6.3097E-03	2.32E+00
6.2370E+05	8.5884E-04	6.3150E-03	2.32E+00
6.2401E+05	8.5927E-04	6.3181E-03	2.32E+00
6.2419E+05	8.5951E-04	6.3199E-03	2.32E+00
6.2428E+05	8.5964E-04	6.3209E-03	2.32E+00
6.2433E+05	8.5971E-04	6.3214E-03	2.32E+00
6.2436E+05	8.5974E-04	6.3216E-03	2.32E+00
6.2437E+05	8.5976E-04	6.3218E-03	2.32E+00
6.2437E+05	8.5977E-04	6.3218E-03	2.32E+00
6.2438E+05	8.5977E-04	6.3218E-03	2.32E+00
6.2438E+05	8.5977E-04	6.3219E-03	2.32E+00
6.2438E+05	8.5977E-04	6.3219E-03	2.32E+00
6.2438E+05	8.5977E-04	6.3219E-03	2.32E+00
6.2438E+05	8.5977E-04	6.3219E-03	2.32E+00
6.2438E+05	8.5977E-04	6.3219E-03	2.32E+00
6.2438E+05	8.5977E-04	6.3219E-03	2.32E+00
6.2438E+05	8.5978E-04	6.3219E-03	2.32E+00
6.2441E+05	8.5982E-04	6.3222E-03	2.32E+00
6.2450E+05	8.5994E-04	6.3231E-03	2.32E+00
6.2475E+05	8.6028E-04	6.3256E-03	2.32E+00

Flux Out (gm/yr)	No Recycle	Recycle	0.86 Concentration (gm/sq m)
6.2530E+05	8.6104E-04	6.3312E-03	2.33E+00
6.2631E+05	8.6244E-04	6.3415E-03	2.33E+00
6.2789E+05	8.6461E-04	6.3574E-03	2.34E+00
6.2999E+05	8.6750E-04	6.3787E-03	2.34E+00
6.3246E+05	8.7091E-04	6.4037E-03	2.35E+00
6.3505E+05	8.7446E-04	6.4299E-03	2.36E+00
6.3747E+05	8.7781E-04	6.4545E-03	2.37E+00
6.3955E+05	8.8067E-04	6.4755E-03	2.38E+00
6.4118E+05	8.8291E-04	6.4920E-03	2.39E+00
6.4237E+05	8.8455E-04	6.5040E-03	2.39E+00
6.4317E+05	8.8566E-04	6.5122E-03	2.39E+00
6.4369E+05	8.8636E-04	6.5174E-03	2.39E+00
6.4399E+05	8.8678E-04	6.5205E-03	2.40E+00
6.4417E+05	8.8702E-04	6.5222E-03	2.40E+00
6.4426E+05	8.8716E-04	6.5232E-03	2.40E+00
6.4431E+05	8.8722E-04	6.5237E-03	2.40E+00
6.4434E+05	8.8726E-04	6.5240E-03	2.40E+00
6.4437E+05	8.8730E-04	6.5243E-03	2.40E+00
6.4443E+05	8.8739E-04	6.5249E-03	2.40E+00
6.4462E+05	8.8764E-04	6.5268E-03	2.40E+00
6.4506E+05	8.8825E-04	6.5313E-03	2.40E+00
6.4594E+05	8.8946E-04	6.5401E-03	2.40E+00
6.4739E+05	8.9146E-04	6.5548E-03	2.41E+00
6.4944E+05	8.9429E-04	6.5757E-03	2.42E+00
6.5199E+05	8.9779E-04	6.6014E-03	2.43E+00
6.5477E+05	9.0163E-04	6.6296E-03	2.44E+00
6.5750E+05	9.0539E-04	6.6573E-03	2.45E+00
6.5993E+05	9.0872E-04	6.6818E-03	2.46E+00
6.6190E+05	9.1144E-04	6.7018E-03	2.46E+00
6.6338E+05	9.1347E-04	6.7167E-03	2.47E+00
6.6441E+05	9.1489E-04	6.7272E-03	2.47E+00
6.6508E+05	9.1582E-04	6.7340E-03	2.47E+00
6.6549E+05	9.1639E-04	6.7382E-03	2.48E+00
6.6573E+05	9.1672E-04	6.7406E-03	2.48E+00
6.6587E+05	9.1690E-04	6.7419E-03	2.48E+00
6.6594E+05	9.1700E-04	6.7426E-03	2.48E+00
6.6597E+05	9.1705E-04	6.7430E-03	2.48E+00
6.6599E+05	9.1707E-04	6.7432E-03	2.48E+00
6.6600E+05	9.1708E-04	6.7433E-03	2.48E+00
6.6600E+05	9.1709E-04	6.7433E-03	2.48E+00
6.6600E+05	9.1709E-04	6.7433E-03	2.48E+00
6.6600E+05	9.1709E-04	6.7433E-03	2.48E+00
6.6600E+05	9.1709E-04	6.7433E-03	2.48E+00
6.6600E+05	9.1709E-04	6.7433E-03	2.48E+00
6.6600E+05	9.1709E-04	6.7433E-03	2.48E+00
6.6600E+05	9.1709E-04	6.7433E-03	2.48E+00
6.6600E+05	9.1709E-04	6.7433E-03	2.48E+00
6.6600E+05	9.1709E-04	6.7433E-03	2.48E+00
6.6600E+05	9.1709E-04	6.7433E-03	2.48E+00
6.6600E+05	9.1709E-04	6.7433E-03	2.48E+00

Flux Out (gm/yr)	No Recycle	Recycle	0.86 Concentration (gm/sq m)
6.6600E+05	9.1709E-04	6.7433E-03	2.48E+00
6.6600E+05	9.1709E-04	6.7433E-03	2.48E+00
6.6600E+05	9.1709E-04	6.7433E-03	2.48E+00
6.6600E+05	9.1709E-04	6.7433E-03	2.48E+00
6.6600E+05	9.1709E-04	6.7433E-03	2.48E+00
6.6600E+05	9.1709E-04	6.7433E-03	2.48E+00
6.6600E+05	9.1709E-04	6.7433E-03	2.48E+00
6.6600E+05	9.1709E-04	6.7433E-03	2.48E+00
6.6600E+05	9.1709E-04	6.7433E-03	2.48E+00
6.6600E+05	9.1709E-04	6.7433E-03	2.48E+00
6.6600E+05	9.1709E-04	6.7433E-03	2.48E+00
6.6600E+05	9.1709E-04	6.7433E-03	2.48E+00
6.6600E+05	9.1709E-04	6.7433E-03	2.48E+00
6.6600E+05	9.1709E-04	6.7433E-03	2.48E+00
6.6600E+05	9.1709E-04	6.7433E-03	2.48E+00
6.6600E+05	9.1709E-04	6.7433E-03	2.48E+00
6.6600E+05	9.1709E-04	6.7433E-03	2.48E+00
6.6600E+05	9.1709E-04	6.7433E-03	2.48E+00
6.6600E+05	9.1709E-04	6.7433E-03	2.48E+00
6.6600E+05	9.1709E-04	6.7433E-03	2.48E+00
6.6600E+05	9.1709E-04	6.7433E-03	2.48E+00
6.6600E+05	9.1709E-04	6.7433E-03	2.48E+00
6.6600E+05	9.1709E-04	6.7433E-03	2.48E+00
6.6600E+05	9.1709E-04	6.7433E-03	2.48E+00
6.6600E+05	9.1709E-04	6.7433E-03	2.48E+00
6.6600E+05	9.1709E-04	6.7433E-03	2.48E+00
6.6601E+05	9.1710E-04	6.7434E-03	2.48E+00
6.6604E+05	9.1714E-04	6.7437E-03	2.48E+00
6.6618E+05	9.1734E-04	6.7451E-03	2.48E+00
6.6666E+05	9.1799E-04	6.7500E-03	2.48E+00
6.6793E+05	9.1975E-04	6.7629E-03	2.49E+00
6.7068E+05	9.2353E-04	6.7907E-03	2.50E+00
6.7559E+05	9.3029E-04	6.8404E-03	2.51E+00
6.8304E+05	9.4056E-04	6.9159E-03	2.54E+00
6.9283E+05	9.5403E-04	7.0149E-03	2.58E+00
7.0411E+05	9.6956E-04	7.1291E-03	2.62E+00
7.1570E+05	9.8553E-04	7.2465E-03	2.66E+00
7.2645E+05	1.0003E-03	7.3554E-03	2.70E+00
7.3553E+05	1.0128E-03	7.4473E-03	2.74E+00
7.4258E+05	1.0225E-03	7.5187E-03	2.76E+00
7.4765E+05	1.0295E-03	7.5700E-03	2.78E+00
7.5106E+05	1.0342E-03	7.6045E-03	2.79E+00
7.5321E+05	1.0372E-03	7.6263E-03	2.80E+00
7.5449E+05	1.0389E-03	7.6393E-03	2.81E+00
7.5522E+05	1.0399E-03	7.6466E-03	2.81E+00
7.5561E+05	1.0405E-03	7.6505E-03	2.81E+00
7.5581E+05	1.0408E-03	7.6526E-03	2.81E+00
7.5590E+05	1.0409E-03	7.6536E-03	2.81E+00
7.5595E+05	1.0410E-03	7.6541E-03	2.81E+00
7.5597E+05	1.0410E-03	7.6543E-03	2.81E+00

Flux Out (gm/yr)	No Recycle	Recycle	0.86 Concentration (gm/sq m)
7.5598E+05	1.0410E-03	7.6544E-03	2.81E+00
7.5599E+05	1.0410E-03	7.6544E-03	2.81E+00
7.5599E+05	1.0410E-03	7.6544E-03	2.81E+00
7.5599E+05	1.0410E-03	7.6544E-03	2.81E+00
7.5599E+05	1.0410E-03	7.6544E-03	2.81E+00
7.5599E+05	1.0410E-03	7.6544E-03	2.81E+00
7.5599E+05	1.0410E-03	7.6544E-03	2.81E+00
7.5599E+05	1.0410E-03	7.6544E-03	2.81E+00
7.5599E+05	1.0410E-03	7.6544E-03	2.81E+00
7.5599E+05	1.0410E-03	7.6544E-03	2.81E+00
7.5599E+05	1.0410E-03	7.6544E-03	2.81E+00
7.5599E+05	1.0410E-03	7.6544E-03	2.81E+00
7.5599E+05	1.0410E-03	7.6544E-03	2.81E+00
7.5599E+05	1.0410E-03	7.6544E-03	2.81E+00
7.5599E+05	1.0410E-03	7.6544E-03	2.81E+00
7.5599E+05	1.0410E-03	7.6544E-03	2.81E+00
7.5599E+05	1.0410E-03	7.6544E-03	2.81E+00
7.5599E+05	1.0410E-03	7.6544E-03	2.81E+00
7.5599E+05	1.0410E-03	7.6544E-03	2.81E+00
7.5599E+05	1.0410E-03	7.6544E-03	2.81E+00
7.5599E+05	1.0410E-03	7.6544E-03	2.81E+00
7.5599E+05	1.0410E-03	7.6544E-03	2.81E+00
7.5599E+05	1.0410E-03	7.6544E-03	2.81E+00
7.5599E+05	1.0410E-03	7.6544E-03	2.81E+00
7.5599E+05	1.0410E-03	7.6544E-03	2.81E+00
7.5599E+05	1.0410E-03	7.6544E-03	2.81E+00
7.5599E+05	1.0410E-03	7.6544E-03	2.81E+00
7.5599E+05	1.0410E-03	7.6544E-03	2.81E+00
7.5599E+05	1.0410E-03	7.6544E-03	2.81E+00
7.5599E+05	1.0410E-03	7.6544E-03	2.81E+00
7.5599E+05	1.0410E-03	7.6544E-03	2.81E+00
7.5599E+05	1.0410E-03	7.6544E-03	2.81E+00
7.5599E+05	1.0410E-03	7.6544E-03	2.81E+00
7.5599E+05	1.0410E-03	7.6544E-03	2.81E+00
7.5599E+05	1.0410E-03	7.6544E-03	2.81E+00
7.5599E+05	1.0410E-03	7.6544E-03	2.81E+00
7.5599E+05	1.0410E-03	7.6544E-03	2.81E+00
7.5599E+05	1.0410E-03	7.6544E-03	2.81E+00
7.5599E+05	1.0410E-03	7.6544E-03	2.81E+00
7.5599E+05	1.0410E-03	7.6544E-03	2.81E+00
7.5599E+05	1.0410E-03	7.6544E-03	2.81E+00
7.5599E+05	1.0410E-03	7.6544E-03	2.81E+00
7.5599E+05	1.0410E-03	7.6544E-03	2.81E+00
7.5599E+05	1.0410E-03	7.6544E-03	2.81E+00
7.5599E+05	1.0410E-03	7.6544E-03	2.81E+00
7.5599E+05	1.0410E-03	7.6544E-03	2.81E+00
7.5599E+05	1.0410E-03	7.6544E-03	2.81E+00
7.5599E+05	1.0410E-03	7.6544E-03	2.81E+00
7.5599E+05	1.0410E-03	7.6544E-03	2.81E+00

Flux Out (gm/yr)	No Recycle	Recycle	0.86 Concentration (gm/sq m)
7.5599E+05	1.0410E-03	7.6544E-03	2.81E+00
7.5599E+05	1.0410E-03	7.6544E-03	2.81E+00
7.5599E+05	1.0410E-03	7.6544E-03	2.81E+00
7.5599E+05	1.0410E-03	7.6544E-03	2.81E+00
7.5599E+05	1.0410E-03	7.6544E-03	2.81E+00
7.5599E+05	1.0410E-03	7.6544E-03	2.81E+00
7.5599E+05	1.0410E-03	7.6544E-03	2.81E+00
7.5599E+05	1.0410E-03	7.6544E-03	2.81E+00
7.5599E+05	1.0410E-03	7.6544E-03	2.81E+00
7.5599E+05	1.0410E-03	7.6545E-03	2.81E+00
7.5601E+05	1.0410E-03	7.6546E-03	2.81E+00
7.5612E+05	1.0412E-03	7.6557E-03	2.81E+00
7.5666E+05	1.0419E-03	7.6612E-03	2.82E+00
7.5868E+05	1.0447E-03	7.6816E-03	2.82E+00
7.6444E+05	1.0526E-03	7.7400E-03	2.84E+00
7.7767E+05	1.0709E-03	7.8739E-03	2.89E+00
8.0266E+05	1.1053E-03	8.1270E-03	2.99E+00
8.4249E+05	1.1601E-03	8.5303E-03	3.13E+00
8.9707E+05	1.2353E-03	9.0829E-03	3.34E+00
9.6249E+05	1.3253E-03	9.7452E-03	3.58E+00
1.0321E+06	1.4212E-03	1.0450E-02	3.84E+00
1.0986E+06	1.5128E-03	1.1123E-02	4.09E+00
1.1564E+06	1.5923E-03	1.1708E-02	4.30E+00
1.2024E+06	1.6557E-03	1.2174E-02	4.47E+00
1.2362E+06	1.7023E-03	1.2517E-02	4.60E+00
1.2595E+06	1.7343E-03	1.2752E-02	4.69E+00
1.2744E+06	1.7549E-03	1.2903E-02	4.74E+00
1.2835E+06	1.7673E-03	1.2995E-02	4.78E+00
1.2887E+06	1.7745E-03	1.3048E-02	4.79E+00
1.2915E+06	1.7784E-03	1.3076E-02	4.81E+00
1.2930E+06	1.7804E-03	1.3091E-02	4.81E+00
1.2937E+06	1.7815E-03	1.3099E-02	4.81E+00
1.2941E+06	1.7819E-03	1.3103E-02	4.81E+00
1.2942E+06	1.7822E-03	1.3104E-02	4.82E+00
1.2943E+06	1.7823E-03	1.3105E-02	4.82E+00
1.2943E+06	1.7823E-03	1.3105E-02	4.82E+00
1.2944E+06	1.7823E-03	1.3105E-02	4.82E+00
1.2944E+06	1.7823E-03	1.3105E-02	4.82E+00
1.2944E+06	1.7823E-03	1.3105E-02	4.82E+00
1.2944E+06	1.7823E-03	1.3106E-02	4.82E+00
1.2944E+06	1.7823E-03	1.3106E-02	4.82E+00
1.2944E+06	1.7823E-03	1.3106E-02	4.82E+00
1.2944E+06	1.7823E-03	1.3106E-02	4.82E+00
1.2944E+06	1.7823E-03	1.3106E-02	4.82E+00
1.2944E+06	1.7823E-03	1.3106E-02	4.82E+00
1.2944E+06	1.7823E-03	1.3106E-02	4.82E+00
1.2944E+06	1.7823E-03	1.3106E-02	4.82E+00
1.2944E+06	1.7823E-03	1.3106E-02	4.82E+00
1.2944E+06	1.7823E-03	1.3106E-02	4.82E+00
1.2944E+06	1.7823E-03	1.3106E-02	4.82E+00
1.2944E+06	1.7823E-03	1.3106E-02	4.82E+00

Flux Out (gm/yr)	No Recycle	Recycle	0.86 Concentration (gm/sq m)
1.2944E+06	1.7823E-03	1.3106E-02	4.82E+00
1.2944E+06	1.7823E-03	1.3106E-02	4.82E+00
1.2944E+06	1.7823E-03	1.3106E-02	4.82E+00
1.2944E+06	1.7823E-03	1.3106E-02	4.82E+00
1.2944E+06	1.7823E-03	1.3106E-02	4.82E+00
1.2944E+06	1.7823E-03	1.3106E-02	4.82E+00
1.2944E+06	1.7823E-03	1.3106E-02	4.82E+00
1.2944E+06	1.7823E-03	1.3106E-02	4.82E+00
1.2944E+06	1.7823E-03	1.3106E-02	4.82E+00
1.2944E+06	1.7823E-03	1.3106E-02	4.82E+00
1.2944E+06	1.7823E-03	1.3106E-02	4.82E+00
1.2944E+06	1.7823E-03	1.3106E-02	4.82E+00
1.2944E+06	1.7823E-03	1.3106E-02	4.82E+00
1.2944E+06	1.7823E-03	1.3106E-02	4.82E+00
1.2944E+06	1.7823E-03	1.3106E-02	4.82E+00
1.2944E+06	1.7823E-03	1.3106E-02	4.82E+00
1.2944E+06	1.7823E-03	1.3106E-02	4.82E+00
1.2944E+06	1.7823E-03	1.3106E-02	4.82E+00
1.2944E+06	1.7823E-03	1.3106E-02	4.82E+00
1.2944E+06	1.7823E-03	1.3106E-02	4.82E+00
1.2944E+06	1.7823E-03	1.3106E-02	4.82E+00
1.2944E+06	1.7823E-03	1.3106E-02	4.82E+00
1.2944E+06	1.7823E-03	1.3106E-02	4.82E+00
1.2944E+06	1.7823E-03	1.3106E-02	4.82E+00
1.2944E+06	1.7823E-03	1.3106E-02	4.82E+00
1.2944E+06	1.7823E-03	1.3106E-02	4.82E+00
1.2944E+06	1.7823E-03	1.3106E-02	4.82E+00
1.2944E+06	1.7823E-03	1.3106E-02	4.82E+00
1.2944E+06	1.7823E-03	1.3106E-02	4.82E+00
1.2944E+06	1.7823E-03	1.3106E-02	4.82E+00
1.2944E+06	1.7823E-03	1.3106E-02	4.82E+00
1.2944E+06	1.7823E-03	1.3106E-02	4.82E+00
1.2944E+06	1.7823E-03	1.3106E-02	4.82E+00
1.2944E+06	1.7823E-03	1.3106E-02	4.82E+00
1.2944E+06	1.7823E-03	1.3106E-02	4.82E+00
1.2944E+06	1.7823E-03	1.3106E-02	4.82E+00
1.2944E+06	1.7823E-03	1.3106E-02	4.82E+00
1.2944E+06	1.7823E-03	1.3106E-02	4.82E+00
1.2944E+06	1.7823E-03	1.3106E-02	4.82E+00
1.2944E+06	1.7823E-03	1.3106E-02	4.82E+00
1.2944E+06	1.7823E-03	1.3106E-02	4.82E+00
1.2944E+06	1.7823E-03	1.3106E-02	4.82E+00
1.2944E+06	1.7824E-03	1.3106E-02	4.82E+00
1.2944E+06	1.7824E-03	1.3106E-02	4.82E+00
1.2944E+06	1.7824E-03	1.3106E-02	4.82E+00
1.2946E+06	1.7827E-03	1.3108E-02	4.82E+00
1.2951E+06	1.7834E-03	1.3113E-02	4.82E+00
1.2964E+06	1.7851E-03	1.3126E-02	4.82E+00
1.2989E+06	1.7886E-03	1.3151E-02	4.83E+00
1.3031E+06	1.7943E-03	1.3194E-02	4.85E+00
1.3089E+06	1.8024E-03	1.3253E-02	4.87E+00
1.3162E+06	1.8125E-03	1.3327E-02	4.90E+00
1.3242E+06	1.8234E-03	1.3407E-02	4.93E+00
1.3320E+06	1.8341E-03	1.3486E-02	4.96E+00

Flux Out (gm/yr)	No Recycle	Recycle	0.86 Concentration (gm/sq m)
1.3389E+06	1.8436E-03	1.3556E-02	4.98E+00
1.3445E+06	1.8514E-03	1.3613E-02	5.00E+00
1.3487E+06	1.8572E-03	1.3656E-02	5.02E+00
1.3516E+06	1.8612E-03	1.3685E-02	5.03E+00
1.3535E+06	1.8638E-03	1.3705E-02	5.04E+00
1.3547E+06	1.8654E-03	1.3717E-02	5.04E+00
1.3554E+06	1.8664E-03	1.3723E-02	5.04E+00
1.3558E+06	1.8669E-03	1.3727E-02	5.04E+00
1.3560E+06	1.8672E-03	1.3729E-02	5.05E+00
1.3561E+06	1.8673E-03	1.3730E-02	5.05E+00
1.3561E+06	1.8674E-03	1.3731E-02	5.05E+00
1.3561E+06	1.8674E-03	1.3731E-02	5.05E+00
1.3562E+06	1.8674E-03	1.3731E-02	5.05E+00
1.3562E+06	1.8674E-03	1.3731E-02	5.05E+00
1.3562E+06	1.8674E-03	1.3731E-02	5.05E+00
1.3562E+06	1.8674E-03	1.3731E-02	5.05E+00
1.3562E+06	1.8674E-03	1.3731E-02	5.05E+00
1.3562E+06	1.8674E-03	1.3731E-02	5.05E+00
1.3562E+06	1.8674E-03	1.3731E-02	5.05E+00
1.3562E+06	1.8674E-03	1.3731E-02	5.05E+00
1.3562E+06	1.8674E-03	1.3731E-02	5.05E+00
1.3562E+06	1.8674E-03	1.3731E-02	5.05E+00
1.3562E+06	1.8674E-03	1.3731E-02	5.05E+00
1.3562E+06	1.8674E-03	1.3731E-02	5.05E+00
1.3562E+06	1.8674E-03	1.3731E-02	5.05E+00
1.3562E+06	1.8674E-03	1.3731E-02	5.05E+00
1.3562E+06	1.8674E-03	1.3731E-02	5.05E+00
1.3562E+06	1.8674E-03	1.3731E-02	5.05E+00
1.3562E+06	1.8674E-03	1.3731E-02	5.05E+00
1.3562E+06	1.8674E-03	1.3731E-02	5.05E+00
1.3562E+06	1.8674E-03	1.3731E-02	5.05E+00
1.3562E+06	1.8674E-03	1.3731E-02	5.05E+00
1.3562E+06	1.8674E-03	1.3731E-02	5.05E+00
1.3562E+06	1.8674E-03	1.3731E-02	5.05E+00
1.3562E+06	1.8674E-03	1.3731E-02	5.05E+00
1.3562E+06	1.8674E-03	1.3731E-02	5.05E+00
1.3562E+06	1.8674E-03	1.3731E-02	5.05E+00
1.3562E+06	1.8674E-03	1.3731E-02	5.05E+00
1.3562E+06	1.8674E-03	1.3731E-02	5.05E+00
1.3562E+06	1.8674E-03	1.3731E-02	5.05E+00
1.3562E+06	1.8674E-03	1.3731E-02	5.05E+00
1.3562E+06	1.8674E-03	1.3731E-02	5.05E+00
1.3562E+06	1.8674E-03	1.3731E-02	5.05E+00
1.3562E+06	1.8674E-03	1.3731E-02	5.05E+00
1.3562E+06	1.8674E-03	1.3731E-02	5.05E+00
1.3562E+06	1.8674E-03	1.3731E-02	5.05E+00
1.3562E+06	1.8674E-03	1.3731E-02	5.05E+00
1.3562E+06	1.8674E-03	1.3731E-02	5.05E+00
1.3562E+06	1.8674E-03	1.3731E-02	5.05E+00
1.3562E+06	1.8674E-03	1.3731E-02	5.05E+00
1.3562E+06	1.8674E-03	1.3731E-02	5.05E+00
1.3562E+06	1.8674E-03	1.3731E-02	5.05E+00

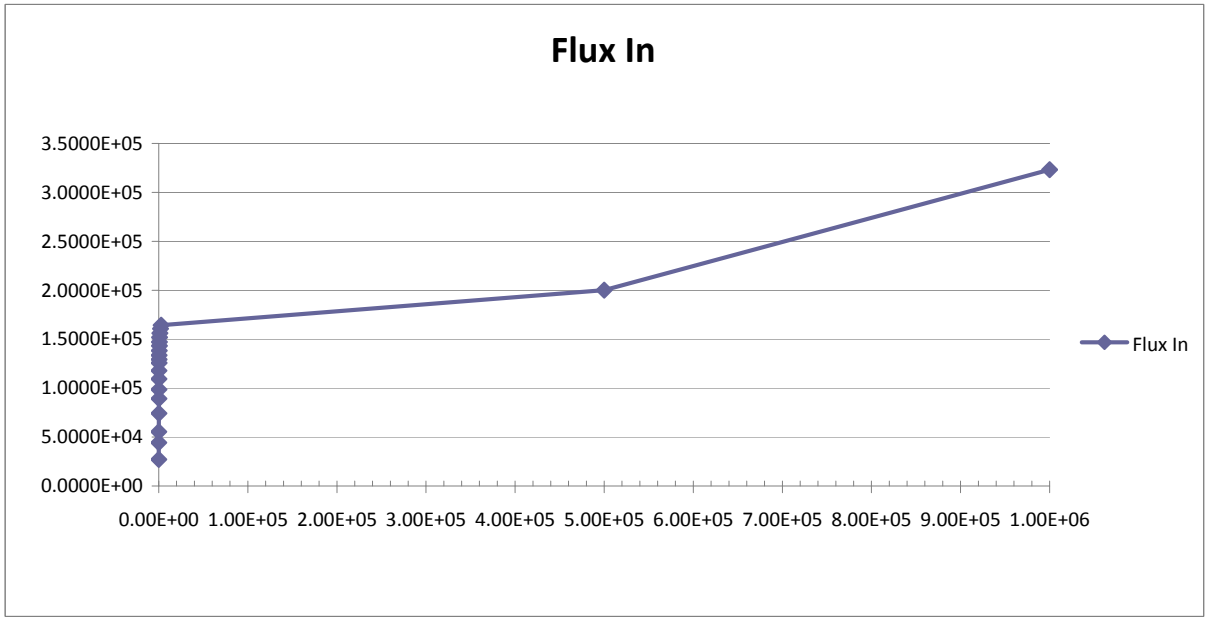
Flux Out (gm/yr)	No Recycle	Recycle	0.86 Concentration (gm/sq m)
1.3562E+06	1.8674E-03	1.3731E-02	5.05E+00

Flux Out (gm/yr)	No Recycle	Recycle	0.86 Concentration (gm/sq m)
1.3562E+06	1.8674E-03	1.3731E-02	5.05E+00
1.3562E+06	1.8674E-03	1.3731E-02	5.05E+00
1.3562E+06	1.8674E-03	1.3731E-02	5.05E+00
1.3562E+06	1.8674E-03	1.3731E-02	5.05E+00
1.3562E+06	1.8674E-03	1.3731E-02	5.05E+00
1.3562E+06	1.8674E-03	1.3731E-02	5.05E+00
1.3562E+06	1.8674E-03	1.3731E-02	5.05E+00
1.3562E+06	1.8674E-03	1.3731E-02	5.05E+00
1.3562E+06	1.8674E-03	1.3731E-02	5.05E+00
1.3562E+06	1.8674E-03	1.3731E-02	5.05E+00
1.3562E+06	1.8674E-03	1.3731E-02	5.05E+00
1.3562E+06	1.8674E-03	1.3731E-02	5.05E+00
1.3562E+06	1.8674E-03	1.3731E-02	5.05E+00
1.3562E+06	1.8674E-03	1.3731E-02	5.05E+00
1.3562E+06	1.8674E-03	1.3731E-02	5.05E+00
1.3562E+06	1.8674E-03	1.3731E-02	5.05E+00
1.3562E+06	1.8674E-03	1.3731E-02	5.05E+00
1.3562E+06	1.8674E-03	1.3731E-02	5.05E+00
1.3562E+06	1.8674E-03	1.3731E-02	5.05E+00
1.3562E+06	1.8674E-03	1.3731E-02	5.05E+00
1.3562E+06	1.8674E-03	1.3731E-02	5.05E+00
1.3562E+06	1.8674E-03	1.3731E-02	5.05E+00
1.3562E+06	1.8674E-03	1.3731E-02	5.05E+00
1.3562E+06	1.8674E-03	1.3731E-02	5.05E+00
1.3562E+06	1.8674E-03	1.3731E-02	5.05E+00
1.3562E+06	1.8674E-03	1.3731E-02	5.05E+00
1.3562E+06	1.8674E-03	1.3731E-02	5.05E+00
1.3562E+06	1.8674E-03	1.3731E-02	5.05E+00
1.3562E+06	1.8674E-03	1.3731E-02	5.05E+00

Combined TSPA Case, 2003 Pumping Rates, Wet Climate
Non-Radiologic Metals Transport from 18 km to Amargosa Farms
Contaminant: Molybdenum
Oral Ref dose =5E-03 mg/kg body wt./day
Pump Rate= 16828 acre-ft/yr 20748924000 liters/yr

Input Curve

Time (yr)	Flux In	Del R
6.00E+01	2.7147E+04	
7.00E+01	4.4293E+04	1.7146E+04
8.00E+01	5.5366E+04	1.1073E+04
1.00E+02	7.4298E+04	1.8932E+04
1.20E+02	8.9301E+04	1.5002E+04
1.40E+02	9.8588E+04	9.2873E+03
1.90E+02	1.0930E+05	1.0716E+04
2.40E+02	1.1788E+05	8.5728E+03
2.90E+02	1.2574E+05	7.8584E+03
3.60E+02	1.2931E+05	3.5720E+03
4.00E+02	1.3359E+05	4.2864E+03
4.80E+02	1.3824E+05	4.6436E+03
6.30E+02	1.4324E+05	5.0008E+03
7.00E+02	1.4717E+05	3.9292E+03
9.10E+02	1.5181E+05	4.6436E+03
1.19E+03	1.5610E+05	4.2864E+03
2.01E+03	1.6074E+05	4.6436E+03
2.76E+03	1.6431E+05	3.5720E+03
5.00E+05	2.0006E+05	3.5743E+04
1.00E+06	3.2315E+05	1.2310E+05



Output Curve

2.39E-02		specific discharge (m/day)
5.4538E-02	v	groundwater velocity (km/yr)
1.6000E+01	L	path length (km)
1.0000E-01	D	Dispersion Coefficient (km)
5.4538E-03	Disp	Dispersivity (sq km/yr)
1.0000E+00	K	Retardation Factor (no units)
2.9337E+02	td	arrival time of the mid-point =TL (yr)
0.0000E+00	Kd	distribution coefficient =Kd (mL/gm)
1.6000E-01	ε	porosity
2.0000E+00	ρ	bulk density of solid (gm/mL)
0.0000E+00	λ	decay constant (1/yr)
NA	t1/2	halflife (yr)

Note: When λ is set to zero this is either a stable contaminant or a member of a decay chain. Decay and growth of radionuclides in decay chain members is adjusted in a separate work sheet.

Composite Curves

Time (yrs)	Arg 1	Curve 1	Arg 2	Curve 2	Arg 3	Curve 3	Arg 4	Curve 4	Arg 5	Curve 5	Arg 6	Curve 6
250	2.7692E+00	7.7104E-01	3.1203E+00	5.6502E-02	3.4940E+00	7.3489E-03	4.3226E+00	7.3310E-06	5.2909E+00	3.3871E-10	6.4560E+00	0.0000E+00
2000	-1.3804E+01	1.7146E+04	-1.3756E+01	1.1073E+04	-1.3707E+01	1.8932E+04	-1.3610E+01	1.5002E+04	-1.3512E+01	9.2873E+03	-1.3413E+01	1.0716E+04
4000	-2.1452E+01	1.7146E+04	-2.1420E+01	1.1073E+04	-2.1388E+01	1.8932E+04	-2.1325E+01	1.5002E+04	-2.1261E+01	9.2873E+03	-2.1197E+01	1.0716E+04
6000	-2.7053E+01	1.7146E+04	-2.7028E+01	1.1073E+04	-2.7003E+01	1.8932E+04	-2.6952E+01	1.5002E+04	-2.6902E+01	9.2873E+03	-2.6851E+01	1.0716E+04
8000	-3.1687E+01	1.7146E+04	-3.1665E+01	1.1073E+04	-3.1644E+01	1.8932E+04	-3.1601E+01	1.5002E+04	-3.1558E+01	9.2873E+03	-3.1514E+01	1.0716E+04
10000	-3.5727E+01	1.7146E+04	-3.5708E+01	1.1073E+04	-3.5689E+01	1.8932E+04	-3.5651E+01	1.5002E+04	-3.5613E+01	9.2873E+03	-3.5575E+01	1.0716E+04
12000	-3.9357E+01	1.7146E+04	-3.9339E+01	1.1073E+04	-3.9322E+01	1.8932E+04	-3.9287E+01	1.5002E+04	-3.9253E+01	9.2873E+03	-3.9218E+01	1.0716E+04
14000	-4.2679E+01	1.7146E+04	-4.2663E+01	1.1073E+04	-4.2647E+01	1.8932E+04	-4.2615E+01	1.5002E+04	-4.2583E+01	9.2873E+03	-4.2551E+01	1.0716E+04
16000	-4.5761E+01	1.7146E+04	-4.5746E+01	1.1073E+04	-4.5731E+01	1.8932E+04	-4.5701E+01	1.5002E+04	-4.5672E+01	9.2873E+03	-4.5642E+01	1.0716E+04
18000	-4.8648E+01	1.7146E+04	-4.8634E+01	1.1073E+04	-4.8620E+01	1.8932E+04	-4.8592E+01	1.5002E+04	-4.8564E+01	9.2873E+03	-4.8536E+01	1.0716E+04
20000	-5.1374E+01	1.7146E+04	-5.1361E+01	1.1073E+04	-5.1348E+01	1.8932E+04	-5.1321E+01	1.5002E+04	-5.1294E+01	9.2873E+03	-5.1268E+01	1.0716E+04
22000	-5.3962E+01	1.7146E+04	-5.3950E+01	1.1073E+04	-5.3937E+01	1.8932E+04	-5.3912E+01	1.5002E+04	-5.3887E+01	9.2873E+03	-5.3861E+01	1.0716E+04
24000	-5.6432E+01	1.7146E+04	-5.6420E+01	1.1073E+04	-5.6408E+01	1.8932E+04	-5.6384E+01	1.5002E+04	-5.6360E+01	9.2873E+03	-5.6335E+01	1.0716E+04
26000	-5.8798E+01	1.7146E+04	-5.8787E+01	1.1073E+04	-5.8775E+01	1.8932E+04	-5.8752E+01	1.5002E+04	-5.8729E+01	9.2873E+03	-5.8705E+01	1.0716E+04
28000	-6.1073E+01	1.7146E+04	-6.1062E+01	1.1073E+04	-6.1050E+01	1.8932E+04	-6.1028E+01	1.5002E+04	-6.1006E+01	9.2873E+03	-6.0983E+01	1.0716E+04
30000	-6.3266E+01	1.7146E+04	-6.3255E+01	1.1073E+04	-6.3244E+01	1.8932E+04	-6.3223E+01	1.5002E+04	-6.3201E+01	9.2873E+03	-6.3179E+01	1.0716E+04
32000	-6.5385E+01	1.7146E+04	-6.5375E+01	1.1073E+04	-6.5364E+01	1.8932E+04	-6.5343E+01	1.5002E+04	-6.5323E+01	9.2873E+03	-6.5302E+01	1.0716E+04
34000	-6.7438E+01	1.7146E+04	-6.7428E+01	1.1073E+04	-6.7418E+01	1.8932E+04	-6.7398E+01	1.5002E+04	-6.7377E+01	9.2873E+03	-6.7357E+01	1.0716E+04
36000	-6.9430E+01	1.7146E+04	-6.9420E+01	1.1073E+04	-6.9411E+01	1.8932E+04	-6.9391E+01	1.5002E+04	-6.9371E+01	9.2873E+03	-6.9352E+01	1.0716E+04
38000	-7.1367E+01	1.7146E+04	-7.1357E+01	1.1073E+04	-7.1348E+01	1.8932E+04	-7.1329E+01	1.5002E+04	-7.1309E+01	9.2873E+03	-7.1290E+01	1.0716E+04
40000	-7.3252E+01	1.7146E+04	-7.3243E+01	1.1073E+04	-7.3234E+01	1.8932E+04	-7.3215E+01	1.5002E+04	-7.3196E+01	9.2873E+03	-7.3178E+01	1.0716E+04
42000	-7.5090E+01	1.7146E+04	-7.5081E+01	1.1073E+04	-7.5072E+01	1.8932E+04	-7.5054E+01	1.5002E+04	-7.5036E+01	9.2873E+03	-7.5018E+01	1.0716E+04
44000	-7.6885E+01	1.7146E+04	-7.6876E+01	1.1073E+04	-7.6867E+01	1.8932E+04	-7.6849E+01	1.5002E+04	-7.6831E+01	9.2873E+03	-7.6814E+01	1.0716E+04
46000	-7.8638E+01	1.7146E+04	-7.8629E+01	1.1073E+04	-7.8621E+01	1.8932E+04	-7.8603E+01	1.5002E+04	-7.8586E+01	9.2873E+03	-7.8569E+01	1.0716E+04
48000	-8.0353E+01	1.7146E+04	-8.0345E+01	1.1073E+04	-8.0336E+01	1.8932E+04	-8.0319E+01	1.5002E+04	-8.0302E+01	9.2873E+03	-8.0285E+01	1.0716E+04
50000	-8.2032E+01	1.7146E+04	-8.2024E+01	1.1073E+04	-8.2016E+01	1.8932E+04	-8.1999E+01	1.5002E+04	-8.1982E+01	9.2873E+03	-8.1966E+01	1.0716E+04
52000	-8.3678E+01	1.7146E+04	-8.3670E+01	1.1073E+04	-8.3661E+01	1.8932E+04	-8.3645E+01	1.5002E+04	-8.3629E+01	9.2873E+03	-8.3613E+01	1.0716E+04
54000	-8.5292E+01	1.7146E+04	-8.5284E+01	1.1073E+04	-8.5276E+01	1.8932E+04	-8.5260E+01	1.5002E+04	-8.5244E+01	9.2873E+03	-8.5228E+01	1.0716E+04
56000	-8.6875E+01	1.7146E+04	-8.6868E+01	1.1073E+04	-8.6860E+01	1.8932E+04	-8.6844E+01	1.5002E+04	-8.6828E+01	9.2873E+03	-8.6813E+01	1.0716E+04
58000	-8.8431E+01	1.7146E+04	-8.8423E+01	1.1073E+04	-8.8415E+01	1.8932E+04	-8.8400E+01	1.5002E+04	-8.8385E+01	9.2873E+03	-8.8369E+01	1.0716E+04
60000	-8.9959E+01	1.7146E+04	-8.9952E+01	1.1073E+04	-8.9944E+01	1.8932E+04	-8.9929E+01	1.5002E+04	-8.9914E+01	9.2873E+03	-8.9899E+01	1.0716E+04
62000	-9.1462E+01	1.7146E+04	-9.1455E+01	1.1073E+04	-9.1448E+01	1.8932E+04	-9.1433E+01	1.5002E+04	-9.1418E+01	9.2873E+03	-9.1403E+01	1.0716E+04
64000	-9.2941E+01	1.7146E+04	-9.2934E+01	1.1073E+04	-9.2926E+01	1.8932E+04	-9.2912E+01	1.5002E+04	-9.2897E+01	9.2873E+03	-9.2882E+01	1.0716E+04
66000	-9.4397E+01	1.7146E+04	-9.4390E+01	1.1073E+04	-9.4382E+01	1.8932E+04	-9.4368E+01	1.5002E+04	-9.4353E+01	9.2873E+03	-9.4339E+01	1.0716E+04
68000	-9.5830E+01	1.7146E+04	-9.5823E+01	1.1073E+04	-9.5816E+01	1.8932E+04	-9.5802E+01	1.5002E+04	-9.5787E+01	9.2873E+03	-9.5773E+01	1.0716E+04
70000	-9.7243E+01	1.7146E+04	-9.7236E+01	1.1073E+04	-9.7229E+01	1.8932E+04	-9.7214E+01	1.5002E+04	-9.7200E+01	9.2873E+03	-9.7186E+01	1.0716E+04
72000	-9.8635E+01	1.7146E+04	-9.8628E+01	1.1073E+04	-9.8621E+01	1.8932E+04	-9.8607E+01	1.5002E+04	-9.8593E+01	9.2873E+03	-9.8579E+01	1.0716E+04
74000	-1.0001E+02	1.7146E+04	-1.0000E+02	1.1073E+04	-9.9994E+01	1.8932E+04	-9.9980E+01	1.5002E+04	-9.9966E+01	9.2873E+03	-9.9953E+01	1.0716E+04
76000	-1.0136E+02	1.7146E+04	-1.0135E+02	1.1073E+04	-1.0135E+02	1.8932E+04	-1.0133E+02	1.5002E+04	-1.0132E+02	9.2873E+03	-1.0131E+02	1.0716E+04
78000	-1.0270E+02	1.7146E+04	-1.0269E+02	1.1073E+04	-1.0268E+02	1.8932E+04	-1.0267E+02	1.5002E+04	-1.0266E+02	9.2873E+03	-1.0264E+02	1.0716E+04
80000	-1.0402E+02	1.7146E+04	-1.0401E+02	1.1073E+04	-1.0400E+02	1.8932E+04	-1.0399E+02	1.5002E+04	-1.0398E+02	9.2873E+03	-1.0396E+02	1.0716E+04
82000	-1.0532E+02	1.7146E+04	-1.0531E+02	1.1073E+04	-1.0531E+02	1.8932E+04	-1.0529E+02	1.5002E+04	-1.0528E+02	9.2873E+03	-1.0527E+02	1.0716E+04
84000	-1.0661E+02	1.7146E+04	-1.0660E+02	1.1073E+04	-1.0659E+02	1.8932E+04	-1.0658E+02	1.5002E+04	-1.0657E+02	9.2873E+03	-1.0656E+02	1.0716E+04
86000	-1.0788E+02	1.7146E+04	-1.0787E+02	1.1073E+04	-1.0787E+02	1.8932E+04	-1.0785E+02	1.5002E+04	-1.0784E+02	9.2873E+03	-1.0783E+02	1.0716E+04
88000	-1.0913E+02	1.7146E+04	-1.0913E+02	1.1073E+04	-1.0912E+02	1.8932E+04	-1.0911E+02	1.5002E+04	-1.0910E+02	9.2873E+03	-1.0908E+02	1.0716E+04
90000	-1.1038E+02	1.7146E+04	-1.1037E+02	1.1073E+04	-1.1036E+02	1.8932E+04	-1.1035E+02	1.5002E+04	-1.1034E+02	9.2873E+03	-1.1033E+02	1.0716E+04
92000	-1.1160E+02	1.7146E+04	-1.1160E+02	1.1073E+04	-1.1159E+02	1.8932E+04	-1.1158E+02	1.5002E+04	-1.1157E+02	9.2873E+03	-1.1156E+02	1.0716E+04
94000	-1.1282E+02	1.7146E+04	-1.1281E+02	1.1073E+04	-1.1281E+02	1.8932E+04	-1.1280E+02	1.5002E+04	-1.1278E+02	9.2873E+03	-1.1277E+02	1.0716E+04
96000	-1.1402E+02	1.7146E+04	-1.1402E+02	1.1073E+04	-1.1401E+02	1.8932E+04	-1.1400E+02	1.5002E+04	-1.1399E+02	9.2873E+03	-1.1397E+02	1.0716E+04
98000	-1.1521E+02	1.7146E+04	-1.1521E+02	1.1073E+04	-1.1520E+02	1.8932E+04	-1.1519E+02	1.5002E+04	-1.1518E+02	9.2873E+03	-1.1516E+02	1.0716E+04
100000	-1.1639E+02	1.7146E+04	-1.1638E+02	1.1073E+04	-1.1638E+02	1.8932E+04	-1.1637E+02	1.5002E+04	-1.1635E+02	9.2873E+03	-1.1634E+02	1.0716E+04
102000	-1.1755E+02	1.7146E+04	-1.1755E+02	1.1073E+04	-1.1754E+02	1.8932E+04	-1.1753E+02	1.5002E+04	-1.1752E+02	9.2873E+03	-1.1751E+02	1.0716E+04

Time (yrs)	Arg 1	Curve 1	Arg 2	Curve 2	Arg 3	Curve 3	Arg 4	Curve 4	Arg 5	Curve 5	Arg 6	Curve 6
104000	-1.1871E+02	1.7146E+04	-1.1870E+02	1.1073E+04	-1.1870E+02	1.8932E+04	-1.1869E+02	1.5002E+04	-1.1867E+02	9.2873E+03	-1.1866E+02	1.0716E+04
106000	-1.1985E+02	1.7146E+04	-1.1985E+02	1.1073E+04	-1.1984E+02	1.8932E+04	-1.1983E+02	1.5002E+04	-1.1982E+02	9.2873E+03	-1.1981E+02	1.0716E+04
108000	-1.2098E+02	1.7146E+04	-1.2098E+02	1.1073E+04	-1.2097E+02	1.8932E+04	-1.2096E+02	1.5002E+04	-1.2095E+02	9.2873E+03	-1.2094E+02	1.0716E+04
110000	-1.2211E+02	1.7146E+04	-1.2210E+02	1.1073E+04	-1.2209E+02	1.8932E+04	-1.2208E+02	1.5002E+04	-1.2207E+02	9.2873E+03	-1.2206E+02	1.0716E+04
112000	-1.2322E+02	1.7146E+04	-1.2321E+02	1.1073E+04	-1.2321E+02	1.8932E+04	-1.2320E+02	1.5002E+04	-1.2318E+02	9.2873E+03	-1.2317E+02	1.0716E+04
114000	-1.2432E+02	1.7146E+04	-1.2431E+02	1.1073E+04	-1.2431E+02	1.8932E+04	-1.2430E+02	1.5002E+04	-1.2429E+02	9.2873E+03	-1.2428E+02	1.0716E+04
116000	-1.2541E+02	1.7146E+04	-1.2541E+02	1.1073E+04	-1.2540E+02	1.8932E+04	-1.2539E+02	1.5002E+04	-1.2538E+02	9.2873E+03	-1.2537E+02	1.0716E+04
118000	-1.2649E+02	1.7146E+04	-1.2649E+02	1.1073E+04	-1.2648E+02	1.8932E+04	-1.2647E+02	1.5002E+04	-1.2646E+02	9.2873E+03	-1.2645E+02	1.0716E+04
120000	-1.2757E+02	1.7146E+04	-1.2756E+02	1.1073E+04	-1.2756E+02	1.8932E+04	-1.2755E+02	1.5002E+04	-1.2753E+02	9.2873E+03	-1.2752E+02	1.0716E+04
122000	-1.2863E+02	1.7146E+04	-1.2863E+02	1.1073E+04	-1.2862E+02	1.8932E+04	-1.2861E+02	1.5002E+04	-1.2860E+02	9.2873E+03	-1.2859E+02	1.0716E+04
124000	-1.2969E+02	1.7146E+04	-1.2968E+02	1.1073E+04	-1.2968E+02	1.8932E+04	-1.2967E+02	1.5002E+04	-1.2966E+02	9.2873E+03	-1.2964E+02	1.0716E+04
126000	-1.3073E+02	1.7146E+04	-1.3073E+02	1.1073E+04	-1.3072E+02	1.8932E+04	-1.3071E+02	1.5002E+04	-1.3070E+02	9.2873E+03	-1.3069E+02	1.0716E+04
128000	-1.3177E+02	1.7146E+04	-1.3177E+02	1.1073E+04	-1.3176E+02	1.8932E+04	-1.3175E+02	1.5002E+04	-1.3174E+02	9.2873E+03	-1.3173E+02	1.0716E+04
130000	-1.3280E+02	1.7146E+04	-1.3280E+02	1.1073E+04	-1.3279E+02	1.8932E+04	-1.3278E+02	1.5002E+04	-1.3277E+02	9.2873E+03	-1.3276E+02	1.0716E+04
132000	-1.3383E+02	1.7146E+04	-1.3382E+02	1.1073E+04	-1.3382E+02	1.8932E+04	-1.3381E+02	1.5002E+04	-1.3380E+02	9.2873E+03	-1.3379E+02	1.0716E+04
134000	-1.3484E+02	1.7146E+04	-1.3484E+02	1.1073E+04	-1.3483E+02	1.8932E+04	-1.3482E+02	1.5002E+04	-1.3481E+02	9.2873E+03	-1.3480E+02	1.0716E+04
136000	-1.3585E+02	1.7146E+04	-1.3584E+02	1.1073E+04	-1.3584E+02	1.8932E+04	-1.3583E+02	1.5002E+04	-1.3582E+02	9.2873E+03	-1.3581E+02	1.0716E+04
138000	-1.3685E+02	1.7146E+04	-1.3684E+02	1.1073E+04	-1.3684E+02	1.8932E+04	-1.3683E+02	1.5002E+04	-1.3682E+02	9.2873E+03	-1.3681E+02	1.0716E+04
140000	-1.3784E+02	1.7146E+04	-1.3784E+02	1.1073E+04	-1.3783E+02	1.8932E+04	-1.3782E+02	1.5002E+04	-1.3781E+02	9.2873E+03	-1.3780E+02	1.0716E+04
142000	-1.3883E+02	1.7146E+04	-1.3882E+02	1.1073E+04	-1.3882E+02	1.8932E+04	-1.3881E+02	1.5002E+04	-1.3880E+02	9.2873E+03	-1.3879E+02	1.0716E+04
144000	-1.3981E+02	1.7146E+04	-1.3980E+02	1.1073E+04	-1.3980E+02	1.8932E+04	-1.3979E+02	1.5002E+04	-1.3978E+02	9.2873E+03	-1.3977E+02	1.0716E+04
146000	-1.4078E+02	1.7146E+04	-1.4077E+02	1.1073E+04	-1.4077E+02	1.8932E+04	-1.4076E+02	1.5002E+04	-1.4075E+02	9.2873E+03	-1.4074E+02	1.0716E+04
148000	-1.4174E+02	1.7146E+04	-1.4174E+02	1.1073E+04	-1.4173E+02	1.8932E+04	-1.4172E+02	1.5002E+04	-1.4171E+02	9.2873E+03	-1.4170E+02	1.0716E+04
150000	-1.4270E+02	1.7146E+04	-1.4270E+02	1.1073E+04	-1.4269E+02	1.8932E+04	-1.4268E+02	1.5002E+04	-1.4267E+02	9.2873E+03	-1.4266E+02	1.0716E+04
152000	-1.4365E+02	1.7146E+04	-1.4365E+02	1.1073E+04	-1.4364E+02	1.8932E+04	-1.4363E+02	1.5002E+04	-1.4362E+02	9.2873E+03	-1.4362E+02	1.0716E+04
154000	-1.4460E+02	1.7146E+04	-1.4459E+02	1.1073E+04	-1.4459E+02	1.8932E+04	-1.4458E+02	1.5002E+04	-1.4457E+02	9.2873E+03	-1.4456E+02	1.0716E+04
156000	-1.4554E+02	1.7146E+04	-1.4553E+02	1.1073E+04	-1.4553E+02	1.8932E+04	-1.4552E+02	1.5002E+04	-1.4551E+02	9.2873E+03	-1.4550E+02	1.0716E+04
158000	-1.4647E+02	1.7146E+04	-1.4647E+02	1.1073E+04	-1.4646E+02	1.8932E+04	-1.4645E+02	1.5002E+04	-1.4645E+02	9.2873E+03	-1.4644E+02	1.0716E+04
160000	-1.4740E+02	1.7146E+04	-1.4740E+02	1.1073E+04	-1.4739E+02	1.8932E+04	-1.4738E+02	1.5002E+04	-1.4737E+02	9.2873E+03	-1.4736E+02	1.0716E+04
162000	-1.4832E+02	1.7146E+04	-1.4832E+02	1.1073E+04	-1.4831E+02	1.8932E+04	-1.4830E+02	1.5002E+04	-1.4830E+02	9.2873E+03	-1.4829E+02	1.0716E+04
164000	-1.4924E+02	1.7146E+04	-1.4923E+02	1.1073E+04	-1.4923E+02	1.8932E+04	-1.4922E+02	1.5002E+04	-1.4921E+02	9.2873E+03	-1.4920E+02	1.0716E+04
166000	-1.5015E+02	1.7146E+04	-1.5015E+02	1.1073E+04	-1.5014E+02	1.8932E+04	-1.5013E+02	1.5002E+04	-1.5012E+02	9.2873E+03	-1.5011E+02	1.0716E+04
168000	-1.5106E+02	1.7146E+04	-1.5105E+02	1.1073E+04	-1.5105E+02	1.8932E+04	-1.5104E+02	1.5002E+04	-1.5103E+02	9.2873E+03	-1.5102E+02	1.0716E+04
170000	-1.5196E+02	1.7146E+04	-1.5195E+02	1.1073E+04	-1.5195E+02	1.8932E+04	-1.5194E+02	1.5002E+04	-1.5193E+02	9.2873E+03	-1.5192E+02	1.0716E+04
172000	-1.5285E+02	1.7146E+04	-1.5285E+02	1.1073E+04	-1.5284E+02	1.8932E+04	-1.5283E+02	1.5002E+04	-1.5282E+02	9.2873E+03	-1.5281E+02	1.0716E+04
174000	-1.5374E+02	1.7146E+04	-1.5374E+02	1.1073E+04	-1.5373E+02	1.8932E+04	-1.5372E+02	1.5002E+04	-1.5371E+02	9.2873E+03	-1.5370E+02	1.0716E+04
176000	-1.5462E+02	1.7146E+04	-1.5462E+02	1.1073E+04	-1.5462E+02	1.8932E+04	-1.5461E+02	1.5002E+04	-1.5460E+02	9.2873E+03	-1.5459E+02	1.0716E+04
178000	-1.5550E+02	1.7146E+04	-1.5550E+02	1.1073E+04	-1.5549E+02	1.8932E+04	-1.5549E+02	1.5002E+04	-1.5548E+02	9.2873E+03	-1.5547E+02	1.0716E+04
180000	-1.5638E+02	1.7146E+04	-1.5637E+02	1.1073E+04	-1.5637E+02	1.8932E+04	-1.5636E+02	1.5002E+04	-1.5635E+02	9.2873E+03	-1.5634E+02	1.0716E+04
182000	-1.5725E+02	1.7146E+04	-1.5724E+02	1.1073E+04	-1.5724E+02	1.8932E+04	-1.5723E+02	1.5002E+04	-1.5722E+02	9.2873E+03	-1.5721E+02	1.0716E+04
184000	-1.5811E+02	1.7146E+04	-1.5811E+02	1.1073E+04	-1.5810E+02	1.8932E+04	-1.5809E+02	1.5002E+04	-1.5809E+02	9.2873E+03	-1.5808E+02	1.0716E+04
186000	-1.5897E+02	1.7146E+04	-1.5897E+02	1.1073E+04	-1.5896E+02	1.8932E+04	-1.5895E+02	1.5002E+04	-1.5895E+02	9.2873E+03	-1.5894E+02	1.0716E+04
188000	-1.5983E+02	1.7146E+04	-1.5982E+02	1.1073E+04	-1.5982E+02	1.8932E+04	-1.5981E+02	1.5002E+04	-1.5980E+02	9.2873E+03	-1.5979E+02	1.0716E+04
190000	-1.6068E+02	1.7146E+04	-1.6067E+02	1.1073E+04	-1.6067E+02	1.8932E+04	-1.6066E+02	1.5002E+04	-1.6065E+02	9.2873E+03	-1.6064E+02	1.0716E+04
192000	-1.6152E+02	1.7146E+04	-1.6152E+02	1.1073E+04	-1.6152E+02	1.8932E+04	-1.6151E+02	1.5002E+04	-1.6150E+02	9.2873E+03	-1.6149E+02	1.0716E+04
194000	-1.6237E+02	1.7146E+04	-1.6236E+02	1.1073E+04	-1.6236E+02	1.8932E+04	-1.6235E+02	1.5002E+04	-1.6234E+02	9.2873E+03	-1.6233E+02	1.0716E+04
196000	-1.6320E+02	1.7146E+04	-1.6320E+02	1.1073E+04	-1.6320E+02	1.8932E+04	-1.6319E+02	1.5002E+04	-1.6318E+02	9.2873E+03	-1.6317E+02	1.0716E+04
198000	-1.6404E+02	1.7146E+04	-1.6403E+02	1.1073E+04	-1.6403E+02	1.8932E+04	-1.6402E+02	1.5002E+04	-1.6401E+02	9.2873E+03	-1.6400E+02	1.0716E+04
200000	-1.6487E+02	1.7146E+04	-1.6486E+02	1.1073E+04	-1.6486E+02	1.8932E+04	-1.6485E+02	1.5002E+04	-1.6484E+02	9.2873E+03	-1.6483E+02	1.0716E+04
202000	-1.6569E+02	1.7146E+04	-1.6569E+02	1.1073E+04	-1.6568E+02	1.8932E+04	-1.6567E+02	1.5002E+04	-1.6567E+02	9.2873E+03	-1.6566E+02	1.0716E+04
204000	-1.6651E+02	1.7146E+04	-1.6651E+02	1.1073E+04	-1.6650E+02	1.8932E+04	-1.6650E+02	1.5002E+04	-1.6649E+02	9.2873E+03	-1.6648E+02	1.0716E+04
206000	-1.6733E+02	1.7146E+04	-1.6732E+02	1.1073E+04	-1.6732E+02	1.8932E+04	-1.6731E+02	1.5002E+04	-1.6730E+02	9.2873E+03	-1.6730E+02	1.0716E+04

Time (yrs)	Arg 1	Curve 1	Arg 2	Curve 2	Arg 3	Curve 3	Arg 4	Curve 4	Arg 5	Curve 5	Arg 6	Curve 6
208000	-1.6814E+02	1.7146E+04	-1.6814E+02	1.1073E+04	-1.6813E+02	1.8932E+04	-1.6813E+02	1.5002E+04	-1.6812E+02	9.2873E+03	-1.6811E+02	1.0716E+04
210000	-1.6895E+02	1.7146E+04	-1.6895E+02	1.1073E+04	-1.6894E+02	1.8932E+04	-1.6893E+02	1.5002E+04	-1.6893E+02	9.2873E+03	-1.6892E+02	1.0716E+04
212000	-1.6976E+02	1.7146E+04	-1.6975E+02	1.1073E+04	-1.6975E+02	1.8932E+04	-1.6974E+02	1.5002E+04	-1.6973E+02	9.2873E+03	-1.6972E+02	1.0716E+04
214000	-1.7056E+02	1.7146E+04	-1.7055E+02	1.1073E+04	-1.7055E+02	1.8932E+04	-1.7054E+02	1.5002E+04	-1.7053E+02	9.2873E+03	-1.7052E+02	1.0716E+04
216000	-1.7135E+02	1.7146E+04	-1.7135E+02	1.1073E+04	-1.7135E+02	1.8932E+04	-1.7134E+02	1.5002E+04	-1.7133E+02	9.2873E+03	-1.7132E+02	1.0716E+04
218000	-1.7215E+02	1.7146E+04	-1.7214E+02	1.1073E+04	-1.7214E+02	1.8932E+04	-1.7213E+02	1.5002E+04	-1.7212E+02	9.2873E+03	-1.7212E+02	1.0716E+04
220000	-1.7294E+02	1.7146E+04	-1.7293E+02	1.1073E+04	-1.7293E+02	1.8932E+04	-1.7292E+02	1.5002E+04	-1.7291E+02	9.2873E+03	-1.7291E+02	1.0716E+04
222000	-1.7372E+02	1.7146E+04	-1.7372E+02	1.1073E+04	-1.7372E+02	1.8932E+04	-1.7371E+02	1.5002E+04	-1.7370E+02	9.2873E+03	-1.7369E+02	1.0716E+04
224000	-1.7451E+02	1.7146E+04	-1.7450E+02	1.1073E+04	-1.7450E+02	1.8932E+04	-1.7449E+02	1.5002E+04	-1.7448E+02	9.2873E+03	-1.7448E+02	1.0716E+04
226000	-1.7529E+02	1.7146E+04	-1.7528E+02	1.1073E+04	-1.7528E+02	1.8932E+04	-1.7527E+02	1.5002E+04	-1.7526E+02	9.2873E+03	-1.7526E+02	1.0716E+04
228000	-1.7606E+02	1.7146E+04	-1.7606E+02	1.1073E+04	-1.7606E+02	1.8932E+04	-1.7605E+02	1.5002E+04	-1.7604E+02	9.2873E+03	-1.7603E+02	1.0716E+04
230000	-1.7684E+02	1.7146E+04	-1.7683E+02	1.1073E+04	-1.7683E+02	1.8932E+04	-1.7682E+02	1.5002E+04	-1.7681E+02	9.2873E+03	-1.7681E+02	1.0716E+04
232000	-1.7761E+02	1.7146E+04	-1.7760E+02	1.1073E+04	-1.7760E+02	1.8932E+04	-1.7759E+02	1.5002E+04	-1.7758E+02	9.2873E+03	-1.7758E+02	1.0716E+04
234000	-1.7837E+02	1.7146E+04	-1.7837E+02	1.1073E+04	-1.7836E+02	1.8932E+04	-1.7836E+02	1.5002E+04	-1.7835E+02	9.2873E+03	-1.7834E+02	1.0716E+04
236000	-1.7913E+02	1.7146E+04	-1.7913E+02	1.1073E+04	-1.7913E+02	1.8932E+04	-1.7912E+02	1.5002E+04	-1.7911E+02	9.2873E+03	-1.7910E+02	1.0716E+04
238000	-1.7989E+02	1.7146E+04	-1.7989E+02	1.1073E+04	-1.7989E+02	1.8932E+04	-1.7988E+02	1.5002E+04	-1.7987E+02	9.2873E+03	-1.7986E+02	1.0716E+04
240000	-1.8065E+02	1.7146E+04	-1.8065E+02	1.1073E+04	-1.8064E+02	1.8932E+04	-1.8064E+02	1.5002E+04	-1.8063E+02	9.2873E+03	-1.8062E+02	1.0716E+04
242000	-1.8140E+02	1.7146E+04	-1.8140E+02	1.1073E+04	-1.8140E+02	1.8932E+04	-1.8139E+02	1.5002E+04	-1.8138E+02	9.2873E+03	-1.8137E+02	1.0716E+04
244000	-1.8215E+02	1.7146E+04	-1.8215E+02	1.1073E+04	-1.8215E+02	1.8932E+04	-1.8214E+02	1.5002E+04	-1.8213E+02	9.2873E+03	-1.8212E+02	1.0716E+04
246000	-1.8290E+02	1.7146E+04	-1.8290E+02	1.1073E+04	-1.8289E+02	1.8932E+04	-1.8289E+02	1.5002E+04	-1.8288E+02	9.2873E+03	-1.8287E+02	1.0716E+04
248000	-1.8364E+02	1.7146E+04	-1.8364E+02	1.1073E+04	-1.8364E+02	1.8932E+04	-1.8363E+02	1.5002E+04	-1.8362E+02	9.2873E+03	-1.8361E+02	1.0716E+04
250000	-1.8439E+02	1.7146E+04	-1.8438E+02	1.1073E+04	-1.8438E+02	1.8932E+04	-1.8437E+02	1.5002E+04	-1.8436E+02	9.2873E+03	-1.8436E+02	1.0716E+04
252000	-1.8512E+02	1.7146E+04	-1.8512E+02	1.1073E+04	-1.8512E+02	1.8932E+04	-1.8511E+02	1.5002E+04	-1.8510E+02	9.2873E+03	-1.8509E+02	1.0716E+04
254000	-1.8586E+02	1.7146E+04	-1.8585E+02	1.1073E+04	-1.8585E+02	1.8932E+04	-1.8584E+02	1.5002E+04	-1.8584E+02	9.2873E+03	-1.8583E+02	1.0716E+04
256000	-1.8659E+02	1.7146E+04	-1.8659E+02	1.1073E+04	-1.8658E+02	1.8932E+04	-1.8658E+02	1.5002E+04	-1.8657E+02	9.2873E+03	-1.8656E+02	1.0716E+04
258000	-1.8732E+02	1.7146E+04	-1.8732E+02	1.1073E+04	-1.8731E+02	1.8932E+04	-1.8731E+02	1.5002E+04	-1.8730E+02	9.2873E+03	-1.8729E+02	1.0716E+04
260000	-1.8805E+02	1.7146E+04	-1.8804E+02	1.1073E+04	-1.8804E+02	1.8932E+04	-1.8803E+02	1.5002E+04	-1.8802E+02	9.2873E+03	-1.8802E+02	1.0716E+04
262000	-1.8877E+02	1.7146E+04	-1.8877E+02	1.1073E+04	-1.8876E+02	1.8932E+04	-1.8876E+02	1.5002E+04	-1.8875E+02	9.2873E+03	-1.8874E+02	1.0716E+04
264000	-1.8949E+02	1.7146E+04	-1.8949E+02	1.1073E+04	-1.8948E+02	1.8932E+04	-1.8948E+02	1.5002E+04	-1.8947E+02	9.2873E+03	-1.8946E+02	1.0716E+04
266000	-1.9021E+02	1.7146E+04	-1.9021E+02	1.1073E+04	-1.9020E+02	1.8932E+04	-1.9019E+02	1.5002E+04	-1.9019E+02	9.2873E+03	-1.9018E+02	1.0716E+04
268000	-1.9092E+02	1.7146E+04	-1.9092E+02	1.1073E+04	-1.9092E+02	1.8932E+04	-1.9091E+02	1.5002E+04	-1.9090E+02	9.2873E+03	-1.9090E+02	1.0716E+04
270000	-1.9164E+02	1.7146E+04	-1.9163E+02	1.1073E+04	-1.9163E+02	1.8932E+04	-1.9162E+02	1.5002E+04	-1.9162E+02	9.2873E+03	-1.9161E+02	1.0716E+04
272000	-1.9235E+02	1.7146E+04	-1.9234E+02	1.1073E+04	-1.9234E+02	1.8932E+04	-1.9233E+02	1.5002E+04	-1.9233E+02	9.2873E+03	-1.9232E+02	1.0716E+04
274000	-1.9306E+02	1.7146E+04	-1.9305E+02	1.1073E+04	-1.9305E+02	1.8932E+04	-1.9304E+02	1.5002E+04	-1.9303E+02	9.2873E+03	-1.9303E+02	1.0716E+04
276000	-1.9376E+02	1.7146E+04	-1.9376E+02	1.1073E+04	-1.9375E+02	1.8932E+04	-1.9375E+02	1.5002E+04	-1.9374E+02	9.2873E+03	-1.9373E+02	1.0716E+04
278000	-1.9446E+02	1.7146E+04	-1.9446E+02	1.1073E+04	-1.9446E+02	1.8932E+04	-1.9445E+02	1.5002E+04	-1.9444E+02	9.2873E+03	-1.9443E+02	1.0716E+04
280000	-1.9516E+02	1.7146E+04	-1.9516E+02	1.1073E+04	-1.9516E+02	1.8932E+04	-1.9515E+02	1.5002E+04	-1.9514E+02	9.2873E+03	-1.9513E+02	1.0716E+04
282000	-1.9586E+02	1.7146E+04	-1.9586E+02	1.1073E+04	-1.9585E+02	1.8932E+04	-1.9585E+02	1.5002E+04	-1.9584E+02	9.2873E+03	-1.9583E+02	1.0716E+04
284000	-1.9655E+02	1.7146E+04	-1.9655E+02	1.1073E+04	-1.9655E+02	1.8932E+04	-1.9654E+02	1.5002E+04	-1.9653E+02	9.2873E+03	-1.9653E+02	1.0716E+04
286000	-1.9725E+02	1.7146E+04	-1.9724E+02	1.1073E+04	-1.9724E+02	1.8932E+04	-1.9723E+02	1.5002E+04	-1.9723E+02	9.2873E+03	-1.9722E+02	1.0716E+04
288000	-1.9794E+02	1.7146E+04	-1.9793E+02	1.1073E+04	-1.9793E+02	1.8932E+04	-1.9792E+02	1.5002E+04	-1.9792E+02	9.2873E+03	-1.9791E+02	1.0716E+04
290000	-1.9862E+02	1.7146E+04	-1.9862E+02	1.1073E+04	-1.9862E+02	1.8932E+04	-1.9861E+02	1.5002E+04	-1.9860E+02	9.2873E+03	-1.9860E+02	1.0716E+04
292000	-1.9931E+02	1.7146E+04	-1.9931E+02	1.1073E+04	-1.9930E+02	1.8932E+04	-1.9930E+02	1.5002E+04	-1.9929E+02	9.2873E+03	-1.9928E+02	1.0716E+04
294000	-1.9999E+02	1.7146E+04	-1.9999E+02	1.1073E+04	-1.9999E+02	1.8932E+04	-1.9998E+02	1.5002E+04	-1.9997E+02	9.2873E+03	-1.9997E+02	1.0716E+04
296000	-2.0067E+02	1.7146E+04	-2.0067E+02	1.1073E+04	-2.0067E+02	1.8932E+04	-2.0066E+02	1.5002E+04	-2.0065E+02	9.2873E+03	-2.0065E+02	1.0716E+04
298000	-2.0135E+02	1.7146E+04	-2.0135E+02	1.1073E+04	-2.0135E+02	1.8932E+04	-2.0134E+02	1.5002E+04	-2.0133E+02	9.2873E+03	-2.0132E+02	1.0716E+04
300000	-2.0203E+02	1.7146E+04	-2.0202E+02	1.1073E+04	-2.0202E+02	1.8932E+04	-2.0201E+02	1.5002E+04	-2.0201E+02	9.2873E+03	-2.0200E+02	1.0716E+04
302000	-2.0270E+02	1.7146E+04	-2.0270E+02	1.1073E+04	-2.0269E+02	1.8932E+04	-2.0269E+02	1.5002E+04	-2.0268E+02	9.2873E+03	-2.0267E+02	1.0716E+04
304000	-2.0337E+02	1.7146E+04	-2.0337E+02	1.1073E+04	-2.0337E+02	1.8932E+04	-2.0336E+02	1.5002E+04	-2.0335E+02	9.2873E+03	-2.0335E+02	1.0716E+04
306000	-2.0404E+02	1.7146E+04	-2.0404E+02	1.1073E+04	-2.0404E+02	1.8932E+04	-2.0403E+02	1.5002E+04	-2.0402E+02	9.2873E+03	-2.0402E+02	1.0716E+04
308000	-2.0471E+02	1.7146E+04	-2.0471E+02	1.1073E+04	-2.0470E+02	1.8932E+04	-2.0470E+02	1.5002E+04	-2.0469E+02	9.2873E+03	-2.0468E+02	1.0716E+04
310000	-2.0537E+02	1.7146E+04	-2.0537E+02	1.1073E+04	-2.0537E+02	1.8932E+04	-2.0536E+02	1.5002E+04	-2.0535E+02	9.2873E+03	-2.0535E+02	1.0716E+04

Time (yrs)	Arg 1	Curve 1	Arg 2	Curve 2	Arg 3	Curve 3	Arg 4	Curve 4	Arg 5	Curve 5	Arg 6	Curve 6
312000	-2.0604E+02	1.7146E+04	-2.0603E+02	1.1073E+04	-2.0603E+02	1.8932E+04	-2.0602E+02	1.5002E+04	-2.0602E+02	9.2873E+03	-2.0601E+02	1.0716E+04
314000	-2.0670E+02	1.7146E+04	-2.0669E+02	1.1073E+04	-2.0669E+02	1.8932E+04	-2.0668E+02	1.5002E+04	-2.0668E+02	9.2873E+03	-2.0667E+02	1.0716E+04
316000	-2.0736E+02	1.7146E+04	-2.0735E+02	1.1073E+04	-2.0735E+02	1.8932E+04	-2.0734E+02	1.5002E+04	-2.0734E+02	9.2873E+03	-2.0733E+02	1.0716E+04
318000	-2.0801E+02	1.7146E+04	-2.0801E+02	1.1073E+04	-2.0801E+02	1.8932E+04	-2.0800E+02	1.5002E+04	-2.0799E+02	9.2873E+03	-2.0799E+02	1.0716E+04
320000	-2.0867E+02	1.7146E+04	-2.0866E+02	1.1073E+04	-2.0866E+02	1.8932E+04	-2.0865E+02	1.5002E+04	-2.0865E+02	9.2873E+03	-2.0864E+02	1.0716E+04
322000	-2.0932E+02	1.7146E+04	-2.0932E+02	1.1073E+04	-2.0931E+02	1.8932E+04	-2.0931E+02	1.5002E+04	-2.0930E+02	9.2873E+03	-2.0929E+02	1.0716E+04
324000	-2.0997E+02	1.7146E+04	-2.0997E+02	1.1073E+04	-2.0996E+02	1.8932E+04	-2.0996E+02	1.5002E+04	-2.0995E+02	9.2873E+03	-2.0994E+02	1.0716E+04
326000	-2.1062E+02	1.7146E+04	-2.1062E+02	1.1073E+04	-2.1061E+02	1.8932E+04	-2.1061E+02	1.5002E+04	-2.1060E+02	9.2873E+03	-2.1059E+02	1.0716E+04
328000	-2.1126E+02	1.7146E+04	-2.1126E+02	1.1073E+04	-2.1126E+02	1.8932E+04	-2.1125E+02	1.5002E+04	-2.1125E+02	9.2873E+03	-2.1124E+02	1.0716E+04
330000	-2.1191E+02	1.7146E+04	-2.1191E+02	1.1073E+04	-2.1190E+02	1.8932E+04	-2.1190E+02	1.5002E+04	-2.1189E+02	9.2873E+03	-2.1188E+02	1.0716E+04
332000	-2.1255E+02	1.7146E+04	-2.1255E+02	1.1073E+04	-2.1255E+02	1.8932E+04	-2.1254E+02	1.5002E+04	-2.1253E+02	9.2873E+03	-2.1253E+02	1.0716E+04
334000	-2.1319E+02	1.7146E+04	-2.1319E+02	1.1073E+04	-2.1319E+02	1.8932E+04	-2.1318E+02	1.5002E+04	-2.1317E+02	9.2873E+03	-2.1317E+02	1.0716E+04
336000	-2.1383E+02	1.7146E+04	-2.1383E+02	1.1073E+04	-2.1382E+02	1.8932E+04	-2.1382E+02	1.5002E+04	-2.1381E+02	9.2873E+03	-2.1381E+02	1.0716E+04
338000	-2.1447E+02	1.7146E+04	-2.1446E+02	1.1073E+04	-2.1446E+02	1.8932E+04	-2.1445E+02	1.5002E+04	-2.1445E+02	9.2873E+03	-2.1444E+02	1.0716E+04
340000	-2.1510E+02	1.7146E+04	-2.1510E+02	1.1073E+04	-2.1510E+02	1.8932E+04	-2.1509E+02	1.5002E+04	-2.1508E+02	9.2873E+03	-2.1508E+02	1.0716E+04
342000	-2.1574E+02	1.7146E+04	-2.1573E+02	1.1073E+04	-2.1573E+02	1.8932E+04	-2.1572E+02	1.5002E+04	-2.1572E+02	9.2873E+03	-2.1571E+02	1.0716E+04
344000	-2.1637E+02	1.7146E+04	-2.1636E+02	1.1073E+04	-2.1636E+02	1.8932E+04	-2.1635E+02	1.5002E+04	-2.1635E+02	9.2873E+03	-2.1634E+02	1.0716E+04
346000	-2.1700E+02	1.7146E+04	-2.1699E+02	1.1073E+04	-2.1699E+02	1.8932E+04	-2.1698E+02	1.5002E+04	-2.1698E+02	9.2873E+03	-2.1697E+02	1.0716E+04
348000	-2.1762E+02	1.7146E+04	-2.1762E+02	1.1073E+04	-2.1762E+02	1.8932E+04	-2.1761E+02	1.5002E+04	-2.1760E+02	9.2873E+03	-2.1760E+02	1.0716E+04
350000	-2.1825E+02	1.7146E+04	-2.1825E+02	1.1073E+04	-2.1824E+02	1.8932E+04	-2.1824E+02	1.5002E+04	-2.1823E+02	9.2873E+03	-2.1822E+02	1.0716E+04
352000	-2.1887E+02	1.7146E+04	-2.1887E+02	1.1073E+04	-2.1887E+02	1.8932E+04	-2.1886E+02	1.5002E+04	-2.1885E+02	9.2873E+03	-2.1885E+02	1.0716E+04
354000	-2.1949E+02	1.7146E+04	-2.1949E+02	1.1073E+04	-2.1949E+02	1.8932E+04	-2.1948E+02	1.5002E+04	-2.1948E+02	9.2873E+03	-2.1947E+02	1.0716E+04
356000	-2.2011E+02	1.7146E+04	-2.2011E+02	1.1073E+04	-2.2011E+02	1.8932E+04	-2.2010E+02	1.5002E+04	-2.2010E+02	9.2873E+03	-2.2009E+02	1.0716E+04
358000	-2.2073E+02	1.7146E+04	-2.2073E+02	1.1073E+04	-2.2073E+02	1.8932E+04	-2.2072E+02	1.5002E+04	-2.2071E+02	9.2873E+03	-2.2071E+02	1.0716E+04
360000	-2.2135E+02	1.7146E+04	-2.2135E+02	1.1073E+04	-2.2134E+02	1.8932E+04	-2.2134E+02	1.5002E+04	-2.2133E+02	9.2873E+03	-2.2133E+02	1.0716E+04
362000	-2.2197E+02	1.7146E+04	-2.2196E+02	1.1073E+04	-2.2196E+02	1.8932E+04	-2.2195E+02	1.5002E+04	-2.2195E+02	9.2873E+03	-2.2194E+02	1.0716E+04
364000	-2.2258E+02	1.7146E+04	-2.2258E+02	1.1073E+04	-2.2257E+02	1.8932E+04	-2.2257E+02	1.5002E+04	-2.2256E+02	9.2873E+03	-2.2255E+02	1.0716E+04
366000	-2.2319E+02	1.7146E+04	-2.2319E+02	1.1073E+04	-2.2318E+02	1.8932E+04	-2.2318E+02	1.5002E+04	-2.2317E+02	9.2873E+03	-2.2317E+02	1.0716E+04
368000	-2.2380E+02	1.7146E+04	-2.2380E+02	1.1073E+04	-2.2379E+02	1.8932E+04	-2.2379E+02	1.5002E+04	-2.2378E+02	9.2873E+03	-2.2378E+02	1.0716E+04
370000	-2.2441E+02	1.7146E+04	-2.2441E+02	1.1073E+04	-2.2440E+02	1.8932E+04	-2.2440E+02	1.5002E+04	-2.2439E+02	9.2873E+03	-2.2438E+02	1.0716E+04
372000	-2.2502E+02	1.7146E+04	-2.2501E+02	1.1073E+04	-2.2501E+02	1.8932E+04	-2.2500E+02	1.5002E+04	-2.2500E+02	9.2873E+03	-2.2499E+02	1.0716E+04
374000	-2.2562E+02	1.7146E+04	-2.2562E+02	1.1073E+04	-2.2561E+02	1.8932E+04	-2.2561E+02	1.5002E+04	-2.2560E+02	9.2873E+03	-2.2560E+02	1.0716E+04
376000	-2.2622E+02	1.7146E+04	-2.2622E+02	1.1073E+04	-2.2622E+02	1.8932E+04	-2.2621E+02	1.5002E+04	-2.2621E+02	9.2873E+03	-2.2620E+02	1.0716E+04
378000	-2.2683E+02	1.7146E+04	-2.2682E+02	1.1073E+04	-2.2682E+02	1.8932E+04	-2.2681E+02	1.5002E+04	-2.2681E+02	9.2873E+03	-2.2680E+02	1.0716E+04
380000	-2.2743E+02	1.7146E+04	-2.2742E+02	1.1073E+04	-2.2742E+02	1.8932E+04	-2.2741E+02	1.5002E+04	-2.2741E+02	9.2873E+03	-2.2740E+02	1.0716E+04
382000	-2.2803E+02	1.7146E+04	-2.2802E+02	1.1073E+04	-2.2802E+02	1.8932E+04	-2.2801E+02	1.5002E+04	-2.2801E+02	9.2873E+03	-2.2800E+02	1.0716E+04
384000	-2.2862E+02	1.7146E+04	-2.2862E+02	1.1073E+04	-2.2862E+02	1.8932E+04	-2.2861E+02	1.5002E+04	-2.2860E+02	9.2873E+03	-2.2860E+02	1.0716E+04
386000	-2.2922E+02	1.7146E+04	-2.2921E+02	1.1073E+04	-2.2921E+02	1.8932E+04	-2.2921E+02	1.5002E+04	-2.2920E+02	9.2873E+03	-2.2919E+02	1.0716E+04
388000	-2.2981E+02	1.7146E+04	-2.2981E+02	1.1073E+04	-2.2981E+02	1.8932E+04	-2.2980E+02	1.5002E+04	-2.2979E+02	9.2873E+03	-2.2979E+02	1.0716E+04
390000	-2.3040E+02	1.7146E+04	-2.3040E+02	1.1073E+04	-2.3040E+02	1.8932E+04	-2.3039E+02	1.5002E+04	-2.3039E+02	9.2873E+03	-2.3038E+02	1.0716E+04
392000	-2.3100E+02	1.7146E+04	-2.3099E+02	1.1073E+04	-2.3099E+02	1.8932E+04	-2.3098E+02	1.5002E+04	-2.3098E+02	9.2873E+03	-2.3097E+02	1.0716E+04
394000	-2.3159E+02	1.7146E+04	-2.3158E+02	1.1073E+04	-2.3158E+02	1.8932E+04	-2.3157E+02	1.5002E+04	-2.3157E+02	9.2873E+03	-2.3156E+02	1.0716E+04
396000	-2.3217E+02	1.7146E+04	-2.3217E+02	1.1073E+04	-2.3217E+02	1.8932E+04	-2.3216E+02	1.5002E+04	-2.3216E+02	9.2873E+03	-2.3215E+02	1.0716E+04
398000	-2.3276E+02	1.7146E+04	-2.3276E+02	1.1073E+04	-2.3275E+02	1.8932E+04	-2.3275E+02	1.5002E+04	-2.3274E+02	9.2873E+03	-2.3274E+02	1.0716E+04
400000	-2.3334E+02	1.7146E+04	-2.3334E+02	1.1073E+04	-2.3334E+02	1.8932E+04	-2.3333E+02	1.5002E+04	-2.3333E+02	9.2873E+03	-2.3332E+02	1.0716E+04
402000	-2.3393E+02	1.7146E+04	-2.3393E+02	1.1073E+04	-2.3392E+02	1.8932E+04	-2.3392E+02	1.5002E+04	-2.3391E+02	9.2873E+03	-2.3390E+02	1.0716E+04
404000	-2.3451E+02	1.7146E+04	-2.3451E+02	1.1073E+04	-2.3450E+02	1.8932E+04	-2.3450E+02	1.5002E+04	-2.3449E+02	9.2873E+03	-2.3449E+02	1.0716E+04
406000	-2.3509E+02	1.7146E+04	-2.3509E+02	1.1073E+04	-2.3509E+02	1.8932E+04	-2.3508E+02	1.5002E+04	-2.3507E+02	9.2873E+03	-2.3507E+02	1.0716E+04
408000	-2.3567E+02	1.7146E+04	-2.3567E+02	1.1073E+04	-2.3566E+02	1.8932E+04	-2.3566E+02	1.5002E+04	-2.3565E+02	9.2873E+03	-2.3565E+02	1.0716E+04
410000	-2.3625E+02	1.7146E+04	-2.3625E+02	1.1073E+04	-2.3624E+02	1.8932E+04	-2.3624E+02	1.5002E+04	-2.3623E+02	9.2873E+03	-2.3622E+02	1.0716E+04
412000	-2.3682E+02	1.7146E+04	-2.3682E+02	1.1073E+04	-2.3682E+02	1.8932E+04	-2.3681E+02	1.5002E+04	-2.3681E+02	9.2873E+03	-2.3680E+02	1.0716E+04
414000	-2.3740E+02	1.7146E+04	-2.3740E+02	1.1073E+04	-2.3739E+02	1.8932E+04	-2.3739E+02	1.5002E+04	-2.3738E+02	9.2873E+03	-2.3738E+02	1.0716E+04

Time (yrs)	Arg 1	Curve 1	Arg 2	Curve 2	Arg 3	Curve 3	Arg 4	Curve 4	Arg 5	Curve 5	Arg 6	Curve 6
416000	-2.3797E+02	1.7146E+04	-2.3797E+02	1.1073E+04	-2.3797E+02	1.8932E+04	-2.3796E+02	1.5002E+04	-2.3796E+02	9.2873E+03	-2.3795E+02	1.0716E+04
418000	-2.3855E+02	1.7146E+04	-2.3854E+02	1.1073E+04	-2.3854E+02	1.8932E+04	-2.3853E+02	1.5002E+04	-2.3853E+02	9.2873E+03	-2.3852E+02	1.0716E+04
420000	-2.3912E+02	1.7146E+04	-2.3911E+02	1.1073E+04	-2.3911E+02	1.8932E+04	-2.3910E+02	1.5002E+04	-2.3910E+02	9.2873E+03	-2.3909E+02	1.0716E+04
422000	-2.3969E+02	1.7146E+04	-2.3968E+02	1.1073E+04	-2.3968E+02	1.8932E+04	-2.3967E+02	1.5002E+04	-2.3967E+02	9.2873E+03	-2.3966E+02	1.0716E+04
424000	-2.4025E+02	1.7146E+04	-2.4025E+02	1.1073E+04	-2.4025E+02	1.8932E+04	-2.4024E+02	1.5002E+04	-2.4024E+02	9.2873E+03	-2.4023E+02	1.0716E+04
426000	-2.4082E+02	1.7146E+04	-2.4082E+02	1.1073E+04	-2.4082E+02	1.8932E+04	-2.4081E+02	1.5002E+04	-2.4080E+02	9.2873E+03	-2.4080E+02	1.0716E+04
428000	-2.4139E+02	1.7146E+04	-2.4138E+02	1.1073E+04	-2.4138E+02	1.8932E+04	-2.4137E+02	1.5002E+04	-2.4137E+02	9.2873E+03	-2.4136E+02	1.0716E+04
430000	-2.4195E+02	1.7146E+04	-2.4195E+02	1.1073E+04	-2.4194E+02	1.8932E+04	-2.4194E+02	1.5002E+04	-2.4193E+02	9.2873E+03	-2.4193E+02	1.0716E+04
432000	-2.4251E+02	1.7146E+04	-2.4251E+02	1.1073E+04	-2.4251E+02	1.8932E+04	-2.4250E+02	1.5002E+04	-2.4250E+02	9.2873E+03	-2.4249E+02	1.0716E+04
434000	-2.4307E+02	1.7146E+04	-2.4307E+02	1.1073E+04	-2.4307E+02	1.8932E+04	-2.4306E+02	1.5002E+04	-2.4306E+02	9.2873E+03	-2.4305E+02	1.0716E+04
436000	-2.4364E+02	1.7146E+04	-2.4363E+02	1.1073E+04	-2.4363E+02	1.8932E+04	-2.4362E+02	1.5002E+04	-2.4362E+02	9.2873E+03	-2.4361E+02	1.0716E+04
438000	-2.4419E+02	1.7146E+04	-2.4419E+02	1.1073E+04	-2.4419E+02	1.8932E+04	-2.4418E+02	1.5002E+04	-2.4418E+02	9.2873E+03	-2.4417E+02	1.0716E+04
440000	-2.4475E+02	1.7146E+04	-2.4475E+02	1.1073E+04	-2.4475E+02	1.8932E+04	-2.4474E+02	1.5002E+04	-2.4474E+02	9.2873E+03	-2.4473E+02	1.0716E+04
442000	-2.4531E+02	1.7146E+04	-2.4531E+02	1.1073E+04	-2.4530E+02	1.8932E+04	-2.4530E+02	1.5002E+04	-2.4529E+02	9.2873E+03	-2.4529E+02	1.0716E+04
444000	-2.4586E+02	1.7146E+04	-2.4586E+02	1.1073E+04	-2.4586E+02	1.8932E+04	-2.4585E+02	1.5002E+04	-2.4585E+02	9.2873E+03	-2.4584E+02	1.0716E+04
446000	-2.4642E+02	1.7146E+04	-2.4641E+02	1.1073E+04	-2.4641E+02	1.8932E+04	-2.4641E+02	1.5002E+04	-2.4640E+02	9.2873E+03	-2.4640E+02	1.0716E+04
448000	-2.4697E+02	1.7146E+04	-2.4697E+02	1.1073E+04	-2.4696E+02	1.8932E+04	-2.4696E+02	1.5002E+04	-2.4695E+02	9.2873E+03	-2.4695E+02	1.0716E+04
450000	-2.4752E+02	1.7146E+04	-2.4752E+02	1.1073E+04	-2.4752E+02	1.8932E+04	-2.4751E+02	1.5002E+04	-2.4751E+02	9.2873E+03	-2.4750E+02	1.0716E+04
452000	-2.4807E+02	1.7146E+04	-2.4807E+02	1.1073E+04	-2.4807E+02	1.8932E+04	-2.4806E+02	1.5002E+04	-2.4806E+02	9.2873E+03	-2.4805E+02	1.0716E+04
454000	-2.4862E+02	1.7146E+04	-2.4862E+02	1.1073E+04	-2.4862E+02	1.8932E+04	-2.4861E+02	1.5002E+04	-2.4860E+02	9.2873E+03	-2.4860E+02	1.0716E+04
456000	-2.4917E+02	1.7146E+04	-2.4917E+02	1.1073E+04	-2.4916E+02	1.8932E+04	-2.4916E+02	1.5002E+04	-2.4915E+02	9.2873E+03	-2.4915E+02	1.0716E+04
458000	-2.4972E+02	1.7146E+04	-2.4971E+02	1.1073E+04	-2.4971E+02	1.8932E+04	-2.4970E+02	1.5002E+04	-2.4970E+02	9.2873E+03	-2.4969E+02	1.0716E+04
460000	-2.5026E+02	1.7146E+04	-2.5026E+02	1.1073E+04	-2.5026E+02	1.8932E+04	-2.5025E+02	1.5002E+04	-2.5024E+02	9.2873E+03	-2.5024E+02	1.0716E+04
462000	-2.5080E+02	1.7146E+04	-2.5080E+02	1.1073E+04	-2.5080E+02	1.8932E+04	-2.5079E+02	1.5002E+04	-2.5079E+02	9.2873E+03	-2.5078E+02	1.0716E+04
464000	-2.5135E+02	1.7146E+04	-2.5135E+02	1.1073E+04	-2.5134E+02	1.8932E+04	-2.5134E+02	1.5002E+04	-2.5133E+02	9.2873E+03	-2.5133E+02	1.0716E+04
466000	-2.5189E+02	1.7146E+04	-2.5189E+02	1.1073E+04	-2.5188E+02	1.8932E+04	-2.5188E+02	1.5002E+04	-2.5187E+02	9.2873E+03	-2.5187E+02	1.0716E+04
468000	-2.5243E+02	1.7146E+04	-2.5243E+02	1.1073E+04	-2.5243E+02	1.8932E+04	-2.5242E+02	1.5002E+04	-2.5241E+02	9.2873E+03	-2.5241E+02	1.0716E+04
470000	-2.5297E+02	1.7146E+04	-2.5297E+02	1.1073E+04	-2.5296E+02	1.8932E+04	-2.5296E+02	1.5002E+04	-2.5295E+02	9.2873E+03	-2.5295E+02	1.0716E+04
472000	-2.5351E+02	1.7146E+04	-2.5351E+02	1.1073E+04	-2.5350E+02	1.8932E+04	-2.5350E+02	1.5002E+04	-2.5349E+02	9.2873E+03	-2.5349E+02	1.0716E+04
474000	-2.5405E+02	1.7146E+04	-2.5404E+02	1.1073E+04	-2.5404E+02	1.8932E+04	-2.5403E+02	1.5002E+04	-2.5403E+02	9.2873E+03	-2.5402E+02	1.0716E+04
476000	-2.5458E+02	1.7146E+04	-2.5458E+02	1.1073E+04	-2.5458E+02	1.8932E+04	-2.5457E+02	1.5002E+04	-2.5457E+02	9.2873E+03	-2.5456E+02	1.0716E+04
478000	-2.5512E+02	1.7146E+04	-2.5511E+02	1.1073E+04	-2.5511E+02	1.8932E+04	-2.5511E+02	1.5002E+04	-2.5510E+02	9.2873E+03	-2.5510E+02	1.0716E+04
480000	-2.5565E+02	1.7146E+04	-2.5565E+02	1.1073E+04	-2.5565E+02	1.8932E+04	-2.5564E+02	1.5002E+04	-2.5563E+02	9.2873E+03	-2.5563E+02	1.0716E+04
482000	-2.5618E+02	1.7146E+04	-2.5618E+02	1.1073E+04	-2.5618E+02	1.8932E+04	-2.5617E+02	1.5002E+04	-2.5617E+02	9.2873E+03	-2.5616E+02	1.0716E+04
484000	-2.5672E+02	1.7146E+04	-2.5671E+02	1.1073E+04	-2.5671E+02	1.8932E+04	-2.5670E+02	1.5002E+04	-2.5670E+02	9.2873E+03	-2.5669E+02	1.0716E+04
486000	-2.5725E+02	1.7146E+04	-2.5724E+02	1.1073E+04	-2.5724E+02	1.8932E+04	-2.5724E+02	1.5002E+04	-2.5723E+02	9.2873E+03	-2.5722E+02	1.0716E+04
488000	-2.5778E+02	1.7146E+04	-2.5777E+02	1.1073E+04	-2.5777E+02	1.8932E+04	-2.5776E+02	1.5002E+04	-2.5776E+02	9.2873E+03	-2.5775E+02	1.0716E+04
490000	-2.5830E+02	1.7146E+04	-2.5830E+02	1.1073E+04	-2.5830E+02	1.8932E+04	-2.5829E+02	1.5002E+04	-2.5829E+02	9.2873E+03	-2.5828E+02	1.0716E+04
492000	-2.5883E+02	1.7146E+04	-2.5883E+02	1.1073E+04	-2.5883E+02	1.8932E+04	-2.5882E+02	1.5002E+04	-2.5882E+02	9.2873E+03	-2.5881E+02	1.0716E+04
494000	-2.5936E+02	1.7146E+04	-2.5935E+02	1.1073E+04	-2.5935E+02	1.8932E+04	-2.5935E+02	1.5002E+04	-2.5934E+02	9.2873E+03	-2.5934E+02	1.0716E+04
496000	-2.5988E+02	1.7146E+04	-2.5988E+02	1.1073E+04	-2.5988E+02	1.8932E+04	-2.5987E+02	1.5002E+04	-2.5987E+02	9.2873E+03	-2.5986E+02	1.0716E+04
498000	-2.6041E+02	1.7146E+04	-2.6040E+02	1.1073E+04	-2.6040E+02	1.8932E+04	-2.6040E+02	1.5002E+04	-2.6039E+02	9.2873E+03	-2.6039E+02	1.0716E+04
500000	-2.6093E+02	1.7146E+04	-2.6093E+02	1.1073E+04	-2.6092E+02	1.8932E+04	-2.6092E+02	1.5002E+04	-2.6091E+02	9.2873E+03	-2.6091E+02	1.0716E+04
502000	-2.6145E+02	1.7146E+04	-2.6145E+02	1.1073E+04	-2.6145E+02	1.8932E+04	-2.6144E+02	1.5002E+04	-2.6144E+02	9.2873E+03	-2.6143E+02	1.0716E+04
504000	-2.6197E+02	1.7146E+04	-2.6197E+02	1.1073E+04	-2.6197E+02	1.8932E+04	-2.6196E+02	1.5002E+04	-2.6196E+02	9.2873E+03	-2.6195E+02	1.0716E+04
506000	-2.6249E+02	1.7146E+04	-2.6249E+02	1.1073E+04	-2.6249E+02	1.8932E+04	-2.6248E+02	1.5002E+04	-2.6248E+02	9.2873E+03	-2.6247E+02	1.0716E+04
508000	-2.6301E+02	1.7146E+04	-2.6301E+02	1.1073E+04	-2.6301E+02	1.8932E+04	-2.6300E+02	1.5002E+04	-2.6300E+02	9.2873E+03	-2.6299E+02	1.0716E+04
510000	-2.6353E+02	1.7146E+04	-2.6353E+02	1.1073E+04	-2.6352E+02	1.8932E+04	-2.6352E+02	1.5002E+04	-2.6351E+02	9.2873E+03	-2.6351E+02	1.0716E+04
512000	-2.6405E+02	1.7146E+04	-2.6404E+02	1.1073E+04	-2.6404E+02	1.8932E+04	-2.6404E+02	1.5002E+04	-2.6403E+02	9.2873E+03	-2.6403E+02	1.0716E+04
514000	-2.6456E+02	1.7146E+04	-2.6456E+02	1.1073E+04	-2.6456E+02	1.8932E+04	-2.6455E+02	1.5002E+04	-2.6455E+02	9.2873E+03	-2.6454E+02	1.0716E+04
516000	-2.6508E+02	1.7146E+04	-2.6507E+02	1.1073E+04	-2.6507E+02	1.8932E+04	-2.6507E+02	1.5002E+04	-2.6506E+02	9.2873E+03	-2.6506E+02	1.0716E+04
518000	-2.6559E+02	1.7146E+04	-2.6559E+02	1.1073E+04	-2.6559E+02	1.8932E+04	-2.6558E+02	1.5002E+04	-2.6558E+02	9.2873E+03	-2.6557E+02	1.0716E+04

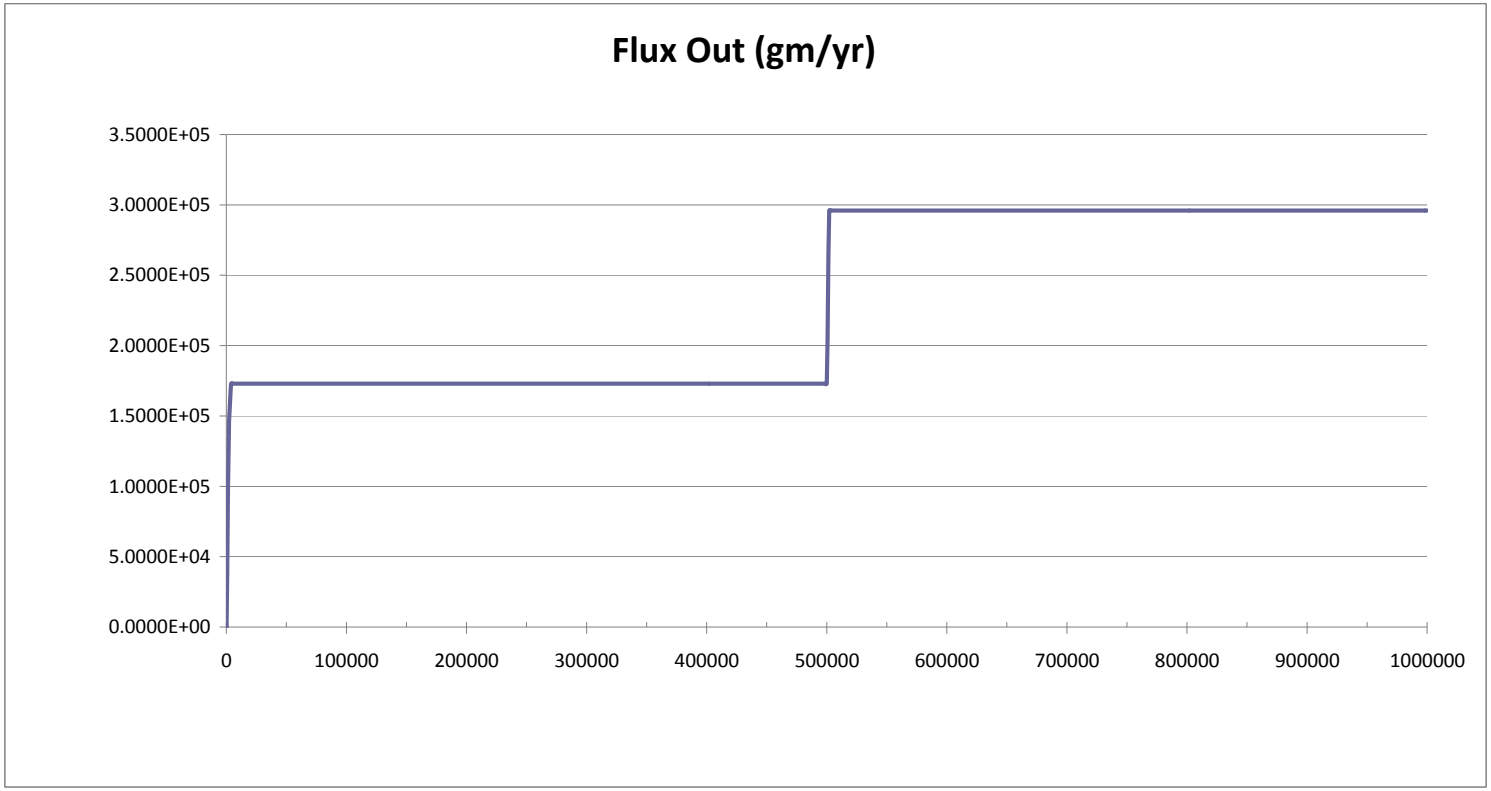
Time (yrs)	Arg 1	Curve 1	Arg 2	Curve 2	Arg 3	Curve 3	Arg 4	Curve 4	Arg 5	Curve 5	Arg 6	Curve 6
520000	-2.6610E+02	1.7146E+04	-2.6610E+02	1.1073E+04	-2.6610E+02	1.8932E+04	-2.6609E+02	1.5002E+04	-2.6609E+02	9.2873E+03	-2.6608E+02	1.0716E+04
522000	-2.6662E+02	1.7146E+04	-2.6661E+02	1.1073E+04	-2.6661E+02	1.8932E+04	-2.6661E+02	1.5002E+04	-2.6660E+02	9.2873E+03	-2.6659E+02	1.0716E+04
524000	-2.6713E+02	1.7146E+04	-2.6712E+02	1.1073E+04	-2.6712E+02	1.8932E+04	-2.6712E+02	1.5002E+04	-2.6711E+02	9.2873E+03	-2.6711E+02	1.0716E+04
526000	-2.6764E+02	1.7146E+04	-2.6763E+02	1.1073E+04	-2.6763E+02	1.8932E+04	-2.6763E+02	1.5002E+04	-2.6762E+02	9.2873E+03	-2.6762E+02	1.0716E+04
528000	-2.6815E+02	1.7146E+04	-2.6814E+02	1.1073E+04	-2.6814E+02	1.8932E+04	-2.6813E+02	1.5002E+04	-2.6813E+02	9.2873E+03	-2.6812E+02	1.0716E+04
530000	-2.6865E+02	1.7146E+04	-2.6865E+02	1.1073E+04	-2.6865E+02	1.8932E+04	-2.6864E+02	1.5002E+04	-2.6864E+02	9.2873E+03	-2.6863E+02	1.0716E+04
532000	-2.6916E+02	1.7146E+04	-2.6916E+02	1.1073E+04	-2.6916E+02	1.8932E+04	-2.6915E+02	1.5002E+04	-2.6914E+02	9.2873E+03	-2.6914E+02	1.0716E+04
534000	-2.6967E+02	1.7146E+04	-2.6966E+02	1.1073E+04	-2.6966E+02	1.8932E+04	-2.6966E+02	1.5002E+04	-2.6965E+02	9.2873E+03	-2.6965E+02	1.0716E+04
536000	-2.7017E+02	1.7146E+04	-2.7017E+02	1.1073E+04	-2.7017E+02	1.8932E+04	-2.7016E+02	1.5002E+04	-2.7016E+02	9.2873E+03	-2.7015E+02	1.0716E+04
538000	-2.7068E+02	1.7146E+04	-2.7067E+02	1.1073E+04	-2.7067E+02	1.8932E+04	-2.7067E+02	1.5002E+04	-2.7066E+02	9.2873E+03	-2.7066E+02	1.0716E+04
540000	-2.7118E+02	1.7146E+04	-2.7118E+02	1.1073E+04	-2.7117E+02	1.8932E+04	-2.7117E+02	1.5002E+04	-2.7116E+02	9.2873E+03	-2.7116E+02	1.0716E+04
542000	-2.7168E+02	1.7146E+04	-2.7168E+02	1.1073E+04	-2.7168E+02	1.8932E+04	-2.7167E+02	1.5002E+04	-2.7167E+02	9.2873E+03	-2.7166E+02	1.0716E+04
544000	-2.7218E+02	1.7146E+04	-2.7218E+02	1.1073E+04	-2.7218E+02	1.8932E+04	-2.7217E+02	1.5002E+04	-2.7217E+02	9.2873E+03	-2.7216E+02	1.0716E+04
546000	-2.7268E+02	1.7146E+04	-2.7268E+02	1.1073E+04	-2.7268E+02	1.8932E+04	-2.7267E+02	1.5002E+04	-2.7267E+02	9.2873E+03	-2.7266E+02	1.0716E+04
548000	-2.7318E+02	1.7146E+04	-2.7318E+02	1.1073E+04	-2.7318E+02	1.8932E+04	-2.7317E+02	1.5002E+04	-2.7317E+02	9.2873E+03	-2.7316E+02	1.0716E+04
550000	-2.7368E+02	1.7146E+04	-2.7368E+02	1.1073E+04	-2.7368E+02	1.8932E+04	-2.7367E+02	1.5002E+04	-2.7367E+02	9.2873E+03	-2.7366E+02	1.0716E+04
552000	-2.7418E+02	1.7146E+04	-2.7418E+02	1.1073E+04	-2.7417E+02	1.8932E+04	-2.7417E+02	1.5002E+04	-2.7416E+02	9.2873E+03	-2.7416E+02	1.0716E+04
554000	-2.7468E+02	1.7146E+04	-2.7467E+02	1.1073E+04	-2.7467E+02	1.8932E+04	-2.7467E+02	1.5002E+04	-2.7466E+02	9.2873E+03	-2.7466E+02	1.0716E+04
556000	-2.7517E+02	1.7146E+04	-2.7517E+02	1.1073E+04	-2.7517E+02	1.8932E+04	-2.7516E+02	1.5002E+04	-2.7516E+02	9.2873E+03	-2.7515E+02	1.0716E+04
558000	-2.7567E+02	1.7146E+04	-2.7566E+02	1.1073E+04	-2.7566E+02	1.8932E+04	-2.7566E+02	1.5002E+04	-2.7565E+02	9.2873E+03	-2.7565E+02	1.0716E+04
560000	-2.7616E+02	1.7146E+04	-2.7616E+02	1.1073E+04	-2.7616E+02	1.8932E+04	-2.7615E+02	1.5002E+04	-2.7615E+02	9.2873E+03	-2.7614E+02	1.0716E+04
562000	-2.7665E+02	1.7146E+04	-2.7665E+02	1.1073E+04	-2.7665E+02	1.8932E+04	-2.7664E+02	1.5002E+04	-2.7664E+02	9.2873E+03	-2.7663E+02	1.0716E+04
564000	-2.7715E+02	1.7146E+04	-2.7714E+02	1.1073E+04	-2.7714E+02	1.8932E+04	-2.7714E+02	1.5002E+04	-2.7713E+02	9.2873E+03	-2.7713E+02	1.0716E+04
566000	-2.7764E+02	1.7146E+04	-2.7764E+02	1.1073E+04	-2.7763E+02	1.8932E+04	-2.7763E+02	1.5002E+04	-2.7762E+02	9.2873E+03	-2.7762E+02	1.0716E+04
568000	-2.7813E+02	1.7146E+04	-2.7813E+02	1.1073E+04	-2.7812E+02	1.8932E+04	-2.7812E+02	1.5002E+04	-2.7811E+02	9.2873E+03	-2.7811E+02	1.0716E+04
570000	-2.7862E+02	1.7146E+04	-2.7862E+02	1.1073E+04	-2.7861E+02	1.8932E+04	-2.7861E+02	1.5002E+04	-2.7860E+02	9.2873E+03	-2.7860E+02	1.0716E+04
572000	-2.7911E+02	1.7146E+04	-2.7910E+02	1.1073E+04	-2.7910E+02	1.8932E+04	-2.7910E+02	1.5002E+04	-2.7909E+02	9.2873E+03	-2.7909E+02	1.0716E+04
574000	-2.7960E+02	1.7146E+04	-2.7959E+02	1.1073E+04	-2.7959E+02	1.8932E+04	-2.7959E+02	1.5002E+04	-2.7958E+02	9.2873E+03	-2.7958E+02	1.0716E+04
576000	-2.8008E+02	1.7146E+04	-2.8008E+02	1.1073E+04	-2.8008E+02	1.8932E+04	-2.8007E+02	1.5002E+04	-2.8007E+02	9.2873E+03	-2.8006E+02	1.0716E+04
578000	-2.8057E+02	1.7146E+04	-2.8057E+02	1.1073E+04	-2.8056E+02	1.8932E+04	-2.8056E+02	1.5002E+04	-2.8055E+02	9.2873E+03	-2.8055E+02	1.0716E+04
580000	-2.8105E+02	1.7146E+04	-2.8105E+02	1.1073E+04	-2.8105E+02	1.8932E+04	-2.8104E+02	1.5002E+04	-2.8104E+02	9.2873E+03	-2.8104E+02	1.0716E+04
582000	-2.8154E+02	1.7146E+04	-2.8154E+02	1.1073E+04	-2.8153E+02	1.8932E+04	-2.8153E+02	1.5002E+04	-2.8152E+02	9.2873E+03	-2.8152E+02	1.0716E+04
584000	-2.8202E+02	1.7146E+04	-2.8202E+02	1.1073E+04	-2.8202E+02	1.8932E+04	-2.8201E+02	1.5002E+04	-2.8201E+02	9.2873E+03	-2.8200E+02	1.0716E+04
586000	-2.8251E+02	1.7146E+04	-2.8250E+02	1.1073E+04	-2.8250E+02	1.8932E+04	-2.8250E+02	1.5002E+04	-2.8249E+02	9.2873E+03	-2.8249E+02	1.0716E+04
588000	-2.8299E+02	1.7146E+04	-2.8299E+02	1.1073E+04	-2.8298E+02	1.8932E+04	-2.8298E+02	1.5002E+04	-2.8297E+02	9.2873E+03	-2.8297E+02	1.0716E+04
590000	-2.8347E+02	1.7146E+04	-2.8347E+02	1.1073E+04	-2.8347E+02	1.8932E+04	-2.8346E+02	1.5002E+04	-2.8346E+02	9.2873E+03	-2.8345E+02	1.0716E+04
592000	-2.8395E+02	1.7146E+04	-2.8395E+02	1.1073E+04	-2.8395E+02	1.8932E+04	-2.8394E+02	1.5002E+04	-2.8394E+02	9.2873E+03	-2.8393E+02	1.0716E+04
594000	-2.8443E+02	1.7146E+04	-2.8443E+02	1.1073E+04	-2.8443E+02	1.8932E+04	-2.8442E+02	1.5002E+04	-2.8442E+02	9.2873E+03	-2.8441E+02	1.0716E+04
596000	-2.8491E+02	1.7146E+04	-2.8491E+02	1.1073E+04	-2.8490E+02	1.8932E+04	-2.8490E+02	1.5002E+04	-2.8489E+02	9.2873E+03	-2.8489E+02	1.0716E+04
598000	-2.8539E+02	1.7146E+04	-2.8538E+02	1.1073E+04	-2.8538E+02	1.8932E+04	-2.8538E+02	1.5002E+04	-2.8537E+02	9.2873E+03	-2.8537E+02	1.0716E+04
600000	-2.8586E+02	1.7146E+04	-2.8586E+02	1.1073E+04	-2.8586E+02	1.8932E+04	-2.8586E+02	1.5002E+04	-2.8585E+02	9.2873E+03	-2.8585E+02	1.0716E+04
602000	-2.8634E+02	1.7146E+04	-2.8634E+02	1.1073E+04	-2.8634E+02	1.8932E+04	-2.8633E+02	1.5002E+04	-2.8633E+02	9.2873E+03	-2.8632E+02	1.0716E+04
604000	-2.8682E+02	1.7146E+04	-2.8681E+02	1.1073E+04	-2.8681E+02	1.8932E+04	-2.8681E+02	1.5002E+04	-2.8680E+02	9.2873E+03	-2.8680E+02	1.0716E+04
606000	-2.8729E+02	1.7146E+04	-2.8729E+02	1.1073E+04	-2.8729E+02	1.8932E+04	-2.8728E+02	1.5002E+04	-2.8728E+02	9.2873E+03	-2.8727E+02	1.0716E+04
608000	-2.8777E+02	1.7146E+04	-2.8776E+02	1.1073E+04	-2.8776E+02	1.8932E+04	-2.8776E+02	1.5002E+04	-2.8775E+02	9.2873E+03	-2.8775E+02	1.0716E+04
610000	-2.8824E+02	1.7146E+04	-2.8824E+02	1.1073E+04	-2.8823E+02	1.8932E+04	-2.8823E+02	1.5002E+04	-2.8823E+02	9.2873E+03	-2.8822E+02	1.0716E+04
612000	-2.8871E+02	1.7146E+04	-2.8871E+02	1.1073E+04	-2.8871E+02	1.8932E+04	-2.8870E+02	1.5002E+04	-2.8870E+02	9.2873E+03	-2.8869E+02	1.0716E+04
614000	-2.8918E+02	1.7146E+04	-2.8918E+02	1.1073E+04	-2.8918E+02	1.8932E+04	-2.8917E+02	1.5002E+04	-2.8917E+02	9.2873E+03	-2.8917E+02	1.0716E+04
616000	-2.8966E+02	1.7146E+04	-2.8965E+02	1.1073E+04	-2.8965E+02	1.8932E+04	-2.8965E+02	1.5002E+04	-2.8964E+02	9.2873E+03	-2.8964E+02	1.0716E+04
618000	-2.9013E+02	1.7146E+04	-2.9012E+02	1.1073E+04	-2.9012E+02	1.8932E+04	-2.9012E+02	1.5002E+04	-2.9011E+02	9.2873E+03	-2.9011E+02	1.0716E+04
620000	-2.9060E+02	1.7146E+04	-2.9059E+02	1.1073E+04	-2.9059E+02	1.8932E+04	-2.9059E+02	1.5002E+04	-2.9058E+02	9.2873E+03	-2.9058E+02	1.0716E+04
622000	-2.9106E+02	1.7146E+04	-2.9106E+02	1.1073E+04	-2.9106E+02	1.8932E+04	-2.9105E+02	1.5002E+04	-2.9105E+02	9.2873E+03	-2.9105E+02	1.0716E+04

Time (yrs)	Arg 1	Curve 1	Arg 2	Curve 2	Arg 3	Curve 3	Arg 4	Curve 4	Arg 5	Curve 5	Arg 6	Curve 6
624000	-2.9153E+02	1.7146E+04	-2.9153E+02	1.1073E+04	-2.9153E+02	1.8932E+04	-2.9152E+02	1.5002E+04	-2.9152E+02	9.2873E+03	-2.9151E+02	1.0716E+04
626000	-2.9200E+02	1.7146E+04	-2.9200E+02	1.1073E+04	-2.9199E+02	1.8932E+04	-2.9199E+02	1.5002E+04	-2.9199E+02	9.2873E+03	-2.9198E+02	1.0716E+04
628000	-2.9247E+02	1.7146E+04	-2.9246E+02	1.1073E+04	-2.9246E+02	1.8932E+04	-2.9246E+02	1.5002E+04	-2.9245E+02	9.2873E+03	-2.9245E+02	1.0716E+04
630000	-2.9293E+02	1.7146E+04	-2.9293E+02	1.1073E+04	-2.9293E+02	1.8932E+04	-2.9292E+02	1.5002E+04	-2.9292E+02	9.2873E+03	-2.9291E+02	1.0716E+04
632000	-2.9340E+02	1.7146E+04	-2.9339E+02	1.1073E+04	-2.9339E+02	1.8932E+04	-2.9339E+02	1.5002E+04	-2.9338E+02	9.2873E+03	-2.9338E+02	1.0716E+04
634000	-2.9386E+02	1.7146E+04	-2.9386E+02	1.1073E+04	-2.9386E+02	1.8932E+04	-2.9385E+02	1.5002E+04	-2.9385E+02	9.2873E+03	-2.9384E+02	1.0716E+04
636000	-2.9432E+02	1.7146E+04	-2.9432E+02	1.1073E+04	-2.9432E+02	1.8932E+04	-2.9432E+02	1.5002E+04	-2.9431E+02	9.2873E+03	-2.9431E+02	1.0716E+04
638000	-2.9479E+02	1.7146E+04	-2.9479E+02	1.1073E+04	-2.9478E+02	1.8932E+04	-2.9478E+02	1.5002E+04	-2.9477E+02	9.2873E+03	-2.9477E+02	1.0716E+04
640000	-2.9525E+02	1.7146E+04	-2.9525E+02	1.1073E+04	-2.9525E+02	1.8932E+04	-2.9524E+02	1.5002E+04	-2.9524E+02	9.2873E+03	-2.9523E+02	1.0716E+04
642000	-2.9571E+02	1.7146E+04	-2.9571E+02	1.1073E+04	-2.9571E+02	1.8932E+04	-2.9570E+02	1.5002E+04	-2.9570E+02	9.2873E+03	-2.9569E+02	1.0716E+04
644000	-2.9617E+02	1.7146E+04	-2.9617E+02	1.1073E+04	-2.9617E+02	1.8932E+04	-2.9616E+02	1.5002E+04	-2.9616E+02	9.2873E+03	-2.9615E+02	1.0716E+04
646000	-2.9663E+02	1.7146E+04	-2.9663E+02	1.1073E+04	-2.9663E+02	1.8932E+04	-2.9662E+02	1.5002E+04	-2.9662E+02	9.2873E+03	-2.9661E+02	1.0716E+04
648000	-2.9709E+02	1.7146E+04	-2.9709E+02	1.1073E+04	-2.9709E+02	1.8932E+04	-2.9708E+02	1.5002E+04	-2.9708E+02	9.2873E+03	-2.9707E+02	1.0716E+04
650000	-2.9755E+02	1.7146E+04	-2.9755E+02	1.1073E+04	-2.9755E+02	1.8932E+04	-2.9754E+02	1.5002E+04	-2.9754E+02	9.2873E+03	-2.9753E+02	1.0716E+04
652000	-2.9801E+02	1.7146E+04	-2.9801E+02	1.1073E+04	-2.9800E+02	1.8932E+04	-2.9800E+02	1.5002E+04	-2.9799E+02	9.2873E+03	-2.9799E+02	1.0716E+04
654000	-2.9846E+02	1.7146E+04	-2.9846E+02	1.1073E+04	-2.9846E+02	1.8932E+04	-2.9846E+02	1.5002E+04	-2.9845E+02	9.2873E+03	-2.9845E+02	1.0716E+04
656000	-2.9892E+02	1.7146E+04	-2.9892E+02	1.1073E+04	-2.9892E+02	1.8932E+04	-2.9891E+02	1.5002E+04	-2.9891E+02	9.2873E+03	-2.9890E+02	1.0716E+04
658000	-2.9938E+02	1.7146E+04	-2.9937E+02	1.1073E+04	-2.9937E+02	1.8932E+04	-2.9937E+02	1.5002E+04	-2.9936E+02	9.2873E+03	-2.9936E+02	1.0716E+04
660000	-2.9983E+02	1.7146E+04	-2.9983E+02	1.1073E+04	-2.9983E+02	1.8932E+04	-2.9982E+02	1.5002E+04	-2.9982E+02	9.2873E+03	-2.9981E+02	1.0716E+04
662000	-3.0029E+02	1.7146E+04	-3.0028E+02	1.1073E+04	-3.0028E+02	1.8932E+04	-3.0028E+02	1.5002E+04	-3.0027E+02	9.2873E+03	-3.0027E+02	1.0716E+04
664000	-3.0074E+02	1.7146E+04	-3.0074E+02	1.1073E+04	-3.0074E+02	1.8932E+04	-3.0073E+02	1.5002E+04	-3.0073E+02	9.2873E+03	-3.0072E+02	1.0716E+04
666000	-3.0119E+02	1.7146E+04	-3.0119E+02	1.1073E+04	-3.0119E+02	1.8932E+04	-3.0118E+02	1.5002E+04	-3.0118E+02	9.2873E+03	-3.0118E+02	1.0716E+04
668000	-3.0165E+02	1.7146E+04	-3.0164E+02	1.1073E+04	-3.0164E+02	1.8932E+04	-3.0164E+02	1.5002E+04	-3.0163E+02	9.2873E+03	-3.0163E+02	1.0716E+04
670000	-3.0210E+02	1.7146E+04	-3.0209E+02	1.1073E+04	-3.0209E+02	1.8932E+04	-3.0209E+02	1.5002E+04	-3.0208E+02	9.2873E+03	-3.0208E+02	1.0716E+04
672000	-3.0255E+02	1.7146E+04	-3.0255E+02	1.1073E+04	-3.0254E+02	1.8932E+04	-3.0254E+02	1.5002E+04	-3.0253E+02	9.2873E+03	-3.0253E+02	1.0716E+04
674000	-3.0300E+02	1.7146E+04	-3.0300E+02	1.1073E+04	-3.0299E+02	1.8932E+04	-3.0299E+02	1.5002E+04	-3.0299E+02	9.2873E+03	-3.0298E+02	1.0716E+04
676000	-3.0345E+02	1.7146E+04	-3.0345E+02	1.1073E+04	-3.0344E+02	1.8932E+04	-3.0344E+02	1.5002E+04	-3.0343E+02	9.2873E+03	-3.0343E+02	1.0716E+04
678000	-3.0390E+02	1.7146E+04	-3.0389E+02	1.1073E+04	-3.0389E+02	1.8932E+04	-3.0389E+02	1.5002E+04	-3.0388E+02	9.2873E+03	-3.0388E+02	1.0716E+04
680000	-3.0435E+02	1.7146E+04	-3.0434E+02	1.1073E+04	-3.0434E+02	1.8932E+04	-3.0434E+02	1.5002E+04	-3.0433E+02	9.2873E+03	-3.0433E+02	1.0716E+04
682000	-3.0479E+02	1.7146E+04	-3.0479E+02	1.1073E+04	-3.0479E+02	1.8932E+04	-3.0478E+02	1.5002E+04	-3.0478E+02	9.2873E+03	-3.0478E+02	1.0716E+04
684000	-3.0524E+02	1.7146E+04	-3.0524E+02	1.1073E+04	-3.0524E+02	1.8932E+04	-3.0523E+02	1.5002E+04	-3.0523E+02	9.2873E+03	-3.0522E+02	1.0716E+04
686000	-3.0569E+02	1.7146E+04	-3.0568E+02	1.1073E+04	-3.0568E+02	1.8932E+04	-3.0568E+02	1.5002E+04	-3.0567E+02	9.2873E+03	-3.0567E+02	1.0716E+04
688000	-3.0613E+02	1.7146E+04	-3.0613E+02	1.1073E+04	-3.0613E+02	1.8932E+04	-3.0612E+02	1.5002E+04	-3.0612E+02	9.2873E+03	-3.0611E+02	1.0716E+04
690000	-3.0658E+02	1.7146E+04	-3.0658E+02	1.1073E+04	-3.0657E+02	1.8932E+04	-3.0657E+02	1.5002E+04	-3.0656E+02	9.2873E+03	-3.0656E+02	1.0716E+04
692000	-3.0702E+02	1.7146E+04	-3.0702E+02	1.1073E+04	-3.0702E+02	1.8932E+04	-3.0701E+02	1.5002E+04	-3.0701E+02	9.2873E+03	-3.0700E+02	1.0716E+04
694000	-3.0747E+02	1.7146E+04	-3.0746E+02	1.1073E+04	-3.0746E+02	1.8932E+04	-3.0746E+02	1.5002E+04	-3.0745E+02	9.2873E+03	-3.0745E+02	1.0716E+04
696000	-3.0791E+02	1.7146E+04	-3.0791E+02	1.1073E+04	-3.0790E+02	1.8932E+04	-3.0790E+02	1.5002E+04	-3.0790E+02	9.2873E+03	-3.0789E+02	1.0716E+04
698000	-3.0835E+02	1.7146E+04	-3.0835E+02	1.1073E+04	-3.0835E+02	1.8932E+04	-3.0834E+02	1.5002E+04	-3.0834E+02	9.2873E+03	-3.0833E+02	1.0716E+04
700000	-3.0879E+02	1.7146E+04	-3.0879E+02	1.1073E+04	-3.0879E+02	1.8932E+04	-3.0878E+02	1.5002E+04	-3.0878E+02	9.2873E+03	-3.0878E+02	1.0716E+04
702000	-3.0923E+02	1.7146E+04	-3.0923E+02	1.1073E+04	-3.0923E+02	1.8932E+04	-3.0923E+02	1.5002E+04	-3.0922E+02	9.2873E+03	-3.0922E+02	1.0716E+04
704000	-3.0967E+02	1.7146E+04	-3.0967E+02	1.1073E+04	-3.0967E+02	1.8932E+04	-3.0967E+02	1.5002E+04	-3.0966E+02	9.2873E+03	-3.0966E+02	1.0716E+04
706000	-3.1011E+02	1.7146E+04	-3.1011E+02	1.1073E+04	-3.1011E+02	1.8932E+04	-3.1011E+02	1.5002E+04	-3.1010E+02	9.2873E+03	-3.1010E+02	1.0716E+04
708000	-3.1055E+02	1.7146E+04	-3.1055E+02	1.1073E+04	-3.1055E+02	1.8932E+04	-3.1055E+02	1.5002E+04	-3.1054E+02	9.2873E+03	-3.1054E+02	1.0716E+04
710000	-3.1099E+02	1.7146E+04	-3.1099E+02	1.1073E+04	-3.1099E+02	1.8932E+04	-3.1098E+02	1.5002E+04	-3.1098E+02	9.2873E+03	-3.1098E+02	1.0716E+04
712000	-3.1143E+02	1.7146E+04	-3.1143E+02	1.1073E+04	-3.1143E+02	1.8932E+04	-3.1142E+02	1.5002E+04	-3.1142E+02	9.2873E+03	-3.1141E+02	1.0716E+04
714000	-3.1187E+02	1.7146E+04	-3.1187E+02	1.1073E+04	-3.1186E+02	1.8932E+04	-3.1186E+02	1.5002E+04	-3.1186E+02	9.2873E+03	-3.1185E+02	1.0716E+04
716000	-3.1231E+02	1.7146E+04	-3.1230E+02	1.1073E+04	-3.1230E+02	1.8932E+04	-3.1230E+02	1.5002E+04	-3.1229E+02	9.2873E+03	-3.1229E+02	1.0716E+04
718000	-3.1274E+02	1.7146E+04	-3.1274E+02	1.1073E+04	-3.1274E+02	1.8932E+04	-3.1273E+02	1.5002E+04	-3.1273E+02	9.2873E+03	-3.1272E+02	1.0716E+04
720000	-3.1318E+02	1.7146E+04	-3.1318E+02	1.1073E+04	-3.1317E+02	1.8932E+04	-3.1317E+02	1.5002E+04	-3.1316E+02	9.2873E+03	-3.1316E+02	1.0716E+04
722000	-3.1361E+02	1.7146E+04	-3.1361E+02	1.1073E+04	-3.1361E+02	1.8932E+04	-3.1360E+02	1.5002E+04	-3.1360E+02	9.2873E+03	-3.1359E+02	1.0716E+04
724000	-3.1405E+02	1.7146E+04	-3.1404E+02	1.1073E+04	-3.1404E+02	1.8932E+04	-3.1404E+02	1.5002E+04	-3.1403E+02	9.2873E+03	-3.1403E+02	1.0716E+04
726000	-3.1448E+02	1.7146E+04	-3.1448E+02	1.1073E+04	-3.1448E+02	1.8932E+04	-3.1447E+02	1.5002E+04	-3.1447E+02	9.2873E+03	-3.1446E+02	1.0716E+04

Time (yrs)	Arg 1	Curve 1	Arg 2	Curve 2	Arg 3	Curve 3	Arg 4	Curve 4	Arg 5	Curve 5	Arg 6	Curve 6
728000	-3.1491E+02	1.7146E+04	-3.1491E+02	1.1073E+04	-3.1491E+02	1.8932E+04	-3.1491E+02	1.5002E+04	-3.1490E+02	9.2873E+03	-3.1490E+02	1.0716E+04
730000	-3.1535E+02	1.7146E+04	-3.1534E+02	1.1073E+04	-3.1534E+02	1.8932E+04	-3.1534E+02	1.5002E+04	-3.1533E+02	9.2873E+03	-3.1533E+02	1.0716E+04
732000	-3.1578E+02	1.7146E+04	-3.1578E+02	1.1073E+04	-3.1577E+02	1.8932E+04	-3.1577E+02	1.5002E+04	-3.1577E+02	9.2873E+03	-3.1576E+02	1.0716E+04
734000	-3.1621E+02	1.7146E+04	-3.1621E+02	1.1073E+04	-3.1621E+02	1.8932E+04	-3.1620E+02	1.5002E+04	-3.1620E+02	9.2873E+03	-3.1619E+02	1.0716E+04
736000	-3.1664E+02	1.7146E+04	-3.1664E+02	1.1073E+04	-3.1664E+02	1.8932E+04	-3.1663E+02	1.5002E+04	-3.1663E+02	9.2873E+03	-3.1662E+02	1.0716E+04
738000	-3.1707E+02	1.7146E+04	-3.1707E+02	1.1073E+04	-3.1707E+02	1.8932E+04	-3.1706E+02	1.5002E+04	-3.1706E+02	9.2873E+03	-3.1705E+02	1.0716E+04
740000	-3.1750E+02	1.7146E+04	-3.1750E+02	1.1073E+04	-3.1750E+02	1.8932E+04	-3.1749E+02	1.5002E+04	-3.1749E+02	9.2873E+03	-3.1748E+02	1.0716E+04
742000	-3.1793E+02	1.7146E+04	-3.1793E+02	1.1073E+04	-3.1793E+02	1.8932E+04	-3.1792E+02	1.5002E+04	-3.1792E+02	9.2873E+03	-3.1791E+02	1.0716E+04
744000	-3.1836E+02	1.7146E+04	-3.1836E+02	1.1073E+04	-3.1835E+02	1.8932E+04	-3.1835E+02	1.5002E+04	-3.1835E+02	9.2873E+03	-3.1834E+02	1.0716E+04
746000	-3.1879E+02	1.7146E+04	-3.1878E+02	1.1073E+04	-3.1878E+02	1.8932E+04	-3.1878E+02	1.5002E+04	-3.1877E+02	9.2873E+03	-3.1877E+02	1.0716E+04
748000	-3.1921E+02	1.7146E+04	-3.1921E+02	1.1073E+04	-3.1921E+02	1.8932E+04	-3.1921E+02	1.5002E+04	-3.1920E+02	9.2873E+03	-3.1920E+02	1.0716E+04
750000	-3.1964E+02	1.7146E+04	-3.1964E+02	1.1073E+04	-3.1964E+02	1.8932E+04	-3.1963E+02	1.5002E+04	-3.1963E+02	9.2873E+03	-3.1962E+02	1.0716E+04
752000	-3.2007E+02	1.7146E+04	-3.2007E+02	1.1073E+04	-3.2006E+02	1.8932E+04	-3.2006E+02	1.5002E+04	-3.2005E+02	9.2873E+03	-3.2005E+02	1.0716E+04
754000	-3.2049E+02	1.7146E+04	-3.2049E+02	1.1073E+04	-3.2049E+02	1.8932E+04	-3.2048E+02	1.5002E+04	-3.2048E+02	9.2873E+03	-3.2048E+02	1.0716E+04
756000	-3.2092E+02	1.7146E+04	-3.2092E+02	1.1073E+04	-3.2091E+02	1.8932E+04	-3.2091E+02	1.5002E+04	-3.2091E+02	9.2873E+03	-3.2090E+02	1.0716E+04
758000	-3.2134E+02	1.7146E+04	-3.2134E+02	1.1073E+04	-3.2134E+02	1.8932E+04	-3.2133E+02	1.5002E+04	-3.2133E+02	9.2873E+03	-3.2133E+02	1.0716E+04
760000	-3.2177E+02	1.7146E+04	-3.2176E+02	1.1073E+04	-3.2176E+02	1.8932E+04	-3.2176E+02	1.5002E+04	-3.2175E+02	9.2873E+03	-3.2175E+02	1.0716E+04
762000	-3.2219E+02	1.7146E+04	-3.2219E+02	1.1073E+04	-3.2219E+02	1.8932E+04	-3.2218E+02	1.5002E+04	-3.2218E+02	9.2873E+03	-3.2217E+02	1.0716E+04
764000	-3.2261E+02	1.7146E+04	-3.2261E+02	1.1073E+04	-3.2261E+02	1.8932E+04	-3.2260E+02	1.5002E+04	-3.2260E+02	9.2873E+03	-3.2260E+02	1.0716E+04
766000	-3.2304E+02	1.7146E+04	-3.2303E+02	1.1073E+04	-3.2303E+02	1.8932E+04	-3.2303E+02	1.5002E+04	-3.2302E+02	9.2873E+03	-3.2302E+02	1.0716E+04
768000	-3.2346E+02	1.7146E+04	-3.2345E+02	1.1073E+04	-3.2345E+02	1.8932E+04	-3.2345E+02	1.5002E+04	-3.2344E+02	9.2873E+03	-3.2344E+02	1.0716E+04
770000	-3.2388E+02	1.7146E+04	-3.2388E+02	1.1073E+04	-3.2387E+02	1.8932E+04	-3.2387E+02	1.5002E+04	-3.2387E+02	9.2873E+03	-3.2386E+02	1.0716E+04
772000	-3.2430E+02	1.7146E+04	-3.2430E+02	1.1073E+04	-3.2429E+02	1.8932E+04	-3.2429E+02	1.5002E+04	-3.2429E+02	9.2873E+03	-3.2428E+02	1.0716E+04
774000	-3.2472E+02	1.7146E+04	-3.2472E+02	1.1073E+04	-3.2472E+02	1.8932E+04	-3.2471E+02	1.5002E+04	-3.2471E+02	9.2873E+03	-3.2470E+02	1.0716E+04
776000	-3.2514E+02	1.7146E+04	-3.2514E+02	1.1073E+04	-3.2513E+02	1.8932E+04	-3.2513E+02	1.5002E+04	-3.2513E+02	9.2873E+03	-3.2512E+02	1.0716E+04
778000	-3.2556E+02	1.7146E+04	-3.2556E+02	1.1073E+04	-3.2555E+02	1.8932E+04	-3.2555E+02	1.5002E+04	-3.2555E+02	9.2873E+03	-3.2554E+02	1.0716E+04
780000	-3.2598E+02	1.7146E+04	-3.2597E+02	1.1073E+04	-3.2597E+02	1.8932E+04	-3.2597E+02	1.5002E+04	-3.2596E+02	9.2873E+03	-3.2596E+02	1.0716E+04
782000	-3.2639E+02	1.7146E+04	-3.2639E+02	1.1073E+04	-3.2639E+02	1.8932E+04	-3.2639E+02	1.5002E+04	-3.2638E+02	9.2873E+03	-3.2638E+02	1.0716E+04
784000	-3.2681E+02	1.7146E+04	-3.2681E+02	1.1073E+04	-3.2681E+02	1.8932E+04	-3.2680E+02	1.5002E+04	-3.2680E+02	9.2873E+03	-3.2680E+02	1.0716E+04
786000	-3.2723E+02	1.7146E+04	-3.2723E+02	1.1073E+04	-3.2722E+02	1.8932E+04	-3.2722E+02	1.5002E+04	-3.2722E+02	9.2873E+03	-3.2721E+02	1.0716E+04
788000	-3.2765E+02	1.7146E+04	-3.2764E+02	1.1073E+04	-3.2764E+02	1.8932E+04	-3.2764E+02	1.5002E+04	-3.2763E+02	9.2873E+03	-3.2763E+02	1.0716E+04
790000	-3.2806E+02	1.7146E+04	-3.2806E+02	1.1073E+04	-3.2806E+02	1.8932E+04	-3.2805E+02	1.5002E+04	-3.2805E+02	9.2873E+03	-3.2804E+02	1.0716E+04
792000	-3.2848E+02	1.7146E+04	-3.2847E+02	1.1073E+04	-3.2847E+02	1.8932E+04	-3.2847E+02	1.5002E+04	-3.2846E+02	9.2873E+03	-3.2846E+02	1.0716E+04
794000	-3.2889E+02	1.7146E+04	-3.2889E+02	1.1073E+04	-3.2889E+02	1.8932E+04	-3.2888E+02	1.5002E+04	-3.2888E+02	9.2873E+03	-3.2887E+02	1.0716E+04
796000	-3.2931E+02	1.7146E+04	-3.2930E+02	1.1073E+04	-3.2930E+02	1.8932E+04	-3.2930E+02	1.5002E+04	-3.2929E+02	9.2873E+03	-3.2929E+02	1.0716E+04
798000	-3.2972E+02	1.7146E+04	-3.2972E+02	1.1073E+04	-3.2972E+02	1.8932E+04	-3.2971E+02	1.5002E+04	-3.2971E+02	9.2873E+03	-3.2970E+02	1.0716E+04
800000	-3.3013E+02	1.7146E+04	-3.3013E+02	1.1073E+04	-3.3013E+02	1.8932E+04	-3.3012E+02	1.5002E+04	-3.3012E+02	9.2873E+03	-3.3012E+02	1.0716E+04
802000	-3.3055E+02	1.7146E+04	-3.3054E+02	1.1073E+04	-3.3054E+02	1.8932E+04	-3.3054E+02	1.5002E+04	-3.3053E+02	9.2873E+03	-3.3053E+02	1.0716E+04
804000	-3.3096E+02	1.7146E+04	-3.3096E+02	1.1073E+04	-3.3095E+02	1.8932E+04	-3.3095E+02	1.5002E+04	-3.3095E+02	9.2873E+03	-3.3094E+02	1.0716E+04
806000	-3.3137E+02	1.7146E+04	-3.3137E+02	1.1073E+04	-3.3137E+02	1.8932E+04	-3.3136E+02	1.5002E+04	-3.3136E+02	9.2873E+03	-3.3135E+02	1.0716E+04
808000	-3.3178E+02	1.7146E+04	-3.3178E+02	1.1073E+04	-3.3178E+02	1.8932E+04	-3.3177E+02	1.5002E+04	-3.3177E+02	9.2873E+03	-3.3176E+02	1.0716E+04
810000	-3.3219E+02	1.7146E+04	-3.3219E+02	1.1073E+04	-3.3219E+02	1.8932E+04	-3.3218E+02	1.5002E+04	-3.3218E+02	9.2873E+03	-3.3217E+02	1.0716E+04
812000	-3.3260E+02	1.7146E+04	-3.3260E+02	1.1073E+04	-3.3260E+02	1.8932E+04	-3.3259E+02	1.5002E+04	-3.3259E+02	9.2873E+03	-3.3258E+02	1.0716E+04
814000	-3.3301E+02	1.7146E+04	-3.3301E+02	1.1073E+04	-3.3301E+02	1.8932E+04	-3.3300E+02	1.5002E+04	-3.3300E+02	9.2873E+03	-3.3299E+02	1.0716E+04
816000	-3.3342E+02	1.7146E+04	-3.3342E+02	1.1073E+04	-3.3342E+02	1.8932E+04	-3.3341E+02	1.5002E+04	-3.3341E+02	9.2873E+03	-3.3340E+02	1.0716E+04
818000	-3.3383E+02	1.7146E+04	-3.3383E+02	1.1073E+04	-3.3382E+02	1.8932E+04	-3.3382E+02	1.5002E+04	-3.3382E+02	9.2873E+03	-3.3381E+02	1.0716E+04
820000	-3.3424E+02	1.7146E+04	-3.3424E+02	1.1073E+04	-3.3423E+02	1.8932E+04	-3.3423E+02	1.5002E+04	-3.3422E+02	9.2873E+03	-3.3422E+02	1.0716E+04
822000	-3.3464E+02	1.7146E+04	-3.3464E+02	1.1073E+04	-3.3464E+02	1.8932E+04	-3.3464E+02	1.5002E+04	-3.3463E+02	9.2873E+03	-3.3463E+02	1.0716E+04
824000	-3.3505E+02	1.7146E+04	-3.3505E+02	1.1073E+04	-3.3505E+02	1.8932E+04	-3.3504E+02	1.5002E+04	-3.3504E+02	9.2873E+03	-3.3504E+02	1.0716E+04
826000	-3.3546E+02	1.7146E+04	-3.3546E+02	1.1073E+04	-3.3545E+02	1.8932E+04	-3.3545E+02	1.5002E+04	-3.3545E+02	9.2873E+03	-3.3544E+02	1.0716E+04
828000	-3.3586E+02	1.7146E+04	-3.3586E+02	1.1073E+04	-3.3586E+02	1.8932E+04	-3.3586E+02	1.5002E+04	-3.3585E+02	9.2873E+03	-3.3585E+02	1.0716E+04
830000	-3.3627E+02	1.7146E+04	-3.3627E+02	1.1073E+04	-3.3627E+02	1.8932E+04	-3.3626E+02	1.5002E+04	-3.3626E+02	9.2873E+03	-3.3625E+02	1.0716E+04

Time (yrs)	Arg 1	Curve 1	Arg 2	Curve 2	Arg 3	Curve 3	Arg 4	Curve 4	Arg 5	Curve 5	Arg 6	Curve 6
832000	-3.3668E+02	1.7146E+04	-3.3667E+02	1.1073E+04	-3.3667E+02	1.8932E+04	-3.3667E+02	1.5002E+04	-3.3666E+02	9.2873E+03	-3.3666E+02	1.0716E+04
834000	-3.3708E+02	1.7146E+04	-3.3708E+02	1.1073E+04	-3.3708E+02	1.8932E+04	-3.3707E+02	1.5002E+04	-3.3707E+02	9.2873E+03	-3.3706E+02	1.0716E+04
836000	-3.3748E+02	1.7146E+04	-3.3748E+02	1.1073E+04	-3.3748E+02	1.8932E+04	-3.3748E+02	1.5002E+04	-3.3747E+02	9.2873E+03	-3.3747E+02	1.0716E+04
838000	-3.3789E+02	1.7146E+04	-3.3789E+02	1.1073E+04	-3.3788E+02	1.8932E+04	-3.3788E+02	1.5002E+04	-3.3788E+02	9.2873E+03	-3.3787E+02	1.0716E+04
840000	-3.3829E+02	1.7146E+04	-3.3829E+02	1.1073E+04	-3.3829E+02	1.8932E+04	-3.3828E+02	1.5002E+04	-3.3828E+02	9.2873E+03	-3.3828E+02	1.0716E+04
842000	-3.3869E+02	1.7146E+04	-3.3869E+02	1.1073E+04	-3.3869E+02	1.8932E+04	-3.3869E+02	1.5002E+04	-3.3868E+02	9.2873E+03	-3.3868E+02	1.0716E+04
844000	-3.3910E+02	1.7146E+04	-3.3909E+02	1.1073E+04	-3.3909E+02	1.8932E+04	-3.3909E+02	1.5002E+04	-3.3908E+02	9.2873E+03	-3.3908E+02	1.0716E+04
846000	-3.3950E+02	1.7146E+04	-3.3950E+02	1.1073E+04	-3.3949E+02	1.8932E+04	-3.3949E+02	1.5002E+04	-3.3949E+02	9.2873E+03	-3.3948E+02	1.0716E+04
848000	-3.3990E+02	1.7146E+04	-3.3990E+02	1.1073E+04	-3.3990E+02	1.8932E+04	-3.3989E+02	1.5002E+04	-3.3989E+02	9.2873E+03	-3.3988E+02	1.0716E+04
850000	-3.4030E+02	1.7146E+04	-3.4030E+02	1.1073E+04	-3.4030E+02	1.8932E+04	-3.4029E+02	1.5002E+04	-3.4029E+02	9.2873E+03	-3.4028E+02	1.0716E+04
852000	-3.4070E+02	1.7146E+04	-3.4070E+02	1.1073E+04	-3.4070E+02	1.8932E+04	-3.4069E+02	1.5002E+04	-3.4069E+02	9.2873E+03	-3.4069E+02	1.0716E+04
854000	-3.4110E+02	1.7146E+04	-3.4110E+02	1.1073E+04	-3.4110E+02	1.8932E+04	-3.4109E+02	1.5002E+04	-3.4109E+02	9.2873E+03	-3.4109E+02	1.0716E+04
856000	-3.4150E+02	1.7146E+04	-3.4150E+02	1.1073E+04	-3.4150E+02	1.8932E+04	-3.4149E+02	1.5002E+04	-3.4149E+02	9.2873E+03	-3.4148E+02	1.0716E+04
858000	-3.4190E+02	1.7146E+04	-3.4190E+02	1.1073E+04	-3.4190E+02	1.8932E+04	-3.4189E+02	1.5002E+04	-3.4189E+02	9.2873E+03	-3.4188E+02	1.0716E+04
860000	-3.4230E+02	1.7146E+04	-3.4230E+02	1.1073E+04	-3.4229E+02	1.8932E+04	-3.4229E+02	1.5002E+04	-3.4229E+02	9.2873E+03	-3.4228E+02	1.0716E+04
862000	-3.4270E+02	1.7146E+04	-3.4269E+02	1.1073E+04	-3.4269E+02	1.8932E+04	-3.4269E+02	1.5002E+04	-3.4268E+02	9.2873E+03	-3.4268E+02	1.0716E+04
864000	-3.4309E+02	1.7146E+04	-3.4309E+02	1.1073E+04	-3.4309E+02	1.8932E+04	-3.4309E+02	1.5002E+04	-3.4308E+02	9.2873E+03	-3.4308E+02	1.0716E+04
866000	-3.4349E+02	1.7146E+04	-3.4349E+02	1.1073E+04	-3.4349E+02	1.8932E+04	-3.4348E+02	1.5002E+04	-3.4348E+02	9.2873E+03	-3.4348E+02	1.0716E+04
868000	-3.4389E+02	1.7146E+04	-3.4389E+02	1.1073E+04	-3.4388E+02	1.8932E+04	-3.4388E+02	1.5002E+04	-3.4388E+02	9.2873E+03	-3.4387E+02	1.0716E+04
870000	-3.4428E+02	1.7146E+04	-3.4428E+02	1.1073E+04	-3.4428E+02	1.8932E+04	-3.4428E+02	1.5002E+04	-3.4427E+02	9.2873E+03	-3.4427E+02	1.0716E+04
872000	-3.4468E+02	1.7146E+04	-3.4468E+02	1.1073E+04	-3.4468E+02	1.8932E+04	-3.4467E+02	1.5002E+04	-3.4467E+02	9.2873E+03	-3.4466E+02	1.0716E+04
874000	-3.4508E+02	1.7146E+04	-3.4507E+02	1.1073E+04	-3.4507E+02	1.8932E+04	-3.4507E+02	1.5002E+04	-3.4506E+02	9.2873E+03	-3.4506E+02	1.0716E+04
876000	-3.4547E+02	1.7146E+04	-3.4547E+02	1.1073E+04	-3.4547E+02	1.8932E+04	-3.4546E+02	1.5002E+04	-3.4546E+02	9.2873E+03	-3.4545E+02	1.0716E+04
878000	-3.4586E+02	1.7146E+04	-3.4586E+02	1.1073E+04	-3.4586E+02	1.8932E+04	-3.4586E+02	1.5002E+04	-3.4585E+02	9.2873E+03	-3.4585E+02	1.0716E+04
880000	-3.4626E+02	1.7146E+04	-3.4626E+02	1.1073E+04	-3.4625E+02	1.8932E+04	-3.4625E+02	1.5002E+04	-3.4625E+02	9.2873E+03	-3.4624E+02	1.0716E+04
882000	-3.4665E+02	1.7146E+04	-3.4665E+02	1.1073E+04	-3.4665E+02	1.8932E+04	-3.4664E+02	1.5002E+04	-3.4664E+02	9.2873E+03	-3.4664E+02	1.0716E+04
884000	-3.4705E+02	1.7146E+04	-3.4704E+02	1.1073E+04	-3.4704E+02	1.8932E+04	-3.4704E+02	1.5002E+04	-3.4703E+02	9.2873E+03	-3.4703E+02	1.0716E+04
886000	-3.4744E+02	1.7146E+04	-3.4744E+02	1.1073E+04	-3.4743E+02	1.8932E+04	-3.4743E+02	1.5002E+04	-3.4743E+02	9.2873E+03	-3.4742E+02	1.0716E+04
888000	-3.4783E+02	1.7146E+04	-3.4783E+02	1.1073E+04	-3.4783E+02	1.8932E+04	-3.4782E+02	1.5002E+04	-3.4782E+02	9.2873E+03	-3.4781E+02	1.0716E+04
890000	-3.4822E+02	1.7146E+04	-3.4822E+02	1.1073E+04	-3.4822E+02	1.8932E+04	-3.4821E+02	1.5002E+04	-3.4821E+02	9.2873E+03	-3.4821E+02	1.0716E+04
892000	-3.4861E+02	1.7146E+04	-3.4861E+02	1.1073E+04	-3.4861E+02	1.8932E+04	-3.4861E+02	1.5002E+04	-3.4860E+02	9.2873E+03	-3.4860E+02	1.0716E+04
894000	-3.4900E+02	1.7146E+04	-3.4900E+02	1.1073E+04	-3.4900E+02	1.8932E+04	-3.4900E+02	1.5002E+04	-3.4899E+02	9.2873E+03	-3.4899E+02	1.0716E+04
896000	-3.4939E+02	1.7146E+04	-3.4939E+02	1.1073E+04	-3.4939E+02	1.8932E+04	-3.4939E+02	1.5002E+04	-3.4938E+02	9.2873E+03	-3.4938E+02	1.0716E+04
898000	-3.4978E+02	1.7146E+04	-3.4978E+02	1.1073E+04	-3.4978E+02	1.8932E+04	-3.4978E+02	1.5002E+04	-3.4977E+02	9.2873E+03	-3.4977E+02	1.0716E+04
900000	-3.5017E+02	1.7146E+04	-3.5017E+02	1.1073E+04	-3.5017E+02	1.8932E+04	-3.5017E+02	1.5002E+04	-3.5016E+02	9.2873E+03	-3.5016E+02	1.0716E+04
902000	-3.5056E+02	1.7146E+04	-3.5056E+02	1.1073E+04	-3.5056E+02	1.8932E+04	-3.5056E+02	1.5002E+04	-3.5055E+02	9.2873E+03	-3.5055E+02	1.0716E+04
904000	-3.5095E+02	1.7146E+04	-3.5095E+02	1.1073E+04	-3.5095E+02	1.8932E+04	-3.5094E+02	1.5002E+04	-3.5094E+02	9.2873E+03	-3.5094E+02	1.0716E+04
906000	-3.5134E+02	1.7146E+04	-3.5134E+02	1.1073E+04	-3.5134E+02	1.8932E+04	-3.5133E+02	1.5002E+04	-3.5133E+02	9.2873E+03	-3.5132E+02	1.0716E+04
908000	-3.5173E+02	1.7146E+04	-3.5173E+02	1.1073E+04	-3.5172E+02	1.8932E+04	-3.5172E+02	1.5002E+04	-3.5172E+02	9.2873E+03	-3.5171E+02	1.0716E+04
910000	-3.5212E+02	1.7146E+04	-3.5211E+02	1.1073E+04	-3.5211E+02	1.8932E+04	-3.5211E+02	1.5002E+04	-3.5210E+02	9.2873E+03	-3.5210E+02	1.0716E+04
912000	-3.5250E+02	1.7146E+04	-3.5250E+02	1.1073E+04	-3.5250E+02	1.8932E+04	-3.5249E+02	1.5002E+04	-3.5249E+02	9.2873E+03	-3.5249E+02	1.0716E+04
914000	-3.5289E+02	1.7146E+04	-3.5289E+02	1.1073E+04	-3.5289E+02	1.8932E+04	-3.5288E+02	1.5002E+04	-3.5288E+02	9.2873E+03	-3.5287E+02	1.0716E+04
916000	-3.5328E+02	1.7146E+04	-3.5327E+02	1.1073E+04	-3.5327E+02	1.8932E+04	-3.5327E+02	1.5002E+04	-3.5326E+02	9.2873E+03	-3.5326E+02	1.0716E+04
918000	-3.5366E+02	1.7146E+04	-3.5366E+02	1.1073E+04	-3.5366E+02	1.8932E+04	-3.5365E+02	1.5002E+04	-3.5365E+02	9.2873E+03	-3.5365E+02	1.0716E+04
920000	-3.5405E+02	1.7146E+04	-3.5404E+02	1.1073E+04	-3.5404E+02	1.8932E+04	-3.5404E+02	1.5002E+04	-3.5403E+02	9.2873E+03	-3.5403E+02	1.0716E+04
922000	-3.5443E+02	1.7146E+04	-3.5443E+02	1.1073E+04	-3.5443E+02	1.8932E+04	-3.5442E+02	1.5002E+04	-3.5442E+02	9.2873E+03	-3.5442E+02	1.0716E+04
924000	-3.5482E+02	1.7146E+04	-3.5481E+02	1.1073E+04	-3.5481E+02	1.8932E+04	-3.5481E+02	1.5002E+04	-3.5480E+02	9.2873E+03	-3.5480E+02	1.0716E+04
926000	-3.5520E+02	1.7146E+04	-3.5520E+02	1.1073E+04	-3.5520E+02	1.8932E+04	-3.5519E+02	1.5002E+04	-3.5519E+02	9.2873E+03	-3.5518E+02	1.0716E+04
928000	-3.5558E+02	1.7146E+04	-3.5558E+02	1.1073E+04	-3.5558E+02	1.8932E+04	-3.5558E+02	1.5002E+04	-3.5557E+02	9.2873E+03	-3.5557E+02	1.0716E+04
930000	-3.5597E+02	1.7146E+04	-3.5596E+02	1.1073E+04	-3.5596E+02	1.8932E+04	-3.5596E+02	1.5002E+04	-3.5596E+02	9.2873E+03	-3.5595E+02	1.0716E+04
932000	-3.5635E+02	1.7146E+04	-3.5635E+02	1.1073E+04	-3.5635E+02	1.8932E+04	-3.5634E+02	1.5002E+04	-3.5634E+02	9.2873E+03	-3.5633E+02	1.0716E+04
934000	-3.5673E+02	1.7146E+04	-3.5673E+02	1.1073E+04	-3.5673E+02	1.8932E+04	-3.5672E+02	1.5002E+04	-3.5672E+02	9.2873E+03	-3.5672E+02	1.0716E+04

Time (yrs)	Arg 1	Curve 1	Arg 2	Curve 2	Arg 3	Curve 3	Arg 4	Curve 4	Arg 5	Curve 5	Arg 6	Curve 6
936000	-3.5711E+02	1.7146E+04	-3.5711E+02	1.1073E+04	-3.5711E+02	1.8932E+04	-3.5711E+02	1.5002E+04	-3.5710E+02	9.2873E+03	-3.5710E+02	1.0716E+04
938000	-3.5750E+02	1.7146E+04	-3.5749E+02	1.1073E+04	-3.5749E+02	1.8932E+04	-3.5749E+02	1.5002E+04	-3.5748E+02	9.2873E+03	-3.5748E+02	1.0716E+04
940000	-3.5788E+02	1.7146E+04	-3.5787E+02	1.1073E+04	-3.5787E+02	1.8932E+04	-3.5787E+02	1.5002E+04	-3.5787E+02	9.2873E+03	-3.5786E+02	1.0716E+04
942000	-3.5826E+02	1.7146E+04	-3.5826E+02	1.1073E+04	-3.5825E+02	1.8932E+04	-3.5825E+02	1.5002E+04	-3.5825E+02	9.2873E+03	-3.5824E+02	1.0716E+04
944000	-3.5864E+02	1.7146E+04	-3.5864E+02	1.1073E+04	-3.5863E+02	1.8932E+04	-3.5863E+02	1.5002E+04	-3.5863E+02	9.2873E+03	-3.5862E+02	1.0716E+04
946000	-3.5902E+02	1.7146E+04	-3.5902E+02	1.1073E+04	-3.5901E+02	1.8932E+04	-3.5901E+02	1.5002E+04	-3.5901E+02	9.2873E+03	-3.5900E+02	1.0716E+04
948000	-3.5940E+02	1.7146E+04	-3.5940E+02	1.1073E+04	-3.5939E+02	1.8932E+04	-3.5939E+02	1.5002E+04	-3.5939E+02	9.2873E+03	-3.5938E+02	1.0716E+04
950000	-3.5978E+02	1.7146E+04	-3.5977E+02	1.1073E+04	-3.5977E+02	1.8932E+04	-3.5977E+02	1.5002E+04	-3.5977E+02	9.2873E+03	-3.5976E+02	1.0716E+04
952000	-3.6016E+02	1.7146E+04	-3.6015E+02	1.1073E+04	-3.6015E+02	1.8932E+04	-3.6015E+02	1.5002E+04	-3.6014E+02	9.2873E+03	-3.6014E+02	1.0716E+04
954000	-3.6053E+02	1.7146E+04	-3.6053E+02	1.1073E+04	-3.6053E+02	1.8932E+04	-3.6053E+02	1.5002E+04	-3.6052E+02	9.2873E+03	-3.6052E+02	1.0716E+04
956000	-3.6091E+02	1.7146E+04	-3.6091E+02	1.1073E+04	-3.6091E+02	1.8932E+04	-3.6090E+02	1.5002E+04	-3.6090E+02	9.2873E+03	-3.6090E+02	1.0716E+04
958000	-3.6129E+02	1.7146E+04	-3.6129E+02	1.1073E+04	-3.6129E+02	1.8932E+04	-3.6128E+02	1.5002E+04	-3.6128E+02	9.2873E+03	-3.6127E+02	1.0716E+04
960000	-3.6167E+02	1.7146E+04	-3.6166E+02	1.1073E+04	-3.6166E+02	1.8932E+04	-3.6166E+02	1.5002E+04	-3.6166E+02	9.2873E+03	-3.6165E+02	1.0716E+04
962000	-3.6204E+02	1.7146E+04	-3.6204E+02	1.1073E+04	-3.6204E+02	1.8932E+04	-3.6204E+02	1.5002E+04	-3.6203E+02	9.2873E+03	-3.6203E+02	1.0716E+04
964000	-3.6242E+02	1.7146E+04	-3.6242E+02	1.1073E+04	-3.6242E+02	1.8932E+04	-3.6241E+02	1.5002E+04	-3.6241E+02	9.2873E+03	-3.6240E+02	1.0716E+04
966000	-3.6280E+02	1.7146E+04	-3.6279E+02	1.1073E+04	-3.6279E+02	1.8932E+04	-3.6279E+02	1.5002E+04	-3.6278E+02	9.2873E+03	-3.6278E+02	1.0716E+04
968000	-3.6317E+02	1.7146E+04	-3.6317E+02	1.1073E+04	-3.6317E+02	1.8932E+04	-3.6316E+02	1.5002E+04	-3.6316E+02	9.2873E+03	-3.6316E+02	1.0716E+04
970000	-3.6355E+02	1.7146E+04	-3.6354E+02	1.1073E+04	-3.6354E+02	1.8932E+04	-3.6354E+02	1.5002E+04	-3.6354E+02	9.2873E+03	-3.6353E+02	1.0716E+04
972000	-3.6392E+02	1.7146E+04	-3.6392E+02	1.1073E+04	-3.6392E+02	1.8932E+04	-3.6391E+02	1.5002E+04	-3.6391E+02	9.2873E+03	-3.6391E+02	1.0716E+04
974000	-3.6430E+02	1.7146E+04	-3.6429E+02	1.1073E+04	-3.6429E+02	1.8932E+04	-3.6429E+02	1.5002E+04	-3.6428E+02	9.2873E+03	-3.6428E+02	1.0716E+04
976000	-3.6467E+02	1.7146E+04	-3.6467E+02	1.1073E+04	-3.6467E+02	1.8932E+04	-3.6466E+02	1.5002E+04	-3.6466E+02	9.2873E+03	-3.6465E+02	1.0716E+04
978000	-3.6504E+02	1.7146E+04	-3.6504E+02	1.1073E+04	-3.6504E+02	1.8932E+04	-3.6504E+02	1.5002E+04	-3.6503E+02	9.2873E+03	-3.6503E+02	1.0716E+04
980000	-3.6542E+02	1.7146E+04	-3.6542E+02	1.1073E+04	-3.6541E+02	1.8932E+04	-3.6541E+02	1.5002E+04	-3.6541E+02	9.2873E+03	-3.6540E+02	1.0716E+04
982000	-3.6579E+02	1.7146E+04	-3.6579E+02	1.1073E+04	-3.6579E+02	1.8932E+04	-3.6578E+02	1.5002E+04	-3.6578E+02	9.2873E+03	-3.6577E+02	1.0716E+04
984000	-3.6616E+02	1.7146E+04	-3.6616E+02	1.1073E+04	-3.6616E+02	1.8932E+04	-3.6615E+02	1.5002E+04	-3.6615E+02	9.2873E+03	-3.6615E+02	1.0716E+04
986000	-3.6653E+02	1.7146E+04	-3.6653E+02	1.1073E+04	-3.6653E+02	1.8932E+04	-3.6653E+02	1.5002E+04	-3.6652E+02	9.2873E+03	-3.6652E+02	1.0716E+04
988000	-3.6691E+02	1.7146E+04	-3.6690E+02	1.1073E+04	-3.6690E+02	1.8932E+04	-3.6690E+02	1.5002E+04	-3.6690E+02	9.2873E+03	-3.6689E+02	1.0716E+04
990000	-3.6728E+02	1.7146E+04	-3.6728E+02	1.1073E+04	-3.6727E+02	1.8932E+04	-3.6727E+02	1.5002E+04	-3.6727E+02	9.2873E+03	-3.6726E+02	1.0716E+04
992000	-3.6765E+02	1.7146E+04	-3.6765E+02	1.1073E+04	-3.6765E+02	1.8932E+04	-3.6764E+02	1.5002E+04	-3.6764E+02	9.2873E+03	-3.6763E+02	1.0716E+04
994000	-3.6802E+02	1.7146E+04	-3.6802E+02	1.1073E+04	-3.6802E+02	1.8932E+04	-3.6801E+02	1.5002E+04	-3.6801E+02	9.2873E+03	-3.6800E+02	1.0716E+04
996000	-3.6839E+02	1.7146E+04	-3.6839E+02	1.1073E+04	-3.6839E+02	1.8932E+04	-3.6838E+02	1.5002E+04	-3.6838E+02	9.2873E+03	-3.6838E+02	1.0716E+04
998000	-3.6876E+02	1.7146E+04	-3.6876E+02	1.1073E+04	-3.6876E+02	1.8932E+04	-3.6875E+02	1.5002E+04	-3.6875E+02	9.2873E+03	-3.6874E+02	1.0716E+04
1000000	-3.6913E+02	1.7146E+04	-3.6913E+02	1.1073E+04	-3.6913E+02	1.8932E+04	-3.6912E+02	1.5002E+04	-3.6912E+02	9.2873E+03	-3.6911E+02	1.0716E+04


Flux Out (gm/yr)
3.5000E+05
3.0000E+05
2.5000E+05
2.0000E+05
1.5000E+05
1.0000E+05
5.0000E+04
0.0000E+00
0
100000
200000
300000
400000
500000
600000
700000
800000
900000
1000000

Arg 7	Curve 7	Arg 8	Curve 8	Arg 9	Curve 9	Arg 10	Curve 10	Arg 11	Curve 11	Arg 12	Curve 12	Arg 13
1.1125E+01	0.0000E+00	3.3089E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
-1.3163E+01	8.5728E+03	-1.2909E+01	7.8584E+03	-1.2650E+01	3.5720E+03	-1.2278E+01	4.2864E+03	-1.2062E+01	4.6436E+03	-1.1617E+01	5.0008E+03	-1.0740E+01
-2.1037E+01	8.5728E+03	-2.0875E+01	7.8584E+03	-2.0712E+01	3.5720E+03	-2.0482E+01	4.2864E+03	-2.0349E+01	4.6436E+03	-2.0082E+01	5.0008E+03	-1.9569E+01
-2.6724E+01	8.5728E+03	-2.6597E+01	7.8584E+03	-2.6469E+01	3.5720E+03	-2.6288E+01	4.2864E+03	-2.6184E+01	4.6436E+03	-2.5976E+01	5.0008E+03	-2.5580E+01
-3.1406E+01	8.5728E+03	-3.1298E+01	7.8584E+03	-3.1189E+01	3.5720E+03	-3.1036E+01	4.2864E+03	-3.0948E+01	4.6436E+03	-3.0771E+01	5.0008E+03	-3.0438E+01
-3.5479E+01	8.5728E+03	-3.5383E+01	7.8584E+03	-3.5286E+01	3.5720E+03	-3.5151E+01	4.2864E+03	-3.5073E+01	4.6436E+03	-3.4918E+01	5.0008E+03	-3.4624E+01
-3.9131E+01	8.5728E+03	-3.9044E+01	7.8584E+03	-3.8956E+01	3.5720E+03	-3.8834E+01	4.2864E+03	-3.8764E+01	4.6436E+03	-3.8623E+01	5.0008E+03	-3.8357E+01
-4.2471E+01	8.5728E+03	-4.2391E+01	7.8584E+03	-4.2310E+01	3.5720E+03	-4.2197E+01	4.2864E+03	-4.2133E+01	4.6436E+03	-4.2003E+01	5.0008E+03	-4.1759E+01
-4.5567E+01	8.5728E+03	-4.5492E+01	7.8584E+03	-4.5417E+01	3.5720E+03	-4.5312E+01	4.2864E+03	-4.5252E+01	4.6436E+03	-4.5131E+01	5.0008E+03	-4.4904E+01
-4.8466E+01	8.5728E+03	-4.8396E+01	7.8584E+03	-4.8325E+01	3.5720E+03	-4.8226E+01	4.2864E+03	-4.8170E+01	4.6436E+03	-4.8057E+01	5.0008E+03	-4.7843E+01
-5.1201E+01	8.5728E+03	-5.1135E+01	7.8584E+03	-5.1068E+01	3.5720E+03	-5.0975E+01	4.2864E+03	-5.0921E+01	4.6436E+03	-5.0814E+01	5.0008E+03	-5.0612E+01
-5.3798E+01	8.5728E+03	-5.3735E+01	7.8584E+03	-5.3671E+01	3.5720E+03	-5.3582E+01	4.2864E+03	-5.3531E+01	4.6436E+03	-5.3429E+01	5.0008E+03	-5.3238E+01
-5.6275E+01	8.5728E+03	-5.6214E+01	7.8584E+03	-5.6154E+01	3.5720E+03	-5.6069E+01	4.2864E+03	-5.6020E+01	4.6436E+03	-5.5922E+01	5.0008E+03	-5.5739E+01
-5.8647E+01	8.5728E+03	-5.8589E+01	7.8584E+03	-5.8531E+01	3.5720E+03	-5.8449E+01	4.2864E+03	-5.8403E+01	4.6436E+03	-5.8309E+01	5.0008E+03	-5.8134E+01
-6.0928E+01	8.5728E+03	-6.0872E+01	7.8584E+03	-6.0816E+01	3.5720E+03	-6.0737E+01	4.2864E+03	-6.0692E+01	4.6436E+03	-6.0602E+01	5.0008E+03	-6.0433E+01
-6.3125E+01	8.5728E+03	-6.3071E+01	7.8584E+03	-6.3017E+01	3.5720E+03	-6.2942E+01	4.2864E+03	-6.2898E+01	4.6436E+03	-6.2812E+01	5.0008E+03	-6.2649E+01
-6.5249E+01	8.5728E+03	-6.5197E+01	7.8584E+03	-6.5145E+01	3.5720E+03	-6.5072E+01	4.2864E+03	-6.5030E+01	4.6436E+03	-6.4946E+01	5.0008E+03	-6.4788E+01
-6.7306E+01	8.5728E+03	-6.7256E+01	7.8584E+03	-6.7205E+01	3.5720E+03	-6.7134E+01	4.2864E+03	-6.7093E+01	4.6436E+03	-6.7012E+01	5.0008E+03	-6.6859E+01
-6.9302E+01	8.5728E+03	-6.9253E+01	7.8584E+03	-6.9204E+01	3.5720E+03	-6.9135E+01	4.2864E+03	-6.9096E+01	4.6436E+03	-6.9017E+01	5.0008E+03	-6.8868E+01
-7.1243E+01	8.5728E+03	-7.1195E+01	7.8584E+03	-7.1147E+01	3.5720E+03	-7.1080E+01	4.2864E+03	-7.1041E+01	4.6436E+03	-7.0965E+01	5.0008E+03	-7.0820E+01
-7.3131E+01	8.5728E+03	-7.3085E+01	7.8584E+03	-7.3038E+01	3.5720E+03	-7.2973E+01	4.2864E+03	-7.2935E+01	4.6436E+03	-7.2860E+01	5.0008E+03	-7.2720E+01
-7.4972E+01	8.5728E+03	-7.4927E+01	7.8584E+03	-7.4881E+01	3.5720E+03	-7.4818E+01	4.2864E+03	-7.4781E+01	4.6436E+03	-7.4708E+01	5.0008E+03	-7.4571E+01
-7.6769E+01	8.5728E+03	-7.6725E+01	7.8584E+03	-7.6680E+01	3.5720E+03	-7.6618E+01	4.2864E+03	-7.6583E+01	4.6436E+03	-7.6511E+01	5.0008E+03	-7.6378E+01
-7.8525E+01	8.5728E+03	-7.8482E+01	7.8584E+03	-7.8438E+01	3.5720E+03	-7.8377E+01	4.2864E+03	-7.8343E+01	4.6436E+03	-7.8273E+01	5.0008E+03	-7.8142E+01
-8.0243E+01	8.5728E+03	-8.0200E+01	7.8584E+03	-8.0158E+01	3.5720E+03	-8.0098E+01	4.2864E+03	-8.0064E+01	4.6436E+03	-7.9996E+01	5.0008E+03	-7.9868E+01
-8.1924E+01	8.5728E+03	-8.1882E+01	7.8584E+03	-8.1841E+01	3.5720E+03	-8.1783E+01	4.2864E+03	-8.1749E+01	4.6436E+03	-8.1682E+01	5.0008E+03	-8.1557E+01
-8.3572E+01	8.5728E+03	-8.3531E+01	7.8584E+03	-8.3490E+01	3.5720E+03	-8.3433E+01	4.2864E+03	-8.3400E+01	4.6436E+03	-8.3335E+01	5.0008E+03	-8.3212E+01
-8.5188E+01	8.5728E+03	-8.5148E+01	7.8584E+03	-8.5108E+01	3.5720E+03	-8.5051E+01	4.2864E+03	-8.5019E+01	4.6436E+03	-8.4955E+01	5.0008E+03	-8.4835E+01
-8.6773E+01	8.5728E+03	-8.6734E+01	7.8584E+03	-8.6695E+01	3.5720E+03	-8.6640E+01	4.2864E+03	-8.6608E+01	4.6436E+03	-8.6545E+01	5.0008E+03	-8.6427E+01
-8.8331E+01	8.5728E+03	-8.8292E+01	7.8584E+03	-8.8253E+01	3.5720E+03	-8.8199E+01	4.2864E+03	-8.8168E+01	4.6436E+03	-8.8106E+01	5.0008E+03	-8.7990E+01
-8.9861E+01	8.5728E+03	-8.9823E+01	7.8584E+03	-8.9785E+01	3.5720E+03	-8.9732E+01	4.2864E+03	-8.9701E+01	4.6436E+03	-8.9641E+01	5.0008E+03	-8.9526E+01
-9.1365E+01	8.5728E+03	-9.1328E+01	7.8584E+03	-9.1291E+01	3.5720E+03	-9.1239E+01	4.2864E+03	-9.1209E+01	4.6436E+03	-9.1149E+01	5.0008E+03	-9.1037E+01
-9.2846E+01	8.5728E+03	-9.2809E+01	7.8584E+03	-9.2772E+01	3.5720E+03	-9.2721E+01	4.2864E+03	-9.2691E+01	4.6436E+03	-9.2633E+01	5.0008E+03	-9.2522E+01
-9.4303E+01	8.5728E+03	-9.4267E+01	7.8584E+03	-9.4230E+01	3.5720E+03	-9.4180E+01	4.2864E+03	-9.4151E+01	4.6436E+03	-9.4093E+01	5.0008E+03	-9.3984E+01
-9.5738E+01	8.5728E+03	-9.5702E+01	7.8584E+03	-9.5666E+01	3.5720E+03	-9.5617E+01	4.2864E+03	-9.5588E+01	4.6436E+03	-9.5531E+01	5.0008E+03	-9.5424E+01
-9.7151E+01	8.5728E+03	-9.7116E+01	7.8584E+03	-9.7081E+01	3.5720E+03	-9.7032E+01	4.2864E+03	-9.7004E+01	4.6436E+03	-9.6948E+01	5.0008E+03	-9.6842E+01
-9.8545E+01	8.5728E+03	-9.8510E+01	7.8584E+03	-9.8476E+01	3.5720E+03	-9.8427E+01	4.2864E+03	-9.8399E+01	4.6436E+03	-9.8344E+01	5.0008E+03	-9.8240E+01
-9.9919E+01	8.5728E+03	-9.9885E+01	7.8584E+03	-9.9850E+01	3.5720E+03	-9.9803E+01	4.2864E+03	-9.9775E+01	4.6436E+03	-9.9721E+01	5.0008E+03	-9.9618E+01
-1.0127E+02	8.5728E+03	-1.0124E+02	7.8584E+03	-1.0121E+02	3.5720E+03	-1.0116E+02	4.2864E+03	-1.0113E+02	4.6436E+03	-1.0108E+02	5.0008E+03	-1.0098E+02
-1.0261E+02	8.5728E+03	-1.0258E+02	7.8584E+03	-1.0255E+02	3.5720E+03	-1.0250E+02	4.2864E+03	-1.0247E+02	4.6436E+03	-1.0242E+02	5.0008E+03	-1.0232E+02
-1.0393E+02	8.5728E+03	-1.0390E+02	7.8584E+03	-1.0387E+02	3.5720E+03	-1.0382E+02	4.2864E+03	-1.0379E+02	4.6436E+03	-1.0374E+02	5.0008E+03	-1.0364E+02
-1.0524E+02	8.5728E+03	-1.0520E+02	7.8584E+03	-1.0517E+02	3.5720E+03	-1.0513E+02	4.2864E+03	-1.0510E+02	4.6436E+03	-1.0505E+02	5.0008E+03	-1.0495E+02
-1.0652E+02	8.5728E+03	-1.0649E+02	7.8584E+03	-1.0646E+02	3.5720E+03	-1.0641E+02	4.2864E+03	-1.0639E+02	4.6436E+03	-1.0634E+02	5.0008E+03	-1.0624E+02
-1.0780E+02	8.5728E+03	-1.0776E+02	7.8584E+03	-1.0773E+02	3.5720E+03	-1.0769E+02	4.2864E+03	-1.0766E+02	4.6436E+03	-1.0761E+02	5.0008E+03	-1.0752E+02
-1.0905E+02	8.5728E+03	-1.0902E+02	7.8584E+03	-1.0899E+02	3.5720E+03	-1.0895E+02	4.2864E+03	-1.0892E+02	4.6436E+03	-1.0887E+02	5.0008E+03	-1.0878E+02
-1.1030E+02	8.5728E+03	-1.1027E+02	7.8584E+03	-1.1023E+02	3.5720E+03	-1.1019E+02	4.2864E+03	-1.1017E+02	4.6436E+03	-1.1012E+02	5.0008E+03	-1.1002E+02
-1.1153E+02	8.5728E+03	-1.1149E+02	7.8584E+03	-1.1146E+02	3.5720E+03	-1.1142E+02	4.2864E+03	-1.1140E+02	4.6436E+03	-1.1135E+02	5.0008E+03	-1.1126E+02
-1.1274E+02	8.5728E+03	-1.1271E+02	7.8584E+03	-1.1268E+02	3.5720E+03	-1.1264E+02	4.2864E+03	-1.1261E+02	4.6436E+03	-1.1257E+02	5.0008E+03	-1.1247E+02
-1.1394E+02	8.5728E+03	-1.1391E+02	7.8584E+03	-1.1388E+02	3.5720E+03	-1.1384E+02	4.2864E+03	-1.1382E+02	4.6436E+03	-1.1377E+02	5.0008E+03	-1.1368E+02
-1.1513E+02	8.5728E+03	-1.1511E+02	7.8584E+03	-1.1508E+02	3.5720E+03	-1.1503E+02	4.2864E+03	-1.1501E+02	4.6436E+03	-1.1496E+02	5.0008E+03	-1.1487E+02
-1.1631E+02	8.5728E+03	-1.1628E+02	7.8584E+03	-1.1625E+02	3.5720E+03	-1.1621E+02	4.2864E+03	-1.1619E+02	4.6436E+03	-1.1614E+02	5.0008E+03	-1.1605E+02
-1.1748E+02	8.5728E+03	-1.1745E+02	7.8584E+03	-1.1742E+02	3.5720E+03	-1.1738E+02	4.2864E+03	-1.1736E+02	4.6436E+03	-1.1731E+02	5.0008E+03	-1.1722E+02

Arg 7	Curve 7	Arg 8	Curve 8	Arg 9	Curve 9	Arg 10	Curve 10	Arg 11	Curve 11	Arg 12	Curve 12	Arg 13
-1.1863E+02	8.5728E+03	-1.1861E+02	7.8584E+03	-1.1858E+02	3.5720E+03	-1.1854E+02	4.2864E+03	-1.1851E+02	4.6436E+03	-1.1847E+02	5.0008E+03	-1.1838E+02
-1.1978E+02	8.5728E+03	-1.1975E+02	7.8584E+03	-1.1972E+02	3.5720E+03	-1.1968E+02	4.2864E+03	-1.1966E+02	4.6436E+03	-1.1961E+02	5.0008E+03	-1.1953E+02
-1.2091E+02	8.5728E+03	-1.2088E+02	7.8584E+03	-1.2085E+02	3.5720E+03	-1.2081E+02	4.2864E+03	-1.2079E+02	4.6436E+03	-1.2075E+02	5.0008E+03	-1.2066E+02
-1.2203E+02	8.5728E+03	-1.2201E+02	7.8584E+03	-1.2198E+02	3.5720E+03	-1.2194E+02	4.2864E+03	-1.2192E+02	4.6436E+03	-1.2187E+02	5.0008E+03	-1.2179E+02
-1.2315E+02	8.5728E+03	-1.2312E+02	7.8584E+03	-1.2309E+02	3.5720E+03	-1.2305E+02	4.2864E+03	-1.2303E+02	4.6436E+03	-1.2298E+02	5.0008E+03	-1.2290E+02
-1.2425E+02	8.5728E+03	-1.2422E+02	7.8584E+03	-1.2419E+02	3.5720E+03	-1.2415E+02	4.2864E+03	-1.2413E+02	4.6436E+03	-1.2409E+02	5.0008E+03	-1.2401E+02
-1.2534E+02	8.5728E+03	-1.2531E+02	7.8584E+03	-1.2529E+02	3.5720E+03	-1.2525E+02	4.2864E+03	-1.2523E+02	4.6436E+03	-1.2518E+02	5.0008E+03	-1.2510E+02
-1.2642E+02	8.5728E+03	-1.2640E+02	7.8584E+03	-1.2637E+02	3.5720E+03	-1.2633E+02	4.2864E+03	-1.2631E+02	4.6436E+03	-1.2627E+02	5.0008E+03	-1.2619E+02
-1.2750E+02	8.5728E+03	-1.2747E+02	7.8584E+03	-1.2744E+02	3.5720E+03	-1.2741E+02	4.2864E+03	-1.2738E+02	4.6436E+03	-1.2734E+02	5.0008E+03	-1.2726E+02
-1.2856E+02	8.5728E+03	-1.2854E+02	7.8584E+03	-1.2851E+02	3.5720E+03	-1.2847E+02	4.2864E+03	-1.2845E+02	4.6436E+03	-1.2841E+02	5.0008E+03	-1.2833E+02
-1.2962E+02	8.5728E+03	-1.2959E+02	7.8584E+03	-1.2957E+02	3.5720E+03	-1.2953E+02	4.2864E+03	-1.2951E+02	4.6436E+03	-1.2947E+02	5.0008E+03	-1.2939E+02
-1.3067E+02	8.5728E+03	-1.3064E+02	7.8584E+03	-1.3061E+02	3.5720E+03	-1.3058E+02	4.2864E+03	-1.3056E+02	4.6436E+03	-1.3051E+02	5.0008E+03	-1.3044E+02
-1.3171E+02	8.5728E+03	-1.3168E+02	7.8584E+03	-1.3165E+02	3.5720E+03	-1.3162E+02	4.2864E+03	-1.3160E+02	4.6436E+03	-1.3156E+02	5.0008E+03	-1.3148E+02
-1.3274E+02	8.5728E+03	-1.3271E+02	7.8584E+03	-1.3269E+02	3.5720E+03	-1.3265E+02	4.2864E+03	-1.3263E+02	4.6436E+03	-1.3259E+02	5.0008E+03	-1.3251E+02
-1.3376E+02	8.5728E+03	-1.3373E+02	7.8584E+03	-1.3371E+02	3.5720E+03	-1.3367E+02	4.2864E+03	-1.3365E+02	4.6436E+03	-1.3361E+02	5.0008E+03	-1.3354E+02
-1.3478E+02	8.5728E+03	-1.3475E+02	7.8584E+03	-1.3472E+02	3.5720E+03	-1.3469E+02	4.2864E+03	-1.3467E+02	4.6436E+03	-1.3463E+02	5.0008E+03	-1.3455E+02
-1.3578E+02	8.5728E+03	-1.3576E+02	7.8584E+03	-1.3573E+02	3.5720E+03	-1.3570E+02	4.2864E+03	-1.3568E+02	4.6436E+03	-1.3564E+02	5.0008E+03	-1.3556E+02
-1.3678E+02	8.5728E+03	-1.3676E+02	7.8584E+03	-1.3673E+02	3.5720E+03	-1.3670E+02	4.2864E+03	-1.3668E+02	4.6436E+03	-1.3664E+02	5.0008E+03	-1.3656E+02
-1.3778E+02	8.5728E+03	-1.3775E+02	7.8584E+03	-1.3773E+02	3.5720E+03	-1.3769E+02	4.2864E+03	-1.3767E+02	4.6436E+03	-1.3763E+02	5.0008E+03	-1.3756E+02
-1.3876E+02	8.5728E+03	-1.3874E+02	7.8584E+03	-1.3871E+02	3.5720E+03	-1.3868E+02	4.2864E+03	-1.3866E+02	4.6436E+03	-1.3862E+02	5.0008E+03	-1.3855E+02
-1.3974E+02	8.5728E+03	-1.3972E+02	7.8584E+03	-1.3969E+02	3.5720E+03	-1.3966E+02	4.2864E+03	-1.3964E+02	4.6436E+03	-1.3960E+02	5.0008E+03	-1.3953E+02
-1.4071E+02	8.5728E+03	-1.4069E+02	7.8584E+03	-1.4067E+02	3.5720E+03	-1.4063E+02	4.2864E+03	-1.4061E+02	4.6436E+03	-1.4057E+02	5.0008E+03	-1.4050E+02
-1.4168E+02	8.5728E+03	-1.4166E+02	7.8584E+03	-1.4163E+02	3.5720E+03	-1.4160E+02	4.2864E+03	-1.4158E+02	4.6436E+03	-1.4154E+02	5.0008E+03	-1.4147E+02
-1.4264E+02	8.5728E+03	-1.4262E+02	7.8584E+03	-1.4259E+02	3.5720E+03	-1.4256E+02	4.2864E+03	-1.4254E+02	4.6436E+03	-1.4250E+02	5.0008E+03	-1.4243E+02
-1.4359E+02	8.5728E+03	-1.4357E+02	7.8584E+03	-1.4354E+02	3.5720E+03	-1.4351E+02	4.2864E+03	-1.4349E+02	4.6436E+03	-1.4345E+02	5.0008E+03	-1.4338E+02
-1.4454E+02	8.5728E+03	-1.4451E+02	7.8584E+03	-1.4449E+02	3.5720E+03	-1.4446E+02	4.2864E+03	-1.4444E+02	4.6436E+03	-1.4440E+02	5.0008E+03	-1.4433E+02
-1.4548E+02	8.5728E+03	-1.4545E+02	7.8584E+03	-1.4543E+02	3.5720E+03	-1.4540E+02	4.2864E+03	-1.4538E+02	4.6436E+03	-1.4534E+02	5.0008E+03	-1.4527E+02
-1.4641E+02	8.5728E+03	-1.4639E+02	7.8584E+03	-1.4637E+02	3.5720E+03	-1.4633E+02	4.2864E+03	-1.4631E+02	4.6436E+03	-1.4628E+02	5.0008E+03	-1.4621E+02
-1.4734E+02	8.5728E+03	-1.4732E+02	7.8584E+03	-1.4729E+02	3.5720E+03	-1.4726E+02	4.2864E+03	-1.4724E+02	4.6436E+03	-1.4721E+02	5.0008E+03	-1.4714E+02
-1.4826E+02	8.5728E+03	-1.4824E+02	7.8584E+03	-1.4822E+02	3.5720E+03	-1.4819E+02	4.2864E+03	-1.4817E+02	4.6436E+03	-1.4813E+02	5.0008E+03	-1.4806E+02
-1.4918E+02	8.5728E+03	-1.4916E+02	7.8584E+03	-1.4913E+02	3.5720E+03	-1.4910E+02	4.2864E+03	-1.4908E+02	4.6436E+03	-1.4905E+02	5.0008E+03	-1.4898E+02
-1.5009E+02	8.5728E+03	-1.5007E+02	7.8584E+03	-1.5005E+02	3.5720E+03	-1.5001E+02	4.2864E+03	-1.5000E+02	4.6436E+03	-1.4996E+02	5.0008E+03	-1.4989E+02
-1.5100E+02	8.5728E+03	-1.5097E+02	7.8584E+03	-1.5095E+02	3.5720E+03	-1.5092E+02	4.2864E+03	-1.5090E+02	4.6436E+03	-1.5087E+02	5.0008E+03	-1.5080E+02
-1.5190E+02	8.5728E+03	-1.5187E+02	7.8584E+03	-1.5185E+02	3.5720E+03	-1.5182E+02	4.2864E+03	-1.5180E+02	4.6436E+03	-1.5177E+02	5.0008E+03	-1.5170E+02
-1.5279E+02	8.5728E+03	-1.5277E+02	7.8584E+03	-1.5275E+02	3.5720E+03	-1.5272E+02	4.2864E+03	-1.5270E+02	4.6436E+03	-1.5266E+02	5.0008E+03	-1.5260E+02
-1.5368E+02	8.5728E+03	-1.5366E+02	7.8584E+03	-1.5364E+02	3.5720E+03	-1.5361E+02	4.2864E+03	-1.5359E+02	4.6436E+03	-1.5355E+02	5.0008E+03	-1.5349E+02
-1.5457E+02	8.5728E+03	-1.5454E+02	7.8584E+03	-1.5452E+02	3.5720E+03	-1.5449E+02	4.2864E+03	-1.5447E+02	4.6436E+03	-1.5444E+02	5.0008E+03	-1.5437E+02
-1.5545E+02	8.5728E+03	-1.5542E+02	7.8584E+03	-1.5540E+02	3.5720E+03	-1.5537E+02	4.2864E+03	-1.5535E+02	4.6436E+03	-1.5532E+02	5.0008E+03	-1.5525E+02
-1.5632E+02	8.5728E+03	-1.5630E+02	7.8584E+03	-1.5628E+02	3.5720E+03	-1.5625E+02	4.2864E+03	-1.5623E+02	4.6436E+03	-1.5619E+02	5.0008E+03	-1.5613E+02
-1.5719E+02	8.5728E+03	-1.5717E+02	7.8584E+03	-1.5715E+02	3.5720E+03	-1.5712E+02	4.2864E+03	-1.5710E+02	4.6436E+03	-1.5706E+02	5.0008E+03	-1.5700E+02
-1.5806E+02	8.5728E+03	-1.5803E+02	7.8584E+03	-1.5801E+02	3.5720E+03	-1.5798E+02	4.2864E+03	-1.5796E+02	4.6436E+03	-1.5793E+02	5.0008E+03	-1.5787E+02
-1.5892E+02	8.5728E+03	-1.5889E+02	7.8584E+03	-1.5887E+02	3.5720E+03	-1.5884E+02	4.2864E+03	-1.5883E+02	4.6436E+03	-1.5879E+02	5.0008E+03	-1.5873E+02
-1.5977E+02	8.5728E+03	-1.5975E+02	7.8584E+03	-1.5973E+02	3.5720E+03	-1.5970E+02	4.2864E+03	-1.5968E+02	4.6436E+03	-1.5965E+02	5.0008E+03	-1.5958E+02
-1.6062E+02	8.5728E+03	-1.6060E+02	7.8584E+03	-1.6058E+02	3.5720E+03	-1.6055E+02	4.2864E+03	-1.6053E+02	4.6436E+03	-1.6050E+02	5.0008E+03	-1.6044E+02
-1.6147E+02	8.5728E+03	-1.6145E+02	7.8584E+03	-1.6143E+02	3.5720E+03	-1.6140E+02	4.2864E+03	-1.6138E+02	4.6436E+03	-1.6135E+02	5.0008E+03	-1.6128E+02
-1.6231E+02	8.5728E+03	-1.6229E+02	7.8584E+03	-1.6227E+02	3.5720E+03	-1.6224E+02	4.2864E+03	-1.6222E+02	4.6436E+03	-1.6219E+02	5.0008E+03	-1.6213E+02
-1.6315E+02	8.5728E+03	-1.6313E+02	7.8584E+03	-1.6311E+02	3.5720E+03	-1.6308E+02	4.2864E+03	-1.6306E+02	4.6436E+03	-1.6303E+02	5.0008E+03	-1.6297E+02
-1.6398E+02	8.5728E+03	-1.6396E+02	7.8584E+03	-1.6394E+02	3.5720E+03	-1.6391E+02	4.2864E+03	-1.6390E+02	4.6436E+03	-1.6386E+02	5.0008E+03	-1.6380E+02
-1.6481E+02	8.5728E+03	-1.6479E+02	7.8584E+03	-1.6477E+02	3.5720E+03	-1.6474E+02	4.2864E+03	-1.6473E+02	4.6436E+03	-1.6469E+02	5.0008E+03	-1.6463E+02
-1.6564E+02	8.5728E+03	-1.6562E+02	7.8584E+03	-1.6560E+02	3.5720E+03	-1.6557E+02	4.2864E+03	-1.6555E+02	4.6436E+03	-1.6552E+02	5.0008E+03	-1.6546E+02
-1.6646E+02	8.5728E+03	-1.6644E+02	7.8584E+03	-1.6642E+02	3.5720E+03	-1.6639E+02	4.2864E+03	-1.6637E+02	4.6436E+03	-1.6634E+02	5.0008E+03	-1.6628E+02
-1.6728E+02	8.5728E+03	-1.6726E+02	7.8584E+03	-1.6723E+02	3.5720E+03	-1.6721E+02	4.2864E+03	-1.6719E+02	4.6436E+03	-1.6716E+02	5.0008E+03	-1.6710E+02

Arg 7	Curve 7	Arg 8	Curve 8	Arg 9	Curve 9	Arg 10	Curve 10	Arg 11	Curve 11	Arg 12	Curve 12	Arg 13
-1.6809E+02	8.5728E+03	-1.6807E+02	7.8584E+03	-1.6805E+02	3.5720E+03	-1.6802E+02	4.2864E+03	-1.6800E+02	4.6436E+03	-1.6797E+02	5.0008E+03	-1.6791E+02
-1.6890E+02	8.5728E+03	-1.6888E+02	7.8584E+03	-1.6886E+02	3.5720E+03	-1.6883E+02	4.2864E+03	-1.6881E+02	4.6436E+03	-1.6878E+02	5.0008E+03	-1.6872E+02
-1.6970E+02	8.5728E+03	-1.6968E+02	7.8584E+03	-1.6966E+02	3.5720E+03	-1.6963E+02	4.2864E+03	-1.6962E+02	4.6436E+03	-1.6959E+02	5.0008E+03	-1.6953E+02
-1.7050E+02	8.5728E+03	-1.7048E+02	7.8584E+03	-1.7046E+02	3.5720E+03	-1.7044E+02	4.2864E+03	-1.7042E+02	4.6436E+03	-1.7039E+02	5.0008E+03	-1.7033E+02
-1.7130E+02	8.5728E+03	-1.7128E+02	7.8584E+03	-1.7126E+02	3.5720E+03	-1.7123E+02	4.2864E+03	-1.7122E+02	4.6436E+03	-1.7119E+02	5.0008E+03	-1.7113E+02
-1.7210E+02	8.5728E+03	-1.7208E+02	7.8584E+03	-1.7206E+02	3.5720E+03	-1.7203E+02	4.2864E+03	-1.7201E+02	4.6436E+03	-1.7198E+02	5.0008E+03	-1.7192E+02
-1.7289E+02	8.5728E+03	-1.7287E+02	7.8584E+03	-1.7285E+02	3.5720E+03	-1.7282E+02	4.2864E+03	-1.7280E+02	4.6436E+03	-1.7277E+02	5.0008E+03	-1.7271E+02
-1.7367E+02	8.5728E+03	-1.7365E+02	7.8584E+03	-1.7363E+02	3.5720E+03	-1.7361E+02	4.2864E+03	-1.7359E+02	4.6436E+03	-1.7356E+02	5.0008E+03	-1.7350E+02
-1.7446E+02	8.5728E+03	-1.7444E+02	7.8584E+03	-1.7442E+02	3.5720E+03	-1.7439E+02	4.2864E+03	-1.7438E+02	4.6436E+03	-1.7434E+02	5.0008E+03	-1.7429E+02
-1.7524E+02	8.5728E+03	-1.7522E+02	7.8584E+03	-1.7520E+02	3.5720E+03	-1.7517E+02	4.2864E+03	-1.7516E+02	4.6436E+03	-1.7512E+02	5.0008E+03	-1.7507E+02
-1.7601E+02	8.5728E+03	-1.7599E+02	7.8584E+03	-1.7597E+02	3.5720E+03	-1.7595E+02	4.2864E+03	-1.7593E+02	4.6436E+03	-1.7590E+02	5.0008E+03	-1.7584E+02
-1.7679E+02	8.5728E+03	-1.7677E+02	7.8584E+03	-1.7675E+02	3.5720E+03	-1.7672E+02	4.2864E+03	-1.7671E+02	4.6436E+03	-1.7667E+02	5.0008E+03	-1.7662E+02
-1.7756E+02	8.5728E+03	-1.7754E+02	7.8584E+03	-1.7752E+02	3.5720E+03	-1.7749E+02	4.2864E+03	-1.7748E+02	4.6436E+03	-1.7744E+02	5.0008E+03	-1.7739E+02
-1.7832E+02	8.5728E+03	-1.7830E+02	7.8584E+03	-1.7828E+02	3.5720E+03	-1.7826E+02	4.2864E+03	-1.7824E+02	4.6436E+03	-1.7821E+02	5.0008E+03	-1.7815E+02
-1.7909E+02	8.5728E+03	-1.7907E+02	7.8584E+03	-1.7905E+02	3.5720E+03	-1.7902E+02	4.2864E+03	-1.7901E+02	4.6436E+03	-1.7897E+02	5.0008E+03	-1.7892E+02
-1.7984E+02	8.5728E+03	-1.7983E+02	7.8584E+03	-1.7981E+02	3.5720E+03	-1.7978E+02	4.2864E+03	-1.7977E+02	4.6436E+03	-1.7973E+02	5.0008E+03	-1.7968E+02
-1.8060E+02	8.5728E+03	-1.8058E+02	7.8584E+03	-1.8056E+02	3.5720E+03	-1.8054E+02	4.2864E+03	-1.8052E+02	4.6436E+03	-1.8049E+02	5.0008E+03	-1.8044E+02
-1.8135E+02	8.5728E+03	-1.8134E+02	7.8584E+03	-1.8132E+02	3.5720E+03	-1.8129E+02	4.2864E+03	-1.8128E+02	4.6436E+03	-1.8125E+02	5.0008E+03	-1.8119E+02
-1.8210E+02	8.5728E+03	-1.8209E+02	7.8584E+03	-1.8207E+02	3.5720E+03	-1.8204E+02	4.2864E+03	-1.8203E+02	4.6436E+03	-1.8200E+02	5.0008E+03	-1.8194E+02
-1.8285E+02	8.5728E+03	-1.8283E+02	7.8584E+03	-1.8281E+02	3.5720E+03	-1.8279E+02	4.2864E+03	-1.8277E+02	4.6436E+03	-1.8274E+02	5.0008E+03	-1.8269E+02
-1.8360E+02	8.5728E+03	-1.8358E+02	7.8584E+03	-1.8356E+02	3.5720E+03	-1.8353E+02	4.2864E+03	-1.8352E+02	4.6436E+03	-1.8349E+02	5.0008E+03	-1.8343E+02
-1.8434E+02	8.5728E+03	-1.8432E+02	7.8584E+03	-1.8430E+02	3.5720E+03	-1.8427E+02	4.2864E+03	-1.8426E+02	4.6436E+03	-1.8423E+02	5.0008E+03	-1.8417E+02
-1.8508E+02	8.5728E+03	-1.8506E+02	7.8584E+03	-1.8504E+02	3.5720E+03	-1.8501E+02	4.2864E+03	-1.8500E+02	4.6436E+03	-1.8497E+02	5.0008E+03	-1.8491E+02
-1.8581E+02	8.5728E+03	-1.8579E+02	7.8584E+03	-1.8577E+02	3.5720E+03	-1.8575E+02	4.2864E+03	-1.8573E+02	4.6436E+03	-1.8570E+02	5.0008E+03	-1.8565E+02
-1.8654E+02	8.5728E+03	-1.8652E+02	7.8584E+03	-1.8651E+02	3.5720E+03	-1.8648E+02	4.2864E+03	-1.8647E+02	4.6436E+03	-1.8644E+02	5.0008E+03	-1.8638E+02
-1.8727E+02	8.5728E+03	-1.8725E+02	7.8584E+03	-1.8724E+02	3.5720E+03	-1.8721E+02	4.2864E+03	-1.8720E+02	4.6436E+03	-1.8717E+02	5.0008E+03	-1.8711E+02
-1.8800E+02	8.5728E+03	-1.8798E+02	7.8584E+03	-1.8796E+02	3.5720E+03	-1.8794E+02	4.2864E+03	-1.8792E+02	4.6436E+03	-1.8789E+02	5.0008E+03	-1.8784E+02
-1.8872E+02	8.5728E+03	-1.8871E+02	7.8584E+03	-1.8869E+02	3.5720E+03	-1.8866E+02	4.2864E+03	-1.8865E+02	4.6436E+03	-1.8862E+02	5.0008E+03	-1.8856E+02
-1.8944E+02	8.5728E+03	-1.8943E+02	7.8584E+03	-1.8941E+02	3.5720E+03	-1.8938E+02	4.2864E+03	-1.8937E+02	4.6436E+03	-1.8934E+02	5.0008E+03	-1.8929E+02
-1.9016E+02	8.5728E+03	-1.9014E+02	7.8584E+03	-1.9013E+02	3.5720E+03	-1.9010E+02	4.2864E+03	-1.9009E+02	4.6436E+03	-1.9006E+02	5.0008E+03	-1.9000E+02
-1.9088E+02	8.5728E+03	-1.9086E+02	7.8584E+03	-1.9084E+02	3.5720E+03	-1.9082E+02	4.2864E+03	-1.9080E+02	4.6436E+03	-1.9077E+02	5.0008E+03	-1.9072E+02
-1.9159E+02	8.5728E+03	-1.9157E+02	7.8584E+03	-1.9156E+02	3.5720E+03	-1.9153E+02	4.2864E+03	-1.9152E+02	4.6436E+03	-1.9149E+02	5.0008E+03	-1.9143E+02
-1.9230E+02	8.5728E+03	-1.9228E+02	7.8584E+03	-1.9227E+02	3.5720E+03	-1.9224E+02	4.2864E+03	-1.9223E+02	4.6436E+03	-1.9220E+02	5.0008E+03	-1.9215E+02
-1.9301E+02	8.5728E+03	-1.9299E+02	7.8584E+03	-1.9297E+02	3.5720E+03	-1.9295E+02	4.2864E+03	-1.9294E+02	4.6436E+03	-1.9291E+02	5.0008E+03	-1.9285E+02
-1.9371E+02	8.5728E+03	-1.9370E+02	7.8584E+03	-1.9368E+02	3.5720E+03	-1.9365E+02	4.2864E+03	-1.9364E+02	4.6436E+03	-1.9361E+02	5.0008E+03	-1.9356E+02
-1.9442E+02	8.5728E+03	-1.9440E+02	7.8584E+03	-1.9438E+02	3.5720E+03	-1.9436E+02	4.2864E+03	-1.9434E+02	4.6436E+03	-1.9432E+02	5.0008E+03	-1.9426E+02
-1.9512E+02	8.5728E+03	-1.9510E+02	7.8584E+03	-1.9508E+02	3.5720E+03	-1.9506E+02	4.2864E+03	-1.9504E+02	4.6436E+03	-1.9502E+02	5.0008E+03	-1.9496E+02
-1.9581E+02	8.5728E+03	-1.9580E+02	7.8584E+03	-1.9578E+02	3.5720E+03	-1.9576E+02	4.2864E+03	-1.9574E+02	4.6436E+03	-1.9571E+02	5.0008E+03	-1.9566E+02
-1.9651E+02	8.5728E+03	-1.9649E+02	7.8584E+03	-1.9647E+02	3.5720E+03	-1.9645E+02	4.2864E+03	-1.9644E+02	4.6436E+03	-1.9641E+02	5.0008E+03	-1.9636E+02
-1.9720E+02	8.5728E+03	-1.9718E+02	7.8584E+03	-1.9717E+02	3.5720E+03	-1.9714E+02	4.2864E+03	-1.9713E+02	4.6436E+03	-1.9710E+02	5.0008E+03	-1.9705E+02
-1.9789E+02	8.5728E+03	-1.9788E+02	7.8584E+03	-1.9786E+02	3.5720E+03	-1.9783E+02	4.2864E+03	-1.9782E+02	4.6436E+03	-1.9779E+02	5.0008E+03	-1.9774E+02
-1.9858E+02	8.5728E+03	-1.9856E+02	7.8584E+03	-1.9855E+02	3.5720E+03	-1.9852E+02	4.2864E+03	-1.9851E+02	4.6436E+03	-1.9848E+02	5.0008E+03	-1.9843E+02
-1.9927E+02	8.5728E+03	-1.9925E+02	7.8584E+03	-1.9923E+02	3.5720E+03	-1.9921E+02	4.2864E+03	-1.9919E+02	4.6436E+03	-1.9917E+02	5.0008E+03	-1.9911E+02
-1.9995E+02	8.5728E+03	-1.9993E+02	7.8584E+03	-1.9991E+02	3.5720E+03	-1.9989E+02	4.2864E+03	-1.9988E+02	4.6436E+03	-1.9985E+02	5.0008E+03	-1.9980E+02
-2.0063E+02	8.5728E+03	-2.0061E+02	7.8584E+03	-2.0060E+02	3.5720E+03	-2.0057E+02	4.2864E+03	-2.0056E+02	4.6436E+03	-2.0053E+02	5.0008E+03	-2.0048E+02
-2.0131E+02	8.5728E+03	-2.0129E+02	7.8584E+03	-2.0127E+02	3.5720E+03	-2.0125E+02	4.2864E+03	-2.0124E+02	4.6436E+03	-2.0121E+02	5.0008E+03	-2.0116E+02
-2.0198E+02	8.5728E+03	-2.0197E+02	7.8584E+03	-2.0195E+02	3.5720E+03	-2.0193E+02	4.2864E+03	-2.0191E+02	4.6436E+03	-2.0189E+02	5.0008E+03	-2.0184E+02
-2.0266E+02	8.5728E+03	-2.0264E+02	7.8584E+03	-2.0262E+02	3.5720E+03	-2.0260E+02	4.2864E+03	-2.0259E+02	4.6436E+03	-2.0256E+02	5.0008E+03	-2.0251E+02
-2.0333E+02	8.5728E+03	-2.0331E+02	7.8584E+03	-2.0330E+02	3.5720E+03	-2.0327E+02	4.2864E+03	-2.0326E+02	4.6436E+03	-2.0323E+02	5.0008E+03	-2.0318E+02
-2.0400E+02	8.5728E+03	-2.0398E+02	7.8584E+03	-2.0397E+02	3.5720E+03	-2.0394E+02	4.2864E+03	-2.0393E+02	4.6436E+03	-2.0390E+02	5.0008E+03	-2.0385E+02
-2.0467E+02	8.5728E+03	-2.0465E+02	7.8584E+03	-2.0463E+02	3.5720E+03	-2.0461E+02	4.2864E+03	-2.0460E+02	4.6436E+03	-2.0457E+02	5.0008E+03	-2.0452E+02
-2.0533E+02	8.5728E+03	-2.0531E+02	7.8584E+03	-2.0530E+02	3.5720E+03	-2.0527E+02	4.2864E+03	-2.0526E+02	4.6436E+03	-2.0524E+02	5.0008E+03	-2.0519E+02

Arg 7	Curve 7	Arg 8	Curve 8	Arg 9	Curve 9	Arg 10	Curve 10	Arg 11	Curve 11	Arg 12	Curve 12	Arg 13
-2.0599E+02	8.5728E+03	-2.0598E+02	7.8584E+03	-2.0596E+02	3.5720E+03	-2.0594E+02	4.2864E+03	-2.0592E+02	4.6436E+03	-2.0590E+02	5.0008E+03	-2.0585E+02
-2.0666E+02	8.5728E+03	-2.0664E+02	7.8584E+03	-2.0662E+02	3.5720E+03	-2.0660E+02	4.2864E+03	-2.0659E+02	4.6436E+03	-2.0656E+02	5.0008E+03	-2.0651E+02
-2.0731E+02	8.5728E+03	-2.0730E+02	7.8584E+03	-2.0728E+02	3.5720E+03	-2.0726E+02	4.2864E+03	-2.0724E+02	4.6436E+03	-2.0722E+02	5.0008E+03	-2.0717E+02
-2.0797E+02	8.5728E+03	-2.0795E+02	7.8584E+03	-2.0794E+02	3.5720E+03	-2.0791E+02	4.2864E+03	-2.0790E+02	4.6436E+03	-2.0788E+02	5.0008E+03	-2.0783E+02
-2.0863E+02	8.5728E+03	-2.0861E+02	7.8584E+03	-2.0859E+02	3.5720E+03	-2.0857E+02	4.2864E+03	-2.0856E+02	4.6436E+03	-2.0853E+02	5.0008E+03	-2.0848E+02
-2.0928E+02	8.5728E+03	-2.0926E+02	7.8584E+03	-2.0924E+02	3.5720E+03	-2.0922E+02	4.2864E+03	-2.0921E+02	4.6436E+03	-2.0918E+02	5.0008E+03	-2.0913E+02
-2.0993E+02	8.5728E+03	-2.0991E+02	7.8584E+03	-2.0990E+02	3.5720E+03	-2.0987E+02	4.2864E+03	-2.0986E+02	4.6436E+03	-2.0983E+02	5.0008E+03	-2.0979E+02
-2.1058E+02	8.5728E+03	-2.1056E+02	7.8584E+03	-2.1054E+02	3.5720E+03	-2.1052E+02	4.2864E+03	-2.1051E+02	4.6436E+03	-2.1048E+02	5.0008E+03	-2.1043E+02
-2.1122E+02	8.5728E+03	-2.1121E+02	7.8584E+03	-2.1119E+02	3.5720E+03	-2.1117E+02	4.2864E+03	-2.1116E+02	4.6436E+03	-2.1113E+02	5.0008E+03	-2.1108E+02
-2.1187E+02	8.5728E+03	-2.1185E+02	7.8584E+03	-2.1184E+02	3.5720E+03	-2.1181E+02	4.2864E+03	-2.1180E+02	4.6436E+03	-2.1177E+02	5.0008E+03	-2.1173E+02
-2.1251E+02	8.5728E+03	-2.1249E+02	7.8584E+03	-2.1248E+02	3.5720E+03	-2.1246E+02	4.2864E+03	-2.1244E+02	4.6436E+03	-2.1242E+02	5.0008E+03	-2.1237E+02
-2.1315E+02	8.5728E+03	-2.1313E+02	7.8584E+03	-2.1312E+02	3.5720E+03	-2.1310E+02	4.2864E+03	-2.1308E+02	4.6436E+03	-2.1306E+02	5.0008E+03	-2.1301E+02
-2.1379E+02	8.5728E+03	-2.1377E+02	7.8584E+03	-2.1376E+02	3.5720E+03	-2.1374E+02	4.2864E+03	-2.1372E+02	4.6436E+03	-2.1370E+02	5.0008E+03	-2.1365E+02
-2.1443E+02	8.5728E+03	-2.1441E+02	7.8584E+03	-2.1439E+02	3.5720E+03	-2.1437E+02	4.2864E+03	-2.1436E+02	4.6436E+03	-2.1433E+02	5.0008E+03	-2.1429E+02
-2.1506E+02	8.5728E+03	-2.1505E+02	7.8584E+03	-2.1503E+02	3.5720E+03	-2.1501E+02	4.2864E+03	-2.1499E+02	4.6436E+03	-2.1497E+02	5.0008E+03	-2.1492E+02
-2.1569E+02	8.5728E+03	-2.1568E+02	7.8584E+03	-2.1566E+02	3.5720E+03	-2.1564E+02	4.2864E+03	-2.1563E+02	4.6436E+03	-2.1560E+02	5.0008E+03	-2.1556E+02
-2.1633E+02	8.5728E+03	-2.1631E+02	7.8584E+03	-2.1629E+02	3.5720E+03	-2.1627E+02	4.2864E+03	-2.1626E+02	4.6436E+03	-2.1623E+02	5.0008E+03	-2.1619E+02
-2.1695E+02	8.5728E+03	-2.1694E+02	7.8584E+03	-2.1692E+02	3.5720E+03	-2.1690E+02	4.2864E+03	-2.1689E+02	4.6436E+03	-2.1686E+02	5.0008E+03	-2.1682E+02
-2.1758E+02	8.5728E+03	-2.1757E+02	7.8584E+03	-2.1755E+02	3.5720E+03	-2.1753E+02	4.2864E+03	-2.1752E+02	4.6436E+03	-2.1749E+02	5.0008E+03	-2.1744E+02
-2.1821E+02	8.5728E+03	-2.1819E+02	7.8584E+03	-2.1818E+02	3.5720E+03	-2.1815E+02	4.2864E+03	-2.1814E+02	4.6436E+03	-2.1812E+02	5.0008E+03	-2.1807E+02
-2.1883E+02	8.5728E+03	-2.1882E+02	7.8584E+03	-2.1880E+02	3.5720E+03	-2.1878E+02	4.2864E+03	-2.1877E+02	4.6436E+03	-2.1874E+02	5.0008E+03	-2.1869E+02
-2.1945E+02	8.5728E+03	-2.1944E+02	7.8584E+03	-2.1942E+02	3.5720E+03	-2.1940E+02	4.2864E+03	-2.1939E+02	4.6436E+03	-2.1936E+02	5.0008E+03	-2.1932E+02
-2.2007E+02	8.5728E+03	-2.2006E+02	7.8584E+03	-2.2004E+02	3.5720E+03	-2.2002E+02	4.2864E+03	-2.2001E+02	4.6436E+03	-2.1998E+02	5.0008E+03	-2.1994E+02
-2.2069E+02	8.5728E+03	-2.2068E+02	7.8584E+03	-2.2066E+02	3.5720E+03	-2.2064E+02	4.2864E+03	-2.2063E+02	4.6436E+03	-2.2060E+02	5.0008E+03	-2.2056E+02
-2.2131E+02	8.5728E+03	-2.2129E+02	7.8584E+03	-2.2128E+02	3.5720E+03	-2.2126E+02	4.2864E+03	-2.2125E+02	4.6436E+03	-2.2122E+02	5.0008E+03	-2.2117E+02
-2.2193E+02	8.5728E+03	-2.2191E+02	7.8584E+03	-2.2189E+02	3.5720E+03	-2.2187E+02	4.2864E+03	-2.2186E+02	4.6436E+03	-2.2184E+02	5.0008E+03	-2.2179E+02
-2.2254E+02	8.5728E+03	-2.2252E+02	7.8584E+03	-2.2251E+02	3.5720E+03	-2.2249E+02	4.2864E+03	-2.2247E+02	4.6436E+03	-2.2245E+02	5.0008E+03	-2.2240E+02
-2.2315E+02	8.5728E+03	-2.2314E+02	7.8584E+03	-2.2312E+02	3.5720E+03	-2.2310E+02	4.2864E+03	-2.2309E+02	4.6436E+03	-2.2306E+02	5.0008E+03	-2.2302E+02
-2.2376E+02	8.5728E+03	-2.2375E+02	7.8584E+03	-2.2373E+02	3.5720E+03	-2.2371E+02	4.2864E+03	-2.2370E+02	4.6436E+03	-2.2367E+02	5.0008E+03	-2.2363E+02
-2.2437E+02	8.5728E+03	-2.2435E+02	7.8584E+03	-2.2434E+02	3.5720E+03	-2.2432E+02	4.2864E+03	-2.2431E+02	4.6436E+03	-2.2428E+02	5.0008E+03	-2.2424E+02
-2.2498E+02	8.5728E+03	-2.2496E+02	7.8584E+03	-2.2495E+02	3.5720E+03	-2.2492E+02	4.2864E+03	-2.2491E+02	4.6436E+03	-2.2489E+02	5.0008E+03	-2.2484E+02
-2.2558E+02	8.5728E+03	-2.2557E+02	7.8584E+03	-2.2555E+02	3.5720E+03	-2.2553E+02	4.2864E+03	-2.2552E+02	4.6436E+03	-2.2549E+02	5.0008E+03	-2.2545E+02
-2.2619E+02	8.5728E+03	-2.2617E+02	7.8584E+03	-2.2615E+02	3.5720E+03	-2.2613E+02	4.2864E+03	-2.2612E+02	4.6436E+03	-2.2610E+02	5.0008E+03	-2.2605E+02
-2.2679E+02	8.5728E+03	-2.2677E+02	7.8584E+03	-2.2676E+02	3.5720E+03	-2.2674E+02	4.2864E+03	-2.2672E+02	4.6436E+03	-2.2670E+02	5.0008E+03	-2.2665E+02
-2.2739E+02	8.5728E+03	-2.2737E+02	7.8584E+03	-2.2736E+02	3.5720E+03	-2.2734E+02	4.2864E+03	-2.2732E+02	4.6436E+03	-2.2730E+02	5.0008E+03	-2.2726E+02
-2.2799E+02	8.5728E+03	-2.2797E+02	7.8584E+03	-2.2796E+02	3.5720E+03	-2.2794E+02	4.2864E+03	-2.2792E+02	4.6436E+03	-2.2790E+02	5.0008E+03	-2.2785E+02
-2.2858E+02	8.5728E+03	-2.2857E+02	7.8584E+03	-2.2855E+02	3.5720E+03	-2.2853E+02	4.2864E+03	-2.2852E+02	4.6436E+03	-2.2850E+02	5.0008E+03	-2.2845E+02
-2.2918E+02	8.5728E+03	-2.2916E+02	7.8584E+03	-2.2915E+02	3.5720E+03	-2.2913E+02	4.2864E+03	-2.2912E+02	4.6436E+03	-2.2909E+02	5.0008E+03	-2.2905E+02
-2.2977E+02	8.5728E+03	-2.2976E+02	7.8584E+03	-2.2974E+02	3.5720E+03	-2.2972E+02	4.2864E+03	-2.2971E+02	4.6436E+03	-2.2969E+02	5.0008E+03	-2.2964E+02
-2.3037E+02	8.5728E+03	-2.3035E+02	7.8584E+03	-2.3034E+02	3.5720E+03	-2.3032E+02	4.2864E+03	-2.3030E+02	4.6436E+03	-2.3028E+02	5.0008E+03	-2.3024E+02
-2.3096E+02	8.5728E+03	-2.3094E+02	7.8584E+03	-2.3093E+02	3.5720E+03	-2.3091E+02	4.2864E+03	-2.3090E+02	4.6436E+03	-2.3087E+02	5.0008E+03	-2.3083E+02
-2.3155E+02	8.5728E+03	-2.3153E+02	7.8584E+03	-2.3152E+02	3.5720E+03	-2.3150E+02	4.2864E+03	-2.3148E+02	4.6436E+03	-2.3146E+02	5.0008E+03	-2.3142E+02
-2.3213E+02	8.5728E+03	-2.3212E+02	7.8584E+03	-2.3211E+02	3.5720E+03	-2.3208E+02	4.2864E+03	-2.3207E+02	4.6436E+03	-2.3205E+02	5.0008E+03	-2.3201E+02
-2.3272E+02	8.5728E+03	-2.3271E+02	7.8584E+03	-2.3269E+02	3.5720E+03	-2.3267E+02	4.2864E+03	-2.3266E+02	4.6436E+03	-2.3264E+02	5.0008E+03	-2.3259E+02
-2.3331E+02	8.5728E+03	-2.3329E+02	7.8584E+03	-2.3328E+02	3.5720E+03	-2.3326E+02	4.2864E+03	-2.3325E+02	4.6436E+03	-2.3322E+02	5.0008E+03	-2.3318E+02
-2.3389E+02	8.5728E+03	-2.3388E+02	7.8584E+03	-2.3386E+02	3.5720E+03	-2.3384E+02	4.2864E+03	-2.3383E+02	4.6436E+03	-2.3381E+02	5.0008E+03	-2.3376E+02
-2.3447E+02	8.5728E+03	-2.3446E+02	7.8584E+03	-2.3444E+02	3.5720E+03	-2.3442E+02	4.2864E+03	-2.3441E+02	4.6436E+03	-2.3439E+02	5.0008E+03	-2.3434E+02
-2.3505E+02	8.5728E+03	-2.3504E+02	7.8584E+03	-2.3502E+02	3.5720E+03	-2.3500E+02	4.2864E+03	-2.3499E+02	4.6436E+03	-2.3497E+02	5.0008E+03	-2.3493E+02
-2.3563E+02	8.5728E+03	-2.3562E+02	7.8584E+03	-2.3560E+02	3.5720E+03	-2.3558E+02	4.2864E+03	-2.3557E+02	4.6436E+03	-2.3555E+02	5.0008E+03	-2.3551E+02
-2.3621E+02	8.5728E+03	-2.3620E+02	7.8584E+03	-2.3618E+02	3.5720E+03	-2.3616E+02	4.2864E+03	-2.3615E+02	4.6436E+03	-2.3613E+02	5.0008E+03	-2.3608E+02
-2.3679E+02	8.5728E+03	-2.3677E+02	7.8584E+03	-2.3676E+02	3.5720E+03	-2.3674E+02	4.2864E+03	-2.3673E+02	4.6436E+03	-2.3670E+02	5.0008E+03	-2.3666E+02
-2.3736E+02	8.5728E+03	-2.3735E+02	7.8584E+03	-2.3733E+02	3.5720E+03	-2.3731E+02	4.2864E+03	-2.3730E+02	4.6436E+03	-2.3728E+02	5.0008E+03	-2.3724E+02

Arg 7	Curve 7	Arg 8	Curve 8	Arg 9	Curve 9	Arg 10	Curve 10	Arg 11	Curve 11	Arg 12	Curve 12	Arg 13
-2.3794E+02	8.5728E+03	-2.3792E+02	7.8584E+03	-2.3791E+02	3.5720E+03	-2.3789E+02	4.2864E+03	-2.3788E+02	4.6436E+03	-2.3785E+02	5.0008E+03	-2.3781E+02
-2.3851E+02	8.5728E+03	-2.3849E+02	7.8584E+03	-2.3848E+02	3.5720E+03	-2.3846E+02	4.2864E+03	-2.3845E+02	4.6436E+03	-2.3843E+02	5.0008E+03	-2.3838E+02
-2.3908E+02	8.5728E+03	-2.3906E+02	7.8584E+03	-2.3905E+02	3.5720E+03	-2.3903E+02	4.2864E+03	-2.3902E+02	4.6436E+03	-2.3900E+02	5.0008E+03	-2.3895E+02
-2.3965E+02	8.5728E+03	-2.3963E+02	7.8584E+03	-2.3962E+02	3.5720E+03	-2.3960E+02	4.2864E+03	-2.3959E+02	4.6436E+03	-2.3957E+02	5.0008E+03	-2.3952E+02
-2.4022E+02	8.5728E+03	-2.4020E+02	7.8584E+03	-2.4019E+02	3.5720E+03	-2.4017E+02	4.2864E+03	-2.4016E+02	4.6436E+03	-2.4013E+02	5.0008E+03	-2.4009E+02
-2.4078E+02	8.5728E+03	-2.4077E+02	7.8584E+03	-2.4076E+02	3.5720E+03	-2.4074E+02	4.2864E+03	-2.4072E+02	4.6436E+03	-2.4070E+02	5.0008E+03	-2.4066E+02
-2.4135E+02	8.5728E+03	-2.4134E+02	7.8584E+03	-2.4132E+02	3.5720E+03	-2.4130E+02	4.2864E+03	-2.4129E+02	4.6436E+03	-2.4127E+02	5.0008E+03	-2.4123E+02
-2.4191E+02	8.5728E+03	-2.4190E+02	7.8584E+03	-2.4189E+02	3.5720E+03	-2.4187E+02	4.2864E+03	-2.4185E+02	4.6436E+03	-2.4183E+02	5.0008E+03	-2.4179E+02
-2.4248E+02	8.5728E+03	-2.4246E+02	7.8584E+03	-2.4245E+02	3.5720E+03	-2.4243E+02	4.2864E+03	-2.4242E+02	4.6436E+03	-2.4240E+02	5.0008E+03	-2.4235E+02
-2.4304E+02	8.5728E+03	-2.4302E+02	7.8584E+03	-2.4301E+02	3.5720E+03	-2.4299E+02	4.2864E+03	-2.4298E+02	4.6436E+03	-2.4296E+02	5.0008E+03	-2.4291E+02
-2.4360E+02	8.5728E+03	-2.4358E+02	7.8584E+03	-2.4357E+02	3.5720E+03	-2.4355E+02	4.2864E+03	-2.4354E+02	4.6436E+03	-2.4352E+02	5.0008E+03	-2.4348E+02
-2.4416E+02	8.5728E+03	-2.4414E+02	7.8584E+03	-2.4413E+02	3.5720E+03	-2.4411E+02	4.2864E+03	-2.4410E+02	4.6436E+03	-2.4408E+02	5.0008E+03	-2.4403E+02
-2.4472E+02	8.5728E+03	-2.4470E+02	7.8584E+03	-2.4469E+02	3.5720E+03	-2.4467E+02	4.2864E+03	-2.4466E+02	4.6436E+03	-2.4463E+02	5.0008E+03	-2.4459E+02
-2.4527E+02	8.5728E+03	-2.4526E+02	7.8584E+03	-2.4524E+02	3.5720E+03	-2.4522E+02	4.2864E+03	-2.4521E+02	4.6436E+03	-2.4519E+02	5.0008E+03	-2.4515E+02
-2.4583E+02	8.5728E+03	-2.4581E+02	7.8584E+03	-2.4580E+02	3.5720E+03	-2.4578E+02	4.2864E+03	-2.4577E+02	4.6436E+03	-2.4575E+02	5.0008E+03	-2.4571E+02
-2.4638E+02	8.5728E+03	-2.4637E+02	7.8584E+03	-2.4635E+02	3.5720E+03	-2.4633E+02	4.2864E+03	-2.4632E+02	4.6436E+03	-2.4630E+02	5.0008E+03	-2.4626E+02
-2.4693E+02	8.5728E+03	-2.4692E+02	7.8584E+03	-2.4691E+02	3.5720E+03	-2.4689E+02	4.2864E+03	-2.4688E+02	4.6436E+03	-2.4685E+02	5.0008E+03	-2.4681E+02
-2.4749E+02	8.5728E+03	-2.4747E+02	7.8584E+03	-2.4746E+02	3.5720E+03	-2.4744E+02	4.2864E+03	-2.4743E+02	4.6436E+03	-2.4741E+02	5.0008E+03	-2.4736E+02
-2.4804E+02	8.5728E+03	-2.4802E+02	7.8584E+03	-2.4801E+02	3.5720E+03	-2.4799E+02	4.2864E+03	-2.4798E+02	4.6436E+03	-2.4796E+02	5.0008E+03	-2.4792E+02
-2.4859E+02	8.5728E+03	-2.4857E+02	7.8584E+03	-2.4856E+02	3.5720E+03	-2.4854E+02	4.2864E+03	-2.4853E+02	4.6436E+03	-2.4851E+02	5.0008E+03	-2.4846E+02
-2.4913E+02	8.5728E+03	-2.4912E+02	7.8584E+03	-2.4911E+02	3.5720E+03	-2.4909E+02	4.2864E+03	-2.4908E+02	4.6436E+03	-2.4905E+02	5.0008E+03	-2.4901E+02
-2.4968E+02	8.5728E+03	-2.4967E+02	7.8584E+03	-2.4965E+02	3.5720E+03	-2.4963E+02	4.2864E+03	-2.4962E+02	4.6436E+03	-2.4960E+02	5.0008E+03	-2.4956E+02
-2.5023E+02	8.5728E+03	-2.5021E+02	7.8584E+03	-2.5020E+02	3.5720E+03	-2.5018E+02	4.2864E+03	-2.5017E+02	4.6436E+03	-2.5015E+02	5.0008E+03	-2.5011E+02
-2.5077E+02	8.5728E+03	-2.5076E+02	7.8584E+03	-2.5074E+02	3.5720E+03	-2.5072E+02	4.2864E+03	-2.5071E+02	4.6436E+03	-2.5069E+02	5.0008E+03	-2.5065E+02
-2.5131E+02	8.5728E+03	-2.5130E+02	7.8584E+03	-2.5129E+02	3.5720E+03	-2.5127E+02	4.2864E+03	-2.5126E+02	4.6436E+03	-2.5123E+02	5.0008E+03	-2.5119E+02
-2.5185E+02	8.5728E+03	-2.5184E+02	7.8584E+03	-2.5183E+02	3.5720E+03	-2.5181E+02	4.2864E+03	-2.5180E+02	4.6436E+03	-2.5178E+02	5.0008E+03	-2.5174E+02
-2.5240E+02	8.5728E+03	-2.5238E+02	7.8584E+03	-2.5237E+02	3.5720E+03	-2.5235E+02	4.2864E+03	-2.5234E+02	4.6436E+03	-2.5232E+02	5.0008E+03	-2.5228E+02
-2.5293E+02	8.5728E+03	-2.5292E+02	7.8584E+03	-2.5291E+02	3.5720E+03	-2.5289E+02	4.2864E+03	-2.5288E+02	4.6436E+03	-2.5286E+02	5.0008E+03	-2.5282E+02
-2.5347E+02	8.5728E+03	-2.5346E+02	7.8584E+03	-2.5345E+02	3.5720E+03	-2.5343E+02	4.2864E+03	-2.5342E+02	4.6436E+03	-2.5340E+02	5.0008E+03	-2.5336E+02
-2.5401E+02	8.5728E+03	-2.5400E+02	7.8584E+03	-2.5398E+02	3.5720E+03	-2.5397E+02	4.2864E+03	-2.5395E+02	4.6436E+03	-2.5393E+02	5.0008E+03	-2.5389E+02
-2.5455E+02	8.5728E+03	-2.5453E+02	7.8584E+03	-2.5452E+02	3.5720E+03	-2.5450E+02	4.2864E+03	-2.5449E+02	4.6436E+03	-2.5447E+02	5.0008E+03	-2.5443E+02
-2.5508E+02	8.5728E+03	-2.5507E+02	7.8584E+03	-2.5506E+02	3.5720E+03	-2.5504E+02	4.2864E+03	-2.5503E+02	4.6436E+03	-2.5500E+02	5.0008E+03	-2.5496E+02
-2.5562E+02	8.5728E+03	-2.5560E+02	7.8584E+03	-2.5559E+02	3.5720E+03	-2.5557E+02	4.2864E+03	-2.5556E+02	4.6436E+03	-2.5554E+02	5.0008E+03	-2.5550E+02
-2.5615E+02	8.5728E+03	-2.5614E+02	7.8584E+03	-2.5612E+02	3.5720E+03	-2.5610E+02	4.2864E+03	-2.5609E+02	4.6436E+03	-2.5607E+02	5.0008E+03	-2.5603E+02
-2.5668E+02	8.5728E+03	-2.5667E+02	7.8584E+03	-2.5665E+02	3.5720E+03	-2.5664E+02	4.2864E+03	-2.5662E+02	4.6436E+03	-2.5660E+02	5.0008E+03	-2.5656E+02
-2.5721E+02	8.5728E+03	-2.5720E+02	7.8584E+03	-2.5718E+02	3.5720E+03	-2.5717E+02	4.2864E+03	-2.5716E+02	4.6436E+03	-2.5713E+02	5.0008E+03	-2.5709E+02
-2.5774E+02	8.5728E+03	-2.5773E+02	7.8584E+03	-2.5771E+02	3.5720E+03	-2.5770E+02	4.2864E+03	-2.5769E+02	4.6436E+03	-2.5766E+02	5.0008E+03	-2.5762E+02
-2.5827E+02	8.5728E+03	-2.5826E+02	7.8584E+03	-2.5824E+02	3.5720E+03	-2.5822E+02	4.2864E+03	-2.5821E+02	4.6436E+03	-2.5819E+02	5.0008E+03	-2.5815E+02
-2.5880E+02	8.5728E+03	-2.5878E+02	7.8584E+03	-2.5877E+02	3.5720E+03	-2.5875E+02	4.2864E+03	-2.5874E+02	4.6436E+03	-2.5872E+02	5.0008E+03	-2.5868E+02
-2.5932E+02	8.5728E+03	-2.5931E+02	7.8584E+03	-2.5930E+02	3.5720E+03	-2.5928E+02	4.2864E+03	-2.5927E+02	4.6436E+03	-2.5925E+02	5.0008E+03	-2.5921E+02
-2.5985E+02	8.5728E+03	-2.5983E+02	7.8584E+03	-2.5982E+02	3.5720E+03	-2.5980E+02	4.2864E+03	-2.5979E+02	4.6436E+03	-2.5977E+02	5.0008E+03	-2.5973E+02
-2.6037E+02	8.5728E+03	-2.6036E+02	7.8584E+03	-2.6035E+02	3.5720E+03	-2.6033E+02	4.2864E+03	-2.6032E+02	4.6436E+03	-2.6030E+02	5.0008E+03	-2.6026E+02
-2.6090E+02	8.5728E+03	-2.6088E+02	7.8584E+03	-2.6087E+02	3.5720E+03	-2.6085E+02	4.2864E+03	-2.6084E+02	4.6436E+03	-2.6082E+02	5.0008E+03	-2.6078E+02
-2.6142E+02	8.5728E+03	-2.6140E+02	7.8584E+03	-2.6139E+02	3.5720E+03	-2.6137E+02	4.2864E+03	-2.6136E+02	4.6436E+03	-2.6134E+02	5.0008E+03	-2.6130E+02
-2.6194E+02	8.5728E+03	-2.6193E+02	7.8584E+03	-2.6191E+02	3.5720E+03	-2.6189E+02	4.2864E+03	-2.6188E+02	4.6436E+03	-2.6186E+02	5.0008E+03	-2.6182E+02
-2.6246E+02	8.5728E+03	-2.6245E+02	7.8584E+03	-2.6243E+02	3.5720E+03	-2.6241E+02	4.2864E+03	-2.6240E+02	4.6436E+03	-2.6238E+02	5.0008E+03	-2.6234E+02
-2.6298E+02	8.5728E+03	-2.6296E+02	7.8584E+03	-2.6295E+02	3.5720E+03	-2.6293E+02	4.2864E+03	-2.6292E+02	4.6436E+03	-2.6290E+02	5.0008E+03	-2.6286E+02
-2.6350E+02	8.5728E+03	-2.6348E+02	7.8584E+03	-2.6347E+02	3.5720E+03	-2.6345E+02	4.2864E+03	-2.6344E+02	4.6436E+03	-2.6342E+02	5.0008E+03	-2.6338E+02
-2.6401E+02	8.5728E+03	-2.6400E+02	7.8584E+03	-2.6399E+02	3.5720E+03	-2.6397E+02	4.2864E+03	-2.6396E+02	4.6436E+03	-2.6394E+02	5.0008E+03	-2.6390E+02
-2.6453E+02	8.5728E+03	-2.6452E+02	7.8584E+03	-2.6450E+02	3.5720E+03	-2.6448E+02	4.2864E+03	-2.6447E+02	4.6436E+03	-2.6445E+02	5.0008E+03	-2.6441E+02
-2.6504E+02	8.5728E+03	-2.6503E+02	7.8584E+03	-2.6502E+02	3.5720E+03	-2.6500E+02	4.2864E+03	-2.6499E+02	4.6436E+03	-2.6497E+02	5.0008E+03	-2.6493E+02
-2.6556E+02	8.5728E+03	-2.6554E+02	7.8584E+03	-2.6553E+02	3.5720E+03	-2.6551E+02	4.2864E+03	-2.6550E+02	4.6436E+03	-2.6548E+02	5.0008E+03	-2.6544E+02

Arg 7	Curve 7	Arg 8	Curve 8	Arg 9	Curve 9	Arg 10	Curve 10	Arg 11	Curve 11	Arg 12	Curve 12	Arg 13
-2.6607E+02	8.5728E+03	-2.6606E+02	7.8584E+03	-2.6604E+02	3.5720E+03	-2.6603E+02	4.2864E+03	-2.6602E+02	4.6436E+03	-2.6600E+02	5.0008E+03	-2.6596E+02
-2.6658E+02	8.5728E+03	-2.6657E+02	7.8584E+03	-2.6656E+02	3.5720E+03	-2.6654E+02	4.2864E+03	-2.6653E+02	4.6436E+03	-2.6651E+02	5.0008E+03	-2.6647E+02
-2.6709E+02	8.5728E+03	-2.6708E+02	7.8584E+03	-2.6707E+02	3.5720E+03	-2.6705E+02	4.2864E+03	-2.6704E+02	4.6436E+03	-2.6702E+02	5.0008E+03	-2.6698E+02
-2.6760E+02	8.5728E+03	-2.6759E+02	7.8584E+03	-2.6758E+02	3.5720E+03	-2.6756E+02	4.2864E+03	-2.6755E+02	4.6436E+03	-2.6753E+02	5.0008E+03	-2.6749E+02
-2.6811E+02	8.5728E+03	-2.6810E+02	7.8584E+03	-2.6809E+02	3.5720E+03	-2.6807E+02	4.2864E+03	-2.6806E+02	4.6436E+03	-2.6804E+02	5.0008E+03	-2.6800E+02
-2.6862E+02	8.5728E+03	-2.6861E+02	7.8584E+03	-2.6859E+02	3.5720E+03	-2.6858E+02	4.2864E+03	-2.6857E+02	4.6436E+03	-2.6855E+02	5.0008E+03	-2.6851E+02
-2.6913E+02	8.5728E+03	-2.6911E+02	7.8584E+03	-2.6910E+02	3.5720E+03	-2.6908E+02	4.2864E+03	-2.6907E+02	4.6436E+03	-2.6905E+02	5.0008E+03	-2.6902E+02
-2.6963E+02	8.5728E+03	-2.6962E+02	7.8584E+03	-2.6961E+02	3.5720E+03	-2.6959E+02	4.2864E+03	-2.6958E+02	4.6436E+03	-2.6956E+02	5.0008E+03	-2.6952E+02
-2.7014E+02	8.5728E+03	-2.7013E+02	7.8584E+03	-2.7011E+02	3.5720E+03	-2.7010E+02	4.2864E+03	-2.7009E+02	4.6436E+03	-2.7007E+02	5.0008E+03	-2.7003E+02
-2.7064E+02	8.5728E+03	-2.7063E+02	7.8584E+03	-2.7062E+02	3.5720E+03	-2.7060E+02	4.2864E+03	-2.7059E+02	4.6436E+03	-2.7057E+02	5.0008E+03	-2.7053E+02
-2.7115E+02	8.5728E+03	-2.7113E+02	7.8584E+03	-2.7112E+02	3.5720E+03	-2.7110E+02	4.2864E+03	-2.7109E+02	4.6436E+03	-2.7107E+02	5.0008E+03	-2.7104E+02
-2.7165E+02	8.5728E+03	-2.7164E+02	7.8584E+03	-2.7162E+02	3.5720E+03	-2.7161E+02	4.2864E+03	-2.7160E+02	4.6436E+03	-2.7158E+02	5.0008E+03	-2.7154E+02
-2.7215E+02	8.5728E+03	-2.7214E+02	7.8584E+03	-2.7212E+02	3.5720E+03	-2.7211E+02	4.2864E+03	-2.7210E+02	4.6436E+03	-2.7208E+02	5.0008E+03	-2.7204E+02
-2.7265E+02	8.5728E+03	-2.7264E+02	7.8584E+03	-2.7263E+02	3.5720E+03	-2.7261E+02	4.2864E+03	-2.7260E+02	4.6436E+03	-2.7258E+02	5.0008E+03	-2.7254E+02
-2.7315E+02	8.5728E+03	-2.7314E+02	7.8584E+03	-2.7313E+02	3.5720E+03	-2.7311E+02	4.2864E+03	-2.7310E+02	4.6436E+03	-2.7308E+02	5.0008E+03	-2.7304E+02
-2.7365E+02	8.5728E+03	-2.7364E+02	7.8584E+03	-2.7362E+02	3.5720E+03	-2.7361E+02	4.2864E+03	-2.7360E+02	4.6436E+03	-2.7358E+02	5.0008E+03	-2.7354E+02
-2.7415E+02	8.5728E+03	-2.7413E+02	7.8584E+03	-2.7412E+02	3.5720E+03	-2.7410E+02	4.2864E+03	-2.7409E+02	4.6436E+03	-2.7407E+02	5.0008E+03	-2.7404E+02
-2.7464E+02	8.5728E+03	-2.7463E+02	7.8584E+03	-2.7462E+02	3.5720E+03	-2.7460E+02	4.2864E+03	-2.7459E+02	4.6436E+03	-2.7457E+02	5.0008E+03	-2.7453E+02
-2.7514E+02	8.5728E+03	-2.7513E+02	7.8584E+03	-2.7511E+02	3.5720E+03	-2.7510E+02	4.2864E+03	-2.7509E+02	4.6436E+03	-2.7507E+02	5.0008E+03	-2.7503E+02
-2.7563E+02	8.5728E+03	-2.7562E+02	7.8584E+03	-2.7561E+02	3.5720E+03	-2.7559E+02	4.2864E+03	-2.7558E+02	4.6436E+03	-2.7556E+02	5.0008E+03	-2.7553E+02
-2.7613E+02	8.5728E+03	-2.7612E+02	7.8584E+03	-2.7610E+02	3.5720E+03	-2.7609E+02	4.2864E+03	-2.7608E+02	4.6436E+03	-2.7606E+02	5.0008E+03	-2.7602E+02
-2.7662E+02	8.5728E+03	-2.7661E+02	7.8584E+03	-2.7660E+02	3.5720E+03	-2.7658E+02	4.2864E+03	-2.7657E+02	4.6436E+03	-2.7655E+02	5.0008E+03	-2.7651E+02
-2.7711E+02	8.5728E+03	-2.7710E+02	7.8584E+03	-2.7709E+02	3.5720E+03	-2.7707E+02	4.2864E+03	-2.7706E+02	4.6436E+03	-2.7704E+02	5.0008E+03	-2.7701E+02
-2.7761E+02	8.5728E+03	-2.7759E+02	7.8584E+03	-2.7758E+02	3.5720E+03	-2.7756E+02	4.2864E+03	-2.7755E+02	4.6436E+03	-2.7753E+02	5.0008E+03	-2.7750E+02
-2.7810E+02	8.5728E+03	-2.7808E+02	7.8584E+03	-2.7807E+02	3.5720E+03	-2.7806E+02	4.2864E+03	-2.7805E+02	4.6436E+03	-2.7803E+02	5.0008E+03	-2.7799E+02
-2.7859E+02	8.5728E+03	-2.7857E+02	7.8584E+03	-2.7856E+02	3.5720E+03	-2.7855E+02	4.2864E+03	-2.7854E+02	4.6436E+03	-2.7852E+02	5.0008E+03	-2.7848E+02
-2.7908E+02	8.5728E+03	-2.7906E+02	7.8584E+03	-2.7905E+02	3.5720E+03	-2.7903E+02	4.2864E+03	-2.7902E+02	4.6436E+03	-2.7900E+02	5.0008E+03	-2.7897E+02
-2.7956E+02	8.5728E+03	-2.7955E+02	7.8584E+03	-2.7954E+02	3.5720E+03	-2.7952E+02	4.2864E+03	-2.7951E+02	4.6436E+03	-2.7949E+02	5.0008E+03	-2.7946E+02
-2.8005E+02	8.5728E+03	-2.8004E+02	7.8584E+03	-2.8003E+02	3.5720E+03	-2.8001E+02	4.2864E+03	-2.8000E+02	4.6436E+03	-2.7998E+02	5.0008E+03	-2.7994E+02
-2.8054E+02	8.5728E+03	-2.8053E+02	7.8584E+03	-2.8051E+02	3.5720E+03	-2.8050E+02	4.2864E+03	-2.8049E+02	4.6436E+03	-2.8047E+02	5.0008E+03	-2.8043E+02
-2.8102E+02	8.5728E+03	-2.8101E+02	7.8584E+03	-2.8100E+02	3.5720E+03	-2.8098E+02	4.2864E+03	-2.8097E+02	4.6436E+03	-2.8095E+02	5.0008E+03	-2.8092E+02
-2.8151E+02	8.5728E+03	-2.8150E+02	7.8584E+03	-2.8148E+02	3.5720E+03	-2.8147E+02	4.2864E+03	-2.8146E+02	4.6436E+03	-2.8144E+02	5.0008E+03	-2.8140E+02
-2.8199E+02	8.5728E+03	-2.8198E+02	7.8584E+03	-2.8197E+02	3.5720E+03	-2.8195E+02	4.2864E+03	-2.8194E+02	4.6436E+03	-2.8192E+02	5.0008E+03	-2.8189E+02
-2.8247E+02	8.5728E+03	-2.8246E+02	7.8584E+03	-2.8245E+02	3.5720E+03	-2.8243E+02	4.2864E+03	-2.8242E+02	4.6436E+03	-2.8240E+02	5.0008E+03	-2.8237E+02
-2.8296E+02	8.5728E+03	-2.8295E+02	7.8584E+03	-2.8293E+02	3.5720E+03	-2.8292E+02	4.2864E+03	-2.8291E+02	4.6436E+03	-2.8289E+02	5.0008E+03	-2.8285E+02
-2.8344E+02	8.5728E+03	-2.8343E+02	7.8584E+03	-2.8341E+02	3.5720E+03	-2.8340E+02	4.2864E+03	-2.8339E+02	4.6436E+03	-2.8337E+02	5.0008E+03	-2.8333E+02
-2.8392E+02	8.5728E+03	-2.8391E+02	7.8584E+03	-2.8390E+02	3.5720E+03	-2.8388E+02	4.2864E+03	-2.8387E+02	4.6436E+03	-2.8385E+02	5.0008E+03	-2.8381E+02
-2.8440E+02	8.5728E+03	-2.8439E+02	7.8584E+03	-2.8438E+02	3.5720E+03	-2.8436E+02	4.2864E+03	-2.8435E+02	4.6436E+03	-2.8433E+02	5.0008E+03	-2.8429E+02
-2.8488E+02	8.5728E+03	-2.8487E+02	7.8584E+03	-2.8485E+02	3.5720E+03	-2.8484E+02	4.2864E+03	-2.8483E+02	4.6436E+03	-2.8481E+02	5.0008E+03	-2.8477E+02
-2.8536E+02	8.5728E+03	-2.8534E+02	7.8584E+03	-2.8533E+02	3.5720E+03	-2.8532E+02	4.2864E+03	-2.8531E+02	4.6436E+03	-2.8529E+02	5.0008E+03	-2.8525E+02
-2.8583E+02	8.5728E+03	-2.8582E+02	7.8584E+03	-2.8581E+02	3.5720E+03	-2.8579E+02	4.2864E+03	-2.8578E+02	4.6436E+03	-2.8576E+02	5.0008E+03	-2.8573E+02
-2.8631E+02	8.5728E+03	-2.8630E+02	7.8584E+03	-2.8629E+02	3.5720E+03	-2.8627E+02	4.2864E+03	-2.8626E+02	4.6436E+03	-2.8624E+02	5.0008E+03	-2.8621E+02
-2.8679E+02	8.5728E+03	-2.8677E+02	7.8584E+03	-2.8676E+02	3.5720E+03	-2.8675E+02	4.2864E+03	-2.8674E+02	4.6436E+03	-2.8672E+02	5.0008E+03	-2.8668E+02
-2.8726E+02	8.5728E+03	-2.8725E+02	7.8584E+03	-2.8724E+02	3.5720E+03	-2.8722E+02	4.2864E+03	-2.8721E+02	4.6436E+03	-2.8719E+02	5.0008E+03	-2.8716E+02
-2.8774E+02	8.5728E+03	-2.8772E+02	7.8584E+03	-2.8771E+02	3.5720E+03	-2.8770E+02	4.2864E+03	-2.8769E+02	4.6436E+03	-2.8767E+02	5.0008E+03	-2.8763E+02
-2.8821E+02	8.5728E+03	-2.8820E+02	7.8584E+03	-2.8819E+02	3.5720E+03	-2.8817E+02	4.2864E+03	-2.8816E+02	4.6436E+03	-2.8814E+02	5.0008E+03	-2.8810E+02
-2.8868E+02	8.5728E+03	-2.8867E+02	7.8584E+03	-2.8866E+02	3.5720E+03	-2.8864E+02	4.2864E+03	-2.8863E+02	4.6436E+03	-2.8861E+02	5.0008E+03	-2.8858E+02
-2.8915E+02	8.5728E+03	-2.8914E+02	7.8584E+03	-2.8913E+02	3.5720E+03	-2.8911E+02	4.2864E+03	-2.8910E+02	4.6436E+03	-2.8909E+02	5.0008E+03	-2.8905E+02
-2.8962E+02	8.5728E+03	-2.8961E+02	7.8584E+03	-2.8960E+02	3.5720E+03	-2.8958E+02	4.2864E+03	-2.8958E+02	4.6436E+03	-2.8956E+02	5.0008E+03	-2.8952E+02
-2.9009E+02	8.5728E+03	-2.9008E+02	7.8584E+03	-2.9007E+02	3.5720E+03	-2.9006E+02	4.2864E+03	-2.9005E+02	4.6436E+03	-2.9003E+02	5.0008E+03	-2.8999E+02
-2.9056E+02	8.5728E+03	-2.9055E+02	7.8584E+03	-2.9054E+02	3.5720E+03	-2.9052E+02	4.2864E+03	-2.9052E+02	4.6436E+03	-2.9050E+02	5.0008E+03	-2.9046E+02
-2.9103E+02	8.5728E+03	-2.9102E+02	7.8584E+03	-2.9101E+02	3.5720E+03	-2.9099E+02	4.2864E+03	-2.9098E+02	4.6436E+03	-2.9097E+02	5.0008E+03	-2.9093E+02

Arg 7	Curve 7	Arg 8	Curve 8	Arg 9	Curve 9	Arg 10	Curve 10	Arg 11	Curve 11	Arg 12	Curve 12	Arg 13
-2.9150E+02	8.5728E+03	-2.9149E+02	7.8584E+03	-2.9148E+02	3.5720E+03	-2.9146E+02	4.2864E+03	-2.9145E+02	4.6436E+03	-2.9143E+02	5.0008E+03	-2.9140E+02
-2.9197E+02	8.5728E+03	-2.9196E+02	7.8584E+03	-2.9195E+02	3.5720E+03	-2.9193E+02	4.2864E+03	-2.9192E+02	4.6436E+03	-2.9190E+02	5.0008E+03	-2.9187E+02
-2.9244E+02	8.5728E+03	-2.9242E+02	7.8584E+03	-2.9241E+02	3.5720E+03	-2.9240E+02	4.2864E+03	-2.9239E+02	4.6436E+03	-2.9237E+02	5.0008E+03	-2.9233E+02
-2.9290E+02	8.5728E+03	-2.9289E+02	7.8584E+03	-2.9288E+02	3.5720E+03	-2.9286E+02	4.2864E+03	-2.9285E+02	4.6436E+03	-2.9283E+02	5.0008E+03	-2.9280E+02
-2.9337E+02	8.5728E+03	-2.9335E+02	7.8584E+03	-2.9334E+02	3.5720E+03	-2.9333E+02	4.2864E+03	-2.9332E+02	4.6436E+03	-2.9330E+02	5.0008E+03	-2.9326E+02
-2.9383E+02	8.5728E+03	-2.9382E+02	7.8584E+03	-2.9381E+02	3.5720E+03	-2.9379E+02	4.2864E+03	-2.9378E+02	4.6436E+03	-2.9376E+02	5.0008E+03	-2.9373E+02
-2.9429E+02	8.5728E+03	-2.9428E+02	7.8584E+03	-2.9427E+02	3.5720E+03	-2.9426E+02	4.2864E+03	-2.9425E+02	4.6436E+03	-2.9423E+02	5.0008E+03	-2.9419E+02
-2.9476E+02	8.5728E+03	-2.9475E+02	7.8584E+03	-2.9473E+02	3.5720E+03	-2.9472E+02	4.2864E+03	-2.9471E+02	4.6436E+03	-2.9469E+02	5.0008E+03	-2.9466E+02
-2.9522E+02	8.5728E+03	-2.9521E+02	7.8584E+03	-2.9520E+02	3.5720E+03	-2.9518E+02	4.2864E+03	-2.9517E+02	4.6436E+03	-2.9515E+02	5.0008E+03	-2.9512E+02
-2.9568E+02	8.5728E+03	-2.9567E+02	7.8584E+03	-2.9566E+02	3.5720E+03	-2.9564E+02	4.2864E+03	-2.9563E+02	4.6436E+03	-2.9561E+02	5.0008E+03	-2.9558E+02
-2.9614E+02	8.5728E+03	-2.9613E+02	7.8584E+03	-2.9612E+02	3.5720E+03	-2.9610E+02	4.2864E+03	-2.9609E+02	4.6436E+03	-2.9608E+02	5.0008E+03	-2.9604E+02
-2.9660E+02	8.5728E+03	-2.9659E+02	7.8584E+03	-2.9658E+02	3.5720E+03	-2.9656E+02	4.2864E+03	-2.9655E+02	4.6436E+03	-2.9654E+02	5.0008E+03	-2.9650E+02
-2.9706E+02	8.5728E+03	-2.9705E+02	7.8584E+03	-2.9704E+02	3.5720E+03	-2.9702E+02	4.2864E+03	-2.9701E+02	4.6436E+03	-2.9699E+02	5.0008E+03	-2.9696E+02
-2.9752E+02	8.5728E+03	-2.9751E+02	7.8584E+03	-2.9750E+02	3.5720E+03	-2.9748E+02	4.2864E+03	-2.9747E+02	4.6436E+03	-2.9745E+02	5.0008E+03	-2.9742E+02
-2.9798E+02	8.5728E+03	-2.9797E+02	7.8584E+03	-2.9795E+02	3.5720E+03	-2.9794E+02	4.2864E+03	-2.9793E+02	4.6436E+03	-2.9791E+02	5.0008E+03	-2.9788E+02
-2.9844E+02	8.5728E+03	-2.9842E+02	7.8584E+03	-2.9841E+02	3.5720E+03	-2.9840E+02	4.2864E+03	-2.9839E+02	4.6436E+03	-2.9837E+02	5.0008E+03	-2.9833E+02
-2.9889E+02	8.5728E+03	-2.9888E+02	7.8584E+03	-2.9887E+02	3.5720E+03	-2.9885E+02	4.2864E+03	-2.9884E+02	4.6436E+03	-2.9883E+02	5.0008E+03	-2.9879E+02
-2.9935E+02	8.5728E+03	-2.9934E+02	7.8584E+03	-2.9932E+02	3.5720E+03	-2.9931E+02	4.2864E+03	-2.9930E+02	4.6436E+03	-2.9928E+02	5.0008E+03	-2.9925E+02
-2.9980E+02	8.5728E+03	-2.9979E+02	7.8584E+03	-2.9978E+02	3.5720E+03	-2.9976E+02	4.2864E+03	-2.9975E+02	4.6436E+03	-2.9974E+02	5.0008E+03	-2.9970E+02
-3.0026E+02	8.5728E+03	-3.0025E+02	7.8584E+03	-3.0023E+02	3.5720E+03	-3.0022E+02	4.2864E+03	-3.0021E+02	4.6436E+03	-3.0019E+02	5.0008E+03	-3.0016E+02
-3.0071E+02	8.5728E+03	-3.0070E+02	7.8584E+03	-3.0069E+02	3.5720E+03	-3.0067E+02	4.2864E+03	-3.0066E+02	4.6436E+03	-3.0064E+02	5.0008E+03	-3.0061E+02
-3.0116E+02	8.5728E+03	-3.0115E+02	7.8584E+03	-3.0114E+02	3.5720E+03	-3.0113E+02	4.2864E+03	-3.0112E+02	4.6436E+03	-3.0110E+02	5.0008E+03	-3.0106E+02
-3.0162E+02	8.5728E+03	-3.0160E+02	7.8584E+03	-3.0159E+02	3.5720E+03	-3.0158E+02	4.2864E+03	-3.0157E+02	4.6436E+03	-3.0155E+02	5.0008E+03	-3.0152E+02
-3.0207E+02	8.5728E+03	-3.0206E+02	7.8584E+03	-3.0205E+02	3.5720E+03	-3.0203E+02	4.2864E+03	-3.0202E+02	4.6436E+03	-3.0200E+02	5.0008E+03	-3.0197E+02
-3.0252E+02	8.5728E+03	-3.0251E+02	7.8584E+03	-3.0250E+02	3.5720E+03	-3.0248E+02	4.2864E+03	-3.0247E+02	4.6436E+03	-3.0245E+02	5.0008E+03	-3.0242E+02
-3.0297E+02	8.5728E+03	-3.0296E+02	7.8584E+03	-3.0295E+02	3.5720E+03	-3.0293E+02	4.2864E+03	-3.0292E+02	4.6436E+03	-3.0290E+02	5.0008E+03	-3.0287E+02
-3.0342E+02	8.5728E+03	-3.0341E+02	7.8584E+03	-3.0340E+02	3.5720E+03	-3.0338E+02	4.2864E+03	-3.0337E+02	4.6436E+03	-3.0335E+02	5.0008E+03	-3.0332E+02
-3.0387E+02	8.5728E+03	-3.0386E+02	7.8584E+03	-3.0385E+02	3.5720E+03	-3.0383E+02	4.2864E+03	-3.0382E+02	4.6436E+03	-3.0380E+02	5.0008E+03	-3.0377E+02
-3.0432E+02	8.5728E+03	-3.0431E+02	7.8584E+03	-3.0429E+02	3.5720E+03	-3.0428E+02	4.2864E+03	-3.0427E+02	4.6436E+03	-3.0425E+02	5.0008E+03	-3.0422E+02
-3.0476E+02	8.5728E+03	-3.0475E+02	7.8584E+03	-3.0474E+02	3.5720E+03	-3.0473E+02	4.2864E+03	-3.0472E+02	4.6436E+03	-3.0470E+02	5.0008E+03	-3.0467E+02
-3.0521E+02	8.5728E+03	-3.0520E+02	7.8584E+03	-3.0519E+02	3.5720E+03	-3.0517E+02	4.2864E+03	-3.0516E+02	4.6436E+03	-3.0515E+02	5.0008E+03	-3.0511E+02
-3.0566E+02	8.5728E+03	-3.0565E+02	7.8584E+03	-3.0564E+02	3.5720E+03	-3.0562E+02	4.2864E+03	-3.0561E+02	4.6436E+03	-3.0559E+02	5.0008E+03	-3.0556E+02
-3.0610E+02	8.5728E+03	-3.0609E+02	7.8584E+03	-3.0608E+02	3.5720E+03	-3.0607E+02	4.2864E+03	-3.0606E+02	4.6436E+03	-3.0604E+02	5.0008E+03	-3.0601E+02
-3.0655E+02	8.5728E+03	-3.0654E+02	7.8584E+03	-3.0653E+02	3.5720E+03	-3.0651E+02	4.2864E+03	-3.0650E+02	4.6436E+03	-3.0648E+02	5.0008E+03	-3.0645E+02
-3.0699E+02	8.5728E+03	-3.0698E+02	7.8584E+03	-3.0697E+02	3.5720E+03	-3.0696E+02	4.2864E+03	-3.0695E+02	4.6436E+03	-3.0693E+02	5.0008E+03	-3.0690E+02
-3.0744E+02	8.5728E+03	-3.0743E+02	7.8584E+03	-3.0741E+02	3.5720E+03	-3.0740E+02	4.2864E+03	-3.0739E+02	4.6436E+03	-3.0737E+02	5.0008E+03	-3.0734E+02
-3.0788E+02	8.5728E+03	-3.0787E+02	7.8584E+03	-3.0786E+02	3.5720E+03	-3.0784E+02	4.2864E+03	-3.0783E+02	4.6436E+03	-3.0782E+02	5.0008E+03	-3.0778E+02
-3.0832E+02	8.5728E+03	-3.0831E+02	7.8584E+03	-3.0830E+02	3.5720E+03	-3.0828E+02	4.2864E+03	-3.0828E+02	4.6436E+03	-3.0826E+02	5.0008E+03	-3.0823E+02
-3.0876E+02	8.5728E+03	-3.0875E+02	7.8584E+03	-3.0874E+02	3.5720E+03	-3.0873E+02	4.2864E+03	-3.0872E+02	4.6436E+03	-3.0870E+02	5.0008E+03	-3.0867E+02
-3.0921E+02	8.5728E+03	-3.0919E+02	7.8584E+03	-3.0918E+02	3.5720E+03	-3.0917E+02	4.2864E+03	-3.0916E+02	4.6436E+03	-3.0914E+02	5.0008E+03	-3.0911E+02
-3.0965E+02	8.5728E+03	-3.0964E+02	7.8584E+03	-3.0962E+02	3.5720E+03	-3.0961E+02	4.2864E+03	-3.0960E+02	4.6436E+03	-3.0958E+02	5.0008E+03	-3.0955E+02
-3.1009E+02	8.5728E+03	-3.1008E+02	7.8584E+03	-3.1006E+02	3.5720E+03	-3.1005E+02	4.2864E+03	-3.1004E+02	4.6436E+03	-3.1002E+02	5.0008E+03	-3.0999E+02
-3.1053E+02	8.5728E+03	-3.1051E+02	7.8584E+03	-3.1050E+02	3.5720E+03	-3.1049E+02	4.2864E+03	-3.1048E+02	4.6436E+03	-3.1046E+02	5.0008E+03	-3.1043E+02
-3.1096E+02	8.5728E+03	-3.1095E+02	7.8584E+03	-3.1094E+02	3.5720E+03	-3.1093E+02	4.2864E+03	-3.1092E+02	4.6436E+03	-3.1090E+02	5.0008E+03	-3.1087E+02
-3.1140E+02	8.5728E+03	-3.1139E+02	7.8584E+03	-3.1138E+02	3.5720E+03	-3.1137E+02	4.2864E+03	-3.1136E+02	4.6436E+03	-3.1134E+02	5.0008E+03	-3.1131E+02
-3.1184E+02	8.5728E+03	-3.1183E+02	7.8584E+03	-3.1182E+02	3.5720E+03	-3.1180E+02	4.2864E+03	-3.1179E+02	4.6436E+03	-3.1178E+02	5.0008E+03	-3.1174E+02
-3.1228E+02	8.5728E+03	-3.1227E+02	7.8584E+03	-3.1226E+02	3.5720E+03	-3.1224E+02	4.2864E+03	-3.1223E+02	4.6436E+03	-3.1221E+02	5.0008E+03	-3.1218E+02
-3.1271E+02	8.5728E+03	-3.1270E+02	7.8584E+03	-3.1269E+02	3.5720E+03	-3.1268E+02	4.2864E+03	-3.1267E+02	4.6436E+03	-3.1265E+02	5.0008E+03	-3.1262E+02
-3.1315E+02	8.5728E+03	-3.1314E+02	7.8584E+03	-3.1313E+02	3.5720E+03	-3.1311E+02	4.2864E+03	-3.1310E+02	4.6436E+03	-3.1309E+02	5.0008E+03	-3.1305E+02
-3.1358E+02	8.5728E+03	-3.1357E+02	7.8584E+03	-3.1356E+02	3.5720E+03	-3.1355E+02	4.2864E+03	-3.1354E+02	4.6436E+03	-3.1352E+02	5.0008E+03	-3.1349E+02
-3.1402E+02	8.5728E+03	-3.1401E+02	7.8584E+03	-3.1400E+02	3.5720E+03	-3.1398E+02	4.2864E+03	-3.1397E+02	4.6436E+03	-3.1396E+02	5.0008E+03	-3.1392E+02
-3.1445E+02	8.5728E+03	-3.1444E+02	7.8584E+03	-3.1443E+02	3.5720E+03	-3.1442E+02	4.2864E+03	-3.1441E+02	4.6436E+03	-3.1439E+02	5.0008E+03	-3.1436E+02

Arg 7	Curve 7	Arg 8	Curve 8	Arg 9	Curve 9	Arg 10	Curve 10	Arg 11	Curve 11	Arg 12	Curve 12	Arg 13
-3.1489E+02	8.5728E+03	-3.1487E+02	7.8584E+03	-3.1486E+02	3.5720E+03	-3.1485E+02	4.2864E+03	-3.1484E+02	4.6436E+03	-3.1482E+02	5.0008E+03	-3.1479E+02
-3.1532E+02	8.5728E+03	-3.1531E+02	7.8584E+03	-3.1530E+02	3.5720E+03	-3.1528E+02	4.2864E+03	-3.1527E+02	4.6436E+03	-3.1526E+02	5.0008E+03	-3.1522E+02
-3.1575E+02	8.5728E+03	-3.1574E+02	7.8584E+03	-3.1573E+02	3.5720E+03	-3.1571E+02	4.2864E+03	-3.1571E+02	4.6436E+03	-3.1569E+02	5.0008E+03	-3.1566E+02
-3.1618E+02	8.5728E+03	-3.1617E+02	7.8584E+03	-3.1616E+02	3.5720E+03	-3.1615E+02	4.2864E+03	-3.1614E+02	4.6436E+03	-3.1612E+02	5.0008E+03	-3.1609E+02
-3.1661E+02	8.5728E+03	-3.1660E+02	7.8584E+03	-3.1659E+02	3.5720E+03	-3.1658E+02	4.2864E+03	-3.1657E+02	4.6436E+03	-3.1655E+02	5.0008E+03	-3.1652E+02
-3.1704E+02	8.5728E+03	-3.1703E+02	7.8584E+03	-3.1702E+02	3.5720E+03	-3.1701E+02	4.2864E+03	-3.1700E+02	4.6436E+03	-3.1698E+02	5.0008E+03	-3.1695E+02
-3.1747E+02	8.5728E+03	-3.1746E+02	7.8584E+03	-3.1745E+02	3.5720E+03	-3.1744E+02	4.2864E+03	-3.1743E+02	4.6436E+03	-3.1741E+02	5.0008E+03	-3.1738E+02
-3.1790E+02	8.5728E+03	-3.1789E+02	7.8584E+03	-3.1788E+02	3.5720E+03	-3.1787E+02	4.2864E+03	-3.1786E+02	4.6436E+03	-3.1784E+02	5.0008E+03	-3.1781E+02
-3.1833E+02	8.5728E+03	-3.1832E+02	7.8584E+03	-3.1831E+02	3.5720E+03	-3.1829E+02	4.2864E+03	-3.1829E+02	4.6436E+03	-3.1827E+02	5.0008E+03	-3.1824E+02
-3.1876E+02	8.5728E+03	-3.1875E+02	7.8584E+03	-3.1874E+02	3.5720E+03	-3.1872E+02	4.2864E+03	-3.1871E+02	4.6436E+03	-3.1870E+02	5.0008E+03	-3.1866E+02
-3.1919E+02	8.5728E+03	-3.1918E+02	7.8584E+03	-3.1916E+02	3.5720E+03	-3.1915E+02	4.2864E+03	-3.1914E+02	4.6436E+03	-3.1912E+02	5.0008E+03	-3.1909E+02
-3.1961E+02	8.5728E+03	-3.1960E+02	7.8584E+03	-3.1959E+02	3.5720E+03	-3.1958E+02	4.2864E+03	-3.1957E+02	4.6436E+03	-3.1955E+02	5.0008E+03	-3.1952E+02
-3.2004E+02	8.5728E+03	-3.2003E+02	7.8584E+03	-3.2002E+02	3.5720E+03	-3.2000E+02	4.2864E+03	-3.1999E+02	4.6436E+03	-3.1998E+02	5.0008E+03	-3.1995E+02
-3.2047E+02	8.5728E+03	-3.2045E+02	7.8584E+03	-3.2044E+02	3.5720E+03	-3.2043E+02	4.2864E+03	-3.2042E+02	4.6436E+03	-3.2040E+02	5.0008E+03	-3.2037E+02
-3.2089E+02	8.5728E+03	-3.2088E+02	7.8584E+03	-3.2087E+02	3.5720E+03	-3.2085E+02	4.2864E+03	-3.2085E+02	4.6436E+03	-3.2083E+02	5.0008E+03	-3.2080E+02
-3.2131E+02	8.5728E+03	-3.2130E+02	7.8584E+03	-3.2129E+02	3.5720E+03	-3.2128E+02	4.2864E+03	-3.2127E+02	4.6436E+03	-3.2125E+02	5.0008E+03	-3.2122E+02
-3.2174E+02	8.5728E+03	-3.2173E+02	7.8584E+03	-3.2172E+02	3.5720E+03	-3.2170E+02	4.2864E+03	-3.2169E+02	4.6436E+03	-3.2168E+02	5.0008E+03	-3.2165E+02
-3.2216E+02	8.5728E+03	-3.2215E+02	7.8584E+03	-3.2214E+02	3.5720E+03	-3.2213E+02	4.2864E+03	-3.2212E+02	4.6436E+03	-3.2210E+02	5.0008E+03	-3.2207E+02
-3.2259E+02	8.5728E+03	-3.2257E+02	7.8584E+03	-3.2256E+02	3.5720E+03	-3.2255E+02	4.2864E+03	-3.2254E+02	4.6436E+03	-3.2252E+02	5.0008E+03	-3.2249E+02
-3.2301E+02	8.5728E+03	-3.2300E+02	7.8584E+03	-3.2299E+02	3.5720E+03	-3.2297E+02	4.2864E+03	-3.2296E+02	4.6436E+03	-3.2295E+02	5.0008E+03	-3.2291E+02
-3.2343E+02	8.5728E+03	-3.2342E+02	7.8584E+03	-3.2341E+02	3.5720E+03	-3.2339E+02	4.2864E+03	-3.2339E+02	4.6436E+03	-3.2337E+02	5.0008E+03	-3.2334E+02
-3.2385E+02	8.5728E+03	-3.2384E+02	7.8584E+03	-3.2383E+02	3.5720E+03	-3.2382E+02	4.2864E+03	-3.2381E+02	4.6436E+03	-3.2379E+02	5.0008E+03	-3.2376E+02
-3.2427E+02	8.5728E+03	-3.2426E+02	7.8584E+03	-3.2425E+02	3.5720E+03	-3.2424E+02	4.2864E+03	-3.2423E+02	4.6436E+03	-3.2421E+02	5.0008E+03	-3.2418E+02
-3.2469E+02	8.5728E+03	-3.2468E+02	7.8584E+03	-3.2467E+02	3.5720E+03	-3.2466E+02	4.2864E+03	-3.2465E+02	4.6436E+03	-3.2463E+02	5.0008E+03	-3.2460E+02
-3.2511E+02	8.5728E+03	-3.2510E+02	7.8584E+03	-3.2509E+02	3.5720E+03	-3.2508E+02	4.2864E+03	-3.2507E+02	4.6436E+03	-3.2505E+02	5.0008E+03	-3.2502E+02
-3.2553E+02	8.5728E+03	-3.2552E+02	7.8584E+03	-3.2551E+02	3.5720E+03	-3.2550E+02	4.2864E+03	-3.2549E+02	4.6436E+03	-3.2547E+02	5.0008E+03	-3.2544E+02
-3.2595E+02	8.5728E+03	-3.2594E+02	7.8584E+03	-3.2593E+02	3.5720E+03	-3.2591E+02	4.2864E+03	-3.2591E+02	4.6436E+03	-3.2589E+02	5.0008E+03	-3.2586E+02
-3.2637E+02	8.5728E+03	-3.2636E+02	7.8584E+03	-3.2635E+02	3.5720E+03	-3.2633E+02	4.2864E+03	-3.2632E+02	4.6436E+03	-3.2631E+02	5.0008E+03	-3.2628E+02
-3.2678E+02	8.5728E+03	-3.2677E+02	7.8584E+03	-3.2676E+02	3.5720E+03	-3.2675E+02	4.2864E+03	-3.2674E+02	4.6436E+03	-3.2672E+02	5.0008E+03	-3.2669E+02
-3.2720E+02	8.5728E+03	-3.2719E+02	7.8584E+03	-3.2718E+02	3.5720E+03	-3.2717E+02	4.2864E+03	-3.2716E+02	4.6436E+03	-3.2714E+02	5.0008E+03	-3.2711E+02
-3.2762E+02	8.5728E+03	-3.2761E+02	7.8584E+03	-3.2760E+02	3.5720E+03	-3.2758E+02	4.2864E+03	-3.2757E+02	4.6436E+03	-3.2756E+02	5.0008E+03	-3.2753E+02
-3.2803E+02	8.5728E+03	-3.2802E+02	7.8584E+03	-3.2801E+02	3.5720E+03	-3.2800E+02	4.2864E+03	-3.2799E+02	4.6436E+03	-3.2797E+02	5.0008E+03	-3.2794E+02
-3.2845E+02	8.5728E+03	-3.2844E+02	7.8584E+03	-3.2843E+02	3.5720E+03	-3.2841E+02	4.2864E+03	-3.2841E+02	4.6436E+03	-3.2839E+02	5.0008E+03	-3.2836E+02
-3.2886E+02	8.5728E+03	-3.2885E+02	7.8584E+03	-3.2884E+02	3.5720E+03	-3.2883E+02	4.2864E+03	-3.2882E+02	4.6436E+03	-3.2880E+02	5.0008E+03	-3.2877E+02
-3.2928E+02	8.5728E+03	-3.2927E+02	7.8584E+03	-3.2926E+02	3.5720E+03	-3.2924E+02	4.2864E+03	-3.2924E+02	4.6436E+03	-3.2922E+02	5.0008E+03	-3.2919E+02
-3.2969E+02	8.5728E+03	-3.2968E+02	7.8584E+03	-3.2967E+02	3.5720E+03	-3.2966E+02	4.2864E+03	-3.2965E+02	4.6436E+03	-3.2963E+02	5.0008E+03	-3.2960E+02
-3.3011E+02	8.5728E+03	-3.3010E+02	7.8584E+03	-3.3009E+02	3.5720E+03	-3.3007E+02	4.2864E+03	-3.3006E+02	4.6436E+03	-3.3005E+02	5.0008E+03	-3.3001E+02
-3.3052E+02	8.5728E+03	-3.3051E+02	7.8584E+03	-3.3050E+02	3.5720E+03	-3.3048E+02	4.2864E+03	-3.3048E+02	4.6436E+03	-3.3046E+02	5.0008E+03	-3.3043E+02
-3.3093E+02	8.5728E+03	-3.3092E+02	7.8584E+03	-3.3091E+02	3.5720E+03	-3.3090E+02	4.2864E+03	-3.3089E+02	4.6436E+03	-3.3087E+02	5.0008E+03	-3.3084E+02
-3.3134E+02	8.5728E+03	-3.3133E+02	7.8584E+03	-3.3132E+02	3.5720E+03	-3.3131E+02	4.2864E+03	-3.3130E+02	4.6436E+03	-3.3128E+02	5.0008E+03	-3.3125E+02
-3.3175E+02	8.5728E+03	-3.3174E+02	7.8584E+03	-3.3173E+02	3.5720E+03	-3.3172E+02	4.2864E+03	-3.3171E+02	4.6436E+03	-3.3169E+02	5.0008E+03	-3.3166E+02
-3.3216E+02	8.5728E+03	-3.3215E+02	7.8584E+03	-3.3214E+02	3.5720E+03	-3.3213E+02	4.2864E+03	-3.3212E+02	4.6436E+03	-3.3210E+02	5.0008E+03	-3.3207E+02
-3.3257E+02	8.5728E+03	-3.3256E+02	7.8584E+03	-3.3255E+02	3.5720E+03	-3.3254E+02	4.2864E+03	-3.3253E+02	4.6436E+03	-3.3252E+02	5.0008E+03	-3.3248E+02
-3.3298E+02	8.5728E+03	-3.3297E+02	7.8584E+03	-3.3296E+02	3.5720E+03	-3.3295E+02	4.2864E+03	-3.3294E+02	4.6436E+03	-3.3293E+02	5.0008E+03	-3.3289E+02
-3.3339E+02	8.5728E+03	-3.3338E+02	7.8584E+03	-3.3337E+02	3.5720E+03	-3.3336E+02	4.2864E+03	-3.3335E+02	4.6436E+03	-3.3333E+02	5.0008E+03	-3.3330E+02
-3.3380E+02	8.5728E+03	-3.3379E+02	7.8584E+03	-3.3378E+02	3.5720E+03	-3.3377E+02	4.2864E+03	-3.3376E+02	4.6436E+03	-3.3374E+02	5.0008E+03	-3.3371E+02
-3.3421E+02	8.5728E+03	-3.3420E+02	7.8584E+03	-3.3419E+02	3.5720E+03	-3.3418E+02	4.2864E+03	-3.3417E+02	4.6436E+03	-3.3415E+02	5.0008E+03	-3.3412E+02
-3.3462E+02	8.5728E+03	-3.3461E+02	7.8584E+03	-3.3460E+02	3.5720E+03	-3.3458E+02	4.2864E+03	-3.3458E+02	4.6436E+03	-3.3456E+02	5.0008E+03	-3.3453E+02
-3.3503E+02	8.5728E+03	-3.3502E+02	7.8584E+03	-3.3501E+02	3.5720E+03	-3.3499E+02	4.2864E+03	-3.3498E+02	4.6436E+03	-3.3497E+02	5.0008E+03	-3.3494E+02
-3.3543E+02	8.5728E+03	-3.3542E+02	7.8584E+03	-3.3541E+02	3.5720E+03	-3.3540E+02	4.2864E+03	-3.3539E+02	4.6436E+03	-3.3537E+02	5.0008E+03	-3.3534E+02
-3.3584E+02	8.5728E+03	-3.3583E+02	7.8584E+03	-3.3582E+02	3.5720E+03	-3.3580E+02	4.2864E+03	-3.3580E+02	4.6436E+03	-3.3578E+02	5.0008E+03	-3.3575E+02
-3.3624E+02	8.5728E+03	-3.3623E+02	7.8584E+03	-3.3622E+02	3.5720E+03	-3.3621E+02	4.2864E+03	-3.3620E+02	4.6436E+03	-3.3619E+02	5.0008E+03	-3.3615E+02

Arg 7	Curve 7	Arg 8	Curve 8	Arg 9	Curve 9	Arg 10	Curve 10	Arg 11	Curve 11	Arg 12	Curve 12	Arg 13
-3.3665E+02	8.5728E+03	-3.3664E+02	7.8584E+03	-3.3663E+02	3.5720E+03	-3.3661E+02	4.2864E+03	-3.3661E+02	4.6436E+03	-3.3659E+02	5.0008E+03	-3.3656E+02
-3.3705E+02	8.5728E+03	-3.3704E+02	7.8584E+03	-3.3703E+02	3.5720E+03	-3.3702E+02	4.2864E+03	-3.3701E+02	4.6436E+03	-3.3700E+02	5.0008E+03	-3.3697E+02
-3.3746E+02	8.5728E+03	-3.3745E+02	7.8584E+03	-3.3744E+02	3.5720E+03	-3.3742E+02	4.2864E+03	-3.3742E+02	4.6436E+03	-3.3740E+02	5.0008E+03	-3.3737E+02
-3.3786E+02	8.5728E+03	-3.3785E+02	7.8584E+03	-3.3784E+02	3.5720E+03	-3.3783E+02	4.2864E+03	-3.3782E+02	4.6436E+03	-3.3780E+02	5.0008E+03	-3.3777E+02
-3.3827E+02	8.5728E+03	-3.3826E+02	7.8584E+03	-3.3825E+02	3.5720E+03	-3.3823E+02	4.2864E+03	-3.3822E+02	4.6436E+03	-3.3821E+02	5.0008E+03	-3.3818E+02
-3.3867E+02	8.5728E+03	-3.3866E+02	7.8584E+03	-3.3865E+02	3.5720E+03	-3.3863E+02	4.2864E+03	-3.3863E+02	4.6436E+03	-3.3861E+02	5.0008E+03	-3.3858E+02
-3.3907E+02	8.5728E+03	-3.3906E+02	7.8584E+03	-3.3905E+02	3.5720E+03	-3.3904E+02	4.2864E+03	-3.3903E+02	4.6436E+03	-3.3901E+02	5.0008E+03	-3.3898E+02
-3.3947E+02	8.5728E+03	-3.3946E+02	7.8584E+03	-3.3945E+02	3.5720E+03	-3.3944E+02	4.2864E+03	-3.3943E+02	4.6436E+03	-3.3941E+02	5.0008E+03	-3.3938E+02
-3.3987E+02	8.5728E+03	-3.3986E+02	7.8584E+03	-3.3985E+02	3.5720E+03	-3.3984E+02	4.2864E+03	-3.3983E+02	4.6436E+03	-3.3982E+02	5.0008E+03	-3.3979E+02
-3.4027E+02	8.5728E+03	-3.4026E+02	7.8584E+03	-3.4025E+02	3.5720E+03	-3.4024E+02	4.2864E+03	-3.4023E+02	4.6436E+03	-3.4022E+02	5.0008E+03	-3.4019E+02
-3.4068E+02	8.5728E+03	-3.4067E+02	7.8584E+03	-3.4066E+02	3.5720E+03	-3.4064E+02	4.2864E+03	-3.4063E+02	4.6436E+03	-3.4062E+02	5.0008E+03	-3.4059E+02
-3.4108E+02	8.5728E+03	-3.4107E+02	7.8584E+03	-3.4106E+02	3.5720E+03	-3.4104E+02	4.2864E+03	-3.4103E+02	4.6436E+03	-3.4102E+02	5.0008E+03	-3.4099E+02
-3.4147E+02	8.5728E+03	-3.4146E+02	7.8584E+03	-3.4145E+02	3.5720E+03	-3.4144E+02	4.2864E+03	-3.4143E+02	4.6436E+03	-3.4142E+02	5.0008E+03	-3.4139E+02
-3.4187E+02	8.5728E+03	-3.4186E+02	7.8584E+03	-3.4185E+02	3.5720E+03	-3.4184E+02	4.2864E+03	-3.4183E+02	4.6436E+03	-3.4182E+02	5.0008E+03	-3.4179E+02
-3.4227E+02	8.5728E+03	-3.4226E+02	7.8584E+03	-3.4225E+02	3.5720E+03	-3.4224E+02	4.2864E+03	-3.4223E+02	4.6436E+03	-3.4221E+02	5.0008E+03	-3.4218E+02
-3.4267E+02	8.5728E+03	-3.4266E+02	7.8584E+03	-3.4265E+02	3.5720E+03	-3.4264E+02	4.2864E+03	-3.4263E+02	4.6436E+03	-3.4261E+02	5.0008E+03	-3.4258E+02
-3.4307E+02	8.5728E+03	-3.4306E+02	7.8584E+03	-3.4305E+02	3.5720E+03	-3.4303E+02	4.2864E+03	-3.4303E+02	4.6436E+03	-3.4301E+02	5.0008E+03	-3.4298E+02
-3.4347E+02	8.5728E+03	-3.4346E+02	7.8584E+03	-3.4345E+02	3.5720E+03	-3.4343E+02	4.2864E+03	-3.4342E+02	4.6436E+03	-3.4341E+02	5.0008E+03	-3.4338E+02
-3.4386E+02	8.5728E+03	-3.4385E+02	7.8584E+03	-3.4384E+02	3.5720E+03	-3.4383E+02	4.2864E+03	-3.4382E+02	4.6436E+03	-3.4380E+02	5.0008E+03	-3.4377E+02
-3.4426E+02	8.5728E+03	-3.4425E+02	7.8584E+03	-3.4424E+02	3.5720E+03	-3.4422E+02	4.2864E+03	-3.4422E+02	4.6436E+03	-3.4420E+02	5.0008E+03	-3.4417E+02
-3.4465E+02	8.5728E+03	-3.4464E+02	7.8584E+03	-3.4463E+02	3.5720E+03	-3.4462E+02	4.2864E+03	-3.4461E+02	4.6436E+03	-3.4460E+02	5.0008E+03	-3.4457E+02
-3.4505E+02	8.5728E+03	-3.4504E+02	7.8584E+03	-3.4503E+02	3.5720E+03	-3.4502E+02	4.2864E+03	-3.4501E+02	4.6436E+03	-3.4499E+02	5.0008E+03	-3.4496E+02
-3.4544E+02	8.5728E+03	-3.4543E+02	7.8584E+03	-3.4542E+02	3.5720E+03	-3.4541E+02	4.2864E+03	-3.4540E+02	4.6436E+03	-3.4539E+02	5.0008E+03	-3.4536E+02
-3.4584E+02	8.5728E+03	-3.4583E+02	7.8584E+03	-3.4582E+02	3.5720E+03	-3.4581E+02	4.2864E+03	-3.4580E+02	4.6436E+03	-3.4578E+02	5.0008E+03	-3.4575E+02
-3.4623E+02	8.5728E+03	-3.4622E+02	7.8584E+03	-3.4621E+02	3.5720E+03	-3.4620E+02	4.2864E+03	-3.4619E+02	4.6436E+03	-3.4618E+02	5.0008E+03	-3.4615E+02
-3.4663E+02	8.5728E+03	-3.4662E+02	7.8584E+03	-3.4661E+02	3.5720E+03	-3.4659E+02	4.2864E+03	-3.4659E+02	4.6436E+03	-3.4657E+02	5.0008E+03	-3.4654E+02
-3.4702E+02	8.5728E+03	-3.4701E+02	7.8584E+03	-3.4700E+02	3.5720E+03	-3.4699E+02	4.2864E+03	-3.4698E+02	4.6436E+03	-3.4696E+02	5.0008E+03	-3.4693E+02
-3.4741E+02	8.5728E+03	-3.4740E+02	7.8584E+03	-3.4739E+02	3.5720E+03	-3.4738E+02	4.2864E+03	-3.4737E+02	4.6436E+03	-3.4736E+02	5.0008E+03	-3.4733E+02
-3.4780E+02	8.5728E+03	-3.4779E+02	7.8584E+03	-3.4779E+02	3.5720E+03	-3.4777E+02	4.2864E+03	-3.4776E+02	4.6436E+03	-3.4775E+02	5.0008E+03	-3.4772E+02
-3.4820E+02	8.5728E+03	-3.4819E+02	7.8584E+03	-3.4818E+02	3.5720E+03	-3.4816E+02	4.2864E+03	-3.4816E+02	4.6436E+03	-3.4814E+02	5.0008E+03	-3.4811E+02
-3.4859E+02	8.5728E+03	-3.4858E+02	7.8584E+03	-3.4857E+02	3.5720E+03	-3.4855E+02	4.2864E+03	-3.4855E+02	4.6436E+03	-3.4853E+02	5.0008E+03	-3.4850E+02
-3.4898E+02	8.5728E+03	-3.4897E+02	7.8584E+03	-3.4896E+02	3.5720E+03	-3.4895E+02	4.2864E+03	-3.4894E+02	4.6436E+03	-3.4892E+02	5.0008E+03	-3.4889E+02
-3.4937E+02	8.5728E+03	-3.4936E+02	7.8584E+03	-3.4935E+02	3.5720E+03	-3.4934E+02	4.2864E+03	-3.4933E+02	4.6436E+03	-3.4931E+02	5.0008E+03	-3.4928E+02
-3.4976E+02	8.5728E+03	-3.4975E+02	7.8584E+03	-3.4974E+02	3.5720E+03	-3.4973E+02	4.2864E+03	-3.4972E+02	4.6436E+03	-3.4970E+02	5.0008E+03	-3.4967E+02
-3.5015E+02	8.5728E+03	-3.5014E+02	7.8584E+03	-3.5013E+02	3.5720E+03	-3.5012E+02	4.2864E+03	-3.5011E+02	4.6436E+03	-3.5009E+02	5.0008E+03	-3.5006E+02
-3.5054E+02	8.5728E+03	-3.5053E+02	7.8584E+03	-3.5052E+02	3.5720E+03	-3.5051E+02	4.2864E+03	-3.5050E+02	4.6436E+03	-3.5048E+02	5.0008E+03	-3.5045E+02
-3.5093E+02	8.5728E+03	-3.5092E+02	7.8584E+03	-3.5091E+02	3.5720E+03	-3.5089E+02	4.2864E+03	-3.5089E+02	4.6436E+03	-3.5087E+02	5.0008E+03	-3.5084E+02
-3.5132E+02	8.5728E+03	-3.5131E+02	7.8584E+03	-3.5130E+02	3.5720E+03	-3.5128E+02	4.2864E+03	-3.5127E+02	4.6436E+03	-3.5126E+02	5.0008E+03	-3.5123E+02
-3.5170E+02	8.5728E+03	-3.5169E+02	7.8584E+03	-3.5168E+02	3.5720E+03	-3.5167E+02	4.2864E+03	-3.5166E+02	4.6436E+03	-3.5165E+02	5.0008E+03	-3.5162E+02
-3.5209E+02	8.5728E+03	-3.5208E+02	7.8584E+03	-3.5207E+02	3.5720E+03	-3.5206E+02	4.2864E+03	-3.5205E+02	4.6436E+03	-3.5203E+02	5.0008E+03	-3.5201E+02
-3.5248E+02	8.5728E+03	-3.5247E+02	7.8584E+03	-3.5246E+02	3.5720E+03	-3.5244E+02	4.2864E+03	-3.5244E+02	4.6436E+03	-3.5242E+02	5.0008E+03	-3.5239E+02
-3.5286E+02	8.5728E+03	-3.5285E+02	7.8584E+03	-3.5284E+02	3.5720E+03	-3.5283E+02	4.2864E+03	-3.5282E+02	4.6436E+03	-3.5281E+02	5.0008E+03	-3.5278E+02
-3.5325E+02	8.5728E+03	-3.5324E+02	7.8584E+03	-3.5323E+02	3.5720E+03	-3.5322E+02	4.2864E+03	-3.5321E+02	4.6436E+03	-3.5319E+02	5.0008E+03	-3.5317E+02
-3.5364E+02	8.5728E+03	-3.5363E+02	7.8584E+03	-3.5362E+02	3.5720E+03	-3.5360E+02	4.2864E+03	-3.5360E+02	4.6436E+03	-3.5358E+02	5.0008E+03	-3.5355E+02
-3.5402E+02	8.5728E+03	-3.5401E+02	7.8584E+03	-3.5400E+02	3.5720E+03	-3.5399E+02	4.2864E+03	-3.5398E+02	4.6436E+03	-3.5397E+02	5.0008E+03	-3.5394E+02
-3.5441E+02	8.5728E+03	-3.5440E+02	7.8584E+03	-3.5439E+02	3.5720E+03	-3.5437E+02	4.2864E+03	-3.5437E+02	4.6436E+03	-3.5435E+02	5.0008E+03	-3.5432E+02
-3.5479E+02	8.5728E+03	-3.5478E+02	7.8584E+03	-3.5477E+02	3.5720E+03	-3.5476E+02	4.2864E+03	-3.5475E+02	4.6436E+03	-3.5474E+02	5.0008E+03	-3.5471E+02
-3.5517E+02	8.5728E+03	-3.5517E+02	7.8584E+03	-3.5516E+02	3.5720E+03	-3.5514E+02	4.2864E+03	-3.5513E+02	4.6436E+03	-3.5512E+02	5.0008E+03	-3.5509E+02
-3.5556E+02	8.5728E+03	-3.5555E+02	7.8584E+03	-3.5554E+02	3.5720E+03	-3.5553E+02	4.2864E+03	-3.5552E+02	4.6436E+03	-3.5550E+02	5.0008E+03	-3.5547E+02
-3.5594E+02	8.5728E+03	-3.5593E+02	7.8584E+03	-3.5592E+02	3.5720E+03	-3.5591E+02	4.2864E+03	-3.5590E+02	4.6436E+03	-3.5589E+02	5.0008E+03	-3.5586E+02
-3.5632E+02	8.5728E+03	-3.5632E+02	7.8584E+03	-3.5631E+02	3.5720E+03	-3.5629E+02	4.2864E+03	-3.5628E+02	4.6436E+03	-3.5627E+02	5.0008E+03	-3.5624E+02
-3.5671E+02	8.5728E+03	-3.5670E+02	7.8584E+03	-3.5669E+02	3.5720E+03	-3.5667E+02	4.2864E+03	-3.5667E+02	4.6436E+03	-3.5665E+02	5.0008E+03	-3.5662E+02

Arg 7	Curve 7	Arg 8	Curve 8	Arg 9	Curve 9	Arg 10	Curve 10	Arg 11	Curve 11	Arg 12	Curve 12	Arg 13
-3.5709E+02	8.5728E+03	-3.5708E+02	7.8584E+03	-3.5707E+02	3.5720E+03	-3.5706E+02	4.2864E+03	-3.5705E+02	4.6436E+03	-3.5703E+02	5.0008E+03	-3.5701E+02
-3.5747E+02	8.5728E+03	-3.5746E+02	7.8584E+03	-3.5745E+02	3.5720E+03	-3.5744E+02	4.2864E+03	-3.5743E+02	4.6436E+03	-3.5742E+02	5.0008E+03	-3.5739E+02
-3.5785E+02	8.5728E+03	-3.5784E+02	7.8584E+03	-3.5783E+02	3.5720E+03	-3.5782E+02	4.2864E+03	-3.5781E+02	4.6436E+03	-3.5780E+02	5.0008E+03	-3.5777E+02
-3.5823E+02	8.5728E+03	-3.5822E+02	7.8584E+03	-3.5821E+02	3.5720E+03	-3.5820E+02	4.2864E+03	-3.5819E+02	4.6436E+03	-3.5818E+02	5.0008E+03	-3.5815E+02
-3.5861E+02	8.5728E+03	-3.5860E+02	7.8584E+03	-3.5859E+02	3.5720E+03	-3.5858E+02	4.2864E+03	-3.5857E+02	4.6436E+03	-3.5856E+02	5.0008E+03	-3.5853E+02
-3.5899E+02	8.5728E+03	-3.5898E+02	7.8584E+03	-3.5897E+02	3.5720E+03	-3.5896E+02	4.2864E+03	-3.5895E+02	4.6436E+03	-3.5894E+02	5.0008E+03	-3.5891E+02
-3.5937E+02	8.5728E+03	-3.5936E+02	7.8584E+03	-3.5935E+02	3.5720E+03	-3.5934E+02	4.2864E+03	-3.5933E+02	4.6436E+03	-3.5932E+02	5.0008E+03	-3.5929E+02
-3.5975E+02	8.5728E+03	-3.5974E+02	7.8584E+03	-3.5973E+02	3.5720E+03	-3.5972E+02	4.2864E+03	-3.5971E+02	4.6436E+03	-3.5970E+02	5.0008E+03	-3.5967E+02
-3.6013E+02	8.5728E+03	-3.6012E+02	7.8584E+03	-3.6011E+02	3.5720E+03	-3.6010E+02	4.2864E+03	-3.6009E+02	4.6436E+03	-3.6008E+02	5.0008E+03	-3.6005E+02
-3.6051E+02	8.5728E+03	-3.6050E+02	7.8584E+03	-3.6049E+02	3.5720E+03	-3.6048E+02	4.2864E+03	-3.6047E+02	4.6436E+03	-3.6045E+02	5.0008E+03	-3.6043E+02
-3.6089E+02	8.5728E+03	-3.6088E+02	7.8584E+03	-3.6087E+02	3.5720E+03	-3.6086E+02	4.2864E+03	-3.6085E+02	4.6436E+03	-3.6083E+02	5.0008E+03	-3.6080E+02
-3.6126E+02	8.5728E+03	-3.6126E+02	7.8584E+03	-3.6125E+02	3.5720E+03	-3.6123E+02	4.2864E+03	-3.6123E+02	4.6436E+03	-3.6121E+02	5.0008E+03	-3.6118E+02
-3.6164E+02	8.5728E+03	-3.6163E+02	7.8584E+03	-3.6162E+02	3.5720E+03	-3.6161E+02	4.2864E+03	-3.6160E+02	4.6436E+03	-3.6159E+02	5.0008E+03	-3.6156E+02
-3.6202E+02	8.5728E+03	-3.6201E+02	7.8584E+03	-3.6200E+02	3.5720E+03	-3.6199E+02	4.2864E+03	-3.6198E+02	4.6436E+03	-3.6196E+02	5.0008E+03	-3.6194E+02
-3.6240E+02	8.5728E+03	-3.6239E+02	7.8584E+03	-3.6238E+02	3.5720E+03	-3.6236E+02	4.2864E+03	-3.6236E+02	4.6436E+03	-3.6234E+02	5.0008E+03	-3.6231E+02
-3.6277E+02	8.5728E+03	-3.6276E+02	7.8584E+03	-3.6275E+02	3.5720E+03	-3.6274E+02	4.2864E+03	-3.6273E+02	4.6436E+03	-3.6272E+02	5.0008E+03	-3.6269E+02
-3.6315E+02	8.5728E+03	-3.6314E+02	7.8584E+03	-3.6313E+02	3.5720E+03	-3.6312E+02	4.2864E+03	-3.6311E+02	4.6436E+03	-3.6309E+02	5.0008E+03	-3.6306E+02
-3.6352E+02	8.5728E+03	-3.6351E+02	7.8584E+03	-3.6350E+02	3.5720E+03	-3.6349E+02	4.2864E+03	-3.6348E+02	4.6436E+03	-3.6347E+02	5.0008E+03	-3.6344E+02
-3.6390E+02	8.5728E+03	-3.6389E+02	7.8584E+03	-3.6388E+02	3.5720E+03	-3.6387E+02	4.2864E+03	-3.6386E+02	4.6436E+03	-3.6384E+02	5.0008E+03	-3.6381E+02
-3.6427E+02	8.5728E+03	-3.6426E+02	7.8584E+03	-3.6425E+02	3.5720E+03	-3.6424E+02	4.2864E+03	-3.6423E+02	4.6436E+03	-3.6422E+02	5.0008E+03	-3.6419E+02
-3.6465E+02	8.5728E+03	-3.6464E+02	7.8584E+03	-3.6463E+02	3.5720E+03	-3.6461E+02	4.2864E+03	-3.6461E+02	4.6436E+03	-3.6459E+02	5.0008E+03	-3.6456E+02
-3.6502E+02	8.5728E+03	-3.6501E+02	7.8584E+03	-3.6500E+02	3.5720E+03	-3.6499E+02	4.2864E+03	-3.6498E+02	4.6436E+03	-3.6497E+02	5.0008E+03	-3.6494E+02
-3.6539E+02	8.5728E+03	-3.6538E+02	7.8584E+03	-3.6537E+02	3.5720E+03	-3.6536E+02	4.2864E+03	-3.6535E+02	4.6436E+03	-3.6534E+02	5.0008E+03	-3.6531E+02
-3.6577E+02	8.5728E+03	-3.6576E+02	7.8584E+03	-3.6575E+02	3.5720E+03	-3.6573E+02	4.2864E+03	-3.6573E+02	4.6436E+03	-3.6571E+02	5.0008E+03	-3.6568E+02
-3.6614E+02	8.5728E+03	-3.6613E+02	7.8584E+03	-3.6612E+02	3.5720E+03	-3.6611E+02	4.2864E+03	-3.6610E+02	4.6436E+03	-3.6608E+02	5.0008E+03	-3.6606E+02
-3.6651E+02	8.5728E+03	-3.6650E+02	7.8584E+03	-3.6649E+02	3.5720E+03	-3.6648E+02	4.2864E+03	-3.6647E+02	4.6436E+03	-3.6646E+02	5.0008E+03	-3.6643E+02
-3.6688E+02	8.5728E+03	-3.6687E+02	7.8584E+03	-3.6686E+02	3.5720E+03	-3.6685E+02	4.2864E+03	-3.6684E+02	4.6436E+03	-3.6683E+02	5.0008E+03	-3.6680E+02
-3.6725E+02	8.5728E+03	-3.6724E+02	7.8584E+03	-3.6724E+02	3.5720E+03	-3.6722E+02	4.2864E+03	-3.6721E+02	4.6436E+03	-3.6720E+02	5.0008E+03	-3.6717E+02
-3.6762E+02	8.5728E+03	-3.6762E+02	7.8584E+03	-3.6761E+02	3.5720E+03	-3.6759E+02	4.2864E+03	-3.6759E+02	4.6436E+03	-3.6757E+02	5.0008E+03	-3.6754E+02
-3.6800E+02	8.5728E+03	-3.6799E+02	7.8584E+03	-3.6798E+02	3.5720E+03	-3.6796E+02	4.2864E+03	-3.6796E+02	4.6436E+03	-3.6794E+02	5.0008E+03	-3.6791E+02
-3.6837E+02	8.5728E+03	-3.6836E+02	7.8584E+03	-3.6835E+02	3.5720E+03	-3.6833E+02	4.2864E+03	-3.6833E+02	4.6436E+03	-3.6831E+02	5.0008E+03	-3.6828E+02
-3.6874E+02	8.5728E+03	-3.6873E+02	7.8584E+03	-3.6872E+02	3.5720E+03	-3.6870E+02	4.2864E+03	-3.6870E+02	4.6436E+03	-3.6868E+02	5.0008E+03	-3.6865E+02
-3.6911E+02	8.5728E+03	-3.6910E+02	7.8584E+03	-3.6909E+02	3.5720E+03	-3.6907E+02	4.2864E+03	-3.6907E+02	4.6436E+03	-3.6905E+02	5.0008E+03	-3.6902E+02

Curve 13	Arg 14	Curve 14	Arg 15	Curve 15	Arg 16	Curve 16	Arg 17	Curve 17	Arg 18	Curve 18	Arg 19	Curve 19
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
3.9292E+03	-1.0309E+01	4.6436E+03	-8.9096E+00	4.2864E+03	-6.7027E+00	4.6436E+03	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
3.9292E+03	-1.9326E+01	4.6436E+03	-1.8577E+01	4.2864E+03	-1.7530E+01	4.6436E+03	-1.4044E+01	3.5720E+03	-9.9263E+00	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-2.5394E+01	4.6436E+03	-2.4825E+01	4.2864E+03	-2.4047E+01	4.6436E+03	-2.1609E+01	3.5720E+03	-1.9115E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-3.0281E+01	4.6436E+03	-2.9805E+01	4.2864E+03	-2.9159E+01	4.6436E+03	-2.7178E+01	3.5720E+03	-2.5233E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-3.4486E+01	4.6436E+03	-3.4069E+01	4.2864E+03	-3.3504E+01	4.6436E+03	-3.1794E+01	3.5720E+03	-3.0146E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-3.8233E+01	4.6436E+03	-3.7857E+01	4.2864E+03	-3.7349E+01	4.6436E+03	-3.5823E+01	3.5720E+03	-3.4367E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-4.1645E+01	4.6436E+03	-4.1299E+01	4.2864E+03	-4.0835E+01	4.6436E+03	-3.9443E+01	3.5720E+03	-3.8126E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-4.4798E+01	4.6436E+03	-4.4477E+01	4.2864E+03	-4.4046E+01	4.6436E+03	-4.2759E+01	3.5720E+03	-4.1546E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-4.7743E+01	4.6436E+03	-4.7443E+01	4.2864E+03	-4.7039E+01	4.6436E+03	-4.5835E+01	3.5720E+03	-4.4706E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-5.0518E+01	4.6436E+03	-5.0234E+01	4.2864E+03	-4.9852E+01	4.6436E+03	-4.8718E+01	3.5720E+03	-4.7658E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-5.3148E+01	4.6436E+03	-5.2878E+01	4.2864E+03	-5.2516E+01	4.6436E+03	-5.1440E+01	3.5720E+03	-5.0437E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-5.5654E+01	4.6436E+03	-5.5396E+01	4.2864E+03	-5.5050E+01	4.6436E+03	-5.4025E+01	3.5720E+03	-5.3071E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-5.8052E+01	4.6436E+03	-5.7804E+01	4.2864E+03	-5.7473E+01	4.6436E+03	-5.6492E+01	3.5720E+03	-5.5580E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-6.0354E+01	4.6436E+03	-6.0117E+01	4.2864E+03	-5.9798E+01	4.6436E+03	-5.8856E+01	3.5720E+03	-5.7981E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-6.2572E+01	4.6436E+03	-6.2343E+01	4.2864E+03	-6.2036E+01	4.6436E+03	-6.1129E+01	3.5720E+03	-6.0286E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-6.4714E+01	4.6436E+03	-6.4493E+01	4.2864E+03	-6.4196E+01	4.6436E+03	-6.3320E+01	3.5720E+03	-6.2507E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-6.6788E+01	4.6436E+03	-6.6573E+01	4.2864E+03	-6.6286E+01	4.6436E+03	-6.5437E+01	3.5720E+03	-6.4651E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-6.8799E+01	4.6436E+03	-6.8591E+01	4.2864E+03	-6.8312E+01	4.6436E+03	-6.7489E+01	3.5720E+03	-6.6727E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-7.0753E+01	4.6436E+03	-7.0550E+01	4.2864E+03	-7.0279E+01	4.6436E+03	-6.9479E+01	3.5720E+03	-6.8739E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-7.2654E+01	4.6436E+03	-7.2457E+01	4.2864E+03	-7.2193E+01	4.6436E+03	-7.1415E+01	3.5720E+03	-7.0695E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-7.4507E+01	4.6436E+03	-7.4315E+01	4.2864E+03	-7.4057E+01	4.6436E+03	-7.3299E+01	3.5720E+03	-7.2598E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-7.6315E+01	4.6436E+03	-7.6127E+01	4.2864E+03	-7.5876E+01	4.6436E+03	-7.5136E+01	3.5720E+03	-7.4452E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-7.8081E+01	4.6436E+03	-7.7898E+01	4.2864E+03	-7.7652E+01	4.6436E+03	-7.6929E+01	3.5720E+03	-7.6261E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-7.9808E+01	4.6436E+03	-7.9629E+01	4.2864E+03	-7.9389E+01	4.6436E+03	-7.8681E+01	3.5720E+03	-7.8029E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-8.1499E+01	4.6436E+03	-8.1323E+01	4.2864E+03	-8.1088E+01	4.6436E+03	-8.0395E+01	3.5720E+03	-7.9757E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-8.3155E+01	4.6436E+03	-8.2982E+01	4.2864E+03	-8.2752E+01	4.6436E+03	-8.2074E+01	3.5720E+03	-8.1448E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-8.4778E+01	4.6436E+03	-8.4609E+01	4.2864E+03	-8.4384E+01	4.6436E+03	-8.3718E+01	3.5720E+03	-8.3106E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-8.6372E+01	4.6436E+03	-8.6206E+01	4.2864E+03	-8.5984E+01	4.6436E+03	-8.5331E+01	3.5720E+03	-8.4730E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-8.7936E+01	4.6436E+03	-8.7773E+01	4.2864E+03	-8.7555E+01	4.6436E+03	-8.6915E+01	3.5720E+03	-8.6324E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-8.9473E+01	4.6436E+03	-8.9313E+01	4.2864E+03	-8.9099E+01	4.6436E+03	-8.8469E+01	3.5720E+03	-8.7890E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-9.0984E+01	4.6436E+03	-9.0827E+01	4.2864E+03	-9.0616E+01	4.6436E+03	-8.9997E+01	3.5720E+03	-8.9427E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-9.2471E+01	4.6436E+03	-9.2316E+01	4.2864E+03	-9.2109E+01	4.6436E+03	-9.1500E+01	3.5720E+03	-9.0939E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-9.3933E+01	4.6436E+03	-9.3781E+01	4.2864E+03	-9.3577E+01	4.6436E+03	-9.2978E+01	3.5720E+03	-9.2426E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-9.5374E+01	4.6436E+03	-9.5224E+01	4.2864E+03	-9.5023E+01	4.6436E+03	-9.4433E+01	3.5720E+03	-9.3890E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-9.6793E+01	4.6436E+03	-9.6645E+01	4.2864E+03	-9.6447E+01	4.6436E+03	-9.5866E+01	3.5720E+03	-9.5331E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-9.8191E+01	4.6436E+03	-9.8045E+01	4.2864E+03	-9.7851E+01	4.6436E+03	-9.7278E+01	3.5720E+03	-9.6751E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-9.9570E+01	4.6436E+03	-9.9426E+01	4.2864E+03	-9.9234E+01	4.6436E+03	-9.8669E+01	3.5720E+03	-9.8150E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.0093E+02	4.6436E+03	-1.0079E+02	4.2864E+03	-1.0060E+02	4.6436E+03	-1.0004E+02	3.5720E+03	-9.9529E+01	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.0227E+02	4.6436E+03	-1.0213E+02	4.2864E+03	-1.0194E+02	4.6436E+03	-1.0140E+02	3.5720E+03	-1.0089E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.0360E+02	4.6436E+03	-1.0346E+02	4.2864E+03	-1.0327E+02	4.6436E+03	-1.0273E+02	3.5720E+03	-1.0223E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.0490E+02	4.6436E+03	-1.0477E+02	4.2864E+03	-1.0459E+02	4.6436E+03	-1.0405E+02	3.5720E+03	-1.0356E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.0620E+02	4.6436E+03	-1.0606E+02	4.2864E+03	-1.0588E+02	4.6436E+03	-1.0535E+02	3.5720E+03	-1.0487E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.0747E+02	4.6436E+03	-1.0734E+02	4.2864E+03	-1.0716E+02	4.6436E+03	-1.0664E+02	3.5720E+03	-1.0616E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.0873E+02	4.6436E+03	-1.0860E+02	4.2864E+03	-1.0843E+02	4.6436E+03	-1.0791E+02	3.5720E+03	-1.0743E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.0998E+02	4.6436E+03	-1.0985E+02	4.2864E+03	-1.0968E+02	4.6436E+03	-1.0917E+02	3.5720E+03	-1.0870E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.1121E+02	4.6436E+03	-1.1108E+02	4.2864E+03	-1.1091E+02	4.6436E+03	-1.1041E+02	3.5720E+03	-1.0994E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.1243E+02	4.6436E+03	-1.1231E+02	4.2864E+03	-1.1214E+02	4.6436E+03	-1.1164E+02	3.5720E+03	-1.1118E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.1364E+02	4.6436E+03	-1.1351E+02	4.2864E+03	-1.1334E+02	4.6436E+03	-1.1285E+02	3.5720E+03	-1.1240E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.1483E+02	4.6436E+03	-1.1471E+02	4.2864E+03	-1.1454E+02	4.6436E+03	-1.1405E+02	3.5720E+03	-1.1360E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.1601E+02	4.6436E+03	-1.1589E+02	4.2864E+03	-1.1573E+02	4.6436E+03	-1.1524E+02	3.5720E+03	-1.1480E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.1718E+02	4.6436E+03	-1.1706E+02	4.2864E+03	-1.1690E+02	4.6436E+03	-1.1642E+02	3.5720E+03	-1.1598E+02	3.5743E+04	0.0000E+00	0.0000E+00

Curve 13	Arg 14	Curve 14	Arg 15	Curve 15	Arg 16	Curve 16	Arg 17	Curve 17	Arg 18	Curve 18	Arg 19	Curve 19
3.9292E+03	-1.1834E+02	4.6436E+03	-1.1822E+02	4.2864E+03	-1.1806E+02	4.6436E+03	-1.1758E+02	3.5720E+03	-1.1715E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.1949E+02	4.6436E+03	-1.1937E+02	4.2864E+03	-1.1921E+02	4.6436E+03	-1.1874E+02	3.5720E+03	-1.1831E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.2062E+02	4.6436E+03	-1.2050E+02	4.2864E+03	-1.2035E+02	4.6436E+03	-1.1988E+02	3.5720E+03	-1.1945E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.2175E+02	4.6436E+03	-1.2163E+02	4.2864E+03	-1.2147E+02	4.6436E+03	-1.2101E+02	3.5720E+03	-1.2059E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.2286E+02	4.6436E+03	-1.2275E+02	4.2864E+03	-1.2259E+02	4.6436E+03	-1.2213E+02	3.5720E+03	-1.2171E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.2397E+02	4.6436E+03	-1.2385E+02	4.2864E+03	-1.2370E+02	4.6436E+03	-1.2325E+02	3.5720E+03	-1.2283E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.2506E+02	4.6436E+03	-1.2495E+02	4.2864E+03	-1.2480E+02	4.6436E+03	-1.2435E+02	3.5720E+03	-1.2393E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.2615E+02	4.6436E+03	-1.2603E+02	4.2864E+03	-1.2588E+02	4.6436E+03	-1.2544E+02	3.5720E+03	-1.2503E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.2722E+02	4.6436E+03	-1.2711E+02	4.2864E+03	-1.2696E+02	4.6436E+03	-1.2652E+02	3.5720E+03	-1.2612E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.2829E+02	4.6436E+03	-1.2818E+02	4.2864E+03	-1.2803E+02	4.6436E+03	-1.2759E+02	3.5720E+03	-1.2719E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.2935E+02	4.6436E+03	-1.2924E+02	4.2864E+03	-1.2909E+02	4.6436E+03	-1.2866E+02	3.5720E+03	-1.2826E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.3040E+02	4.6436E+03	-1.3029E+02	4.2864E+03	-1.3014E+02	4.6436E+03	-1.2971E+02	3.5720E+03	-1.2932E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.3144E+02	4.6436E+03	-1.3133E+02	4.2864E+03	-1.3119E+02	4.6436E+03	-1.3076E+02	3.5720E+03	-1.3037E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.3247E+02	4.6436E+03	-1.3237E+02	4.2864E+03	-1.3222E+02	4.6436E+03	-1.3180E+02	3.5720E+03	-1.3141E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.3350E+02	4.6436E+03	-1.3339E+02	4.2864E+03	-1.3325E+02	4.6436E+03	-1.3283E+02	3.5720E+03	-1.3244E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.3452E+02	4.6436E+03	-1.3441E+02	4.2864E+03	-1.3427E+02	4.6436E+03	-1.3385E+02	3.5720E+03	-1.3347E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.3553E+02	4.6436E+03	-1.3542E+02	4.2864E+03	-1.3528E+02	4.6436E+03	-1.3487E+02	3.5720E+03	-1.3449E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.3653E+02	4.6436E+03	-1.3642E+02	4.2864E+03	-1.3628E+02	4.6436E+03	-1.3587E+02	3.5720E+03	-1.3550E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.3752E+02	4.6436E+03	-1.3742E+02	4.2864E+03	-1.3728E+02	4.6436E+03	-1.3687E+02	3.5720E+03	-1.3650E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.3851E+02	4.6436E+03	-1.3841E+02	4.2864E+03	-1.3827E+02	4.6436E+03	-1.3787E+02	3.5720E+03	-1.3749E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.3949E+02	4.6436E+03	-1.3939E+02	4.2864E+03	-1.3925E+02	4.6436E+03	-1.3885E+02	3.5720E+03	-1.3848E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.4047E+02	4.6436E+03	-1.4036E+02	4.2864E+03	-1.4023E+02	4.6436E+03	-1.3983E+02	3.5720E+03	-1.3946E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.4143E+02	4.6436E+03	-1.4133E+02	4.2864E+03	-1.4120E+02	4.6436E+03	-1.4080E+02	3.5720E+03	-1.4044E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.4239E+02	4.6436E+03	-1.4229E+02	4.2864E+03	-1.4216E+02	4.6436E+03	-1.4177E+02	3.5720E+03	-1.4141E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.4335E+02	4.6436E+03	-1.4325E+02	4.2864E+03	-1.4312E+02	4.6436E+03	-1.4272E+02	3.5720E+03	-1.4237E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.4430E+02	4.6436E+03	-1.4420E+02	4.2864E+03	-1.4407E+02	4.6436E+03	-1.4368E+02	3.5720E+03	-1.4332E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.4524E+02	4.6436E+03	-1.4514E+02	4.2864E+03	-1.4501E+02	4.6436E+03	-1.4462E+02	3.5720E+03	-1.4427E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.4617E+02	4.6436E+03	-1.4608E+02	4.2864E+03	-1.4595E+02	4.6436E+03	-1.4556E+02	3.5720E+03	-1.4521E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.4710E+02	4.6436E+03	-1.4701E+02	4.2864E+03	-1.4688E+02	4.6436E+03	-1.4650E+02	3.5720E+03	-1.4615E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.4803E+02	4.6436E+03	-1.4793E+02	4.2864E+03	-1.4780E+02	4.6436E+03	-1.4742E+02	3.5720E+03	-1.4708E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.4895E+02	4.6436E+03	-1.4885E+02	4.2864E+03	-1.4872E+02	4.6436E+03	-1.4835E+02	3.5720E+03	-1.4800E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.4986E+02	4.6436E+03	-1.4976E+02	4.2864E+03	-1.4964E+02	4.6436E+03	-1.4926E+02	3.5720E+03	-1.4892E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.5077E+02	4.6436E+03	-1.5067E+02	4.2864E+03	-1.5054E+02	4.6436E+03	-1.5017E+02	3.5720E+03	-1.4983E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.5167E+02	4.6436E+03	-1.5157E+02	4.2864E+03	-1.5145E+02	4.6436E+03	-1.5108E+02	3.5720E+03	-1.5074E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.5256E+02	4.6436E+03	-1.5247E+02	4.2864E+03	-1.5235E+02	4.6436E+03	-1.5198E+02	3.5720E+03	-1.5164E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.5346E+02	4.6436E+03	-1.5336E+02	4.2864E+03	-1.5324E+02	4.6436E+03	-1.5287E+02	3.5720E+03	-1.5254E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.5434E+02	4.6436E+03	-1.5425E+02	4.2864E+03	-1.5412E+02	4.6436E+03	-1.5376E+02	3.5720E+03	-1.5343E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.5522E+02	4.6436E+03	-1.5513E+02	4.2864E+03	-1.5501E+02	4.6436E+03	-1.5465E+02	3.5720E+03	-1.5431E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.5610E+02	4.6436E+03	-1.5601E+02	4.2864E+03	-1.5588E+02	4.6436E+03	-1.5553E+02	3.5720E+03	-1.5520E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.5697E+02	4.6436E+03	-1.5688E+02	4.2864E+03	-1.5676E+02	4.6436E+03	-1.5640E+02	3.5720E+03	-1.5607E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.5784E+02	4.6436E+03	-1.5774E+02	4.2864E+03	-1.5762E+02	4.6436E+03	-1.5727E+02	3.5720E+03	-1.5694E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.5870E+02	4.6436E+03	-1.5861E+02	4.2864E+03	-1.5849E+02	4.6436E+03	-1.5813E+02	3.5720E+03	-1.5781E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.5955E+02	4.6436E+03	-1.5946E+02	4.2864E+03	-1.5934E+02	4.6436E+03	-1.5899E+02	3.5720E+03	-1.5867E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.6041E+02	4.6436E+03	-1.6032E+02	4.2864E+03	-1.6020E+02	4.6436E+03	-1.5985E+02	3.5720E+03	-1.5953E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.6125E+02	4.6436E+03	-1.6116E+02	4.2864E+03	-1.6105E+02	4.6436E+03	-1.6070E+02	3.5720E+03	-1.6038E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.6210E+02	4.6436E+03	-1.6201E+02	4.2864E+03	-1.6189E+02	4.6436E+03	-1.6155E+02	3.5720E+03	-1.6123E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.6294E+02	4.6436E+03	-1.6285E+02	4.2864E+03	-1.6273E+02	4.6436E+03	-1.6239E+02	3.5720E+03	-1.6207E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.6377E+02	4.6436E+03	-1.6368E+02	4.2864E+03	-1.6357E+02	4.6436E+03	-1.6322E+02	3.5720E+03	-1.6291E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.6460E+02	4.6436E+03	-1.6451E+02	4.2864E+03	-1.6440E+02	4.6436E+03	-1.6406E+02	3.5720E+03	-1.6375E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.6543E+02	4.6436E+03	-1.6534E+02	4.2864E+03	-1.6523E+02	4.6436E+03	-1.6489E+02	3.5720E+03	-1.6458E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.6625E+02	4.6436E+03	-1.6616E+02	4.2864E+03	-1.6605E+02	4.6436E+03	-1.6571E+02	3.5720E+03	-1.6540E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.6707E+02	4.6436E+03	-1.6698E+02	4.2864E+03	-1.6687E+02	4.6436E+03	-1.6653E+02	3.5720E+03	-1.6622E+02	3.5743E+04	0.0000E+00	0.0000E+00

Curve 13	Arg 14	Curve 14	Arg 15	Curve 15	Arg 16	Curve 16	Arg 17	Curve 17	Arg 18	Curve 18	Arg 19	Curve 19
3.9292E+03	-1.6788E+02	4.6436E+03	-1.6780E+02	4.2864E+03	-1.6768E+02	4.6436E+03	-1.6735E+02	3.5720E+03	-1.6704E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.6869E+02	4.6436E+03	-1.6861E+02	4.2864E+03	-1.6849E+02	4.6436E+03	-1.6816E+02	3.5720E+03	-1.6786E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.6950E+02	4.6436E+03	-1.6941E+02	4.2864E+03	-1.6930E+02	4.6436E+03	-1.6897E+02	3.5720E+03	-1.6867E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.7030E+02	4.6436E+03	-1.7022E+02	4.2864E+03	-1.7010E+02	4.6436E+03	-1.6978E+02	3.5720E+03	-1.6947E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.7110E+02	4.6436E+03	-1.7102E+02	4.2864E+03	-1.7090E+02	4.6436E+03	-1.7058E+02	3.5720E+03	-1.7028E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.7189E+02	4.6436E+03	-1.7181E+02	4.2864E+03	-1.7170E+02	4.6436E+03	-1.7137E+02	3.5720E+03	-1.7108E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.7269E+02	4.6436E+03	-1.7260E+02	4.2864E+03	-1.7249E+02	4.6436E+03	-1.7217E+02	3.5720E+03	-1.7187E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.7347E+02	4.6436E+03	-1.7339E+02	4.2864E+03	-1.7328E+02	4.6436E+03	-1.7296E+02	3.5720E+03	-1.7266E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.7426E+02	4.6436E+03	-1.7418E+02	4.2864E+03	-1.7407E+02	4.6436E+03	-1.7374E+02	3.5720E+03	-1.7345E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.7504E+02	4.6436E+03	-1.7496E+02	4.2864E+03	-1.7485E+02	4.6436E+03	-1.7453E+02	3.5720E+03	-1.7423E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.7582E+02	4.6436E+03	-1.7573E+02	4.2864E+03	-1.7563E+02	4.6436E+03	-1.7531E+02	3.5720E+03	-1.7502E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.7659E+02	4.6436E+03	-1.7651E+02	4.2864E+03	-1.7640E+02	4.6436E+03	-1.7608E+02	3.5720E+03	-1.7579E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.7736E+02	4.6436E+03	-1.7728E+02	4.2864E+03	-1.7717E+02	4.6436E+03	-1.7686E+02	3.5720E+03	-1.7657E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.7813E+02	4.6436E+03	-1.7805E+02	4.2864E+03	-1.7794E+02	4.6436E+03	-1.7762E+02	3.5720E+03	-1.7734E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.7889E+02	4.6436E+03	-1.7881E+02	4.2864E+03	-1.7870E+02	4.6436E+03	-1.7839E+02	3.5720E+03	-1.7810E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.7965E+02	4.6436E+03	-1.7957E+02	4.2864E+03	-1.7947E+02	4.6436E+03	-1.7915E+02	3.5720E+03	-1.7887E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.8041E+02	4.6436E+03	-1.8033E+02	4.2864E+03	-1.8022E+02	4.6436E+03	-1.7991E+02	3.5720E+03	-1.7963E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.8116E+02	4.6436E+03	-1.8108E+02	4.2864E+03	-1.8098E+02	4.6436E+03	-1.8067E+02	3.5720E+03	-1.8039E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.8191E+02	4.6436E+03	-1.8184E+02	4.2864E+03	-1.8173E+02	4.6436E+03	-1.8142E+02	3.5720E+03	-1.8114E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.8266E+02	4.6436E+03	-1.8258E+02	4.2864E+03	-1.8248E+02	4.6436E+03	-1.8217E+02	3.5720E+03	-1.8189E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.8341E+02	4.6436E+03	-1.8333E+02	4.2864E+03	-1.8322E+02	4.6436E+03	-1.8292E+02	3.5720E+03	-1.8264E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.8415E+02	4.6436E+03	-1.8407E+02	4.2864E+03	-1.8397E+02	4.6436E+03	-1.8366E+02	3.5720E+03	-1.8338E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.8489E+02	4.6436E+03	-1.8481E+02	4.2864E+03	-1.8471E+02	4.6436E+03	-1.8440E+02	3.5720E+03	-1.8413E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.8562E+02	4.6436E+03	-1.8555E+02	4.2864E+03	-1.8544E+02	4.6436E+03	-1.8514E+02	3.5720E+03	-1.8487E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.8636E+02	4.6436E+03	-1.8628E+02	4.2864E+03	-1.8618E+02	4.6436E+03	-1.8588E+02	3.5720E+03	-1.8560E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.8709E+02	4.6436E+03	-1.8701E+02	4.2864E+03	-1.8691E+02	4.6436E+03	-1.8661E+02	3.5720E+03	-1.8633E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.8781E+02	4.6436E+03	-1.8774E+02	4.2864E+03	-1.8764E+02	4.6436E+03	-1.8734E+02	3.5720E+03	-1.8707E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.8854E+02	4.6436E+03	-1.8846E+02	4.2864E+03	-1.8836E+02	4.6436E+03	-1.8806E+02	3.5720E+03	-1.8779E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.8926E+02	4.6436E+03	-1.8918E+02	4.2864E+03	-1.8908E+02	4.6436E+03	-1.8879E+02	3.5720E+03	-1.8852E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.8998E+02	4.6436E+03	-1.8990E+02	4.2864E+03	-1.8980E+02	4.6436E+03	-1.8951E+02	3.5720E+03	-1.8924E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.9070E+02	4.6436E+03	-1.9062E+02	4.2864E+03	-1.9052E+02	4.6436E+03	-1.9023E+02	3.5720E+03	-1.8996E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.9141E+02	4.6436E+03	-1.9133E+02	4.2864E+03	-1.9124E+02	4.6436E+03	-1.9094E+02	3.5720E+03	-1.9067E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.9212E+02	4.6436E+03	-1.9205E+02	4.2864E+03	-1.9195E+02	4.6436E+03	-1.9166E+02	3.5720E+03	-1.9139E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.9283E+02	4.6436E+03	-1.9275E+02	4.2864E+03	-1.9266E+02	4.6436E+03	-1.9237E+02	3.5720E+03	-1.9210E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.9353E+02	4.6436E+03	-1.9346E+02	4.2864E+03	-1.9336E+02	4.6436E+03	-1.9307E+02	3.5720E+03	-1.9281E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.9424E+02	4.6436E+03	-1.9416E+02	4.2864E+03	-1.9407E+02	4.6436E+03	-1.9378E+02	3.5720E+03	-1.9351E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.9494E+02	4.6436E+03	-1.9487E+02	4.2864E+03	-1.9477E+02	4.6436E+03	-1.9448E+02	3.5720E+03	-1.9422E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.9564E+02	4.6436E+03	-1.9556E+02	4.2864E+03	-1.9547E+02	4.6436E+03	-1.9518E+02	3.5720E+03	-1.9492E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.9633E+02	4.6436E+03	-1.9626E+02	4.2864E+03	-1.9616E+02	4.6436E+03	-1.9588E+02	3.5720E+03	-1.9562E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.9703E+02	4.6436E+03	-1.9695E+02	4.2864E+03	-1.9686E+02	4.6436E+03	-1.9657E+02	3.5720E+03	-1.9631E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.9772E+02	4.6436E+03	-1.9764E+02	4.2864E+03	-1.9755E+02	4.6436E+03	-1.9726E+02	3.5720E+03	-1.9701E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.9840E+02	4.6436E+03	-1.9833E+02	4.2864E+03	-1.9824E+02	4.6436E+03	-1.9795E+02	3.5720E+03	-1.9770E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.9909E+02	4.6436E+03	-1.9902E+02	4.2864E+03	-1.9892E+02	4.6436E+03	-1.9864E+02	3.5720E+03	-1.9838E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-1.9977E+02	4.6436E+03	-1.9970E+02	4.2864E+03	-1.9961E+02	4.6436E+03	-1.9933E+02	3.5720E+03	-1.9907E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-2.0046E+02	4.6436E+03	-2.0038E+02	4.2864E+03	-2.0029E+02	4.6436E+03	-2.0001E+02	3.5720E+03	-1.9975E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-2.0114E+02	4.6436E+03	-2.0106E+02	4.2864E+03	-2.0097E+02	4.6436E+03	-2.0069E+02	3.5720E+03	-2.0044E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-2.0181E+02	4.6436E+03	-2.0174E+02	4.2864E+03	-2.0165E+02	4.6436E+03	-2.0137E+02	3.5720E+03	-2.0111E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-2.0249E+02	4.6436E+03	-2.0242E+02	4.2864E+03	-2.0232E+02	4.6436E+03	-2.0204E+02	3.5720E+03	-2.0179E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-2.0316E+02	4.6436E+03	-2.0309E+02	4.2864E+03	-2.0299E+02	4.6436E+03	-2.0272E+02	3.5720E+03	-2.0247E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-2.0383E+02	4.6436E+03	-2.0376E+02	4.2864E+03	-2.0366E+02	4.6436E+03	-2.0339E+02	3.5720E+03	-2.0314E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-2.0450E+02	4.6436E+03	-2.0443E+02	4.2864E+03	-2.0433E+02	4.6436E+03	-2.0406E+02	3.5720E+03	-2.0381E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-2.0516E+02	4.6436E+03	-2.0509E+02	4.2864E+03	-2.0500E+02	4.6436E+03	-2.0473E+02	3.5720E+03	-2.0448E+02	3.5743E+04	0.0000E+00	0.0000E+00

Curve 13	Arg 14	Curve 14	Arg 15	Curve 15	Arg 16	Curve 16	Arg 17	Curve 17	Arg 18	Curve 18	Arg 19	Curve 19
3.9292E+03	-2.0583E+02	4.6436E+03	-2.0576E+02	4.2864E+03	-2.0566E+02	4.6436E+03	-2.0539E+02	3.5720E+03	-2.0514E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-2.0649E+02	4.6436E+03	-2.0642E+02	4.2864E+03	-2.0632E+02	4.6436E+03	-2.0605E+02	3.5720E+03	-2.0581E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-2.0715E+02	4.6436E+03	-2.0708E+02	4.2864E+03	-2.0698E+02	4.6436E+03	-2.0671E+02	3.5720E+03	-2.0647E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-2.0780E+02	4.6436E+03	-2.0773E+02	4.2864E+03	-2.0764E+02	4.6436E+03	-2.0737E+02	3.5720E+03	-2.0713E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-2.0846E+02	4.6436E+03	-2.0839E+02	4.2864E+03	-2.0830E+02	4.6436E+03	-2.0803E+02	3.5720E+03	-2.0778E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-2.0911E+02	4.6436E+03	-2.0904E+02	4.2864E+03	-2.0895E+02	4.6436E+03	-2.0868E+02	3.5720E+03	-2.0844E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-2.0976E+02	4.6436E+03	-2.0969E+02	4.2864E+03	-2.0960E+02	4.6436E+03	-2.0934E+02	3.5720E+03	-2.0909E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-2.1041E+02	4.6436E+03	-2.1034E+02	4.2864E+03	-2.1025E+02	4.6436E+03	-2.0999E+02	3.5720E+03	-2.0974E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-2.1106E+02	4.6436E+03	-2.1099E+02	4.2864E+03	-2.1090E+02	4.6436E+03	-2.1063E+02	3.5720E+03	-2.1039E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-2.1170E+02	4.6436E+03	-2.1164E+02	4.2864E+03	-2.1155E+02	4.6436E+03	-2.1128E+02	3.5720E+03	-2.1104E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-2.1235E+02	4.6436E+03	-2.1228E+02	4.2864E+03	-2.1219E+02	4.6436E+03	-2.1193E+02	3.5720E+03	-2.1168E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-2.1299E+02	4.6436E+03	-2.1292E+02	4.2864E+03	-2.1283E+02	4.6436E+03	-2.1257E+02	3.5720E+03	-2.1233E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-2.1363E+02	4.6436E+03	-2.1356E+02	4.2864E+03	-2.1347E+02	4.6436E+03	-2.1321E+02	3.5720E+03	-2.1297E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-2.1426E+02	4.6436E+03	-2.1420E+02	4.2864E+03	-2.1411E+02	4.6436E+03	-2.1385E+02	3.5720E+03	-2.1361E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-2.1490E+02	4.6436E+03	-2.1483E+02	4.2864E+03	-2.1474E+02	4.6436E+03	-2.1448E+02	3.5720E+03	-2.1424E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-2.1553E+02	4.6436E+03	-2.1547E+02	4.2864E+03	-2.1538E+02	4.6436E+03	-2.1512E+02	3.5720E+03	-2.1488E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-2.1616E+02	4.6436E+03	-2.1610E+02	4.2864E+03	-2.1601E+02	4.6436E+03	-2.1575E+02	3.5720E+03	-2.1551E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-2.1679E+02	4.6436E+03	-2.1673E+02	4.2864E+03	-2.1664E+02	4.6436E+03	-2.1638E+02	3.5720E+03	-2.1615E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-2.1742E+02	4.6436E+03	-2.1736E+02	4.2864E+03	-2.1727E+02	4.6436E+03	-2.1701E+02	3.5720E+03	-2.1678E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-2.1805E+02	4.6436E+03	-2.1798E+02	4.2864E+03	-2.1790E+02	4.6436E+03	-2.1764E+02	3.5720E+03	-2.1740E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-2.1867E+02	4.6436E+03	-2.1861E+02	4.2864E+03	-2.1852E+02	4.6436E+03	-2.1826E+02	3.5720E+03	-2.1803E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-2.1930E+02	4.6436E+03	-2.1923E+02	4.2864E+03	-2.1914E+02	4.6436E+03	-2.1889E+02	3.5720E+03	-2.1865E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-2.1992E+02	4.6436E+03	-2.1985E+02	4.2864E+03	-2.1976E+02	4.6436E+03	-2.1951E+02	3.5720E+03	-2.1928E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-2.2054E+02	4.6436E+03	-2.2047E+02	4.2864E+03	-2.2038E+02	4.6436E+03	-2.2013E+02	3.5720E+03	-2.1990E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-2.2115E+02	4.6436E+03	-2.2109E+02	4.2864E+03	-2.2100E+02	4.6436E+03	-2.2075E+02	3.5720E+03	-2.2052E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-2.2177E+02	4.6436E+03	-2.2170E+02	4.2864E+03	-2.2162E+02	4.6436E+03	-2.2137E+02	3.5720E+03	-2.2113E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-2.2238E+02	4.6436E+03	-2.2232E+02	4.2864E+03	-2.2223E+02	4.6436E+03	-2.2198E+02	3.5720E+03	-2.2175E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-2.2299E+02	4.6436E+03	-2.2293E+02	4.2864E+03	-2.2285E+02	4.6436E+03	-2.2259E+02	3.5720E+03	-2.2236E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-2.2361E+02	4.6436E+03	-2.2354E+02	4.2864E+03	-2.2346E+02	4.6436E+03	-2.2321E+02	3.5720E+03	-2.2298E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-2.2421E+02	4.6436E+03	-2.2415E+02	4.2864E+03	-2.2407E+02	4.6436E+03	-2.2382E+02	3.5720E+03	-2.2359E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-2.2482E+02	4.6436E+03	-2.2476E+02	4.2864E+03	-2.2467E+02	4.6436E+03	-2.2442E+02	3.5720E+03	-2.2420E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-2.2543E+02	4.6436E+03	-2.2536E+02	4.2864E+03	-2.2528E+02	4.6436E+03	-2.2503E+02	3.5720E+03	-2.2480E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-2.2603E+02	4.6436E+03	-2.2597E+02	4.2864E+03	-2.2588E+02	4.6436E+03	-2.2564E+02	3.5720E+03	-2.2541E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-2.2663E+02	4.6436E+03	-2.2657E+02	4.2864E+03	-2.2649E+02	4.6436E+03	-2.2624E+02	3.5720E+03	-2.2601E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-2.2723E+02	4.6436E+03	-2.2717E+02	4.2864E+03	-2.2709E+02	4.6436E+03	-2.2684E+02	3.5720E+03	-2.2662E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-2.2783E+02	4.6436E+03	-2.2777E+02	4.2864E+03	-2.2769E+02	4.6436E+03	-2.2744E+02	3.5720E+03	-2.2722E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-2.2843E+02	4.6436E+03	-2.2837E+02	4.2864E+03	-2.2829E+02	4.6436E+03	-2.2804E+02	3.5720E+03	-2.2782E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-2.2903E+02	4.6436E+03	-2.2897E+02	4.2864E+03	-2.2888E+02	4.6436E+03	-2.2864E+02	3.5720E+03	-2.2841E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-2.2962E+02	4.6436E+03	-2.2956E+02	4.2864E+03	-2.2948E+02	4.6436E+03	-2.2923E+02	3.5720E+03	-2.2901E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-2.3022E+02	4.6436E+03	-2.3015E+02	4.2864E+03	-2.3007E+02	4.6436E+03	-2.2983E+02	3.5720E+03	-2.2960E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-2.3081E+02	4.6436E+03	-2.3074E+02	4.2864E+03	-2.3066E+02	4.6436E+03	-2.3042E+02	3.5720E+03	-2.3020E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-2.3140E+02	4.6436E+03	-2.3133E+02	4.2864E+03	-2.3125E+02	4.6436E+03	-2.3101E+02	3.5720E+03	-2.3079E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-2.3199E+02	4.6436E+03	-2.3192E+02	4.2864E+03	-2.3184E+02	4.6436E+03	-2.3160E+02	3.5720E+03	-2.3138E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-2.3257E+02	4.6436E+03	-2.3251E+02	4.2864E+03	-2.3243E+02	4.6436E+03	-2.3219E+02	3.5720E+03	-2.3197E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-2.3316E+02	4.6436E+03	-2.3310E+02	4.2864E+03	-2.3301E+02	4.6436E+03	-2.3277E+02	3.5720E+03	-2.3255E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-2.3374E+02	4.6436E+03	-2.3368E+02	4.2864E+03	-2.3360E+02	4.6436E+03	-2.3336E+02	3.5720E+03	-2.3314E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-2.3432E+02	4.6436E+03	-2.3426E+02	4.2864E+03	-2.3418E+02	4.6436E+03	-2.3394E+02	3.5720E+03	-2.3372E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-2.3491E+02	4.6436E+03	-2.3484E+02	4.2864E+03	-2.3476E+02	4.6436E+03	-2.3452E+02	3.5720E+03	-2.3431E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-2.3549E+02	4.6436E+03	-2.3542E+02	4.2864E+03	-2.3534E+02	4.6436E+03	-2.3511E+02	3.5720E+03	-2.3489E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-2.3606E+02	4.6436E+03	-2.3600E+02	4.2864E+03	-2.3592E+02	4.6436E+03	-2.3568E+02	3.5720E+03	-2.3547E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-2.3664E+02	4.6436E+03	-2.3658E+02	4.2864E+03	-2.3650E+02	4.6436E+03	-2.3626E+02	3.5720E+03	-2.3605E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-2.3722E+02	4.6436E+03	-2.3716E+02	4.2864E+03	-2.3707E+02	4.6436E+03	-2.3684E+02	3.5720E+03	-2.3662E+02	3.5743E+04	0.0000E+00	0.0000E+00

Curve 13	Arg 14	Curve 14	Arg 15	Curve 15	Arg 16	Curve 16	Arg 17	Curve 17	Arg 18	Curve 18	Arg 19	Curve 19
3.9292E+03	-2.3779E+02	4.6436E+03	-2.3773E+02	4.2864E+03	-2.3765E+02	4.6436E+03	-2.3741E+02	3.5720E+03	-2.3720E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-2.3836E+02	4.6436E+03	-2.3830E+02	4.2864E+03	-2.3822E+02	4.6436E+03	-2.3799E+02	3.5720E+03	-2.3777E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-2.3893E+02	4.6436E+03	-2.3887E+02	4.2864E+03	-2.3879E+02	4.6436E+03	-2.3856E+02	3.5720E+03	-2.3835E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-2.3950E+02	4.6436E+03	-2.3944E+02	4.2864E+03	-2.3936E+02	4.6436E+03	-2.3913E+02	3.5720E+03	-2.3892E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-2.4007E+02	4.6436E+03	-2.4001E+02	4.2864E+03	-2.3993E+02	4.6436E+03	-2.3970E+02	3.5720E+03	-2.3949E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-2.4064E+02	4.6436E+03	-2.4058E+02	4.2864E+03	-2.4050E+02	4.6436E+03	-2.4027E+02	3.5720E+03	-2.4006E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-2.4121E+02	4.6436E+03	-2.4115E+02	4.2864E+03	-2.4107E+02	4.6436E+03	-2.4083E+02	3.5720E+03	-2.4062E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-2.4177E+02	4.6436E+03	-2.4171E+02	4.2864E+03	-2.4163E+02	4.6436E+03	-2.4140E+02	3.5720E+03	-2.4119E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-2.4233E+02	4.6436E+03	-2.4227E+02	4.2864E+03	-2.4220E+02	4.6436E+03	-2.4196E+02	3.5720E+03	-2.4175E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-2.4290E+02	4.6436E+03	-2.4284E+02	4.2864E+03	-2.4276E+02	4.6436E+03	-2.4253E+02	3.5720E+03	-2.4232E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-2.4346E+02	4.6436E+03	-2.4340E+02	4.2864E+03	-2.4332E+02	4.6436E+03	-2.4309E+02	3.5720E+03	-2.4288E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-2.4402E+02	4.6436E+03	-2.4396E+02	4.2864E+03	-2.4388E+02	4.6436E+03	-2.4365E+02	3.5720E+03	-2.4344E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-2.4457E+02	4.6436E+03	-2.4451E+02	4.2864E+03	-2.4444E+02	4.6436E+03	-2.4421E+02	3.5720E+03	-2.4400E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-2.4513E+02	4.6436E+03	-2.4507E+02	4.2864E+03	-2.4499E+02	4.6436E+03	-2.4477E+02	3.5720E+03	-2.4456E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-2.4569E+02	4.6436E+03	-2.4563E+02	4.2864E+03	-2.4555E+02	4.6436E+03	-2.4532E+02	3.5720E+03	-2.4511E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-2.4624E+02	4.6436E+03	-2.4618E+02	4.2864E+03	-2.4610E+02	4.6436E+03	-2.4588E+02	3.5720E+03	-2.4567E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-2.4679E+02	4.6436E+03	-2.4674E+02	4.2864E+03	-2.4666E+02	4.6436E+03	-2.4643E+02	3.5720E+03	-2.4622E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-2.4735E+02	4.6436E+03	-2.4729E+02	4.2864E+03	-2.4721E+02	4.6436E+03	-2.4698E+02	3.5720E+03	-2.4678E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-2.4790E+02	4.6436E+03	-2.4784E+02	4.2864E+03	-2.4776E+02	4.6436E+03	-2.4754E+02	3.5720E+03	-2.4733E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-2.4845E+02	4.6436E+03	-2.4839E+02	4.2864E+03	-2.4831E+02	4.6436E+03	-2.4809E+02	3.5720E+03	-2.4788E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-2.4899E+02	4.6436E+03	-2.4894E+02	4.2864E+03	-2.4886E+02	4.6436E+03	-2.4863E+02	3.5720E+03	-2.4843E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-2.4954E+02	4.6436E+03	-2.4948E+02	4.2864E+03	-2.4941E+02	4.6436E+03	-2.4918E+02	3.5720E+03	-2.4898E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-2.5009E+02	4.6436E+03	-2.5003E+02	4.2864E+03	-2.4995E+02	4.6436E+03	-2.4973E+02	3.5720E+03	-2.4952E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-2.5063E+02	4.6436E+03	-2.5057E+02	4.2864E+03	-2.5050E+02	4.6436E+03	-2.5027E+02	3.5720E+03	-2.5007E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-2.5117E+02	4.6436E+03	-2.5112E+02	4.2864E+03	-2.5104E+02	4.6436E+03	-2.5082E+02	3.5720E+03	-2.5061E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-2.5172E+02	4.6436E+03	-2.5166E+02	4.2864E+03	-2.5158E+02	4.6436E+03	-2.5136E+02	3.5720E+03	-2.5116E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-2.5226E+02	4.6436E+03	-2.5220E+02	4.2864E+03	-2.5213E+02	4.6436E+03	-2.5190E+02	3.5720E+03	-2.5170E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-2.5280E+02	4.6436E+03	-2.5274E+02	4.2864E+03	-2.5267E+02	4.6436E+03	-2.5244E+02	3.5720E+03	-2.5224E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-2.5334E+02	4.6436E+03	-2.5328E+02	4.2864E+03	-2.5320E+02	4.6436E+03	-2.5298E+02	3.5720E+03	-2.5278E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-2.5387E+02	4.6436E+03	-2.5382E+02	4.2864E+03	-2.5374E+02	4.6436E+03	-2.5352E+02	3.5720E+03	-2.5332E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-2.5441E+02	4.6436E+03	-2.5435E+02	4.2864E+03	-2.5428E+02	4.6436E+03	-2.5406E+02	3.5720E+03	-2.5386E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-2.5495E+02	4.6436E+03	-2.5489E+02	4.2864E+03	-2.5481E+02	4.6436E+03	-2.5460E+02	3.5720E+03	-2.5439E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-2.5548E+02	4.6436E+03	-2.5542E+02	4.2864E+03	-2.5535E+02	4.6436E+03	-2.5513E+02	3.5720E+03	-2.5493E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-2.5601E+02	4.6436E+03	-2.5596E+02	4.2864E+03	-2.5588E+02	4.6436E+03	-2.5566E+02	3.5720E+03	-2.5546E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-2.5655E+02	4.6436E+03	-2.5649E+02	4.2864E+03	-2.5641E+02	4.6436E+03	-2.5620E+02	3.5720E+03	-2.5600E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-2.5708E+02	4.6436E+03	-2.5702E+02	4.2864E+03	-2.5695E+02	4.6436E+03	-2.5673E+02	3.5720E+03	-2.5653E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-2.5761E+02	4.6436E+03	-2.5755E+02	4.2864E+03	-2.5748E+02	4.6436E+03	-2.5726E+02	3.5720E+03	-2.5706E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-2.5813E+02	4.6436E+03	-2.5808E+02	4.2864E+03	-2.5801E+02	4.6436E+03	-2.5779E+02	3.5720E+03	-2.5759E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-2.5866E+02	4.6436E+03	-2.5861E+02	4.2864E+03	-2.5853E+02	4.6436E+03	-2.5832E+02	3.5720E+03	-2.5812E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-2.5919E+02	4.6436E+03	-2.5913E+02	4.2864E+03	-2.5906E+02	4.6436E+03	-2.5884E+02	3.5720E+03	-2.5865E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-2.5971E+02	4.6436E+03	-2.5966E+02	4.2864E+03	-2.5959E+02	4.6436E+03	-2.5937E+02	3.5720E+03	-2.5917E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-2.6024E+02	4.6436E+03	-2.6018E+02	4.2864E+03	-2.6011E+02	4.6436E+03	-2.5990E+02	3.5720E+03	-2.5970E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-2.6076E+02	4.6436E+03	-2.6071E+02	4.2864E+03	-2.6063E+02	4.6436E+03	-2.6042E+02	3.5720E+03	-2.6022E+02	3.5743E+04	0.0000E+00	0.0000E+00
3.9292E+03	-2.6128E+02	4.6436E+03	-2.6123E+02	4.2864E+03	-2.6116E+02	4.6436E+03	-2.6094E+02	3.5720E+03	-2.6075E+02	3.5743E+04	-1.4091E+01	1.2310E+05
3.9292E+03	-2.6181E+02	4.6436E+03	-2.6175E+02	4.2864E+03	-2.6168E+02	4.6436E+03	-2.6146E+02	3.5720E+03	-2.6127E+02	3.5743E+04	-2.1641E+01	1.2310E+05
3.9292E+03	-2.6233E+02	4.6436E+03	-2.6227E+02	4.2864E+03	-2.6220E+02	4.6436E+03	-2.6199E+02	3.5720E+03	-2.6179E+02	3.5743E+04	-2.7203E+01	1.2310E+05
3.9292E+03	-2.6285E+02	4.6436E+03	-2.6279E+02	4.2864E+03	-2.6272E+02	4.6436E+03	-2.6251E+02	3.5720E+03	-2.6231E+02	3.5743E+04	-3.1815E+01	1.2310E+05
3.9292E+03	-2.6336E+02	4.6436E+03	-2.6331E+02	4.2864E+03	-2.6324E+02	4.6436E+03	-2.6302E+02	3.5720E+03	-2.6283E+02	3.5743E+04	-3.5842E+01	1.2310E+05
3.9292E+03	-2.6388E+02	4.6436E+03	-2.6383E+02	4.2864E+03	-2.6375E+02	4.6436E+03	-2.6354E+02	3.5720E+03	-2.6335E+02	3.5743E+04	-3.9460E+01	1.2310E+05
3.9292E+03	-2.6440E+02	4.6436E+03	-2.6434E+02	4.2864E+03	-2.6427E+02	4.6436E+03	-2.6406E+02	3.5720E+03	-2.6387E+02	3.5743E+04	-4.2775E+01	1.2310E+05
3.9292E+03	-2.6491E+02	4.6436E+03	-2.6486E+02	4.2864E+03	-2.6479E+02	4.6436E+03	-2.6457E+02	3.5720E+03	-2.6438E+02	3.5743E+04	-4.5850E+01	1.2310E+05
3.9292E+03	-2.6543E+02	4.6436E+03	-2.6537E+02	4.2864E+03	-2.6530E+02	4.6436E+03	-2.6509E+02	3.5720E+03	-2.6490E+02	3.5743E+04	-4.8732E+01	1.2310E+05

Curve 13	Arg 14	Curve 14	Arg 15	Curve 15	Arg 16	Curve 16	Arg 17	Curve 17	Arg 18	Curve 18	Arg 19	Curve 19
3.9292E+03	-2.6594E+02	4.6436E+03	-2.6589E+02	4.2864E+03	-2.6581E+02	4.6436E+03	-2.6560E+02	3.5720E+03	-2.6541E+02	3.5743E+04	-5.1454E+01	1.2310E+05
3.9292E+03	-2.6645E+02	4.6436E+03	-2.6640E+02	4.2864E+03	-2.6633E+02	4.6436E+03	-2.6612E+02	3.5720E+03	-2.6592E+02	3.5743E+04	-5.4038E+01	1.2310E+05
3.9292E+03	-2.6696E+02	4.6436E+03	-2.6691E+02	4.2864E+03	-2.6684E+02	4.6436E+03	-2.6663E+02	3.5720E+03	-2.6644E+02	3.5743E+04	-5.6505E+01	1.2310E+05
3.9292E+03	-2.6747E+02	4.6436E+03	-2.6742E+02	4.2864E+03	-2.6735E+02	4.6436E+03	-2.6714E+02	3.5720E+03	-2.6695E+02	3.5743E+04	-5.8868E+01	1.2310E+05
3.9292E+03	-2.6798E+02	4.6436E+03	-2.6793E+02	4.2864E+03	-2.6786E+02	4.6436E+03	-2.6765E+02	3.5720E+03	-2.6746E+02	3.5743E+04	-6.1140E+01	1.2310E+05
3.9292E+03	-2.6849E+02	4.6436E+03	-2.6844E+02	4.2864E+03	-2.6837E+02	4.6436E+03	-2.6816E+02	3.5720E+03	-2.6797E+02	3.5743E+04	-6.3330E+01	1.2310E+05
3.9292E+03	-2.6900E+02	4.6436E+03	-2.6894E+02	4.2864E+03	-2.6887E+02	4.6436E+03	-2.6867E+02	3.5720E+03	-2.6848E+02	3.5743E+04	-6.5448E+01	1.2310E+05
3.9292E+03	-2.6950E+02	4.6436E+03	-2.6945E+02	4.2864E+03	-2.6938E+02	4.6436E+03	-2.6917E+02	3.5720E+03	-2.6898E+02	3.5743E+04	-6.7499E+01	1.2310E+05
3.9292E+03	-2.7001E+02	4.6436E+03	-2.6996E+02	4.2864E+03	-2.6989E+02	4.6436E+03	-2.6968E+02	3.5720E+03	-2.6949E+02	3.5743E+04	-6.9489E+01	1.2310E+05
3.9292E+03	-2.7051E+02	4.6436E+03	-2.7046E+02	4.2864E+03	-2.7039E+02	4.6436E+03	-2.7018E+02	3.5720E+03	-2.6999E+02	3.5743E+04	-7.1424E+01	1.2310E+05
3.9292E+03	-2.7102E+02	4.6436E+03	-2.7097E+02	4.2864E+03	-2.7089E+02	4.6436E+03	-2.7069E+02	3.5720E+03	-2.7050E+02	3.5743E+04	-7.3308E+01	1.2310E+05
3.9292E+03	-2.7152E+02	4.6436E+03	-2.7147E+02	4.2864E+03	-2.7140E+02	4.6436E+03	-2.7119E+02	3.5720E+03	-2.7100E+02	3.5743E+04	-7.5145E+01	1.2310E+05
3.9292E+03	-2.7202E+02	4.6436E+03	-2.7197E+02	4.2864E+03	-2.7190E+02	4.6436E+03	-2.7169E+02	3.5720E+03	-2.7151E+02	3.5743E+04	-7.6938E+01	1.2310E+05
3.9292E+03	-2.7252E+02	4.6436E+03	-2.7247E+02	4.2864E+03	-2.7240E+02	4.6436E+03	-2.7220E+02	3.5720E+03	-2.7201E+02	3.5743E+04	-7.8690E+01	1.2310E+05
3.9292E+03	-2.7302E+02	4.6436E+03	-2.7297E+02	4.2864E+03	-2.7290E+02	4.6436E+03	-2.7270E+02	3.5720E+03	-2.7251E+02	3.5743E+04	-8.0404E+01	1.2310E+05
3.9292E+03	-2.7352E+02	4.6436E+03	-2.7347E+02	4.2864E+03	-2.7340E+02	4.6436E+03	-2.7319E+02	3.5720E+03	-2.7301E+02	3.5743E+04	-8.2082E+01	1.2310E+05
3.9292E+03	-2.7402E+02	4.6436E+03	-2.7397E+02	4.2864E+03	-2.7390E+02	4.6436E+03	-2.7369E+02	3.5720E+03	-2.7351E+02	3.5743E+04	-8.3727E+01	1.2310E+05
3.9292E+03	-2.7452E+02	4.6436E+03	-2.7446E+02	4.2864E+03	-2.7440E+02	4.6436E+03	-2.7419E+02	3.5720E+03	-2.7400E+02	3.5743E+04	-8.5339E+01	1.2310E+05
3.9292E+03	-2.7501E+02	4.6436E+03	-2.7496E+02	4.2864E+03	-2.7489E+02	4.6436E+03	-2.7469E+02	3.5720E+03	-2.7450E+02	3.5743E+04	-8.6922E+01	1.2310E+05
3.9292E+03	-2.7551E+02	4.6436E+03	-2.7546E+02	4.2864E+03	-2.7539E+02	4.6436E+03	-2.7518E+02	3.5720E+03	-2.7500E+02	3.5743E+04	-8.8477E+01	1.2310E+05
3.9292E+03	-2.7600E+02	4.6436E+03	-2.7595E+02	4.2864E+03	-2.7588E+02	4.6436E+03	-2.7568E+02	3.5720E+03	-2.7549E+02	3.5743E+04	-9.0005E+01	1.2310E+05
3.9292E+03	-2.7650E+02	4.6436E+03	-2.7644E+02	4.2864E+03	-2.7638E+02	4.6436E+03	-2.7617E+02	3.5720E+03	-2.7599E+02	3.5743E+04	-9.1507E+01	1.2310E+05
3.9292E+03	-2.7699E+02	4.6436E+03	-2.7694E+02	4.2864E+03	-2.7687E+02	4.6436E+03	-2.7667E+02	3.5720E+03	-2.7648E+02	3.5743E+04	-9.2985E+01	1.2310E+05
3.9292E+03	-2.7748E+02	4.6436E+03	-2.7743E+02	4.2864E+03	-2.7736E+02	4.6436E+03	-2.7716E+02	3.5720E+03	-2.7697E+02	3.5743E+04	-9.4440E+01	1.2310E+05
3.9292E+03	-2.7797E+02	4.6436E+03	-2.7792E+02	4.2864E+03	-2.7785E+02	4.6436E+03	-2.7765E+02	3.5720E+03	-2.7747E+02	3.5743E+04	-9.5873E+01	1.2310E+05
3.9292E+03	-2.7846E+02	4.6436E+03	-2.7841E+02	4.2864E+03	-2.7834E+02	4.6436E+03	-2.7814E+02	3.5720E+03	-2.7796E+02	3.5743E+04	-9.7285E+01	1.2310E+05
3.9292E+03	-2.7895E+02	4.6436E+03	-2.7890E+02	4.2864E+03	-2.7883E+02	4.6436E+03	-2.7863E+02	3.5720E+03	-2.7845E+02	3.5743E+04	-9.8676E+01	1.2310E+05
3.9292E+03	-2.7944E+02	4.6436E+03	-2.7939E+02	4.2864E+03	-2.7932E+02	4.6436E+03	-2.7912E+02	3.5720E+03	-2.7894E+02	3.5743E+04	-1.0005E+02	1.2310E+05
3.9292E+03	-2.7993E+02	4.6436E+03	-2.7988E+02	4.2864E+03	-2.7981E+02	4.6436E+03	-2.7961E+02	3.5720E+03	-2.7942E+02	3.5743E+04	-1.0140E+02	1.2310E+05
3.9292E+03	-2.8041E+02	4.6436E+03	-2.8036E+02	4.2864E+03	-2.8029E+02	4.6436E+03	-2.8009E+02	3.5720E+03	-2.7991E+02	3.5743E+04	-1.0274E+02	1.2310E+05
3.9292E+03	-2.8090E+02	4.6436E+03	-2.8085E+02	4.2864E+03	-2.8078E+02	4.6436E+03	-2.8058E+02	3.5720E+03	-2.8040E+02	3.5743E+04	-1.0406E+02	1.2310E+05
3.9292E+03	-2.8138E+02	4.6436E+03	-2.8133E+02	4.2864E+03	-2.8127E+02	4.6436E+03	-2.8107E+02	3.5720E+03	-2.8088E+02	3.5743E+04	-1.0536E+02	1.2310E+05
3.9292E+03	-2.8187E+02	4.6436E+03	-2.8182E+02	4.2864E+03	-2.8175E+02	4.6436E+03	-2.8155E+02	3.5720E+03	-2.8137E+02	3.5743E+04	-1.0664E+02	1.2310E+05
3.9292E+03	-2.8235E+02	4.6436E+03	-2.8230E+02	4.2864E+03	-2.8223E+02	4.6436E+03	-2.8204E+02	3.5720E+03	-2.8185E+02	3.5743E+04	-1.0792E+02	1.2310E+05
3.9292E+03	-2.8283E+02	4.6436E+03	-2.8278E+02	4.2864E+03	-2.8272E+02	4.6436E+03	-2.8252E+02	3.5720E+03	-2.8234E+02	3.5743E+04	-1.0917E+02	1.2310E+05
3.9292E+03	-2.8332E+02	4.6436E+03	-2.8327E+02	4.2864E+03	-2.8320E+02	4.6436E+03	-2.8300E+02	3.5720E+03	-2.8282E+02	3.5743E+04	-1.1041E+02	1.2310E+05
3.9292E+03	-2.8380E+02	4.6436E+03	-2.8375E+02	4.2864E+03	-2.8368E+02	4.6436E+03	-2.8348E+02	3.5720E+03	-2.8330E+02	3.5743E+04	-1.1164E+02	1.2310E+05
3.9292E+03	-2.8428E+02	4.6436E+03	-2.8423E+02	4.2864E+03	-2.8416E+02	4.6436E+03	-2.8396E+02	3.5720E+03	-2.8378E+02	3.5743E+04	-1.1286E+02	1.2310E+05
3.9292E+03	-2.8476E+02	4.6436E+03	-2.8471E+02	4.2864E+03	-2.8464E+02	4.6436E+03	-2.8444E+02	3.5720E+03	-2.8426E+02	3.5743E+04	-1.1406E+02	1.2310E+05
3.9292E+03	-2.8523E+02	4.6436E+03	-2.8518E+02	4.2864E+03	-2.8512E+02	4.6436E+03	-2.8492E+02	3.5720E+03	-2.8474E+02	3.5743E+04	-1.1525E+02	1.2310E+05
3.9292E+03	-2.8571E+02	4.6436E+03	-2.8566E+02	4.2864E+03	-2.8560E+02	4.6436E+03	-2.8540E+02	3.5720E+03	-2.8522E+02	3.5743E+04	-1.1642E+02	1.2310E+05
3.9292E+03	-2.8619E+02	4.6436E+03	-2.8614E+02	4.2864E+03	-2.8607E+02	4.6436E+03	-2.8588E+02	3.5720E+03	-2.8570E+02	3.5743E+04	-1.1759E+02	1.2310E+05
3.9292E+03	-2.8666E+02	4.6436E+03	-2.8661E+02	4.2864E+03	-2.8655E+02	4.6436E+03	-2.8635E+02	3.5720E+03	-2.8617E+02	3.5743E+04	-1.1874E+02	1.2310E+05
3.9292E+03	-2.8714E+02	4.6436E+03	-2.8709E+02	4.2864E+03	-2.8702E+02	4.6436E+03	-2.8683E+02	3.5720E+03	-2.8665E+02	3.5743E+04	-1.1989E+02	1.2310E+05
3.9292E+03	-2.8761E+02	4.6436E+03	-2.8756E+02	4.2864E+03	-2.8750E+02	4.6436E+03	-2.8730E+02	3.5720E+03	-2.8713E+02	3.5743E+04	-1.2102E+02	1.2310E+05
3.9292E+03	-2.8809E+02	4.6436E+03	-2.8804E+02	4.2864E+03	-2.8797E+02	4.6436E+03	-2.8778E+02	3.5720E+03	-2.8760E+02	3.5743E+04	-1.2214E+02	1.2310E+05
3.9292E+03	-2.8856E+02	4.6436E+03	-2.8851E+02	4.2864E+03	-2.8845E+02	4.6436E+03	-2.8825E+02	3.5720E+03	-2.8807E+02	3.5743E+04	-1.2325E+02	1.2310E+05
3.9292E+03	-2.8903E+02	4.6436E+03	-2.8898E+02	4.2864E+03	-2.8892E+02	4.6436E+03	-2.8872E+02	3.5720E+03	-2.8855E+02	3.5743E+04	-1.2435E+02	1.2310E+05
3.9292E+03	-2.8950E+02	4.6436E+03	-2.8946E+02	4.2864E+03	-2.8939E+02	4.6436E+03	-2.8920E+02	3.5720E+03	-2.8902E+02	3.5743E+04	-1.2544E+02	1.2310E+05
3.9292E+03	-2.8998E+02	4.6436E+03	-2.8993E+02	4.2864E+03	-2.8986E+02	4.6436E+03	-2.8967E+02	3.5720E+03	-2.8949E+02	3.5743E+04	-1.2653E+02	1.2310E+05
3.9292E+03	-2.9044E+02	4.6436E+03	-2.9040E+02	4.2864E+03	-2.9033E+02	4.6436E+03	-2.9014E+02	3.5720E+03	-2.8996E+02	3.5743E+04	-1.2760E+02	1.2310E+05
3.9292E+03	-2.9091E+02	4.6436E+03	-2.9086E+02	4.2864E+03	-2.9080E+02	4.6436E+03	-2.9061E+02	3.5720E+03	-2.9043E+02	3.5743E+04	-1.2866E+02	1.2310E+05

Curve 13	Arg 14	Curve 14	Arg 15	Curve 15	Arg 16	Curve 16	Arg 17	Curve 17	Arg 18	Curve 18	Arg 19	Curve 19
3.9292E+03	-2.9138E+02	4.6436E+03	-2.9133E+02	4.2864E+03	-2.9127E+02	4.6436E+03	-2.9108E+02	3.5720E+03	-2.9090E+02	3.5743E+04	-1.2972E+02	1.2310E+05
3.9292E+03	-2.9185E+02	4.6436E+03	-2.9180E+02	4.2864E+03	-2.9174E+02	4.6436E+03	-2.9154E+02	3.5720E+03	-2.9137E+02	3.5743E+04	-1.3077E+02	1.2310E+05
3.9292E+03	-2.9232E+02	4.6436E+03	-2.9227E+02	4.2864E+03	-2.9220E+02	4.6436E+03	-2.9201E+02	3.5720E+03	-2.9184E+02	3.5743E+04	-1.3180E+02	1.2310E+05
3.9292E+03	-2.9278E+02	4.6436E+03	-2.9273E+02	4.2864E+03	-2.9267E+02	4.6436E+03	-2.9248E+02	3.5720E+03	-2.9230E+02	3.5743E+04	-1.3283E+02	1.2310E+05
3.9292E+03	-2.9325E+02	4.6436E+03	-2.9320E+02	4.2864E+03	-2.9313E+02	4.6436E+03	-2.9294E+02	3.5720E+03	-2.9277E+02	3.5743E+04	-1.3386E+02	1.2310E+05
3.9292E+03	-2.9371E+02	4.6436E+03	-2.9366E+02	4.2864E+03	-2.9360E+02	4.6436E+03	-2.9341E+02	3.5720E+03	-2.9323E+02	3.5743E+04	-1.3487E+02	1.2310E+05
3.9292E+03	-2.9418E+02	4.6436E+03	-2.9413E+02	4.2864E+03	-2.9406E+02	4.6436E+03	-2.9387E+02	3.5720E+03	-2.9370E+02	3.5743E+04	-1.3588E+02	1.2310E+05
3.9292E+03	-2.9464E+02	4.6436E+03	-2.9459E+02	4.2864E+03	-2.9453E+02	4.6436E+03	-2.9434E+02	3.5720E+03	-2.9416E+02	3.5743E+04	-1.3688E+02	1.2310E+05
3.9292E+03	-2.9510E+02	4.6436E+03	-2.9505E+02	4.2864E+03	-2.9499E+02	4.6436E+03	-2.9480E+02	3.5720E+03	-2.9463E+02	3.5743E+04	-1.3787E+02	1.2310E+05
3.9292E+03	-2.9556E+02	4.6436E+03	-2.9552E+02	4.2864E+03	-2.9545E+02	4.6436E+03	-2.9526E+02	3.5720E+03	-2.9509E+02	3.5743E+04	-1.3886E+02	1.2310E+05
3.9292E+03	-2.9602E+02	4.6436E+03	-2.9598E+02	4.2864E+03	-2.9591E+02	4.6436E+03	-2.9572E+02	3.5720E+03	-2.9555E+02	3.5743E+04	-1.3983E+02	1.2310E+05
3.9292E+03	-2.9648E+02	4.6436E+03	-2.9644E+02	4.2864E+03	-2.9637E+02	4.6436E+03	-2.9618E+02	3.5720E+03	-2.9601E+02	3.5743E+04	-1.4081E+02	1.2310E+05
3.9292E+03	-2.9694E+02	4.6436E+03	-2.9690E+02	4.2864E+03	-2.9683E+02	4.6436E+03	-2.9664E+02	3.5720E+03	-2.9647E+02	3.5743E+04	-1.4177E+02	1.2310E+05
3.9292E+03	-2.9740E+02	4.6436E+03	-2.9735E+02	4.2864E+03	-2.9729E+02	4.6436E+03	-2.9710E+02	3.5720E+03	-2.9693E+02	3.5743E+04	-1.4273E+02	1.2310E+05
3.9292E+03	-2.9786E+02	4.6436E+03	-2.9781E+02	4.2864E+03	-2.9775E+02	4.6436E+03	-2.9756E+02	3.5720E+03	-2.9739E+02	3.5743E+04	-1.4368E+02	1.2310E+05
3.9292E+03	-2.9832E+02	4.6436E+03	-2.9827E+02	4.2864E+03	-2.9821E+02	4.6436E+03	-2.9802E+02	3.5720E+03	-2.9785E+02	3.5743E+04	-1.4463E+02	1.2310E+05
3.9292E+03	-2.9878E+02	4.6436E+03	-2.9873E+02	4.2864E+03	-2.9866E+02	4.6436E+03	-2.9848E+02	3.5720E+03	-2.9830E+02	3.5743E+04	-1.4557E+02	1.2310E+05
3.9292E+03	-2.9923E+02	4.6436E+03	-2.9918E+02	4.2864E+03	-2.9912E+02	4.6436E+03	-2.9893E+02	3.5720E+03	-2.9876E+02	3.5743E+04	-1.4650E+02	1.2310E+05
3.9292E+03	-2.9969E+02	4.6436E+03	-2.9964E+02	4.2864E+03	-2.9958E+02	4.6436E+03	-2.9939E+02	3.5720E+03	-2.9922E+02	3.5743E+04	-1.4743E+02	1.2310E+05
3.9292E+03	-3.0014E+02	4.6436E+03	-3.0009E+02	4.2864E+03	-3.0003E+02	4.6436E+03	-2.9984E+02	3.5720E+03	-2.9967E+02	3.5743E+04	-1.4835E+02	1.2310E+05
3.9292E+03	-3.0060E+02	4.6436E+03	-3.0055E+02	4.2864E+03	-3.0048E+02	4.6436E+03	-3.0030E+02	3.5720E+03	-3.0013E+02	3.5743E+04	-1.4927E+02	1.2310E+05
3.9292E+03	-3.0105E+02	4.6436E+03	-3.0100E+02	4.2864E+03	-3.0094E+02	4.6436E+03	-3.0075E+02	3.5720E+03	-3.0058E+02	3.5743E+04	-1.5018E+02	1.2310E+05
3.9292E+03	-3.0150E+02	4.6436E+03	-3.0145E+02	4.2864E+03	-3.0139E+02	4.6436E+03	-3.0120E+02	3.5720E+03	-3.0103E+02	3.5743E+04	-1.5108E+02	1.2310E+05
3.9292E+03	-3.0195E+02	4.6436E+03	-3.0191E+02	4.2864E+03	-3.0184E+02	4.6436E+03	-3.0166E+02	3.5720E+03	-3.0149E+02	3.5743E+04	-1.5198E+02	1.2310E+05
3.9292E+03	-3.0240E+02	4.6436E+03	-3.0236E+02	4.2864E+03	-3.0229E+02	4.6436E+03	-3.0211E+02	3.5720E+03	-3.0194E+02	3.5743E+04	-1.5288E+02	1.2310E+05
3.9292E+03	-3.0285E+02	4.6436E+03	-3.0281E+02	4.2864E+03	-3.0274E+02	4.6436E+03	-3.0256E+02	3.5720E+03	-3.0239E+02	3.5743E+04	-1.5377E+02	1.2310E+05
3.9292E+03	-3.0330E+02	4.6436E+03	-3.0326E+02	4.2864E+03	-3.0319E+02	4.6436E+03	-3.0301E+02	3.5720E+03	-3.0284E+02	3.5743E+04	-1.5465E+02	1.2310E+05
3.9292E+03	-3.0375E+02	4.6436E+03	-3.0371E+02	4.2864E+03	-3.0364E+02	4.6436E+03	-3.0346E+02	3.5720E+03	-3.0329E+02	3.5743E+04	-1.5553E+02	1.2310E+05
3.9292E+03	-3.0420E+02	4.6436E+03	-3.0416E+02	4.2864E+03	-3.0409E+02	4.6436E+03	-3.0391E+02	3.5720E+03	-3.0374E+02	3.5743E+04	-1.5640E+02	1.2310E+05
3.9292E+03	-3.0465E+02	4.6436E+03	-3.0460E+02	4.2864E+03	-3.0454E+02	4.6436E+03	-3.0436E+02	3.5720E+03	-3.0419E+02	3.5743E+04	-1.5727E+02	1.2310E+05
3.9292E+03	-3.0510E+02	4.6436E+03	-3.0505E+02	4.2864E+03	-3.0499E+02	4.6436E+03	-3.0480E+02	3.5720E+03	-3.0464E+02	3.5743E+04	-1.5814E+02	1.2310E+05
3.9292E+03	-3.0554E+02	4.6436E+03	-3.0550E+02	4.2864E+03	-3.0543E+02	4.6436E+03	-3.0525E+02	3.5720E+03	-3.0508E+02	3.5743E+04	-1.5900E+02	1.2310E+05
3.9292E+03	-3.0599E+02	4.6436E+03	-3.0594E+02	4.2864E+03	-3.0588E+02	4.6436E+03	-3.0570E+02	3.5720E+03	-3.0553E+02	3.5743E+04	-1.5985E+02	1.2310E+05
3.9292E+03	-3.0643E+02	4.6436E+03	-3.0639E+02	4.2864E+03	-3.0633E+02	4.6436E+03	-3.0614E+02	3.5720E+03	-3.0598E+02	3.5743E+04	-1.6070E+02	1.2310E+05
3.9292E+03	-3.0688E+02	4.6436E+03	-3.0683E+02	4.2864E+03	-3.0677E+02	4.6436E+03	-3.0659E+02	3.5720E+03	-3.0642E+02	3.5743E+04	-1.6155E+02	1.2310E+05
3.9292E+03	-3.0732E+02	4.6436E+03	-3.0728E+02	4.2864E+03	-3.0721E+02	4.6436E+03	-3.0703E+02	3.5720E+03	-3.0687E+02	3.5743E+04	-1.6239E+02	1.2310E+05
3.9292E+03	-3.0777E+02	4.6436E+03	-3.0772E+02	4.2864E+03	-3.0766E+02	4.6436E+03	-3.0748E+02	3.5720E+03	-3.0731E+02	3.5743E+04	-1.6323E+02	1.2310E+05
3.9292E+03	-3.0821E+02	4.6436E+03	-3.0816E+02	4.2864E+03	-3.0810E+02	4.6436E+03	-3.0792E+02	3.5720E+03	-3.0775E+02	3.5743E+04	-1.6406E+02	1.2310E+05
3.9292E+03	-3.0865E+02	4.6436E+03	-3.0861E+02	4.2864E+03	-3.0854E+02	4.6436E+03	-3.0836E+02	3.5720E+03	-3.0820E+02	3.5743E+04	-1.6489E+02	1.2310E+05
3.9292E+03	-3.0909E+02	4.6436E+03	-3.0905E+02	4.2864E+03	-3.0898E+02	4.6436E+03	-3.0880E+02	3.5720E+03	-3.0864E+02	3.5743E+04	-1.6572E+02	1.2310E+05
3.9292E+03	-3.0953E+02	4.6436E+03	-3.0949E+02	4.2864E+03	-3.0943E+02	4.6436E+03	-3.0925E+02	3.5720E+03	-3.0908E+02	3.5743E+04	-1.6654E+02	1.2310E+05
3.9292E+03	-3.0997E+02	4.6436E+03	-3.0993E+02	4.2864E+03	-3.0987E+02	4.6436E+03	-3.0969E+02	3.5720E+03	-3.0952E+02	3.5743E+04	-1.6735E+02	1.2310E+05
3.9292E+03	-3.1041E+02	4.6436E+03	-3.1037E+02	4.2864E+03	-3.1031E+02	4.6436E+03	-3.1013E+02	3.5720E+03	-3.0996E+02	3.5743E+04	-1.6817E+02	1.2310E+05
3.9292E+03	-3.1085E+02	4.6436E+03	-3.1081E+02	4.2864E+03	-3.1074E+02	4.6436E+03	-3.1057E+02	3.5720E+03	-3.1040E+02	3.5743E+04	-1.6897E+02	1.2310E+05
3.9292E+03	-3.1129E+02	4.6436E+03	-3.1124E+02	4.2864E+03	-3.1118E+02	4.6436E+03	-3.1100E+02	3.5720E+03	-3.1084E+02	3.5743E+04	-1.6978E+02	1.2310E+05
3.9292E+03	-3.1173E+02	4.6436E+03	-3.1168E+02	4.2864E+03	-3.1162E+02	4.6436E+03	-3.1144E+02	3.5720E+03	-3.1128E+02	3.5743E+04	-1.7058E+02	1.2310E+05
3.9292E+03	-3.1217E+02	4.6436E+03	-3.1212E+02	4.2864E+03	-3.1206E+02	4.6436E+03	-3.1188E+02	3.5720E+03	-3.1172E+02	3.5743E+04	-1.7138E+02	1.2310E+05
3.9292E+03	-3.1260E+02	4.6436E+03	-3.1256E+02	4.2864E+03	-3.1250E+02	4.6436E+03	-3.1232E+02	3.5720E+03	-3.1215E+02	3.5743E+04	-1.7217E+02	1.2310E+05
3.9292E+03	-3.1304E+02	4.6436E+03	-3.1299E+02	4.2864E+03	-3.1293E+02	4.6436E+03	-3.1275E+02	3.5720E+03	-3.1259E+02	3.5743E+04	-1.7296E+02	1.2310E+05
3.9292E+03	-3.1347E+02	4.6436E+03	-3.1343E+02	4.2864E+03	-3.1337E+02	4.6436E+03	-3.1319E+02	3.5720E+03	-3.1302E+02	3.5743E+04	-1.7375E+02	1.2310E+05
3.9292E+03	-3.1391E+02	4.6436E+03	-3.1386E+02	4.2864E+03	-3.1380E+02	4.6436E+03	-3.1362E+02	3.5720E+03	-3.1346E+02	3.5743E+04	-1.7453E+02	1.2310E+05
3.9292E+03	-3.1434E+02	4.6436E+03	-3.1430E+02	4.2864E+03	-3.1424E+02	4.6436E+03	-3.1406E+02	3.5720E+03	-3.1389E+02	3.5743E+04	-1.7531E+02	1.2310E+05

Curve 13	Arg 14	Curve 14	Arg 15	Curve 15	Arg 16	Curve 16	Arg 17	Curve 17	Arg 18	Curve 18	Arg 19	Curve 19
3.9292E+03	-3.1478E+02	4.6436E+03	-3.1473E+02	4.2864E+03	-3.1467E+02	4.6436E+03	-3.1449E+02	3.5720E+03	-3.1433E+02	3.5743E+04	-1.7609E+02	1.2310E+05
3.9292E+03	-3.1521E+02	4.6436E+03	-3.1516E+02	4.2864E+03	-3.1510E+02	4.6436E+03	-3.1492E+02	3.5720E+03	-3.1476E+02	3.5743E+04	-1.7686E+02	1.2310E+05
3.9292E+03	-3.1564E+02	4.6436E+03	-3.1559E+02	4.2864E+03	-3.1553E+02	4.6436E+03	-3.1536E+02	3.5720E+03	-3.1520E+02	3.5743E+04	-1.7763E+02	1.2310E+05
3.9292E+03	-3.1607E+02	4.6436E+03	-3.1603E+02	4.2864E+03	-3.1597E+02	4.6436E+03	-3.1579E+02	3.5720E+03	-3.1563E+02	3.5743E+04	-1.7839E+02	1.2310E+05
3.9292E+03	-3.1650E+02	4.6436E+03	-3.1646E+02	4.2864E+03	-3.1640E+02	4.6436E+03	-3.1622E+02	3.5720E+03	-3.1606E+02	3.5743E+04	-1.7916E+02	1.2310E+05
3.9292E+03	-3.1693E+02	4.6436E+03	-3.1689E+02	4.2864E+03	-3.1683E+02	4.6436E+03	-3.1665E+02	3.5720E+03	-3.1649E+02	3.5743E+04	-1.7992E+02	1.2310E+05
3.9292E+03	-3.1736E+02	4.6436E+03	-3.1732E+02	4.2864E+03	-3.1726E+02	4.6436E+03	-3.1708E+02	3.5720E+03	-3.1692E+02	3.5743E+04	-1.8067E+02	1.2310E+05
3.9292E+03	-3.1779E+02	4.6436E+03	-3.1775E+02	4.2864E+03	-3.1769E+02	4.6436E+03	-3.1751E+02	3.5720E+03	-3.1735E+02	3.5743E+04	-1.8143E+02	1.2310E+05
3.9292E+03	-3.1822E+02	4.6436E+03	-3.1818E+02	4.2864E+03	-3.1812E+02	4.6436E+03	-3.1794E+02	3.5720E+03	-3.1778E+02	3.5743E+04	-1.8218E+02	1.2310E+05
3.9292E+03	-3.1865E+02	4.6436E+03	-3.1860E+02	4.2864E+03	-3.1854E+02	4.6436E+03	-3.1837E+02	3.5720E+03	-3.1821E+02	3.5743E+04	-1.8292E+02	1.2310E+05
3.9292E+03	-3.1908E+02	4.6436E+03	-3.1903E+02	4.2864E+03	-3.1897E+02	4.6436E+03	-3.1880E+02	3.5720E+03	-3.1864E+02	3.5743E+04	-1.8367E+02	1.2310E+05
3.9292E+03	-3.1950E+02	4.6436E+03	-3.1946E+02	4.2864E+03	-3.1940E+02	4.6436E+03	-3.1922E+02	3.5720E+03	-3.1906E+02	3.5743E+04	-1.8441E+02	1.2310E+05
3.9292E+03	-3.1993E+02	4.6436E+03	-3.1989E+02	4.2864E+03	-3.1983E+02	4.6436E+03	-3.1965E+02	3.5720E+03	-3.1949E+02	3.5743E+04	-1.8515E+02	1.2310E+05
3.9292E+03	-3.2036E+02	4.6436E+03	-3.2031E+02	4.2864E+03	-3.2025E+02	4.6436E+03	-3.2008E+02	3.5720E+03	-3.1992E+02	3.5743E+04	-1.8588E+02	1.2310E+05
3.9292E+03	-3.2078E+02	4.6436E+03	-3.2074E+02	4.2864E+03	-3.2068E+02	4.6436E+03	-3.2050E+02	3.5720E+03	-3.2034E+02	3.5743E+04	-1.8661E+02	1.2310E+05
3.9292E+03	-3.2121E+02	4.6436E+03	-3.2116E+02	4.2864E+03	-3.2110E+02	4.6436E+03	-3.2093E+02	3.5720E+03	-3.2077E+02	3.5743E+04	-1.8734E+02	1.2310E+05
3.9292E+03	-3.2163E+02	4.6436E+03	-3.2159E+02	4.2864E+03	-3.2153E+02	4.6436E+03	-3.2135E+02	3.5720E+03	-3.2119E+02	3.5743E+04	-1.8807E+02	1.2310E+05
3.9292E+03	-3.2205E+02	4.6436E+03	-3.2201E+02	4.2864E+03	-3.2195E+02	4.6436E+03	-3.2178E+02	3.5720E+03	-3.2162E+02	3.5743E+04	-1.8879E+02	1.2310E+05
3.9292E+03	-3.2248E+02	4.6436E+03	-3.2243E+02	4.2864E+03	-3.2237E+02	4.6436E+03	-3.2220E+02	3.5720E+03	-3.2204E+02	3.5743E+04	-1.8951E+02	1.2310E+05
3.9292E+03	-3.2290E+02	4.6436E+03	-3.2286E+02	4.2864E+03	-3.2280E+02	4.6436E+03	-3.2262E+02	3.5720E+03	-3.2246E+02	3.5743E+04	-1.9023E+02	1.2310E+05
3.9292E+03	-3.2332E+02	4.6436E+03	-3.2328E+02	4.2864E+03	-3.2322E+02	4.6436E+03	-3.2305E+02	3.5720E+03	-3.2289E+02	3.5743E+04	-1.9095E+02	1.2310E+05
3.9292E+03	-3.2374E+02	4.6436E+03	-3.2370E+02	4.2864E+03	-3.2364E+02	4.6436E+03	-3.2347E+02	3.5720E+03	-3.2331E+02	3.5743E+04	-1.9166E+02	1.2310E+05
3.9292E+03	-3.2416E+02	4.6436E+03	-3.2412E+02	4.2864E+03	-3.2406E+02	4.6436E+03	-3.2389E+02	3.5720E+03	-3.2373E+02	3.5743E+04	-1.9237E+02	1.2310E+05
3.9292E+03	-3.2458E+02	4.6436E+03	-3.2454E+02	4.2864E+03	-3.2448E+02	4.6436E+03	-3.2431E+02	3.5720E+03	-3.2415E+02	3.5743E+04	-1.9308E+02	1.2310E+05
3.9292E+03	-3.2500E+02	4.6436E+03	-3.2496E+02	4.2864E+03	-3.2490E+02	4.6436E+03	-3.2473E+02	3.5720E+03	-3.2457E+02	3.5743E+04	-1.9378E+02	1.2310E+05
3.9292E+03	-3.2542E+02	4.6436E+03	-3.2538E+02	4.2864E+03	-3.2532E+02	4.6436E+03	-3.2515E+02	3.5720E+03	-3.2499E+02	3.5743E+04	-1.9448E+02	1.2310E+05
3.9292E+03	-3.2584E+02	4.6436E+03	-3.2580E+02	4.2864E+03	-3.2574E+02	4.6436E+03	-3.2557E+02	3.5720E+03	-3.2541E+02	3.5743E+04	-1.9518E+02	1.2310E+05
3.9292E+03	-3.2626E+02	4.6436E+03	-3.2622E+02	4.2864E+03	-3.2616E+02	4.6436E+03	-3.2599E+02	3.5720E+03	-3.2583E+02	3.5743E+04	-1.9588E+02	1.2310E+05
3.9292E+03	-3.2668E+02	4.6436E+03	-3.2663E+02	4.2864E+03	-3.2658E+02	4.6436E+03	-3.2640E+02	3.5720E+03	-3.2625E+02	3.5743E+04	-1.9658E+02	1.2310E+05
3.9292E+03	-3.2710E+02	4.6436E+03	-3.2705E+02	4.2864E+03	-3.2699E+02	4.6436E+03	-3.2682E+02	3.5720E+03	-3.2667E+02	3.5743E+04	-1.9727E+02	1.2310E+05
3.9292E+03	-3.2751E+02	4.6436E+03	-3.2747E+02	4.2864E+03	-3.2741E+02	4.6436E+03	-3.2724E+02	3.5720E+03	-3.2708E+02	3.5743E+04	-1.9796E+02	1.2310E+05
3.9292E+03	-3.2793E+02	4.6436E+03	-3.2788E+02	4.2864E+03	-3.2783E+02	4.6436E+03	-3.2766E+02	3.5720E+03	-3.2750E+02	3.5743E+04	-1.9865E+02	1.2310E+05
3.9292E+03	-3.2834E+02	4.6436E+03	-3.2830E+02	4.2864E+03	-3.2824E+02	4.6436E+03	-3.2807E+02	3.5720E+03	-3.2792E+02	3.5743E+04	-1.9933E+02	1.2310E+05
3.9292E+03	-3.2876E+02	4.6436E+03	-3.2872E+02	4.2864E+03	-3.2866E+02	4.6436E+03	-3.2849E+02	3.5720E+03	-3.2833E+02	3.5743E+04	-2.0001E+02	1.2310E+05
3.9292E+03	-3.2917E+02	4.6436E+03	-3.2913E+02	4.2864E+03	-3.2907E+02	4.6436E+03	-3.2890E+02	3.5720E+03	-3.2875E+02	3.5743E+04	-2.0069E+02	1.2310E+05
3.9292E+03	-3.2959E+02	4.6436E+03	-3.2954E+02	4.2864E+03	-3.2949E+02	4.6436E+03	-3.2932E+02	3.5720E+03	-3.2916E+02	3.5743E+04	-2.0137E+02	1.2310E+05
3.9292E+03	-3.3000E+02	4.6436E+03	-3.2996E+02	4.2864E+03	-3.2990E+02	4.6436E+03	-3.2973E+02	3.5720E+03	-3.2957E+02	3.5743E+04	-2.0205E+02	1.2310E+05
3.9292E+03	-3.3041E+02	4.6436E+03	-3.3037E+02	4.2864E+03	-3.3031E+02	4.6436E+03	-3.3014E+02	3.5720E+03	-3.2999E+02	3.5743E+04	-2.0272E+02	1.2310E+05
3.9292E+03	-3.3083E+02	4.6436E+03	-3.3078E+02	4.2864E+03	-3.3072E+02	4.6436E+03	-3.3056E+02	3.5720E+03	-3.3040E+02	3.5743E+04	-2.0339E+02	1.2310E+05
3.9292E+03	-3.3124E+02	4.6436E+03	-3.3119E+02	4.2864E+03	-3.3114E+02	4.6436E+03	-3.3097E+02	3.5720E+03	-3.3081E+02	3.5743E+04	-2.0406E+02	1.2310E+05
3.9292E+03	-3.3165E+02	4.6436E+03	-3.3161E+02	4.2864E+03	-3.3155E+02	4.6436E+03	-3.3138E+02	3.5720E+03	-3.3123E+02	3.5743E+04	-2.0473E+02	1.2310E+05
3.9292E+03	-3.3206E+02	4.6436E+03	-3.3202E+02	4.2864E+03	-3.3196E+02	4.6436E+03	-3.3179E+02	3.5720E+03	-3.3164E+02	3.5743E+04	-2.0539E+02	1.2310E+05
3.9292E+03	-3.3247E+02	4.6436E+03	-3.3243E+02	4.2864E+03	-3.3237E+02	4.6436E+03	-3.3220E+02	3.5720E+03	-3.3205E+02	3.5743E+04	-2.0606E+02	1.2310E+05
3.9292E+03	-3.3288E+02	4.6436E+03	-3.3284E+02	4.2864E+03	-3.3278E+02	4.6436E+03	-3.3261E+02	3.5720E+03	-3.3246E+02	3.5743E+04	-2.0672E+02	1.2310E+05
3.9292E+03	-3.3329E+02	4.6436E+03	-3.3325E+02	4.2864E+03	-3.3319E+02	4.6436E+03	-3.3302E+02	3.5720E+03	-3.3287E+02	3.5743E+04	-2.0738E+02	1.2310E+05
3.9292E+03	-3.3370E+02	4.6436E+03	-3.3366E+02	4.2864E+03	-3.3360E+02	4.6436E+03	-3.3343E+02	3.5720E+03	-3.3328E+02	3.5743E+04	-2.0803E+02	1.2310E+05
3.9292E+03	-3.3411E+02	4.6436E+03	-3.3406E+02	4.2864E+03	-3.3401E+02	4.6436E+03	-3.3384E+02	3.5720E+03	-3.3369E+02	3.5743E+04	-2.0869E+02	1.2310E+05
3.9292E+03	-3.3451E+02	4.6436E+03	-3.3447E+02	4.2864E+03	-3.3441E+02	4.6436E+03	-3.3425E+02	3.5720E+03	-3.3409E+02	3.5743E+04	-2.0934E+02	1.2310E+05
3.9292E+03	-3.3492E+02	4.6436E+03	-3.3488E+02	4.2864E+03	-3.3482E+02	4.6436E+03	-3.3465E+02	3.5720E+03	-3.3450E+02	3.5743E+04	-2.0999E+02	1.2310E+05
3.9292E+03	-3.3533E+02	4.6436E+03	-3.3529E+02	4.2864E+03	-3.3523E+02	4.6436E+03	-3.3506E+02	3.5720E+03	-3.3491E+02	3.5743E+04	-2.1064E+02	1.2310E+05
3.9292E+03	-3.3573E+02	4.6436E+03	-3.3569E+02	4.2864E+03	-3.3564E+02	4.6436E+03	-3.3547E+02	3.5720E+03	-3.3532E+02	3.5743E+04	-2.1128E+02	1.2310E+05
3.9292E+03	-3.3614E+02	4.6436E+03	-3.3610E+02	4.2864E+03	-3.3604E+02	4.6436E+03	-3.3587E+02	3.5720E+03	-3.3572E+02	3.5743E+04	-2.1193E+02	1.2310E+05

Curve 13	Arg 14	Curve 14	Arg 15	Curve 15	Arg 16	Curve 16	Arg 17	Curve 17	Arg 18	Curve 18	Arg 19	Curve 19
3.9292E+03	-3.3655E+02	4.6436E+03	-3.3650E+02	4.2864E+03	-3.3645E+02	4.6436E+03	-3.3628E+02	3.5720E+03	-3.3613E+02	3.5743E+04	-2.1257E+02	1.2310E+05
3.9292E+03	-3.3695E+02	4.6436E+03	-3.3691E+02	4.2864E+03	-3.3685E+02	4.6436E+03	-3.3669E+02	3.5720E+03	-3.3653E+02	3.5743E+04	-2.1321E+02	1.2310E+05
3.9292E+03	-3.3736E+02	4.6436E+03	-3.3731E+02	4.2864E+03	-3.3726E+02	4.6436E+03	-3.3709E+02	3.5720E+03	-3.3694E+02	3.5743E+04	-2.1385E+02	1.2310E+05
3.9292E+03	-3.3776E+02	4.6436E+03	-3.3772E+02	4.2864E+03	-3.3766E+02	4.6436E+03	-3.3749E+02	3.5720E+03	-3.3734E+02	3.5743E+04	-2.1449E+02	1.2310E+05
3.9292E+03	-3.3816E+02	4.6436E+03	-3.3812E+02	4.2864E+03	-3.3806E+02	4.6436E+03	-3.3790E+02	3.5720E+03	-3.3775E+02	3.5743E+04	-2.1512E+02	1.2310E+05
3.9292E+03	-3.3857E+02	4.6436E+03	-3.3852E+02	4.2864E+03	-3.3847E+02	4.6436E+03	-3.3830E+02	3.5720E+03	-3.3815E+02	3.5743E+04	-2.1575E+02	1.2310E+05
3.9292E+03	-3.3897E+02	4.6436E+03	-3.3893E+02	4.2864E+03	-3.3887E+02	4.6436E+03	-3.3870E+02	3.5720E+03	-3.3855E+02	3.5743E+04	-2.1639E+02	1.2310E+05
3.9292E+03	-3.3937E+02	4.6436E+03	-3.3933E+02	4.2864E+03	-3.3927E+02	4.6436E+03	-3.3911E+02	3.5720E+03	-3.3896E+02	3.5743E+04	-2.1701E+02	1.2310E+05
3.9292E+03	-3.3977E+02	4.6436E+03	-3.3973E+02	4.2864E+03	-3.3967E+02	4.6436E+03	-3.3951E+02	3.5720E+03	-3.3936E+02	3.5743E+04	-2.1764E+02	1.2310E+05
3.9292E+03	-3.4017E+02	4.6436E+03	-3.4013E+02	4.2864E+03	-3.4007E+02	4.6436E+03	-3.3991E+02	3.5720E+03	-3.3976E+02	3.5743E+04	-2.1827E+02	1.2310E+05
3.9292E+03	-3.4057E+02	4.6436E+03	-3.4053E+02	4.2864E+03	-3.4048E+02	4.6436E+03	-3.4031E+02	3.5720E+03	-3.4016E+02	3.5743E+04	-2.1889E+02	1.2310E+05
3.9292E+03	-3.4097E+02	4.6436E+03	-3.4093E+02	4.2864E+03	-3.4088E+02	4.6436E+03	-3.4071E+02	3.5720E+03	-3.4056E+02	3.5743E+04	-2.1951E+02	1.2310E+05
3.9292E+03	-3.4137E+02	4.6436E+03	-3.4133E+02	4.2864E+03	-3.4128E+02	4.6436E+03	-3.4111E+02	3.5720E+03	-3.4096E+02	3.5743E+04	-2.2013E+02	1.2310E+05
3.9292E+03	-3.4177E+02	4.6436E+03	-3.4173E+02	4.2864E+03	-3.4167E+02	4.6436E+03	-3.4151E+02	3.5720E+03	-3.4136E+02	3.5743E+04	-2.2075E+02	1.2310E+05
3.9292E+03	-3.4217E+02	4.6436E+03	-3.4213E+02	4.2864E+03	-3.4207E+02	4.6436E+03	-3.4191E+02	3.5720E+03	-3.4176E+02	3.5743E+04	-2.2137E+02	1.2310E+05
3.9292E+03	-3.4257E+02	4.6436E+03	-3.4253E+02	4.2864E+03	-3.4247E+02	4.6436E+03	-3.4231E+02	3.5720E+03	-3.4216E+02	3.5743E+04	-2.2198E+02	1.2310E+05
3.9292E+03	-3.4297E+02	4.6436E+03	-3.4293E+02	4.2864E+03	-3.4287E+02	4.6436E+03	-3.4271E+02	3.5720E+03	-3.4256E+02	3.5743E+04	-2.2260E+02	1.2310E+05
3.9292E+03	-3.4336E+02	4.6436E+03	-3.4332E+02	4.2864E+03	-3.4327E+02	4.6436E+03	-3.4310E+02	3.5720E+03	-3.4296E+02	3.5743E+04	-2.2321E+02	1.2310E+05
3.9292E+03	-3.4376E+02	4.6436E+03	-3.4372E+02	4.2864E+03	-3.4366E+02	4.6436E+03	-3.4350E+02	3.5720E+03	-3.4335E+02	3.5743E+04	-2.2382E+02	1.2310E+05
3.9292E+03	-3.4416E+02	4.6436E+03	-3.4412E+02	4.2864E+03	-3.4406E+02	4.6436E+03	-3.4390E+02	3.5720E+03	-3.4375E+02	3.5743E+04	-2.2443E+02	1.2310E+05
3.9292E+03	-3.4455E+02	4.6436E+03	-3.4451E+02	4.2864E+03	-3.4446E+02	4.6436E+03	-3.4429E+02	3.5720E+03	-3.4415E+02	3.5743E+04	-2.2503E+02	1.2310E+05
3.9292E+03	-3.4495E+02	4.6436E+03	-3.4491E+02	4.2864E+03	-3.4485E+02	4.6436E+03	-3.4469E+02	3.5720E+03	-3.4454E+02	3.5743E+04	-2.2564E+02	1.2310E+05
3.9292E+03	-3.4534E+02	4.6436E+03	-3.4530E+02	4.2864E+03	-3.4525E+02	4.6436E+03	-3.4509E+02	3.5720E+03	-3.4494E+02	3.5743E+04	-2.2624E+02	1.2310E+05
3.9292E+03	-3.4574E+02	4.6436E+03	-3.4570E+02	4.2864E+03	-3.4564E+02	4.6436E+03	-3.4548E+02	3.5720E+03	-3.4533E+02	3.5743E+04	-2.2684E+02	1.2310E+05
3.9292E+03	-3.4613E+02	4.6436E+03	-3.4609E+02	4.2864E+03	-3.4604E+02	4.6436E+03	-3.4587E+02	3.5720E+03	-3.4573E+02	3.5743E+04	-2.2744E+02	1.2310E+05
3.9292E+03	-3.4653E+02	4.6436E+03	-3.4649E+02	4.2864E+03	-3.4643E+02	4.6436E+03	-3.4627E+02	3.5720E+03	-3.4612E+02	3.5743E+04	-2.2804E+02	1.2310E+05
3.9292E+03	-3.4692E+02	4.6436E+03	-3.4688E+02	4.2864E+03	-3.4682E+02	4.6436E+03	-3.4666E+02	3.5720E+03	-3.4651E+02	3.5743E+04	-2.2864E+02	1.2310E+05
3.9292E+03	-3.4731E+02	4.6436E+03	-3.4727E+02	4.2864E+03	-3.4722E+02	4.6436E+03	-3.4706E+02	3.5720E+03	-3.4691E+02	3.5743E+04	-2.2924E+02	1.2310E+05
3.9292E+03	-3.4770E+02	4.6436E+03	-3.4766E+02	4.2864E+03	-3.4761E+02	4.6436E+03	-3.4745E+02	3.5720E+03	-3.4730E+02	3.5743E+04	-2.2983E+02	1.2310E+05
3.9292E+03	-3.4810E+02	4.6436E+03	-3.4806E+02	4.2864E+03	-3.4800E+02	4.6436E+03	-3.4784E+02	3.5720E+03	-3.4769E+02	3.5743E+04	-2.3042E+02	1.2310E+05
3.9292E+03	-3.4849E+02	4.6436E+03	-3.4845E+02	4.2864E+03	-3.4839E+02	4.6436E+03	-3.4823E+02	3.5720E+03	-3.4808E+02	3.5743E+04	-2.3101E+02	1.2310E+05
3.9292E+03	-3.4888E+02	4.6436E+03	-3.4884E+02	4.2864E+03	-3.4878E+02	4.6436E+03	-3.4862E+02	3.5720E+03	-3.4848E+02	3.5743E+04	-2.3160E+02	1.2310E+05
3.9292E+03	-3.4927E+02	4.6436E+03	-3.4923E+02	4.2864E+03	-3.4917E+02	4.6436E+03	-3.4901E+02	3.5720E+03	-3.4887E+02	3.5743E+04	-2.3219E+02	1.2310E+05
3.9292E+03	-3.4966E+02	4.6436E+03	-3.4962E+02	4.2864E+03	-3.4956E+02	4.6436E+03	-3.4940E+02	3.5720E+03	-3.4926E+02	3.5743E+04	-2.3278E+02	1.2310E+05
3.9292E+03	-3.5005E+02	4.6436E+03	-3.5001E+02	4.2864E+03	-3.4995E+02	4.6436E+03	-3.4979E+02	3.5720E+03	-3.4965E+02	3.5743E+04	-2.3336E+02	1.2310E+05
3.9292E+03	-3.5044E+02	4.6436E+03	-3.5040E+02	4.2864E+03	-3.5034E+02	4.6436E+03	-3.5018E+02	3.5720E+03	-3.5004E+02	3.5743E+04	-2.3395E+02	1.2310E+05
3.9292E+03	-3.5083E+02	4.6436E+03	-3.5079E+02	4.2864E+03	-3.5073E+02	4.6436E+03	-3.5057E+02	3.5720E+03	-3.5043E+02	3.5743E+04	-2.3453E+02	1.2310E+05
3.9292E+03	-3.5122E+02	4.6436E+03	-3.5118E+02	4.2864E+03	-3.5112E+02	4.6436E+03	-3.5096E+02	3.5720E+03	-3.5082E+02	3.5743E+04	-2.3511E+02	1.2310E+05
3.9292E+03	-3.5160E+02	4.6436E+03	-3.5156E+02	4.2864E+03	-3.5151E+02	4.6436E+03	-3.5135E+02	3.5720E+03	-3.5120E+02	3.5743E+04	-2.3569E+02	1.2310E+05
3.9292E+03	-3.5199E+02	4.6436E+03	-3.5195E+02	4.2864E+03	-3.5190E+02	4.6436E+03	-3.5174E+02	3.5720E+03	-3.5159E+02	3.5743E+04	-2.3627E+02	1.2310E+05
3.9292E+03	-3.5238E+02	4.6436E+03	-3.5234E+02	4.2864E+03	-3.5228E+02	4.6436E+03	-3.5213E+02	3.5720E+03	-3.5198E+02	3.5743E+04	-2.3684E+02	1.2310E+05
3.9292E+03	-3.5277E+02	4.6436E+03	-3.5272E+02	4.2864E+03	-3.5267E+02	4.6436E+03	-3.5251E+02	3.5720E+03	-3.5237E+02	3.5743E+04	-2.3742E+02	1.2310E+05
3.9292E+03	-3.5315E+02	4.6436E+03	-3.5311E+02	4.2864E+03	-3.5306E+02	4.6436E+03	-3.5290E+02	3.5720E+03	-3.5275E+02	3.5743E+04	-2.3799E+02	1.2310E+05
3.9292E+03	-3.5354E+02	4.6436E+03	-3.5350E+02	4.2864E+03	-3.5344E+02	4.6436E+03	-3.5329E+02	3.5720E+03	-3.5314E+02	3.5743E+04	-2.3856E+02	1.2310E+05
3.9292E+03	-3.5392E+02	4.6436E+03	-3.5388E+02	4.2864E+03	-3.5383E+02	4.6436E+03	-3.5367E+02	3.5720E+03	-3.5353E+02	3.5743E+04	-2.3913E+02	1.2310E+05
3.9292E+03	-3.5431E+02	4.6436E+03	-3.5427E+02	4.2864E+03	-3.5421E+02	4.6436E+03	-3.5406E+02	3.5720E+03	-3.5391E+02	3.5743E+04	-2.3970E+02	1.2310E+05
3.9292E+03	-3.5469E+02	4.6436E+03	-3.5465E+02	4.2864E+03	-3.5460E+02	4.6436E+03	-3.5444E+02	3.5720E+03	-3.5430E+02	3.5743E+04	-2.4027E+02	1.2310E+05
3.9292E+03	-3.5508E+02	4.6436E+03	-3.5504E+02	4.2864E+03	-3.5498E+02	4.6436E+03	-3.5483E+02	3.5720E+03	-3.5468E+02	3.5743E+04	-2.4084E+02	1.2310E+05
3.9292E+03	-3.5546E+02	4.6436E+03	-3.5542E+02	4.2864E+03	-3.5537E+02	4.6436E+03	-3.5521E+02	3.5720E+03	-3.5507E+02	3.5743E+04	-2.4140E+02	1.2310E+05
3.9292E+03	-3.5584E+02	4.6436E+03	-3.5580E+02	4.2864E+03	-3.5575E+02	4.6436E+03	-3.5559E+02	3.5720E+03	-3.5545E+02	3.5743E+04	-2.4197E+02	1.2310E+05
3.9292E+03	-3.5623E+02	4.6436E+03	-3.5619E+02	4.2864E+03	-3.5613E+02	4.6436E+03	-3.5598E+02	3.5720E+03	-3.5583E+02	3.5743E+04	-2.4253E+02	1.2310E+05
3.9292E+03	-3.5661E+02	4.6436E+03	-3.5657E+02	4.2864E+03	-3.5652E+02	4.6436E+03	-3.5636E+02	3.5720E+03	-3.5622E+02	3.5743E+04	-2.4309E+02	1.2310E+05

Curve 13	Arg 14	Curve 14	Arg 15	Curve 15	Arg 16	Curve 16	Arg 17	Curve 17	Arg 18	Curve 18	Arg 19	Curve 19
3.9292E+03	-3.5699E+02	4.6436E+03	-3.5695E+02	4.2864E+03	-3.5690E+02	4.6436E+03	-3.5674E+02	3.5720E+03	-3.5660E+02	3.5743E+04	-2.4365E+02	1.2310E+05
3.9292E+03	-3.5737E+02	4.6436E+03	-3.5733E+02	4.2864E+03	-3.5728E+02	4.6436E+03	-3.5712E+02	3.5720E+03	-3.5698E+02	3.5743E+04	-2.4421E+02	1.2310E+05
3.9292E+03	-3.5775E+02	4.6436E+03	-3.5771E+02	4.2864E+03	-3.5766E+02	4.6436E+03	-3.5751E+02	3.5720E+03	-3.5736E+02	3.5743E+04	-2.4477E+02	1.2310E+05
3.9292E+03	-3.5814E+02	4.6436E+03	-3.5810E+02	4.2864E+03	-3.5804E+02	4.6436E+03	-3.5789E+02	3.5720E+03	-3.5774E+02	3.5743E+04	-2.4532E+02	1.2310E+05
3.9292E+03	-3.5852E+02	4.6436E+03	-3.5848E+02	4.2864E+03	-3.5842E+02	4.6436E+03	-3.5827E+02	3.5720E+03	-3.5812E+02	3.5743E+04	-2.4588E+02	1.2310E+05
3.9292E+03	-3.5890E+02	4.6436E+03	-3.5886E+02	4.2864E+03	-3.5880E+02	4.6436E+03	-3.5865E+02	3.5720E+03	-3.5850E+02	3.5743E+04	-2.4643E+02	1.2310E+05
3.9292E+03	-3.5928E+02	4.6436E+03	-3.5924E+02	4.2864E+03	-3.5918E+02	4.6436E+03	-3.5903E+02	3.5720E+03	-3.5888E+02	3.5743E+04	-2.4699E+02	1.2310E+05
3.9292E+03	-3.5966E+02	4.6436E+03	-3.5962E+02	4.2864E+03	-3.5956E+02	4.6436E+03	-3.5941E+02	3.5720E+03	-3.5926E+02	3.5743E+04	-2.4754E+02	1.2310E+05
3.9292E+03	-3.6003E+02	4.6436E+03	-3.5999E+02	4.2864E+03	-3.5994E+02	4.6436E+03	-3.5979E+02	3.5720E+03	-3.5964E+02	3.5743E+04	-2.4809E+02	1.2310E+05
3.9292E+03	-3.6041E+02	4.6436E+03	-3.6037E+02	4.2864E+03	-3.6032E+02	4.6436E+03	-3.6016E+02	3.5720E+03	-3.6002E+02	3.5743E+04	-2.4864E+02	1.2310E+05
3.9292E+03	-3.6079E+02	4.6436E+03	-3.6075E+02	4.2864E+03	-3.6070E+02	4.6436E+03	-3.6054E+02	3.5720E+03	-3.6040E+02	3.5743E+04	-2.4919E+02	1.2310E+05
3.9292E+03	-3.6117E+02	4.6436E+03	-3.6113E+02	4.2864E+03	-3.6108E+02	4.6436E+03	-3.6092E+02	3.5720E+03	-3.6078E+02	3.5743E+04	-2.4973E+02	1.2310E+05
3.9292E+03	-3.6155E+02	4.6436E+03	-3.6151E+02	4.2864E+03	-3.6145E+02	4.6436E+03	-3.6130E+02	3.5720E+03	-3.6116E+02	3.5743E+04	-2.5028E+02	1.2310E+05
3.9292E+03	-3.6192E+02	4.6436E+03	-3.6188E+02	4.2864E+03	-3.6183E+02	4.6436E+03	-3.6168E+02	3.5720E+03	-3.6153E+02	3.5743E+04	-2.5082E+02	1.2310E+05
3.9292E+03	-3.6230E+02	4.6436E+03	-3.6226E+02	4.2864E+03	-3.6221E+02	4.6436E+03	-3.6205E+02	3.5720E+03	-3.6191E+02	3.5743E+04	-2.5136E+02	1.2310E+05
3.9292E+03	-3.6268E+02	4.6436E+03	-3.6264E+02	4.2864E+03	-3.6258E+02	4.6436E+03	-3.6243E+02	3.5720E+03	-3.6229E+02	3.5743E+04	-2.5191E+02	1.2310E+05
3.9292E+03	-3.6305E+02	4.6436E+03	-3.6301E+02	4.2864E+03	-3.6296E+02	4.6436E+03	-3.6281E+02	3.5720E+03	-3.6266E+02	3.5743E+04	-2.5245E+02	1.2310E+05
3.9292E+03	-3.6343E+02	4.6436E+03	-3.6339E+02	4.2864E+03	-3.6333E+02	4.6436E+03	-3.6318E+02	3.5720E+03	-3.6304E+02	3.5743E+04	-2.5299E+02	1.2310E+05
3.9292E+03	-3.6380E+02	4.6436E+03	-3.6376E+02	4.2864E+03	-3.6371E+02	4.6436E+03	-3.6356E+02	3.5720E+03	-3.6342E+02	3.5743E+04	-2.5352E+02	1.2310E+05
3.9292E+03	-3.6418E+02	4.6436E+03	-3.6414E+02	4.2864E+03	-3.6408E+02	4.6436E+03	-3.6393E+02	3.5720E+03	-3.6379E+02	3.5743E+04	-2.5406E+02	1.2310E+05
3.9292E+03	-3.6455E+02	4.6436E+03	-3.6451E+02	4.2864E+03	-3.6446E+02	4.6436E+03	-3.6431E+02	3.5720E+03	-3.6416E+02	3.5743E+04	-2.5460E+02	1.2310E+05
3.9292E+03	-3.6492E+02	4.6436E+03	-3.6488E+02	4.2864E+03	-3.6483E+02	4.6436E+03	-3.6468E+02	3.5720E+03	-3.6454E+02	3.5743E+04	-2.5513E+02	1.2310E+05
3.9292E+03	-3.6530E+02	4.6436E+03	-3.6526E+02	4.2864E+03	-3.6521E+02	4.6436E+03	-3.6505E+02	3.5720E+03	-3.6491E+02	3.5743E+04	-2.5567E+02	1.2310E+05
3.9292E+03	-3.6567E+02	4.6436E+03	-3.6563E+02	4.2864E+03	-3.6558E+02	4.6436E+03	-3.6543E+02	3.5720E+03	-3.6529E+02	3.5743E+04	-2.5620E+02	1.2310E+05
3.9292E+03	-3.6604E+02	4.6436E+03	-3.6600E+02	4.2864E+03	-3.6595E+02	4.6436E+03	-3.6580E+02	3.5720E+03	-3.6566E+02	3.5743E+04	-2.5673E+02	1.2310E+05
3.9292E+03	-3.6642E+02	4.6436E+03	-3.6638E+02	4.2864E+03	-3.6632E+02	4.6436E+03	-3.6617E+02	3.5720E+03	-3.6603E+02	3.5743E+04	-2.5726E+02	1.2310E+05
3.9292E+03	-3.6679E+02	4.6436E+03	-3.6675E+02	4.2864E+03	-3.6670E+02	4.6436E+03	-3.6654E+02	3.5720E+03	-3.6640E+02	3.5743E+04	-2.5779E+02	1.2310E+05
3.9292E+03	-3.6716E+02	4.6436E+03	-3.6712E+02	4.2864E+03	-3.6707E+02	4.6436E+03	-3.6692E+02	3.5720E+03	-3.6678E+02	3.5743E+04	-2.5832E+02	1.2310E+05
3.9292E+03	-3.6753E+02	4.6436E+03	-3.6749E+02	4.2864E+03	-3.6744E+02	4.6436E+03	-3.6729E+02	3.5720E+03	-3.6715E+02	3.5743E+04	-2.5885E+02	1.2310E+05
3.9292E+03	-3.6790E+02	4.6436E+03	-3.6786E+02	4.2864E+03	-3.6781E+02	4.6436E+03	-3.6766E+02	3.5720E+03	-3.6752E+02	3.5743E+04	-2.5937E+02	1.2310E+05
3.9292E+03	-3.6827E+02	4.6436E+03	-3.6823E+02	4.2864E+03	-3.6818E+02	4.6436E+03	-3.6803E+02	3.5720E+03	-3.6789E+02	3.5743E+04	-2.5990E+02	1.2310E+05
3.9292E+03	-3.6864E+02	4.6436E+03	-3.6860E+02	4.2864E+03	-3.6855E+02	4.6436E+03	-3.6840E+02	3.5720E+03	-3.6826E+02	3.5743E+04	-2.6042E+02	1.2310E+05
3.9292E+03	-3.6901E+02	4.6436E+03	-3.6897E+02	4.2864E+03	-3.6892E+02	4.6436E+03	-3.6877E+02	3.5720E+03	-3.6863E+02	3.5743E+04	-2.6095E+02	1.2310E+05

Soil Parameters	
Kd (mL/g)	0
Moisture content	0.2
Erosion Rate (0.2 kg/sq m-yr)	0.2
Bulk Density (g/cc)	1.5
Over watering Rate (m/yr)	0.079
Affected Depth (m)	0.25
Lamda effective (1/yr)	1.580533333

Intake (mg/kg body wt./day) Soil

Flux Out (gm/yr)	No Recycle	Recycle	0.86 Concentration (gm/sq m)
8.3490E-01	1.1497E-09	8.4534E-09	1.48E-08
1.3359E+05	1.8396E-04	1.3526E-03	2.37E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03

Flux Out (gm/yr)	No Recycle	Recycle	0.86 Concentration (gm/sq m)
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03

Flux Out (gm/yr)	No Recycle	Recycle	0.86 Concentration (gm/sq m)
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03

Flux Out (gm/yr)	No Recycle	Recycle	0.86 Concentration (gm/sq m)
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03

Flux Out (gm/yr)	No Recycle	Recycle	0.86 Concentration (gm/sq m)
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
1.7291E+05	2.3810E-04	1.7507E-03	3.06E-03
2.9600E+05	4.0760E-04	2.9971E-03	5.24E-03
2.9600E+05	4.0760E-04	2.9971E-03	5.24E-03
2.9600E+05	4.0760E-04	2.9971E-03	5.24E-03
2.9600E+05	4.0760E-04	2.9971E-03	5.24E-03
2.9600E+05	4.0760E-04	2.9971E-03	5.24E-03
2.9600E+05	4.0760E-04	2.9971E-03	5.24E-03
2.9600E+05	4.0760E-04	2.9971E-03	5.24E-03
2.9600E+05	4.0760E-04	2.9971E-03	5.24E-03
2.9600E+05	4.0760E-04	2.9971E-03	5.24E-03

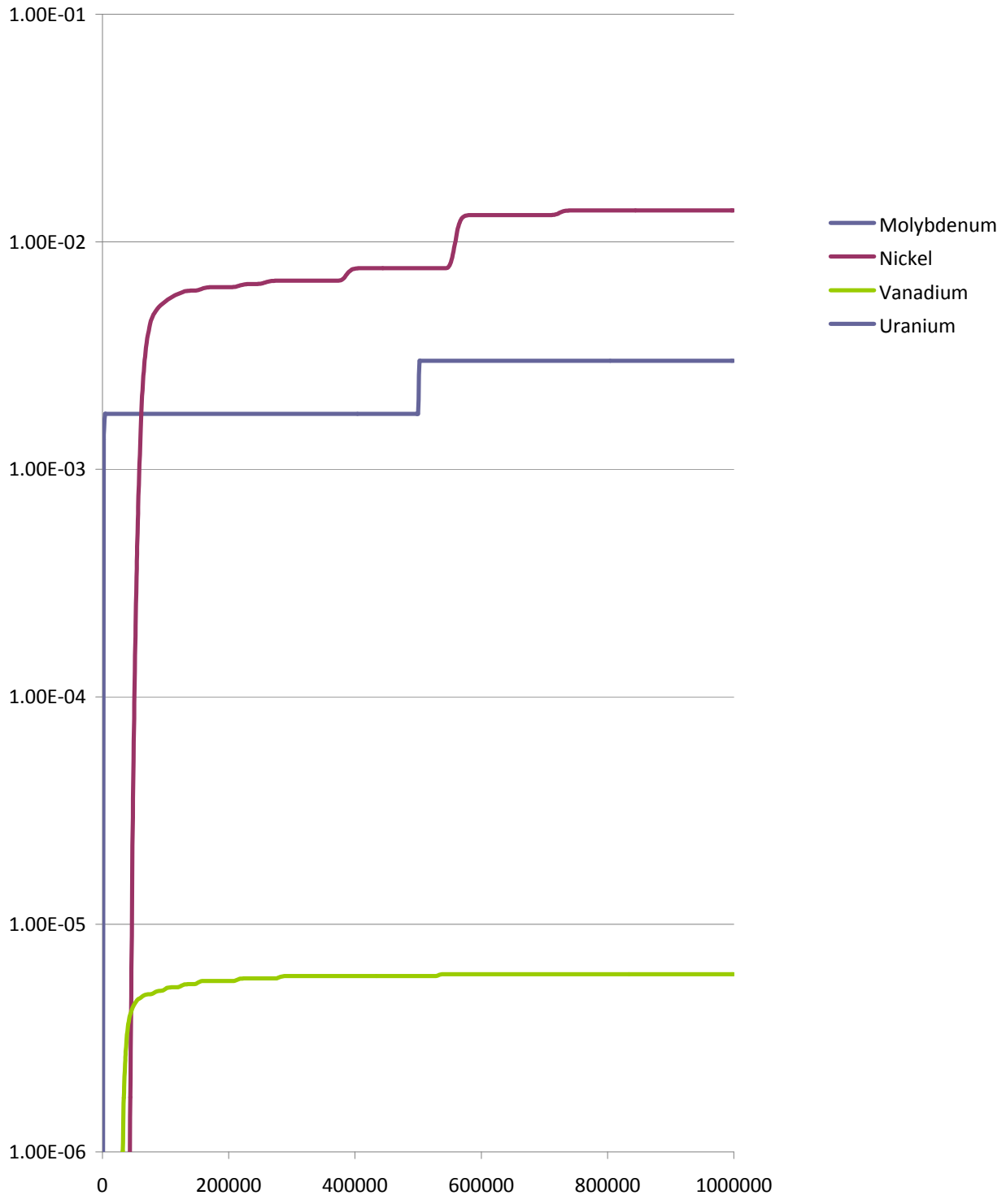
Flux Out (gm/yr)	No Recycle	Recycle	0.86 Concentration (gm/sq m)
2.9600E+05	4.0760E-04	2.9971E-03	5.24E-03

Flux Out (gm/yr)	No Recycle	Recycle	0.86 Concentration (gm/sq m)
2.9600E+05	4.0760E-04	2.9971E-03	5.24E-03

Flux Out (gm/yr)	No Recycle	Recycle	0.86 Concentration (gm/sq m)
2.9600E+05	4.0760E-04	2.9971E-03	5.24E-03

Flux Out (gm/yr)	No Recycle	Recycle	0.86 Concentration (gm/sq m)
2.9600E+05	4.0760E-04	2.9971E-03	5.24E-03

Flux Out (gm/yr)	No Recycle	Recycle	0.86 Concentration (gm/sq m)
2.9600E+05	4.0760E-04	2.9971E-03	5.24E-03
2.9600E+05	4.0760E-04	2.9971E-03	5.24E-03
2.9600E+05	4.0760E-04	2.9971E-03	5.24E-03
2.9600E+05	4.0760E-04	2.9971E-03	5.24E-03
2.9600E+05	4.0760E-04	2.9971E-03	5.24E-03
2.9600E+05	4.0760E-04	2.9971E-03	5.24E-03
2.9600E+05	4.0760E-04	2.9971E-03	5.24E-03
2.9600E+05	4.0760E-04	2.9971E-03	5.24E-03
2.9600E+05	4.0760E-04	2.9971E-03	5.24E-03
2.9600E+05	4.0760E-04	2.9971E-03	5.24E-03
2.9600E+05	4.0760E-04	2.9971E-03	5.24E-03
2.9600E+05	4.0760E-04	2.9971E-03	5.24E-03
2.9600E+05	4.0760E-04	2.9971E-03	5.24E-03
2.9600E+05	4.0760E-04	2.9971E-03	5.24E-03
2.9600E+05	4.0760E-04	2.9971E-03	5.24E-03
2.9600E+05	4.0760E-04	2.9971E-03	5.24E-03
2.9600E+05	4.0760E-04	2.9971E-03	5.24E-03
2.9600E+05	4.0760E-04	2.9971E-03	5.24E-03
2.9600E+05	4.0760E-04	2.9971E-03	5.24E-03
2.9600E+05	4.0760E-04	2.9971E-03	5.24E-03
2.9600E+05	4.0760E-04	2.9971E-03	5.24E-03
2.9600E+05	4.0760E-04	2.9971E-03	5.24E-03
2.9600E+05	4.0760E-04	2.9971E-03	5.24E-03
2.9600E+05	4.0760E-04	2.9971E-03	5.24E-03
2.9600E+05	4.0760E-04	2.9971E-03	5.24E-03
2.9600E+05	4.0760E-04	2.9971E-03	5.24E-03
2.9600E+05	4.0760E-04	2.9971E-03	5.24E-03
2.9600E+05	4.0760E-04	2.9971E-03	5.24E-03
2.9600E+05	4.0760E-04	2.9971E-03	5.24E-03
2.9600E+05	4.0760E-04	2.9971E-03	5.24E-03
2.9600E+05	4.0760E-04	2.9971E-03	5.24E-03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Molybdenum
Nickel
Vanadium
Uranium

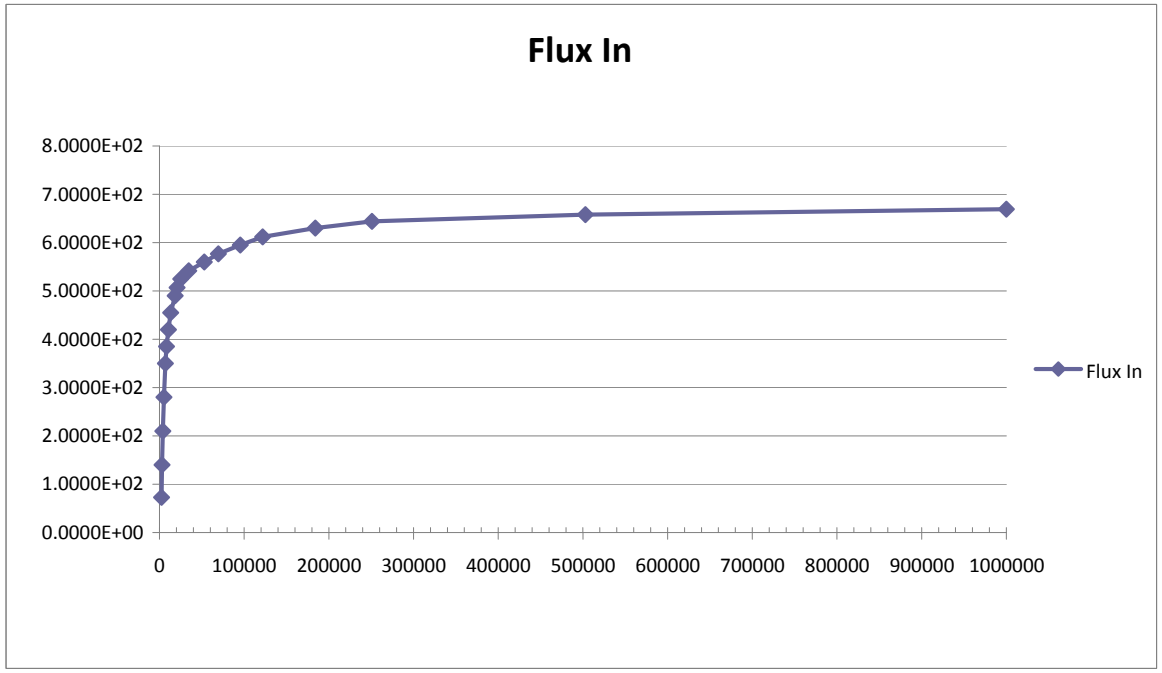
Combined TSPA Case, No Pumping, Present Climate
Non-Radiologic Metals Transport from 18 km to Furnace Creek Springs

specific discharge (m/day)=	4.61E-04		
path length (km)	5.6000E+01		
Fraction of 18 km flux diverted to this path	1		
Flow Rate of Discharge for Springs	2294	acre-ft/yr	DIRS 173179-Belcher 2004, p. 109 (Table C-2)

Combined TSPA Case, No Pumping, Present Climate
Non-Radiologic Metals Transport from 18 km to Furnace Creek Springs
Contaminant: Vanadium
Oral Ref dose =7E-03 mg/kg body wt./day
Flow Rate of Discharge for Springs 2294 acre-ft/yr 2828502000 liters/yr

Input Curve

Time (yr)	18 km Flux	Flux In	Del R
2400	7.2800E+01	7.2800E+01	
3010	1.4000E+02	1.4000E+02	6.7200E+01
4040	2.1000E+02	2.1000E+02	7.0000E+01
5270	2.8000E+02	2.8000E+02	7.0000E+01
6940	3.5000E+02	3.5000E+02	7.0000E+01
8290	3.8500E+02	3.8500E+02	3.5000E+01
10630	4.2000E+02	4.2000E+02	3.5000E+01
13210	4.5500E+02	4.5500E+02	3.5000E+01
18470	4.9000E+02	4.9000E+02	3.5000E+01
20860	5.0680E+02	5.0680E+02	1.6800E+01
25180	5.2500E+02	5.2500E+02	1.8200E+01
34520	5.4180E+02	5.4180E+02	1.6800E+01
52880	5.6000E+02	5.6000E+02	1.8200E+01
69550	5.7680E+02	5.7680E+02	1.6800E+01
95350	5.9500E+02	5.9500E+02	1.8200E+01
121790	6.1180E+02	6.1180E+02	1.6800E+01
183930	6.3000E+02	6.3000E+02	1.8200E+01
250910	6.4400E+02	6.4400E+02	1.4000E+01
503020	6.5800E+02	6.5800E+02	1.4000E+01
1000000	6.6920E+02	6.6920E+02	1.1200E+01



Output Curve

4.61E-04		specific discharge (m/day)
1.5297E-03	v	groundwater velocity (km/yr)
5.6000E+01	L	path length (km)
1.0000E-01	D	Dispersion Coefficient (km)
1.5297E-04	Disp	Dispersivity (sq km/yr)
1.6973E+02	K	Retardation Factor (no units)
6.2135E+06	td	arrival time of the mid-point =TL (yr)
8.0000E+00	Kd	distribution coefficient =Kd (mL/gm)
1.1000E-01	ε	porosity
2.3200E+00	ρ	bulk density of solid (gm/mL)
0.0000E+00	λ	decay constant (1/yr)
NA	t1/2	halflife (yr)

Note: When λ is set to zero this is either a stable contaminant or a member of a decay chain. Decay and growth of radionuclides in decay chain members is adjusted in a separate work sheet.

Composite Curves

Time (yrs)	Arg 1	Curve 1	Arg 2	Curve 2	Arg 3	Curve 3	Arg 4	Curve 4	Arg 5	Curve 5	Arg 6
250	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
2000	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
4000	7.3716E+02	0.0000E+00	9.3723E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
6000	4.9128E+02	0.0000E+00	5.3912E+02	0.0000E+00	6.6599E+02	0.0000E+00	1.0915E+03	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
8000	3.9377E+02	0.0000E+00	4.1719E+02	0.0000E+00	4.6839E+02	0.0000E+00	5.6424E+02	0.0000E+00	9.0575E+02	0.0000E+00	0.0000E+00
10000	3.3791E+02	0.0000E+00	3.5238E+02	0.0000E+00	3.8167E+02	0.0000E+00	4.2852E+02	0.0000E+00	5.3292E+02	0.0000E+00	7.1304E+02
12000	3.0056E+02	0.0000E+00	3.1062E+02	0.0000E+00	3.3016E+02	0.0000E+00	3.5913E+02	0.0000E+00	4.1429E+02	0.0000E+00	4.8393E+02
14000	2.7333E+02	0.0000E+00	2.8084E+02	0.0000E+00	2.9506E+02	0.0000E+00	3.1522E+02	0.0000E+00	3.5062E+02	0.0000E+00	3.8996E+02
16000	2.5236E+02	0.0000E+00	2.5824E+02	0.0000E+00	2.6917E+02	0.0000E+00	2.8424E+02	0.0000E+00	3.0941E+02	0.0000E+00	3.3548E+02
18000	2.3555E+02	0.0000E+00	2.4032E+02	0.0000E+00	2.4907E+02	0.0000E+00	2.6087E+02	0.0000E+00	2.7995E+02	0.0000E+00	2.9884E+02
20000	2.2169E+02	0.0000E+00	2.2566E+02	0.0000E+00	2.3286E+02	0.0000E+00	2.4244E+02	0.0000E+00	2.5754E+02	0.0000E+00	2.7204E+02
22000	2.1001E+02	0.0000E+00	2.1337E+02	0.0000E+00	2.1944E+02	0.0000E+00	2.2741E+02	0.0000E+00	2.3975E+02	0.0000E+00	2.5134E+02
24000	1.9998E+02	0.0000E+00	2.0289E+02	0.0000E+00	2.0809E+02	0.0000E+00	2.1486E+02	0.0000E+00	2.2519E+02	0.0000E+00	2.3472E+02
26000	1.9126E+02	0.0000E+00	1.9380E+02	0.0000E+00	1.9833E+02	0.0000E+00	2.0417E+02	0.0000E+00	2.1298E+02	0.0000E+00	2.2100E+02
28000	1.8358E+02	0.0000E+00	1.8582E+02	0.0000E+00	1.8981E+02	0.0000E+00	1.9491E+02	0.0000E+00	2.0255E+02	0.0000E+00	2.0942E+02
30000	1.7674E+02	0.0000E+00	1.7875E+02	0.0000E+00	1.8229E+02	0.0000E+00	1.8681E+02	0.0000E+00	1.9350E+02	0.0000E+00	1.9947E+02
32000	1.7061E+02	0.0000E+00	1.7242E+02	0.0000E+00	1.7559E+02	0.0000E+00	1.7962E+02	0.0000E+00	1.8556E+02	0.0000E+00	1.9081E+02
34000	1.6507E+02	0.0000E+00	1.6671E+02	0.0000E+00	1.6958E+02	0.0000E+00	1.7320E+02	0.0000E+00	1.7851E+02	0.0000E+00	1.8318E+02
36000	1.6003E+02	0.0000E+00	1.6152E+02	0.0000E+00	1.6413E+02	0.0000E+00	1.6742E+02	0.0000E+00	1.7221E+02	0.0000E+00	1.7639E+02
38000	1.5542E+02	0.0000E+00	1.5679E+02	0.0000E+00	1.5917E+02	0.0000E+00	1.6217E+02	0.0000E+00	1.6652E+02	0.0000E+00	1.7029E+02
40000	1.5118E+02	0.0000E+00	1.5244E+02	0.0000E+00	1.5463E+02	0.0000E+00	1.5738E+02	0.0000E+00	1.6135E+02	0.0000E+00	1.6478E+02
42000	1.4727E+02	0.0000E+00	1.4843E+02	0.0000E+00	1.5046E+02	0.0000E+00	1.5298E+02	0.0000E+00	1.5663E+02	0.0000E+00	1.5977E+02
44000	1.4364E+02	0.0000E+00	1.4472E+02	0.0000E+00	1.4659E+02	0.0000E+00	1.4893E+02	0.0000E+00	1.5229E+02	0.0000E+00	1.5518E+02
46000	1.4026E+02	0.0000E+00	1.4126E+02	0.0000E+00	1.4301E+02	0.0000E+00	1.4518E+02	0.0000E+00	1.4830E+02	0.0000E+00	1.5096E+02
48000	1.3710E+02	0.0000E+00	1.3804E+02	0.0000E+00	1.3968E+02	0.0000E+00	1.4170E+02	0.0000E+00	1.4459E+02	0.0000E+00	1.4706E+02
50000	1.3415E+02	0.0000E+00	1.3503E+02	0.0000E+00	1.3656E+02	0.0000E+00	1.3845E+02	0.0000E+00	1.4115E+02	0.0000E+00	1.4345E+02
52000	1.3137E+02	0.0000E+00	1.3220E+02	0.0000E+00	1.3364E+02	0.0000E+00	1.3541E+02	0.0000E+00	1.3794E+02	0.0000E+00	1.4008E+02
54000	1.2876E+02	0.0000E+00	1.2954E+02	0.0000E+00	1.3089E+02	0.0000E+00	1.3256E+02	0.0000E+00	1.3493E+02	0.0000E+00	1.3694E+02
56000	1.2630E+02	0.0000E+00	1.2703E+02	0.0000E+00	1.2831E+02	0.0000E+00	1.2988E+02	0.0000E+00	1.3211E+02	0.0000E+00	1.3399E+02
58000	1.2396E+02	0.0000E+00	1.2466E+02	0.0000E+00	1.2587E+02	0.0000E+00	1.2735E+02	0.0000E+00	1.2945E+02	0.0000E+00	1.3123E+02
60000	1.2175E+02	0.0000E+00	1.2241E+02	0.0000E+00	1.2356E+02	0.0000E+00	1.2496E+02	0.0000E+00	1.2695E+02	0.0000E+00	1.2862E+02
62000	1.1965E+02	0.0000E+00	1.2028E+02	0.0000E+00	1.2137E+02	0.0000E+00	1.2270E+02	0.0000E+00	1.2458E+02	0.0000E+00	1.2616E+02
64000	1.1766E+02	0.0000E+00	1.1826E+02	0.0000E+00	1.1929E+02	0.0000E+00	1.2055E+02	0.0000E+00	1.2234E+02	0.0000E+00	1.2384E+02
66000	1.1575E+02	0.0000E+00	1.1632E+02	0.0000E+00	1.1731E+02	0.0000E+00	1.1851E+02	0.0000E+00	1.2021E+02	0.0000E+00	1.2163E+02
68000	1.1394E+02	0.0000E+00	1.1448E+02	0.0000E+00	1.1542E+02	0.0000E+00	1.1657E+02	0.0000E+00	1.1819E+02	0.0000E+00	1.1954E+02
70000	1.1220E+02	0.0000E+00	1.1273E+02	0.0000E+00	1.1362E+02	0.0000E+00	1.1472E+02	0.0000E+00	1.1626E+02	0.0000E+00	1.1755E+02
72000	1.1054E+02	0.0000E+00	1.1104E+02	0.0000E+00	1.1190E+02	0.0000E+00	1.1295E+02	0.0000E+00	1.1442E+02	0.0000E+00	1.1565E+02
74000	1.0895E+02	0.0000E+00	1.0943E+02	0.0000E+00	1.1025E+02	0.0000E+00	1.1126E+02	0.0000E+00	1.1266E+02	0.0000E+00	1.1384E+02
76000	1.0743E+02	0.0000E+00	1.0789E+02	0.0000E+00	1.0867E+02	0.0000E+00	1.0964E+02	0.0000E+00	1.1099E+02	0.0000E+00	1.1211E+02
78000	1.0596E+02	0.0000E+00	1.0640E+02	0.0000E+00	1.0716E+02	0.0000E+00	1.0808E+02	0.0000E+00	1.0938E+02	0.0000E+00	1.1046E+02
80000	1.0455E+02	0.0000E+00	1.0498E+02	0.0000E+00	1.0571E+02	0.0000E+00	1.0659E+02	0.0000E+00	1.0783E+02	0.0000E+00	1.0887E+02
82000	1.0320E+02	0.0000E+00	1.0361E+02	0.0000E+00	1.0431E+02	0.0000E+00	1.0516E+02	0.0000E+00	1.0635E+02	0.0000E+00	1.0735E+02
84000	1.0189E+02	0.0000E+00	1.0229E+02	0.0000E+00	1.0296E+02	0.0000E+00	1.0378E+02	0.0000E+00	1.0493E+02	0.0000E+00	1.0588E+02
86000	1.0063E+02	0.0000E+00	1.0101E+02	0.0000E+00	1.0166E+02	0.0000E+00	1.0246E+02	0.0000E+00	1.0356E+02	0.0000E+00	1.0448E+02
88000	9.9420E+01	0.0000E+00	9.9786E+01	0.0000E+00	1.0041E+02	0.0000E+00	1.0118E+02	0.0000E+00	1.0224E+02	0.0000E+00	1.0313E+02
90000	9.8246E+01	0.0000E+00	9.8600E+01	0.0000E+00	9.9205E+01	0.0000E+00	9.9943E+01	0.0000E+00	1.0097E+02	0.0000E+00	1.0182E+02
92000	9.7112E+01	0.0000E+00	9.7454E+01	0.0000E+00	9.8039E+01	0.0000E+00	9.8752E+01	0.0000E+00	9.9743E+01	0.0000E+00	1.0057E+02
94000	9.6014E+01	0.0000E+00	9.6345E+01	0.0000E+00	9.6911E+01	0.0000E+00	9.7600E+01	0.0000E+00	9.8559E+01	0.0000E+00	9.9354E+01
96000	9.4952E+01	0.0000E+00	9.5272E+01	0.0000E+00	9.5820E+01	0.0000E+00	9.6487E+01	0.0000E+00	9.7414E+01	0.0000E+00	9.8183E+01
98000	9.3923E+01	0.0000E+00	9.4233E+01	0.0000E+00	9.4764E+01	0.0000E+00	9.5410E+01	0.0000E+00	9.6307E+01	0.0000E+00	9.7050E+01
100000	9.2925E+01	0.0000E+00	9.3226E+01	0.0000E+00	9.3741E+01	0.0000E+00	9.4366E+01	0.0000E+00	9.5235E+01	0.0000E+00	9.5955E+01
102000	9.1957E+01	0.0000E+00	9.2249E+01	0.0000E+00	9.2749E+01	0.0000E+00	9.3355E+01	0.0000E+00	9.4197E+01	0.0000E+00	9.4894E+01

Time (yrs)	Arg 1	Curve 1	Arg 2	Curve 2	Arg 3	Curve 3	Arg 4	Curve 4	Arg 5	Curve 5	Arg 6
104000	9.1018E+01	0.0000E+00	9.1301E+01	0.0000E+00	9.1786E+01	0.0000E+00	9.2375E+01	0.0000E+00	9.3191E+01	0.0000E+00	9.3867E+01
106000	9.0105E+01	0.0000E+00	9.0381E+01	0.0000E+00	9.0852E+01	0.0000E+00	9.1423E+01	0.0000E+00	9.2216E+01	0.0000E+00	9.2871E+01
108000	8.9219E+01	0.0000E+00	8.9487E+01	0.0000E+00	8.9944E+01	0.0000E+00	9.0499E+01	0.0000E+00	9.1269E+01	0.0000E+00	9.1905E+01
110000	8.8357E+01	0.0000E+00	8.8617E+01	0.0000E+00	8.9062E+01	0.0000E+00	8.9601E+01	0.0000E+00	9.0349E+01	0.0000E+00	9.0967E+01
112000	8.7518E+01	0.0000E+00	8.7772E+01	0.0000E+00	8.8204E+01	0.0000E+00	8.8729E+01	0.0000E+00	8.9456E+01	0.0000E+00	9.0056E+01
114000	8.6702E+01	0.0000E+00	8.6949E+01	0.0000E+00	8.7370E+01	0.0000E+00	8.7880E+01	0.0000E+00	8.8587E+01	0.0000E+00	8.9171E+01
116000	8.5907E+01	0.0000E+00	8.6148E+01	0.0000E+00	8.6558E+01	0.0000E+00	8.7055E+01	0.0000E+00	8.7743E+01	0.0000E+00	8.8310E+01
118000	8.5133E+01	0.0000E+00	8.5367E+01	0.0000E+00	8.5767E+01	0.0000E+00	8.6251E+01	0.0000E+00	8.6920E+01	0.0000E+00	8.7473E+01
120000	8.4378E+01	0.0000E+00	8.4607E+01	0.0000E+00	8.4996E+01	0.0000E+00	8.5467E+01	0.0000E+00	8.6120E+01	0.0000E+00	8.6658E+01
122000	8.3642E+01	0.0000E+00	8.3865E+01	0.0000E+00	8.4245E+01	0.0000E+00	8.4704E+01	0.0000E+00	8.5340E+01	0.0000E+00	8.5864E+01
124000	8.2925E+01	0.0000E+00	8.3142E+01	0.0000E+00	8.3512E+01	0.0000E+00	8.3960E+01	0.0000E+00	8.4580E+01	0.0000E+00	8.5091E+01
126000	8.2224E+01	0.0000E+00	8.2436E+01	0.0000E+00	8.2797E+01	0.0000E+00	8.3235E+01	0.0000E+00	8.3839E+01	0.0000E+00	8.4337E+01
128000	8.1540E+01	0.0000E+00	8.1747E+01	0.0000E+00	8.2100E+01	0.0000E+00	8.2527E+01	0.0000E+00	8.3117E+01	0.0000E+00	8.3603E+01
130000	8.0872E+01	0.0000E+00	8.1074E+01	0.0000E+00	8.1418E+01	0.0000E+00	8.1835E+01	0.0000E+00	8.2411E+01	0.0000E+00	8.2886E+01
132000	8.0219E+01	0.0000E+00	8.0416E+01	0.0000E+00	8.0753E+01	0.0000E+00	8.1160E+01	0.0000E+00	8.1723E+01	0.0000E+00	8.2186E+01
134000	7.9581E+01	0.0000E+00	7.9774E+01	0.0000E+00	8.0103E+01	0.0000E+00	8.0501E+01	0.0000E+00	8.1051E+01	0.0000E+00	8.1503E+01
136000	7.8957E+01	0.0000E+00	7.9146E+01	0.0000E+00	7.9467E+01	0.0000E+00	7.9857E+01	0.0000E+00	8.0394E+01	0.0000E+00	8.0835E+01
138000	7.8347E+01	0.0000E+00	7.8531E+01	0.0000E+00	7.8846E+01	0.0000E+00	7.9227E+01	0.0000E+00	7.9752E+01	0.0000E+00	8.0183E+01
140000	7.7750E+01	0.0000E+00	7.7930E+01	0.0000E+00	7.8238E+01	0.0000E+00	7.8611E+01	0.0000E+00	7.9124E+01	0.0000E+00	7.9546E+01
142000	7.7165E+01	0.0000E+00	7.7342E+01	0.0000E+00	7.7644E+01	0.0000E+00	7.8008E+01	0.0000E+00	7.8510E+01	0.0000E+00	7.8923E+01
144000	7.6593E+01	0.0000E+00	7.6766E+01	0.0000E+00	7.7061E+01	0.0000E+00	7.7418E+01	0.0000E+00	7.7910E+01	0.0000E+00	7.8314E+01
146000	7.6033E+01	0.0000E+00	7.6203E+01	0.0000E+00	7.6491E+01	0.0000E+00	7.6841E+01	0.0000E+00	7.7322E+01	0.0000E+00	7.7717E+01
148000	7.5484E+01	0.0000E+00	7.5650E+01	0.0000E+00	7.5933E+01	0.0000E+00	7.6275E+01	0.0000E+00	7.6746E+01	0.0000E+00	7.7134E+01
150000	7.4946E+01	0.0000E+00	7.5109E+01	0.0000E+00	7.5386E+01	0.0000E+00	7.5721E+01	0.0000E+00	7.6183E+01	0.0000E+00	7.6562E+01
152000	7.4419E+01	0.0000E+00	7.4579E+01	0.0000E+00	7.4850E+01	0.0000E+00	7.5179E+01	0.0000E+00	7.5631E+01	0.0000E+00	7.6002E+01
154000	7.3902E+01	0.0000E+00	7.4059E+01	0.0000E+00	7.4325E+01	0.0000E+00	7.4647E+01	0.0000E+00	7.5090E+01	0.0000E+00	7.5454E+01
156000	7.3395E+01	0.0000E+00	7.3549E+01	0.0000E+00	7.3810E+01	0.0000E+00	7.4126E+01	0.0000E+00	7.4560E+01	0.0000E+00	7.4917E+01
158000	7.2898E+01	0.0000E+00	7.3048E+01	0.0000E+00	7.3305E+01	0.0000E+00	7.3614E+01	0.0000E+00	7.4041E+01	0.0000E+00	7.4390E+01
160000	7.2410E+01	0.0000E+00	7.2558E+01	0.0000E+00	7.2809E+01	0.0000E+00	7.3113E+01	0.0000E+00	7.3531E+01	0.0000E+00	7.3874E+01
162000	7.1931E+01	0.0000E+00	7.2076E+01	0.0000E+00	7.2323E+01	0.0000E+00	7.2621E+01	0.0000E+00	7.3031E+01	0.0000E+00	7.3367E+01
164000	7.1461E+01	0.0000E+00	7.1603E+01	0.0000E+00	7.1846E+01	0.0000E+00	7.2138E+01	0.0000E+00	7.2541E+01	0.0000E+00	7.2871E+01
166000	7.0999E+01	0.0000E+00	7.1139E+01	0.0000E+00	7.1377E+01	0.0000E+00	7.1664E+01	0.0000E+00	7.2059E+01	0.0000E+00	7.2383E+01
168000	7.0546E+01	0.0000E+00	7.0683E+01	0.0000E+00	7.0917E+01	0.0000E+00	7.1199E+01	0.0000E+00	7.1587E+01	0.0000E+00	7.1905E+01
170000	7.0100E+01	0.0000E+00	7.0235E+01	0.0000E+00	7.0465E+01	0.0000E+00	7.0742E+01	0.0000E+00	7.1123E+01	0.0000E+00	7.1435E+01
172000	6.9663E+01	0.0000E+00	6.9796E+01	0.0000E+00	7.0021E+01	0.0000E+00	7.0293E+01	0.0000E+00	7.0667E+01	0.0000E+00	7.0974E+01
174000	6.9233E+01	0.0000E+00	6.9363E+01	0.0000E+00	6.9585E+01	0.0000E+00	6.9852E+01	0.0000E+00	7.0220E+01	0.0000E+00	7.0521E+01
176000	6.8810E+01	0.0000E+00	6.8938E+01	0.0000E+00	6.9156E+01	0.0000E+00	6.9419E+01	0.0000E+00	6.9780E+01	0.0000E+00	7.0076E+01
178000	6.8394E+01	0.0000E+00	6.8520E+01	0.0000E+00	6.8735E+01	0.0000E+00	6.8993E+01	0.0000E+00	6.9348E+01	0.0000E+00	6.9639E+01
180000	6.7986E+01	0.0000E+00	6.8110E+01	0.0000E+00	6.8320E+01	0.0000E+00	6.8574E+01	0.0000E+00	6.8923E+01	0.0000E+00	6.9209E+01
182000	6.7584E+01	0.0000E+00	6.7706E+01	0.0000E+00	6.7913E+01	0.0000E+00	6.8163E+01	0.0000E+00	6.8506E+01	0.0000E+00	6.8787E+01
184000	6.7188E+01	0.0000E+00	6.7308E+01	0.0000E+00	6.7512E+01	0.0000E+00	6.7758E+01	0.0000E+00	6.8095E+01	0.0000E+00	6.8372E+01
186000	6.6799E+01	0.0000E+00	6.6917E+01	0.0000E+00	6.7118E+01	0.0000E+00	6.7359E+01	0.0000E+00	6.7692E+01	0.0000E+00	6.7963E+01
188000	6.6416E+01	0.0000E+00	6.6532E+01	0.0000E+00	6.6730E+01	0.0000E+00	6.6968E+01	0.0000E+00	6.7294E+01	0.0000E+00	6.7562E+01
190000	6.6039E+01	0.0000E+00	6.6154E+01	0.0000E+00	6.6348E+01	0.0000E+00	6.6582E+01	0.0000E+00	6.6904E+01	0.0000E+00	6.7167E+01
192000	6.5668E+01	0.0000E+00	6.5781E+01	0.0000E+00	6.5972E+01	0.0000E+00	6.6203E+01	0.0000E+00	6.6519E+01	0.0000E+00	6.6778E+01
194000	6.5303E+01	0.0000E+00	6.5414E+01	0.0000E+00	6.5602E+01	0.0000E+00	6.5829E+01	0.0000E+00	6.6140E+01	0.0000E+00	6.6395E+01
196000	6.4943E+01	0.0000E+00	6.5052E+01	0.0000E+00	6.5238E+01	0.0000E+00	6.5461E+01	0.0000E+00	6.5768E+01	0.0000E+00	6.6019E+01
198000	6.4589E+01	0.0000E+00	6.4696E+01	0.0000E+00	6.4879E+01	0.0000E+00	6.5099E+01	0.0000E+00	6.5401E+01	0.0000E+00	6.5648E+01
200000	6.4240E+01	0.0000E+00	6.4346E+01	0.0000E+00	6.4526E+01	0.0000E+00	6.4742E+01	0.0000E+00	6.5040E+01	0.0000E+00	6.5283E+01
202000	6.3896E+01	0.0000E+00	6.4000E+01	0.0000E+00	6.4178E+01	0.0000E+00	6.4391E+01	0.0000E+00	6.4684E+01	0.0000E+00	6.4924E+01
204000	6.3557E+01	0.0000E+00	6.3660E+01	0.0000E+00	6.3835E+01	0.0000E+00	6.4045E+01	0.0000E+00	6.4334E+01	0.0000E+00	6.4570E+01
206000	6.3223E+01	0.0000E+00	6.3324E+01	0.0000E+00	6.3497E+01	0.0000E+00	6.3704E+01	0.0000E+00	6.3988E+01	0.0000E+00	6.4221E+01

Time (yrs)	Arg 1	Curve 1	Arg 2	Curve 2	Arg 3	Curve 3	Arg 4	Curve 4	Arg 5	Curve 5	Arg 6
208000	6.2894E+01	0.0000E+00	6.2994E+01	0.0000E+00	6.3163E+01	0.0000E+00	6.3368E+01	0.0000E+00	6.3648E+01	0.0000E+00	6.3877E+01
210000	6.2569E+01	0.0000E+00	6.2668E+01	0.0000E+00	6.2835E+01	0.0000E+00	6.3036E+01	0.0000E+00	6.3313E+01	0.0000E+00	6.3539E+01
212000	6.2249E+01	0.0000E+00	6.2346E+01	0.0000E+00	6.2511E+01	0.0000E+00	6.2710E+01	0.0000E+00	6.2982E+01	0.0000E+00	6.3205E+01
214000	6.1934E+01	0.0000E+00	6.2030E+01	0.0000E+00	6.2192E+01	0.0000E+00	6.2388E+01	0.0000E+00	6.2656E+01	0.0000E+00	6.2876E+01
216000	6.1623E+01	0.0000E+00	6.1717E+01	0.0000E+00	6.1878E+01	0.0000E+00	6.2071E+01	0.0000E+00	6.2335E+01	0.0000E+00	6.2552E+01
218000	6.1316E+01	0.0000E+00	6.1409E+01	0.0000E+00	6.1567E+01	0.0000E+00	6.1757E+01	0.0000E+00	6.2019E+01	0.0000E+00	6.2232E+01
220000	6.1013E+01	0.0000E+00	6.1105E+01	0.0000E+00	6.1261E+01	0.0000E+00	6.1449E+01	0.0000E+00	6.1706E+01	0.0000E+00	6.1917E+01
222000	6.0714E+01	0.0000E+00	6.0805E+01	0.0000E+00	6.0959E+01	0.0000E+00	6.1144E+01	0.0000E+00	6.1398E+01	0.0000E+00	6.1606E+01
224000	6.0419E+01	0.0000E+00	6.0509E+01	0.0000E+00	6.0661E+01	0.0000E+00	6.0844E+01	0.0000E+00	6.1094E+01	0.0000E+00	6.1299E+01
226000	6.0129E+01	0.0000E+00	6.0217E+01	0.0000E+00	6.0367E+01	0.0000E+00	6.0547E+01	0.0000E+00	6.0794E+01	0.0000E+00	6.0996E+01
228000	5.9841E+01	0.0000E+00	5.9929E+01	0.0000E+00	6.0077E+01	0.0000E+00	6.0255E+01	0.0000E+00	6.0499E+01	0.0000E+00	6.0698E+01
230000	5.9558E+01	0.0000E+00	5.9644E+01	0.0000E+00	5.9790E+01	0.0000E+00	5.9966E+01	0.0000E+00	6.0207E+01	0.0000E+00	6.0403E+01
232000	5.9278E+01	0.0000E+00	5.9363E+01	0.0000E+00	5.9507E+01	0.0000E+00	5.9681E+01	0.0000E+00	5.9919E+01	0.0000E+00	6.0113E+01
234000	5.9002E+01	0.0000E+00	5.9086E+01	0.0000E+00	5.9228E+01	0.0000E+00	5.9400E+01	0.0000E+00	5.9634E+01	0.0000E+00	5.9826E+01
236000	5.8729E+01	0.0000E+00	5.8812E+01	0.0000E+00	5.8953E+01	0.0000E+00	5.9122E+01	0.0000E+00	5.9353E+01	0.0000E+00	5.9543E+01
238000	5.8460E+01	0.0000E+00	5.8542E+01	0.0000E+00	5.8681E+01	0.0000E+00	5.8847E+01	0.0000E+00	5.9076E+01	0.0000E+00	5.9263E+01
240000	5.8194E+01	0.0000E+00	5.8275E+01	0.0000E+00	5.8412E+01	0.0000E+00	5.8577E+01	0.0000E+00	5.8803E+01	0.0000E+00	5.8987E+01
242000	5.7931E+01	0.0000E+00	5.8011E+01	0.0000E+00	5.8146E+01	0.0000E+00	5.8309E+01	0.0000E+00	5.8532E+01	0.0000E+00	5.8714E+01
244000	5.7671E+01	0.0000E+00	5.7750E+01	0.0000E+00	5.7884E+01	0.0000E+00	5.8045E+01	0.0000E+00	5.8265E+01	0.0000E+00	5.8445E+01
246000	5.7415E+01	0.0000E+00	5.7493E+01	0.0000E+00	5.7625E+01	0.0000E+00	5.7784E+01	0.0000E+00	5.8002E+01	0.0000E+00	5.8179E+01
248000	5.7162E+01	0.0000E+00	5.7239E+01	0.0000E+00	5.7369E+01	0.0000E+00	5.7526E+01	0.0000E+00	5.7741E+01	0.0000E+00	5.7917E+01
250000	5.6911E+01	0.0000E+00	5.6987E+01	0.0000E+00	5.7116E+01	0.0000E+00	5.7271E+01	0.0000E+00	5.7484E+01	0.0000E+00	5.7657E+01
252000	5.6664E+01	0.0000E+00	5.6739E+01	0.0000E+00	5.6866E+01	0.0000E+00	5.7020E+01	0.0000E+00	5.7230E+01	0.0000E+00	5.7401E+01
254000	5.6419E+01	0.0000E+00	5.6493E+01	0.0000E+00	5.6619E+01	0.0000E+00	5.6771E+01	0.0000E+00	5.6979E+01	0.0000E+00	5.7148E+01
256000	5.6177E+01	0.0000E+00	5.6251E+01	0.0000E+00	5.6375E+01	0.0000E+00	5.6525E+01	0.0000E+00	5.6730E+01	0.0000E+00	5.6898E+01
258000	5.5938E+01	0.0000E+00	5.6011E+01	0.0000E+00	5.6134E+01	0.0000E+00	5.6282E+01	0.0000E+00	5.6485E+01	0.0000E+00	5.6650E+01
260000	5.5702E+01	0.0000E+00	5.5774E+01	0.0000E+00	5.5896E+01	0.0000E+00	5.6042E+01	0.0000E+00	5.6242E+01	0.0000E+00	5.6406E+01
262000	5.5468E+01	0.0000E+00	5.5539E+01	0.0000E+00	5.5660E+01	0.0000E+00	5.5805E+01	0.0000E+00	5.6003E+01	0.0000E+00	5.6164E+01
264000	5.5237E+01	0.0000E+00	5.5308E+01	0.0000E+00	5.5427E+01	0.0000E+00	5.5570E+01	0.0000E+00	5.5766E+01	0.0000E+00	5.5925E+01
266000	5.5009E+01	0.0000E+00	5.5078E+01	0.0000E+00	5.5196E+01	0.0000E+00	5.5338E+01	0.0000E+00	5.5531E+01	0.0000E+00	5.5689E+01
268000	5.4783E+01	0.0000E+00	5.4852E+01	0.0000E+00	5.4968E+01	0.0000E+00	5.5108E+01	0.0000E+00	5.5300E+01	0.0000E+00	5.5456E+01
270000	5.4560E+01	0.0000E+00	5.4628E+01	0.0000E+00	5.4743E+01	0.0000E+00	5.4881E+01	0.0000E+00	5.5070E+01	0.0000E+00	5.5225E+01
272000	5.4339E+01	0.0000E+00	5.4406E+01	0.0000E+00	5.4520E+01	0.0000E+00	5.4657E+01	0.0000E+00	5.4844E+01	0.0000E+00	5.4997E+01
274000	5.4120E+01	0.0000E+00	5.4186E+01	0.0000E+00	5.4299E+01	0.0000E+00	5.4434E+01	0.0000E+00	5.4620E+01	0.0000E+00	5.4771E+01
276000	5.3904E+01	0.0000E+00	5.3969E+01	0.0000E+00	5.4081E+01	0.0000E+00	5.4215E+01	0.0000E+00	5.4398E+01	0.0000E+00	5.4547E+01
278000	5.3690E+01	0.0000E+00	5.3755E+01	0.0000E+00	5.3865E+01	0.0000E+00	5.3997E+01	0.0000E+00	5.4179E+01	0.0000E+00	5.4327E+01
280000	5.3478E+01	0.0000E+00	5.3542E+01	0.0000E+00	5.3651E+01	0.0000E+00	5.3782E+01	0.0000E+00	5.3962E+01	0.0000E+00	5.4108E+01
282000	5.3268E+01	0.0000E+00	5.3332E+01	0.0000E+00	5.3440E+01	0.0000E+00	5.3570E+01	0.0000E+00	5.3747E+01	0.0000E+00	5.3892E+01
284000	5.3061E+01	0.0000E+00	5.3124E+01	0.0000E+00	5.3231E+01	0.0000E+00	5.3359E+01	0.0000E+00	5.3535E+01	0.0000E+00	5.3678E+01
286000	5.2856E+01	0.0000E+00	5.2918E+01	0.0000E+00	5.3024E+01	0.0000E+00	5.3151E+01	0.0000E+00	5.3325E+01	0.0000E+00	5.3466E+01
288000	5.2652E+01	0.0000E+00	5.2714E+01	0.0000E+00	5.2819E+01	0.0000E+00	5.2945E+01	0.0000E+00	5.3117E+01	0.0000E+00	5.3257E+01
290000	5.2451E+01	0.0000E+00	5.2513E+01	0.0000E+00	5.2616E+01	0.0000E+00	5.2741E+01	0.0000E+00	5.2911E+01	0.0000E+00	5.3050E+01
292000	5.2252E+01	0.0000E+00	5.2313E+01	0.0000E+00	5.2415E+01	0.0000E+00	5.2539E+01	0.0000E+00	5.2707E+01	0.0000E+00	5.2844E+01
294000	5.2055E+01	0.0000E+00	5.2115E+01	0.0000E+00	5.2217E+01	0.0000E+00	5.2339E+01	0.0000E+00	5.2505E+01	0.0000E+00	5.2641E+01
296000	5.1860E+01	0.0000E+00	5.1919E+01	0.0000E+00	5.2020E+01	0.0000E+00	5.2141E+01	0.0000E+00	5.2306E+01	0.0000E+00	5.2440E+01
298000	5.1667E+01	0.0000E+00	5.1726E+01	0.0000E+00	5.1825E+01	0.0000E+00	5.1945E+01	0.0000E+00	5.2108E+01	0.0000E+00	5.2241E+01
300000	5.1476E+01	0.0000E+00	5.1534E+01	0.0000E+00	5.1632E+01	0.0000E+00	5.1751E+01	0.0000E+00	5.1913E+01	0.0000E+00	5.2044E+01
302000	5.1286E+01	0.0000E+00	5.1344E+01	0.0000E+00	5.1441E+01	0.0000E+00	5.1559E+01	0.0000E+00	5.1719E+01	0.0000E+00	5.1849E+01
304000	5.1099E+01	0.0000E+00	5.1156E+01	0.0000E+00	5.1252E+01	0.0000E+00	5.1368E+01	0.0000E+00	5.1527E+01	0.0000E+00	5.1656E+01
306000	5.0913E+01	0.0000E+00	5.0969E+01	0.0000E+00	5.1065E+01	0.0000E+00	5.1180E+01	0.0000E+00	5.1337E+01	0.0000E+00	5.1465E+01
308000	5.0729E+01	0.0000E+00	5.0785E+01	0.0000E+00	5.0879E+01	0.0000E+00	5.0993E+01	0.0000E+00	5.1149E+01	0.0000E+00	5.1276E+01
310000	5.0546E+01	0.0000E+00	5.0602E+01	0.0000E+00	5.0696E+01	0.0000E+00	5.0809E+01	0.0000E+00	5.0963E+01	0.0000E+00	5.1088E+01

Time (yrs)	Arg 1	Curve 1	Arg 2	Curve 2	Arg 3	Curve 3	Arg 4	Curve 4	Arg 5	Curve 5	Arg 6
312000	5.0366E+01	0.0000E+00	5.0421E+01	0.0000E+00	5.0514E+01	0.0000E+00	5.0625E+01	0.0000E+00	5.0778E+01	0.0000E+00	5.0903E+01
314000	5.0187E+01	0.0000E+00	5.0241E+01	0.0000E+00	5.0333E+01	0.0000E+00	5.0444E+01	0.0000E+00	5.0595E+01	0.0000E+00	5.0719E+01
316000	5.0010E+01	0.0000E+00	5.0064E+01	0.0000E+00	5.0155E+01	0.0000E+00	5.0265E+01	0.0000E+00	5.0414E+01	0.0000E+00	5.0536E+01
318000	4.9834E+01	0.0000E+00	4.9887E+01	0.0000E+00	4.9978E+01	0.0000E+00	5.0087E+01	0.0000E+00	5.0235E+01	0.0000E+00	5.0356E+01
320000	4.9660E+01	0.0000E+00	4.9713E+01	0.0000E+00	4.9803E+01	0.0000E+00	4.9910E+01	0.0000E+00	5.0057E+01	0.0000E+00	5.0177E+01
322000	4.9488E+01	0.0000E+00	4.9540E+01	0.0000E+00	4.9629E+01	0.0000E+00	4.9736E+01	0.0000E+00	4.9881E+01	0.0000E+00	5.0000E+01
324000	4.9317E+01	0.0000E+00	4.9369E+01	0.0000E+00	4.9457E+01	0.0000E+00	4.9562E+01	0.0000E+00	4.9707E+01	0.0000E+00	4.9824E+01
326000	4.9147E+01	0.0000E+00	4.9199E+01	0.0000E+00	4.9286E+01	0.0000E+00	4.9391E+01	0.0000E+00	4.9534E+01	0.0000E+00	4.9651E+01
328000	4.8980E+01	0.0000E+00	4.9031E+01	0.0000E+00	4.9117E+01	0.0000E+00	4.9221E+01	0.0000E+00	4.9363E+01	0.0000E+00	4.9478E+01
330000	4.8813E+01	0.0000E+00	4.8864E+01	0.0000E+00	4.8950E+01	0.0000E+00	4.9052E+01	0.0000E+00	4.9193E+01	0.0000E+00	4.9307E+01
332000	4.8648E+01	0.0000E+00	4.8699E+01	0.0000E+00	4.8784E+01	0.0000E+00	4.8885E+01	0.0000E+00	4.9025E+01	0.0000E+00	4.9138E+01
334000	4.8485E+01	0.0000E+00	4.8535E+01	0.0000E+00	4.8619E+01	0.0000E+00	4.8720E+01	0.0000E+00	4.8858E+01	0.0000E+00	4.8970E+01
336000	4.8323E+01	0.0000E+00	4.8372E+01	0.0000E+00	4.8456E+01	0.0000E+00	4.8556E+01	0.0000E+00	4.8693E+01	0.0000E+00	4.8804E+01
338000	4.8162E+01	0.0000E+00	4.8211E+01	0.0000E+00	4.8294E+01	0.0000E+00	4.8393E+01	0.0000E+00	4.8529E+01	0.0000E+00	4.8639E+01
340000	4.8003E+01	0.0000E+00	4.8052E+01	0.0000E+00	4.8134E+01	0.0000E+00	4.8232E+01	0.0000E+00	4.8367E+01	0.0000E+00	4.8476E+01
342000	4.7845E+01	0.0000E+00	4.7893E+01	0.0000E+00	4.7975E+01	0.0000E+00	4.8072E+01	0.0000E+00	4.8206E+01	0.0000E+00	4.8314E+01
344000	4.7689E+01	0.0000E+00	4.7736E+01	0.0000E+00	4.7817E+01	0.0000E+00	4.7914E+01	0.0000E+00	4.8046E+01	0.0000E+00	4.8154E+01
346000	4.7534E+01	0.0000E+00	4.7581E+01	0.0000E+00	4.7661E+01	0.0000E+00	4.7757E+01	0.0000E+00	4.7888E+01	0.0000E+00	4.7994E+01
348000	4.7380E+01	0.0000E+00	4.7427E+01	0.0000E+00	4.7506E+01	0.0000E+00	4.7601E+01	0.0000E+00	4.7731E+01	0.0000E+00	4.7837E+01
350000	4.7227E+01	0.0000E+00	4.7274E+01	0.0000E+00	4.7352E+01	0.0000E+00	4.7447E+01	0.0000E+00	4.7575E+01	0.0000E+00	4.7680E+01
352000	4.7076E+01	0.0000E+00	4.7122E+01	0.0000E+00	4.7200E+01	0.0000E+00	4.7293E+01	0.0000E+00	4.7421E+01	0.0000E+00	4.7525E+01
354000	4.6926E+01	0.0000E+00	4.6971E+01	0.0000E+00	4.7049E+01	0.0000E+00	4.7142E+01	0.0000E+00	4.7268E+01	0.0000E+00	4.7371E+01
356000	4.6777E+01	0.0000E+00	4.6822E+01	0.0000E+00	4.6899E+01	0.0000E+00	4.6991E+01	0.0000E+00	4.7117E+01	0.0000E+00	4.7219E+01
358000	4.6629E+01	0.0000E+00	4.6674E+01	0.0000E+00	4.6750E+01	0.0000E+00	4.6841E+01	0.0000E+00	4.6966E+01	0.0000E+00	4.7068E+01
360000	4.6483E+01	0.0000E+00	4.6527E+01	0.0000E+00	4.6603E+01	0.0000E+00	4.6693E+01	0.0000E+00	4.6817E+01	0.0000E+00	4.6918E+01
362000	4.6337E+01	0.0000E+00	4.6382E+01	0.0000E+00	4.6457E+01	0.0000E+00	4.6546E+01	0.0000E+00	4.6669E+01	0.0000E+00	4.6769E+01
364000	4.6193E+01	0.0000E+00	4.6237E+01	0.0000E+00	4.6311E+01	0.0000E+00	4.6401E+01	0.0000E+00	4.6522E+01	0.0000E+00	4.6621E+01
366000	4.6050E+01	0.0000E+00	4.6094E+01	0.0000E+00	4.6168E+01	0.0000E+00	4.6256E+01	0.0000E+00	4.6377E+01	0.0000E+00	4.6475E+01
368000	4.5909E+01	0.0000E+00	4.5952E+01	0.0000E+00	4.6025E+01	0.0000E+00	4.6112E+01	0.0000E+00	4.6232E+01	0.0000E+00	4.6330E+01
370000	4.5768E+01	0.0000E+00	4.5811E+01	0.0000E+00	4.5883E+01	0.0000E+00	4.5970E+01	0.0000E+00	4.6089E+01	0.0000E+00	4.6185E+01
372000	4.5628E+01	0.0000E+00	4.5671E+01	0.0000E+00	4.5743E+01	0.0000E+00	4.5829E+01	0.0000E+00	4.5947E+01	0.0000E+00	4.6043E+01
374000	4.5490E+01	0.0000E+00	4.5532E+01	0.0000E+00	4.5603E+01	0.0000E+00	4.5689E+01	0.0000E+00	4.5806E+01	0.0000E+00	4.5901E+01
376000	4.5352E+01	0.0000E+00	4.5394E+01	0.0000E+00	4.5465E+01	0.0000E+00	4.5550E+01	0.0000E+00	4.5666E+01	0.0000E+00	4.5760E+01
378000	4.5216E+01	0.0000E+00	4.5257E+01	0.0000E+00	4.5328E+01	0.0000E+00	4.5412E+01	0.0000E+00	4.5527E+01	0.0000E+00	4.5621E+01
380000	4.5081E+01	0.0000E+00	4.5122E+01	0.0000E+00	4.5191E+01	0.0000E+00	4.5275E+01	0.0000E+00	4.5389E+01	0.0000E+00	4.5482E+01
382000	4.4946E+01	0.0000E+00	4.4987E+01	0.0000E+00	4.5056E+01	0.0000E+00	4.5139E+01	0.0000E+00	4.5253E+01	0.0000E+00	4.5345E+01
384000	4.4813E+01	0.0000E+00	4.4853E+01	0.0000E+00	4.4922E+01	0.0000E+00	4.5005E+01	0.0000E+00	4.5117E+01	0.0000E+00	4.5208E+01
386000	4.4681E+01	0.0000E+00	4.4721E+01	0.0000E+00	4.4789E+01	0.0000E+00	4.4871E+01	0.0000E+00	4.4982E+01	0.0000E+00	4.5073E+01
388000	4.4549E+01	0.0000E+00	4.4589E+01	0.0000E+00	4.4657E+01	0.0000E+00	4.4738E+01	0.0000E+00	4.4849E+01	0.0000E+00	4.4939E+01
390000	4.4419E+01	0.0000E+00	4.4459E+01	0.0000E+00	4.4526E+01	0.0000E+00	4.4606E+01	0.0000E+00	4.4716E+01	0.0000E+00	4.4806E+01
392000	4.4290E+01	0.0000E+00	4.4329E+01	0.0000E+00	4.4396E+01	0.0000E+00	4.4476E+01	0.0000E+00	4.4585E+01	0.0000E+00	4.4673E+01
394000	4.4161E+01	0.0000E+00	4.4200E+01	0.0000E+00	4.4266E+01	0.0000E+00	4.4346E+01	0.0000E+00	4.4454E+01	0.0000E+00	4.4542E+01
396000	4.4034E+01	0.0000E+00	4.4072E+01	0.0000E+00	4.4138E+01	0.0000E+00	4.4217E+01	0.0000E+00	4.4324E+01	0.0000E+00	4.4412E+01
398000	4.3907E+01	0.0000E+00	4.3946E+01	0.0000E+00	4.4011E+01	0.0000E+00	4.4089E+01	0.0000E+00	4.4196E+01	0.0000E+00	4.4282E+01
400000	4.3782E+01	0.0000E+00	4.3820E+01	0.0000E+00	4.3884E+01	0.0000E+00	4.3962E+01	0.0000E+00	4.4068E+01	0.0000E+00	4.4154E+01
402000	4.3657E+01	0.0000E+00	4.3695E+01	0.0000E+00	4.3759E+01	0.0000E+00	4.3836E+01	0.0000E+00	4.3941E+01	0.0000E+00	4.4027E+01
404000	4.3533E+01	0.0000E+00	4.3571E+01	0.0000E+00	4.3634E+01	0.0000E+00	4.3711E+01	0.0000E+00	4.3815E+01	0.0000E+00	4.3900E+01
406000	4.3410E+01	0.0000E+00	4.3447E+01	0.0000E+00	4.3511E+01	0.0000E+00	4.3587E+01	0.0000E+00	4.3690E+01	0.0000E+00	4.3775E+01
408000	4.3288E+01	0.0000E+00	4.3325E+01	0.0000E+00	4.3388E+01	0.0000E+00	4.3463E+01	0.0000E+00	4.3566E+01	0.0000E+00	4.3650E+01
410000	4.3167E+01	0.0000E+00	4.3204E+01	0.0000E+00	4.3266E+01	0.0000E+00	4.3341E+01	0.0000E+00	4.3443E+01	0.0000E+00	4.3526E+01
412000	4.3046E+01	0.0000E+00	4.3083E+01	0.0000E+00	4.3145E+01	0.0000E+00	4.3219E+01	0.0000E+00	4.3321E+01	0.0000E+00	4.3403E+01
414000	4.2927E+01	0.0000E+00	4.2963E+01	0.0000E+00	4.3025E+01	0.0000E+00	4.3099E+01	0.0000E+00	4.3199E+01	0.0000E+00	4.3281E+01

Time (yrs)	Arg 1	Curve 1	Arg 2	Curve 2	Arg 3	Curve 3	Arg 4	Curve 4	Arg 5	Curve 5	Arg 6
416000	4.2808E+01	0.0000E+00	4.2844E+01	0.0000E+00	4.2905E+01	0.0000E+00	4.2979E+01	0.0000E+00	4.3079E+01	0.0000E+00	4.3160E+01
418000	4.2690E+01	0.0000E+00	4.2726E+01	0.0000E+00	4.2787E+01	0.0000E+00	4.2860E+01	0.0000E+00	4.2959E+01	0.0000E+00	4.3040E+01
420000	4.2573E+01	0.0000E+00	4.2609E+01	0.0000E+00	4.2669E+01	0.0000E+00	4.2742E+01	0.0000E+00	4.2840E+01	0.0000E+00	4.2920E+01
422000	4.2457E+01	0.0000E+00	4.2492E+01	0.0000E+00	4.2552E+01	0.0000E+00	4.2624E+01	0.0000E+00	4.2722E+01	0.0000E+00	4.2802E+01
424000	4.2342E+01	0.0000E+00	4.2377E+01	0.0000E+00	4.2436E+01	0.0000E+00	4.2508E+01	0.0000E+00	4.2605E+01	0.0000E+00	4.2684E+01
426000	4.2227E+01	0.0000E+00	4.2262E+01	0.0000E+00	4.2321E+01	0.0000E+00	4.2392E+01	0.0000E+00	4.2488E+01	0.0000E+00	4.2567E+01
428000	4.2113E+01	0.0000E+00	4.2148E+01	0.0000E+00	4.2206E+01	0.0000E+00	4.2277E+01	0.0000E+00	4.2373E+01	0.0000E+00	4.2451E+01
430000	4.2000E+01	0.0000E+00	4.2034E+01	0.0000E+00	4.2093E+01	0.0000E+00	4.2163E+01	0.0000E+00	4.2258E+01	0.0000E+00	4.2335E+01
432000	4.1888E+01	0.0000E+00	4.1922E+01	0.0000E+00	4.1980E+01	0.0000E+00	4.2049E+01	0.0000E+00	4.2144E+01	0.0000E+00	4.2221E+01
434000	4.1776E+01	0.0000E+00	4.1810E+01	0.0000E+00	4.1867E+01	0.0000E+00	4.1936E+01	0.0000E+00	4.2030E+01	0.0000E+00	4.2107E+01
436000	4.1665E+01	0.0000E+00	4.1699E+01	0.0000E+00	4.1756E+01	0.0000E+00	4.1824E+01	0.0000E+00	4.1918E+01	0.0000E+00	4.1994E+01
438000	4.1555E+01	0.0000E+00	4.1589E+01	0.0000E+00	4.1645E+01	0.0000E+00	4.1713E+01	0.0000E+00	4.1806E+01	0.0000E+00	4.1881E+01
440000	4.1446E+01	0.0000E+00	4.1479E+01	0.0000E+00	4.1535E+01	0.0000E+00	4.1603E+01	0.0000E+00	4.1695E+01	0.0000E+00	4.1770E+01
442000	4.1337E+01	0.0000E+00	4.1370E+01	0.0000E+00	4.1426E+01	0.0000E+00	4.1493E+01	0.0000E+00	4.1585E+01	0.0000E+00	4.1659E+01
444000	4.1229E+01	0.0000E+00	4.1262E+01	0.0000E+00	4.1317E+01	0.0000E+00	4.1384E+01	0.0000E+00	4.1475E+01	0.0000E+00	4.1549E+01
446000	4.1122E+01	0.0000E+00	4.1154E+01	0.0000E+00	4.1210E+01	0.0000E+00	4.1276E+01	0.0000E+00	4.1366E+01	0.0000E+00	4.1440E+01
448000	4.1015E+01	0.0000E+00	4.1047E+01	0.0000E+00	4.1102E+01	0.0000E+00	4.1168E+01	0.0000E+00	4.1258E+01	0.0000E+00	4.1331E+01
450000	4.0909E+01	0.0000E+00	4.0941E+01	0.0000E+00	4.0996E+01	0.0000E+00	4.1061E+01	0.0000E+00	4.1150E+01	0.0000E+00	4.1223E+01
452000	4.0804E+01	0.0000E+00	4.0836E+01	0.0000E+00	4.0890E+01	0.0000E+00	4.0955E+01	0.0000E+00	4.1044E+01	0.0000E+00	4.1116E+01
454000	4.0699E+01	0.0000E+00	4.0731E+01	0.0000E+00	4.0785E+01	0.0000E+00	4.0849E+01	0.0000E+00	4.0938E+01	0.0000E+00	4.1009E+01
456000	4.0595E+01	0.0000E+00	4.0627E+01	0.0000E+00	4.0680E+01	0.0000E+00	4.0745E+01	0.0000E+00	4.0832E+01	0.0000E+00	4.0903E+01
458000	4.0492E+01	0.0000E+00	4.0523E+01	0.0000E+00	4.0577E+01	0.0000E+00	4.0640E+01	0.0000E+00	4.0727E+01	0.0000E+00	4.0798E+01
460000	4.0389E+01	0.0000E+00	4.0421E+01	0.0000E+00	4.0474E+01	0.0000E+00	4.0537E+01	0.0000E+00	4.0623E+01	0.0000E+00	4.0693E+01
462000	4.0287E+01	0.0000E+00	4.0318E+01	0.0000E+00	4.0371E+01	0.0000E+00	4.0434E+01	0.0000E+00	4.0520E+01	0.0000E+00	4.0590E+01
464000	4.0186E+01	0.0000E+00	4.0217E+01	0.0000E+00	4.0269E+01	0.0000E+00	4.0332E+01	0.0000E+00	4.0417E+01	0.0000E+00	4.0486E+01
466000	4.0085E+01	0.0000E+00	4.0116E+01	0.0000E+00	4.0168E+01	0.0000E+00	4.0230E+01	0.0000E+00	4.0315E+01	0.0000E+00	4.0384E+01
468000	3.9985E+01	0.0000E+00	4.0016E+01	0.0000E+00	4.0067E+01	0.0000E+00	4.0129E+01	0.0000E+00	4.0213E+01	0.0000E+00	4.0282E+01
470000	3.9886E+01	0.0000E+00	3.9916E+01	0.0000E+00	3.9967E+01	0.0000E+00	4.0029E+01	0.0000E+00	4.0112E+01	0.0000E+00	4.0181E+01
472000	3.9787E+01	0.0000E+00	3.9817E+01	0.0000E+00	3.9868E+01	0.0000E+00	3.9929E+01	0.0000E+00	4.0012E+01	0.0000E+00	4.0080E+01
474000	3.9689E+01	0.0000E+00	3.9719E+01	0.0000E+00	3.9769E+01	0.0000E+00	3.9830E+01	0.0000E+00	3.9913E+01	0.0000E+00	3.9980E+01
476000	3.9591E+01	0.0000E+00	3.9621E+01	0.0000E+00	3.9671E+01	0.0000E+00	3.9731E+01	0.0000E+00	3.9814E+01	0.0000E+00	3.9880E+01
478000	3.9494E+01	0.0000E+00	3.9523E+01	0.0000E+00	3.9573E+01	0.0000E+00	3.9633E+01	0.0000E+00	3.9715E+01	0.0000E+00	3.9781E+01
480000	3.9397E+01	0.0000E+00	3.9427E+01	0.0000E+00	3.9476E+01	0.0000E+00	3.9536E+01	0.0000E+00	3.9617E+01	0.0000E+00	3.9683E+01
482000	3.9301E+01	0.0000E+00	3.9331E+01	0.0000E+00	3.9380E+01	0.0000E+00	3.9439E+01	0.0000E+00	3.9520E+01	0.0000E+00	3.9586E+01
484000	3.9206E+01	0.0000E+00	3.9235E+01	0.0000E+00	3.9284E+01	0.0000E+00	3.9343E+01	0.0000E+00	3.9423E+01	0.0000E+00	3.9489E+01
486000	3.9111E+01	0.0000E+00	3.9140E+01	0.0000E+00	3.9189E+01	0.0000E+00	3.9247E+01	0.0000E+00	3.9327E+01	0.0000E+00	3.9392E+01
488000	3.9017E+01	0.0000E+00	3.9046E+01	0.0000E+00	3.9094E+01	0.0000E+00	3.9152E+01	0.0000E+00	3.9232E+01	0.0000E+00	3.9296E+01
490000	3.8923E+01	0.0000E+00	3.8952E+01	0.0000E+00	3.9000E+01	0.0000E+00	3.9058E+01	0.0000E+00	3.9137E+01	0.0000E+00	3.9201E+01
492000	3.8830E+01	0.0000E+00	3.8858E+01	0.0000E+00	3.8906E+01	0.0000E+00	3.8964E+01	0.0000E+00	3.9042E+01	0.0000E+00	3.9106E+01
494000	3.8737E+01	0.0000E+00	3.8766E+01	0.0000E+00	3.8813E+01	0.0000E+00	3.8871E+01	0.0000E+00	3.8948E+01	0.0000E+00	3.9012E+01
496000	3.8645E+01	0.0000E+00	3.8673E+01	0.0000E+00	3.8721E+01	0.0000E+00	3.8778E+01	0.0000E+00	3.8855E+01	0.0000E+00	3.8918E+01
498000	3.8554E+01	0.0000E+00	3.8582E+01	0.0000E+00	3.8629E+01	0.0000E+00	3.8685E+01	0.0000E+00	3.8762E+01	0.0000E+00	3.8825E+01
500000	3.8463E+01	0.0000E+00	3.8491E+01	0.0000E+00	3.8537E+01	0.0000E+00	3.8594E+01	0.0000E+00	3.8670E+01	0.0000E+00	3.8732E+01
502000	3.8372E+01	0.0000E+00	3.8400E+01	0.0000E+00	3.8447E+01	0.0000E+00	3.8502E+01	0.0000E+00	3.8579E+01	0.0000E+00	3.8640E+01
504000	3.8282E+01	0.0000E+00	3.8310E+01	0.0000E+00	3.8356E+01	0.0000E+00	3.8412E+01	0.0000E+00	3.8487E+01	0.0000E+00	3.8549E+01
506000	3.8193E+01	0.0000E+00	3.8220E+01	0.0000E+00	3.8266E+01	0.0000E+00	3.8321E+01	0.0000E+00	3.8397E+01	0.0000E+00	3.8458E+01
508000	3.8104E+01	0.0000E+00	3.8131E+01	0.0000E+00	3.8177E+01	0.0000E+00	3.8232E+01	0.0000E+00	3.8307E+01	0.0000E+00	3.8367E+01
510000	3.8015E+01	0.0000E+00	3.8042E+01	0.0000E+00	3.8088E+01	0.0000E+00	3.8143E+01	0.0000E+00	3.8217E+01	0.0000E+00	3.8277E+01
512000	3.7928E+01	0.0000E+00	3.7954E+01	0.0000E+00	3.8000E+01	0.0000E+00	3.8054E+01	0.0000E+00	3.8128E+01	0.0000E+00	3.8188E+01
514000	3.7840E+01	0.0000E+00	3.7867E+01	0.0000E+00	3.7912E+01	0.0000E+00	3.7966E+01	0.0000E+00	3.8039E+01	0.0000E+00	3.8099E+01
516000	3.7753E+01	0.0000E+00	3.7780E+01	0.0000E+00	3.7824E+01	0.0000E+00	3.7878E+01	0.0000E+00	3.7951E+01	0.0000E+00	3.8011E+01
518000	3.7667E+01	0.0000E+00	3.7693E+01	0.0000E+00	3.7737E+01	0.0000E+00	3.7791E+01	0.0000E+00	3.7864E+01	0.0000E+00	3.7923E+01

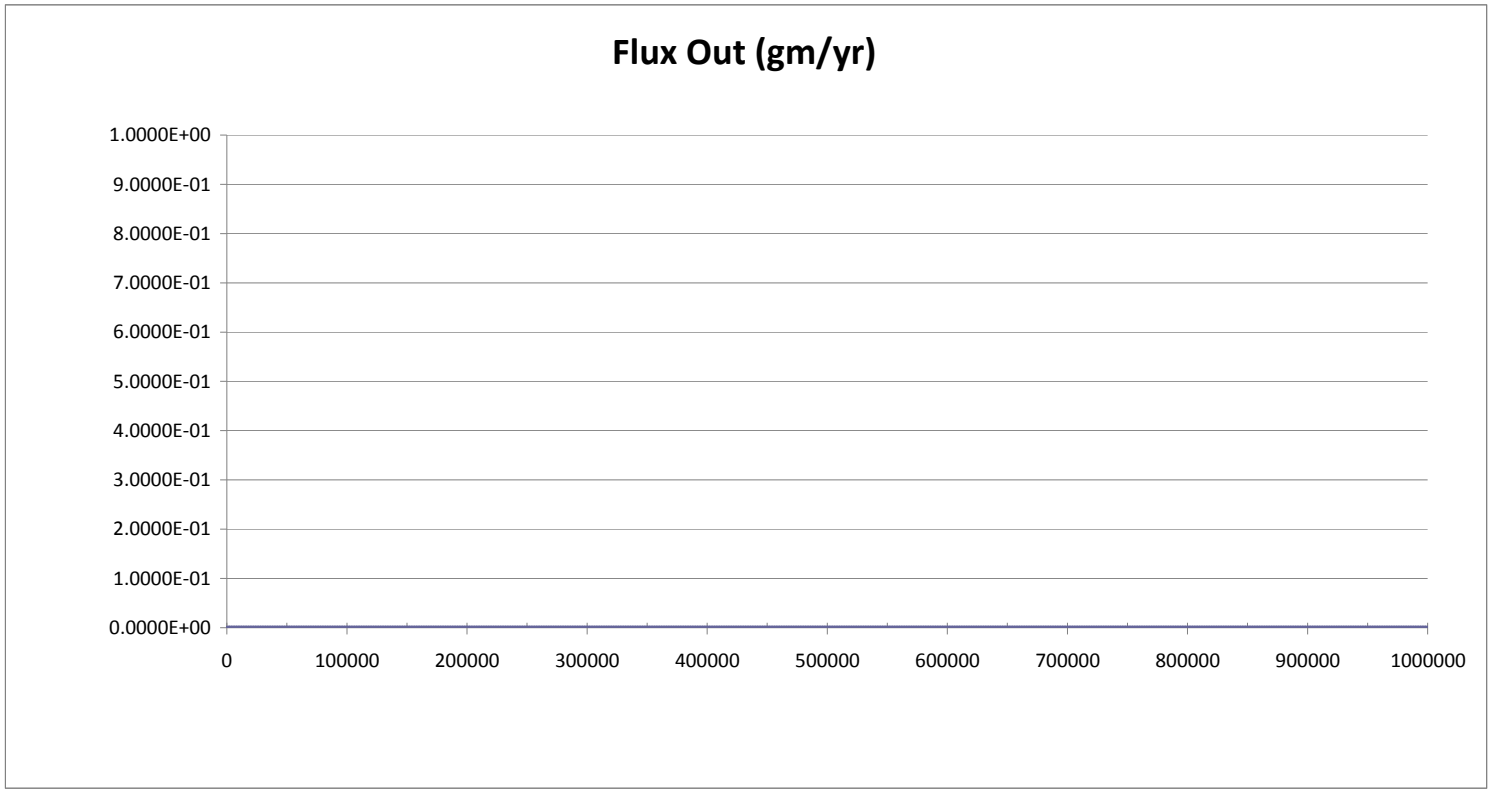
Time (yrs)	Arg 1	Curve 1	Arg 2	Curve 2	Arg 3	Curve 3	Arg 4	Curve 4	Arg 5	Curve 5	Arg 6
520000	3.7580E+01	0.0000E+00	3.7607E+01	0.0000E+00	3.7651E+01	0.0000E+00	3.7704E+01	0.0000E+00	3.7776E+01	0.0000E+00	3.7835E+01
522000	3.7495E+01	0.0000E+00	3.7521E+01	0.0000E+00	3.7565E+01	0.0000E+00	3.7618E+01	0.0000E+00	3.7690E+01	0.0000E+00	3.7748E+01
524000	3.7410E+01	0.0000E+00	3.7436E+01	0.0000E+00	3.7480E+01	0.0000E+00	3.7532E+01	0.0000E+00	3.7604E+01	0.0000E+00	3.7662E+01
526000	3.7325E+01	0.0000E+00	3.7351E+01	0.0000E+00	3.7395E+01	0.0000E+00	3.7447E+01	0.0000E+00	3.7518E+01	0.0000E+00	3.7576E+01
528000	3.7241E+01	0.0000E+00	3.7267E+01	0.0000E+00	3.7310E+01	0.0000E+00	3.7362E+01	0.0000E+00	3.7433E+01	0.0000E+00	3.7490E+01
530000	3.7157E+01	0.0000E+00	3.7183E+01	0.0000E+00	3.7226E+01	0.0000E+00	3.7278E+01	0.0000E+00	3.7348E+01	0.0000E+00	3.7405E+01
532000	3.7074E+01	0.0000E+00	3.7099E+01	0.0000E+00	3.7142E+01	0.0000E+00	3.7194E+01	0.0000E+00	3.7264E+01	0.0000E+00	3.7321E+01
534000	3.6991E+01	0.0000E+00	3.7016E+01	0.0000E+00	3.7059E+01	0.0000E+00	3.7110E+01	0.0000E+00	3.7180E+01	0.0000E+00	3.7236E+01
536000	3.6909E+01	0.0000E+00	3.6934E+01	0.0000E+00	3.6976E+01	0.0000E+00	3.7027E+01	0.0000E+00	3.7096E+01	0.0000E+00	3.7153E+01
538000	3.6827E+01	0.0000E+00	3.6852E+01	0.0000E+00	3.6894E+01	0.0000E+00	3.6945E+01	0.0000E+00	3.7014E+01	0.0000E+00	3.7069E+01
540000	3.6745E+01	0.0000E+00	3.6770E+01	0.0000E+00	3.6812E+01	0.0000E+00	3.6862E+01	0.0000E+00	3.6931E+01	0.0000E+00	3.6987E+01
542000	3.6664E+01	0.0000E+00	3.6689E+01	0.0000E+00	3.6731E+01	0.0000E+00	3.6781E+01	0.0000E+00	3.6849E+01	0.0000E+00	3.6904E+01
544000	3.6584E+01	0.0000E+00	3.6608E+01	0.0000E+00	3.6650E+01	0.0000E+00	3.6699E+01	0.0000E+00	3.6767E+01	0.0000E+00	3.6822E+01
546000	3.6503E+01	0.0000E+00	3.6528E+01	0.0000E+00	3.6569E+01	0.0000E+00	3.6619E+01	0.0000E+00	3.6686E+01	0.0000E+00	3.6741E+01
548000	3.6424E+01	0.0000E+00	3.6448E+01	0.0000E+00	3.6489E+01	0.0000E+00	3.6538E+01	0.0000E+00	3.6605E+01	0.0000E+00	3.6660E+01
550000	3.6344E+01	0.0000E+00	3.6368E+01	0.0000E+00	3.6409E+01	0.0000E+00	3.6458E+01	0.0000E+00	3.6525E+01	0.0000E+00	3.6579E+01
552000	3.6265E+01	0.0000E+00	3.6289E+01	0.0000E+00	3.6330E+01	0.0000E+00	3.6379E+01	0.0000E+00	3.6445E+01	0.0000E+00	3.6499E+01
554000	3.6187E+01	0.0000E+00	3.6210E+01	0.0000E+00	3.6251E+01	0.0000E+00	3.6299E+01	0.0000E+00	3.6366E+01	0.0000E+00	3.6419E+01
556000	3.6108E+01	0.0000E+00	3.6132E+01	0.0000E+00	3.6172E+01	0.0000E+00	3.6221E+01	0.0000E+00	3.6286E+01	0.0000E+00	3.6340E+01
558000	3.6031E+01	0.0000E+00	3.6054E+01	0.0000E+00	3.6094E+01	0.0000E+00	3.6142E+01	0.0000E+00	3.6208E+01	0.0000E+00	3.6261E+01
560000	3.5953E+01	0.0000E+00	3.5977E+01	0.0000E+00	3.6017E+01	0.0000E+00	3.6064E+01	0.0000E+00	3.6129E+01	0.0000E+00	3.6182E+01
562000	3.5876E+01	0.0000E+00	3.5900E+01	0.0000E+00	3.5939E+01	0.0000E+00	3.5987E+01	0.0000E+00	3.6052E+01	0.0000E+00	3.6104E+01
564000	3.5800E+01	0.0000E+00	3.5823E+01	0.0000E+00	3.5862E+01	0.0000E+00	3.5910E+01	0.0000E+00	3.5974E+01	0.0000E+00	3.6026E+01
566000	3.5723E+01	0.0000E+00	3.5747E+01	0.0000E+00	3.5786E+01	0.0000E+00	3.5833E+01	0.0000E+00	3.5897E+01	0.0000E+00	3.5949E+01
568000	3.5648E+01	0.0000E+00	3.5671E+01	0.0000E+00	3.5710E+01	0.0000E+00	3.5756E+01	0.0000E+00	3.5820E+01	0.0000E+00	3.5872E+01
570000	3.5572E+01	0.0000E+00	3.5595E+01	0.0000E+00	3.5634E+01	0.0000E+00	3.5680E+01	0.0000E+00	3.5744E+01	0.0000E+00	3.5795E+01
572000	3.5497E+01	0.0000E+00	3.5520E+01	0.0000E+00	3.5559E+01	0.0000E+00	3.5605E+01	0.0000E+00	3.5668E+01	0.0000E+00	3.5719E+01
574000	3.5422E+01	0.0000E+00	3.5445E+01	0.0000E+00	3.5484E+01	0.0000E+00	3.5530E+01	0.0000E+00	3.5592E+01	0.0000E+00	3.5643E+01
576000	3.5348E+01	0.0000E+00	3.5371E+01	0.0000E+00	3.5409E+01	0.0000E+00	3.5455E+01	0.0000E+00	3.5517E+01	0.0000E+00	3.5568E+01
578000	3.5274E+01	0.0000E+00	3.5296E+01	0.0000E+00	3.5335E+01	0.0000E+00	3.5380E+01	0.0000E+00	3.5442E+01	0.0000E+00	3.5493E+01
580000	3.5200E+01	0.0000E+00	3.5223E+01	0.0000E+00	3.5261E+01	0.0000E+00	3.5306E+01	0.0000E+00	3.5368E+01	0.0000E+00	3.5418E+01
582000	3.5127E+01	0.0000E+00	3.5149E+01	0.0000E+00	3.5187E+01	0.0000E+00	3.5232E+01	0.0000E+00	3.5294E+01	0.0000E+00	3.5344E+01
584000	3.5054E+01	0.0000E+00	3.5076E+01	0.0000E+00	3.5114E+01	0.0000E+00	3.5159E+01	0.0000E+00	3.5220E+01	0.0000E+00	3.5270E+01
586000	3.4982E+01	0.0000E+00	3.5004E+01	0.0000E+00	3.5041E+01	0.0000E+00	3.5086E+01	0.0000E+00	3.5147E+01	0.0000E+00	3.5196E+01
588000	3.4909E+01	0.0000E+00	3.4931E+01	0.0000E+00	3.4969E+01	0.0000E+00	3.5013E+01	0.0000E+00	3.5074E+01	0.0000E+00	3.5123E+01
590000	3.4838E+01	0.0000E+00	3.4859E+01	0.0000E+00	3.4896E+01	0.0000E+00	3.4941E+01	0.0000E+00	3.5001E+01	0.0000E+00	3.5050E+01
592000	3.4766E+01	0.0000E+00	3.4788E+01	0.0000E+00	3.4825E+01	0.0000E+00	3.4869E+01	0.0000E+00	3.4929E+01	0.0000E+00	3.4978E+01
594000	3.4695E+01	0.0000E+00	3.4717E+01	0.0000E+00	3.4753E+01	0.0000E+00	3.4797E+01	0.0000E+00	3.4857E+01	0.0000E+00	3.4905E+01
596000	3.4624E+01	0.0000E+00	3.4646E+01	0.0000E+00	3.4682E+01	0.0000E+00	3.4726E+01	0.0000E+00	3.4785E+01	0.0000E+00	3.4834E+01
598000	3.4554E+01	0.0000E+00	3.4575E+01	0.0000E+00	3.4611E+01	0.0000E+00	3.4655E+01	0.0000E+00	3.4714E+01	0.0000E+00	3.4762E+01
600000	3.4483E+01	0.0000E+00	3.4505E+01	0.0000E+00	3.4541E+01	0.0000E+00	3.4584E+01	0.0000E+00	3.4643E+01	0.0000E+00	3.4691E+01
602000	3.4414E+01	0.0000E+00	3.4435E+01	0.0000E+00	3.4471E+01	0.0000E+00	3.4514E+01	0.0000E+00	3.4573E+01	0.0000E+00	3.4620E+01
604000	3.4344E+01	0.0000E+00	3.4365E+01	0.0000E+00	3.4401E+01	0.0000E+00	3.4444E+01	0.0000E+00	3.4502E+01	0.0000E+00	3.4550E+01
606000	3.4275E+01	0.0000E+00	3.4296E+01	0.0000E+00	3.4332E+01	0.0000E+00	3.4374E+01	0.0000E+00	3.4432E+01	0.0000E+00	3.4480E+01
608000	3.4206E+01	0.0000E+00	3.4227E+01	0.0000E+00	3.4263E+01	0.0000E+00	3.4305E+01	0.0000E+00	3.4363E+01	0.0000E+00	3.4410E+01
610000	3.4138E+01	0.0000E+00	3.4159E+01	0.0000E+00	3.4194E+01	0.0000E+00	3.4236E+01	0.0000E+00	3.4294E+01	0.0000E+00	3.4340E+01
612000	3.4069E+01	0.0000E+00	3.4090E+01	0.0000E+00	3.4125E+01	0.0000E+00	3.4167E+01	0.0000E+00	3.4225E+01	0.0000E+00	3.4271E+01
614000	3.4002E+01	0.0000E+00	3.4022E+01	0.0000E+00	3.4057E+01	0.0000E+00	3.4099E+01	0.0000E+00	3.4156E+01	0.0000E+00	3.4202E+01
616000	3.3934E+01	0.0000E+00	3.3955E+01	0.0000E+00	3.3989E+01	0.0000E+00	3.4031E+01	0.0000E+00	3.4088E+01	0.0000E+00	3.4134E+01
618000	3.3867E+01	0.0000E+00	3.3887E+01	0.0000E+00	3.3922E+01	0.0000E+00	3.3963E+01	0.0000E+00	3.4020E+01	0.0000E+00	3.4066E+01
620000	3.3800E+01	0.0000E+00	3.3820E+01	0.0000E+00	3.3855E+01	0.0000E+00	3.3896E+01	0.0000E+00	3.3952E+01	0.0000E+00	3.3998E+01
622000	3.3733E+01	0.0000E+00	3.3753E+01	0.0000E+00	3.3788E+01	0.0000E+00	3.3829E+01	0.0000E+00	3.3885E+01	0.0000E+00	3.3930E+01

Time (yrs)	Arg 1	Curve 1	Arg 2	Curve 2	Arg 3	Curve 3	Arg 4	Curve 4	Arg 5	Curve 5	Arg 6
624000	3.3667E+01	0.0000E+00	3.3687E+01	0.0000E+00	3.3721E+01	0.0000E+00	3.3762E+01	0.0000E+00	3.3818E+01	0.0000E+00	3.3863E+01
626000	3.3601E+01	0.0000E+00	3.3621E+01	0.0000E+00	3.3655E+01	0.0000E+00	3.3696E+01	0.0000E+00	3.3751E+01	0.0000E+00	3.3796E+01
628000	3.3535E+01	0.0000E+00	3.3555E+01	0.0000E+00	3.3589E+01	0.0000E+00	3.3629E+01	0.0000E+00	3.3685E+01	0.0000E+00	3.3729E+01
630000	3.3469E+01	0.0000E+00	3.3489E+01	0.0000E+00	3.3523E+01	0.0000E+00	3.3564E+01	0.0000E+00	3.3618E+01	0.0000E+00	3.3663E+01
632000	3.3404E+01	0.0000E+00	3.3424E+01	0.0000E+00	3.3458E+01	0.0000E+00	3.3498E+01	0.0000E+00	3.3553E+01	0.0000E+00	3.3597E+01
634000	3.3339E+01	0.0000E+00	3.3359E+01	0.0000E+00	3.3393E+01	0.0000E+00	3.3433E+01	0.0000E+00	3.3487E+01	0.0000E+00	3.3531E+01
636000	3.3275E+01	0.0000E+00	3.3295E+01	0.0000E+00	3.3328E+01	0.0000E+00	3.3368E+01	0.0000E+00	3.3422E+01	0.0000E+00	3.3466E+01
638000	3.3211E+01	0.0000E+00	3.3230E+01	0.0000E+00	3.3263E+01	0.0000E+00	3.3303E+01	0.0000E+00	3.3357E+01	0.0000E+00	3.3401E+01
640000	3.3147E+01	0.0000E+00	3.3166E+01	0.0000E+00	3.3199E+01	0.0000E+00	3.3238E+01	0.0000E+00	3.3292E+01	0.0000E+00	3.3336E+01
642000	3.3083E+01	0.0000E+00	3.3102E+01	0.0000E+00	3.3135E+01	0.0000E+00	3.3174E+01	0.0000E+00	3.3228E+01	0.0000E+00	3.3271E+01
644000	3.3019E+01	0.0000E+00	3.3039E+01	0.0000E+00	3.3071E+01	0.0000E+00	3.3110E+01	0.0000E+00	3.3164E+01	0.0000E+00	3.3207E+01
646000	3.2956E+01	0.0000E+00	3.2975E+01	0.0000E+00	3.3008E+01	0.0000E+00	3.3047E+01	0.0000E+00	3.3100E+01	0.0000E+00	3.3143E+01
648000	3.2893E+01	0.0000E+00	3.2912E+01	0.0000E+00	3.2945E+01	0.0000E+00	3.2984E+01	0.0000E+00	3.3036E+01	0.0000E+00	3.3079E+01
650000	3.2831E+01	0.0000E+00	3.2850E+01	0.0000E+00	3.2882E+01	0.0000E+00	3.2921E+01	0.0000E+00	3.2973E+01	0.0000E+00	3.3016E+01
652000	3.2768E+01	0.0000E+00	3.2787E+01	0.0000E+00	3.2819E+01	0.0000E+00	3.2858E+01	0.0000E+00	3.2910E+01	0.0000E+00	3.2953E+01
654000	3.2706E+01	0.0000E+00	3.2725E+01	0.0000E+00	3.2757E+01	0.0000E+00	3.2795E+01	0.0000E+00	3.2848E+01	0.0000E+00	3.2890E+01
656000	3.2644E+01	0.0000E+00	3.2663E+01	0.0000E+00	3.2695E+01	0.0000E+00	3.2733E+01	0.0000E+00	3.2785E+01	0.0000E+00	3.2827E+01
658000	3.2583E+01	0.0000E+00	3.2602E+01	0.0000E+00	3.2633E+01	0.0000E+00	3.2671E+01	0.0000E+00	3.2723E+01	0.0000E+00	3.2765E+01
660000	3.2522E+01	0.0000E+00	3.2540E+01	0.0000E+00	3.2572E+01	0.0000E+00	3.2610E+01	0.0000E+00	3.2661E+01	0.0000E+00	3.2703E+01
662000	3.2460E+01	0.0000E+00	3.2479E+01	0.0000E+00	3.2511E+01	0.0000E+00	3.2548E+01	0.0000E+00	3.2599E+01	0.0000E+00	3.2641E+01
664000	3.2400E+01	0.0000E+00	3.2418E+01	0.0000E+00	3.2450E+01	0.0000E+00	3.2487E+01	0.0000E+00	3.2538E+01	0.0000E+00	3.2579E+01
666000	3.2339E+01	0.0000E+00	3.2358E+01	0.0000E+00	3.2389E+01	0.0000E+00	3.2426E+01	0.0000E+00	3.2477E+01	0.0000E+00	3.2518E+01
668000	3.2279E+01	0.0000E+00	3.2297E+01	0.0000E+00	3.2328E+01	0.0000E+00	3.2365E+01	0.0000E+00	3.2416E+01	0.0000E+00	3.2457E+01
670000	3.2219E+01	0.0000E+00	3.2237E+01	0.0000E+00	3.2268E+01	0.0000E+00	3.2305E+01	0.0000E+00	3.2356E+01	0.0000E+00	3.2396E+01
672000	3.2159E+01	0.0000E+00	3.2177E+01	0.0000E+00	3.2208E+01	0.0000E+00	3.2245E+01	0.0000E+00	3.2295E+01	0.0000E+00	3.2336E+01
674000	3.2100E+01	0.0000E+00	3.2118E+01	0.0000E+00	3.2148E+01	0.0000E+00	3.2185E+01	0.0000E+00	3.2235E+01	0.0000E+00	3.2276E+01
676000	3.2040E+01	0.0000E+00	3.2058E+01	0.0000E+00	3.2089E+01	0.0000E+00	3.2126E+01	0.0000E+00	3.2175E+01	0.0000E+00	3.2216E+01
678000	3.1981E+01	0.0000E+00	3.1999E+01	0.0000E+00	3.2030E+01	0.0000E+00	3.2066E+01	0.0000E+00	3.2116E+01	0.0000E+00	3.2156E+01
680000	3.1923E+01	0.0000E+00	3.1941E+01	0.0000E+00	3.1971E+01	0.0000E+00	3.2007E+01	0.0000E+00	3.2056E+01	0.0000E+00	3.2096E+01
682000	3.1864E+01	0.0000E+00	3.1882E+01	0.0000E+00	3.1912E+01	0.0000E+00	3.1948E+01	0.0000E+00	3.1997E+01	0.0000E+00	3.2037E+01
684000	3.1806E+01	0.0000E+00	3.1824E+01	0.0000E+00	3.1854E+01	0.0000E+00	3.1890E+01	0.0000E+00	3.1938E+01	0.0000E+00	3.1978E+01
686000	3.1748E+01	0.0000E+00	3.1765E+01	0.0000E+00	3.1795E+01	0.0000E+00	3.1831E+01	0.0000E+00	3.1880E+01	0.0000E+00	3.1919E+01
688000	3.1690E+01	0.0000E+00	3.1708E+01	0.0000E+00	3.1737E+01	0.0000E+00	3.1773E+01	0.0000E+00	3.1822E+01	0.0000E+00	3.1861E+01
690000	3.1632E+01	0.0000E+00	3.1650E+01	0.0000E+00	3.1680E+01	0.0000E+00	3.1715E+01	0.0000E+00	3.1763E+01	0.0000E+00	3.1803E+01
692000	3.1575E+01	0.0000E+00	3.1593E+01	0.0000E+00	3.1622E+01	0.0000E+00	3.1657E+01	0.0000E+00	3.1706E+01	0.0000E+00	3.1745E+01
694000	3.1518E+01	0.0000E+00	3.1535E+01	0.0000E+00	3.1565E+01	0.0000E+00	3.1600E+01	0.0000E+00	3.1648E+01	0.0000E+00	3.1687E+01
696000	3.1461E+01	0.0000E+00	3.1478E+01	0.0000E+00	3.1508E+01	0.0000E+00	3.1543E+01	0.0000E+00	3.1591E+01	0.0000E+00	3.1629E+01
698000	3.1404E+01	0.0000E+00	3.1422E+01	0.0000E+00	3.1451E+01	0.0000E+00	3.1486E+01	0.0000E+00	3.1533E+01	0.0000E+00	3.1572E+01
700000	3.1348E+01	0.0000E+00	3.1365E+01	0.0000E+00	3.1394E+01	0.0000E+00	3.1429E+01	0.0000E+00	3.1476E+01	0.0000E+00	3.1515E+01
702000	3.1292E+01	0.0000E+00	3.1309E+01	0.0000E+00	3.1338E+01	0.0000E+00	3.1373E+01	0.0000E+00	3.1420E+01	0.0000E+00	3.1458E+01
704000	3.1236E+01	0.0000E+00	3.1253E+01	0.0000E+00	3.1282E+01	0.0000E+00	3.1316E+01	0.0000E+00	3.1363E+01	0.0000E+00	3.1401E+01
706000	3.1180E+01	0.0000E+00	3.1197E+01	0.0000E+00	3.1226E+01	0.0000E+00	3.1260E+01	0.0000E+00	3.1307E+01	0.0000E+00	3.1345E+01
708000	3.1125E+01	0.0000E+00	3.1142E+01	0.0000E+00	3.1170E+01	0.0000E+00	3.1204E+01	0.0000E+00	3.1251E+01	0.0000E+00	3.1289E+01
710000	3.1069E+01	0.0000E+00	3.1086E+01	0.0000E+00	3.1115E+01	0.0000E+00	3.1149E+01	0.0000E+00	3.1195E+01	0.0000E+00	3.1233E+01
712000	3.1014E+01	0.0000E+00	3.1031E+01	0.0000E+00	3.1059E+01	0.0000E+00	3.1093E+01	0.0000E+00	3.1140E+01	0.0000E+00	3.1177E+01
714000	3.0959E+01	0.0000E+00	3.0976E+01	0.0000E+00	3.1004E+01	0.0000E+00	3.1038E+01	0.0000E+00	3.1084E+01	0.0000E+00	3.1122E+01
716000	3.0905E+01	0.0000E+00	3.0921E+01	0.0000E+00	3.0950E+01	0.0000E+00	3.0983E+01	0.0000E+00	3.1029E+01	0.0000E+00	3.1066E+01
718000	3.0850E+01	0.0000E+00	3.0867E+01	0.0000E+00	3.0895E+01	0.0000E+00	3.0928E+01	0.0000E+00	3.0974E+01	0.0000E+00	3.1011E+01
720000	3.0796E+01	0.0000E+00	3.0813E+01	0.0000E+00	3.0840E+01	0.0000E+00	3.0874E+01	0.0000E+00	3.0919E+01	0.0000E+00	3.0956E+01
722000	3.0742E+01	0.0000E+00	3.0758E+01	0.0000E+00	3.0786E+01	0.0000E+00	3.0820E+01	0.0000E+00	3.0865E+01	0.0000E+00	3.0902E+01
724000	3.0688E+01	0.0000E+00	3.0705E+01	0.0000E+00	3.0732E+01	0.0000E+00	3.0765E+01	0.0000E+00	3.0811E+01	0.0000E+00	3.0847E+01
726000	3.0635E+01	0.0000E+00	3.0651E+01	0.0000E+00	3.0679E+01	0.0000E+00	3.0712E+01	0.0000E+00	3.0757E+01	0.0000E+00	3.0793E+01

Time (yrs)	Arg 1	Curve 1	Arg 2	Curve 2	Arg 3	Curve 3	Arg 4	Curve 4	Arg 5	Curve 5	Arg 6
728000	3.0581E+01	0.0000E+00	3.0597E+01	0.0000E+00	3.0625E+01	0.0000E+00	3.0658E+01	0.0000E+00	3.0703E+01	0.0000E+00	3.0739E+01
730000	3.0528E+01	0.0000E+00	3.0544E+01	0.0000E+00	3.0572E+01	0.0000E+00	3.0604E+01	0.0000E+00	3.0649E+01	0.0000E+00	3.0685E+01
732000	3.0475E+01	0.0000E+00	3.0491E+01	0.0000E+00	3.0518E+01	0.0000E+00	3.0551E+01	0.0000E+00	3.0596E+01	0.0000E+00	3.0632E+01
734000	3.0422E+01	0.0000E+00	3.0438E+01	0.0000E+00	3.0466E+01	0.0000E+00	3.0498E+01	0.0000E+00	3.0542E+01	0.0000E+00	3.0578E+01
736000	3.0370E+01	0.0000E+00	3.0386E+01	0.0000E+00	3.0413E+01	0.0000E+00	3.0445E+01	0.0000E+00	3.0489E+01	0.0000E+00	3.0525E+01
738000	3.0317E+01	0.0000E+00	3.0333E+01	0.0000E+00	3.0360E+01	0.0000E+00	3.0393E+01	0.0000E+00	3.0436E+01	0.0000E+00	3.0472E+01
740000	3.0265E+01	0.0000E+00	3.0281E+01	0.0000E+00	3.0308E+01	0.0000E+00	3.0340E+01	0.0000E+00	3.0384E+01	0.0000E+00	3.0419E+01
742000	3.0213E+01	0.0000E+00	3.0229E+01	0.0000E+00	3.0256E+01	0.0000E+00	3.0288E+01	0.0000E+00	3.0331E+01	0.0000E+00	3.0367E+01
744000	3.0161E+01	0.0000E+00	3.0177E+01	0.0000E+00	3.0204E+01	0.0000E+00	3.0236E+01	0.0000E+00	3.0279E+01	0.0000E+00	3.0314E+01
746000	3.0110E+01	0.0000E+00	3.0125E+01	0.0000E+00	3.0152E+01	0.0000E+00	3.0184E+01	0.0000E+00	3.0227E+01	0.0000E+00	3.0262E+01
748000	3.0058E+01	0.0000E+00	3.0074E+01	0.0000E+00	3.0100E+01	0.0000E+00	3.0132E+01	0.0000E+00	3.0175E+01	0.0000E+00	3.0210E+01
750000	3.0007E+01	0.0000E+00	3.0023E+01	0.0000E+00	3.0049E+01	0.0000E+00	3.0081E+01	0.0000E+00	3.0124E+01	0.0000E+00	3.0158E+01
752000	2.9956E+01	0.0000E+00	2.9972E+01	0.0000E+00	2.9998E+01	0.0000E+00	3.0029E+01	0.0000E+00	3.0072E+01	0.0000E+00	3.0107E+01
754000	2.9905E+01	0.0000E+00	2.9921E+01	0.0000E+00	2.9947E+01	0.0000E+00	2.9978E+01	0.0000E+00	3.0021E+01	0.0000E+00	3.0056E+01
756000	2.9855E+01	0.0000E+00	2.9870E+01	0.0000E+00	2.9896E+01	0.0000E+00	2.9927E+01	0.0000E+00	2.9970E+01	0.0000E+00	3.0004E+01
758000	2.9804E+01	0.0000E+00	2.9820E+01	0.0000E+00	2.9846E+01	0.0000E+00	2.9877E+01	0.0000E+00	2.9919E+01	0.0000E+00	2.9953E+01
760000	2.9754E+01	0.0000E+00	2.9769E+01	0.0000E+00	2.9795E+01	0.0000E+00	2.9826E+01	0.0000E+00	2.9868E+01	0.0000E+00	2.9902E+01
762000	2.9704E+01	0.0000E+00	2.9719E+01	0.0000E+00	2.9745E+01	0.0000E+00	2.9776E+01	0.0000E+00	2.9818E+01	0.0000E+00	2.9852E+01
764000	2.9654E+01	0.0000E+00	2.9669E+01	0.0000E+00	2.9695E+01	0.0000E+00	2.9726E+01	0.0000E+00	2.9767E+01	0.0000E+00	2.9801E+01
766000	2.9604E+01	0.0000E+00	2.9619E+01	0.0000E+00	2.9645E+01	0.0000E+00	2.9676E+01	0.0000E+00	2.9717E+01	0.0000E+00	2.9751E+01
768000	2.9555E+01	0.0000E+00	2.9570E+01	0.0000E+00	2.9595E+01	0.0000E+00	2.9626E+01	0.0000E+00	2.9667E+01	0.0000E+00	2.9701E+01
770000	2.9505E+01	0.0000E+00	2.9520E+01	0.0000E+00	2.9546E+01	0.0000E+00	2.9576E+01	0.0000E+00	2.9618E+01	0.0000E+00	2.9651E+01
772000	2.9456E+01	0.0000E+00	2.9471E+01	0.0000E+00	2.9496E+01	0.0000E+00	2.9527E+01	0.0000E+00	2.9568E+01	0.0000E+00	2.9601E+01
774000	2.9407E+01	0.0000E+00	2.9422E+01	0.0000E+00	2.9447E+01	0.0000E+00	2.9477E+01	0.0000E+00	2.9519E+01	0.0000E+00	2.9552E+01
776000	2.9358E+01	0.0000E+00	2.9373E+01	0.0000E+00	2.9398E+01	0.0000E+00	2.9428E+01	0.0000E+00	2.9469E+01	0.0000E+00	2.9503E+01
778000	2.9310E+01	0.0000E+00	2.9324E+01	0.0000E+00	2.9349E+01	0.0000E+00	2.9379E+01	0.0000E+00	2.9420E+01	0.0000E+00	2.9453E+01
780000	2.9261E+01	0.0000E+00	2.9276E+01	0.0000E+00	2.9301E+01	0.0000E+00	2.9331E+01	0.0000E+00	2.9371E+01	0.0000E+00	2.9404E+01
782000	2.9213E+01	0.0000E+00	2.9228E+01	0.0000E+00	2.9252E+01	0.0000E+00	2.9282E+01	0.0000E+00	2.9323E+01	0.0000E+00	2.9356E+01
784000	2.9165E+01	0.0000E+00	2.9179E+01	0.0000E+00	2.9204E+01	0.0000E+00	2.9234E+01	0.0000E+00	2.9274E+01	0.0000E+00	2.9307E+01
786000	2.9117E+01	0.0000E+00	2.9131E+01	0.0000E+00	2.9156E+01	0.0000E+00	2.9186E+01	0.0000E+00	2.9226E+01	0.0000E+00	2.9258E+01
788000	2.9069E+01	0.0000E+00	2.9083E+01	0.0000E+00	2.9108E+01	0.0000E+00	2.9138E+01	0.0000E+00	2.9178E+01	0.0000E+00	2.9210E+01
790000	2.9021E+01	0.0000E+00	2.9036E+01	0.0000E+00	2.9060E+01	0.0000E+00	2.9090E+01	0.0000E+00	2.9130E+01	0.0000E+00	2.9162E+01
792000	2.8974E+01	0.0000E+00	2.8988E+01	0.0000E+00	2.9013E+01	0.0000E+00	2.9042E+01	0.0000E+00	2.9082E+01	0.0000E+00	2.9114E+01
794000	2.8927E+01	0.0000E+00	2.8941E+01	0.0000E+00	2.8965E+01	0.0000E+00	2.8994E+01	0.0000E+00	2.9034E+01	0.0000E+00	2.9066E+01
796000	2.8879E+01	0.0000E+00	2.8894E+01	0.0000E+00	2.8918E+01	0.0000E+00	2.8947E+01	0.0000E+00	2.8987E+01	0.0000E+00	2.9019E+01
798000	2.8832E+01	0.0000E+00	2.8847E+01	0.0000E+00	2.8871E+01	0.0000E+00	2.8900E+01	0.0000E+00	2.8939E+01	0.0000E+00	2.8971E+01
800000	2.8786E+01	0.0000E+00	2.8800E+01	0.0000E+00	2.8824E+01	0.0000E+00	2.8853E+01	0.0000E+00	2.8892E+01	0.0000E+00	2.8924E+01
802000	2.8739E+01	0.0000E+00	2.8753E+01	0.0000E+00	2.8777E+01	0.0000E+00	2.8806E+01	0.0000E+00	2.8845E+01	0.0000E+00	2.8877E+01
804000	2.8692E+01	0.0000E+00	2.8707E+01	0.0000E+00	2.8731E+01	0.0000E+00	2.8759E+01	0.0000E+00	2.8798E+01	0.0000E+00	2.8830E+01
806000	2.8646E+01	0.0000E+00	2.8660E+01	0.0000E+00	2.8684E+01	0.0000E+00	2.8713E+01	0.0000E+00	2.8752E+01	0.0000E+00	2.8783E+01
808000	2.8600E+01	0.0000E+00	2.8614E+01	0.0000E+00	2.8638E+01	0.0000E+00	2.8666E+01	0.0000E+00	2.8705E+01	0.0000E+00	2.8736E+01
810000	2.8554E+01	0.0000E+00	2.8568E+01	0.0000E+00	2.8592E+01	0.0000E+00	2.8620E+01	0.0000E+00	2.8659E+01	0.0000E+00	2.8690E+01
812000	2.8508E+01	0.0000E+00	2.8522E+01	0.0000E+00	2.8546E+01	0.0000E+00	2.8574E+01	0.0000E+00	2.8612E+01	0.0000E+00	2.8644E+01
814000	2.8462E+01	0.0000E+00	2.8476E+01	0.0000E+00	2.8500E+01	0.0000E+00	2.8528E+01	0.0000E+00	2.8566E+01	0.0000E+00	2.8597E+01
816000	2.8417E+01	0.0000E+00	2.8431E+01	0.0000E+00	2.8454E+01	0.0000E+00	2.8482E+01	0.0000E+00	2.8521E+01	0.0000E+00	2.8551E+01
818000	2.8372E+01	0.0000E+00	2.8385E+01	0.0000E+00	2.8409E+01	0.0000E+00	2.8437E+01	0.0000E+00	2.8475E+01	0.0000E+00	2.8506E+01
820000	2.8326E+01	0.0000E+00	2.8340E+01	0.0000E+00	2.8363E+01	0.0000E+00	2.8391E+01	0.0000E+00	2.8429E+01	0.0000E+00	2.8460E+01
822000	2.8281E+01	0.0000E+00	2.8295E+01	0.0000E+00	2.8318E+01	0.0000E+00	2.8346E+01	0.0000E+00	2.8384E+01	0.0000E+00	2.8414E+01
824000	2.8236E+01	0.0000E+00	2.8250E+01	0.0000E+00	2.8273E+01	0.0000E+00	2.8301E+01	0.0000E+00	2.8339E+01	0.0000E+00	2.8369E+01
826000	2.8192E+01	0.0000E+00	2.8205E+01	0.0000E+00	2.8228E+01	0.0000E+00	2.8256E+01	0.0000E+00	2.8293E+01	0.0000E+00	2.8324E+01
828000	2.8147E+01	0.0000E+00	2.8161E+01	0.0000E+00	2.8184E+01	0.0000E+00	2.8211E+01	0.0000E+00	2.8248E+01	0.0000E+00	2.8279E+01
830000	2.8103E+01	0.0000E+00	2.8116E+01	0.0000E+00	2.8139E+01	0.0000E+00	2.8166E+01	0.0000E+00	2.8204E+01	0.0000E+00	2.8234E+01

Time (yrs)	Arg 1	Curve 1	Arg 2	Curve 2	Arg 3	Curve 3	Arg 4	Curve 4	Arg 5	Curve 5	Arg 6
832000	2.8058E+01	0.0000E+00	2.8072E+01	0.0000E+00	2.8095E+01	0.0000E+00	2.8122E+01	0.0000E+00	2.8159E+01	0.0000E+00	2.8189E+01
834000	2.8014E+01	0.0000E+00	2.8027E+01	0.0000E+00	2.8050E+01	0.0000E+00	2.8077E+01	0.0000E+00	2.8115E+01	0.0000E+00	2.8145E+01
836000	2.7970E+01	0.0000E+00	2.7983E+01	0.0000E+00	2.8006E+01	0.0000E+00	2.8033E+01	0.0000E+00	2.8070E+01	0.0000E+00	2.8100E+01
838000	2.7926E+01	0.0000E+00	2.7940E+01	0.0000E+00	2.7962E+01	0.0000E+00	2.7989E+01	0.0000E+00	2.8026E+01	0.0000E+00	2.8056E+01
840000	2.7882E+01	0.0000E+00	2.7896E+01	0.0000E+00	2.7918E+01	0.0000E+00	2.7945E+01	0.0000E+00	2.7982E+01	0.0000E+00	2.8012E+01
842000	2.7839E+01	0.0000E+00	2.7852E+01	0.0000E+00	2.7875E+01	0.0000E+00	2.7901E+01	0.0000E+00	2.7938E+01	0.0000E+00	2.7968E+01
844000	2.7795E+01	0.0000E+00	2.7809E+01	0.0000E+00	2.7831E+01	0.0000E+00	2.7858E+01	0.0000E+00	2.7894E+01	0.0000E+00	2.7924E+01
846000	2.7752E+01	0.0000E+00	2.7765E+01	0.0000E+00	2.7788E+01	0.0000E+00	2.7814E+01	0.0000E+00	2.7851E+01	0.0000E+00	2.7880E+01
848000	2.7709E+01	0.0000E+00	2.7722E+01	0.0000E+00	2.7744E+01	0.0000E+00	2.7771E+01	0.0000E+00	2.7807E+01	0.0000E+00	2.7836E+01
850000	2.7666E+01	0.0000E+00	2.7679E+01	0.0000E+00	2.7701E+01	0.0000E+00	2.7728E+01	0.0000E+00	2.7764E+01	0.0000E+00	2.7793E+01
852000	2.7623E+01	0.0000E+00	2.7636E+01	0.0000E+00	2.7658E+01	0.0000E+00	2.7685E+01	0.0000E+00	2.7721E+01	0.0000E+00	2.7750E+01
854000	2.7580E+01	0.0000E+00	2.7593E+01	0.0000E+00	2.7615E+01	0.0000E+00	2.7642E+01	0.0000E+00	2.7677E+01	0.0000E+00	2.7707E+01
856000	2.7538E+01	0.0000E+00	2.7551E+01	0.0000E+00	2.7573E+01	0.0000E+00	2.7599E+01	0.0000E+00	2.7635E+01	0.0000E+00	2.7664E+01
858000	2.7495E+01	0.0000E+00	2.7508E+01	0.0000E+00	2.7530E+01	0.0000E+00	2.7556E+01	0.0000E+00	2.7592E+01	0.0000E+00	2.7621E+01
860000	2.7453E+01	0.0000E+00	2.7466E+01	0.0000E+00	2.7488E+01	0.0000E+00	2.7514E+01	0.0000E+00	2.7549E+01	0.0000E+00	2.7578E+01
862000	2.7411E+01	0.0000E+00	2.7424E+01	0.0000E+00	2.7445E+01	0.0000E+00	2.7471E+01	0.0000E+00	2.7507E+01	0.0000E+00	2.7535E+01
864000	2.7369E+01	0.0000E+00	2.7381E+01	0.0000E+00	2.7403E+01	0.0000E+00	2.7429E+01	0.0000E+00	2.7464E+01	0.0000E+00	2.7493E+01
866000	2.7327E+01	0.0000E+00	2.7339E+01	0.0000E+00	2.7361E+01	0.0000E+00	2.7387E+01	0.0000E+00	2.7422E+01	0.0000E+00	2.7451E+01
868000	2.7285E+01	0.0000E+00	2.7298E+01	0.0000E+00	2.7319E+01	0.0000E+00	2.7345E+01	0.0000E+00	2.7380E+01	0.0000E+00	2.7408E+01
870000	2.7243E+01	0.0000E+00	2.7256E+01	0.0000E+00	2.7277E+01	0.0000E+00	2.7303E+01	0.0000E+00	2.7338E+01	0.0000E+00	2.7366E+01
872000	2.7202E+01	0.0000E+00	2.7214E+01	0.0000E+00	2.7236E+01	0.0000E+00	2.7261E+01	0.0000E+00	2.7296E+01	0.0000E+00	2.7324E+01
874000	2.7160E+01	0.0000E+00	2.7173E+01	0.0000E+00	2.7194E+01	0.0000E+00	2.7220E+01	0.0000E+00	2.7254E+01	0.0000E+00	2.7283E+01
876000	2.7119E+01	0.0000E+00	2.7132E+01	0.0000E+00	2.7153E+01	0.0000E+00	2.7178E+01	0.0000E+00	2.7213E+01	0.0000E+00	2.7241E+01
878000	2.7078E+01	0.0000E+00	2.7090E+01	0.0000E+00	2.7112E+01	0.0000E+00	2.7137E+01	0.0000E+00	2.7171E+01	0.0000E+00	2.7199E+01
880000	2.7037E+01	0.0000E+00	2.7049E+01	0.0000E+00	2.7071E+01	0.0000E+00	2.7096E+01	0.0000E+00	2.7130E+01	0.0000E+00	2.7158E+01
882000	2.6996E+01	0.0000E+00	2.7008E+01	0.0000E+00	2.7030E+01	0.0000E+00	2.7055E+01	0.0000E+00	2.7089E+01	0.0000E+00	2.7117E+01
884000	2.6955E+01	0.0000E+00	2.6968E+01	0.0000E+00	2.6989E+01	0.0000E+00	2.7014E+01	0.0000E+00	2.7048E+01	0.0000E+00	2.7076E+01
886000	2.6915E+01	0.0000E+00	2.6927E+01	0.0000E+00	2.6948E+01	0.0000E+00	2.6973E+01	0.0000E+00	2.7007E+01	0.0000E+00	2.7035E+01
888000	2.6874E+01	0.0000E+00	2.6886E+01	0.0000E+00	2.6907E+01	0.0000E+00	2.6932E+01	0.0000E+00	2.6966E+01	0.0000E+00	2.6994E+01
890000	2.6834E+01	0.0000E+00	2.6846E+01	0.0000E+00	2.6867E+01	0.0000E+00	2.6892E+01	0.0000E+00	2.6926E+01	0.0000E+00	2.6953E+01
892000	2.6794E+01	0.0000E+00	2.6806E+01	0.0000E+00	2.6827E+01	0.0000E+00	2.6851E+01	0.0000E+00	2.6885E+01	0.0000E+00	2.6912E+01
894000	2.6753E+01	0.0000E+00	2.6766E+01	0.0000E+00	2.6786E+01	0.0000E+00	2.6811E+01	0.0000E+00	2.6845E+01	0.0000E+00	2.6872E+01
896000	2.6713E+01	0.0000E+00	2.6726E+01	0.0000E+00	2.6746E+01	0.0000E+00	2.6771E+01	0.0000E+00	2.6804E+01	0.0000E+00	2.6832E+01
898000	2.6674E+01	0.0000E+00	2.6686E+01	0.0000E+00	2.6706E+01	0.0000E+00	2.6731E+01	0.0000E+00	2.6764E+01	0.0000E+00	2.6791E+01
900000	2.6634E+01	0.0000E+00	2.6646E+01	0.0000E+00	2.6666E+01	0.0000E+00	2.6691E+01	0.0000E+00	2.6724E+01	0.0000E+00	2.6751E+01
902000	2.6594E+01	0.0000E+00	2.6606E+01	0.0000E+00	2.6627E+01	0.0000E+00	2.6651E+01	0.0000E+00	2.6684E+01	0.0000E+00	2.6711E+01
904000	2.6555E+01	0.0000E+00	2.6567E+01	0.0000E+00	2.6587E+01	0.0000E+00	2.6611E+01	0.0000E+00	2.6644E+01	0.0000E+00	2.6671E+01
906000	2.6515E+01	0.0000E+00	2.6527E+01	0.0000E+00	2.6548E+01	0.0000E+00	2.6572E+01	0.0000E+00	2.6605E+01	0.0000E+00	2.6632E+01
908000	2.6476E+01	0.0000E+00	2.6488E+01	0.0000E+00	2.6508E+01	0.0000E+00	2.6532E+01	0.0000E+00	2.6565E+01	0.0000E+00	2.6592E+01
910000	2.6437E+01	0.0000E+00	2.6449E+01	0.0000E+00	2.6469E+01	0.0000E+00	2.6493E+01	0.0000E+00	2.6526E+01	0.0000E+00	2.6552E+01
912000	2.6398E+01	0.0000E+00	2.6410E+01	0.0000E+00	2.6430E+01	0.0000E+00	2.6454E+01	0.0000E+00	2.6487E+01	0.0000E+00	2.6513E+01
914000	2.6359E+01	0.0000E+00	2.6371E+01	0.0000E+00	2.6391E+01	0.0000E+00	2.6415E+01	0.0000E+00	2.6447E+01	0.0000E+00	2.6474E+01
916000	2.6320E+01	0.0000E+00	2.6332E+01	0.0000E+00	2.6352E+01	0.0000E+00	2.6376E+01	0.0000E+00	2.6408E+01	0.0000E+00	2.6435E+01
918000	2.6281E+01	0.0000E+00	2.6293E+01	0.0000E+00	2.6313E+01	0.0000E+00	2.6337E+01	0.0000E+00	2.6369E+01	0.0000E+00	2.6396E+01
920000	2.6243E+01	0.0000E+00	2.6255E+01	0.0000E+00	2.6274E+01	0.0000E+00	2.6298E+01	0.0000E+00	2.6331E+01	0.0000E+00	2.6357E+01
922000	2.6204E+01	0.0000E+00	2.6216E+01	0.0000E+00	2.6236E+01	0.0000E+00	2.6260E+01	0.0000E+00	2.6292E+01	0.0000E+00	2.6318E+01
924000	2.6166E+01	0.0000E+00	2.6178E+01	0.0000E+00	2.6197E+01	0.0000E+00	2.6221E+01	0.0000E+00	2.6253E+01	0.0000E+00	2.6279E+01
926000	2.6128E+01	0.0000E+00	2.6139E+01	0.0000E+00	2.6159E+01	0.0000E+00	2.6183E+01	0.0000E+00	2.6215E+01	0.0000E+00	2.6241E+01
928000	2.6090E+01	0.0000E+00	2.6101E+01	0.0000E+00	2.6121E+01	0.0000E+00	2.6144E+01	0.0000E+00	2.6176E+01	0.0000E+00	2.6202E+01
930000	2.6052E+01	0.0000E+00	2.6063E+01	0.0000E+00	2.6083E+01	0.0000E+00	2.6106E+01	0.0000E+00	2.6138E+01	0.0000E+00	2.6164E+01
932000	2.6014E+01	0.0000E+00	2.6025E+01	0.0000E+00	2.6045E+01	0.0000E+00	2.6068E+01	0.0000E+00	2.6100E+01	0.0000E+00	2.6126E+01
934000	2.5976E+01	0.0000E+00	2.5988E+01	0.0000E+00	2.6007E+01	0.0000E+00	2.6030E+01	0.0000E+00	2.6062E+01	0.0000E+00	2.6088E+01

Time (yrs)	Arg 1	Curve 1	Arg 2	Curve 2	Arg 3	Curve 3	Arg 4	Curve 4	Arg 5	Curve 5	Arg 6
936000	2.5938E+01	0.0000E+00	2.5950E+01	0.0000E+00	2.5969E+01	0.0000E+00	2.5992E+01	0.0000E+00	2.6024E+01	0.0000E+00	2.6050E+01
938000	2.5901E+01	0.0000E+00	2.5912E+01	0.0000E+00	2.5932E+01	0.0000E+00	2.5955E+01	0.0000E+00	2.5986E+01	0.0000E+00	2.6012E+01
940000	2.5863E+01	0.0000E+00	2.5875E+01	0.0000E+00	2.5894E+01	0.0000E+00	2.5917E+01	0.0000E+00	2.5949E+01	0.0000E+00	2.5974E+01
942000	2.5826E+01	0.0000E+00	2.5837E+01	0.0000E+00	2.5857E+01	0.0000E+00	2.5880E+01	0.0000E+00	2.5911E+01	0.0000E+00	2.5936E+01
944000	2.5789E+01	0.0000E+00	2.5800E+01	0.0000E+00	2.5819E+01	0.0000E+00	2.5842E+01	0.0000E+00	2.5873E+01	0.0000E+00	2.5899E+01
946000	2.5752E+01	0.0000E+00	2.5763E+01	0.0000E+00	2.5782E+01	0.0000E+00	2.5805E+01	0.0000E+00	2.5836E+01	0.0000E+00	2.5861E+01
948000	2.5715E+01	0.0000E+00	2.5726E+01	0.0000E+00	2.5745E+01	0.0000E+00	2.5768E+01	0.0000E+00	2.5799E+01	0.0000E+00	2.5824E+01
950000	2.5678E+01	0.0000E+00	2.5689E+01	0.0000E+00	2.5708E+01	0.0000E+00	2.5731E+01	0.0000E+00	2.5762E+01	0.0000E+00	2.5787E+01
952000	2.5641E+01	0.0000E+00	2.5652E+01	0.0000E+00	2.5671E+01	0.0000E+00	2.5694E+01	0.0000E+00	2.5725E+01	0.0000E+00	2.5750E+01
954000	2.5604E+01	0.0000E+00	2.5615E+01	0.0000E+00	2.5634E+01	0.0000E+00	2.5657E+01	0.0000E+00	2.5688E+01	0.0000E+00	2.5713E+01
956000	2.5568E+01	0.0000E+00	2.5579E+01	0.0000E+00	2.5598E+01	0.0000E+00	2.5620E+01	0.0000E+00	2.5651E+01	0.0000E+00	2.5676E+01
958000	2.5531E+01	0.0000E+00	2.5542E+01	0.0000E+00	2.5561E+01	0.0000E+00	2.5584E+01	0.0000E+00	2.5614E+01	0.0000E+00	2.5639E+01
960000	2.5495E+01	0.0000E+00	2.5506E+01	0.0000E+00	2.5525E+01	0.0000E+00	2.5547E+01	0.0000E+00	2.5578E+01	0.0000E+00	2.5602E+01
962000	2.5459E+01	0.0000E+00	2.5470E+01	0.0000E+00	2.5488E+01	0.0000E+00	2.5511E+01	0.0000E+00	2.5541E+01	0.0000E+00	2.5566E+01
964000	2.5422E+01	0.0000E+00	2.5433E+01	0.0000E+00	2.5452E+01	0.0000E+00	2.5474E+01	0.0000E+00	2.5505E+01	0.0000E+00	2.5529E+01
966000	2.5386E+01	0.0000E+00	2.5397E+01	0.0000E+00	2.5416E+01	0.0000E+00	2.5438E+01	0.0000E+00	2.5468E+01	0.0000E+00	2.5493E+01
968000	2.5350E+01	0.0000E+00	2.5361E+01	0.0000E+00	2.5380E+01	0.0000E+00	2.5402E+01	0.0000E+00	2.5432E+01	0.0000E+00	2.5457E+01
970000	2.5315E+01	0.0000E+00	2.5325E+01	0.0000E+00	2.5344E+01	0.0000E+00	2.5366E+01	0.0000E+00	2.5396E+01	0.0000E+00	2.5420E+01
972000	2.5279E+01	0.0000E+00	2.5290E+01	0.0000E+00	2.5308E+01	0.0000E+00	2.5330E+01	0.0000E+00	2.5360E+01	0.0000E+00	2.5384E+01
974000	2.5243E+01	0.0000E+00	2.5254E+01	0.0000E+00	2.5272E+01	0.0000E+00	2.5294E+01	0.0000E+00	2.5324E+01	0.0000E+00	2.5348E+01
976000	2.5208E+01	0.0000E+00	2.5218E+01	0.0000E+00	2.5237E+01	0.0000E+00	2.5259E+01	0.0000E+00	2.5288E+01	0.0000E+00	2.5313E+01
978000	2.5172E+01	0.0000E+00	2.5183E+01	0.0000E+00	2.5201E+01	0.0000E+00	2.5223E+01	0.0000E+00	2.5253E+01	0.0000E+00	2.5277E+01
980000	2.5137E+01	0.0000E+00	2.5147E+01	0.0000E+00	2.5166E+01	0.0000E+00	2.5187E+01	0.0000E+00	2.5217E+01	0.0000E+00	2.5241E+01
982000	2.5101E+01	0.0000E+00	2.5112E+01	0.0000E+00	2.5130E+01	0.0000E+00	2.5152E+01	0.0000E+00	2.5182E+01	0.0000E+00	2.5206E+01
984000	2.5066E+01	0.0000E+00	2.5077E+01	0.0000E+00	2.5095E+01	0.0000E+00	2.5117E+01	0.0000E+00	2.5146E+01	0.0000E+00	2.5170E+01
986000	2.5031E+01	0.0000E+00	2.5042E+01	0.0000E+00	2.5060E+01	0.0000E+00	2.5082E+01	0.0000E+00	2.5111E+01	0.0000E+00	2.5135E+01
988000	2.4996E+01	0.0000E+00	2.5007E+01	0.0000E+00	2.5025E+01	0.0000E+00	2.5046E+01	0.0000E+00	2.5076E+01	0.0000E+00	2.5099E+01
990000	2.4961E+01	0.0000E+00	2.4972E+01	0.0000E+00	2.4990E+01	0.0000E+00	2.5011E+01	0.0000E+00	2.5041E+01	0.0000E+00	2.5064E+01
992000	2.4927E+01	0.0000E+00	2.4937E+01	0.0000E+00	2.4955E+01	0.0000E+00	2.4977E+01	0.0000E+00	2.5006E+01	0.0000E+00	2.5029E+01
994000	2.4892E+01	0.0000E+00	2.4902E+01	0.0000E+00	2.4920E+01	0.0000E+00	2.4942E+01	0.0000E+00	2.4971E+01	0.0000E+00	2.4994E+01
996000	2.4857E+01	0.0000E+00	2.4868E+01	0.0000E+00	2.4886E+01	0.0000E+00	2.4907E+01	0.0000E+00	2.4936E+01	0.0000E+00	2.4959E+01
998000	2.4823E+01	0.0000E+00	2.4833E+01	0.0000E+00	2.4851E+01	0.0000E+00	2.4872E+01	0.0000E+00	2.4901E+01	0.0000E+00	2.4925E+01
1000000	2.4788E+01	0.0000E+00	2.4799E+01	0.0000E+00	2.4817E+01	0.0000E+00	2.4838E+01	0.0000E+00	2.4867E+01	0.0000E+00	2.4890E+01


Flux Out (gm/yr)
1.0000E+00
9.0000E-01
8.0000E-01
7.0000E-01
6.0000E-01
5.0000E-01
4.0000E-01
3.0000E-01
2.0000E-01
1.0000E-01
0.0000E+00
0
100000
200000
300000
400000
500000
600000
700000
800000
900000
1000000

Curve 6	Arg 7	Curve 7	Arg 8	Curve 8	Arg 9	Curve 9	Arg 10	Curve 10	Arg 11	Curve 11	Arg 12	Curve 12
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	7.9667E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	5.0779E+02	0.0000E+00	1.0492E+03	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	4.0213E+02	0.0000E+00	5.5813E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	3.4315E+02	0.0000E+00	4.2582E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	3.0423E+02	0.0000E+00	3.5754E+02	0.0000E+00	7.5384E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	2.7609E+02	0.0000E+00	3.1414E+02	0.0000E+00	4.9613E+02	0.0000E+00	8.7338E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	2.5453E+02	0.0000E+00	2.8344E+02	0.0000E+00	3.9626E+02	0.0000E+00	5.2608E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	2.3731E+02	0.0000E+00	2.6026E+02	0.0000E+00	3.3948E+02	0.0000E+00	4.1105E+02	0.0000E+00	1.0298E+03	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	2.2316E+02	0.0000E+00	2.4194E+02	0.0000E+00	3.0166E+02	0.0000E+00	3.4865E+02	0.0000E+00	5.5515E+02	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	2.1126E+02	0.0000E+00	2.2700E+02	0.0000E+00	2.7416E+02	0.0000E+00	3.0805E+02	0.0000E+00	4.2450E+02	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	2.0106E+02	0.0000E+00	2.1451E+02	0.0000E+00	2.5301E+02	0.0000E+00	2.7894E+02	0.0000E+00	3.5675E+02	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	1.9221E+02	0.0000E+00	2.0387E+02	0.0000E+00	2.3608E+02	0.0000E+00	2.5675E+02	0.0000E+00	3.1360E+02	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	1.8441E+02	0.0000E+00	1.9465E+02	0.0000E+00	2.2213E+02	0.0000E+00	2.3912E+02	0.0000E+00	2.8305E+02	0.0000E+00	7.6648E+02	0.0000E+00
0.0000E+00	1.7749E+02	0.0000E+00	1.8658E+02	0.0000E+00	2.1039E+02	0.0000E+00	2.2466E+02	0.0000E+00	2.5995E+02	0.0000E+00	4.9969E+02	0.0000E+00
0.0000E+00	1.7129E+02	0.0000E+00	1.7942E+02	0.0000E+00	2.0031E+02	0.0000E+00	2.1253E+02	0.0000E+00	2.4170E+02	0.0000E+00	3.9807E+02	0.0000E+00
0.0000E+00	1.6568E+02	0.0000E+00	1.7302E+02	0.0000E+00	1.9155E+02	0.0000E+00	2.0216E+02	0.0000E+00	2.2680E+02	0.0000E+00	3.4061E+02	0.0000E+00
0.0000E+00	1.6059E+02	0.0000E+00	1.6725E+02	0.0000E+00	1.8383E+02	0.0000E+00	1.9317E+02	0.0000E+00	2.1434E+02	0.0000E+00	3.0246E+02	0.0000E+00
0.0000E+00	1.5593E+02	0.0000E+00	1.6202E+02	0.0000E+00	1.7697E+02	0.0000E+00	1.8526E+02	0.0000E+00	2.0372E+02	0.0000E+00	2.7476E+02	0.0000E+00
0.0000E+00	1.5165E+02	0.0000E+00	1.5724E+02	0.0000E+00	1.7082E+02	0.0000E+00	1.7825E+02	0.0000E+00	1.9453E+02	0.0000E+00	2.5348E+02	0.0000E+00
0.0000E+00	1.4770E+02	0.0000E+00	1.5286E+02	0.0000E+00	1.6526E+02	0.0000E+00	1.7197E+02	0.0000E+00	1.8646E+02	0.0000E+00	2.3646E+02	0.0000E+00
0.0000E+00	1.4404E+02	0.0000E+00	1.4882E+02	0.0000E+00	1.6020E+02	0.0000E+00	1.6630E+02	0.0000E+00	1.7932E+02	0.0000E+00	2.2245E+02	0.0000E+00
0.0000E+00	1.4064E+02	0.0000E+00	1.4508E+02	0.0000E+00	1.5558E+02	0.0000E+00	1.6115E+02	0.0000E+00	1.7293E+02	0.0000E+00	2.1066E+02	0.0000E+00
0.0000E+00	1.3746E+02	0.0000E+00	1.4160E+02	0.0000E+00	1.5133E+02	0.0000E+00	1.5645E+02	0.0000E+00	1.6717E+02	0.0000E+00	2.0055E+02	0.0000E+00
0.0000E+00	1.3448E+02	0.0000E+00	1.3836E+02	0.0000E+00	1.4740E+02	0.0000E+00	1.5213E+02	0.0000E+00	1.6194E+02	0.0000E+00	1.9175E+02	0.0000E+00
0.0000E+00	1.3169E+02	0.0000E+00	1.3532E+02	0.0000E+00	1.4376E+02	0.0000E+00	1.4814E+02	0.0000E+00	1.5717E+02	0.0000E+00	1.8401E+02	0.0000E+00
0.0000E+00	1.2905E+02	0.0000E+00	1.3248E+02	0.0000E+00	1.4037E+02	0.0000E+00	1.4445E+02	0.0000E+00	1.5280E+02	0.0000E+00	1.7713E+02	0.0000E+00
0.0000E+00	1.2657E+02	0.0000E+00	1.2980E+02	0.0000E+00	1.3721E+02	0.0000E+00	1.4102E+02	0.0000E+00	1.4876E+02	0.0000E+00	1.7096E+02	0.0000E+00
0.0000E+00	1.2422E+02	0.0000E+00	1.2728E+02	0.0000E+00	1.3425E+02	0.0000E+00	1.3781E+02	0.0000E+00	1.4502E+02	0.0000E+00	1.6539E+02	0.0000E+00
0.0000E+00	1.2200E+02	0.0000E+00	1.2489E+02	0.0000E+00	1.3147E+02	0.0000E+00	1.3481E+02	0.0000E+00	1.4155E+02	0.0000E+00	1.6032E+02	0.0000E+00
0.0000E+00	1.1989E+02	0.0000E+00	1.2263E+02	0.0000E+00	1.2885E+02	0.0000E+00	1.3200E+02	0.0000E+00	1.3831E+02	0.0000E+00	1.5569E+02	0.0000E+00
0.0000E+00	1.1788E+02	0.0000E+00	1.2049E+02	0.0000E+00	1.2638E+02	0.0000E+00	1.2935E+02	0.0000E+00	1.3528E+02	0.0000E+00	1.5143E+02	0.0000E+00
0.0000E+00	1.1597E+02	0.0000E+00	1.1845E+02	0.0000E+00	1.2404E+02	0.0000E+00	1.2685E+02	0.0000E+00	1.3244E+02	0.0000E+00	1.4749E+02	0.0000E+00
0.0000E+00	1.1414E+02	0.0000E+00	1.1651E+02	0.0000E+00	1.2183E+02	0.0000E+00	1.2449E+02	0.0000E+00	1.2976E+02	0.0000E+00	1.4385E+02	0.0000E+00
0.0000E+00	1.1240E+02	0.0000E+00	1.1466E+02	0.0000E+00	1.1972E+02	0.0000E+00	1.2225E+02	0.0000E+00	1.2724E+02	0.0000E+00	1.4046E+02	0.0000E+00
0.0000E+00	1.1073E+02	0.0000E+00	1.1290E+02	0.0000E+00	1.1772E+02	0.0000E+00	1.2013E+02	0.0000E+00	1.2486E+02	0.0000E+00	1.3729E+02	0.0000E+00
0.0000E+00	1.0913E+02	0.0000E+00	1.1121E+02	0.0000E+00	1.1582E+02	0.0000E+00	1.1811E+02	0.0000E+00	1.2260E+02	0.0000E+00	1.3432E+02	0.0000E+00
0.0000E+00	1.0760E+02	0.0000E+00	1.0959E+02	0.0000E+00	1.1400E+02	0.0000E+00	1.1618E+02	0.0000E+00	1.2046E+02	0.0000E+00	1.3154E+02	0.0000E+00
0.0000E+00	1.0613E+02	0.0000E+00	1.0804E+02	0.0000E+00	1.1226E+02	0.0000E+00	1.1435E+02	0.0000E+00	1.1842E+02	0.0000E+00	1.2891E+02	0.0000E+00
0.0000E+00	1.0471E+02	0.0000E+00	1.0655E+02	0.0000E+00	1.1060E+02	0.0000E+00	1.1260E+02	0.0000E+00	1.1649E+02	0.0000E+00	1.2644E+02	0.0000E+00
0.0000E+00	1.0335E+02	0.0000E+00	1.0512E+02	0.0000E+00	1.0901E+02	0.0000E+00	1.1092E+02	0.0000E+00	1.1464E+02	0.0000E+00	1.2410E+02	0.0000E+00
0.0000E+00	1.0204E+02	0.0000E+00	1.0374E+02	0.0000E+00	1.0748E+02	0.0000E+00	1.0931E+02	0.0000E+00	1.1287E+02	0.0000E+00	1.2188E+02	0.0000E+00
0.0000E+00	1.0078E+02	0.0000E+00	1.0242E+02	0.0000E+00	1.0601E+02	0.0000E+00	1.0777E+02	0.0000E+00	1.1118E+02	0.0000E+00	1.1978E+02	0.0000E+00
0.0000E+00	9.9557E+01	0.0000E+00	1.0114E+02	0.0000E+00	1.0460E+02	0.0000E+00	1.0630E+02	0.0000E+00	1.0957E+02	0.0000E+00	1.1777E+02	0.0000E+00
0.0000E+00	9.8379E+01	0.0000E+00	9.9907E+01	0.0000E+00	1.0325E+02	0.0000E+00	1.0487E+02	0.0000E+00	1.0802E+02	0.0000E+00	1.1587E+02	0.0000E+00
0.0000E+00	9.7240E+01	0.0000E+00	9.8716E+01	0.0000E+00	1.0194E+02	0.0000E+00	1.0351E+02	0.0000E+00	1.0653E+02	0.0000E+00	1.1405E+02	0.0000E+00
0.0000E+00	9.6139E+01	0.0000E+00	9.7566E+01	0.0000E+00	1.0068E+02	0.0000E+00	1.0219E+02	0.0000E+00	1.0510E+02	0.0000E+00	1.1231E+02	0.0000E+00

Curve 6	Arg 7	Curve 7	Arg 8	Curve 8	Arg 9	Curve 9	Arg 10	Curve 10	Arg 11	Curve 11	Arg 12	Curve 12
0.0000E+00	9.5072E+01	0.0000E+00	9.6454E+01	0.0000E+00	9.9461E+01	0.0000E+00	1.0092E+02	0.0000E+00	1.0372E+02	0.0000E+00	1.1064E+02	0.0000E+00
0.0000E+00	9.4039E+01	0.0000E+00	9.5378E+01	0.0000E+00	9.8286E+01	0.0000E+00	9.9695E+01	0.0000E+00	1.0240E+02	0.0000E+00	1.0905E+02	0.0000E+00
0.0000E+00	9.3038E+01	0.0000E+00	9.4336E+01	0.0000E+00	9.7151E+01	0.0000E+00	9.8512E+01	0.0000E+00	1.0112E+02	0.0000E+00	1.0752E+02	0.0000E+00
0.0000E+00	9.2067E+01	0.0000E+00	9.3325E+01	0.0000E+00	9.6052E+01	0.0000E+00	9.7369E+01	0.0000E+00	9.9888E+01	0.0000E+00	1.0605E+02	0.0000E+00
0.0000E+00	9.1124E+01	0.0000E+00	9.2346E+01	0.0000E+00	9.4988E+01	0.0000E+00	9.6263E+01	0.0000E+00	9.8699E+01	0.0000E+00	1.0464E+02	0.0000E+00
0.0000E+00	9.0209E+01	0.0000E+00	9.1395E+01	0.0000E+00	9.3958E+01	0.0000E+00	9.5193E+01	0.0000E+00	9.7549E+01	0.0000E+00	1.0328E+02	0.0000E+00
0.0000E+00	8.9320E+01	0.0000E+00	9.0472E+01	0.0000E+00	9.2959E+01	0.0000E+00	9.4157E+01	0.0000E+00	9.6438E+01	0.0000E+00	1.0197E+02	0.0000E+00
0.0000E+00	8.8455E+01	0.0000E+00	8.9575E+01	0.0000E+00	9.1991E+01	0.0000E+00	9.3152E+01	0.0000E+00	9.5362E+01	0.0000E+00	1.0071E+02	0.0000E+00
0.0000E+00	8.7614E+01	0.0000E+00	8.8703E+01	0.0000E+00	9.1050E+01	0.0000E+00	9.2177E+01	0.0000E+00	9.4320E+01	0.0000E+00	9.9491E+01	0.0000E+00
0.0000E+00	8.6795E+01	0.0000E+00	8.7855E+01	0.0000E+00	9.0137E+01	0.0000E+00	9.1231E+01	0.0000E+00	9.3310E+01	0.0000E+00	9.8315E+01	0.0000E+00
0.0000E+00	8.5998E+01	0.0000E+00	8.7030E+01	0.0000E+00	8.9250E+01	0.0000E+00	9.0313E+01	0.0000E+00	9.2331E+01	0.0000E+00	9.7179E+01	0.0000E+00
0.0000E+00	8.5221E+01	0.0000E+00	8.6227E+01	0.0000E+00	8.8387E+01	0.0000E+00	8.9421E+01	0.0000E+00	9.1381E+01	0.0000E+00	9.6079E+01	0.0000E+00
0.0000E+00	8.4464E+01	0.0000E+00	8.5444E+01	0.0000E+00	8.7547E+01	0.0000E+00	8.8553E+01	0.0000E+00	9.0458E+01	0.0000E+00	9.5015E+01	0.0000E+00
0.0000E+00	8.3726E+01	0.0000E+00	8.4682E+01	0.0000E+00	8.6730E+01	0.0000E+00	8.7709E+01	0.0000E+00	8.9562E+01	0.0000E+00	9.3984E+01	0.0000E+00
0.0000E+00	8.3006E+01	0.0000E+00	8.3938E+01	0.0000E+00	8.5935E+01	0.0000E+00	8.6888E+01	0.0000E+00	8.8690E+01	0.0000E+00	9.2984E+01	0.0000E+00
0.0000E+00	8.2304E+01	0.0000E+00	8.3213E+01	0.0000E+00	8.5160E+01	0.0000E+00	8.6088E+01	0.0000E+00	8.7843E+01	0.0000E+00	9.2014E+01	0.0000E+00
0.0000E+00	8.1618E+01	0.0000E+00	8.2506E+01	0.0000E+00	8.4404E+01	0.0000E+00	8.5309E+01	0.0000E+00	8.7018E+01	0.0000E+00	9.1073E+01	0.0000E+00
0.0000E+00	8.0948E+01	0.0000E+00	8.1815E+01	0.0000E+00	8.3668E+01	0.0000E+00	8.4550E+01	0.0000E+00	8.6215E+01	0.0000E+00	9.0159E+01	0.0000E+00
0.0000E+00	8.0293E+01	0.0000E+00	8.1140E+01	0.0000E+00	8.2949E+01	0.0000E+00	8.3810E+01	0.0000E+00	8.5433E+01	0.0000E+00	8.9271E+01	0.0000E+00
0.0000E+00	7.9653E+01	0.0000E+00	8.0481E+01	0.0000E+00	8.2248E+01	0.0000E+00	8.3088E+01	0.0000E+00	8.4670E+01	0.0000E+00	8.8408E+01	0.0000E+00
0.0000E+00	7.9028E+01	0.0000E+00	7.9837E+01	0.0000E+00	8.1563E+01	0.0000E+00	8.2384E+01	0.0000E+00	8.3927E+01	0.0000E+00	8.7568E+01	0.0000E+00
0.0000E+00	7.8416E+01	0.0000E+00	7.9208E+01	0.0000E+00	8.0895E+01	0.0000E+00	8.1696E+01	0.0000E+00	8.3202E+01	0.0000E+00	8.6751E+01	0.0000E+00
0.0000E+00	7.7818E+01	0.0000E+00	7.8592E+01	0.0000E+00	8.0241E+01	0.0000E+00	8.1024E+01	0.0000E+00	8.2495E+01	0.0000E+00	8.5955E+01	0.0000E+00
0.0000E+00	7.7232E+01	0.0000E+00	7.7990E+01	0.0000E+00	7.9603E+01	0.0000E+00	8.0368E+01	0.0000E+00	8.1805E+01	0.0000E+00	8.5179E+01	0.0000E+00
0.0000E+00	7.6658E+01	0.0000E+00	7.7400E+01	0.0000E+00	7.8979E+01	0.0000E+00	7.9726E+01	0.0000E+00	8.1130E+01	0.0000E+00	8.4423E+01	0.0000E+00
0.0000E+00	7.6097E+01	0.0000E+00	7.6823E+01	0.0000E+00	7.8368E+01	0.0000E+00	7.9099E+01	0.0000E+00	8.0472E+01	0.0000E+00	8.3686E+01	0.0000E+00
0.0000E+00	7.5547E+01	0.0000E+00	7.6258E+01	0.0000E+00	7.7770E+01	0.0000E+00	7.8486E+01	0.0000E+00	7.9828E+01	0.0000E+00	8.2967E+01	0.0000E+00
0.0000E+00	7.5007E+01	0.0000E+00	7.5705E+01	0.0000E+00	7.7186E+01	0.0000E+00	7.7886E+01	0.0000E+00	7.9199E+01	0.0000E+00	8.2265E+01	0.0000E+00
0.0000E+00	7.4479E+01	0.0000E+00	7.5163E+01	0.0000E+00	7.6613E+01	0.0000E+00	7.7299E+01	0.0000E+00	7.8583E+01	0.0000E+00	8.1580E+01	0.0000E+00
0.0000E+00	7.3961E+01	0.0000E+00	7.4631E+01	0.0000E+00	7.6052E+01	0.0000E+00	7.6724E+01	0.0000E+00	7.7981E+01	0.0000E+00	8.0911E+01	0.0000E+00
0.0000E+00	7.3453E+01	0.0000E+00	7.4110E+01	0.0000E+00	7.5503E+01	0.0000E+00	7.6161E+01	0.0000E+00	7.7392E+01	0.0000E+00	8.0258E+01	0.0000E+00
0.0000E+00	7.2954E+01	0.0000E+00	7.3599E+01	0.0000E+00	7.4965E+01	0.0000E+00	7.5609E+01	0.0000E+00	7.6815E+01	0.0000E+00	7.9619E+01	0.0000E+00
0.0000E+00	7.2465E+01	0.0000E+00	7.3098E+01	0.0000E+00	7.4437E+01	0.0000E+00	7.5069E+01	0.0000E+00	7.6250E+01	0.0000E+00	7.8994E+01	0.0000E+00
0.0000E+00	7.1986E+01	0.0000E+00	7.2606E+01	0.0000E+00	7.3920E+01	0.0000E+00	7.4539E+01	0.0000E+00	7.5697E+01	0.0000E+00	7.8383E+01	0.0000E+00
0.0000E+00	7.1514E+01	0.0000E+00	7.2124E+01	0.0000E+00	7.3413E+01	0.0000E+00	7.4020E+01	0.0000E+00	7.5155E+01	0.0000E+00	7.7785E+01	0.0000E+00
0.0000E+00	7.1052E+01	0.0000E+00	7.1650E+01	0.0000E+00	7.2915E+01	0.0000E+00	7.3511E+01	0.0000E+00	7.4623E+01	0.0000E+00	7.7200E+01	0.0000E+00
0.0000E+00	7.0598E+01	0.0000E+00	7.1185E+01	0.0000E+00	7.2427E+01	0.0000E+00	7.3011E+01	0.0000E+00	7.4102E+01	0.0000E+00	7.6627E+01	0.0000E+00
0.0000E+00	7.0151E+01	0.0000E+00	7.0728E+01	0.0000E+00	7.1948E+01	0.0000E+00	7.2521E+01	0.0000E+00	7.3592E+01	0.0000E+00	7.6066E+01	0.0000E+00
0.0000E+00	6.9713E+01	0.0000E+00	7.0280E+01	0.0000E+00	7.1477E+01	0.0000E+00	7.2040E+01	0.0000E+00	7.3091E+01	0.0000E+00	7.5517E+01	0.0000E+00
0.0000E+00	6.9282E+01	0.0000E+00	6.9839E+01	0.0000E+00	7.1015E+01	0.0000E+00	7.1568E+01	0.0000E+00	7.2599E+01	0.0000E+00	7.4978E+01	0.0000E+00
0.0000E+00	6.8858E+01	0.0000E+00	6.9406E+01	0.0000E+00	7.0562E+01	0.0000E+00	7.1105E+01	0.0000E+00	7.2117E+01	0.0000E+00	7.4450E+01	0.0000E+00
0.0000E+00	6.8442E+01	0.0000E+00	6.8980E+01	0.0000E+00	7.0116E+01	0.0000E+00	7.0649E+01	0.0000E+00	7.1643E+01	0.0000E+00	7.3933E+01	0.0000E+00
0.0000E+00	6.8032E+01	0.0000E+00	6.8562E+01	0.0000E+00	6.9678E+01	0.0000E+00	7.0202E+01	0.0000E+00	7.1178E+01	0.0000E+00	7.3425E+01	0.0000E+00
0.0000E+00	6.7630E+01	0.0000E+00	6.8150E+01	0.0000E+00	6.9248E+01	0.0000E+00	6.9763E+01	0.0000E+00	7.0722E+01	0.0000E+00	7.2927E+01	0.0000E+00
0.0000E+00	6.7233E+01	0.0000E+00	6.7746E+01	0.0000E+00	6.8825E+01	0.0000E+00	6.9331E+01	0.0000E+00	7.0273E+01	0.0000E+00	7.2439E+01	0.0000E+00
0.0000E+00	6.6844E+01	0.0000E+00	6.7348E+01	0.0000E+00	6.8409E+01	0.0000E+00	6.8907E+01	0.0000E+00	6.9833E+01	0.0000E+00	7.1959E+01	0.0000E+00
0.0000E+00	6.6460E+01	0.0000E+00	6.6956E+01	0.0000E+00	6.8000E+01	0.0000E+00	6.8489E+01	0.0000E+00	6.9400E+01	0.0000E+00	7.1489E+01	0.0000E+00
0.0000E+00	6.6082E+01	0.0000E+00	6.6571E+01	0.0000E+00	6.7598E+01	0.0000E+00	6.8079E+01	0.0000E+00	6.8974E+01	0.0000E+00	7.1027E+01	0.0000E+00
0.0000E+00	6.5711E+01	0.0000E+00	6.6191E+01	0.0000E+00	6.7202E+01	0.0000E+00	6.7676E+01	0.0000E+00	6.8556E+01	0.0000E+00	7.0573E+01	0.0000E+00
0.0000E+00	6.5345E+01	0.0000E+00	6.5818E+01	0.0000E+00	6.6813E+01	0.0000E+00	6.7279E+01	0.0000E+00	6.8144E+01	0.0000E+00	7.0127E+01	0.0000E+00
0.0000E+00	6.4984E+01	0.0000E+00	6.5450E+01	0.0000E+00	6.6430E+01	0.0000E+00	6.6888E+01	0.0000E+00	6.7740E+01	0.0000E+00	6.9689E+01	0.0000E+00
0.0000E+00	6.4629E+01	0.0000E+00	6.5088E+01	0.0000E+00	6.6052E+01	0.0000E+00	6.6504E+01	0.0000E+00	6.7342E+01	0.0000E+00	6.9258E+01	0.0000E+00

Curve 6	Arg 7	Curve 7	Arg 8	Curve 8	Arg 9	Curve 9	Arg 10	Curve 10	Arg 11	Curve 11	Arg 12	Curve 12
0.0000E+00	6.4280E+01	0.0000E+00	6.4732E+01	0.0000E+00	6.5681E+01	0.0000E+00	6.6125E+01	0.0000E+00	6.6950E+01	0.0000E+00	6.8835E+01	0.0000E+00
0.0000E+00	6.3935E+01	0.0000E+00	6.4381E+01	0.0000E+00	6.5316E+01	0.0000E+00	6.5753E+01	0.0000E+00	6.6565E+01	0.0000E+00	6.8419E+01	0.0000E+00
0.0000E+00	6.3596E+01	0.0000E+00	6.4035E+01	0.0000E+00	6.4956E+01	0.0000E+00	6.5386E+01	0.0000E+00	6.6186E+01	0.0000E+00	6.8010E+01	0.0000E+00
0.0000E+00	6.3261E+01	0.0000E+00	6.3694E+01	0.0000E+00	6.4601E+01	0.0000E+00	6.5025E+01	0.0000E+00	6.5812E+01	0.0000E+00	6.7608E+01	0.0000E+00
0.0000E+00	6.2931E+01	0.0000E+00	6.3358E+01	0.0000E+00	6.4252E+01	0.0000E+00	6.4670E+01	0.0000E+00	6.5445E+01	0.0000E+00	6.7212E+01	0.0000E+00
0.0000E+00	6.2606E+01	0.0000E+00	6.3027E+01	0.0000E+00	6.3908E+01	0.0000E+00	6.4320E+01	0.0000E+00	6.5083E+01	0.0000E+00	6.6822E+01	0.0000E+00
0.0000E+00	6.2286E+01	0.0000E+00	6.2700E+01	0.0000E+00	6.3569E+01	0.0000E+00	6.3975E+01	0.0000E+00	6.4726E+01	0.0000E+00	6.6439E+01	0.0000E+00
0.0000E+00	6.1970E+01	0.0000E+00	6.2378E+01	0.0000E+00	6.3235E+01	0.0000E+00	6.3635E+01	0.0000E+00	6.4375E+01	0.0000E+00	6.6062E+01	0.0000E+00
0.0000E+00	6.1658E+01	0.0000E+00	6.2061E+01	0.0000E+00	6.2905E+01	0.0000E+00	6.3299E+01	0.0000E+00	6.4029E+01	0.0000E+00	6.5690E+01	0.0000E+00
0.0000E+00	6.1351E+01	0.0000E+00	6.1748E+01	0.0000E+00	6.2581E+01	0.0000E+00	6.2969E+01	0.0000E+00	6.3689E+01	0.0000E+00	6.5325E+01	0.0000E+00
0.0000E+00	6.1048E+01	0.0000E+00	6.1440E+01	0.0000E+00	6.2260E+01	0.0000E+00	6.2644E+01	0.0000E+00	6.3353E+01	0.0000E+00	6.4965E+01	0.0000E+00
0.0000E+00	6.0748E+01	0.0000E+00	6.1135E+01	0.0000E+00	6.1945E+01	0.0000E+00	6.2323E+01	0.0000E+00	6.3022E+01	0.0000E+00	6.4610E+01	0.0000E+00
0.0000E+00	6.0453E+01	0.0000E+00	6.0835E+01	0.0000E+00	6.1633E+01	0.0000E+00	6.2006E+01	0.0000E+00	6.2695E+01	0.0000E+00	6.4261E+01	0.0000E+00
0.0000E+00	6.0162E+01	0.0000E+00	6.0538E+01	0.0000E+00	6.1326E+01	0.0000E+00	6.1694E+01	0.0000E+00	6.2374E+01	0.0000E+00	6.3916E+01	0.0000E+00
0.0000E+00	5.9874E+01	0.0000E+00	6.0246E+01	0.0000E+00	6.1023E+01	0.0000E+00	6.1386E+01	0.0000E+00	6.2056E+01	0.0000E+00	6.3577E+01	0.0000E+00
0.0000E+00	5.9590E+01	0.0000E+00	5.9957E+01	0.0000E+00	6.0725E+01	0.0000E+00	6.1082E+01	0.0000E+00	6.1744E+01	0.0000E+00	6.3243E+01	0.0000E+00
0.0000E+00	5.9310E+01	0.0000E+00	5.9672E+01	0.0000E+00	6.0430E+01	0.0000E+00	6.0783E+01	0.0000E+00	6.1435E+01	0.0000E+00	6.2913E+01	0.0000E+00
0.0000E+00	5.9034E+01	0.0000E+00	5.9391E+01	0.0000E+00	6.0139E+01	0.0000E+00	6.0487E+01	0.0000E+00	6.1131E+01	0.0000E+00	6.2589E+01	0.0000E+00
0.0000E+00	5.8760E+01	0.0000E+00	5.9113E+01	0.0000E+00	5.9851E+01	0.0000E+00	6.0195E+01	0.0000E+00	6.0830E+01	0.0000E+00	6.2268E+01	0.0000E+00
0.0000E+00	5.8491E+01	0.0000E+00	5.8839E+01	0.0000E+00	5.9568E+01	0.0000E+00	5.9907E+01	0.0000E+00	6.0534E+01	0.0000E+00	6.1953E+01	0.0000E+00
0.0000E+00	5.8224E+01	0.0000E+00	5.8569E+01	0.0000E+00	5.9288E+01	0.0000E+00	5.9623E+01	0.0000E+00	6.0242E+01	0.0000E+00	6.1641E+01	0.0000E+00
0.0000E+00	5.7961E+01	0.0000E+00	5.8301E+01	0.0000E+00	5.9012E+01	0.0000E+00	5.9342E+01	0.0000E+00	5.9953E+01	0.0000E+00	6.1334E+01	0.0000E+00
0.0000E+00	5.7701E+01	0.0000E+00	5.8037E+01	0.0000E+00	5.8739E+01	0.0000E+00	5.9065E+01	0.0000E+00	5.9668E+01	0.0000E+00	6.1031E+01	0.0000E+00
0.0000E+00	5.7444E+01	0.0000E+00	5.7776E+01	0.0000E+00	5.8469E+01	0.0000E+00	5.8792E+01	0.0000E+00	5.9387E+01	0.0000E+00	6.0732E+01	0.0000E+00
0.0000E+00	5.7191E+01	0.0000E+00	5.7519E+01	0.0000E+00	5.8203E+01	0.0000E+00	5.8522E+01	0.0000E+00	5.9109E+01	0.0000E+00	6.0437E+01	0.0000E+00
0.0000E+00	5.6940E+01	0.0000E+00	5.7264E+01	0.0000E+00	5.7940E+01	0.0000E+00	5.8255E+01	0.0000E+00	5.8835E+01	0.0000E+00	6.0146E+01	0.0000E+00
0.0000E+00	5.6692E+01	0.0000E+00	5.7012E+01	0.0000E+00	5.7681E+01	0.0000E+00	5.7991E+01	0.0000E+00	5.8565E+01	0.0000E+00	5.9859E+01	0.0000E+00
0.0000E+00	5.6447E+01	0.0000E+00	5.6764E+01	0.0000E+00	5.7424E+01	0.0000E+00	5.7731E+01	0.0000E+00	5.8297E+01	0.0000E+00	5.9575E+01	0.0000E+00
0.0000E+00	5.6205E+01	0.0000E+00	5.6518E+01	0.0000E+00	5.7170E+01	0.0000E+00	5.7474E+01	0.0000E+00	5.8033E+01	0.0000E+00	5.9295E+01	0.0000E+00
0.0000E+00	5.5966E+01	0.0000E+00	5.6275E+01	0.0000E+00	5.6920E+01	0.0000E+00	5.7220E+01	0.0000E+00	5.7772E+01	0.0000E+00	5.9019E+01	0.0000E+00
0.0000E+00	5.5729E+01	0.0000E+00	5.6035E+01	0.0000E+00	5.6672E+01	0.0000E+00	5.6969E+01	0.0000E+00	5.7515E+01	0.0000E+00	5.8746E+01	0.0000E+00
0.0000E+00	5.5495E+01	0.0000E+00	5.5797E+01	0.0000E+00	5.6428E+01	0.0000E+00	5.6720E+01	0.0000E+00	5.7260E+01	0.0000E+00	5.8476E+01	0.0000E+00
0.0000E+00	5.5264E+01	0.0000E+00	5.5563E+01	0.0000E+00	5.6186E+01	0.0000E+00	5.6475E+01	0.0000E+00	5.7009E+01	0.0000E+00	5.8210E+01	0.0000E+00
0.0000E+00	5.5035E+01	0.0000E+00	5.5331E+01	0.0000E+00	5.5947E+01	0.0000E+00	5.6233E+01	0.0000E+00	5.6760E+01	0.0000E+00	5.7947E+01	0.0000E+00
0.0000E+00	5.4809E+01	0.0000E+00	5.5101E+01	0.0000E+00	5.5710E+01	0.0000E+00	5.5993E+01	0.0000E+00	5.6514E+01	0.0000E+00	5.7687E+01	0.0000E+00
0.0000E+00	5.4585E+01	0.0000E+00	5.4874E+01	0.0000E+00	5.5477E+01	0.0000E+00	5.5756E+01	0.0000E+00	5.6271E+01	0.0000E+00	5.7430E+01	0.0000E+00
0.0000E+00	5.4364E+01	0.0000E+00	5.4650E+01	0.0000E+00	5.5246E+01	0.0000E+00	5.5522E+01	0.0000E+00	5.6031E+01	0.0000E+00	5.7177E+01	0.0000E+00
0.0000E+00	5.4145E+01	0.0000E+00	5.4428E+01	0.0000E+00	5.5017E+01	0.0000E+00	5.5290E+01	0.0000E+00	5.5794E+01	0.0000E+00	5.6926E+01	0.0000E+00
0.0000E+00	5.3928E+01	0.0000E+00	5.4208E+01	0.0000E+00	5.4791E+01	0.0000E+00	5.5061E+01	0.0000E+00	5.5559E+01	0.0000E+00	5.6678E+01	0.0000E+00
0.0000E+00	5.3714E+01	0.0000E+00	5.3991E+01	0.0000E+00	5.4567E+01	0.0000E+00	5.4835E+01	0.0000E+00	5.5327E+01	0.0000E+00	5.6434E+01	0.0000E+00
0.0000E+00	5.3502E+01	0.0000E+00	5.3776E+01	0.0000E+00	5.4346E+01	0.0000E+00	5.4611E+01	0.0000E+00	5.5098E+01	0.0000E+00	5.6192E+01	0.0000E+00
0.0000E+00	5.3292E+01	0.0000E+00	5.3563E+01	0.0000E+00	5.4128E+01	0.0000E+00	5.4389E+01	0.0000E+00	5.4871E+01	0.0000E+00	5.5953E+01	0.0000E+00
0.0000E+00	5.3085E+01	0.0000E+00	5.3353E+01	0.0000E+00	5.3911E+01	0.0000E+00	5.4170E+01	0.0000E+00	5.4647E+01	0.0000E+00	5.5716E+01	0.0000E+00
0.0000E+00	5.2879E+01	0.0000E+00	5.3145E+01	0.0000E+00	5.3697E+01	0.0000E+00	5.3953E+01	0.0000E+00	5.4425E+01	0.0000E+00	5.5482E+01	0.0000E+00
0.0000E+00	5.2676E+01	0.0000E+00	5.2939E+01	0.0000E+00	5.3485E+01	0.0000E+00	5.3739E+01	0.0000E+00	5.4205E+01	0.0000E+00	5.5251E+01	0.0000E+00
0.0000E+00	5.2474E+01	0.0000E+00	5.2735E+01	0.0000E+00	5.3276E+01	0.0000E+00	5.3526E+01	0.0000E+00	5.3988E+01	0.0000E+00	5.5023E+01	0.0000E+00
0.0000E+00	5.2275E+01	0.0000E+00	5.2533E+01	0.0000E+00	5.3068E+01	0.0000E+00	5.3316E+01	0.0000E+00	5.3773E+01	0.0000E+00	5.4797E+01	0.0000E+00
0.0000E+00	5.2078E+01	0.0000E+00	5.2333E+01	0.0000E+00	5.2863E+01	0.0000E+00	5.3108E+01	0.0000E+00	5.3560E+01	0.0000E+00	5.4573E+01	0.0000E+00
0.0000E+00	5.1882E+01	0.0000E+00	5.2135E+01	0.0000E+00	5.2660E+01	0.0000E+00	5.2903E+01	0.0000E+00	5.3350E+01	0.0000E+00	5.4352E+01	0.0000E+00
0.0000E+00	5.1689E+01	0.0000E+00	5.1939E+01	0.0000E+00	5.2458E+01	0.0000E+00	5.2699E+01	0.0000E+00	5.3142E+01	0.0000E+00	5.4133E+01	0.0000E+00
0.0000E+00	5.1498E+01	0.0000E+00	5.1745E+01	0.0000E+00	5.2259E+01	0.0000E+00	5.2497E+01	0.0000E+00	5.2935E+01	0.0000E+00	5.3917E+01	0.0000E+00
0.0000E+00	5.1308E+01	0.0000E+00	5.1553E+01	0.0000E+00	5.2062E+01	0.0000E+00	5.2298E+01	0.0000E+00	5.2731E+01	0.0000E+00	5.3702E+01	0.0000E+00

Curve 6	Arg 7	Curve 7	Arg 8	Curve 8	Arg 9	Curve 9	Arg 10	Curve 10	Arg 11	Curve 11	Arg 12	Curve 12
0.0000E+00	5.1120E+01	0.0000E+00	5.1363E+01	0.0000E+00	5.1867E+01	0.0000E+00	5.2100E+01	0.0000E+00	5.2530E+01	0.0000E+00	5.3490E+01	0.0000E+00
0.0000E+00	5.0934E+01	0.0000E+00	5.1174E+01	0.0000E+00	5.1674E+01	0.0000E+00	5.1905E+01	0.0000E+00	5.2330E+01	0.0000E+00	5.3281E+01	0.0000E+00
0.0000E+00	5.0750E+01	0.0000E+00	5.0988E+01	0.0000E+00	5.1482E+01	0.0000E+00	5.1711E+01	0.0000E+00	5.2132E+01	0.0000E+00	5.3073E+01	0.0000E+00
0.0000E+00	5.0567E+01	0.0000E+00	5.0803E+01	0.0000E+00	5.1293E+01	0.0000E+00	5.1519E+01	0.0000E+00	5.1936E+01	0.0000E+00	5.2868E+01	0.0000E+00
0.0000E+00	5.0386E+01	0.0000E+00	5.0620E+01	0.0000E+00	5.1105E+01	0.0000E+00	5.1330E+01	0.0000E+00	5.1742E+01	0.0000E+00	5.2665E+01	0.0000E+00
0.0000E+00	5.0207E+01	0.0000E+00	5.0439E+01	0.0000E+00	5.0919E+01	0.0000E+00	5.1142E+01	0.0000E+00	5.1550E+01	0.0000E+00	5.2463E+01	0.0000E+00
0.0000E+00	5.0030E+01	0.0000E+00	5.0259E+01	0.0000E+00	5.0735E+01	0.0000E+00	5.0955E+01	0.0000E+00	5.1360E+01	0.0000E+00	5.2264E+01	0.0000E+00
0.0000E+00	4.9854E+01	0.0000E+00	5.0081E+01	0.0000E+00	5.0553E+01	0.0000E+00	5.0771E+01	0.0000E+00	5.1171E+01	0.0000E+00	5.2067E+01	0.0000E+00
0.0000E+00	4.9680E+01	0.0000E+00	4.9905E+01	0.0000E+00	5.0372E+01	0.0000E+00	5.0588E+01	0.0000E+00	5.0985E+01	0.0000E+00	5.1872E+01	0.0000E+00
0.0000E+00	4.9507E+01	0.0000E+00	4.9730E+01	0.0000E+00	5.0193E+01	0.0000E+00	5.0407E+01	0.0000E+00	5.0800E+01	0.0000E+00	5.1678E+01	0.0000E+00
0.0000E+00	4.9336E+01	0.0000E+00	4.9557E+01	0.0000E+00	5.0016E+01	0.0000E+00	5.0228E+01	0.0000E+00	5.0617E+01	0.0000E+00	5.1487E+01	0.0000E+00
0.0000E+00	4.9167E+01	0.0000E+00	4.9386E+01	0.0000E+00	4.9840E+01	0.0000E+00	5.0050E+01	0.0000E+00	5.0436E+01	0.0000E+00	5.1297E+01	0.0000E+00
0.0000E+00	4.8999E+01	0.0000E+00	4.9216E+01	0.0000E+00	4.9666E+01	0.0000E+00	4.9874E+01	0.0000E+00	5.0256E+01	0.0000E+00	5.1110E+01	0.0000E+00
0.0000E+00	4.8832E+01	0.0000E+00	4.9047E+01	0.0000E+00	4.9494E+01	0.0000E+00	4.9700E+01	0.0000E+00	5.0079E+01	0.0000E+00	5.0924E+01	0.0000E+00
0.0000E+00	4.8667E+01	0.0000E+00	4.8880E+01	0.0000E+00	4.9323E+01	0.0000E+00	4.9527E+01	0.0000E+00	4.9902E+01	0.0000E+00	5.0740E+01	0.0000E+00
0.0000E+00	4.8504E+01	0.0000E+00	4.8715E+01	0.0000E+00	4.9153E+01	0.0000E+00	4.9356E+01	0.0000E+00	4.9728E+01	0.0000E+00	5.0557E+01	0.0000E+00
0.0000E+00	4.8342E+01	0.0000E+00	4.8551E+01	0.0000E+00	4.8985E+01	0.0000E+00	4.9186E+01	0.0000E+00	4.9555E+01	0.0000E+00	5.0377E+01	0.0000E+00
0.0000E+00	4.8181E+01	0.0000E+00	4.8388E+01	0.0000E+00	4.8819E+01	0.0000E+00	4.9018E+01	0.0000E+00	4.9383E+01	0.0000E+00	5.0198E+01	0.0000E+00
0.0000E+00	4.8021E+01	0.0000E+00	4.8227E+01	0.0000E+00	4.8654E+01	0.0000E+00	4.8851E+01	0.0000E+00	4.9213E+01	0.0000E+00	5.0020E+01	0.0000E+00
0.0000E+00	4.7863E+01	0.0000E+00	4.8068E+01	0.0000E+00	4.8491E+01	0.0000E+00	4.8686E+01	0.0000E+00	4.9045E+01	0.0000E+00	4.9845E+01	0.0000E+00
0.0000E+00	4.7707E+01	0.0000E+00	4.7909E+01	0.0000E+00	4.8329E+01	0.0000E+00	4.8522E+01	0.0000E+00	4.8878E+01	0.0000E+00	4.9670E+01	0.0000E+00
0.0000E+00	4.7551E+01	0.0000E+00	4.7752E+01	0.0000E+00	4.8168E+01	0.0000E+00	4.8360E+01	0.0000E+00	4.8713E+01	0.0000E+00	4.9498E+01	0.0000E+00
0.0000E+00	4.7397E+01	0.0000E+00	4.7596E+01	0.0000E+00	4.8009E+01	0.0000E+00	4.8199E+01	0.0000E+00	4.8549E+01	0.0000E+00	4.9327E+01	0.0000E+00
0.0000E+00	4.7245E+01	0.0000E+00	4.7442E+01	0.0000E+00	4.7851E+01	0.0000E+00	4.8040E+01	0.0000E+00	4.8386E+01	0.0000E+00	4.9158E+01	0.0000E+00
0.0000E+00	4.7093E+01	0.0000E+00	4.7289E+01	0.0000E+00	4.7694E+01	0.0000E+00	4.7882E+01	0.0000E+00	4.8225E+01	0.0000E+00	4.8990E+01	0.0000E+00
0.0000E+00	4.6943E+01	0.0000E+00	4.7137E+01	0.0000E+00	4.7539E+01	0.0000E+00	4.7725E+01	0.0000E+00	4.8065E+01	0.0000E+00	4.8823E+01	0.0000E+00
0.0000E+00	4.6794E+01	0.0000E+00	4.6986E+01	0.0000E+00	4.7385E+01	0.0000E+00	4.7569E+01	0.0000E+00	4.7907E+01	0.0000E+00	4.8658E+01	0.0000E+00
0.0000E+00	4.6646E+01	0.0000E+00	4.6837E+01	0.0000E+00	4.7232E+01	0.0000E+00	4.7415E+01	0.0000E+00	4.7750E+01	0.0000E+00	4.8495E+01	0.0000E+00
0.0000E+00	4.6500E+01	0.0000E+00	4.6689E+01	0.0000E+00	4.7081E+01	0.0000E+00	4.7262E+01	0.0000E+00	4.7594E+01	0.0000E+00	4.8333E+01	0.0000E+00
0.0000E+00	4.6354E+01	0.0000E+00	4.6542E+01	0.0000E+00	4.6931E+01	0.0000E+00	4.7111E+01	0.0000E+00	4.7440E+01	0.0000E+00	4.8172E+01	0.0000E+00
0.0000E+00	4.6210E+01	0.0000E+00	4.6396E+01	0.0000E+00	4.6782E+01	0.0000E+00	4.6960E+01	0.0000E+00	4.7287E+01	0.0000E+00	4.8013E+01	0.0000E+00
0.0000E+00	4.6067E+01	0.0000E+00	4.6252E+01	0.0000E+00	4.6634E+01	0.0000E+00	4.6811E+01	0.0000E+00	4.7135E+01	0.0000E+00	4.7855E+01	0.0000E+00
0.0000E+00	4.5925E+01	0.0000E+00	4.6108E+01	0.0000E+00	4.6488E+01	0.0000E+00	4.6663E+01	0.0000E+00	4.6984E+01	0.0000E+00	4.7698E+01	0.0000E+00
0.0000E+00	4.5784E+01	0.0000E+00	4.5966E+01	0.0000E+00	4.6343E+01	0.0000E+00	4.6516E+01	0.0000E+00	4.6835E+01	0.0000E+00	4.7543E+01	0.0000E+00
0.0000E+00	4.5644E+01	0.0000E+00	4.5825E+01	0.0000E+00	4.6198E+01	0.0000E+00	4.6371E+01	0.0000E+00	4.6687E+01	0.0000E+00	4.7389E+01	0.0000E+00
0.0000E+00	4.5506E+01	0.0000E+00	4.5685E+01	0.0000E+00	4.6055E+01	0.0000E+00	4.6226E+01	0.0000E+00	4.6540E+01	0.0000E+00	4.7236E+01	0.0000E+00
0.0000E+00	4.5368E+01	0.0000E+00	4.5546E+01	0.0000E+00	4.5914E+01	0.0000E+00	4.6083E+01	0.0000E+00	4.6394E+01	0.0000E+00	4.7085E+01	0.0000E+00
0.0000E+00	4.5232E+01	0.0000E+00	4.5408E+01	0.0000E+00	4.5773E+01	0.0000E+00	4.5941E+01	0.0000E+00	4.6249E+01	0.0000E+00	4.6935E+01	0.0000E+00
0.0000E+00	4.5096E+01	0.0000E+00	4.5271E+01	0.0000E+00	4.5633E+01	0.0000E+00	4.5800E+01	0.0000E+00	4.6106E+01	0.0000E+00	4.6786E+01	0.0000E+00
0.0000E+00	4.4962E+01	0.0000E+00	4.5135E+01	0.0000E+00	4.5495E+01	0.0000E+00	4.5660E+01	0.0000E+00	4.5964E+01	0.0000E+00	4.6638E+01	0.0000E+00
0.0000E+00	4.4828E+01	0.0000E+00	4.5000E+01	0.0000E+00	4.5357E+01	0.0000E+00	4.5522E+01	0.0000E+00	4.5823E+01	0.0000E+00	4.6492E+01	0.0000E+00
0.0000E+00	4.4696E+01	0.0000E+00	4.4867E+01	0.0000E+00	4.5221E+01	0.0000E+00	4.5384E+01	0.0000E+00	4.5683E+01	0.0000E+00	4.6346E+01	0.0000E+00
0.0000E+00	4.4564E+01	0.0000E+00	4.4734E+01	0.0000E+00	4.5085E+01	0.0000E+00	4.5247E+01	0.0000E+00	4.5544E+01	0.0000E+00	4.6202E+01	0.0000E+00
0.0000E+00	4.4434E+01	0.0000E+00	4.4602E+01	0.0000E+00	4.4951E+01	0.0000E+00	4.5112E+01	0.0000E+00	4.5406E+01	0.0000E+00	4.6059E+01	0.0000E+00
0.0000E+00	4.4304E+01	0.0000E+00	4.4472E+01	0.0000E+00	4.4818E+01	0.0000E+00	4.4977E+01	0.0000E+00	4.5269E+01	0.0000E+00	4.5917E+01	0.0000E+00
0.0000E+00	4.4176E+01	0.0000E+00	4.4342E+01	0.0000E+00	4.4685E+01	0.0000E+00	4.4843E+01	0.0000E+00	4.5133E+01	0.0000E+00	4.5776E+01	0.0000E+00
0.0000E+00	4.4048E+01	0.0000E+00	4.4213E+01	0.0000E+00	4.4554E+01	0.0000E+00	4.4711E+01	0.0000E+00	4.4998E+01	0.0000E+00	4.5637E+01	0.0000E+00
0.0000E+00	4.3922E+01	0.0000E+00	4.4085E+01	0.0000E+00	4.4423E+01	0.0000E+00	4.4579E+01	0.0000E+00	4.4865E+01	0.0000E+00	4.5498E+01	0.0000E+00
0.0000E+00	4.3796E+01	0.0000E+00	4.3958E+01	0.0000E+00	4.4294E+01	0.0000E+00	4.4449E+01	0.0000E+00	4.4732E+01	0.0000E+00	4.5360E+01	0.0000E+00
0.0000E+00	4.3671E+01	0.0000E+00	4.3832E+01	0.0000E+00	4.4166E+01	0.0000E+00	4.4319E+01	0.0000E+00	4.4600E+01	0.0000E+00	4.5224E+01	0.0000E+00
0.0000E+00	4.3547E+01	0.0000E+00	4.3707E+01	0.0000E+00	4.4038E+01	0.0000E+00	4.4191E+01	0.0000E+00	4.4470E+01	0.0000E+00	4.5089E+01	0.0000E+00
0.0000E+00	4.3424E+01	0.0000E+00	4.3583E+01	0.0000E+00	4.3912E+01	0.0000E+00	4.4063E+01	0.0000E+00	4.4340E+01	0.0000E+00	4.4954E+01	0.0000E+00

Curve 6	Arg 7	Curve 7	Arg 8	Curve 8	Arg 9	Curve 9	Arg 10	Curve 10	Arg 11	Curve 11	Arg 12	Curve 12
0.0000E+00	4.3302E+01	0.0000E+00	4.3460E+01	0.0000E+00	4.3786E+01	0.0000E+00	4.3936E+01	0.0000E+00	4.4211E+01	0.0000E+00	4.4821E+01	0.0000E+00
0.0000E+00	4.3181E+01	0.0000E+00	4.3337E+01	0.0000E+00	4.3661E+01	0.0000E+00	4.3810E+01	0.0000E+00	4.4083E+01	0.0000E+00	4.4689E+01	0.0000E+00
0.0000E+00	4.3060E+01	0.0000E+00	4.3216E+01	0.0000E+00	4.3537E+01	0.0000E+00	4.3685E+01	0.0000E+00	4.3956E+01	0.0000E+00	4.4557E+01	0.0000E+00
0.0000E+00	4.2941E+01	0.0000E+00	4.3095E+01	0.0000E+00	4.3414E+01	0.0000E+00	4.3561E+01	0.0000E+00	4.3830E+01	0.0000E+00	4.4427E+01	0.0000E+00
0.0000E+00	4.2822E+01	0.0000E+00	4.2975E+01	0.0000E+00	4.3292E+01	0.0000E+00	4.3438E+01	0.0000E+00	4.3705E+01	0.0000E+00	4.4297E+01	0.0000E+00
0.0000E+00	4.2704E+01	0.0000E+00	4.2856E+01	0.0000E+00	4.3171E+01	0.0000E+00	4.3316E+01	0.0000E+00	4.3581E+01	0.0000E+00	4.4169E+01	0.0000E+00
0.0000E+00	4.2587E+01	0.0000E+00	4.2738E+01	0.0000E+00	4.3051E+01	0.0000E+00	4.3195E+01	0.0000E+00	4.3458E+01	0.0000E+00	4.4041E+01	0.0000E+00
0.0000E+00	4.2470E+01	0.0000E+00	4.2621E+01	0.0000E+00	4.2931E+01	0.0000E+00	4.3074E+01	0.0000E+00	4.3335E+01	0.0000E+00	4.3915E+01	0.0000E+00
0.0000E+00	4.2355E+01	0.0000E+00	4.2504E+01	0.0000E+00	4.2812E+01	0.0000E+00	4.2954E+01	0.0000E+00	4.3214E+01	0.0000E+00	4.3789E+01	0.0000E+00
0.0000E+00	4.2240E+01	0.0000E+00	4.2388E+01	0.0000E+00	4.2694E+01	0.0000E+00	4.2835E+01	0.0000E+00	4.3093E+01	0.0000E+00	4.3664E+01	0.0000E+00
0.0000E+00	4.2126E+01	0.0000E+00	4.2273E+01	0.0000E+00	4.2577E+01	0.0000E+00	4.2717E+01	0.0000E+00	4.2973E+01	0.0000E+00	4.3540E+01	0.0000E+00
0.0000E+00	4.2013E+01	0.0000E+00	4.2159E+01	0.0000E+00	4.2461E+01	0.0000E+00	4.2600E+01	0.0000E+00	4.2854E+01	0.0000E+00	4.3417E+01	0.0000E+00
0.0000E+00	4.1901E+01	0.0000E+00	4.2046E+01	0.0000E+00	4.2346E+01	0.0000E+00	4.2484E+01	0.0000E+00	4.2736E+01	0.0000E+00	4.3295E+01	0.0000E+00
0.0000E+00	4.1789E+01	0.0000E+00	4.1933E+01	0.0000E+00	4.2231E+01	0.0000E+00	4.2368E+01	0.0000E+00	4.2619E+01	0.0000E+00	4.3174E+01	0.0000E+00
0.0000E+00	4.1678E+01	0.0000E+00	4.1821E+01	0.0000E+00	4.2117E+01	0.0000E+00	4.2253E+01	0.0000E+00	4.2502E+01	0.0000E+00	4.3054E+01	0.0000E+00
0.0000E+00	4.1568E+01	0.0000E+00	4.1710E+01	0.0000E+00	4.2004E+01	0.0000E+00	4.2139E+01	0.0000E+00	4.2387E+01	0.0000E+00	4.2934E+01	0.0000E+00
0.0000E+00	4.1458E+01	0.0000E+00	4.1600E+01	0.0000E+00	4.1892E+01	0.0000E+00	4.2026E+01	0.0000E+00	4.2272E+01	0.0000E+00	4.2815E+01	0.0000E+00
0.0000E+00	4.1349E+01	0.0000E+00	4.1490E+01	0.0000E+00	4.1780E+01	0.0000E+00	4.1913E+01	0.0000E+00	4.2157E+01	0.0000E+00	4.2697E+01	0.0000E+00
0.0000E+00	4.1241E+01	0.0000E+00	4.1381E+01	0.0000E+00	4.1669E+01	0.0000E+00	4.1802E+01	0.0000E+00	4.2044E+01	0.0000E+00	4.2580E+01	0.0000E+00
0.0000E+00	4.1134E+01	0.0000E+00	4.1273E+01	0.0000E+00	4.1559E+01	0.0000E+00	4.1691E+01	0.0000E+00	4.1931E+01	0.0000E+00	4.2464E+01	0.0000E+00
0.0000E+00	4.1027E+01	0.0000E+00	4.1165E+01	0.0000E+00	4.1449E+01	0.0000E+00	4.1580E+01	0.0000E+00	4.1819E+01	0.0000E+00	4.2349E+01	0.0000E+00
0.0000E+00	4.0921E+01	0.0000E+00	4.1058E+01	0.0000E+00	4.1341E+01	0.0000E+00	4.1471E+01	0.0000E+00	4.1708E+01	0.0000E+00	4.2234E+01	0.0000E+00
0.0000E+00	4.0816E+01	0.0000E+00	4.0952E+01	0.0000E+00	4.1233E+01	0.0000E+00	4.1362E+01	0.0000E+00	4.1598E+01	0.0000E+00	4.2120E+01	0.0000E+00
0.0000E+00	4.0711E+01	0.0000E+00	4.0846E+01	0.0000E+00	4.1125E+01	0.0000E+00	4.1254E+01	0.0000E+00	4.1488E+01	0.0000E+00	4.2007E+01	0.0000E+00
0.0000E+00	4.0607E+01	0.0000E+00	4.0741E+01	0.0000E+00	4.1019E+01	0.0000E+00	4.1146E+01	0.0000E+00	4.1379E+01	0.0000E+00	4.1894E+01	0.0000E+00
0.0000E+00	4.0504E+01	0.0000E+00	4.0637E+01	0.0000E+00	4.0913E+01	0.0000E+00	4.1039E+01	0.0000E+00	4.1271E+01	0.0000E+00	4.1783E+01	0.0000E+00
0.0000E+00	4.0401E+01	0.0000E+00	4.0534E+01	0.0000E+00	4.0807E+01	0.0000E+00	4.0933E+01	0.0000E+00	4.1163E+01	0.0000E+00	4.1672E+01	0.0000E+00
0.0000E+00	4.0299E+01	0.0000E+00	4.0431E+01	0.0000E+00	4.0703E+01	0.0000E+00	4.0828E+01	0.0000E+00	4.1056E+01	0.0000E+00	4.1562E+01	0.0000E+00
0.0000E+00	4.0198E+01	0.0000E+00	4.0329E+01	0.0000E+00	4.0599E+01	0.0000E+00	4.0723E+01	0.0000E+00	4.0950E+01	0.0000E+00	4.1452E+01	0.0000E+00
0.0000E+00	4.0097E+01	0.0000E+00	4.0227E+01	0.0000E+00	4.0496E+01	0.0000E+00	4.0619E+01	0.0000E+00	4.0845E+01	0.0000E+00	4.1343E+01	0.0000E+00
0.0000E+00	3.9997E+01	0.0000E+00	4.0126E+01	0.0000E+00	4.0393E+01	0.0000E+00	4.0516E+01	0.0000E+00	4.0740E+01	0.0000E+00	4.1235E+01	0.0000E+00
0.0000E+00	3.9897E+01	0.0000E+00	4.0026E+01	0.0000E+00	4.0291E+01	0.0000E+00	4.0413E+01	0.0000E+00	4.0636E+01	0.0000E+00	4.1128E+01	0.0000E+00
0.0000E+00	3.9798E+01	0.0000E+00	3.9926E+01	0.0000E+00	4.0190E+01	0.0000E+00	4.0311E+01	0.0000E+00	4.0532E+01	0.0000E+00	4.1021E+01	0.0000E+00
0.0000E+00	3.9700E+01	0.0000E+00	3.9827E+01	0.0000E+00	4.0089E+01	0.0000E+00	4.0209E+01	0.0000E+00	4.0429E+01	0.0000E+00	4.0915E+01	0.0000E+00
0.0000E+00	3.9602E+01	0.0000E+00	3.9728E+01	0.0000E+00	3.9989E+01	0.0000E+00	4.0108E+01	0.0000E+00	4.0327E+01	0.0000E+00	4.0810E+01	0.0000E+00
0.0000E+00	3.9505E+01	0.0000E+00	3.9630E+01	0.0000E+00	3.9889E+01	0.0000E+00	4.0008E+01	0.0000E+00	4.0226E+01	0.0000E+00	4.0705E+01	0.0000E+00
0.0000E+00	3.9408E+01	0.0000E+00	3.9533E+01	0.0000E+00	3.9790E+01	0.0000E+00	3.9909E+01	0.0000E+00	4.0125E+01	0.0000E+00	4.0602E+01	0.0000E+00
0.0000E+00	3.9312E+01	0.0000E+00	3.9436E+01	0.0000E+00	3.9692E+01	0.0000E+00	3.9810E+01	0.0000E+00	4.0024E+01	0.0000E+00	4.0498E+01	0.0000E+00
0.0000E+00	3.9217E+01	0.0000E+00	3.9340E+01	0.0000E+00	3.9594E+01	0.0000E+00	3.9711E+01	0.0000E+00	3.9924E+01	0.0000E+00	4.0396E+01	0.0000E+00
0.0000E+00	3.9122E+01	0.0000E+00	3.9245E+01	0.0000E+00	3.9497E+01	0.0000E+00	3.9613E+01	0.0000E+00	3.9825E+01	0.0000E+00	4.0294E+01	0.0000E+00
0.0000E+00	3.9028E+01	0.0000E+00	3.9150E+01	0.0000E+00	3.9401E+01	0.0000E+00	3.9516E+01	0.0000E+00	3.9727E+01	0.0000E+00	4.0192E+01	0.0000E+00
0.0000E+00	3.8934E+01	0.0000E+00	3.9055E+01	0.0000E+00	3.9305E+01	0.0000E+00	3.9419E+01	0.0000E+00	3.9629E+01	0.0000E+00	4.0091E+01	0.0000E+00
0.0000E+00	3.8841E+01	0.0000E+00	3.8961E+01	0.0000E+00	3.9209E+01	0.0000E+00	3.9323E+01	0.0000E+00	3.9532E+01	0.0000E+00	3.9991E+01	0.0000E+00
0.0000E+00	3.8748E+01	0.0000E+00	3.8868E+01	0.0000E+00	3.9115E+01	0.0000E+00	3.9228E+01	0.0000E+00	3.9435E+01	0.0000E+00	3.9892E+01	0.0000E+00
0.0000E+00	3.8656E+01	0.0000E+00	3.8775E+01	0.0000E+00	3.9020E+01	0.0000E+00	3.9133E+01	0.0000E+00	3.9339E+01	0.0000E+00	3.9793E+01	0.0000E+00
0.0000E+00	3.8564E+01	0.0000E+00	3.8683E+01	0.0000E+00	3.8927E+01	0.0000E+00	3.9039E+01	0.0000E+00	3.9243E+01	0.0000E+00	3.9694E+01	0.0000E+00
0.0000E+00	3.8473E+01	0.0000E+00	3.8591E+01	0.0000E+00	3.8833E+01	0.0000E+00	3.8945E+01	0.0000E+00	3.9148E+01	0.0000E+00	3.9597E+01	0.0000E+00
0.0000E+00	3.8383E+01	0.0000E+00	3.8500E+01	0.0000E+00	3.8741E+01	0.0000E+00	3.8851E+01	0.0000E+00	3.9054E+01	0.0000E+00	3.9500E+01	0.0000E+00
0.0000E+00	3.8293E+01	0.0000E+00	3.8409E+01	0.0000E+00	3.8649E+01	0.0000E+00	3.8759E+01	0.0000E+00	3.8960E+01	0.0000E+00	3.9403E+01	0.0000E+00
0.0000E+00	3.8203E+01	0.0000E+00	3.8319E+01	0.0000E+00	3.8557E+01	0.0000E+00	3.8667E+01	0.0000E+00	3.8866E+01	0.0000E+00	3.9307E+01	0.0000E+00
0.0000E+00	3.8114E+01	0.0000E+00	3.8229E+01	0.0000E+00	3.8466E+01	0.0000E+00	3.8575E+01	0.0000E+00	3.8774E+01	0.0000E+00	3.9212E+01	0.0000E+00
0.0000E+00	3.8026E+01	0.0000E+00	3.8140E+01	0.0000E+00	3.8376E+01	0.0000E+00	3.8484E+01	0.0000E+00	3.8681E+01	0.0000E+00	3.9117E+01	0.0000E+00

Curve 6	Arg 7	Curve 7	Arg 8	Curve 8	Arg 9	Curve 9	Arg 10	Curve 10	Arg 11	Curve 11	Arg 12	Curve 12
0.0000E+00	3.7938E+01	0.0000E+00	3.8051E+01	0.0000E+00	3.8286E+01	0.0000E+00	3.8393E+01	0.0000E+00	3.8590E+01	0.0000E+00	3.9023E+01	0.0000E+00
0.0000E+00	3.7850E+01	0.0000E+00	3.7963E+01	0.0000E+00	3.8196E+01	0.0000E+00	3.8303E+01	0.0000E+00	3.8498E+01	0.0000E+00	3.8929E+01	0.0000E+00
0.0000E+00	3.7763E+01	0.0000E+00	3.7875E+01	0.0000E+00	3.8107E+01	0.0000E+00	3.8213E+01	0.0000E+00	3.8408E+01	0.0000E+00	3.8836E+01	0.0000E+00
0.0000E+00	3.7676E+01	0.0000E+00	3.7788E+01	0.0000E+00	3.8019E+01	0.0000E+00	3.8124E+01	0.0000E+00	3.8317E+01	0.0000E+00	3.8743E+01	0.0000E+00
0.0000E+00	3.7590E+01	0.0000E+00	3.7702E+01	0.0000E+00	3.7931E+01	0.0000E+00	3.8036E+01	0.0000E+00	3.8228E+01	0.0000E+00	3.8651E+01	0.0000E+00
0.0000E+00	3.7505E+01	0.0000E+00	3.7615E+01	0.0000E+00	3.7843E+01	0.0000E+00	3.7948E+01	0.0000E+00	3.8139E+01	0.0000E+00	3.8559E+01	0.0000E+00
0.0000E+00	3.7420E+01	0.0000E+00	3.7530E+01	0.0000E+00	3.7756E+01	0.0000E+00	3.7860E+01	0.0000E+00	3.8050E+01	0.0000E+00	3.8468E+01	0.0000E+00
0.0000E+00	3.7335E+01	0.0000E+00	3.7444E+01	0.0000E+00	3.7670E+01	0.0000E+00	3.7773E+01	0.0000E+00	3.7962E+01	0.0000E+00	3.8378E+01	0.0000E+00
0.0000E+00	3.7251E+01	0.0000E+00	3.7359E+01	0.0000E+00	3.7583E+01	0.0000E+00	3.7686E+01	0.0000E+00	3.7874E+01	0.0000E+00	3.8288E+01	0.0000E+00
0.0000E+00	3.7167E+01	0.0000E+00	3.7275E+01	0.0000E+00	3.7498E+01	0.0000E+00	3.7600E+01	0.0000E+00	3.7787E+01	0.0000E+00	3.8198E+01	0.0000E+00
0.0000E+00	3.7084E+01	0.0000E+00	3.7191E+01	0.0000E+00	3.7413E+01	0.0000E+00	3.7515E+01	0.0000E+00	3.7700E+01	0.0000E+00	3.8109E+01	0.0000E+00
0.0000E+00	3.7001E+01	0.0000E+00	3.7108E+01	0.0000E+00	3.7328E+01	0.0000E+00	3.7429E+01	0.0000E+00	3.7614E+01	0.0000E+00	3.8021E+01	0.0000E+00
0.0000E+00	3.6918E+01	0.0000E+00	3.7025E+01	0.0000E+00	3.7244E+01	0.0000E+00	3.7345E+01	0.0000E+00	3.7528E+01	0.0000E+00	3.7933E+01	0.0000E+00
0.0000E+00	3.6836E+01	0.0000E+00	3.6942E+01	0.0000E+00	3.7160E+01	0.0000E+00	3.7260E+01	0.0000E+00	3.7443E+01	0.0000E+00	3.7845E+01	0.0000E+00
0.0000E+00	3.6755E+01	0.0000E+00	3.6860E+01	0.0000E+00	3.7077E+01	0.0000E+00	3.7177E+01	0.0000E+00	3.7358E+01	0.0000E+00	3.7758E+01	0.0000E+00
0.0000E+00	3.6674E+01	0.0000E+00	3.6778E+01	0.0000E+00	3.6994E+01	0.0000E+00	3.7093E+01	0.0000E+00	3.7274E+01	0.0000E+00	3.7672E+01	0.0000E+00
0.0000E+00	3.6593E+01	0.0000E+00	3.6697E+01	0.0000E+00	3.6912E+01	0.0000E+00	3.7010E+01	0.0000E+00	3.7190E+01	0.0000E+00	3.7586E+01	0.0000E+00
0.0000E+00	3.6513E+01	0.0000E+00	3.6616E+01	0.0000E+00	3.6830E+01	0.0000E+00	3.6928E+01	0.0000E+00	3.7106E+01	0.0000E+00	3.7500E+01	0.0000E+00
0.0000E+00	3.6433E+01	0.0000E+00	3.6536E+01	0.0000E+00	3.6748E+01	0.0000E+00	3.6846E+01	0.0000E+00	3.7023E+01	0.0000E+00	3.7415E+01	0.0000E+00
0.0000E+00	3.6353E+01	0.0000E+00	3.6456E+01	0.0000E+00	3.6667E+01	0.0000E+00	3.6764E+01	0.0000E+00	3.6941E+01	0.0000E+00	3.7330E+01	0.0000E+00
0.0000E+00	3.6274E+01	0.0000E+00	3.6376E+01	0.0000E+00	3.6586E+01	0.0000E+00	3.6683E+01	0.0000E+00	3.6859E+01	0.0000E+00	3.7246E+01	0.0000E+00
0.0000E+00	3.6196E+01	0.0000E+00	3.6297E+01	0.0000E+00	3.6506E+01	0.0000E+00	3.6602E+01	0.0000E+00	3.6777E+01	0.0000E+00	3.7162E+01	0.0000E+00
0.0000E+00	3.6117E+01	0.0000E+00	3.6218E+01	0.0000E+00	3.6426E+01	0.0000E+00	3.6522E+01	0.0000E+00	3.6696E+01	0.0000E+00	3.7079E+01	0.0000E+00
0.0000E+00	3.6040E+01	0.0000E+00	3.6140E+01	0.0000E+00	3.6347E+01	0.0000E+00	3.6442E+01	0.0000E+00	3.6615E+01	0.0000E+00	3.6996E+01	0.0000E+00
0.0000E+00	3.5962E+01	0.0000E+00	3.6062E+01	0.0000E+00	3.6268E+01	0.0000E+00	3.6362E+01	0.0000E+00	3.6535E+01	0.0000E+00	3.6914E+01	0.0000E+00
0.0000E+00	3.5885E+01	0.0000E+00	3.5984E+01	0.0000E+00	3.6189E+01	0.0000E+00	3.6283E+01	0.0000E+00	3.6455E+01	0.0000E+00	3.6832E+01	0.0000E+00
0.0000E+00	3.5808E+01	0.0000E+00	3.5907E+01	0.0000E+00	3.6111E+01	0.0000E+00	3.6205E+01	0.0000E+00	3.6375E+01	0.0000E+00	3.6750E+01	0.0000E+00
0.0000E+00	3.5732E+01	0.0000E+00	3.5831E+01	0.0000E+00	3.6033E+01	0.0000E+00	3.6126E+01	0.0000E+00	3.6296E+01	0.0000E+00	3.6669E+01	0.0000E+00
0.0000E+00	3.5656E+01	0.0000E+00	3.5754E+01	0.0000E+00	3.5956E+01	0.0000E+00	3.6048E+01	0.0000E+00	3.6217E+01	0.0000E+00	3.6588E+01	0.0000E+00
0.0000E+00	3.5581E+01	0.0000E+00	3.5678E+01	0.0000E+00	3.5879E+01	0.0000E+00	3.5971E+01	0.0000E+00	3.6139E+01	0.0000E+00	3.6508E+01	0.0000E+00
0.0000E+00	3.5506E+01	0.0000E+00	3.5603E+01	0.0000E+00	3.5802E+01	0.0000E+00	3.5894E+01	0.0000E+00	3.6061E+01	0.0000E+00	3.6428E+01	0.0000E+00
0.0000E+00	3.5431E+01	0.0000E+00	3.5527E+01	0.0000E+00	3.5726E+01	0.0000E+00	3.5817E+01	0.0000E+00	3.5983E+01	0.0000E+00	3.6349E+01	0.0000E+00
0.0000E+00	3.5356E+01	0.0000E+00	3.5452E+01	0.0000E+00	3.5650E+01	0.0000E+00	3.5741E+01	0.0000E+00	3.5906E+01	0.0000E+00	3.6270E+01	0.0000E+00
0.0000E+00	3.5282E+01	0.0000E+00	3.5378E+01	0.0000E+00	3.5575E+01	0.0000E+00	3.5665E+01	0.0000E+00	3.5829E+01	0.0000E+00	3.6191E+01	0.0000E+00
0.0000E+00	3.5209E+01	0.0000E+00	3.5304E+01	0.0000E+00	3.5500E+01	0.0000E+00	3.5589E+01	0.0000E+00	3.5753E+01	0.0000E+00	3.6113E+01	0.0000E+00
0.0000E+00	3.5135E+01	0.0000E+00	3.5230E+01	0.0000E+00	3.5425E+01	0.0000E+00	3.5514E+01	0.0000E+00	3.5677E+01	0.0000E+00	3.6035E+01	0.0000E+00
0.0000E+00	3.5063E+01	0.0000E+00	3.5157E+01	0.0000E+00	3.5351E+01	0.0000E+00	3.5439E+01	0.0000E+00	3.5601E+01	0.0000E+00	3.5958E+01	0.0000E+00
0.0000E+00	3.4990E+01	0.0000E+00	3.5084E+01	0.0000E+00	3.5277E+01	0.0000E+00	3.5365E+01	0.0000E+00	3.5526E+01	0.0000E+00	3.5881E+01	0.0000E+00
0.0000E+00	3.4918E+01	0.0000E+00	3.5011E+01	0.0000E+00	3.5203E+01	0.0000E+00	3.5291E+01	0.0000E+00	3.5451E+01	0.0000E+00	3.5804E+01	0.0000E+00
0.0000E+00	3.4846E+01	0.0000E+00	3.4939E+01	0.0000E+00	3.5130E+01	0.0000E+00	3.5217E+01	0.0000E+00	3.5377E+01	0.0000E+00	3.5728E+01	0.0000E+00
0.0000E+00	3.4774E+01	0.0000E+00	3.4867E+01	0.0000E+00	3.5057E+01	0.0000E+00	3.5144E+01	0.0000E+00	3.5303E+01	0.0000E+00	3.5652E+01	0.0000E+00
0.0000E+00	3.4703E+01	0.0000E+00	3.4795E+01	0.0000E+00	3.4984E+01	0.0000E+00	3.5071E+01	0.0000E+00	3.5229E+01	0.0000E+00	3.5577E+01	0.0000E+00
0.0000E+00	3.4632E+01	0.0000E+00	3.4724E+01	0.0000E+00	3.4912E+01	0.0000E+00	3.4998E+01	0.0000E+00	3.5156E+01	0.0000E+00	3.5501E+01	0.0000E+00
0.0000E+00	3.4562E+01	0.0000E+00	3.4653E+01	0.0000E+00	3.4840E+01	0.0000E+00	3.4926E+01	0.0000E+00	3.5083E+01	0.0000E+00	3.5427E+01	0.0000E+00
0.0000E+00	3.4492E+01	0.0000E+00	3.4582E+01	0.0000E+00	3.4769E+01	0.0000E+00	3.4854E+01	0.0000E+00	3.5010E+01	0.0000E+00	3.5352E+01	0.0000E+00
0.0000E+00	3.4422E+01	0.0000E+00	3.4512E+01	0.0000E+00	3.4697E+01	0.0000E+00	3.4783E+01	0.0000E+00	3.4938E+01	0.0000E+00	3.5278E+01	0.0000E+00
0.0000E+00	3.4352E+01	0.0000E+00	3.4442E+01	0.0000E+00	3.4627E+01	0.0000E+00	3.4711E+01	0.0000E+00	3.4866E+01	0.0000E+00	3.5205E+01	0.0000E+00
0.0000E+00	3.4283E+01	0.0000E+00	3.4372E+01	0.0000E+00	3.4556E+01	0.0000E+00	3.4640E+01	0.0000E+00	3.4794E+01	0.0000E+00	3.5131E+01	0.0000E+00
0.0000E+00	3.4214E+01	0.0000E+00	3.4303E+01	0.0000E+00	3.4486E+01	0.0000E+00	3.4570E+01	0.0000E+00	3.4723E+01	0.0000E+00	3.5059E+01	0.0000E+00
0.0000E+00	3.4146E+01	0.0000E+00	3.4234E+01	0.0000E+00	3.4416E+01	0.0000E+00	3.4500E+01	0.0000E+00	3.4652E+01	0.0000E+00	3.4986E+01	0.0000E+00
0.0000E+00	3.4077E+01	0.0000E+00	3.4165E+01	0.0000E+00	3.4347E+01	0.0000E+00	3.4430E+01	0.0000E+00	3.4581E+01	0.0000E+00	3.4914E+01	0.0000E+00
0.0000E+00	3.4009E+01	0.0000E+00	3.4097E+01	0.0000E+00	3.4277E+01	0.0000E+00	3.4360E+01	0.0000E+00	3.4511E+01	0.0000E+00	3.4842E+01	0.0000E+00

Curve 6	Arg 7	Curve 7	Arg 8	Curve 8	Arg 9	Curve 9	Arg 10	Curve 10	Arg 11	Curve 11	Arg 12	Curve 12
0.0000E+00	3.3942E+01	0.0000E+00	3.4029E+01	0.0000E+00	3.4209E+01	0.0000E+00	3.4291E+01	0.0000E+00	3.4441E+01	0.0000E+00	3.4770E+01	0.0000E+00
0.0000E+00	3.3874E+01	0.0000E+00	3.3961E+01	0.0000E+00	3.4140E+01	0.0000E+00	3.4222E+01	0.0000E+00	3.4371E+01	0.0000E+00	3.4699E+01	0.0000E+00
0.0000E+00	3.3807E+01	0.0000E+00	3.3894E+01	0.0000E+00	3.4072E+01	0.0000E+00	3.4153E+01	0.0000E+00	3.4302E+01	0.0000E+00	3.4628E+01	0.0000E+00
0.0000E+00	3.3741E+01	0.0000E+00	3.3827E+01	0.0000E+00	3.4004E+01	0.0000E+00	3.4085E+01	0.0000E+00	3.4233E+01	0.0000E+00	3.4558E+01	0.0000E+00
0.0000E+00	3.3674E+01	0.0000E+00	3.3760E+01	0.0000E+00	3.3936E+01	0.0000E+00	3.4017E+01	0.0000E+00	3.4164E+01	0.0000E+00	3.4488E+01	0.0000E+00
0.0000E+00	3.3608E+01	0.0000E+00	3.3694E+01	0.0000E+00	3.3869E+01	0.0000E+00	3.3949E+01	0.0000E+00	3.4096E+01	0.0000E+00	3.4418E+01	0.0000E+00
0.0000E+00	3.3542E+01	0.0000E+00	3.3627E+01	0.0000E+00	3.3802E+01	0.0000E+00	3.3882E+01	0.0000E+00	3.4028E+01	0.0000E+00	3.4348E+01	0.0000E+00
0.0000E+00	3.3477E+01	0.0000E+00	3.3562E+01	0.0000E+00	3.3735E+01	0.0000E+00	3.3815E+01	0.0000E+00	3.3960E+01	0.0000E+00	3.4279E+01	0.0000E+00
0.0000E+00	3.3412E+01	0.0000E+00	3.3496E+01	0.0000E+00	3.3669E+01	0.0000E+00	3.3748E+01	0.0000E+00	3.3893E+01	0.0000E+00	3.4210E+01	0.0000E+00
0.0000E+00	3.3347E+01	0.0000E+00	3.3431E+01	0.0000E+00	3.3603E+01	0.0000E+00	3.3682E+01	0.0000E+00	3.3826E+01	0.0000E+00	3.4142E+01	0.0000E+00
0.0000E+00	3.3282E+01	0.0000E+00	3.3366E+01	0.0000E+00	3.3537E+01	0.0000E+00	3.3616E+01	0.0000E+00	3.3759E+01	0.0000E+00	3.4074E+01	0.0000E+00
0.0000E+00	3.3218E+01	0.0000E+00	3.3301E+01	0.0000E+00	3.3472E+01	0.0000E+00	3.3550E+01	0.0000E+00	3.3693E+01	0.0000E+00	3.4006E+01	0.0000E+00
0.0000E+00	3.3154E+01	0.0000E+00	3.3237E+01	0.0000E+00	3.3407E+01	0.0000E+00	3.3485E+01	0.0000E+00	3.3626E+01	0.0000E+00	3.3938E+01	0.0000E+00
0.0000E+00	3.3090E+01	0.0000E+00	3.3172E+01	0.0000E+00	3.3342E+01	0.0000E+00	3.3419E+01	0.0000E+00	3.3561E+01	0.0000E+00	3.3871E+01	0.0000E+00
0.0000E+00	3.3027E+01	0.0000E+00	3.3109E+01	0.0000E+00	3.3277E+01	0.0000E+00	3.3354E+01	0.0000E+00	3.3495E+01	0.0000E+00	3.3804E+01	0.0000E+00
0.0000E+00	3.2963E+01	0.0000E+00	3.3045E+01	0.0000E+00	3.3213E+01	0.0000E+00	3.3290E+01	0.0000E+00	3.3430E+01	0.0000E+00	3.3737E+01	0.0000E+00
0.0000E+00	3.2900E+01	0.0000E+00	3.2982E+01	0.0000E+00	3.3149E+01	0.0000E+00	3.3225E+01	0.0000E+00	3.3365E+01	0.0000E+00	3.3671E+01	0.0000E+00
0.0000E+00	3.2838E+01	0.0000E+00	3.2919E+01	0.0000E+00	3.3085E+01	0.0000E+00	3.3161E+01	0.0000E+00	3.3300E+01	0.0000E+00	3.3605E+01	0.0000E+00
0.0000E+00	3.2775E+01	0.0000E+00	3.2856E+01	0.0000E+00	3.3022E+01	0.0000E+00	3.3097E+01	0.0000E+00	3.3236E+01	0.0000E+00	3.3539E+01	0.0000E+00
0.0000E+00	3.2713E+01	0.0000E+00	3.2793E+01	0.0000E+00	3.2958E+01	0.0000E+00	3.3034E+01	0.0000E+00	3.3171E+01	0.0000E+00	3.3473E+01	0.0000E+00
0.0000E+00	3.2651E+01	0.0000E+00	3.2731E+01	0.0000E+00	3.2895E+01	0.0000E+00	3.2971E+01	0.0000E+00	3.3108E+01	0.0000E+00	3.3408E+01	0.0000E+00
0.0000E+00	3.2590E+01	0.0000E+00	3.2669E+01	0.0000E+00	3.2833E+01	0.0000E+00	3.2908E+01	0.0000E+00	3.3044E+01	0.0000E+00	3.3343E+01	0.0000E+00
0.0000E+00	3.2529E+01	0.0000E+00	3.2608E+01	0.0000E+00	3.2770E+01	0.0000E+00	3.2845E+01	0.0000E+00	3.2981E+01	0.0000E+00	3.3279E+01	0.0000E+00
0.0000E+00	3.2467E+01	0.0000E+00	3.2546E+01	0.0000E+00	3.2708E+01	0.0000E+00	3.2783E+01	0.0000E+00	3.2918E+01	0.0000E+00	3.3214E+01	0.0000E+00
0.0000E+00	3.2407E+01	0.0000E+00	3.2485E+01	0.0000E+00	3.2647E+01	0.0000E+00	3.2720E+01	0.0000E+00	3.2855E+01	0.0000E+00	3.3150E+01	0.0000E+00
0.0000E+00	3.2346E+01	0.0000E+00	3.2424E+01	0.0000E+00	3.2585E+01	0.0000E+00	3.2659E+01	0.0000E+00	3.2793E+01	0.0000E+00	3.3087E+01	0.0000E+00
0.0000E+00	3.2286E+01	0.0000E+00	3.2364E+01	0.0000E+00	3.2524E+01	0.0000E+00	3.2597E+01	0.0000E+00	3.2730E+01	0.0000E+00	3.3023E+01	0.0000E+00
0.0000E+00	3.2226E+01	0.0000E+00	3.2303E+01	0.0000E+00	3.2463E+01	0.0000E+00	3.2536E+01	0.0000E+00	3.2668E+01	0.0000E+00	3.2960E+01	0.0000E+00
0.0000E+00	3.2166E+01	0.0000E+00	3.2243E+01	0.0000E+00	3.2402E+01	0.0000E+00	3.2474E+01	0.0000E+00	3.2607E+01	0.0000E+00	3.2897E+01	0.0000E+00
0.0000E+00	3.2107E+01	0.0000E+00	3.2183E+01	0.0000E+00	3.2341E+01	0.0000E+00	3.2414E+01	0.0000E+00	3.2545E+01	0.0000E+00	3.2834E+01	0.0000E+00
0.0000E+00	3.2047E+01	0.0000E+00	3.2124E+01	0.0000E+00	3.2281E+01	0.0000E+00	3.2353E+01	0.0000E+00	3.2484E+01	0.0000E+00	3.2772E+01	0.0000E+00
0.0000E+00	3.1988E+01	0.0000E+00	3.2064E+01	0.0000E+00	3.2221E+01	0.0000E+00	3.2293E+01	0.0000E+00	3.2423E+01	0.0000E+00	3.2710E+01	0.0000E+00
0.0000E+00	3.1929E+01	0.0000E+00	3.2005E+01	0.0000E+00	3.2161E+01	0.0000E+00	3.2233E+01	0.0000E+00	3.2363E+01	0.0000E+00	3.2648E+01	0.0000E+00
0.0000E+00	3.1871E+01	0.0000E+00	3.1946E+01	0.0000E+00	3.2102E+01	0.0000E+00	3.2173E+01	0.0000E+00	3.2302E+01	0.0000E+00	3.2586E+01	0.0000E+00
0.0000E+00	3.1813E+01	0.0000E+00	3.1888E+01	0.0000E+00	3.2042E+01	0.0000E+00	3.2113E+01	0.0000E+00	3.2242E+01	0.0000E+00	3.2525E+01	0.0000E+00
0.0000E+00	3.1754E+01	0.0000E+00	3.1829E+01	0.0000E+00	3.1983E+01	0.0000E+00	3.2054E+01	0.0000E+00	3.2182E+01	0.0000E+00	3.2464E+01	0.0000E+00
0.0000E+00	3.1697E+01	0.0000E+00	3.1771E+01	0.0000E+00	3.1925E+01	0.0000E+00	3.1995E+01	0.0000E+00	3.2123E+01	0.0000E+00	3.2403E+01	0.0000E+00
0.0000E+00	3.1639E+01	0.0000E+00	3.1713E+01	0.0000E+00	3.1866E+01	0.0000E+00	3.1936E+01	0.0000E+00	3.2063E+01	0.0000E+00	3.2343E+01	0.0000E+00
0.0000E+00	3.1582E+01	0.0000E+00	3.1656E+01	0.0000E+00	3.1808E+01	0.0000E+00	3.1878E+01	0.0000E+00	3.2004E+01	0.0000E+00	3.2283E+01	0.0000E+00
0.0000E+00	3.1525E+01	0.0000E+00	3.1598E+01	0.0000E+00	3.1750E+01	0.0000E+00	3.1819E+01	0.0000E+00	3.1946E+01	0.0000E+00	3.2223E+01	0.0000E+00
0.0000E+00	3.1468E+01	0.0000E+00	3.1541E+01	0.0000E+00	3.1692E+01	0.0000E+00	3.1761E+01	0.0000E+00	3.1887E+01	0.0000E+00	3.2163E+01	0.0000E+00
0.0000E+00	3.1411E+01	0.0000E+00	3.1484E+01	0.0000E+00	3.1634E+01	0.0000E+00	3.1703E+01	0.0000E+00	3.1829E+01	0.0000E+00	3.2103E+01	0.0000E+00
0.0000E+00	3.1355E+01	0.0000E+00	3.1427E+01	0.0000E+00	3.1577E+01	0.0000E+00	3.1646E+01	0.0000E+00	3.1770E+01	0.0000E+00	3.2044E+01	0.0000E+00
0.0000E+00	3.1298E+01	0.0000E+00	3.1371E+01	0.0000E+00	3.1520E+01	0.0000E+00	3.1588E+01	0.0000E+00	3.1713E+01	0.0000E+00	3.1985E+01	0.0000E+00
0.0000E+00	3.1242E+01	0.0000E+00	3.1315E+01	0.0000E+00	3.1463E+01	0.0000E+00	3.1531E+01	0.0000E+00	3.1655E+01	0.0000E+00	3.1926E+01	0.0000E+00
0.0000E+00	3.1187E+01	0.0000E+00	3.1259E+01	0.0000E+00	3.1406E+01	0.0000E+00	3.1474E+01	0.0000E+00	3.1597E+01	0.0000E+00	3.1868E+01	0.0000E+00
0.0000E+00	3.1131E+01	0.0000E+00	3.1203E+01	0.0000E+00	3.1350E+01	0.0000E+00	3.1417E+01	0.0000E+00	3.1540E+01	0.0000E+00	3.1809E+01	0.0000E+00
0.0000E+00	3.1076E+01	0.0000E+00	3.1147E+01	0.0000E+00	3.1294E+01	0.0000E+00	3.1361E+01	0.0000E+00	3.1483E+01	0.0000E+00	3.1751E+01	0.0000E+00
0.0000E+00	3.1021E+01	0.0000E+00	3.1092E+01	0.0000E+00	3.1238E+01	0.0000E+00	3.1305E+01	0.0000E+00	3.1427E+01	0.0000E+00	3.1693E+01	0.0000E+00
0.0000E+00	3.0966E+01	0.0000E+00	3.1037E+01	0.0000E+00	3.1182E+01	0.0000E+00	3.1249E+01	0.0000E+00	3.1370E+01	0.0000E+00	3.1636E+01	0.0000E+00
0.0000E+00	3.0911E+01	0.0000E+00	3.0982E+01	0.0000E+00	3.1127E+01	0.0000E+00	3.1193E+01	0.0000E+00	3.1314E+01	0.0000E+00	3.1579E+01	0.0000E+00
0.0000E+00	3.0857E+01	0.0000E+00	3.0927E+01	0.0000E+00	3.1071E+01	0.0000E+00	3.1137E+01	0.0000E+00	3.1258E+01	0.0000E+00	3.1521E+01	0.0000E+00

Curve 6	Arg 7	Curve 7	Arg 8	Curve 8	Arg 9	Curve 9	Arg 10	Curve 10	Arg 11	Curve 11	Arg 12	Curve 12
0.0000E+00	3.0802E+01	0.0000E+00	3.0872E+01	0.0000E+00	3.1016E+01	0.0000E+00	3.1082E+01	0.0000E+00	3.1202E+01	0.0000E+00	3.1465E+01	0.0000E+00
0.0000E+00	3.0748E+01	0.0000E+00	3.0818E+01	0.0000E+00	3.0961E+01	0.0000E+00	3.1027E+01	0.0000E+00	3.1146E+01	0.0000E+00	3.1408E+01	0.0000E+00
0.0000E+00	3.0694E+01	0.0000E+00	3.0764E+01	0.0000E+00	3.0907E+01	0.0000E+00	3.0972E+01	0.0000E+00	3.1091E+01	0.0000E+00	3.1351E+01	0.0000E+00
0.0000E+00	3.0641E+01	0.0000E+00	3.0710E+01	0.0000E+00	3.0852E+01	0.0000E+00	3.0917E+01	0.0000E+00	3.1036E+01	0.0000E+00	3.1295E+01	0.0000E+00
0.0000E+00	3.0587E+01	0.0000E+00	3.0656E+01	0.0000E+00	3.0798E+01	0.0000E+00	3.0863E+01	0.0000E+00	3.0981E+01	0.0000E+00	3.1239E+01	0.0000E+00
0.0000E+00	3.0534E+01	0.0000E+00	3.0603E+01	0.0000E+00	3.0744E+01	0.0000E+00	3.0808E+01	0.0000E+00	3.0926E+01	0.0000E+00	3.1183E+01	0.0000E+00
0.0000E+00	3.0481E+01	0.0000E+00	3.0550E+01	0.0000E+00	3.0690E+01	0.0000E+00	3.0754E+01	0.0000E+00	3.0871E+01	0.0000E+00	3.1128E+01	0.0000E+00
0.0000E+00	3.0428E+01	0.0000E+00	3.0496E+01	0.0000E+00	3.0636E+01	0.0000E+00	3.0701E+01	0.0000E+00	3.0817E+01	0.0000E+00	3.1073E+01	0.0000E+00
0.0000E+00	3.0376E+01	0.0000E+00	3.0444E+01	0.0000E+00	3.0583E+01	0.0000E+00	3.0647E+01	0.0000E+00	3.0763E+01	0.0000E+00	3.1018E+01	0.0000E+00
0.0000E+00	3.0323E+01	0.0000E+00	3.0391E+01	0.0000E+00	3.0530E+01	0.0000E+00	3.0593E+01	0.0000E+00	3.0709E+01	0.0000E+00	3.0963E+01	0.0000E+00
0.0000E+00	3.0271E+01	0.0000E+00	3.0338E+01	0.0000E+00	3.0477E+01	0.0000E+00	3.0540E+01	0.0000E+00	3.0655E+01	0.0000E+00	3.0908E+01	0.0000E+00
0.0000E+00	3.0219E+01	0.0000E+00	3.0286E+01	0.0000E+00	3.0424E+01	0.0000E+00	3.0487E+01	0.0000E+00	3.0602E+01	0.0000E+00	3.0854E+01	0.0000E+00
0.0000E+00	3.0167E+01	0.0000E+00	3.0234E+01	0.0000E+00	3.0372E+01	0.0000E+00	3.0434E+01	0.0000E+00	3.0549E+01	0.0000E+00	3.0799E+01	0.0000E+00
0.0000E+00	3.0116E+01	0.0000E+00	3.0182E+01	0.0000E+00	3.0319E+01	0.0000E+00	3.0382E+01	0.0000E+00	3.0496E+01	0.0000E+00	3.0745E+01	0.0000E+00
0.0000E+00	3.0064E+01	0.0000E+00	3.0131E+01	0.0000E+00	3.0267E+01	0.0000E+00	3.0329E+01	0.0000E+00	3.0443E+01	0.0000E+00	3.0691E+01	0.0000E+00
0.0000E+00	3.0013E+01	0.0000E+00	3.0079E+01	0.0000E+00	3.0215E+01	0.0000E+00	3.0277E+01	0.0000E+00	3.0390E+01	0.0000E+00	3.0638E+01	0.0000E+00
0.0000E+00	2.9962E+01	0.0000E+00	3.0028E+01	0.0000E+00	3.0163E+01	0.0000E+00	3.0225E+01	0.0000E+00	3.0338E+01	0.0000E+00	3.0584E+01	0.0000E+00
0.0000E+00	2.9911E+01	0.0000E+00	2.9977E+01	0.0000E+00	3.0112E+01	0.0000E+00	3.0173E+01	0.0000E+00	3.0285E+01	0.0000E+00	3.0531E+01	0.0000E+00
0.0000E+00	2.9860E+01	0.0000E+00	2.9926E+01	0.0000E+00	3.0060E+01	0.0000E+00	3.0122E+01	0.0000E+00	3.0233E+01	0.0000E+00	3.0478E+01	0.0000E+00
0.0000E+00	2.9810E+01	0.0000E+00	2.9875E+01	0.0000E+00	3.0009E+01	0.0000E+00	3.0070E+01	0.0000E+00	3.0182E+01	0.0000E+00	3.0425E+01	0.0000E+00
0.0000E+00	2.9760E+01	0.0000E+00	2.9825E+01	0.0000E+00	2.9958E+01	0.0000E+00	3.0019E+01	0.0000E+00	3.0130E+01	0.0000E+00	3.0373E+01	0.0000E+00
0.0000E+00	2.9710E+01	0.0000E+00	2.9774E+01	0.0000E+00	2.9907E+01	0.0000E+00	2.9968E+01	0.0000E+00	3.0078E+01	0.0000E+00	3.0320E+01	0.0000E+00
0.0000E+00	2.9660E+01	0.0000E+00	2.9724E+01	0.0000E+00	2.9856E+01	0.0000E+00	2.9917E+01	0.0000E+00	3.0027E+01	0.0000E+00	3.0268E+01	0.0000E+00
0.0000E+00	2.9610E+01	0.0000E+00	2.9674E+01	0.0000E+00	2.9806E+01	0.0000E+00	2.9866E+01	0.0000E+00	2.9976E+01	0.0000E+00	3.0216E+01	0.0000E+00
0.0000E+00	2.9560E+01	0.0000E+00	2.9624E+01	0.0000E+00	2.9756E+01	0.0000E+00	2.9816E+01	0.0000E+00	2.9925E+01	0.0000E+00	3.0164E+01	0.0000E+00
0.0000E+00	2.9511E+01	0.0000E+00	2.9575E+01	0.0000E+00	2.9706E+01	0.0000E+00	2.9765E+01	0.0000E+00	2.9874E+01	0.0000E+00	3.0113E+01	0.0000E+00
0.0000E+00	2.9462E+01	0.0000E+00	2.9525E+01	0.0000E+00	2.9656E+01	0.0000E+00	2.9715E+01	0.0000E+00	2.9824E+01	0.0000E+00	3.0061E+01	0.0000E+00
0.0000E+00	2.9413E+01	0.0000E+00	2.9476E+01	0.0000E+00	2.9606E+01	0.0000E+00	2.9665E+01	0.0000E+00	2.9773E+01	0.0000E+00	3.0010E+01	0.0000E+00
0.0000E+00	2.9364E+01	0.0000E+00	2.9427E+01	0.0000E+00	2.9556E+01	0.0000E+00	2.9616E+01	0.0000E+00	2.9723E+01	0.0000E+00	2.9959E+01	0.0000E+00
0.0000E+00	2.9315E+01	0.0000E+00	2.9378E+01	0.0000E+00	2.9507E+01	0.0000E+00	2.9566E+01	0.0000E+00	2.9673E+01	0.0000E+00	2.9908E+01	0.0000E+00
0.0000E+00	2.9267E+01	0.0000E+00	2.9329E+01	0.0000E+00	2.9458E+01	0.0000E+00	2.9517E+01	0.0000E+00	2.9624E+01	0.0000E+00	2.9858E+01	0.0000E+00
0.0000E+00	2.9218E+01	0.0000E+00	2.9281E+01	0.0000E+00	2.9409E+01	0.0000E+00	2.9467E+01	0.0000E+00	2.9574E+01	0.0000E+00	2.9807E+01	0.0000E+00
0.0000E+00	2.9170E+01	0.0000E+00	2.9232E+01	0.0000E+00	2.9360E+01	0.0000E+00	2.9418E+01	0.0000E+00	2.9524E+01	0.0000E+00	2.9757E+01	0.0000E+00
0.0000E+00	2.9122E+01	0.0000E+00	2.9184E+01	0.0000E+00	2.9311E+01	0.0000E+00	2.9369E+01	0.0000E+00	2.9475E+01	0.0000E+00	2.9707E+01	0.0000E+00
0.0000E+00	2.9074E+01	0.0000E+00	2.9136E+01	0.0000E+00	2.9263E+01	0.0000E+00	2.9321E+01	0.0000E+00	2.9426E+01	0.0000E+00	2.9657E+01	0.0000E+00
0.0000E+00	2.9027E+01	0.0000E+00	2.9088E+01	0.0000E+00	2.9214E+01	0.0000E+00	2.9272E+01	0.0000E+00	2.9377E+01	0.0000E+00	2.9607E+01	0.0000E+00
0.0000E+00	2.8979E+01	0.0000E+00	2.9041E+01	0.0000E+00	2.9166E+01	0.0000E+00	2.9224E+01	0.0000E+00	2.9329E+01	0.0000E+00	2.9558E+01	0.0000E+00
0.0000E+00	2.8932E+01	0.0000E+00	2.8993E+01	0.0000E+00	2.9118E+01	0.0000E+00	2.9176E+01	0.0000E+00	2.9280E+01	0.0000E+00	2.9508E+01	0.0000E+00
0.0000E+00	2.8885E+01	0.0000E+00	2.8946E+01	0.0000E+00	2.9071E+01	0.0000E+00	2.9128E+01	0.0000E+00	2.9232E+01	0.0000E+00	2.9459E+01	0.0000E+00
0.0000E+00	2.8838E+01	0.0000E+00	2.8898E+01	0.0000E+00	2.9023E+01	0.0000E+00	2.9080E+01	0.0000E+00	2.9183E+01	0.0000E+00	2.9410E+01	0.0000E+00
0.0000E+00	2.8791E+01	0.0000E+00	2.8851E+01	0.0000E+00	2.8975E+01	0.0000E+00	2.9032E+01	0.0000E+00	2.9135E+01	0.0000E+00	2.9361E+01	0.0000E+00
0.0000E+00	2.8744E+01	0.0000E+00	2.8805E+01	0.0000E+00	2.8928E+01	0.0000E+00	2.8985E+01	0.0000E+00	2.9088E+01	0.0000E+00	2.9312E+01	0.0000E+00
0.0000E+00	2.8698E+01	0.0000E+00	2.8758E+01	0.0000E+00	2.8881E+01	0.0000E+00	2.8937E+01	0.0000E+00	2.9040E+01	0.0000E+00	2.9264E+01	0.0000E+00
0.0000E+00	2.8651E+01	0.0000E+00	2.8711E+01	0.0000E+00	2.8834E+01	0.0000E+00	2.8890E+01	0.0000E+00	2.8992E+01	0.0000E+00	2.9216E+01	0.0000E+00
0.0000E+00	2.8605E+01	0.0000E+00	2.8665E+01	0.0000E+00	2.8787E+01	0.0000E+00	2.8843E+01	0.0000E+00	2.8945E+01	0.0000E+00	2.9168E+01	0.0000E+00
0.0000E+00	2.8559E+01	0.0000E+00	2.8619E+01	0.0000E+00	2.8741E+01	0.0000E+00	2.8796E+01	0.0000E+00	2.8898E+01	0.0000E+00	2.9120E+01	0.0000E+00
0.0000E+00	2.8513E+01	0.0000E+00	2.8573E+01	0.0000E+00	2.8694E+01	0.0000E+00	2.8750E+01	0.0000E+00	2.8851E+01	0.0000E+00	2.9072E+01	0.0000E+00
0.0000E+00	2.8468E+01	0.0000E+00	2.8527E+01	0.0000E+00	2.8648E+01	0.0000E+00	2.8703E+01	0.0000E+00	2.8804E+01	0.0000E+00	2.9024E+01	0.0000E+00
0.0000E+00	2.8422E+01	0.0000E+00	2.8481E+01	0.0000E+00	2.8602E+01	0.0000E+00	2.8657E+01	0.0000E+00	2.8757E+01	0.0000E+00	2.8977E+01	0.0000E+00
0.0000E+00	2.8377E+01	0.0000E+00	2.8435E+01	0.0000E+00	2.8556E+01	0.0000E+00	2.8611E+01	0.0000E+00	2.8711E+01	0.0000E+00	2.8929E+01	0.0000E+00
0.0000E+00	2.8332E+01	0.0000E+00	2.8390E+01	0.0000E+00	2.8510E+01	0.0000E+00	2.8565E+01	0.0000E+00	2.8664E+01	0.0000E+00	2.8882E+01	0.0000E+00
0.0000E+00	2.8286E+01	0.0000E+00	2.8345E+01	0.0000E+00	2.8464E+01	0.0000E+00	2.8519E+01	0.0000E+00	2.8618E+01	0.0000E+00	2.8835E+01	0.0000E+00

Curve 6	Arg 7	Curve 7	Arg 8	Curve 8	Arg 9	Curve 9	Arg 10	Curve 10	Arg 11	Curve 11	Arg 12	Curve 12
0.0000E+00	2.8242E+01	0.0000E+00	2.8300E+01	0.0000E+00	2.8419E+01	0.0000E+00	2.8473E+01	0.0000E+00	2.8572E+01	0.0000E+00	2.8788E+01	0.0000E+00
0.0000E+00	2.8197E+01	0.0000E+00	2.8255E+01	0.0000E+00	2.8373E+01	0.0000E+00	2.8427E+01	0.0000E+00	2.8526E+01	0.0000E+00	2.8742E+01	0.0000E+00
0.0000E+00	2.8152E+01	0.0000E+00	2.8210E+01	0.0000E+00	2.8328E+01	0.0000E+00	2.8382E+01	0.0000E+00	2.8480E+01	0.0000E+00	2.8695E+01	0.0000E+00
0.0000E+00	2.8108E+01	0.0000E+00	2.8165E+01	0.0000E+00	2.8283E+01	0.0000E+00	2.8337E+01	0.0000E+00	2.8435E+01	0.0000E+00	2.8649E+01	0.0000E+00
0.0000E+00	2.8063E+01	0.0000E+00	2.8121E+01	0.0000E+00	2.8238E+01	0.0000E+00	2.8292E+01	0.0000E+00	2.8389E+01	0.0000E+00	2.8603E+01	0.0000E+00
0.0000E+00	2.8019E+01	0.0000E+00	2.8076E+01	0.0000E+00	2.8193E+01	0.0000E+00	2.8247E+01	0.0000E+00	2.8344E+01	0.0000E+00	2.8557E+01	0.0000E+00
0.0000E+00	2.7975E+01	0.0000E+00	2.8032E+01	0.0000E+00	2.8149E+01	0.0000E+00	2.8202E+01	0.0000E+00	2.8299E+01	0.0000E+00	2.8511E+01	0.0000E+00
0.0000E+00	2.7931E+01	0.0000E+00	2.7988E+01	0.0000E+00	2.8104E+01	0.0000E+00	2.8157E+01	0.0000E+00	2.8254E+01	0.0000E+00	2.8465E+01	0.0000E+00
0.0000E+00	2.7887E+01	0.0000E+00	2.7944E+01	0.0000E+00	2.8060E+01	0.0000E+00	2.8113E+01	0.0000E+00	2.8209E+01	0.0000E+00	2.8420E+01	0.0000E+00
0.0000E+00	2.7844E+01	0.0000E+00	2.7900E+01	0.0000E+00	2.8016E+01	0.0000E+00	2.8068E+01	0.0000E+00	2.8164E+01	0.0000E+00	2.8374E+01	0.0000E+00
0.0000E+00	2.7800E+01	0.0000E+00	2.7856E+01	0.0000E+00	2.7972E+01	0.0000E+00	2.8024E+01	0.0000E+00	2.8120E+01	0.0000E+00	2.8329E+01	0.0000E+00
0.0000E+00	2.7757E+01	0.0000E+00	2.7813E+01	0.0000E+00	2.7928E+01	0.0000E+00	2.7980E+01	0.0000E+00	2.8075E+01	0.0000E+00	2.8284E+01	0.0000E+00
0.0000E+00	2.7714E+01	0.0000E+00	2.7770E+01	0.0000E+00	2.7884E+01	0.0000E+00	2.7936E+01	0.0000E+00	2.8031E+01	0.0000E+00	2.8239E+01	0.0000E+00
0.0000E+00	2.7671E+01	0.0000E+00	2.7726E+01	0.0000E+00	2.7840E+01	0.0000E+00	2.7892E+01	0.0000E+00	2.7987E+01	0.0000E+00	2.8194E+01	0.0000E+00
0.0000E+00	2.7628E+01	0.0000E+00	2.7683E+01	0.0000E+00	2.7797E+01	0.0000E+00	2.7849E+01	0.0000E+00	2.7943E+01	0.0000E+00	2.8150E+01	0.0000E+00
0.0000E+00	2.7585E+01	0.0000E+00	2.7640E+01	0.0000E+00	2.7754E+01	0.0000E+00	2.7805E+01	0.0000E+00	2.7899E+01	0.0000E+00	2.8105E+01	0.0000E+00
0.0000E+00	2.7543E+01	0.0000E+00	2.7598E+01	0.0000E+00	2.7710E+01	0.0000E+00	2.7762E+01	0.0000E+00	2.7856E+01	0.0000E+00	2.8061E+01	0.0000E+00
0.0000E+00	2.7500E+01	0.0000E+00	2.7555E+01	0.0000E+00	2.7667E+01	0.0000E+00	2.7719E+01	0.0000E+00	2.7812E+01	0.0000E+00	2.8017E+01	0.0000E+00
0.0000E+00	2.7458E+01	0.0000E+00	2.7512E+01	0.0000E+00	2.7624E+01	0.0000E+00	2.7676E+01	0.0000E+00	2.7769E+01	0.0000E+00	2.7973E+01	0.0000E+00
0.0000E+00	2.7416E+01	0.0000E+00	2.7470E+01	0.0000E+00	2.7582E+01	0.0000E+00	2.7633E+01	0.0000E+00	2.7726E+01	0.0000E+00	2.7929E+01	0.0000E+00
0.0000E+00	2.7373E+01	0.0000E+00	2.7428E+01	0.0000E+00	2.7539E+01	0.0000E+00	2.7590E+01	0.0000E+00	2.7683E+01	0.0000E+00	2.7885E+01	0.0000E+00
0.0000E+00	2.7331E+01	0.0000E+00	2.7386E+01	0.0000E+00	2.7497E+01	0.0000E+00	2.7547E+01	0.0000E+00	2.7640E+01	0.0000E+00	2.7841E+01	0.0000E+00
0.0000E+00	2.7290E+01	0.0000E+00	2.7344E+01	0.0000E+00	2.7454E+01	0.0000E+00	2.7505E+01	0.0000E+00	2.7597E+01	0.0000E+00	2.7798E+01	0.0000E+00
0.0000E+00	2.7248E+01	0.0000E+00	2.7302E+01	0.0000E+00	2.7412E+01	0.0000E+00	2.7463E+01	0.0000E+00	2.7554E+01	0.0000E+00	2.7755E+01	0.0000E+00
0.0000E+00	2.7206E+01	0.0000E+00	2.7260E+01	0.0000E+00	2.7370E+01	0.0000E+00	2.7420E+01	0.0000E+00	2.7512E+01	0.0000E+00	2.7711E+01	0.0000E+00
0.0000E+00	2.7165E+01	0.0000E+00	2.7218E+01	0.0000E+00	2.7328E+01	0.0000E+00	2.7378E+01	0.0000E+00	2.7469E+01	0.0000E+00	2.7668E+01	0.0000E+00
0.0000E+00	2.7124E+01	0.0000E+00	2.7177E+01	0.0000E+00	2.7286E+01	0.0000E+00	2.7336E+01	0.0000E+00	2.7427E+01	0.0000E+00	2.7626E+01	0.0000E+00
0.0000E+00	2.7083E+01	0.0000E+00	2.7136E+01	0.0000E+00	2.7245E+01	0.0000E+00	2.7294E+01	0.0000E+00	2.7385E+01	0.0000E+00	2.7583E+01	0.0000E+00
0.0000E+00	2.7042E+01	0.0000E+00	2.7095E+01	0.0000E+00	2.7203E+01	0.0000E+00	2.7253E+01	0.0000E+00	2.7343E+01	0.0000E+00	2.7540E+01	0.0000E+00
0.0000E+00	2.7001E+01	0.0000E+00	2.7053E+01	0.0000E+00	2.7162E+01	0.0000E+00	2.7211E+01	0.0000E+00	2.7301E+01	0.0000E+00	2.7498E+01	0.0000E+00
0.0000E+00	2.6960E+01	0.0000E+00	2.7013E+01	0.0000E+00	2.7120E+01	0.0000E+00	2.7170E+01	0.0000E+00	2.7259E+01	0.0000E+00	2.7455E+01	0.0000E+00
0.0000E+00	2.6919E+01	0.0000E+00	2.6972E+01	0.0000E+00	2.7079E+01	0.0000E+00	2.7129E+01	0.0000E+00	2.7218E+01	0.0000E+00	2.7413E+01	0.0000E+00
0.0000E+00	2.6879E+01	0.0000E+00	2.6931E+01	0.0000E+00	2.7038E+01	0.0000E+00	2.7087E+01	0.0000E+00	2.7176E+01	0.0000E+00	2.7371E+01	0.0000E+00
0.0000E+00	2.6838E+01	0.0000E+00	2.6891E+01	0.0000E+00	2.6997E+01	0.0000E+00	2.7046E+01	0.0000E+00	2.7135E+01	0.0000E+00	2.7329E+01	0.0000E+00
0.0000E+00	2.6798E+01	0.0000E+00	2.6850E+01	0.0000E+00	2.6957E+01	0.0000E+00	2.7005E+01	0.0000E+00	2.7094E+01	0.0000E+00	2.7287E+01	0.0000E+00
0.0000E+00	2.6758E+01	0.0000E+00	2.6810E+01	0.0000E+00	2.6916E+01	0.0000E+00	2.6965E+01	0.0000E+00	2.7053E+01	0.0000E+00	2.7246E+01	0.0000E+00
0.0000E+00	2.6718E+01	0.0000E+00	2.6770E+01	0.0000E+00	2.6876E+01	0.0000E+00	2.6924E+01	0.0000E+00	2.7012E+01	0.0000E+00	2.7204E+01	0.0000E+00
0.0000E+00	2.6678E+01	0.0000E+00	2.6730E+01	0.0000E+00	2.6835E+01	0.0000E+00	2.6883E+01	0.0000E+00	2.6971E+01	0.0000E+00	2.7163E+01	0.0000E+00
0.0000E+00	2.6638E+01	0.0000E+00	2.6690E+01	0.0000E+00	2.6795E+01	0.0000E+00	2.6843E+01	0.0000E+00	2.6930E+01	0.0000E+00	2.7122E+01	0.0000E+00
0.0000E+00	2.6599E+01	0.0000E+00	2.6650E+01	0.0000E+00	2.6755E+01	0.0000E+00	2.6803E+01	0.0000E+00	2.6890E+01	0.0000E+00	2.7080E+01	0.0000E+00
0.0000E+00	2.6559E+01	0.0000E+00	2.6610E+01	0.0000E+00	2.6715E+01	0.0000E+00	2.6763E+01	0.0000E+00	2.6850E+01	0.0000E+00	2.7039E+01	0.0000E+00
0.0000E+00	2.6520E+01	0.0000E+00	2.6571E+01	0.0000E+00	2.6675E+01	0.0000E+00	2.6723E+01	0.0000E+00	2.6809E+01	0.0000E+00	2.6998E+01	0.0000E+00
0.0000E+00	2.6480E+01	0.0000E+00	2.6531E+01	0.0000E+00	2.6635E+01	0.0000E+00	2.6683E+01	0.0000E+00	2.6769E+01	0.0000E+00	2.6958E+01	0.0000E+00
0.0000E+00	2.6441E+01	0.0000E+00	2.6492E+01	0.0000E+00	2.6596E+01	0.0000E+00	2.6643E+01	0.0000E+00	2.6729E+01	0.0000E+00	2.6917E+01	0.0000E+00
0.0000E+00	2.6402E+01	0.0000E+00	2.6453E+01	0.0000E+00	2.6556E+01	0.0000E+00	2.6603E+01	0.0000E+00	2.6689E+01	0.0000E+00	2.6877E+01	0.0000E+00
0.0000E+00	2.6363E+01	0.0000E+00	2.6414E+01	0.0000E+00	2.6517E+01	0.0000E+00	2.6564E+01	0.0000E+00	2.6649E+01	0.0000E+00	2.6836E+01	0.0000E+00
0.0000E+00	2.6325E+01	0.0000E+00	2.6375E+01	0.0000E+00	2.6477E+01	0.0000E+00	2.6524E+01	0.0000E+00	2.6610E+01	0.0000E+00	2.6796E+01	0.0000E+00
0.0000E+00	2.6286E+01	0.0000E+00	2.6336E+01	0.0000E+00	2.6438E+01	0.0000E+00	2.6485E+01	0.0000E+00	2.6570E+01	0.0000E+00	2.6756E+01	0.0000E+00
0.0000E+00	2.6247E+01	0.0000E+00	2.6297E+01	0.0000E+00	2.6399E+01	0.0000E+00	2.6446E+01	0.0000E+00	2.6531E+01	0.0000E+00	2.6716E+01	0.0000E+00
0.0000E+00	2.6209E+01	0.0000E+00	2.6258E+01	0.0000E+00	2.6360E+01	0.0000E+00	2.6407E+01	0.0000E+00	2.6491E+01	0.0000E+00	2.6676E+01	0.0000E+00
0.0000E+00	2.6170E+01	0.0000E+00	2.6220E+01	0.0000E+00	2.6321E+01	0.0000E+00	2.6368E+01	0.0000E+00	2.6452E+01	0.0000E+00	2.6636E+01	0.0000E+00
0.0000E+00	2.6132E+01	0.0000E+00	2.6182E+01	0.0000E+00	2.6283E+01	0.0000E+00	2.6329E+01	0.0000E+00	2.6413E+01	0.0000E+00	2.6597E+01	0.0000E+00

Curve 6	Arg 7	Curve 7	Arg 8	Curve 8	Arg 9	Curve 9	Arg 10	Curve 10	Arg 11	Curve 11	Arg 12	Curve 12
0.0000E+00	2.6094E+01	0.0000E+00	2.6143E+01	0.0000E+00	2.6244E+01	0.0000E+00	2.6290E+01	0.0000E+00	2.6374E+01	0.0000E+00	2.6557E+01	0.0000E+00
0.0000E+00	2.6056E+01	0.0000E+00	2.6105E+01	0.0000E+00	2.6206E+01	0.0000E+00	2.6252E+01	0.0000E+00	2.6335E+01	0.0000E+00	2.6518E+01	0.0000E+00
0.0000E+00	2.6018E+01	0.0000E+00	2.6067E+01	0.0000E+00	2.6167E+01	0.0000E+00	2.6213E+01	0.0000E+00	2.6296E+01	0.0000E+00	2.6478E+01	0.0000E+00
0.0000E+00	2.5980E+01	0.0000E+00	2.6029E+01	0.0000E+00	2.6129E+01	0.0000E+00	2.6175E+01	0.0000E+00	2.6258E+01	0.0000E+00	2.6439E+01	0.0000E+00
0.0000E+00	2.5943E+01	0.0000E+00	2.5991E+01	0.0000E+00	2.6091E+01	0.0000E+00	2.6137E+01	0.0000E+00	2.6219E+01	0.0000E+00	2.6400E+01	0.0000E+00
0.0000E+00	2.5905E+01	0.0000E+00	2.5954E+01	0.0000E+00	2.6053E+01	0.0000E+00	2.6098E+01	0.0000E+00	2.6181E+01	0.0000E+00	2.6361E+01	0.0000E+00
0.0000E+00	2.5868E+01	0.0000E+00	2.5916E+01	0.0000E+00	2.6015E+01	0.0000E+00	2.6060E+01	0.0000E+00	2.6143E+01	0.0000E+00	2.6322E+01	0.0000E+00
0.0000E+00	2.5830E+01	0.0000E+00	2.5879E+01	0.0000E+00	2.5977E+01	0.0000E+00	2.6023E+01	0.0000E+00	2.6105E+01	0.0000E+00	2.6284E+01	0.0000E+00
0.0000E+00	2.5793E+01	0.0000E+00	2.5841E+01	0.0000E+00	2.5940E+01	0.0000E+00	2.5985E+01	0.0000E+00	2.6066E+01	0.0000E+00	2.6245E+01	0.0000E+00
0.0000E+00	2.5756E+01	0.0000E+00	2.5804E+01	0.0000E+00	2.5902E+01	0.0000E+00	2.5947E+01	0.0000E+00	2.6029E+01	0.0000E+00	2.6207E+01	0.0000E+00
0.0000E+00	2.5719E+01	0.0000E+00	2.5767E+01	0.0000E+00	2.5865E+01	0.0000E+00	2.5909E+01	0.0000E+00	2.5991E+01	0.0000E+00	2.6168E+01	0.0000E+00
0.0000E+00	2.5682E+01	0.0000E+00	2.5730E+01	0.0000E+00	2.5827E+01	0.0000E+00	2.5872E+01	0.0000E+00	2.5953E+01	0.0000E+00	2.6130E+01	0.0000E+00
0.0000E+00	2.5645E+01	0.0000E+00	2.5693E+01	0.0000E+00	2.5790E+01	0.0000E+00	2.5835E+01	0.0000E+00	2.5915E+01	0.0000E+00	2.6092E+01	0.0000E+00
0.0000E+00	2.5609E+01	0.0000E+00	2.5656E+01	0.0000E+00	2.5753E+01	0.0000E+00	2.5797E+01	0.0000E+00	2.5878E+01	0.0000E+00	2.6054E+01	0.0000E+00
0.0000E+00	2.5572E+01	0.0000E+00	2.5619E+01	0.0000E+00	2.5716E+01	0.0000E+00	2.5760E+01	0.0000E+00	2.5841E+01	0.0000E+00	2.6016E+01	0.0000E+00
0.0000E+00	2.5535E+01	0.0000E+00	2.5583E+01	0.0000E+00	2.5679E+01	0.0000E+00	2.5723E+01	0.0000E+00	2.5803E+01	0.0000E+00	2.5978E+01	0.0000E+00
0.0000E+00	2.5499E+01	0.0000E+00	2.5546E+01	0.0000E+00	2.5642E+01	0.0000E+00	2.5686E+01	0.0000E+00	2.5766E+01	0.0000E+00	2.5941E+01	0.0000E+00
0.0000E+00	2.5463E+01	0.0000E+00	2.5510E+01	0.0000E+00	2.5606E+01	0.0000E+00	2.5649E+01	0.0000E+00	2.5729E+01	0.0000E+00	2.5903E+01	0.0000E+00
0.0000E+00	2.5427E+01	0.0000E+00	2.5473E+01	0.0000E+00	2.5569E+01	0.0000E+00	2.5613E+01	0.0000E+00	2.5692E+01	0.0000E+00	2.5866E+01	0.0000E+00
0.0000E+00	2.5390E+01	0.0000E+00	2.5437E+01	0.0000E+00	2.5533E+01	0.0000E+00	2.5576E+01	0.0000E+00	2.5655E+01	0.0000E+00	2.5828E+01	0.0000E+00
0.0000E+00	2.5355E+01	0.0000E+00	2.5401E+01	0.0000E+00	2.5496E+01	0.0000E+00	2.5540E+01	0.0000E+00	2.5619E+01	0.0000E+00	2.5791E+01	0.0000E+00
0.0000E+00	2.5319E+01	0.0000E+00	2.5365E+01	0.0000E+00	2.5460E+01	0.0000E+00	2.5503E+01	0.0000E+00	2.5582E+01	0.0000E+00	2.5754E+01	0.0000E+00
0.0000E+00	2.5283E+01	0.0000E+00	2.5329E+01	0.0000E+00	2.5424E+01	0.0000E+00	2.5467E+01	0.0000E+00	2.5545E+01	0.0000E+00	2.5717E+01	0.0000E+00
0.0000E+00	2.5247E+01	0.0000E+00	2.5293E+01	0.0000E+00	2.5388E+01	0.0000E+00	2.5431E+01	0.0000E+00	2.5509E+01	0.0000E+00	2.5680E+01	0.0000E+00
0.0000E+00	2.5212E+01	0.0000E+00	2.5258E+01	0.0000E+00	2.5352E+01	0.0000E+00	2.5395E+01	0.0000E+00	2.5473E+01	0.0000E+00	2.5643E+01	0.0000E+00
0.0000E+00	2.5176E+01	0.0000E+00	2.5222E+01	0.0000E+00	2.5316E+01	0.0000E+00	2.5359E+01	0.0000E+00	2.5436E+01	0.0000E+00	2.5606E+01	0.0000E+00
0.0000E+00	2.5141E+01	0.0000E+00	2.5186E+01	0.0000E+00	2.5280E+01	0.0000E+00	2.5323E+01	0.0000E+00	2.5400E+01	0.0000E+00	2.5570E+01	0.0000E+00
0.0000E+00	2.5105E+01	0.0000E+00	2.5151E+01	0.0000E+00	2.5244E+01	0.0000E+00	2.5287E+01	0.0000E+00	2.5364E+01	0.0000E+00	2.5533E+01	0.0000E+00
0.0000E+00	2.5070E+01	0.0000E+00	2.5116E+01	0.0000E+00	2.5209E+01	0.0000E+00	2.5251E+01	0.0000E+00	2.5328E+01	0.0000E+00	2.5497E+01	0.0000E+00
0.0000E+00	2.5035E+01	0.0000E+00	2.5080E+01	0.0000E+00	2.5173E+01	0.0000E+00	2.5216E+01	0.0000E+00	2.5293E+01	0.0000E+00	2.5461E+01	0.0000E+00
0.0000E+00	2.5000E+01	0.0000E+00	2.5045E+01	0.0000E+00	2.5138E+01	0.0000E+00	2.5180E+01	0.0000E+00	2.5257E+01	0.0000E+00	2.5425E+01	0.0000E+00
0.0000E+00	2.4965E+01	0.0000E+00	2.5010E+01	0.0000E+00	2.5103E+01	0.0000E+00	2.5145E+01	0.0000E+00	2.5221E+01	0.0000E+00	2.5388E+01	0.0000E+00
0.0000E+00	2.4931E+01	0.0000E+00	2.4975E+01	0.0000E+00	2.5067E+01	0.0000E+00	2.5110E+01	0.0000E+00	2.5186E+01	0.0000E+00	2.5353E+01	0.0000E+00

Arg 13	Curve 13	Arg 14	Curve 14	Arg 15	Curve 15	Arg 16	Curve 16	Arg 17	Curve 17	Arg 18	Curve 18
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
8.8114E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
5.2776E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
4.1185E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
3.4914E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
3.0839E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
2.7919E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
2.5695E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
2.3928E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
2.2479E+02	0.0000E+00	1.3903E+03	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
2.1264E+02	0.0000E+00	5.9563E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
2.0226E+02	0.0000E+00	4.4182E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9325E+02	0.0000E+00	3.6686E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.8534E+02	0.0000E+00	3.2042E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.7832E+02	0.0000E+00	2.8803E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.7203E+02	0.0000E+00	2.6380E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6635E+02	0.0000E+00	2.4479E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6120E+02	0.0000E+00	2.2935E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.5649E+02	0.0000E+00	2.1649E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.5217E+02	0.0000E+00	2.0557E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.4818E+02	0.0000E+00	1.9613E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.4449E+02	0.0000E+00	1.8788E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.4105E+02	0.0000E+00	1.8058E+02	0.0000E+00	1.1567E+03	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.3784E+02	0.0000E+00	1.7406E+02	0.0000E+00	5.7270E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.3484E+02	0.0000E+00	1.6819E+02	0.0000E+00	4.3220E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.3203E+02	0.0000E+00	1.6287E+02	0.0000E+00	3.6129E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00

Arg 13	Curve 13	Arg 14	Curve 14	Arg 15	Curve 15	Arg 16	Curve 16	Arg 17	Curve 17	Arg 18	Curve 18
1.2937E+02	0.0000E+00	1.5802E+02	0.0000E+00	3.1668E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.2687E+02	0.0000E+00	1.5358E+02	0.0000E+00	2.8531E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.2451E+02	0.0000E+00	1.4948E+02	0.0000E+00	2.6170E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.2227E+02	0.0000E+00	1.4569E+02	0.0000E+00	2.4310E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.2015E+02	0.0000E+00	1.4217E+02	0.0000E+00	2.2796E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.1813E+02	0.0000E+00	1.3889E+02	0.0000E+00	2.1532E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.1620E+02	0.0000E+00	1.3583E+02	0.0000E+00	2.0456E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.1437E+02	0.0000E+00	1.3295E+02	0.0000E+00	1.9526E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.1261E+02	0.0000E+00	1.3025E+02	0.0000E+00	1.8711E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.1094E+02	0.0000E+00	1.2770E+02	0.0000E+00	1.7989E+02	0.0000E+00	2.0352E+03	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.0933E+02	0.0000E+00	1.2529E+02	0.0000E+00	1.7345E+02	0.0000E+00	6.2717E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.0779E+02	0.0000E+00	1.2301E+02	0.0000E+00	1.6764E+02	0.0000E+00	4.5425E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.0631E+02	0.0000E+00	1.2085E+02	0.0000E+00	1.6237E+02	0.0000E+00	3.7390E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.0489E+02	0.0000E+00	1.1879E+02	0.0000E+00	1.5756E+02	0.0000E+00	3.2508E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.0352E+02	0.0000E+00	1.1684E+02	0.0000E+00	1.5315E+02	0.0000E+00	2.9141E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.0220E+02	0.0000E+00	1.1497E+02	0.0000E+00	1.4909E+02	0.0000E+00	2.6639E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.0093E+02	0.0000E+00	1.1319E+02	0.0000E+00	1.4533E+02	0.0000E+00	2.4685E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
9.9707E+01	0.0000E+00	1.1149E+02	0.0000E+00	1.4183E+02	0.0000E+00	2.3105E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
9.8524E+01	0.0000E+00	1.0986E+02	0.0000E+00	1.3858E+02	0.0000E+00	2.1792E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
9.7380E+01	0.0000E+00	1.0830E+02	0.0000E+00	1.3553E+02	0.0000E+00	2.0679E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
9.6274E+01	0.0000E+00	1.0680E+02	0.0000E+00	1.3267E+02	0.0000E+00	1.9720E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
9.5204E+01	0.0000E+00	1.0536E+02	0.0000E+00	1.2998E+02	0.0000E+00	1.8882E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
9.4167E+01	0.0000E+00	1.0397E+02	0.0000E+00	1.2745E+02	0.0000E+00	1.8141E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
9.3162E+01	0.0000E+00	1.0264E+02	0.0000E+00	1.2506E+02	0.0000E+00	1.7481E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
9.2187E+01	0.0000E+00	1.0135E+02	0.0000E+00	1.2279E+02	0.0000E+00	1.6887E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
9.1241E+01	0.0000E+00	1.0011E+02	0.0000E+00	1.2064E+02	0.0000E+00	1.6349E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
9.0322E+01	0.0000E+00	9.8916E+01	0.0000E+00	1.1859E+02	0.0000E+00	1.5858E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
8.9429E+01	0.0000E+00	9.7759E+01	0.0000E+00	1.1665E+02	0.0000E+00	1.5409E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
8.8562E+01	0.0000E+00	9.6641E+01	0.0000E+00	1.1479E+02	0.0000E+00	1.4996E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
8.7718E+01	0.0000E+00	9.5559E+01	0.0000E+00	1.1302E+02	0.0000E+00	1.4613E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
8.6896E+01	0.0000E+00	9.4510E+01	0.0000E+00	1.1132E+02	0.0000E+00	1.4258E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
8.6096E+01	0.0000E+00	9.3495E+01	0.0000E+00	1.0970E+02	0.0000E+00	1.3927E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
8.5317E+01	0.0000E+00	9.2510E+01	0.0000E+00	1.0815E+02	0.0000E+00	1.3618E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
8.4558E+01	0.0000E+00	9.1555E+01	0.0000E+00	1.0665E+02	0.0000E+00	1.3329E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
8.3817E+01	0.0000E+00	9.0627E+01	0.0000E+00	1.0522E+02	0.0000E+00	1.3056E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
8.3095E+01	0.0000E+00	8.9726E+01	0.0000E+00	1.0384E+02	0.0000E+00	1.2799E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
8.2390E+01	0.0000E+00	8.8850E+01	0.0000E+00	1.0251E+02	0.0000E+00	1.2557E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
8.1703E+01	0.0000E+00	8.7998E+01	0.0000E+00	1.0123E+02	0.0000E+00	1.2328E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
8.1031E+01	0.0000E+00	8.7169E+01	0.0000E+00	9.9991E+01	0.0000E+00	1.2110E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
8.0374E+01	0.0000E+00	8.6362E+01	0.0000E+00	9.8798E+01	0.0000E+00	1.1903E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
7.9733E+01	0.0000E+00	8.5576E+01	0.0000E+00	9.7646E+01	0.0000E+00	1.1707E+02	0.0000E+00	3.5252E+03	0.0000E+00	0.0000E+00	0.0000E+00
7.9105E+01	0.0000E+00	8.4810E+01	0.0000E+00	9.6531E+01	0.0000E+00	1.1519E+02	0.0000E+00	6.4804E+02	0.0000E+00	0.0000E+00	0.0000E+00
7.8492E+01	0.0000E+00	8.4063E+01	0.0000E+00	9.5452E+01	0.0000E+00	1.1340E+02	0.0000E+00	4.6201E+02	0.0000E+00	0.0000E+00	0.0000E+00
7.7892E+01	0.0000E+00	8.3335E+01	0.0000E+00	9.4408E+01	0.0000E+00	1.1169E+02	0.0000E+00	3.7819E+02	0.0000E+00	0.0000E+00	0.0000E+00
7.7304E+01	0.0000E+00	8.2625E+01	0.0000E+00	9.3395E+01	0.0000E+00	1.1005E+02	0.0000E+00	3.2789E+02	0.0000E+00	0.0000E+00	0.0000E+00
7.6729E+01	0.0000E+00	8.1931E+01	0.0000E+00	9.2413E+01	0.0000E+00	1.0848E+02	0.0000E+00	2.9344E+02	0.0000E+00	0.0000E+00	0.0000E+00
7.6166E+01	0.0000E+00	8.1254E+01	0.0000E+00	9.1461E+01	0.0000E+00	1.0698E+02	0.0000E+00	2.6794E+02	0.0000E+00	0.0000E+00	0.0000E+00
7.5615E+01	0.0000E+00	8.0592E+01	0.0000E+00	9.0536E+01	0.0000E+00	1.0553E+02	0.0000E+00	2.4809E+02	0.0000E+00	0.0000E+00	0.0000E+00
7.5074E+01	0.0000E+00	7.9946E+01	0.0000E+00	8.9637E+01	0.0000E+00	1.0414E+02	0.0000E+00	2.3206E+02	0.0000E+00	0.0000E+00	0.0000E+00
7.4544E+01	0.0000E+00	7.9314E+01	0.0000E+00	8.8763E+01	0.0000E+00	1.0280E+02	0.0000E+00	2.1877E+02	0.0000E+00	0.0000E+00	0.0000E+00
7.4025E+01	0.0000E+00	7.8696E+01	0.0000E+00	8.7914E+01	0.0000E+00	1.0150E+02	0.0000E+00	2.0752E+02	0.0000E+00	0.0000E+00	0.0000E+00
7.3516E+01	0.0000E+00	7.8091E+01	0.0000E+00	8.7087E+01	0.0000E+00	1.0026E+02	0.0000E+00	1.9783E+02	0.0000E+00	0.0000E+00	0.0000E+00

Arg 13	Curve 13	Arg 14	Curve 14	Arg 15	Curve 15	Arg 16	Curve 16	Arg 17	Curve 17	Arg 18	Curve 18
7.3016E+01	0.0000E+00	7.7500E+01	0.0000E+00	8.6282E+01	0.0000E+00	9.9057E+01	0.0000E+00	1.8937E+02	0.0000E+00	0.0000E+00	0.0000E+00
7.2526E+01	0.0000E+00	7.6921E+01	0.0000E+00	8.5498E+01	0.0000E+00	9.7896E+01	0.0000E+00	1.8190E+02	0.0000E+00	0.0000E+00	0.0000E+00
7.2045E+01	0.0000E+00	7.6354E+01	0.0000E+00	8.4734E+01	0.0000E+00	9.6773E+01	0.0000E+00	1.7525E+02	0.0000E+00	0.0000E+00	0.0000E+00
7.1573E+01	0.0000E+00	7.5798E+01	0.0000E+00	8.3990E+01	0.0000E+00	9.5687E+01	0.0000E+00	1.6926E+02	0.0000E+00	0.0000E+00	0.0000E+00
7.1109E+01	0.0000E+00	7.5254E+01	0.0000E+00	8.3263E+01	0.0000E+00	9.4635E+01	0.0000E+00	1.6385E+02	0.0000E+00	0.0000E+00	0.0000E+00
7.0654E+01	0.0000E+00	7.4721E+01	0.0000E+00	8.2555E+01	0.0000E+00	9.3615E+01	0.0000E+00	1.5891E+02	0.0000E+00	0.0000E+00	0.0000E+00
7.0207E+01	0.0000E+00	7.4198E+01	0.0000E+00	8.1863E+01	0.0000E+00	9.2627E+01	0.0000E+00	1.5439E+02	0.0000E+00	0.0000E+00	0.0000E+00
6.9767E+01	0.0000E+00	7.3685E+01	0.0000E+00	8.1187E+01	0.0000E+00	9.1668E+01	0.0000E+00	1.5024E+02	0.0000E+00	0.0000E+00	0.0000E+00
6.9335E+01	0.0000E+00	7.3183E+01	0.0000E+00	8.0527E+01	0.0000E+00	9.0737E+01	0.0000E+00	1.4639E+02	0.0000E+00	0.0000E+00	0.0000E+00
6.8911E+01	0.0000E+00	7.2689E+01	0.0000E+00	7.9882E+01	0.0000E+00	8.9832E+01	0.0000E+00	1.4282E+02	0.0000E+00	0.0000E+00	0.0000E+00
6.8494E+01	0.0000E+00	7.2205E+01	0.0000E+00	7.9252E+01	0.0000E+00	8.8953E+01	0.0000E+00	1.3950E+02	0.0000E+00	0.0000E+00	0.0000E+00
6.8083E+01	0.0000E+00	7.1730E+01	0.0000E+00	7.8635E+01	0.0000E+00	8.8099E+01	0.0000E+00	1.3639E+02	0.0000E+00	0.0000E+00	0.0000E+00
6.7680E+01	0.0000E+00	7.1264E+01	0.0000E+00	7.8032E+01	0.0000E+00	8.7267E+01	0.0000E+00	1.3348E+02	0.0000E+00	0.0000E+00	0.0000E+00
6.7283E+01	0.0000E+00	7.0806E+01	0.0000E+00	7.7441E+01	0.0000E+00	8.6458E+01	0.0000E+00	1.3075E+02	0.0000E+00	0.0000E+00	0.0000E+00
6.6892E+01	0.0000E+00	7.0356E+01	0.0000E+00	7.6863E+01	0.0000E+00	8.5669E+01	0.0000E+00	1.2817E+02	0.0000E+00	0.0000E+00	0.0000E+00
6.6508E+01	0.0000E+00	6.9914E+01	0.0000E+00	7.6298E+01	0.0000E+00	8.4901E+01	0.0000E+00	1.2574E+02	0.0000E+00	0.0000E+00	0.0000E+00
6.6129E+01	0.0000E+00	6.9479E+01	0.0000E+00	7.5743E+01	0.0000E+00	8.4152E+01	0.0000E+00	1.2343E+02	0.0000E+00	0.0000E+00	0.0000E+00
6.5757E+01	0.0000E+00	6.9052E+01	0.0000E+00	7.5200E+01	0.0000E+00	8.3422E+01	0.0000E+00	1.2125E+02	0.0000E+00	0.0000E+00	0.0000E+00
6.5390E+01	0.0000E+00	6.8633E+01	0.0000E+00	7.4668E+01	0.0000E+00	8.2709E+01	0.0000E+00	1.1918E+02	0.0000E+00	0.0000E+00	0.0000E+00
6.5029E+01	0.0000E+00	6.8220E+01	0.0000E+00	7.4146E+01	0.0000E+00	8.2014E+01	0.0000E+00	1.1720E+02	0.0000E+00	0.0000E+00	0.0000E+00
6.4673E+01	0.0000E+00	6.7814E+01	0.0000E+00	7.3635E+01	0.0000E+00	8.1334E+01	0.0000E+00	1.1532E+02	0.0000E+00	0.0000E+00	0.0000E+00
6.4323E+01	0.0000E+00	6.7415E+01	0.0000E+00	7.3133E+01	0.0000E+00	8.0671E+01	0.0000E+00	1.1352E+02	0.0000E+00	0.0000E+00	0.0000E+00
6.3978E+01	0.0000E+00	6.7022E+01	0.0000E+00	7.2640E+01	0.0000E+00	8.0023E+01	0.0000E+00	1.1181E+02	0.0000E+00	8.9319E+02	0.0000E+00
6.3638E+01	0.0000E+00	6.6636E+01	0.0000E+00	7.2157E+01	0.0000E+00	7.9389E+01	0.0000E+00	1.1016E+02	0.0000E+00	5.3032E+02	0.0000E+00
6.3303E+01	0.0000E+00	6.6255E+01	0.0000E+00	7.1683E+01	0.0000E+00	7.8769E+01	0.0000E+00	1.0859E+02	0.0000E+00	4.1307E+02	0.0000E+00
6.2972E+01	0.0000E+00	6.5881E+01	0.0000E+00	7.1217E+01	0.0000E+00	7.8163E+01	0.0000E+00	1.0708E+02	0.0000E+00	3.4988E+02	0.0000E+00
6.2647E+01	0.0000E+00	6.5512E+01	0.0000E+00	7.0760E+01	0.0000E+00	7.7570E+01	0.0000E+00	1.0563E+02	0.0000E+00	3.0890E+02	0.0000E+00
6.2326E+01	0.0000E+00	6.5149E+01	0.0000E+00	7.0311E+01	0.0000E+00	7.6990E+01	0.0000E+00	1.0423E+02	0.0000E+00	2.7957E+02	0.0000E+00
6.2009E+01	0.0000E+00	6.4792E+01	0.0000E+00	6.9870E+01	0.0000E+00	7.6421E+01	0.0000E+00	1.0289E+02	0.0000E+00	2.5725E+02	0.0000E+00
6.1697E+01	0.0000E+00	6.4440E+01	0.0000E+00	6.9436E+01	0.0000E+00	7.5864E+01	0.0000E+00	1.0159E+02	0.0000E+00	2.3951E+02	0.0000E+00
6.1389E+01	0.0000E+00	6.4093E+01	0.0000E+00	6.9010E+01	0.0000E+00	7.5319E+01	0.0000E+00	1.0035E+02	0.0000E+00	2.2499E+02	0.0000E+00
6.1085E+01	0.0000E+00	6.3751E+01	0.0000E+00	6.8591E+01	0.0000E+00	7.4784E+01	0.0000E+00	9.9140E+01	0.0000E+00	2.1281E+02	0.0000E+00
6.0786E+01	0.0000E+00	6.3414E+01	0.0000E+00	6.8179E+01	0.0000E+00	7.4260E+01	0.0000E+00	9.7976E+01	0.0000E+00	2.0240E+02	0.0000E+00
6.0490E+01	0.0000E+00	6.3083E+01	0.0000E+00	6.7774E+01	0.0000E+00	7.3746E+01	0.0000E+00	9.6850E+01	0.0000E+00	1.9338E+02	0.0000E+00
6.0198E+01	0.0000E+00	6.2755E+01	0.0000E+00	6.7375E+01	0.0000E+00	7.3242E+01	0.0000E+00	9.5761E+01	0.0000E+00	1.8545E+02	0.0000E+00
5.9910E+01	0.0000E+00	6.2433E+01	0.0000E+00	6.6983E+01	0.0000E+00	7.2748E+01	0.0000E+00	9.4707E+01	0.0000E+00	1.7841E+02	0.0000E+00
5.9626E+01	0.0000E+00	6.2115E+01	0.0000E+00	6.6597E+01	0.0000E+00	7.2263E+01	0.0000E+00	9.3685E+01	0.0000E+00	1.7212E+02	0.0000E+00
5.9345E+01	0.0000E+00	6.1801E+01	0.0000E+00	6.6218E+01	0.0000E+00	7.1787E+01	0.0000E+00	9.2695E+01	0.0000E+00	1.6643E+02	0.0000E+00
5.9068E+01	0.0000E+00	6.1492E+01	0.0000E+00	6.5844E+01	0.0000E+00	7.1319E+01	0.0000E+00	9.1734E+01	0.0000E+00	1.6127E+02	0.0000E+00
5.8794E+01	0.0000E+00	6.1187E+01	0.0000E+00	6.5476E+01	0.0000E+00	7.0860E+01	0.0000E+00	9.0801E+01	0.0000E+00	1.5656E+02	0.0000E+00
5.8524E+01	0.0000E+00	6.0885E+01	0.0000E+00	6.5113E+01	0.0000E+00	7.0409E+01	0.0000E+00	8.9895E+01	0.0000E+00	1.5223E+02	0.0000E+00
5.8257E+01	0.0000E+00	6.0588E+01	0.0000E+00	6.4757E+01	0.0000E+00	6.9966E+01	0.0000E+00	8.9014E+01	0.0000E+00	1.4824E+02	0.0000E+00
5.7994E+01	0.0000E+00	6.0295E+01	0.0000E+00	6.4405E+01	0.0000E+00	6.9531E+01	0.0000E+00	8.8158E+01	0.0000E+00	1.4454E+02	0.0000E+00
5.7734E+01	0.0000E+00	6.0006E+01	0.0000E+00	6.4059E+01	0.0000E+00	6.9103E+01	0.0000E+00	8.7325E+01	0.0000E+00	1.4110E+02	0.0000E+00
5.7476E+01	0.0000E+00	5.9721E+01	0.0000E+00	6.3717E+01	0.0000E+00	6.8683E+01	0.0000E+00	8.6514E+01	0.0000E+00	1.3789E+02	0.0000E+00
5.7222E+01	0.0000E+00	5.9439E+01	0.0000E+00	6.3381E+01	0.0000E+00	6.8269E+01	0.0000E+00	8.5724E+01	0.0000E+00	1.3489E+02	0.0000E+00
5.6971E+01	0.0000E+00	5.9160E+01	0.0000E+00	6.3050E+01	0.0000E+00	6.7862E+01	0.0000E+00	8.4954E+01	0.0000E+00	1.3207E+02	0.0000E+00
5.6723E+01	0.0000E+00	5.8886E+01	0.0000E+00	6.2723E+01	0.0000E+00	6.7462E+01	0.0000E+00	8.4204E+01	0.0000E+00	1.2941E+02	0.0000E+00
5.6478E+01	0.0000E+00	5.8614E+01	0.0000E+00	6.2401E+01	0.0000E+00	6.7069E+01	0.0000E+00	8.3472E+01	0.0000E+00	1.2691E+02	0.0000E+00
5.6235E+01	0.0000E+00	5.8346E+01	0.0000E+00	6.2083E+01	0.0000E+00	6.6682E+01	0.0000E+00	8.2758E+01	0.0000E+00	1.2455E+02	0.0000E+00
5.5995E+01	0.0000E+00	5.8082E+01	0.0000E+00	6.1770E+01	0.0000E+00	6.6301E+01	0.0000E+00	8.2062E+01	0.0000E+00	1.2231E+02	0.0000E+00
5.5759E+01	0.0000E+00	5.7820E+01	0.0000E+00	6.1461E+01	0.0000E+00	6.5926E+01	0.0000E+00	8.1381E+01	0.0000E+00	1.2018E+02	0.0000E+00

Arg 13	Curve 13	Arg 14	Curve 14	Arg 15	Curve 15	Arg 16	Curve 16	Arg 17	Curve 17	Arg 18	Curve 18
5.5524E+01	0.0000E+00	5.7562E+01	0.0000E+00	6.1156E+01	0.0000E+00	6.5556E+01	0.0000E+00	8.0717E+01	0.0000E+00	1.1816E+02	0.0000E+00
5.5293E+01	0.0000E+00	5.7307E+01	0.0000E+00	6.0856E+01	0.0000E+00	6.5193E+01	0.0000E+00	8.0068E+01	0.0000E+00	1.1623E+02	0.0000E+00
5.5064E+01	0.0000E+00	5.7055E+01	0.0000E+00	6.0559E+01	0.0000E+00	6.4835E+01	0.0000E+00	7.9433E+01	0.0000E+00	1.1439E+02	0.0000E+00
5.4837E+01	0.0000E+00	5.6806E+01	0.0000E+00	6.0266E+01	0.0000E+00	6.4482E+01	0.0000E+00	7.8812E+01	0.0000E+00	1.1264E+02	0.0000E+00
5.4613E+01	0.0000E+00	5.6559E+01	0.0000E+00	5.9977E+01	0.0000E+00	6.4134E+01	0.0000E+00	7.8205E+01	0.0000E+00	1.1096E+02	0.0000E+00
5.4391E+01	0.0000E+00	5.6316E+01	0.0000E+00	5.9692E+01	0.0000E+00	6.3792E+01	0.0000E+00	7.7611E+01	0.0000E+00	1.0935E+02	0.0000E+00
5.4172E+01	0.0000E+00	5.6075E+01	0.0000E+00	5.9411E+01	0.0000E+00	6.3455E+01	0.0000E+00	7.7030E+01	0.0000E+00	1.0781E+02	0.0000E+00
5.3955E+01	0.0000E+00	5.5838E+01	0.0000E+00	5.9133E+01	0.0000E+00	6.3122E+01	0.0000E+00	7.6460E+01	0.0000E+00	1.0633E+02	0.0000E+00
5.3741E+01	0.0000E+00	5.5602E+01	0.0000E+00	5.8858E+01	0.0000E+00	6.2794E+01	0.0000E+00	7.5903E+01	0.0000E+00	1.0491E+02	0.0000E+00
5.3528E+01	0.0000E+00	5.5370E+01	0.0000E+00	5.8587E+01	0.0000E+00	6.2471E+01	0.0000E+00	7.5357E+01	0.0000E+00	1.0354E+02	0.0000E+00
5.3318E+01	0.0000E+00	5.5140E+01	0.0000E+00	5.8320E+01	0.0000E+00	6.2153E+01	0.0000E+00	7.4821E+01	0.0000E+00	1.0222E+02	0.0000E+00
5.3110E+01	0.0000E+00	5.4913E+01	0.0000E+00	5.8056E+01	0.0000E+00	6.1838E+01	0.0000E+00	7.4297E+01	0.0000E+00	1.0095E+02	0.0000E+00
5.2905E+01	0.0000E+00	5.4688E+01	0.0000E+00	5.7794E+01	0.0000E+00	6.1529E+01	0.0000E+00	7.3782E+01	0.0000E+00	9.9725E+01	0.0000E+00
5.2701E+01	0.0000E+00	5.4465E+01	0.0000E+00	5.7536E+01	0.0000E+00	6.1223E+01	0.0000E+00	7.3277E+01	0.0000E+00	9.8541E+01	0.0000E+00
5.2499E+01	0.0000E+00	5.4245E+01	0.0000E+00	5.7282E+01	0.0000E+00	6.0921E+01	0.0000E+00	7.2782E+01	0.0000E+00	9.7397E+01	0.0000E+00
5.2300E+01	0.0000E+00	5.4028E+01	0.0000E+00	5.7030E+01	0.0000E+00	6.0624E+01	0.0000E+00	7.2297E+01	0.0000E+00	9.6291E+01	0.0000E+00
5.2102E+01	0.0000E+00	5.3812E+01	0.0000E+00	5.6781E+01	0.0000E+00	6.0330E+01	0.0000E+00	7.1820E+01	0.0000E+00	9.5220E+01	0.0000E+00
5.1907E+01	0.0000E+00	5.3599E+01	0.0000E+00	5.6535E+01	0.0000E+00	6.0041E+01	0.0000E+00	7.1352E+01	0.0000E+00	9.4182E+01	0.0000E+00
5.1713E+01	0.0000E+00	5.3389E+01	0.0000E+00	5.6292E+01	0.0000E+00	5.9755E+01	0.0000E+00	7.0892E+01	0.0000E+00	9.3176E+01	0.0000E+00
5.1521E+01	0.0000E+00	5.3180E+01	0.0000E+00	5.6052E+01	0.0000E+00	5.9472E+01	0.0000E+00	7.0440E+01	0.0000E+00	9.2201E+01	0.0000E+00
5.1331E+01	0.0000E+00	5.2973E+01	0.0000E+00	5.5814E+01	0.0000E+00	5.9194E+01	0.0000E+00	6.9997E+01	0.0000E+00	9.1255E+01	0.0000E+00
5.1143E+01	0.0000E+00	5.2769E+01	0.0000E+00	5.5579E+01	0.0000E+00	5.8918E+01	0.0000E+00	6.9561E+01	0.0000E+00	9.0336E+01	0.0000E+00
5.0957E+01	0.0000E+00	5.2567E+01	0.0000E+00	5.5347E+01	0.0000E+00	5.8647E+01	0.0000E+00	6.9133E+01	0.0000E+00	8.9443E+01	0.0000E+00
5.0773E+01	0.0000E+00	5.2367E+01	0.0000E+00	5.5117E+01	0.0000E+00	5.8378E+01	0.0000E+00	6.8712E+01	0.0000E+00	8.8574E+01	0.0000E+00
5.0590E+01	0.0000E+00	5.2168E+01	0.0000E+00	5.4890E+01	0.0000E+00	5.8113E+01	0.0000E+00	6.8298E+01	0.0000E+00	8.7730E+01	0.0000E+00
5.0409E+01	0.0000E+00	5.1972E+01	0.0000E+00	5.4665E+01	0.0000E+00	5.7852E+01	0.0000E+00	6.7891E+01	0.0000E+00	8.6908E+01	0.0000E+00
5.0230E+01	0.0000E+00	5.1778E+01	0.0000E+00	5.4443E+01	0.0000E+00	5.7593E+01	0.0000E+00	6.7490E+01	0.0000E+00	8.6108E+01	0.0000E+00
5.0052E+01	0.0000E+00	5.1585E+01	0.0000E+00	5.4224E+01	0.0000E+00	5.7337E+01	0.0000E+00	6.7096E+01	0.0000E+00	8.5329E+01	0.0000E+00
4.9876E+01	0.0000E+00	5.1395E+01	0.0000E+00	5.4006E+01	0.0000E+00	5.7085E+01	0.0000E+00	6.6709E+01	0.0000E+00	8.4569E+01	0.0000E+00
4.9702E+01	0.0000E+00	5.1206E+01	0.0000E+00	5.3791E+01	0.0000E+00	5.6835E+01	0.0000E+00	6.6327E+01	0.0000E+00	8.3828E+01	0.0000E+00
4.9529E+01	0.0000E+00	5.1019E+01	0.0000E+00	5.3578E+01	0.0000E+00	5.6589E+01	0.0000E+00	6.5952E+01	0.0000E+00	8.3106E+01	0.0000E+00
4.9358E+01	0.0000E+00	5.0834E+01	0.0000E+00	5.3368E+01	0.0000E+00	5.6345E+01	0.0000E+00	6.5582E+01	0.0000E+00	8.2401E+01	0.0000E+00
4.9188E+01	0.0000E+00	5.0651E+01	0.0000E+00	5.3159E+01	0.0000E+00	5.6104E+01	0.0000E+00	6.5218E+01	0.0000E+00	8.1713E+01	0.0000E+00
4.9020E+01	0.0000E+00	5.0469E+01	0.0000E+00	5.2953E+01	0.0000E+00	5.5866E+01	0.0000E+00	6.4859E+01	0.0000E+00	8.1041E+01	0.0000E+00
4.8853E+01	0.0000E+00	5.0290E+01	0.0000E+00	5.2749E+01	0.0000E+00	5.5631E+01	0.0000E+00	6.4506E+01	0.0000E+00	8.0384E+01	0.0000E+00
4.8688E+01	0.0000E+00	5.0111E+01	0.0000E+00	5.2547E+01	0.0000E+00	5.5398E+01	0.0000E+00	6.4159E+01	0.0000E+00	7.9742E+01	0.0000E+00
4.8524E+01	0.0000E+00	4.9935E+01	0.0000E+00	5.2347E+01	0.0000E+00	5.5168E+01	0.0000E+00	6.3816E+01	0.0000E+00	7.9115E+01	0.0000E+00
4.8362E+01	0.0000E+00	4.9760E+01	0.0000E+00	5.2149E+01	0.0000E+00	5.4940E+01	0.0000E+00	6.3478E+01	0.0000E+00	7.8501E+01	0.0000E+00
4.8201E+01	0.0000E+00	4.9587E+01	0.0000E+00	5.1953E+01	0.0000E+00	5.4715E+01	0.0000E+00	6.3145E+01	0.0000E+00	7.7901E+01	0.0000E+00
4.8041E+01	0.0000E+00	4.9415E+01	0.0000E+00	5.1758E+01	0.0000E+00	5.4492E+01	0.0000E+00	6.2817E+01	0.0000E+00	7.7313E+01	0.0000E+00
4.7883E+01	0.0000E+00	4.9245E+01	0.0000E+00	5.1566E+01	0.0000E+00	5.4272E+01	0.0000E+00	6.2494E+01	0.0000E+00	7.6738E+01	0.0000E+00
4.7726E+01	0.0000E+00	4.9076E+01	0.0000E+00	5.1376E+01	0.0000E+00	5.4054E+01	0.0000E+00	6.2175E+01	0.0000E+00	7.6175E+01	0.0000E+00
4.7571E+01	0.0000E+00	4.8909E+01	0.0000E+00	5.1187E+01	0.0000E+00	5.3838E+01	0.0000E+00	6.1860E+01	0.0000E+00	7.5623E+01	0.0000E+00
4.7417E+01	0.0000E+00	4.8743E+01	0.0000E+00	5.1001E+01	0.0000E+00	5.3625E+01	0.0000E+00	6.1550E+01	0.0000E+00	7.5082E+01	0.0000E+00
4.7264E+01	0.0000E+00	4.8579E+01	0.0000E+00	5.0816E+01	0.0000E+00	5.3414E+01	0.0000E+00	6.1244E+01	0.0000E+00	7.4552E+01	0.0000E+00
4.7112E+01	0.0000E+00	4.8416E+01	0.0000E+00	5.0633E+01	0.0000E+00	5.3205E+01	0.0000E+00	6.0942E+01	0.0000E+00	7.4033E+01	0.0000E+00
4.6962E+01	0.0000E+00	4.8255E+01	0.0000E+00	5.0451E+01	0.0000E+00	5.2998E+01	0.0000E+00	6.0645E+01	0.0000E+00	7.3523E+01	0.0000E+00
4.6812E+01	0.0000E+00	4.8095E+01	0.0000E+00	5.0272E+01	0.0000E+00	5.2793E+01	0.0000E+00	6.0351E+01	0.0000E+00	7.3024E+01	0.0000E+00
4.6665E+01	0.0000E+00	4.7936E+01	0.0000E+00	5.0094E+01	0.0000E+00	5.2591E+01	0.0000E+00	6.0061E+01	0.0000E+00	7.2533E+01	0.0000E+00
4.6518E+01	0.0000E+00	4.7779E+01	0.0000E+00	4.9917E+01	0.0000E+00	5.2390E+01	0.0000E+00	5.9775E+01	0.0000E+00	7.2052E+01	0.0000E+00
4.6372E+01	0.0000E+00	4.7623E+01	0.0000E+00	4.9742E+01	0.0000E+00	5.2192E+01	0.0000E+00	5.9492E+01	0.0000E+00	7.1580E+01	0.0000E+00
4.6228E+01	0.0000E+00	4.7468E+01	0.0000E+00	4.9569E+01	0.0000E+00	5.1996E+01	0.0000E+00	5.9213E+01	0.0000E+00	7.1116E+01	0.0000E+00

Arg 13	Curve 13	Arg 14	Curve 14	Arg 15	Curve 15	Arg 16	Curve 16	Arg 17	Curve 17	Arg 18	Curve 18
4.6085E+01	0.0000E+00	4.7315E+01	0.0000E+00	4.9398E+01	0.0000E+00	5.1801E+01	0.0000E+00	5.8938E+01	0.0000E+00	7.0661E+01	0.0000E+00
4.5943E+01	0.0000E+00	4.7163E+01	0.0000E+00	4.9228E+01	0.0000E+00	5.1608E+01	0.0000E+00	5.8666E+01	0.0000E+00	7.0213E+01	0.0000E+00
4.5802E+01	0.0000E+00	4.7012E+01	0.0000E+00	4.9059E+01	0.0000E+00	5.1418E+01	0.0000E+00	5.8397E+01	0.0000E+00	6.9774E+01	0.0000E+00
4.5662E+01	0.0000E+00	4.6862E+01	0.0000E+00	4.8892E+01	0.0000E+00	5.1229E+01	0.0000E+00	5.8132E+01	0.0000E+00	6.9342E+01	0.0000E+00
4.5523E+01	0.0000E+00	4.6714E+01	0.0000E+00	4.8727E+01	0.0000E+00	5.1042E+01	0.0000E+00	5.7870E+01	0.0000E+00	6.8917E+01	0.0000E+00
4.5385E+01	0.0000E+00	4.6567E+01	0.0000E+00	4.8562E+01	0.0000E+00	5.0856E+01	0.0000E+00	5.7611E+01	0.0000E+00	6.8500E+01	0.0000E+00
4.5249E+01	0.0000E+00	4.6421E+01	0.0000E+00	4.8400E+01	0.0000E+00	5.0673E+01	0.0000E+00	5.7355E+01	0.0000E+00	6.8089E+01	0.0000E+00
4.5113E+01	0.0000E+00	4.6276E+01	0.0000E+00	4.8239E+01	0.0000E+00	5.0491E+01	0.0000E+00	5.7102E+01	0.0000E+00	6.7686E+01	0.0000E+00
4.4978E+01	0.0000E+00	4.6132E+01	0.0000E+00	4.8079E+01	0.0000E+00	5.0311E+01	0.0000E+00	5.6853E+01	0.0000E+00	6.7288E+01	0.0000E+00
4.4845E+01	0.0000E+00	4.5990E+01	0.0000E+00	4.7920E+01	0.0000E+00	5.0133E+01	0.0000E+00	5.6606E+01	0.0000E+00	6.6898E+01	0.0000E+00
4.4712E+01	0.0000E+00	4.5849E+01	0.0000E+00	4.7763E+01	0.0000E+00	4.9956E+01	0.0000E+00	5.6362E+01	0.0000E+00	6.6513E+01	0.0000E+00
4.4581E+01	0.0000E+00	4.5708E+01	0.0000E+00	4.7607E+01	0.0000E+00	4.9781E+01	0.0000E+00	5.6121E+01	0.0000E+00	6.6135E+01	0.0000E+00
4.4450E+01	0.0000E+00	4.5569E+01	0.0000E+00	4.7453E+01	0.0000E+00	4.9607E+01	0.0000E+00	5.5883E+01	0.0000E+00	6.5762E+01	0.0000E+00
4.4321E+01	0.0000E+00	4.5431E+01	0.0000E+00	4.7299E+01	0.0000E+00	4.9435E+01	0.0000E+00	5.5647E+01	0.0000E+00	6.5396E+01	0.0000E+00
4.4192E+01	0.0000E+00	4.5294E+01	0.0000E+00	4.7148E+01	0.0000E+00	4.9265E+01	0.0000E+00	5.5414E+01	0.0000E+00	6.5034E+01	0.0000E+00
4.4064E+01	0.0000E+00	4.5158E+01	0.0000E+00	4.6997E+01	0.0000E+00	4.9096E+01	0.0000E+00	5.5184E+01	0.0000E+00	6.4679E+01	0.0000E+00
4.3937E+01	0.0000E+00	4.5023E+01	0.0000E+00	4.6847E+01	0.0000E+00	4.8929E+01	0.0000E+00	5.4956E+01	0.0000E+00	6.4328E+01	0.0000E+00
4.3812E+01	0.0000E+00	4.4889E+01	0.0000E+00	4.6699E+01	0.0000E+00	4.8763E+01	0.0000E+00	5.4730E+01	0.0000E+00	6.3983E+01	0.0000E+00
4.3687E+01	0.0000E+00	4.4757E+01	0.0000E+00	4.6552E+01	0.0000E+00	4.8598E+01	0.0000E+00	5.4507E+01	0.0000E+00	6.3643E+01	0.0000E+00
4.3563E+01	0.0000E+00	4.4625E+01	0.0000E+00	4.6406E+01	0.0000E+00	4.8435E+01	0.0000E+00	5.4287E+01	0.0000E+00	6.3308E+01	0.0000E+00
4.3439E+01	0.0000E+00	4.4494E+01	0.0000E+00	4.6262E+01	0.0000E+00	4.8274E+01	0.0000E+00	5.4069E+01	0.0000E+00	6.2977E+01	0.0000E+00
4.3317E+01	0.0000E+00	4.4364E+01	0.0000E+00	4.6118E+01	0.0000E+00	4.8114E+01	0.0000E+00	5.3853E+01	0.0000E+00	6.2652E+01	0.0000E+00
4.3196E+01	0.0000E+00	4.4235E+01	0.0000E+00	4.5976E+01	0.0000E+00	4.7955E+01	0.0000E+00	5.3640E+01	0.0000E+00	6.2331E+01	0.0000E+00
4.3075E+01	0.0000E+00	4.4107E+01	0.0000E+00	4.5835E+01	0.0000E+00	4.7797E+01	0.0000E+00	5.3428E+01	0.0000E+00	6.2014E+01	0.0000E+00
4.2956E+01	0.0000E+00	4.3980E+01	0.0000E+00	4.5694E+01	0.0000E+00	4.7641E+01	0.0000E+00	5.3219E+01	0.0000E+00	6.1702E+01	0.0000E+00
4.2837E+01	0.0000E+00	4.3854E+01	0.0000E+00	4.5555E+01	0.0000E+00	4.7487E+01	0.0000E+00	5.3012E+01	0.0000E+00	6.1394E+01	0.0000E+00
4.2719E+01	0.0000E+00	4.3728E+01	0.0000E+00	4.5417E+01	0.0000E+00	4.7333E+01	0.0000E+00	5.2808E+01	0.0000E+00	6.1090E+01	0.0000E+00
4.2601E+01	0.0000E+00	4.3604E+01	0.0000E+00	4.5281E+01	0.0000E+00	4.7181E+01	0.0000E+00	5.2605E+01	0.0000E+00	6.0790E+01	0.0000E+00
4.2485E+01	0.0000E+00	4.3481E+01	0.0000E+00	4.5145E+01	0.0000E+00	4.7030E+01	0.0000E+00	5.2404E+01	0.0000E+00	6.0494E+01	0.0000E+00
4.2369E+01	0.0000E+00	4.3358E+01	0.0000E+00	4.5010E+01	0.0000E+00	4.6880E+01	0.0000E+00	5.2206E+01	0.0000E+00	6.0202E+01	0.0000E+00
4.2254E+01	0.0000E+00	4.3236E+01	0.0000E+00	4.4876E+01	0.0000E+00	4.6732E+01	0.0000E+00	5.2009E+01	0.0000E+00	5.9914E+01	0.0000E+00
4.2140E+01	0.0000E+00	4.3116E+01	0.0000E+00	4.4743E+01	0.0000E+00	4.6584E+01	0.0000E+00	5.1815E+01	0.0000E+00	5.9630E+01	0.0000E+00
4.2027E+01	0.0000E+00	4.2996E+01	0.0000E+00	4.4612E+01	0.0000E+00	4.6438E+01	0.0000E+00	5.1622E+01	0.0000E+00	5.9349E+01	0.0000E+00
4.1915E+01	0.0000E+00	4.2876E+01	0.0000E+00	4.4481E+01	0.0000E+00	4.6293E+01	0.0000E+00	5.1431E+01	0.0000E+00	5.9072E+01	0.0000E+00
4.1803E+01	0.0000E+00	4.2758E+01	0.0000E+00	4.4351E+01	0.0000E+00	4.6150E+01	0.0000E+00	5.1242E+01	0.0000E+00	5.8798E+01	0.0000E+00
4.1692E+01	0.0000E+00	4.2641E+01	0.0000E+00	4.4222E+01	0.0000E+00	4.6007E+01	0.0000E+00	5.1055E+01	0.0000E+00	5.8528E+01	0.0000E+00
4.1581E+01	0.0000E+00	4.2524E+01	0.0000E+00	4.4094E+01	0.0000E+00	4.5866E+01	0.0000E+00	5.0869E+01	0.0000E+00	5.8261E+01	0.0000E+00
4.1472E+01	0.0000E+00	4.2408E+01	0.0000E+00	4.3967E+01	0.0000E+00	4.5725E+01	0.0000E+00	5.0686E+01	0.0000E+00	5.7998E+01	0.0000E+00
4.1363E+01	0.0000E+00	4.2293E+01	0.0000E+00	4.3841E+01	0.0000E+00	4.5586E+01	0.0000E+00	5.0504E+01	0.0000E+00	5.7737E+01	0.0000E+00
4.1255E+01	0.0000E+00	4.2179E+01	0.0000E+00	4.3716E+01	0.0000E+00	4.5448E+01	0.0000E+00	5.0324E+01	0.0000E+00	5.7480E+01	0.0000E+00
4.1147E+01	0.0000E+00	4.2065E+01	0.0000E+00	4.3592E+01	0.0000E+00	4.5311E+01	0.0000E+00	5.0145E+01	0.0000E+00	5.7226E+01	0.0000E+00
4.1040E+01	0.0000E+00	4.1952E+01	0.0000E+00	4.3468E+01	0.0000E+00	4.5174E+01	0.0000E+00	4.9968E+01	0.0000E+00	5.6975E+01	0.0000E+00
4.0934E+01	0.0000E+00	4.1840E+01	0.0000E+00	4.3346E+01	0.0000E+00	4.5039E+01	0.0000E+00	4.9793E+01	0.0000E+00	5.6727E+01	0.0000E+00
4.0829E+01	0.0000E+00	4.1729E+01	0.0000E+00	4.3224E+01	0.0000E+00	4.4905E+01	0.0000E+00	4.9619E+01	0.0000E+00	5.6481E+01	0.0000E+00
4.0724E+01	0.0000E+00	4.1618E+01	0.0000E+00	4.3103E+01	0.0000E+00	4.4772E+01	0.0000E+00	4.9447E+01	0.0000E+00	5.6239E+01	0.0000E+00
4.0620E+01	0.0000E+00	4.1508E+01	0.0000E+00	4.2984E+01	0.0000E+00	4.4640E+01	0.0000E+00	4.9277E+01	0.0000E+00	5.5999E+01	0.0000E+00
4.0517E+01	0.0000E+00	4.1399E+01	0.0000E+00	4.2865E+01	0.0000E+00	4.4509E+01	0.0000E+00	4.9108E+01	0.0000E+00	5.5762E+01	0.0000E+00
4.0414E+01	0.0000E+00	4.1291E+01	0.0000E+00	4.2746E+01	0.0000E+00	4.4379E+01	0.0000E+00	4.8940E+01	0.0000E+00	5.5528E+01	0.0000E+00
4.0312E+01	0.0000E+00	4.1183E+01	0.0000E+00	4.2629E+01	0.0000E+00	4.4250E+01	0.0000E+00	4.8774E+01	0.0000E+00	5.5296E+01	0.0000E+00
4.0210E+01	0.0000E+00	4.1076E+01	0.0000E+00	4.2512E+01	0.0000E+00	4.4122E+01	0.0000E+00	4.8610E+01	0.0000E+00	5.5067E+01	0.0000E+00
4.0109E+01	0.0000E+00	4.0970E+01	0.0000E+00	4.2396E+01	0.0000E+00	4.3995E+01	0.0000E+00	4.8447E+01	0.0000E+00	5.4840E+01	0.0000E+00
4.0009E+01	0.0000E+00	4.0864E+01	0.0000E+00	4.2281E+01	0.0000E+00	4.3869E+01	0.0000E+00	4.8285E+01	0.0000E+00	5.4616E+01	0.0000E+00

Arg 13	Curve 13	Arg 14	Curve 14	Arg 15	Curve 15	Arg 16	Curve 16	Arg 17	Curve 17	Arg 18	Curve 18
3.9910E+01	0.0000E+00	4.0759E+01	0.0000E+00	4.2167E+01	0.0000E+00	4.3743E+01	0.0000E+00	4.8125E+01	0.0000E+00	5.4395E+01	0.0000E+00
3.9811E+01	0.0000E+00	4.0655E+01	0.0000E+00	4.2054E+01	0.0000E+00	4.3619E+01	0.0000E+00	4.7966E+01	0.0000E+00	5.4176E+01	0.0000E+00
3.9712E+01	0.0000E+00	4.0551E+01	0.0000E+00	4.1941E+01	0.0000E+00	4.3495E+01	0.0000E+00	4.7808E+01	0.0000E+00	5.3959E+01	0.0000E+00
3.9614E+01	0.0000E+00	4.0448E+01	0.0000E+00	4.1829E+01	0.0000E+00	4.3373E+01	0.0000E+00	4.7652E+01	0.0000E+00	5.3744E+01	0.0000E+00
3.9517E+01	0.0000E+00	4.0346E+01	0.0000E+00	4.1718E+01	0.0000E+00	4.3251E+01	0.0000E+00	4.7497E+01	0.0000E+00	5.3532E+01	0.0000E+00
3.9420E+01	0.0000E+00	4.0244E+01	0.0000E+00	4.1607E+01	0.0000E+00	4.3130E+01	0.0000E+00	4.7344E+01	0.0000E+00	5.3322E+01	0.0000E+00
3.9324E+01	0.0000E+00	4.0143E+01	0.0000E+00	4.1497E+01	0.0000E+00	4.3010E+01	0.0000E+00	4.7191E+01	0.0000E+00	5.3114E+01	0.0000E+00
3.9229E+01	0.0000E+00	4.0043E+01	0.0000E+00	4.1388E+01	0.0000E+00	4.2891E+01	0.0000E+00	4.7040E+01	0.0000E+00	5.2908E+01	0.0000E+00
3.9134E+01	0.0000E+00	3.9943E+01	0.0000E+00	4.1280E+01	0.0000E+00	4.2772E+01	0.0000E+00	4.6891E+01	0.0000E+00	5.2704E+01	0.0000E+00
3.9040E+01	0.0000E+00	3.9844E+01	0.0000E+00	4.1172E+01	0.0000E+00	4.2655E+01	0.0000E+00	4.6742E+01	0.0000E+00	5.2502E+01	0.0000E+00
3.8946E+01	0.0000E+00	3.9745E+01	0.0000E+00	4.1066E+01	0.0000E+00	4.2538E+01	0.0000E+00	4.6595E+01	0.0000E+00	5.2303E+01	0.0000E+00
3.8852E+01	0.0000E+00	3.9647E+01	0.0000E+00	4.0959E+01	0.0000E+00	4.2422E+01	0.0000E+00	4.6449E+01	0.0000E+00	5.2105E+01	0.0000E+00
3.8760E+01	0.0000E+00	3.9550E+01	0.0000E+00	4.0854E+01	0.0000E+00	4.2307E+01	0.0000E+00	4.6304E+01	0.0000E+00	5.1910E+01	0.0000E+00
3.8667E+01	0.0000E+00	3.9453E+01	0.0000E+00	4.0749E+01	0.0000E+00	4.2192E+01	0.0000E+00	4.6160E+01	0.0000E+00	5.1716E+01	0.0000E+00
3.8576E+01	0.0000E+00	3.9356E+01	0.0000E+00	4.0645E+01	0.0000E+00	4.2079E+01	0.0000E+00	4.6017E+01	0.0000E+00	5.1524E+01	0.0000E+00
3.8485E+01	0.0000E+00	3.9261E+01	0.0000E+00	4.0541E+01	0.0000E+00	4.1966E+01	0.0000E+00	4.5875E+01	0.0000E+00	5.1334E+01	0.0000E+00
3.8394E+01	0.0000E+00	3.9166E+01	0.0000E+00	4.0438E+01	0.0000E+00	4.1854E+01	0.0000E+00	4.5735E+01	0.0000E+00	5.1146E+01	0.0000E+00
3.8304E+01	0.0000E+00	3.9071E+01	0.0000E+00	4.0336E+01	0.0000E+00	4.1742E+01	0.0000E+00	4.5596E+01	0.0000E+00	5.0960E+01	0.0000E+00
3.8214E+01	0.0000E+00	3.8977E+01	0.0000E+00	4.0234E+01	0.0000E+00	4.1631E+01	0.0000E+00	4.5457E+01	0.0000E+00	5.0775E+01	0.0000E+00
3.8125E+01	0.0000E+00	3.8884E+01	0.0000E+00	4.0133E+01	0.0000E+00	4.1522E+01	0.0000E+00	4.5320E+01	0.0000E+00	5.0593E+01	0.0000E+00
3.8037E+01	0.0000E+00	3.8791E+01	0.0000E+00	4.0033E+01	0.0000E+00	4.1412E+01	0.0000E+00	4.5184E+01	0.0000E+00	5.0412E+01	0.0000E+00
3.7949E+01	0.0000E+00	3.8698E+01	0.0000E+00	3.9933E+01	0.0000E+00	4.1304E+01	0.0000E+00	4.5049E+01	0.0000E+00	5.0232E+01	0.0000E+00
3.7861E+01	0.0000E+00	3.8606E+01	0.0000E+00	3.9834E+01	0.0000E+00	4.1196E+01	0.0000E+00	4.4915E+01	0.0000E+00	5.0055E+01	0.0000E+00
3.7774E+01	0.0000E+00	3.8515E+01	0.0000E+00	3.9735E+01	0.0000E+00	4.1089E+01	0.0000E+00	4.4782E+01	0.0000E+00	4.9879E+01	0.0000E+00
3.7687E+01	0.0000E+00	3.8424E+01	0.0000E+00	3.9637E+01	0.0000E+00	4.0983E+01	0.0000E+00	4.4650E+01	0.0000E+00	4.9704E+01	0.0000E+00
3.7601E+01	0.0000E+00	3.8334E+01	0.0000E+00	3.9540E+01	0.0000E+00	4.0877E+01	0.0000E+00	4.4519E+01	0.0000E+00	4.9531E+01	0.0000E+00
3.7515E+01	0.0000E+00	3.8244E+01	0.0000E+00	3.9443E+01	0.0000E+00	4.0772E+01	0.0000E+00	4.4388E+01	0.0000E+00	4.9360E+01	0.0000E+00
3.7430E+01	0.0000E+00	3.8155E+01	0.0000E+00	3.9347E+01	0.0000E+00	4.0667E+01	0.0000E+00	4.4259E+01	0.0000E+00	4.9190E+01	0.0000E+00
3.7345E+01	0.0000E+00	3.8066E+01	0.0000E+00	3.9251E+01	0.0000E+00	4.0564E+01	0.0000E+00	4.4131E+01	0.0000E+00	4.9022E+01	0.0000E+00
3.7261E+01	0.0000E+00	3.7978E+01	0.0000E+00	3.9156E+01	0.0000E+00	4.0461E+01	0.0000E+00	4.4004E+01	0.0000E+00	4.8856E+01	0.0000E+00
3.7177E+01	0.0000E+00	3.7890E+01	0.0000E+00	3.9062E+01	0.0000E+00	4.0358E+01	0.0000E+00	4.3878E+01	0.0000E+00	4.8690E+01	0.0000E+00
3.7094E+01	0.0000E+00	3.7803E+01	0.0000E+00	3.8968E+01	0.0000E+00	4.0256E+01	0.0000E+00	4.3752E+01	0.0000E+00	4.8527E+01	0.0000E+00
3.7011E+01	0.0000E+00	3.7716E+01	0.0000E+00	3.8874E+01	0.0000E+00	4.0155E+01	0.0000E+00	4.3628E+01	0.0000E+00	4.8364E+01	0.0000E+00
3.6929E+01	0.0000E+00	3.7630E+01	0.0000E+00	3.8781E+01	0.0000E+00	4.0055E+01	0.0000E+00	4.3504E+01	0.0000E+00	4.8203E+01	0.0000E+00
3.6846E+01	0.0000E+00	3.7544E+01	0.0000E+00	3.8689E+01	0.0000E+00	3.9955E+01	0.0000E+00	4.3381E+01	0.0000E+00	4.8044E+01	0.0000E+00
3.6765E+01	0.0000E+00	3.7459E+01	0.0000E+00	3.8597E+01	0.0000E+00	3.9856E+01	0.0000E+00	4.3259E+01	0.0000E+00	4.7885E+01	0.0000E+00
3.6684E+01	0.0000E+00	3.7374E+01	0.0000E+00	3.8506E+01	0.0000E+00	3.9757E+01	0.0000E+00	4.3138E+01	0.0000E+00	4.7729E+01	0.0000E+00
3.6603E+01	0.0000E+00	3.7289E+01	0.0000E+00	3.8415E+01	0.0000E+00	3.9659E+01	0.0000E+00	4.3018E+01	0.0000E+00	4.7573E+01	0.0000E+00
3.6523E+01	0.0000E+00	3.7205E+01	0.0000E+00	3.8325E+01	0.0000E+00	3.9561E+01	0.0000E+00	4.2899E+01	0.0000E+00	4.7419E+01	0.0000E+00
3.6443E+01	0.0000E+00	3.7122E+01	0.0000E+00	3.8235E+01	0.0000E+00	3.9464E+01	0.0000E+00	4.2780E+01	0.0000E+00	4.7266E+01	0.0000E+00
3.6363E+01	0.0000E+00	3.7039E+01	0.0000E+00	3.8146E+01	0.0000E+00	3.9368E+01	0.0000E+00	4.2663E+01	0.0000E+00	4.7114E+01	0.0000E+00
3.6284E+01	0.0000E+00	3.6956E+01	0.0000E+00	3.8057E+01	0.0000E+00	3.9272E+01	0.0000E+00	4.2546E+01	0.0000E+00	4.6964E+01	0.0000E+00
3.6205E+01	0.0000E+00	3.6874E+01	0.0000E+00	3.7969E+01	0.0000E+00	3.9177E+01	0.0000E+00	4.2430E+01	0.0000E+00	4.6815E+01	0.0000E+00
3.6127E+01	0.0000E+00	3.6792E+01	0.0000E+00	3.7882E+01	0.0000E+00	3.9082E+01	0.0000E+00	4.2315E+01	0.0000E+00	4.6667E+01	0.0000E+00
3.6049E+01	0.0000E+00	3.6711E+01	0.0000E+00	3.7794E+01	0.0000E+00	3.8988E+01	0.0000E+00	4.2200E+01	0.0000E+00	4.6520E+01	0.0000E+00
3.5972E+01	0.0000E+00	3.6630E+01	0.0000E+00	3.7708E+01	0.0000E+00	3.8895E+01	0.0000E+00	4.2086E+01	0.0000E+00	4.6374E+01	0.0000E+00
3.5895E+01	0.0000E+00	3.6549E+01	0.0000E+00	3.7621E+01	0.0000E+00	3.8802E+01	0.0000E+00	4.1974E+01	0.0000E+00	4.6230E+01	0.0000E+00
3.5818E+01	0.0000E+00	3.6469E+01	0.0000E+00	3.7536E+01	0.0000E+00	3.8709E+01	0.0000E+00	4.1861E+01	0.0000E+00	4.6087E+01	0.0000E+00
3.5742E+01	0.0000E+00	3.6390E+01	0.0000E+00	3.7450E+01	0.0000E+00	3.8617E+01	0.0000E+00	4.1750E+01	0.0000E+00	4.5945E+01	0.0000E+00
3.5666E+01	0.0000E+00	3.6311E+01	0.0000E+00	3.7365E+01	0.0000E+00	3.8526E+01	0.0000E+00	4.1639E+01	0.0000E+00	4.5804E+01	0.0000E+00
3.5590E+01	0.0000E+00	3.6232E+01	0.0000E+00	3.7281E+01	0.0000E+00	3.8435E+01	0.0000E+00	4.1529E+01	0.0000E+00	4.5664E+01	0.0000E+00
3.5515E+01	0.0000E+00	3.6153E+01	0.0000E+00	3.7197E+01	0.0000E+00	3.8345E+01	0.0000E+00	4.1420E+01	0.0000E+00	4.5525E+01	0.0000E+00

Arg 13	Curve 13	Arg 14	Curve 14	Arg 15	Curve 15	Arg 16	Curve 16	Arg 17	Curve 17	Arg 18	Curve 18
3.5440E+01	0.0000E+00	3.6075E+01	0.0000E+00	3.7114E+01	0.0000E+00	3.8255E+01	0.0000E+00	4.1311E+01	0.0000E+00	4.5387E+01	0.0000E+00
3.5366E+01	0.0000E+00	3.5998E+01	0.0000E+00	3.7030E+01	0.0000E+00	3.8166E+01	0.0000E+00	4.1204E+01	0.0000E+00	4.5251E+01	0.0000E+00
3.5292E+01	0.0000E+00	3.5920E+01	0.0000E+00	3.6948E+01	0.0000E+00	3.8077E+01	0.0000E+00	4.1096E+01	0.0000E+00	4.5115E+01	0.0000E+00
3.5218E+01	0.0000E+00	3.5844E+01	0.0000E+00	3.6866E+01	0.0000E+00	3.7989E+01	0.0000E+00	4.0990E+01	0.0000E+00	4.4980E+01	0.0000E+00
3.5145E+01	0.0000E+00	3.5767E+01	0.0000E+00	3.6784E+01	0.0000E+00	3.7901E+01	0.0000E+00	4.0884E+01	0.0000E+00	4.4847E+01	0.0000E+00
3.5072E+01	0.0000E+00	3.5691E+01	0.0000E+00	3.6703E+01	0.0000E+00	3.7813E+01	0.0000E+00	4.0779E+01	0.0000E+00	4.4714E+01	0.0000E+00
3.4999E+01	0.0000E+00	3.5615E+01	0.0000E+00	3.6622E+01	0.0000E+00	3.7727E+01	0.0000E+00	4.0675E+01	0.0000E+00	4.4583E+01	0.0000E+00
3.4927E+01	0.0000E+00	3.5540E+01	0.0000E+00	3.6541E+01	0.0000E+00	3.7640E+01	0.0000E+00	4.0571E+01	0.0000E+00	4.4452E+01	0.0000E+00
3.4855E+01	0.0000E+00	3.5465E+01	0.0000E+00	3.6461E+01	0.0000E+00	3.7554E+01	0.0000E+00	4.0468E+01	0.0000E+00	4.4322E+01	0.0000E+00
3.4783E+01	0.0000E+00	3.5391E+01	0.0000E+00	3.6382E+01	0.0000E+00	3.7469E+01	0.0000E+00	4.0365E+01	0.0000E+00	4.4194E+01	0.0000E+00
3.4712E+01	0.0000E+00	3.5316E+01	0.0000E+00	3.6303E+01	0.0000E+00	3.7384E+01	0.0000E+00	4.0264E+01	0.0000E+00	4.4066E+01	0.0000E+00
3.4641E+01	0.0000E+00	3.5243E+01	0.0000E+00	3.6224E+01	0.0000E+00	3.7299E+01	0.0000E+00	4.0162E+01	0.0000E+00	4.3939E+01	0.0000E+00
3.4571E+01	0.0000E+00	3.5169E+01	0.0000E+00	3.6145E+01	0.0000E+00	3.7215E+01	0.0000E+00	4.0062E+01	0.0000E+00	4.3813E+01	0.0000E+00
3.4500E+01	0.0000E+00	3.5096E+01	0.0000E+00	3.6067E+01	0.0000E+00	3.7132E+01	0.0000E+00	3.9962E+01	0.0000E+00	4.3689E+01	0.0000E+00
3.4430E+01	0.0000E+00	3.5023E+01	0.0000E+00	3.5990E+01	0.0000E+00	3.7049E+01	0.0000E+00	3.9862E+01	0.0000E+00	4.3564E+01	0.0000E+00
3.4361E+01	0.0000E+00	3.4951E+01	0.0000E+00	3.5913E+01	0.0000E+00	3.6966E+01	0.0000E+00	3.9764E+01	0.0000E+00	4.3441E+01	0.0000E+00
3.4292E+01	0.0000E+00	3.4879E+01	0.0000E+00	3.5836E+01	0.0000E+00	3.6884E+01	0.0000E+00	3.9666E+01	0.0000E+00	4.3319E+01	0.0000E+00
3.4223E+01	0.0000E+00	3.4807E+01	0.0000E+00	3.5760E+01	0.0000E+00	3.6802E+01	0.0000E+00	3.9568E+01	0.0000E+00	4.3198E+01	0.0000E+00
3.4154E+01	0.0000E+00	3.4736E+01	0.0000E+00	3.5684E+01	0.0000E+00	3.6721E+01	0.0000E+00	3.9471E+01	0.0000E+00	4.3077E+01	0.0000E+00
3.4086E+01	0.0000E+00	3.4665E+01	0.0000E+00	3.5608E+01	0.0000E+00	3.6640E+01	0.0000E+00	3.9375E+01	0.0000E+00	4.2957E+01	0.0000E+00
3.4018E+01	0.0000E+00	3.4594E+01	0.0000E+00	3.5533E+01	0.0000E+00	3.6559E+01	0.0000E+00	3.9279E+01	0.0000E+00	4.2838E+01	0.0000E+00
3.3950E+01	0.0000E+00	3.4524E+01	0.0000E+00	3.5458E+01	0.0000E+00	3.6479E+01	0.0000E+00	3.9184E+01	0.0000E+00	4.2720E+01	0.0000E+00
3.3883E+01	0.0000E+00	3.4454E+01	0.0000E+00	3.5383E+01	0.0000E+00	3.6399E+01	0.0000E+00	3.9089E+01	0.0000E+00	4.2603E+01	0.0000E+00
3.3816E+01	0.0000E+00	3.4384E+01	0.0000E+00	3.5309E+01	0.0000E+00	3.6320E+01	0.0000E+00	3.8995E+01	0.0000E+00	4.2487E+01	0.0000E+00
3.3749E+01	0.0000E+00	3.4315E+01	0.0000E+00	3.5235E+01	0.0000E+00	3.6241E+01	0.0000E+00	3.8901E+01	0.0000E+00	4.2371E+01	0.0000E+00
3.3683E+01	0.0000E+00	3.4246E+01	0.0000E+00	3.5162E+01	0.0000E+00	3.6163E+01	0.0000E+00	3.8808E+01	0.0000E+00	4.2256E+01	0.0000E+00
3.3617E+01	0.0000E+00	3.4177E+01	0.0000E+00	3.5089E+01	0.0000E+00	3.6085E+01	0.0000E+00	3.8716E+01	0.0000E+00	4.2142E+01	0.0000E+00
3.3551E+01	0.0000E+00	3.4109E+01	0.0000E+00	3.5016E+01	0.0000E+00	3.6007E+01	0.0000E+00	3.8624E+01	0.0000E+00	4.2029E+01	0.0000E+00
3.3485E+01	0.0000E+00	3.4041E+01	0.0000E+00	3.4944E+01	0.0000E+00	3.5930E+01	0.0000E+00	3.8532E+01	0.0000E+00	4.1916E+01	0.0000E+00
3.3420E+01	0.0000E+00	3.3973E+01	0.0000E+00	3.4872E+01	0.0000E+00	3.5853E+01	0.0000E+00	3.8442E+01	0.0000E+00	4.1804E+01	0.0000E+00
3.3355E+01	0.0000E+00	3.3905E+01	0.0000E+00	3.4800E+01	0.0000E+00	3.5776E+01	0.0000E+00	3.8351E+01	0.0000E+00	4.1693E+01	0.0000E+00
3.3290E+01	0.0000E+00	3.3838E+01	0.0000E+00	3.4729E+01	0.0000E+00	3.5700E+01	0.0000E+00	3.8261E+01	0.0000E+00	4.1583E+01	0.0000E+00
3.3226E+01	0.0000E+00	3.3771E+01	0.0000E+00	3.4658E+01	0.0000E+00	3.5624E+01	0.0000E+00	3.8172E+01	0.0000E+00	4.1473E+01	0.0000E+00
3.3162E+01	0.0000E+00	3.3705E+01	0.0000E+00	3.4587E+01	0.0000E+00	3.5549E+01	0.0000E+00	3.8083E+01	0.0000E+00	4.1365E+01	0.0000E+00
3.3098E+01	0.0000E+00	3.3639E+01	0.0000E+00	3.4517E+01	0.0000E+00	3.5474E+01	0.0000E+00	3.7995E+01	0.0000E+00	4.1256E+01	0.0000E+00
3.3035E+01	0.0000E+00	3.3573E+01	0.0000E+00	3.4447E+01	0.0000E+00	3.5400E+01	0.0000E+00	3.7907E+01	0.0000E+00	4.1149E+01	0.0000E+00
3.2971E+01	0.0000E+00	3.3507E+01	0.0000E+00	3.4377E+01	0.0000E+00	3.5325E+01	0.0000E+00	3.7820E+01	0.0000E+00	4.1042E+01	0.0000E+00
3.2908E+01	0.0000E+00	3.3442E+01	0.0000E+00	3.4308E+01	0.0000E+00	3.5251E+01	0.0000E+00	3.7733E+01	0.0000E+00	4.0936E+01	0.0000E+00
3.2846E+01	0.0000E+00	3.3377E+01	0.0000E+00	3.4239E+01	0.0000E+00	3.5178E+01	0.0000E+00	3.7646E+01	0.0000E+00	4.0831E+01	0.0000E+00
3.2783E+01	0.0000E+00	3.3312E+01	0.0000E+00	3.4170E+01	0.0000E+00	3.5105E+01	0.0000E+00	3.7560E+01	0.0000E+00	4.0726E+01	0.0000E+00
3.2721E+01	0.0000E+00	3.3247E+01	0.0000E+00	3.4102E+01	0.0000E+00	3.5032E+01	0.0000E+00	3.7475E+01	0.0000E+00	4.0622E+01	0.0000E+00
3.2659E+01	0.0000E+00	3.3183E+01	0.0000E+00	3.4034E+01	0.0000E+00	3.4960E+01	0.0000E+00	3.7390E+01	0.0000E+00	4.0518E+01	0.0000E+00
3.2598E+01	0.0000E+00	3.3119E+01	0.0000E+00	3.3966E+01	0.0000E+00	3.4888E+01	0.0000E+00	3.7305E+01	0.0000E+00	4.0416E+01	0.0000E+00
3.2536E+01	0.0000E+00	3.3056E+01	0.0000E+00	3.3899E+01	0.0000E+00	3.4816E+01	0.0000E+00	3.7221E+01	0.0000E+00	4.0313E+01	0.0000E+00
3.2475E+01	0.0000E+00	3.2992E+01	0.0000E+00	3.3832E+01	0.0000E+00	3.4744E+01	0.0000E+00	3.7138E+01	0.0000E+00	4.0212E+01	0.0000E+00
3.2414E+01	0.0000E+00	3.2929E+01	0.0000E+00	3.3765E+01	0.0000E+00	3.4673E+01	0.0000E+00	3.7055E+01	0.0000E+00	4.0111E+01	0.0000E+00
3.2354E+01	0.0000E+00	3.2867E+01	0.0000E+00	3.3698E+01	0.0000E+00	3.4603E+01	0.0000E+00	3.6972E+01	0.0000E+00	4.0011E+01	0.0000E+00
3.2293E+01	0.0000E+00	3.2804E+01	0.0000E+00	3.3632E+01	0.0000E+00	3.4532E+01	0.0000E+00	3.6890E+01	0.0000E+00	3.9911E+01	0.0000E+00
3.2233E+01	0.0000E+00	3.2742E+01	0.0000E+00	3.3566E+01	0.0000E+00	3.4462E+01	0.0000E+00	3.6808E+01	0.0000E+00	3.9812E+01	0.0000E+00
3.2173E+01	0.0000E+00	3.2680E+01	0.0000E+00	3.3501E+01	0.0000E+00	3.4392E+01	0.0000E+00	3.6726E+01	0.0000E+00	3.9714E+01	0.0000E+00
3.2114E+01	0.0000E+00	3.2618E+01	0.0000E+00	3.3435E+01	0.0000E+00	3.4323E+01	0.0000E+00	3.6645E+01	0.0000E+00	3.9616E+01	0.0000E+00
3.2055E+01	0.0000E+00	3.2557E+01	0.0000E+00	3.3370E+01	0.0000E+00	3.4254E+01	0.0000E+00	3.6565E+01	0.0000E+00	3.9519E+01	0.0000E+00

Arg 13	Curve 13	Arg 14	Curve 14	Arg 15	Curve 15	Arg 16	Curve 16	Arg 17	Curve 17	Arg 18	Curve 18
3.1996E+01	0.0000E+00	3.2496E+01	0.0000E+00	3.3305E+01	0.0000E+00	3.4185E+01	0.0000E+00	3.6485E+01	0.0000E+00	3.9422E+01	0.0000E+00
3.1937E+01	0.0000E+00	3.2435E+01	0.0000E+00	3.3241E+01	0.0000E+00	3.4117E+01	0.0000E+00	3.6405E+01	0.0000E+00	3.9326E+01	0.0000E+00
3.1878E+01	0.0000E+00	3.2374E+01	0.0000E+00	3.3177E+01	0.0000E+00	3.4049E+01	0.0000E+00	3.6326E+01	0.0000E+00	3.9230E+01	0.0000E+00
3.1820E+01	0.0000E+00	3.2314E+01	0.0000E+00	3.3113E+01	0.0000E+00	3.3981E+01	0.0000E+00	3.6247E+01	0.0000E+00	3.9135E+01	0.0000E+00
3.1762E+01	0.0000E+00	3.2253E+01	0.0000E+00	3.3049E+01	0.0000E+00	3.3913E+01	0.0000E+00	3.6168E+01	0.0000E+00	3.9041E+01	0.0000E+00
3.1704E+01	0.0000E+00	3.2194E+01	0.0000E+00	3.2986E+01	0.0000E+00	3.3846E+01	0.0000E+00	3.6090E+01	0.0000E+00	3.8947E+01	0.0000E+00
3.1646E+01	0.0000E+00	3.2134E+01	0.0000E+00	3.2923E+01	0.0000E+00	3.3779E+01	0.0000E+00	3.6012E+01	0.0000E+00	3.8854E+01	0.0000E+00
3.1589E+01	0.0000E+00	3.2074E+01	0.0000E+00	3.2860E+01	0.0000E+00	3.3713E+01	0.0000E+00	3.5935E+01	0.0000E+00	3.8761E+01	0.0000E+00
3.1532E+01	0.0000E+00	3.2015E+01	0.0000E+00	3.2798E+01	0.0000E+00	3.3647E+01	0.0000E+00	3.5858E+01	0.0000E+00	3.8669E+01	0.0000E+00
3.1475E+01	0.0000E+00	3.1956E+01	0.0000E+00	3.2736E+01	0.0000E+00	3.3581E+01	0.0000E+00	3.5782E+01	0.0000E+00	3.8577E+01	0.0000E+00
3.1418E+01	0.0000E+00	3.1898E+01	0.0000E+00	3.2674E+01	0.0000E+00	3.3515E+01	0.0000E+00	3.5706E+01	0.0000E+00	3.8486E+01	0.0000E+00
3.1362E+01	0.0000E+00	3.1839E+01	0.0000E+00	3.2612E+01	0.0000E+00	3.3450E+01	0.0000E+00	3.5630E+01	0.0000E+00	3.8395E+01	0.0000E+00
3.1305E+01	0.0000E+00	3.1781E+01	0.0000E+00	3.2551E+01	0.0000E+00	3.3384E+01	0.0000E+00	3.5554E+01	0.0000E+00	3.8305E+01	0.0000E+00
3.1249E+01	0.0000E+00	3.1723E+01	0.0000E+00	3.2489E+01	0.0000E+00	3.3320E+01	0.0000E+00	3.5479E+01	0.0000E+00	3.8216E+01	0.0000E+00
3.1193E+01	0.0000E+00	3.1665E+01	0.0000E+00	3.2429E+01	0.0000E+00	3.3255E+01	0.0000E+00	3.5405E+01	0.0000E+00	3.8127E+01	0.0000E+00
3.1138E+01	0.0000E+00	3.1608E+01	0.0000E+00	3.2368E+01	0.0000E+00	3.3191E+01	0.0000E+00	3.5331E+01	0.0000E+00	3.8038E+01	0.0000E+00
3.1083E+01	0.0000E+00	3.1551E+01	0.0000E+00	3.2308E+01	0.0000E+00	3.3127E+01	0.0000E+00	3.5257E+01	0.0000E+00	3.7950E+01	0.0000E+00
3.1027E+01	0.0000E+00	3.1494E+01	0.0000E+00	3.2247E+01	0.0000E+00	3.3063E+01	0.0000E+00	3.5183E+01	0.0000E+00	3.7862E+01	0.0000E+00
3.0973E+01	0.0000E+00	3.1437E+01	0.0000E+00	3.2188E+01	0.0000E+00	3.3000E+01	0.0000E+00	3.5110E+01	0.0000E+00	3.7775E+01	0.0000E+00
3.0918E+01	0.0000E+00	3.1380E+01	0.0000E+00	3.2128E+01	0.0000E+00	3.2937E+01	0.0000E+00	3.5037E+01	0.0000E+00	3.7689E+01	0.0000E+00
3.0863E+01	0.0000E+00	3.1324E+01	0.0000E+00	3.2069E+01	0.0000E+00	3.2874E+01	0.0000E+00	3.4965E+01	0.0000E+00	3.7602E+01	0.0000E+00
3.0809E+01	0.0000E+00	3.1268E+01	0.0000E+00	3.2009E+01	0.0000E+00	3.2812E+01	0.0000E+00	3.4893E+01	0.0000E+00	3.7517E+01	0.0000E+00
3.0755E+01	0.0000E+00	3.1212E+01	0.0000E+00	3.1951E+01	0.0000E+00	3.2749E+01	0.0000E+00	3.4821E+01	0.0000E+00	3.7431E+01	0.0000E+00
3.0701E+01	0.0000E+00	3.1157E+01	0.0000E+00	3.1892E+01	0.0000E+00	3.2687E+01	0.0000E+00	3.4749E+01	0.0000E+00	3.7347E+01	0.0000E+00
3.0647E+01	0.0000E+00	3.1101E+01	0.0000E+00	3.1833E+01	0.0000E+00	3.2626E+01	0.0000E+00	3.4678E+01	0.0000E+00	3.7262E+01	0.0000E+00
3.0594E+01	0.0000E+00	3.1046E+01	0.0000E+00	3.1775E+01	0.0000E+00	3.2564E+01	0.0000E+00	3.4608E+01	0.0000E+00	3.7179E+01	0.0000E+00
3.0541E+01	0.0000E+00	3.0991E+01	0.0000E+00	3.1717E+01	0.0000E+00	3.2503E+01	0.0000E+00	3.4537E+01	0.0000E+00	3.7095E+01	0.0000E+00
3.0488E+01	0.0000E+00	3.0936E+01	0.0000E+00	3.1660E+01	0.0000E+00	3.2442E+01	0.0000E+00	3.4467E+01	0.0000E+00	3.7012E+01	0.0000E+00
3.0435E+01	0.0000E+00	3.0882E+01	0.0000E+00	3.1602E+01	0.0000E+00	3.2381E+01	0.0000E+00	3.4397E+01	0.0000E+00	3.6930E+01	0.0000E+00
3.0382E+01	0.0000E+00	3.0827E+01	0.0000E+00	3.1545E+01	0.0000E+00	3.2321E+01	0.0000E+00	3.4328E+01	0.0000E+00	3.6848E+01	0.0000E+00
3.0330E+01	0.0000E+00	3.0773E+01	0.0000E+00	3.1488E+01	0.0000E+00	3.2261E+01	0.0000E+00	3.4259E+01	0.0000E+00	3.6766E+01	0.0000E+00
3.0278E+01	0.0000E+00	3.0719E+01	0.0000E+00	3.1431E+01	0.0000E+00	3.2201E+01	0.0000E+00	3.4190E+01	0.0000E+00	3.6685E+01	0.0000E+00
3.0226E+01	0.0000E+00	3.0665E+01	0.0000E+00	3.1375E+01	0.0000E+00	3.2141E+01	0.0000E+00	3.4122E+01	0.0000E+00	3.6604E+01	0.0000E+00
3.0174E+01	0.0000E+00	3.0612E+01	0.0000E+00	3.1319E+01	0.0000E+00	3.2082E+01	0.0000E+00	3.4053E+01	0.0000E+00	3.6524E+01	0.0000E+00
3.0122E+01	0.0000E+00	3.0559E+01	0.0000E+00	3.1262E+01	0.0000E+00	3.2022E+01	0.0000E+00	3.3986E+01	0.0000E+00	3.6444E+01	0.0000E+00
3.0071E+01	0.0000E+00	3.0505E+01	0.0000E+00	3.1207E+01	0.0000E+00	3.1963E+01	0.0000E+00	3.3918E+01	0.0000E+00	3.6364E+01	0.0000E+00
3.0019E+01	0.0000E+00	3.0453E+01	0.0000E+00	3.1151E+01	0.0000E+00	3.1905E+01	0.0000E+00	3.3851E+01	0.0000E+00	3.6285E+01	0.0000E+00
2.9968E+01	0.0000E+00	3.0400E+01	0.0000E+00	3.1096E+01	0.0000E+00	3.1846E+01	0.0000E+00	3.3784E+01	0.0000E+00	3.6207E+01	0.0000E+00
2.9917E+01	0.0000E+00	3.0347E+01	0.0000E+00	3.1040E+01	0.0000E+00	3.1788E+01	0.0000E+00	3.3717E+01	0.0000E+00	3.6128E+01	0.0000E+00
2.9867E+01	0.0000E+00	3.0295E+01	0.0000E+00	3.0985E+01	0.0000E+00	3.1730E+01	0.0000E+00	3.3651E+01	0.0000E+00	3.6050E+01	0.0000E+00
2.9816E+01	0.0000E+00	3.0243E+01	0.0000E+00	3.0931E+01	0.0000E+00	3.1672E+01	0.0000E+00	3.3585E+01	0.0000E+00	3.5973E+01	0.0000E+00
2.9766E+01	0.0000E+00	3.0191E+01	0.0000E+00	3.0876E+01	0.0000E+00	3.1615E+01	0.0000E+00	3.3520E+01	0.0000E+00	3.5896E+01	0.0000E+00
2.9716E+01	0.0000E+00	3.0139E+01	0.0000E+00	3.0822E+01	0.0000E+00	3.1558E+01	0.0000E+00	3.3454E+01	0.0000E+00	3.5819E+01	0.0000E+00
2.9666E+01	0.0000E+00	3.0088E+01	0.0000E+00	3.0768E+01	0.0000E+00	3.1501E+01	0.0000E+00	3.3389E+01	0.0000E+00	3.5743E+01	0.0000E+00
2.9616E+01	0.0000E+00	3.0037E+01	0.0000E+00	3.0714E+01	0.0000E+00	3.1444E+01	0.0000E+00	3.3324E+01	0.0000E+00	3.5667E+01	0.0000E+00
2.9567E+01	0.0000E+00	2.9985E+01	0.0000E+00	3.0660E+01	0.0000E+00	3.1387E+01	0.0000E+00	3.3260E+01	0.0000E+00	3.5591E+01	0.0000E+00
2.9517E+01	0.0000E+00	2.9934E+01	0.0000E+00	3.0607E+01	0.0000E+00	3.1331E+01	0.0000E+00	3.3195E+01	0.0000E+00	3.5516E+01	0.0000E+00
2.9468E+01	0.0000E+00	2.9884E+01	0.0000E+00	3.0553E+01	0.0000E+00	3.1275E+01	0.0000E+00	3.3132E+01	0.0000E+00	3.5441E+01	0.0000E+00
2.9419E+01	0.0000E+00	2.9833E+01	0.0000E+00	3.0500E+01	0.0000E+00	3.1219E+01	0.0000E+00	3.3068E+01	0.0000E+00	3.5367E+01	0.0000E+00
2.9370E+01	0.0000E+00	2.9783E+01	0.0000E+00	3.0447E+01	0.0000E+00	3.1163E+01	0.0000E+00	3.3004E+01	0.0000E+00	3.5293E+01	0.0000E+00
2.9321E+01	0.0000E+00	2.9733E+01	0.0000E+00	3.0395E+01	0.0000E+00	3.1108E+01	0.0000E+00	3.2941E+01	0.0000E+00	3.5219E+01	0.0000E+00
2.9273E+01	0.0000E+00	2.9683E+01	0.0000E+00	3.0342E+01	0.0000E+00	3.1052E+01	0.0000E+00	3.2879E+01	0.0000E+00	3.5146E+01	0.0000E+00

Arg 13	Curve 13	Arg 14	Curve 14	Arg 15	Curve 15	Arg 16	Curve 16	Arg 17	Curve 17	Arg 18	Curve 18
2.9224E+01	0.0000E+00	2.9633E+01	0.0000E+00	3.0290E+01	0.0000E+00	3.0997E+01	0.0000E+00	3.2816E+01	0.0000E+00	3.5073E+01	0.0000E+00
2.9176E+01	0.0000E+00	2.9583E+01	0.0000E+00	3.0238E+01	0.0000E+00	3.0943E+01	0.0000E+00	3.2754E+01	0.0000E+00	3.5000E+01	0.0000E+00
2.9128E+01	0.0000E+00	2.9534E+01	0.0000E+00	3.0186E+01	0.0000E+00	3.0888E+01	0.0000E+00	3.2692E+01	0.0000E+00	3.4928E+01	0.0000E+00
2.9080E+01	0.0000E+00	2.9484E+01	0.0000E+00	3.0134E+01	0.0000E+00	3.0834E+01	0.0000E+00	3.2630E+01	0.0000E+00	3.4856E+01	0.0000E+00
2.9033E+01	0.0000E+00	2.9435E+01	0.0000E+00	3.0083E+01	0.0000E+00	3.0780E+01	0.0000E+00	3.2568E+01	0.0000E+00	3.4784E+01	0.0000E+00
2.8985E+01	0.0000E+00	2.9386E+01	0.0000E+00	3.0031E+01	0.0000E+00	3.0726E+01	0.0000E+00	3.2507E+01	0.0000E+00	3.4713E+01	0.0000E+00
2.8938E+01	0.0000E+00	2.9338E+01	0.0000E+00	2.9980E+01	0.0000E+00	3.0672E+01	0.0000E+00	3.2446E+01	0.0000E+00	3.4642E+01	0.0000E+00
2.8891E+01	0.0000E+00	2.9289E+01	0.0000E+00	2.9929E+01	0.0000E+00	3.0618E+01	0.0000E+00	3.2385E+01	0.0000E+00	3.4572E+01	0.0000E+00
2.8844E+01	0.0000E+00	2.9241E+01	0.0000E+00	2.9879E+01	0.0000E+00	3.0565E+01	0.0000E+00	3.2325E+01	0.0000E+00	3.4501E+01	0.0000E+00
2.8797E+01	0.0000E+00	2.9192E+01	0.0000E+00	2.9828E+01	0.0000E+00	3.0512E+01	0.0000E+00	3.2265E+01	0.0000E+00	3.4431E+01	0.0000E+00
2.8750E+01	0.0000E+00	2.9144E+01	0.0000E+00	2.9778E+01	0.0000E+00	3.0459E+01	0.0000E+00	3.2205E+01	0.0000E+00	3.4362E+01	0.0000E+00
2.8704E+01	0.0000E+00	2.9096E+01	0.0000E+00	2.9728E+01	0.0000E+00	3.0406E+01	0.0000E+00	3.2145E+01	0.0000E+00	3.4293E+01	0.0000E+00
2.8657E+01	0.0000E+00	2.9049E+01	0.0000E+00	2.9678E+01	0.0000E+00	3.0354E+01	0.0000E+00	3.2086E+01	0.0000E+00	3.4224E+01	0.0000E+00
2.8611E+01	0.0000E+00	2.9001E+01	0.0000E+00	2.9628E+01	0.0000E+00	3.0301E+01	0.0000E+00	3.2027E+01	0.0000E+00	3.4155E+01	0.0000E+00
2.8565E+01	0.0000E+00	2.8954E+01	0.0000E+00	2.9578E+01	0.0000E+00	3.0249E+01	0.0000E+00	3.1968E+01	0.0000E+00	3.4087E+01	0.0000E+00
2.8519E+01	0.0000E+00	2.8906E+01	0.0000E+00	2.9529E+01	0.0000E+00	3.0197E+01	0.0000E+00	3.1909E+01	0.0000E+00	3.4019E+01	0.0000E+00
2.8473E+01	0.0000E+00	2.8859E+01	0.0000E+00	2.9479E+01	0.0000E+00	3.0146E+01	0.0000E+00	3.1850E+01	0.0000E+00	3.3951E+01	0.0000E+00
2.8428E+01	0.0000E+00	2.8812E+01	0.0000E+00	2.9430E+01	0.0000E+00	3.0094E+01	0.0000E+00	3.1792E+01	0.0000E+00	3.3884E+01	0.0000E+00
2.8382E+01	0.0000E+00	2.8766E+01	0.0000E+00	2.9381E+01	0.0000E+00	3.0043E+01	0.0000E+00	3.1734E+01	0.0000E+00	3.3817E+01	0.0000E+00
2.8337E+01	0.0000E+00	2.8719E+01	0.0000E+00	2.9333E+01	0.0000E+00	2.9992E+01	0.0000E+00	3.1676E+01	0.0000E+00	3.3750E+01	0.0000E+00
2.8292E+01	0.0000E+00	2.8673E+01	0.0000E+00	2.9284E+01	0.0000E+00	2.9941E+01	0.0000E+00	3.1619E+01	0.0000E+00	3.3684E+01	0.0000E+00
2.8247E+01	0.0000E+00	2.8627E+01	0.0000E+00	2.9236E+01	0.0000E+00	2.9890E+01	0.0000E+00	3.1562E+01	0.0000E+00	3.3618E+01	0.0000E+00
2.8202E+01	0.0000E+00	2.8580E+01	0.0000E+00	2.9187E+01	0.0000E+00	2.9839E+01	0.0000E+00	3.1505E+01	0.0000E+00	3.3552E+01	0.0000E+00
2.8158E+01	0.0000E+00	2.8535E+01	0.0000E+00	2.9139E+01	0.0000E+00	2.9789E+01	0.0000E+00	3.1448E+01	0.0000E+00	3.3486E+01	0.0000E+00
2.8113E+01	0.0000E+00	2.8489E+01	0.0000E+00	2.9092E+01	0.0000E+00	2.9739E+01	0.0000E+00	3.1391E+01	0.0000E+00	3.3421E+01	0.0000E+00
2.8069E+01	0.0000E+00	2.8443E+01	0.0000E+00	2.9044E+01	0.0000E+00	2.9689E+01	0.0000E+00	3.1335E+01	0.0000E+00	3.3356E+01	0.0000E+00
2.8025E+01	0.0000E+00	2.8398E+01	0.0000E+00	2.8996E+01	0.0000E+00	2.9639E+01	0.0000E+00	3.1279E+01	0.0000E+00	3.3291E+01	0.0000E+00
2.7981E+01	0.0000E+00	2.8352E+01	0.0000E+00	2.8949E+01	0.0000E+00	2.9589E+01	0.0000E+00	3.1223E+01	0.0000E+00	3.3227E+01	0.0000E+00
2.7937E+01	0.0000E+00	2.8307E+01	0.0000E+00	2.8902E+01	0.0000E+00	2.9540E+01	0.0000E+00	3.1167E+01	0.0000E+00	3.3163E+01	0.0000E+00
2.7893E+01	0.0000E+00	2.8262E+01	0.0000E+00	2.8855E+01	0.0000E+00	2.9490E+01	0.0000E+00	3.1112E+01	0.0000E+00	3.3099E+01	0.0000E+00
2.7849E+01	0.0000E+00	2.8217E+01	0.0000E+00	2.8808E+01	0.0000E+00	2.9441E+01	0.0000E+00	3.1056E+01	0.0000E+00	3.3035E+01	0.0000E+00
2.7806E+01	0.0000E+00	2.8173E+01	0.0000E+00	2.8761E+01	0.0000E+00	2.9392E+01	0.0000E+00	3.1001E+01	0.0000E+00	3.2972E+01	0.0000E+00
2.7762E+01	0.0000E+00	2.8128E+01	0.0000E+00	2.8715E+01	0.0000E+00	2.9343E+01	0.0000E+00	3.0946E+01	0.0000E+00	3.2909E+01	0.0000E+00
2.7719E+01	0.0000E+00	2.8084E+01	0.0000E+00	2.8668E+01	0.0000E+00	2.9295E+01	0.0000E+00	3.0892E+01	0.0000E+00	3.2847E+01	0.0000E+00
2.7676E+01	0.0000E+00	2.8039E+01	0.0000E+00	2.8622E+01	0.0000E+00	2.9246E+01	0.0000E+00	3.0838E+01	0.0000E+00	3.2784E+01	0.0000E+00
2.7633E+01	0.0000E+00	2.7995E+01	0.0000E+00	2.8576E+01	0.0000E+00	2.9198E+01	0.0000E+00	3.0783E+01	0.0000E+00	3.2722E+01	0.0000E+00
2.7590E+01	0.0000E+00	2.7951E+01	0.0000E+00	2.8530E+01	0.0000E+00	2.9150E+01	0.0000E+00	3.0729E+01	0.0000E+00	3.2660E+01	0.0000E+00
2.7548E+01	0.0000E+00	2.7908E+01	0.0000E+00	2.8484E+01	0.0000E+00	2.9102E+01	0.0000E+00	3.0676E+01	0.0000E+00	3.2598E+01	0.0000E+00
2.7505E+01	0.0000E+00	2.7864E+01	0.0000E+00	2.8439E+01	0.0000E+00	2.9054E+01	0.0000E+00	3.0622E+01	0.0000E+00	3.2537E+01	0.0000E+00
2.7463E+01	0.0000E+00	2.7820E+01	0.0000E+00	2.8393E+01	0.0000E+00	2.9007E+01	0.0000E+00	3.0569E+01	0.0000E+00	3.2476E+01	0.0000E+00
2.7421E+01	0.0000E+00	2.7777E+01	0.0000E+00	2.8348E+01	0.0000E+00	2.8959E+01	0.0000E+00	3.0516E+01	0.0000E+00	3.2415E+01	0.0000E+00
2.7379E+01	0.0000E+00	2.7734E+01	0.0000E+00	2.8303E+01	0.0000E+00	2.8912E+01	0.0000E+00	3.0463E+01	0.0000E+00	3.2355E+01	0.0000E+00
2.7337E+01	0.0000E+00	2.7691E+01	0.0000E+00	2.8258E+01	0.0000E+00	2.8865E+01	0.0000E+00	3.0410E+01	0.0000E+00	3.2294E+01	0.0000E+00
2.7295E+01	0.0000E+00	2.7648E+01	0.0000E+00	2.8213E+01	0.0000E+00	2.8818E+01	0.0000E+00	3.0357E+01	0.0000E+00	3.2234E+01	0.0000E+00
2.7253E+01	0.0000E+00	2.7605E+01	0.0000E+00	2.8168E+01	0.0000E+00	2.8771E+01	0.0000E+00	3.0305E+01	0.0000E+00	3.2174E+01	0.0000E+00
2.7212E+01	0.0000E+00	2.7562E+01	0.0000E+00	2.8124E+01	0.0000E+00	2.8725E+01	0.0000E+00	3.0253E+01	0.0000E+00	3.2115E+01	0.0000E+00
2.7170E+01	0.0000E+00	2.7520E+01	0.0000E+00	2.8079E+01	0.0000E+00	2.8678E+01	0.0000E+00	3.0201E+01	0.0000E+00	3.2056E+01	0.0000E+00
2.7129E+01	0.0000E+00	2.7477E+01	0.0000E+00	2.8035E+01	0.0000E+00	2.8632E+01	0.0000E+00	3.0149E+01	0.0000E+00	3.1996E+01	0.0000E+00
2.7088E+01	0.0000E+00	2.7435E+01	0.0000E+00	2.7991E+01	0.0000E+00	2.8586E+01	0.0000E+00	3.0098E+01	0.0000E+00	3.1938E+01	0.0000E+00
2.7047E+01	0.0000E+00	2.7393E+01	0.0000E+00	2.7947E+01	0.0000E+00	2.8540E+01	0.0000E+00	3.0046E+01	0.0000E+00	3.1879E+01	0.0000E+00
2.7006E+01	0.0000E+00	2.7351E+01	0.0000E+00	2.7903E+01	0.0000E+00	2.8494E+01	0.0000E+00	2.9995E+01	0.0000E+00	3.1821E+01	0.0000E+00
2.6965E+01	0.0000E+00	2.7309E+01	0.0000E+00	2.7859E+01	0.0000E+00	2.8449E+01	0.0000E+00	2.9944E+01	0.0000E+00	3.1763E+01	0.0000E+00

Arg 13	Curve 13	Arg 14	Curve 14	Arg 15	Curve 15	Arg 16	Curve 16	Arg 17	Curve 17	Arg 18	Curve 18
2.6924E+01	0.0000E+00	2.7267E+01	0.0000E+00	2.7816E+01	0.0000E+00	2.8403E+01	0.0000E+00	2.9893E+01	0.0000E+00	3.1705E+01	0.0000E+00
2.6884E+01	0.0000E+00	2.7226E+01	0.0000E+00	2.7773E+01	0.0000E+00	2.8358E+01	0.0000E+00	2.9843E+01	0.0000E+00	3.1647E+01	0.0000E+00
2.6843E+01	0.0000E+00	2.7184E+01	0.0000E+00	2.7729E+01	0.0000E+00	2.8313E+01	0.0000E+00	2.9792E+01	0.0000E+00	3.1590E+01	0.0000E+00
2.6803E+01	0.0000E+00	2.7143E+01	0.0000E+00	2.7686E+01	0.0000E+00	2.8268E+01	0.0000E+00	2.9742E+01	0.0000E+00	3.1533E+01	0.0000E+00
2.6763E+01	0.0000E+00	2.7102E+01	0.0000E+00	2.7643E+01	0.0000E+00	2.8223E+01	0.0000E+00	2.9692E+01	0.0000E+00	3.1476E+01	0.0000E+00
2.6723E+01	0.0000E+00	2.7060E+01	0.0000E+00	2.7601E+01	0.0000E+00	2.8178E+01	0.0000E+00	2.9642E+01	0.0000E+00	3.1419E+01	0.0000E+00
2.6683E+01	0.0000E+00	2.7020E+01	0.0000E+00	2.7558E+01	0.0000E+00	2.8133E+01	0.0000E+00	2.9593E+01	0.0000E+00	3.1362E+01	0.0000E+00
2.6643E+01	0.0000E+00	2.6979E+01	0.0000E+00	2.7515E+01	0.0000E+00	2.8089E+01	0.0000E+00	2.9543E+01	0.0000E+00	3.1306E+01	0.0000E+00
2.6604E+01	0.0000E+00	2.6938E+01	0.0000E+00	2.7473E+01	0.0000E+00	2.8045E+01	0.0000E+00	2.9494E+01	0.0000E+00	3.1250E+01	0.0000E+00
2.6564E+01	0.0000E+00	2.6897E+01	0.0000E+00	2.7431E+01	0.0000E+00	2.8001E+01	0.0000E+00	2.9445E+01	0.0000E+00	3.1194E+01	0.0000E+00
2.6525E+01	0.0000E+00	2.6857E+01	0.0000E+00	2.7389E+01	0.0000E+00	2.7957E+01	0.0000E+00	2.9396E+01	0.0000E+00	3.1139E+01	0.0000E+00
2.6485E+01	0.0000E+00	2.6817E+01	0.0000E+00	2.7347E+01	0.0000E+00	2.7913E+01	0.0000E+00	2.9347E+01	0.0000E+00	3.1083E+01	0.0000E+00
2.6446E+01	0.0000E+00	2.6776E+01	0.0000E+00	2.7305E+01	0.0000E+00	2.7869E+01	0.0000E+00	2.9298E+01	0.0000E+00	3.1028E+01	0.0000E+00
2.6407E+01	0.0000E+00	2.6736E+01	0.0000E+00	2.7263E+01	0.0000E+00	2.7826E+01	0.0000E+00	2.9250E+01	0.0000E+00	3.0973E+01	0.0000E+00
2.6368E+01	0.0000E+00	2.6696E+01	0.0000E+00	2.7221E+01	0.0000E+00	2.7782E+01	0.0000E+00	2.9201E+01	0.0000E+00	3.0919E+01	0.0000E+00
2.6329E+01	0.0000E+00	2.6657E+01	0.0000E+00	2.7180E+01	0.0000E+00	2.7739E+01	0.0000E+00	2.9153E+01	0.0000E+00	3.0864E+01	0.0000E+00
2.6291E+01	0.0000E+00	2.6617E+01	0.0000E+00	2.7139E+01	0.0000E+00	2.7696E+01	0.0000E+00	2.9105E+01	0.0000E+00	3.0810E+01	0.0000E+00
2.6252E+01	0.0000E+00	2.6577E+01	0.0000E+00	2.7097E+01	0.0000E+00	2.7653E+01	0.0000E+00	2.9058E+01	0.0000E+00	3.0756E+01	0.0000E+00
2.6214E+01	0.0000E+00	2.6538E+01	0.0000E+00	2.7056E+01	0.0000E+00	2.7610E+01	0.0000E+00	2.9010E+01	0.0000E+00	3.0702E+01	0.0000E+00
2.6175E+01	0.0000E+00	2.6499E+01	0.0000E+00	2.7015E+01	0.0000E+00	2.7567E+01	0.0000E+00	2.8963E+01	0.0000E+00	3.0648E+01	0.0000E+00
2.6137E+01	0.0000E+00	2.6459E+01	0.0000E+00	2.6975E+01	0.0000E+00	2.7525E+01	0.0000E+00	2.8915E+01	0.0000E+00	3.0595E+01	0.0000E+00
2.6099E+01	0.0000E+00	2.6420E+01	0.0000E+00	2.6934E+01	0.0000E+00	2.7482E+01	0.0000E+00	2.8868E+01	0.0000E+00	3.0542E+01	0.0000E+00
2.6061E+01	0.0000E+00	2.6381E+01	0.0000E+00	2.6893E+01	0.0000E+00	2.7440E+01	0.0000E+00	2.8821E+01	0.0000E+00	3.0489E+01	0.0000E+00
2.6023E+01	0.0000E+00	2.6342E+01	0.0000E+00	2.6853E+01	0.0000E+00	2.7398E+01	0.0000E+00	2.8775E+01	0.0000E+00	3.0436E+01	0.0000E+00
2.5985E+01	0.0000E+00	2.6304E+01	0.0000E+00	2.6813E+01	0.0000E+00	2.7356E+01	0.0000E+00	2.8728E+01	0.0000E+00	3.0383E+01	0.0000E+00
2.5947E+01	0.0000E+00	2.6265E+01	0.0000E+00	2.6772E+01	0.0000E+00	2.7314E+01	0.0000E+00	2.8682E+01	0.0000E+00	3.0331E+01	0.0000E+00
2.5910E+01	0.0000E+00	2.6226E+01	0.0000E+00	2.6732E+01	0.0000E+00	2.7272E+01	0.0000E+00	2.8635E+01	0.0000E+00	3.0278E+01	0.0000E+00
2.5872E+01	0.0000E+00	2.6188E+01	0.0000E+00	2.6692E+01	0.0000E+00	2.7231E+01	0.0000E+00	2.8589E+01	0.0000E+00	3.0226E+01	0.0000E+00
2.5835E+01	0.0000E+00	2.6150E+01	0.0000E+00	2.6653E+01	0.0000E+00	2.7189E+01	0.0000E+00	2.8543E+01	0.0000E+00	3.0175E+01	0.0000E+00
2.5798E+01	0.0000E+00	2.6112E+01	0.0000E+00	2.6613E+01	0.0000E+00	2.7148E+01	0.0000E+00	2.8497E+01	0.0000E+00	3.0123E+01	0.0000E+00
2.5761E+01	0.0000E+00	2.6074E+01	0.0000E+00	2.6573E+01	0.0000E+00	2.7106E+01	0.0000E+00	2.8452E+01	0.0000E+00	3.0071E+01	0.0000E+00
2.5724E+01	0.0000E+00	2.6036E+01	0.0000E+00	2.6534E+01	0.0000E+00	2.7065E+01	0.0000E+00	2.8406E+01	0.0000E+00	3.0020E+01	0.0000E+00
2.5687E+01	0.0000E+00	2.5998E+01	0.0000E+00	2.6495E+01	0.0000E+00	2.7024E+01	0.0000E+00	2.8361E+01	0.0000E+00	2.9969E+01	0.0000E+00

Arg 19	Curve 19	Flux Out (gm/yr)	Intake (mg/kg body wt./day)
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00

Arg 19	Curve 19	Flux Out (gm/yr)	Intake (mg/kg body wt./day)
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00

Arg 19	Curve 19	Flux Out (gm/yr)	Intake (mg/kg body wt./day)
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00

Arg 19	Curve 19	Flux Out (gm/yr)	Intake (mg/kg body wt./day)
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00

Arg 19	Curve 19	Flux Out (gm/yr)	Intake (mg/kg body wt./day)
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
9.4200E+02	0.0000E+00	0.0000E+00	0.0000E+00
5.4003E+02	0.0000E+00	0.0000E+00	0.0000E+00
4.1761E+02	0.0000E+00	0.0000E+00	0.0000E+00
3.5263E+02	0.0000E+00	0.0000E+00	0.0000E+00
3.1079E+02	0.0000E+00	0.0000E+00	0.0000E+00
2.8097E+02	0.0000E+00	0.0000E+00	0.0000E+00
2.5834E+02	0.0000E+00	0.0000E+00	0.0000E+00
2.4040E+02	0.0000E+00	0.0000E+00	0.0000E+00

Arg 19	Curve 19	Flux Out (gm/yr)	Intake (mg/kg body wt./day)
2.2572E+02	0.0000E+00	0.0000E+00	0.0000E+00
2.1343E+02	0.0000E+00	0.0000E+00	0.0000E+00
2.0294E+02	0.0000E+00	0.0000E+00	0.0000E+00
1.9384E+02	0.0000E+00	0.0000E+00	0.0000E+00
1.8586E+02	0.0000E+00	0.0000E+00	0.0000E+00
1.7878E+02	0.0000E+00	0.0000E+00	0.0000E+00
1.7245E+02	0.0000E+00	0.0000E+00	0.0000E+00
1.6673E+02	0.0000E+00	0.0000E+00	0.0000E+00
1.6155E+02	0.0000E+00	0.0000E+00	0.0000E+00
1.5681E+02	0.0000E+00	0.0000E+00	0.0000E+00
1.5246E+02	0.0000E+00	0.0000E+00	0.0000E+00
1.4845E+02	0.0000E+00	0.0000E+00	0.0000E+00
1.4473E+02	0.0000E+00	0.0000E+00	0.0000E+00
1.4128E+02	0.0000E+00	0.0000E+00	0.0000E+00
1.3806E+02	0.0000E+00	0.0000E+00	0.0000E+00
1.3505E+02	0.0000E+00	0.0000E+00	0.0000E+00
1.3222E+02	0.0000E+00	0.0000E+00	0.0000E+00
1.2956E+02	0.0000E+00	0.0000E+00	0.0000E+00
1.2705E+02	0.0000E+00	0.0000E+00	0.0000E+00
1.2467E+02	0.0000E+00	0.0000E+00	0.0000E+00
1.2243E+02	0.0000E+00	0.0000E+00	0.0000E+00
1.2029E+02	0.0000E+00	0.0000E+00	0.0000E+00
1.1827E+02	0.0000E+00	0.0000E+00	0.0000E+00
1.1633E+02	0.0000E+00	0.0000E+00	0.0000E+00
1.1449E+02	0.0000E+00	0.0000E+00	0.0000E+00
1.1273E+02	0.0000E+00	0.0000E+00	0.0000E+00
1.1105E+02	0.0000E+00	0.0000E+00	0.0000E+00
1.0944E+02	0.0000E+00	0.0000E+00	0.0000E+00
1.0789E+02	0.0000E+00	0.0000E+00	0.0000E+00
1.0641E+02	0.0000E+00	0.0000E+00	0.0000E+00
1.0499E+02	0.0000E+00	0.0000E+00	0.0000E+00
1.0361E+02	0.0000E+00	0.0000E+00	0.0000E+00
1.0229E+02	0.0000E+00	0.0000E+00	0.0000E+00
1.0102E+02	0.0000E+00	0.0000E+00	0.0000E+00
9.9792E+01	0.0000E+00	0.0000E+00	0.0000E+00
9.8606E+01	0.0000E+00	0.0000E+00	0.0000E+00
9.7459E+01	0.0000E+00	0.0000E+00	0.0000E+00
9.6351E+01	0.0000E+00	0.0000E+00	0.0000E+00
9.5278E+01	0.0000E+00	0.0000E+00	0.0000E+00
9.4238E+01	0.0000E+00	0.0000E+00	0.0000E+00
9.3231E+01	0.0000E+00	0.0000E+00	0.0000E+00
9.2254E+01	0.0000E+00	0.0000E+00	0.0000E+00
9.1306E+01	0.0000E+00	0.0000E+00	0.0000E+00
9.0385E+01	0.0000E+00	0.0000E+00	0.0000E+00
8.9491E+01	0.0000E+00	0.0000E+00	0.0000E+00
8.8622E+01	0.0000E+00	0.0000E+00	0.0000E+00
8.7776E+01	0.0000E+00	0.0000E+00	0.0000E+00
8.6953E+01	0.0000E+00	0.0000E+00	0.0000E+00
8.6152E+01	0.0000E+00	0.0000E+00	0.0000E+00
8.5371E+01	0.0000E+00	0.0000E+00	0.0000E+00
8.4610E+01	0.0000E+00	0.0000E+00	0.0000E+00
8.3869E+01	0.0000E+00	0.0000E+00	0.0000E+00

Arg 19	Curve 19	Flux Out (gm/yr)	Intake (mg/kg body wt./day)
8.3145E+01	0.0000E+00	0.0000E+00	0.0000E+00
8.2439E+01	0.0000E+00	0.0000E+00	0.0000E+00
8.1750E+01	0.0000E+00	0.0000E+00	0.0000E+00
8.1077E+01	0.0000E+00	0.0000E+00	0.0000E+00
8.0420E+01	0.0000E+00	0.0000E+00	0.0000E+00
7.9777E+01	0.0000E+00	0.0000E+00	0.0000E+00
7.9149E+01	0.0000E+00	0.0000E+00	0.0000E+00
7.8534E+01	0.0000E+00	0.0000E+00	0.0000E+00
7.7933E+01	0.0000E+00	0.0000E+00	0.0000E+00
7.7345E+01	0.0000E+00	0.0000E+00	0.0000E+00
7.6769E+01	0.0000E+00	0.0000E+00	0.0000E+00
7.6205E+01	0.0000E+00	0.0000E+00	0.0000E+00
7.5653E+01	0.0000E+00	0.0000E+00	0.0000E+00
7.5112E+01	0.0000E+00	0.0000E+00	0.0000E+00
7.4581E+01	0.0000E+00	0.0000E+00	0.0000E+00
7.4061E+01	0.0000E+00	0.0000E+00	0.0000E+00
7.3551E+01	0.0000E+00	0.0000E+00	0.0000E+00
7.3051E+01	0.0000E+00	0.0000E+00	0.0000E+00
7.2560E+01	0.0000E+00	0.0000E+00	0.0000E+00
7.2078E+01	0.0000E+00	0.0000E+00	0.0000E+00
7.1606E+01	0.0000E+00	0.0000E+00	0.0000E+00
7.1141E+01	0.0000E+00	0.0000E+00	0.0000E+00
7.0686E+01	0.0000E+00	0.0000E+00	0.0000E+00
7.0238E+01	0.0000E+00	0.0000E+00	0.0000E+00
6.9798E+01	0.0000E+00	0.0000E+00	0.0000E+00
6.9365E+01	0.0000E+00	0.0000E+00	0.0000E+00
6.8940E+01	0.0000E+00	0.0000E+00	0.0000E+00
6.8523E+01	0.0000E+00	0.0000E+00	0.0000E+00
6.8112E+01	0.0000E+00	0.0000E+00	0.0000E+00
6.7708E+01	0.0000E+00	0.0000E+00	0.0000E+00
6.7310E+01	0.0000E+00	0.0000E+00	0.0000E+00
6.6919E+01	0.0000E+00	0.0000E+00	0.0000E+00
6.6534E+01	0.0000E+00	0.0000E+00	0.0000E+00
6.6156E+01	0.0000E+00	0.0000E+00	0.0000E+00
6.5783E+01	0.0000E+00	0.0000E+00	0.0000E+00
6.5416E+01	0.0000E+00	0.0000E+00	0.0000E+00
6.5054E+01	0.0000E+00	0.0000E+00	0.0000E+00
6.4698E+01	0.0000E+00	0.0000E+00	0.0000E+00
6.4347E+01	0.0000E+00	0.0000E+00	0.0000E+00
6.4002E+01	0.0000E+00	0.0000E+00	0.0000E+00
6.3662E+01	0.0000E+00	0.0000E+00	0.0000E+00
6.3326E+01	0.0000E+00	0.0000E+00	0.0000E+00
6.2995E+01	0.0000E+00	0.0000E+00	0.0000E+00
6.2669E+01	0.0000E+00	0.0000E+00	0.0000E+00
6.2348E+01	0.0000E+00	0.0000E+00	0.0000E+00
6.2031E+01	0.0000E+00	0.0000E+00	0.0000E+00
6.1719E+01	0.0000E+00	0.0000E+00	0.0000E+00
6.1410E+01	0.0000E+00	0.0000E+00	0.0000E+00
6.1106E+01	0.0000E+00	0.0000E+00	0.0000E+00
6.0806E+01	0.0000E+00	0.0000E+00	0.0000E+00
6.0510E+01	0.0000E+00	0.0000E+00	0.0000E+00
6.0218E+01	0.0000E+00	0.0000E+00	0.0000E+00

Arg 19	Curve 19	Flux Out (gm/yr)	Intake (mg/kg body wt./day)
5.9930E+01	0.0000E+00	0.0000E+00	0.0000E+00
5.9646E+01	0.0000E+00	0.0000E+00	0.0000E+00
5.9365E+01	0.0000E+00	0.0000E+00	0.0000E+00
5.9087E+01	0.0000E+00	0.0000E+00	0.0000E+00
5.8813E+01	0.0000E+00	0.0000E+00	0.0000E+00
5.8543E+01	0.0000E+00	0.0000E+00	0.0000E+00
5.8276E+01	0.0000E+00	0.0000E+00	0.0000E+00
5.8012E+01	0.0000E+00	0.0000E+00	0.0000E+00
5.7752E+01	0.0000E+00	0.0000E+00	0.0000E+00
5.7494E+01	0.0000E+00	0.0000E+00	0.0000E+00
5.7240E+01	0.0000E+00	0.0000E+00	0.0000E+00
5.6989E+01	0.0000E+00	0.0000E+00	0.0000E+00
5.6740E+01	0.0000E+00	0.0000E+00	0.0000E+00
5.6495E+01	0.0000E+00	0.0000E+00	0.0000E+00
5.6252E+01	0.0000E+00	0.0000E+00	0.0000E+00
5.6012E+01	0.0000E+00	0.0000E+00	0.0000E+00
5.5775E+01	0.0000E+00	0.0000E+00	0.0000E+00
5.5541E+01	0.0000E+00	0.0000E+00	0.0000E+00
5.5309E+01	0.0000E+00	0.0000E+00	0.0000E+00
5.5080E+01	0.0000E+00	0.0000E+00	0.0000E+00
5.4853E+01	0.0000E+00	0.0000E+00	0.0000E+00
5.4629E+01	0.0000E+00	0.0000E+00	0.0000E+00
5.4407E+01	0.0000E+00	0.0000E+00	0.0000E+00
5.4188E+01	0.0000E+00	0.0000E+00	0.0000E+00
5.3970E+01	0.0000E+00	0.0000E+00	0.0000E+00
5.3756E+01	0.0000E+00	0.0000E+00	0.0000E+00
5.3543E+01	0.0000E+00	0.0000E+00	0.0000E+00
5.3333E+01	0.0000E+00	0.0000E+00	0.0000E+00
5.3125E+01	0.0000E+00	0.0000E+00	0.0000E+00
5.2919E+01	0.0000E+00	0.0000E+00	0.0000E+00
5.2715E+01	0.0000E+00	0.0000E+00	0.0000E+00
5.2514E+01	0.0000E+00	0.0000E+00	0.0000E+00
5.2314E+01	0.0000E+00	0.0000E+00	0.0000E+00
5.2116E+01	0.0000E+00	0.0000E+00	0.0000E+00
5.1920E+01	0.0000E+00	0.0000E+00	0.0000E+00
5.1727E+01	0.0000E+00	0.0000E+00	0.0000E+00
5.1535E+01	0.0000E+00	0.0000E+00	0.0000E+00
5.1345E+01	0.0000E+00	0.0000E+00	0.0000E+00
5.1157E+01	0.0000E+00	0.0000E+00	0.0000E+00
5.0970E+01	0.0000E+00	0.0000E+00	0.0000E+00
5.0786E+01	0.0000E+00	0.0000E+00	0.0000E+00
5.0603E+01	0.0000E+00	0.0000E+00	0.0000E+00
5.0422E+01	0.0000E+00	0.0000E+00	0.0000E+00
5.0242E+01	0.0000E+00	0.0000E+00	0.0000E+00
5.0064E+01	0.0000E+00	0.0000E+00	0.0000E+00
4.9888E+01	0.0000E+00	0.0000E+00	0.0000E+00
4.9714E+01	0.0000E+00	0.0000E+00	0.0000E+00
4.9541E+01	0.0000E+00	0.0000E+00	0.0000E+00
4.9370E+01	0.0000E+00	0.0000E+00	0.0000E+00
4.9200E+01	0.0000E+00	0.0000E+00	0.0000E+00
4.9031E+01	0.0000E+00	0.0000E+00	0.0000E+00
4.8865E+01	0.0000E+00	0.0000E+00	0.0000E+00

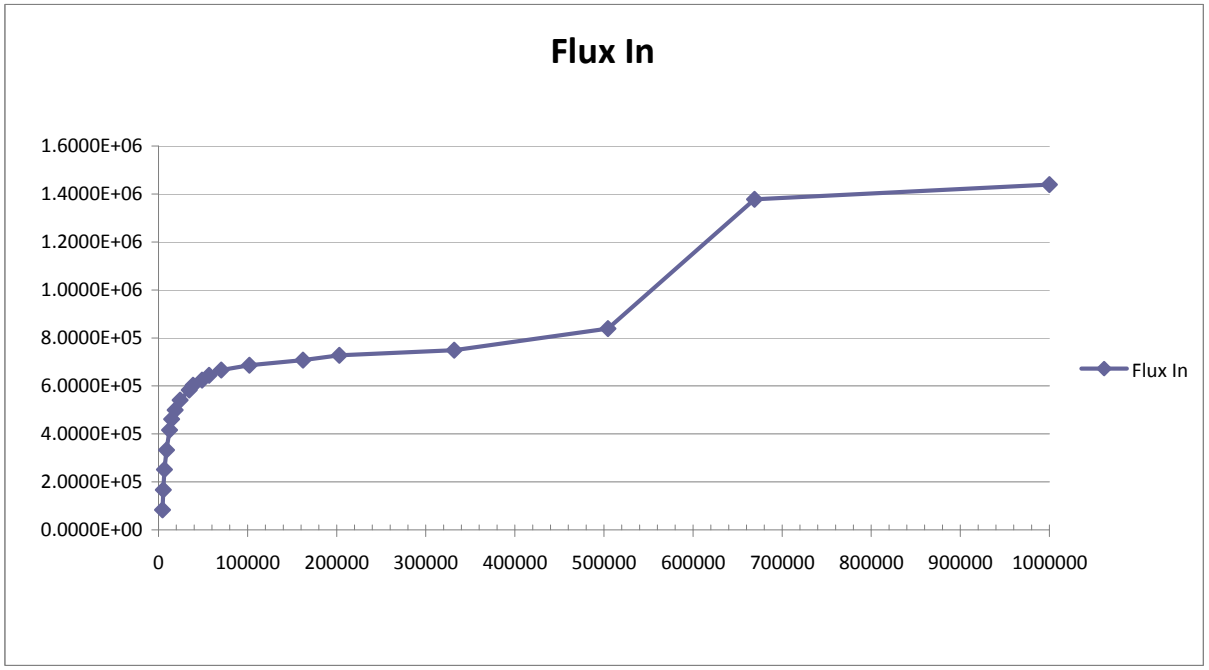
Arg 19	Curve 19	Flux Out (gm/yr)	Intake (mg/kg body wt./day)
4.8699E+01	0.0000E+00	0.0000E+00	0.0000E+00
4.8536E+01	0.0000E+00	0.0000E+00	0.0000E+00
4.8373E+01	0.0000E+00	0.0000E+00	0.0000E+00
4.8212E+01	0.0000E+00	0.0000E+00	0.0000E+00
4.8052E+01	0.0000E+00	0.0000E+00	0.0000E+00
4.7894E+01	0.0000E+00	0.0000E+00	0.0000E+00
4.7737E+01	0.0000E+00	0.0000E+00	0.0000E+00
4.7582E+01	0.0000E+00	0.0000E+00	0.0000E+00
4.7427E+01	0.0000E+00	0.0000E+00	0.0000E+00
4.7274E+01	0.0000E+00	0.0000E+00	0.0000E+00
4.7123E+01	0.0000E+00	0.0000E+00	0.0000E+00
4.6972E+01	0.0000E+00	0.0000E+00	0.0000E+00
4.6823E+01	0.0000E+00	0.0000E+00	0.0000E+00
4.6675E+01	0.0000E+00	0.0000E+00	0.0000E+00
4.6528E+01	0.0000E+00	0.0000E+00	0.0000E+00
4.6382E+01	0.0000E+00	0.0000E+00	0.0000E+00
4.6238E+01	0.0000E+00	0.0000E+00	0.0000E+00
4.6095E+01	0.0000E+00	0.0000E+00	0.0000E+00
4.5952E+01	0.0000E+00	0.0000E+00	0.0000E+00
4.5811E+01	0.0000E+00	0.0000E+00	0.0000E+00
4.5671E+01	0.0000E+00	0.0000E+00	0.0000E+00
4.5533E+01	0.0000E+00	0.0000E+00	0.0000E+00
4.5395E+01	0.0000E+00	0.0000E+00	0.0000E+00
4.5258E+01	0.0000E+00	0.0000E+00	0.0000E+00
4.5122E+01	0.0000E+00	0.0000E+00	0.0000E+00
4.4988E+01	0.0000E+00	0.0000E+00	0.0000E+00
4.4854E+01	0.0000E+00	0.0000E+00	0.0000E+00
4.4722E+01	0.0000E+00	0.0000E+00	0.0000E+00
4.4590E+01	0.0000E+00	0.0000E+00	0.0000E+00
4.4459E+01	0.0000E+00	0.0000E+00	0.0000E+00
4.4330E+01	0.0000E+00	0.0000E+00	0.0000E+00
4.4201E+01	0.0000E+00	0.0000E+00	0.0000E+00
4.4073E+01	0.0000E+00	0.0000E+00	0.0000E+00
4.3946E+01	0.0000E+00	0.0000E+00	0.0000E+00
4.3820E+01	0.0000E+00	0.0000E+00	0.0000E+00
4.3695E+01	0.0000E+00	0.0000E+00	0.0000E+00
4.3571E+01	0.0000E+00	0.0000E+00	0.0000E+00
4.3448E+01	0.0000E+00	0.0000E+00	0.0000E+00
4.3326E+01	0.0000E+00	0.0000E+00	0.0000E+00
4.3204E+01	0.0000E+00	0.0000E+00	0.0000E+00
4.3084E+01	0.0000E+00	0.0000E+00	0.0000E+00
4.2964E+01	0.0000E+00	0.0000E+00	0.0000E+00
4.2845E+01	0.0000E+00	0.0000E+00	0.0000E+00
4.2727E+01	0.0000E+00	0.0000E+00	0.0000E+00
4.2610E+01	0.0000E+00	0.0000E+00	0.0000E+00
4.2493E+01	0.0000E+00	0.0000E+00	0.0000E+00
4.2377E+01	0.0000E+00	0.0000E+00	0.0000E+00
4.2262E+01	0.0000E+00	0.0000E+00	0.0000E+00
4.2148E+01	0.0000E+00	0.0000E+00	0.0000E+00
4.2035E+01	0.0000E+00	0.0000E+00	0.0000E+00
4.1922E+01	0.0000E+00	0.0000E+00	0.0000E+00
4.1811E+01	0.0000E+00	0.0000E+00	0.0000E+00

Arg 19	Curve 19	Flux Out (gm/yr)	Intake (mg/kg body wt./day)
4.1699E+01	0.0000E+00	0.0000E+00	0.0000E+00
4.1589E+01	0.0000E+00	0.0000E+00	0.0000E+00
4.1479E+01	0.0000E+00	0.0000E+00	0.0000E+00
4.1370E+01	0.0000E+00	0.0000E+00	0.0000E+00
4.1262E+01	0.0000E+00	0.0000E+00	0.0000E+00
4.1155E+01	0.0000E+00	0.0000E+00	0.0000E+00
4.1048E+01	0.0000E+00	0.0000E+00	0.0000E+00
4.0942E+01	0.0000E+00	0.0000E+00	0.0000E+00
4.0836E+01	0.0000E+00	0.0000E+00	0.0000E+00
4.0732E+01	0.0000E+00	0.0000E+00	0.0000E+00
4.0627E+01	0.0000E+00	0.0000E+00	0.0000E+00
4.0524E+01	0.0000E+00	0.0000E+00	0.0000E+00
4.0421E+01	0.0000E+00	0.0000E+00	0.0000E+00
4.0319E+01	0.0000E+00	0.0000E+00	0.0000E+00
4.0217E+01	0.0000E+00	0.0000E+00	0.0000E+00
4.0117E+01	0.0000E+00	0.0000E+00	0.0000E+00
4.0016E+01	0.0000E+00	0.0000E+00	0.0000E+00
3.9917E+01	0.0000E+00	0.0000E+00	0.0000E+00
3.9817E+01	0.0000E+00	0.0000E+00	0.0000E+00
3.9719E+01	0.0000E+00	0.0000E+00	0.0000E+00
3.9621E+01	0.0000E+00	0.0000E+00	0.0000E+00
3.9524E+01	0.0000E+00	0.0000E+00	0.0000E+00
3.9427E+01	0.0000E+00	0.0000E+00	0.0000E+00
3.9331E+01	0.0000E+00	0.0000E+00	0.0000E+00
3.9236E+01	0.0000E+00	0.0000E+00	0.0000E+00
3.9141E+01	0.0000E+00	0.0000E+00	0.0000E+00
3.9046E+01	0.0000E+00	0.0000E+00	0.0000E+00
3.8952E+01	0.0000E+00	0.0000E+00	0.0000E+00
3.8859E+01	0.0000E+00	0.0000E+00	0.0000E+00
3.8766E+01	0.0000E+00	0.0000E+00	0.0000E+00
3.8674E+01	0.0000E+00	0.0000E+00	0.0000E+00
3.8582E+01	0.0000E+00	0.0000E+00	0.0000E+00
3.8491E+01	0.0000E+00	0.0000E+00	0.0000E+00

Combined TSPA Case, No Pumping, Present Climate
Non-Radiologic Metals Transport from 18 km to Furnace Creek Springs
Contaminant: Nickel
Oral Ref dose =2E-02 mg/kg body wt./day
Flow Rate of Discharge for Springs 2294 acre-ft/yr 2.8285E+09 liters/yr

Input Curve

Time (yr)	18 km Flux	Flux In	Del R
4500	8.3250E+04	8.3250E+04	
5450	1.6650E+05	1.6650E+05	8.3250E+04
6670	2.5142E+05	2.5142E+05	8.4915E+04
9010	3.3300E+05	3.3300E+05	8.1585E+04
12440	4.1625E+05	4.1625E+05	8.3250E+04
14700	4.6121E+05	4.6121E+05	4.4955E+04
18600	4.9950E+05	4.9950E+05	3.8295E+04
24290	5.4113E+05	5.4113E+05	4.1625E+04
34490	5.8275E+05	5.8275E+05	4.1625E+04
38830	6.0273E+05	6.0273E+05	1.9980E+04
48770	6.2438E+05	6.2438E+05	2.1645E+04
56800	6.4436E+05	6.4436E+05	1.9980E+04
70380	6.6600E+05	6.6600E+05	2.1645E+04
101940	6.8598E+05	6.8598E+05	1.9980E+04
162170	7.0763E+05	7.0763E+05	2.1645E+04
202990	7.2761E+05	7.2761E+05	1.9980E+04
331880	7.4925E+05	7.4925E+05	2.1645E+04
504500	8.3924E+05	8.3924E+05	8.9987E+04
668970	1.3776E+06	1.3776E+06	5.3837E+05
1000000	1.4394E+06	1.4394E+06	6.1795E+04



Output Curve

4.61E-04		specific discharge (m/day)
1.5297E-03	v	groundwater velocity (km/yr)
5.6000E+01	L	path length (km)
1.0000E-01	D	Dispersion Coefficient (km)
1.5297E-04	Disp	Dispersivity (sq km/yr)
3.1736E+02	K	Retardation Factor (no units)
1.1618E+07	td	arrival time of the mid-point =TL (yr)
1.5000E+01	Kd	distribution coefficient =Kd (mL/gm)
1.1000E-01	ε	porosity
2.3200E+00	ρ	bulk density of solid (gm/mL)
0.0000E+00	λ	decay constant (1/yr)
NA	t1/2	halflife (yr)

Note: When λ is set to zero this is either a stable contaminant or a member of a decay chain. Decay and growth of radionuclides in decay chain members is adjusted in a separate work sheet.

Composite Curves

Time (yrs)	Arg 1	Curve 1	Arg 2	Curve 2	Arg 3	Curve 3	Arg 4	Curve 4	Arg 5	Curve 5	Arg 6
250	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
2000	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
4000	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
6000	1.0412E+03	0.0000E+00	1.7196E+03	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
8000	6.8151E+02	0.0000E+00	7.9849E+02	0.0000E+00	1.1058E+03	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
10000	5.4356E+02	0.0000E+00	5.9767E+02	0.0000E+00	6.9870E+02	0.0000E+00	1.2817E+03	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
12000	4.6540E+02	0.0000E+00	4.9805E+02	0.0000E+00	5.5217E+02	0.0000E+00	7.3738E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
14000	4.1345E+02	0.0000E+00	4.3585E+02	0.0000E+00	4.7077E+02	0.0000E+00	5.7069E+02	0.0000E+00	1.0210E+03	0.0000E+00	0.0000E+00
16000	3.7571E+02	0.0000E+00	3.9230E+02	0.0000E+00	4.1720E+02	0.0000E+00	4.8210E+02	0.0000E+00	6.7574E+02	0.0000E+00	1.1184E+03
18000	3.4671E+02	0.0000E+00	3.5962E+02	0.0000E+00	3.7853E+02	0.0000E+00	4.2503E+02	0.0000E+00	5.4062E+02	0.0000E+00	7.0187E+02
20000	3.2351E+02	0.0000E+00	3.3393E+02	0.0000E+00	3.4892E+02	0.0000E+00	3.8435E+02	0.0000E+00	4.6355E+02	0.0000E+00	5.5373E+02
22000	3.0441E+02	0.0000E+00	3.1305E+02	0.0000E+00	3.2531E+02	0.0000E+00	3.5346E+02	0.0000E+00	4.1214E+02	0.0000E+00	4.7174E+02
24000	2.8833E+02	0.0000E+00	2.9564E+02	0.0000E+00	3.0591E+02	0.0000E+00	3.2898E+02	0.0000E+00	3.7474E+02	0.0000E+00	4.1788E+02
26000	2.7454E+02	0.0000E+00	2.8084E+02	0.0000E+00	2.8960E+02	0.0000E+00	3.0896E+02	0.0000E+00	3.4594E+02	0.0000E+00	3.7903E+02
28000	2.6256E+02	0.0000E+00	2.6805E+02	0.0000E+00	2.7564E+02	0.0000E+00	2.9219E+02	0.0000E+00	3.2289E+02	0.0000E+00	3.4931E+02
30000	2.5201E+02	0.0000E+00	2.5686E+02	0.0000E+00	2.6352E+02	0.0000E+00	2.7787E+02	0.0000E+00	3.0389E+02	0.0000E+00	3.2563E+02
32000	2.4263E+02	0.0000E+00	2.4695E+02	0.0000E+00	2.5285E+02	0.0000E+00	2.6546E+02	0.0000E+00	2.8789E+02	0.0000E+00	3.0617E+02
34000	2.3422E+02	0.0000E+00	2.3810E+02	0.0000E+00	2.4338E+02	0.0000E+00	2.5458E+02	0.0000E+00	2.7416E+02	0.0000E+00	2.8982E+02
36000	2.2662E+02	0.0000E+00	2.3014E+02	0.0000E+00	2.3490E+02	0.0000E+00	2.4492E+02	0.0000E+00	2.6222E+02	0.0000E+00	2.7583E+02
38000	2.1971E+02	0.0000E+00	2.2292E+02	0.0000E+00	2.2724E+02	0.0000E+00	2.3628E+02	0.0000E+00	2.5171E+02	0.0000E+00	2.6369E+02
40000	2.1340E+02	0.0000E+00	2.1633E+02	0.0000E+00	2.2028E+02	0.0000E+00	2.2849E+02	0.0000E+00	2.4236E+02	0.0000E+00	2.5300E+02
42000	2.0759E+02	0.0000E+00	2.1029E+02	0.0000E+00	2.1392E+02	0.0000E+00	2.2142E+02	0.0000E+00	2.3398E+02	0.0000E+00	2.4352E+02
44000	2.0224E+02	0.0000E+00	2.0473E+02	0.0000E+00	2.0807E+02	0.0000E+00	2.1496E+02	0.0000E+00	2.2641E+02	0.0000E+00	2.3502E+02
46000	1.9727E+02	0.0000E+00	1.9958E+02	0.0000E+00	2.0268E+02	0.0000E+00	2.0903E+02	0.0000E+00	2.1952E+02	0.0000E+00	2.2735E+02
48000	1.9265E+02	0.0000E+00	1.9480E+02	0.0000E+00	1.9768E+02	0.0000E+00	2.0356E+02	0.0000E+00	2.1322E+02	0.0000E+00	2.2038E+02
50000	1.8833E+02	0.0000E+00	1.9035E+02	0.0000E+00	1.9303E+02	0.0000E+00	1.9850E+02	0.0000E+00	2.0743E+02	0.0000E+00	2.1401E+02
52000	1.8429E+02	0.0000E+00	1.8618E+02	0.0000E+00	1.8869E+02	0.0000E+00	1.9379E+02	0.0000E+00	2.0208E+02	0.0000E+00	2.0815E+02
54000	1.8050E+02	0.0000E+00	1.8227E+02	0.0000E+00	1.8463E+02	0.0000E+00	1.8941E+02	0.0000E+00	1.9713E+02	0.0000E+00	2.0275E+02
56000	1.7693E+02	0.0000E+00	1.7860E+02	0.0000E+00	1.8081E+02	0.0000E+00	1.8530E+02	0.0000E+00	1.9251E+02	0.0000E+00	1.9775E+02
58000	1.7356E+02	0.0000E+00	1.7514E+02	0.0000E+00	1.7723E+02	0.0000E+00	1.8145E+02	0.0000E+00	1.8821E+02	0.0000E+00	1.9309E+02
60000	1.7038E+02	0.0000E+00	1.7187E+02	0.0000E+00	1.7384E+02	0.0000E+00	1.7782E+02	0.0000E+00	1.8418E+02	0.0000E+00	1.8875E+02
62000	1.6736E+02	0.0000E+00	1.6877E+02	0.0000E+00	1.7064E+02	0.0000E+00	1.7440E+02	0.0000E+00	1.8039E+02	0.0000E+00	1.8469E+02
64000	1.6449E+02	0.0000E+00	1.6584E+02	0.0000E+00	1.6761E+02	0.0000E+00	1.7117E+02	0.0000E+00	1.7683E+02	0.0000E+00	1.8087E+02
66000	1.6177E+02	0.0000E+00	1.6305E+02	0.0000E+00	1.6473E+02	0.0000E+00	1.6811E+02	0.0000E+00	1.7346E+02	0.0000E+00	1.7728E+02
68000	1.5917E+02	0.0000E+00	1.6039E+02	0.0000E+00	1.6199E+02	0.0000E+00	1.6521E+02	0.0000E+00	1.7028E+02	0.0000E+00	1.7389E+02
70000	1.5670E+02	0.0000E+00	1.5786E+02	0.0000E+00	1.5939E+02	0.0000E+00	1.6245E+02	0.0000E+00	1.6727E+02	0.0000E+00	1.7069E+02
72000	1.5433E+02	0.0000E+00	1.5544E+02	0.0000E+00	1.5690E+02	0.0000E+00	1.5982E+02	0.0000E+00	1.6441E+02	0.0000E+00	1.6765E+02
74000	1.5207E+02	0.0000E+00	1.5313E+02	0.0000E+00	1.5453E+02	0.0000E+00	1.5732E+02	0.0000E+00	1.6169E+02	0.0000E+00	1.6477E+02
76000	1.4990E+02	0.0000E+00	1.5092E+02	0.0000E+00	1.5226E+02	0.0000E+00	1.5492E+02	0.0000E+00	1.5910E+02	0.0000E+00	1.6203E+02
78000	1.4782E+02	0.0000E+00	1.4880E+02	0.0000E+00	1.5008E+02	0.0000E+00	1.5264E+02	0.0000E+00	1.5662E+02	0.0000E+00	1.5943E+02
80000	1.4582E+02	0.0000E+00	1.4676E+02	0.0000E+00	1.4799E+02	0.0000E+00	1.5044E+02	0.0000E+00	1.5426E+02	0.0000E+00	1.5694E+02
82000	1.4391E+02	0.0000E+00	1.4481E+02	0.0000E+00	1.4599E+02	0.0000E+00	1.4834E+02	0.0000E+00	1.5200E+02	0.0000E+00	1.5456E+02
84000	1.4206E+02	0.0000E+00	1.4293E+02	0.0000E+00	1.4407E+02	0.0000E+00	1.4633E+02	0.0000E+00	1.4984E+02	0.0000E+00	1.5229E+02
86000	1.4028E+02	0.0000E+00	1.4112E+02	0.0000E+00	1.4221E+02	0.0000E+00	1.4439E+02	0.0000E+00	1.4776E+02	0.0000E+00	1.5011E+02
88000	1.3857E+02	0.0000E+00	1.3937E+02	0.0000E+00	1.4043E+02	0.0000E+00	1.4252E+02	0.0000E+00	1.4577E+02	0.0000E+00	1.4803E+02
90000	1.3691E+02	0.0000E+00	1.3769E+02	0.0000E+00	1.3871E+02	0.0000E+00	1.4073E+02	0.0000E+00	1.4385E+02	0.0000E+00	1.4602E+02
92000	1.3532E+02	0.0000E+00	1.3607E+02	0.0000E+00	1.3705E+02	0.0000E+00	1.3900E+02	0.0000E+00	1.4201E+02	0.0000E+00	1.4409E+02
94000	1.3377E+02	0.0000E+00	1.3450E+02	0.0000E+00	1.3545E+02	0.0000E+00	1.3733E+02	0.0000E+00	1.4023E+02	0.0000E+00	1.4224E+02
96000	1.3228E+02	0.0000E+00	1.3298E+02	0.0000E+00	1.3390E+02	0.0000E+00	1.3572E+02	0.0000E+00	1.3852E+02	0.0000E+00	1.4046E+02
98000	1.3083E+02	0.0000E+00	1.3151E+02	0.0000E+00	1.3240E+02	0.0000E+00	1.3416E+02	0.0000E+00	1.3686E+02	0.0000E+00	1.3874E+02
100000	1.2943E+02	0.0000E+00	1.3009E+02	0.0000E+00	1.3096E+02	0.0000E+00	1.3266E+02	0.0000E+00	1.3527E+02	0.0000E+00	1.3708E+02
102000	1.2808E+02	0.0000E+00	1.2872E+02	0.0000E+00	1.2955E+02	0.0000E+00	1.3120E+02	0.0000E+00	1.3373E+02	0.0000E+00	1.3547E+02

Time (yrs)	Arg 1	Curve 1	Arg 2	Curve 2	Arg 3	Curve 3	Arg 4	Curve 4	Arg 5	Curve 5	Arg 6
104000	1.2676E+02	0.0000E+00	1.2738E+02	0.0000E+00	1.2819E+02	0.0000E+00	1.2979E+02	0.0000E+00	1.3224E+02	0.0000E+00	1.3392E+02
106000	1.2549E+02	0.0000E+00	1.2609E+02	0.0000E+00	1.2687E+02	0.0000E+00	1.2842E+02	0.0000E+00	1.3079E+02	0.0000E+00	1.3243E+02
108000	1.2425E+02	0.0000E+00	1.2483E+02	0.0000E+00	1.2559E+02	0.0000E+00	1.2709E+02	0.0000E+00	1.2939E+02	0.0000E+00	1.3098E+02
110000	1.2304E+02	0.0000E+00	1.2361E+02	0.0000E+00	1.2435E+02	0.0000E+00	1.2581E+02	0.0000E+00	1.2804E+02	0.0000E+00	1.2957E+02
112000	1.2187E+02	0.0000E+00	1.2242E+02	0.0000E+00	1.2314E+02	0.0000E+00	1.2456E+02	0.0000E+00	1.2672E+02	0.0000E+00	1.2821E+02
114000	1.2073E+02	0.0000E+00	1.2127E+02	0.0000E+00	1.2197E+02	0.0000E+00	1.2334E+02	0.0000E+00	1.2545E+02	0.0000E+00	1.2689E+02
116000	1.1962E+02	0.0000E+00	1.2014E+02	0.0000E+00	1.2083E+02	0.0000E+00	1.2216E+02	0.0000E+00	1.2421E+02	0.0000E+00	1.2561E+02
118000	1.1854E+02	0.0000E+00	1.1905E+02	0.0000E+00	1.1971E+02	0.0000E+00	1.2102E+02	0.0000E+00	1.2300E+02	0.0000E+00	1.2437E+02
120000	1.1749E+02	0.0000E+00	1.1799E+02	0.0000E+00	1.1863E+02	0.0000E+00	1.1990E+02	0.0000E+00	1.2183E+02	0.0000E+00	1.2316E+02
122000	1.1647E+02	0.0000E+00	1.1695E+02	0.0000E+00	1.1758E+02	0.0000E+00	1.1882E+02	0.0000E+00	1.2070E+02	0.0000E+00	1.2199E+02
124000	1.1547E+02	0.0000E+00	1.1594E+02	0.0000E+00	1.1655E+02	0.0000E+00	1.1776E+02	0.0000E+00	1.1959E+02	0.0000E+00	1.2084E+02
126000	1.1449E+02	0.0000E+00	1.1495E+02	0.0000E+00	1.1555E+02	0.0000E+00	1.1673E+02	0.0000E+00	1.1851E+02	0.0000E+00	1.1973E+02
128000	1.1354E+02	0.0000E+00	1.1399E+02	0.0000E+00	1.1458E+02	0.0000E+00	1.1572E+02	0.0000E+00	1.1746E+02	0.0000E+00	1.1865E+02
130000	1.1262E+02	0.0000E+00	1.1305E+02	0.0000E+00	1.1362E+02	0.0000E+00	1.1474E+02	0.0000E+00	1.1644E+02	0.0000E+00	1.1760E+02
132000	1.1171E+02	0.0000E+00	1.1214E+02	0.0000E+00	1.1269E+02	0.0000E+00	1.1378E+02	0.0000E+00	1.1544E+02	0.0000E+00	1.1657E+02
134000	1.1082E+02	0.0000E+00	1.1124E+02	0.0000E+00	1.1179E+02	0.0000E+00	1.1285E+02	0.0000E+00	1.1447E+02	0.0000E+00	1.1557E+02
136000	1.0996E+02	0.0000E+00	1.1037E+02	0.0000E+00	1.1090E+02	0.0000E+00	1.1194E+02	0.0000E+00	1.1352E+02	0.0000E+00	1.1459E+02
138000	1.0911E+02	0.0000E+00	1.0951E+02	0.0000E+00	1.1003E+02	0.0000E+00	1.1105E+02	0.0000E+00	1.1259E+02	0.0000E+00	1.1364E+02
140000	1.0829E+02	0.0000E+00	1.0868E+02	0.0000E+00	1.0918E+02	0.0000E+00	1.1018E+02	0.0000E+00	1.1168E+02	0.0000E+00	1.1271E+02
142000	1.0748E+02	0.0000E+00	1.0786E+02	0.0000E+00	1.0836E+02	0.0000E+00	1.0933E+02	0.0000E+00	1.1080E+02	0.0000E+00	1.1180E+02
144000	1.0668E+02	0.0000E+00	1.0706E+02	0.0000E+00	1.0754E+02	0.0000E+00	1.0850E+02	0.0000E+00	1.0993E+02	0.0000E+00	1.1091E+02
146000	1.0591E+02	0.0000E+00	1.0628E+02	0.0000E+00	1.0675E+02	0.0000E+00	1.0768E+02	0.0000E+00	1.0909E+02	0.0000E+00	1.1004E+02
148000	1.0515E+02	0.0000E+00	1.0551E+02	0.0000E+00	1.0598E+02	0.0000E+00	1.0689E+02	0.0000E+00	1.0826E+02	0.0000E+00	1.0920E+02
150000	1.0441E+02	0.0000E+00	1.0476E+02	0.0000E+00	1.0521E+02	0.0000E+00	1.0611E+02	0.0000E+00	1.0745E+02	0.0000E+00	1.0837E+02
152000	1.0368E+02	0.0000E+00	1.0402E+02	0.0000E+00	1.0447E+02	0.0000E+00	1.0534E+02	0.0000E+00	1.0666E+02	0.0000E+00	1.0756E+02
154000	1.0297E+02	0.0000E+00	1.0330E+02	0.0000E+00	1.0374E+02	0.0000E+00	1.0460E+02	0.0000E+00	1.0589E+02	0.0000E+00	1.0676E+02
156000	1.0227E+02	0.0000E+00	1.0260E+02	0.0000E+00	1.0303E+02	0.0000E+00	1.0386E+02	0.0000E+00	1.0513E+02	0.0000E+00	1.0599E+02
158000	1.0158E+02	0.0000E+00	1.0190E+02	0.0000E+00	1.0232E+02	0.0000E+00	1.0315E+02	0.0000E+00	1.0439E+02	0.0000E+00	1.0523E+02
160000	1.0091E+02	0.0000E+00	1.0122E+02	0.0000E+00	1.0164E+02	0.0000E+00	1.0244E+02	0.0000E+00	1.0366E+02	0.0000E+00	1.0448E+02
162000	1.0025E+02	0.0000E+00	1.0056E+02	0.0000E+00	1.0096E+02	0.0000E+00	1.0175E+02	0.0000E+00	1.0294E+02	0.0000E+00	1.0375E+02
164000	9.9598E+01	0.0000E+00	9.9905E+01	0.0000E+00	1.0030E+02	0.0000E+00	1.0108E+02	0.0000E+00	1.0224E+02	0.0000E+00	1.0304E+02
166000	9.8962E+01	0.0000E+00	9.9263E+01	0.0000E+00	9.9653E+01	0.0000E+00	1.0041E+02	0.0000E+00	1.0156E+02	0.0000E+00	1.0233E+02
168000	9.8338E+01	0.0000E+00	9.8633E+01	0.0000E+00	9.9016E+01	0.0000E+00	9.9762E+01	0.0000E+00	1.0089E+02	0.0000E+00	1.0165E+02
170000	9.7725E+01	0.0000E+00	9.8015E+01	0.0000E+00	9.8391E+01	0.0000E+00	9.9124E+01	0.0000E+00	1.0023E+02	0.0000E+00	1.0097E+02
172000	9.7123E+01	0.0000E+00	9.7408E+01	0.0000E+00	9.7777E+01	0.0000E+00	9.8496E+01	0.0000E+00	9.9579E+01	0.0000E+00	1.0031E+02
174000	9.6531E+01	0.0000E+00	9.6811E+01	0.0000E+00	9.7174E+01	0.0000E+00	9.7880E+01	0.0000E+00	9.8944E+01	0.0000E+00	9.9663E+01
176000	9.5950E+01	0.0000E+00	9.6225E+01	0.0000E+00	9.6581E+01	0.0000E+00	9.7275E+01	0.0000E+00	9.8320E+01	0.0000E+00	9.9026E+01
178000	9.5379E+01	0.0000E+00	9.5649E+01	0.0000E+00	9.5999E+01	0.0000E+00	9.6681E+01	0.0000E+00	9.7707E+01	0.0000E+00	9.8400E+01
180000	9.4817E+01	0.0000E+00	9.5083E+01	0.0000E+00	9.5427E+01	0.0000E+00	9.6097E+01	0.0000E+00	9.7105E+01	0.0000E+00	9.7786E+01
182000	9.4265E+01	0.0000E+00	9.4526E+01	0.0000E+00	9.4865E+01	0.0000E+00	9.5524E+01	0.0000E+00	9.6514E+01	0.0000E+00	9.7183E+01
184000	9.3722E+01	0.0000E+00	9.3979E+01	0.0000E+00	9.4312E+01	0.0000E+00	9.4960E+01	0.0000E+00	9.5933E+01	0.0000E+00	9.6590E+01
186000	9.3188E+01	0.0000E+00	9.3441E+01	0.0000E+00	9.3768E+01	0.0000E+00	9.4405E+01	0.0000E+00	9.5362E+01	0.0000E+00	9.6008E+01
188000	9.2663E+01	0.0000E+00	9.2911E+01	0.0000E+00	9.3233E+01	0.0000E+00	9.3860E+01	0.0000E+00	9.4801E+01	0.0000E+00	9.5436E+01
190000	9.2146E+01	0.0000E+00	9.2390E+01	0.0000E+00	9.2707E+01	0.0000E+00	9.3323E+01	0.0000E+00	9.4249E+01	0.0000E+00	9.4873E+01
192000	9.1637E+01	0.0000E+00	9.1877E+01	0.0000E+00	9.2189E+01	0.0000E+00	9.2796E+01	0.0000E+00	9.3706E+01	0.0000E+00	9.4320E+01
194000	9.1136E+01	0.0000E+00	9.1373E+01	0.0000E+00	9.1680E+01	0.0000E+00	9.2277E+01	0.0000E+00	9.3172E+01	0.0000E+00	9.3776E+01
196000	9.0643E+01	0.0000E+00	9.0876E+01	0.0000E+00	9.1178E+01	0.0000E+00	9.1766E+01	0.0000E+00	9.2647E+01	0.0000E+00	9.3241E+01
198000	9.0157E+01	0.0000E+00	9.0387E+01	0.0000E+00	9.0684E+01	0.0000E+00	9.1263E+01	0.0000E+00	9.2130E+01	0.0000E+00	9.2715E+01
200000	8.9679E+01	0.0000E+00	8.9906E+01	0.0000E+00	9.0198E+01	0.0000E+00	9.0768E+01	0.0000E+00	9.1622E+01	0.0000E+00	9.2197E+01
202000	8.9209E+01	0.0000E+00	8.9431E+01	0.0000E+00	8.9720E+01	0.0000E+00	9.0281E+01	0.0000E+00	9.1121E+01	0.0000E+00	9.1687E+01
204000	8.8745E+01	0.0000E+00	8.8964E+01	0.0000E+00	8.9248E+01	0.0000E+00	8.9801E+01	0.0000E+00	9.0628E+01	0.0000E+00	9.1186E+01
206000	8.8288E+01	0.0000E+00	8.8504E+01	0.0000E+00	8.8784E+01	0.0000E+00	8.9328E+01	0.0000E+00	9.0143E+01	0.0000E+00	9.0692E+01

Time (yrs)	Arg 1	Curve 1	Arg 2	Curve 2	Arg 3	Curve 3	Arg 4	Curve 4	Arg 5	Curve 5	Arg 6
208000	8.7837E+01	0.0000E+00	8.8051E+01	0.0000E+00	8.8326E+01	0.0000E+00	8.8862E+01	0.0000E+00	8.9665E+01	0.0000E+00	9.0206E+01
210000	8.7394E+01	0.0000E+00	8.7604E+01	0.0000E+00	8.7875E+01	0.0000E+00	8.8404E+01	0.0000E+00	8.9195E+01	0.0000E+00	8.9727E+01
212000	8.6956E+01	0.0000E+00	8.7163E+01	0.0000E+00	8.7431E+01	0.0000E+00	8.7952E+01	0.0000E+00	8.8731E+01	0.0000E+00	8.9255E+01
214000	8.6525E+01	0.0000E+00	8.6729E+01	0.0000E+00	8.6993E+01	0.0000E+00	8.7506E+01	0.0000E+00	8.8274E+01	0.0000E+00	8.8791E+01
216000	8.6100E+01	0.0000E+00	8.6301E+01	0.0000E+00	8.6561E+01	0.0000E+00	8.7067E+01	0.0000E+00	8.7824E+01	0.0000E+00	8.8333E+01
218000	8.5681E+01	0.0000E+00	8.5879E+01	0.0000E+00	8.6136E+01	0.0000E+00	8.6634E+01	0.0000E+00	8.7380E+01	0.0000E+00	8.7882E+01
220000	8.5267E+01	0.0000E+00	8.5463E+01	0.0000E+00	8.5716E+01	0.0000E+00	8.6208E+01	0.0000E+00	8.6943E+01	0.0000E+00	8.7438E+01
222000	8.4859E+01	0.0000E+00	8.5052E+01	0.0000E+00	8.5302E+01	0.0000E+00	8.5787E+01	0.0000E+00	8.6512E+01	0.0000E+00	8.7000E+01
224000	8.4457E+01	0.0000E+00	8.4647E+01	0.0000E+00	8.4894E+01	0.0000E+00	8.5372E+01	0.0000E+00	8.6087E+01	0.0000E+00	8.6568E+01
226000	8.4060E+01	0.0000E+00	8.4248E+01	0.0000E+00	8.4491E+01	0.0000E+00	8.4963E+01	0.0000E+00	8.5668E+01	0.0000E+00	8.6142E+01
228000	8.3668E+01	0.0000E+00	8.3854E+01	0.0000E+00	8.4094E+01	0.0000E+00	8.4559E+01	0.0000E+00	8.5255E+01	0.0000E+00	8.5722E+01
230000	8.3282E+01	0.0000E+00	8.3465E+01	0.0000E+00	8.3701E+01	0.0000E+00	8.4161E+01	0.0000E+00	8.4847E+01	0.0000E+00	8.5308E+01
232000	8.2900E+01	0.0000E+00	8.3081E+01	0.0000E+00	8.3315E+01	0.0000E+00	8.3768E+01	0.0000E+00	8.4445E+01	0.0000E+00	8.4900E+01
234000	8.2524E+01	0.0000E+00	8.2702E+01	0.0000E+00	8.2933E+01	0.0000E+00	8.3380E+01	0.0000E+00	8.4048E+01	0.0000E+00	8.4497E+01
236000	8.2152E+01	0.0000E+00	8.2328E+01	0.0000E+00	8.2556E+01	0.0000E+00	8.2997E+01	0.0000E+00	8.3657E+01	0.0000E+00	8.4099E+01
238000	8.1785E+01	0.0000E+00	8.1959E+01	0.0000E+00	8.2184E+01	0.0000E+00	8.2620E+01	0.0000E+00	8.3270E+01	0.0000E+00	8.3707E+01
240000	8.1423E+01	0.0000E+00	8.1595E+01	0.0000E+00	8.1816E+01	0.0000E+00	8.2247E+01	0.0000E+00	8.2889E+01	0.0000E+00	8.3320E+01
242000	8.1065E+01	0.0000E+00	8.1235E+01	0.0000E+00	8.1454E+01	0.0000E+00	8.1878E+01	0.0000E+00	8.2513E+01	0.0000E+00	8.2938E+01
244000	8.0712E+01	0.0000E+00	8.0879E+01	0.0000E+00	8.1095E+01	0.0000E+00	8.1515E+01	0.0000E+00	8.2141E+01	0.0000E+00	8.2561E+01
246000	8.0363E+01	0.0000E+00	8.0528E+01	0.0000E+00	8.0742E+01	0.0000E+00	8.1156E+01	0.0000E+00	8.1774E+01	0.0000E+00	8.2189E+01
248000	8.0018E+01	0.0000E+00	8.0181E+01	0.0000E+00	8.0392E+01	0.0000E+00	8.0802E+01	0.0000E+00	8.1412E+01	0.0000E+00	8.1822E+01
250000	7.9677E+01	0.0000E+00	7.9839E+01	0.0000E+00	8.0047E+01	0.0000E+00	8.0451E+01	0.0000E+00	8.1055E+01	0.0000E+00	8.1459E+01
252000	7.9341E+01	0.0000E+00	7.9500E+01	0.0000E+00	7.9706E+01	0.0000E+00	8.0106E+01	0.0000E+00	8.0701E+01	0.0000E+00	8.1101E+01
254000	7.9008E+01	0.0000E+00	7.9166E+01	0.0000E+00	7.9369E+01	0.0000E+00	7.9764E+01	0.0000E+00	8.0352E+01	0.0000E+00	8.0747E+01
256000	7.8680E+01	0.0000E+00	7.8835E+01	0.0000E+00	7.9036E+01	0.0000E+00	7.9426E+01	0.0000E+00	8.0008E+01	0.0000E+00	8.0398E+01
258000	7.8355E+01	0.0000E+00	7.8509E+01	0.0000E+00	7.8707E+01	0.0000E+00	7.9093E+01	0.0000E+00	7.9667E+01	0.0000E+00	8.0052E+01
260000	7.8034E+01	0.0000E+00	7.8186E+01	0.0000E+00	7.8382E+01	0.0000E+00	7.8763E+01	0.0000E+00	7.9331E+01	0.0000E+00	7.9711E+01
262000	7.7717E+01	0.0000E+00	7.7867E+01	0.0000E+00	7.8061E+01	0.0000E+00	7.8437E+01	0.0000E+00	7.8998E+01	0.0000E+00	7.9374E+01
264000	7.7403E+01	0.0000E+00	7.7551E+01	0.0000E+00	7.7743E+01	0.0000E+00	7.8115E+01	0.0000E+00	7.8670E+01	0.0000E+00	7.9041E+01
266000	7.7093E+01	0.0000E+00	7.7240E+01	0.0000E+00	7.7429E+01	0.0000E+00	7.7797E+01	0.0000E+00	7.8345E+01	0.0000E+00	7.8712E+01
268000	7.6786E+01	0.0000E+00	7.6931E+01	0.0000E+00	7.7119E+01	0.0000E+00	7.7483E+01	0.0000E+00	7.8024E+01	0.0000E+00	7.8387E+01
270000	7.6483E+01	0.0000E+00	7.6626E+01	0.0000E+00	7.6812E+01	0.0000E+00	7.7172E+01	0.0000E+00	7.7707E+01	0.0000E+00	7.8066E+01
272000	7.6183E+01	0.0000E+00	7.6325E+01	0.0000E+00	7.6509E+01	0.0000E+00	7.6864E+01	0.0000E+00	7.7394E+01	0.0000E+00	7.7748E+01
274000	7.5886E+01	0.0000E+00	7.6027E+01	0.0000E+00	7.6208E+01	0.0000E+00	7.6560E+01	0.0000E+00	7.7084E+01	0.0000E+00	7.7434E+01
276000	7.5593E+01	0.0000E+00	7.5732E+01	0.0000E+00	7.5912E+01	0.0000E+00	7.6259E+01	0.0000E+00	7.6777E+01	0.0000E+00	7.7124E+01
278000	7.5303E+01	0.0000E+00	7.5440E+01	0.0000E+00	7.5618E+01	0.0000E+00	7.5962E+01	0.0000E+00	7.6474E+01	0.0000E+00	7.6817E+01
280000	7.5016E+01	0.0000E+00	7.5152E+01	0.0000E+00	7.5327E+01	0.0000E+00	7.5668E+01	0.0000E+00	7.6174E+01	0.0000E+00	7.6513E+01
282000	7.4732E+01	0.0000E+00	7.4866E+01	0.0000E+00	7.5040E+01	0.0000E+00	7.5377E+01	0.0000E+00	7.5878E+01	0.0000E+00	7.6213E+01
284000	7.4451E+01	0.0000E+00	7.4584E+01	0.0000E+00	7.4756E+01	0.0000E+00	7.5089E+01	0.0000E+00	7.5584E+01	0.0000E+00	7.5916E+01
286000	7.4173E+01	0.0000E+00	7.4305E+01	0.0000E+00	7.4475E+01	0.0000E+00	7.4804E+01	0.0000E+00	7.5294E+01	0.0000E+00	7.5622E+01
288000	7.3898E+01	0.0000E+00	7.4028E+01	0.0000E+00	7.4196E+01	0.0000E+00	7.4522E+01	0.0000E+00	7.5007E+01	0.0000E+00	7.5332E+01
290000	7.3625E+01	0.0000E+00	7.3754E+01	0.0000E+00	7.3921E+01	0.0000E+00	7.4243E+01	0.0000E+00	7.4723E+01	0.0000E+00	7.5044E+01
292000	7.3356E+01	0.0000E+00	7.3484E+01	0.0000E+00	7.3648E+01	0.0000E+00	7.3968E+01	0.0000E+00	7.4442E+01	0.0000E+00	7.4760E+01
294000	7.3089E+01	0.0000E+00	7.3216E+01	0.0000E+00	7.3379E+01	0.0000E+00	7.3695E+01	0.0000E+00	7.4165E+01	0.0000E+00	7.4479E+01
296000	7.2825E+01	0.0000E+00	7.2950E+01	0.0000E+00	7.3112E+01	0.0000E+00	7.3424E+01	0.0000E+00	7.3889E+01	0.0000E+00	7.4200E+01
298000	7.2564E+01	0.0000E+00	7.2688E+01	0.0000E+00	7.2848E+01	0.0000E+00	7.3157E+01	0.0000E+00	7.3617E+01	0.0000E+00	7.3925E+01
300000	7.2305E+01	0.0000E+00	7.2428E+01	0.0000E+00	7.2586E+01	0.0000E+00	7.2892E+01	0.0000E+00	7.3348E+01	0.0000E+00	7.3653E+01
302000	7.2049E+01	0.0000E+00	7.2170E+01	0.0000E+00	7.2327E+01	0.0000E+00	7.2630E+01	0.0000E+00	7.3081E+01	0.0000E+00	7.3383E+01
304000	7.1795E+01	0.0000E+00	7.1915E+01	0.0000E+00	7.2071E+01	0.0000E+00	7.2371E+01	0.0000E+00	7.2817E+01	0.0000E+00	7.3116E+01
306000	7.1544E+01	0.0000E+00	7.1663E+01	0.0000E+00	7.1817E+01	0.0000E+00	7.2114E+01	0.0000E+00	7.2556E+01	0.0000E+00	7.2851E+01
308000	7.1295E+01	0.0000E+00	7.1413E+01	0.0000E+00	7.1565E+01	0.0000E+00	7.1860E+01	0.0000E+00	7.2297E+01	0.0000E+00	7.2590E+01
310000	7.1049E+01	0.0000E+00	7.1166E+01	0.0000E+00	7.1316E+01	0.0000E+00	7.1608E+01	0.0000E+00	7.2041E+01	0.0000E+00	7.2331E+01

Time (yrs)	Arg 1	Curve 1	Arg 2	Curve 2	Arg 3	Curve 3	Arg 4	Curve 4	Arg 5	Curve 5	Arg 6
312000	7.0805E+01	0.0000E+00	7.0921E+01	0.0000E+00	7.1070E+01	0.0000E+00	7.1359E+01	0.0000E+00	7.1788E+01	0.0000E+00	7.2074E+01
314000	7.0563E+01	0.0000E+00	7.0678E+01	0.0000E+00	7.0826E+01	0.0000E+00	7.1112E+01	0.0000E+00	7.1537E+01	0.0000E+00	7.1820E+01
316000	7.0324E+01	0.0000E+00	7.0438E+01	0.0000E+00	7.0584E+01	0.0000E+00	7.0867E+01	0.0000E+00	7.1288E+01	0.0000E+00	7.1569E+01
318000	7.0087E+01	0.0000E+00	7.0199E+01	0.0000E+00	7.0344E+01	0.0000E+00	7.0625E+01	0.0000E+00	7.1042E+01	0.0000E+00	7.1320E+01
320000	6.9852E+01	0.0000E+00	6.9963E+01	0.0000E+00	7.0107E+01	0.0000E+00	7.0385E+01	0.0000E+00	7.0798E+01	0.0000E+00	7.1074E+01
322000	6.9619E+01	0.0000E+00	6.9730E+01	0.0000E+00	6.9872E+01	0.0000E+00	7.0147E+01	0.0000E+00	7.0556E+01	0.0000E+00	7.0829E+01
324000	6.9389E+01	0.0000E+00	6.9498E+01	0.0000E+00	6.9639E+01	0.0000E+00	6.9912E+01	0.0000E+00	7.0317E+01	0.0000E+00	7.0587E+01
326000	6.9161E+01	0.0000E+00	6.9269E+01	0.0000E+00	6.9408E+01	0.0000E+00	6.9679E+01	0.0000E+00	7.0080E+01	0.0000E+00	7.0348E+01
328000	6.8934E+01	0.0000E+00	6.9041E+01	0.0000E+00	6.9180E+01	0.0000E+00	6.9448E+01	0.0000E+00	6.9845E+01	0.0000E+00	7.0111E+01
330000	6.8710E+01	0.0000E+00	6.8816E+01	0.0000E+00	6.8953E+01	0.0000E+00	6.9219E+01	0.0000E+00	6.9613E+01	0.0000E+00	6.9876E+01
332000	6.8488E+01	0.0000E+00	6.8593E+01	0.0000E+00	6.8729E+01	0.0000E+00	6.8992E+01	0.0000E+00	6.9382E+01	0.0000E+00	6.9643E+01
334000	6.8267E+01	0.0000E+00	6.8372E+01	0.0000E+00	6.8507E+01	0.0000E+00	6.8767E+01	0.0000E+00	6.9154E+01	0.0000E+00	6.9412E+01
336000	6.8049E+01	0.0000E+00	6.8153E+01	0.0000E+00	6.8286E+01	0.0000E+00	6.8544E+01	0.0000E+00	6.8927E+01	0.0000E+00	6.9183E+01
338000	6.7833E+01	0.0000E+00	6.7935E+01	0.0000E+00	6.8068E+01	0.0000E+00	6.8323E+01	0.0000E+00	6.8703E+01	0.0000E+00	6.8957E+01
340000	6.7618E+01	0.0000E+00	6.7720E+01	0.0000E+00	6.7851E+01	0.0000E+00	6.8105E+01	0.0000E+00	6.8481E+01	0.0000E+00	6.8732E+01
342000	6.7406E+01	0.0000E+00	6.7506E+01	0.0000E+00	6.7636E+01	0.0000E+00	6.7888E+01	0.0000E+00	6.8261E+01	0.0000E+00	6.8510E+01
344000	6.7195E+01	0.0000E+00	6.7295E+01	0.0000E+00	6.7424E+01	0.0000E+00	6.7673E+01	0.0000E+00	6.8043E+01	0.0000E+00	6.8289E+01
346000	6.6986E+01	0.0000E+00	6.7085E+01	0.0000E+00	6.7213E+01	0.0000E+00	6.7460E+01	0.0000E+00	6.7826E+01	0.0000E+00	6.8071E+01
348000	6.6779E+01	0.0000E+00	6.6877E+01	0.0000E+00	6.7004E+01	0.0000E+00	6.7249E+01	0.0000E+00	6.7612E+01	0.0000E+00	6.7854E+01
350000	6.6573E+01	0.0000E+00	6.6671E+01	0.0000E+00	6.6796E+01	0.0000E+00	6.7039E+01	0.0000E+00	6.7399E+01	0.0000E+00	6.7640E+01
352000	6.6370E+01	0.0000E+00	6.6466E+01	0.0000E+00	6.6591E+01	0.0000E+00	6.6832E+01	0.0000E+00	6.7189E+01	0.0000E+00	6.7427E+01
354000	6.6168E+01	0.0000E+00	6.6264E+01	0.0000E+00	6.6387E+01	0.0000E+00	6.6626E+01	0.0000E+00	6.6980E+01	0.0000E+00	6.7216E+01
356000	6.5968E+01	0.0000E+00	6.6063E+01	0.0000E+00	6.6185E+01	0.0000E+00	6.6422E+01	0.0000E+00	6.6773E+01	0.0000E+00	6.7007E+01
358000	6.5769E+01	0.0000E+00	6.5863E+01	0.0000E+00	6.5985E+01	0.0000E+00	6.6219E+01	0.0000E+00	6.6567E+01	0.0000E+00	6.6799E+01
360000	6.5572E+01	0.0000E+00	6.5666E+01	0.0000E+00	6.5786E+01	0.0000E+00	6.6019E+01	0.0000E+00	6.6364E+01	0.0000E+00	6.6594E+01
362000	6.5377E+01	0.0000E+00	6.5470E+01	0.0000E+00	6.5589E+01	0.0000E+00	6.5820E+01	0.0000E+00	6.6162E+01	0.0000E+00	6.6390E+01
364000	6.5183E+01	0.0000E+00	6.5275E+01	0.0000E+00	6.5394E+01	0.0000E+00	6.5622E+01	0.0000E+00	6.5962E+01	0.0000E+00	6.6188E+01
366000	6.4991E+01	0.0000E+00	6.5082E+01	0.0000E+00	6.5200E+01	0.0000E+00	6.5427E+01	0.0000E+00	6.5763E+01	0.0000E+00	6.5988E+01
368000	6.4801E+01	0.0000E+00	6.4891E+01	0.0000E+00	6.5007E+01	0.0000E+00	6.5233E+01	0.0000E+00	6.5566E+01	0.0000E+00	6.5789E+01
370000	6.4612E+01	0.0000E+00	6.4701E+01	0.0000E+00	6.4817E+01	0.0000E+00	6.5040E+01	0.0000E+00	6.5371E+01	0.0000E+00	6.5592E+01
372000	6.4424E+01	0.0000E+00	6.4513E+01	0.0000E+00	6.4628E+01	0.0000E+00	6.4849E+01	0.0000E+00	6.5177E+01	0.0000E+00	6.5396E+01
374000	6.4238E+01	0.0000E+00	6.4326E+01	0.0000E+00	6.4440E+01	0.0000E+00	6.4660E+01	0.0000E+00	6.4985E+01	0.0000E+00	6.5203E+01
376000	6.4054E+01	0.0000E+00	6.4141E+01	0.0000E+00	6.4254E+01	0.0000E+00	6.4472E+01	0.0000E+00	6.4795E+01	0.0000E+00	6.5010E+01
378000	6.3870E+01	0.0000E+00	6.3957E+01	0.0000E+00	6.4069E+01	0.0000E+00	6.4285E+01	0.0000E+00	6.4606E+01	0.0000E+00	6.4820E+01
380000	6.3689E+01	0.0000E+00	6.3775E+01	0.0000E+00	6.3886E+01	0.0000E+00	6.4100E+01	0.0000E+00	6.4418E+01	0.0000E+00	6.4630E+01
382000	6.3509E+01	0.0000E+00	6.3594E+01	0.0000E+00	6.3704E+01	0.0000E+00	6.3917E+01	0.0000E+00	6.4233E+01	0.0000E+00	6.4443E+01
384000	6.3330E+01	0.0000E+00	6.3414E+01	0.0000E+00	6.3524E+01	0.0000E+00	6.3735E+01	0.0000E+00	6.4048E+01	0.0000E+00	6.4257E+01
386000	6.3152E+01	0.0000E+00	6.3236E+01	0.0000E+00	6.3345E+01	0.0000E+00	6.3554E+01	0.0000E+00	6.3865E+01	0.0000E+00	6.4072E+01
388000	6.2976E+01	0.0000E+00	6.3060E+01	0.0000E+00	6.3167E+01	0.0000E+00	6.3375E+01	0.0000E+00	6.3683E+01	0.0000E+00	6.3889E+01
390000	6.2801E+01	0.0000E+00	6.2884E+01	0.0000E+00	6.2991E+01	0.0000E+00	6.3197E+01	0.0000E+00	6.3503E+01	0.0000E+00	6.3707E+01
392000	6.2628E+01	0.0000E+00	6.2710E+01	0.0000E+00	6.2816E+01	0.0000E+00	6.3021E+01	0.0000E+00	6.3324E+01	0.0000E+00	6.3527E+01
394000	6.2456E+01	0.0000E+00	6.2537E+01	0.0000E+00	6.2643E+01	0.0000E+00	6.2846E+01	0.0000E+00	6.3147E+01	0.0000E+00	6.3348E+01
396000	6.2285E+01	0.0000E+00	6.2366E+01	0.0000E+00	6.2470E+01	0.0000E+00	6.2672E+01	0.0000E+00	6.2971E+01	0.0000E+00	6.3170E+01
398000	6.2115E+01	0.0000E+00	6.2196E+01	0.0000E+00	6.2299E+01	0.0000E+00	6.2500E+01	0.0000E+00	6.2796E+01	0.0000E+00	6.2994E+01
400000	6.1947E+01	0.0000E+00	6.2027E+01	0.0000E+00	6.2130E+01	0.0000E+00	6.2328E+01	0.0000E+00	6.2623E+01	0.0000E+00	6.2819E+01
402000	6.1780E+01	0.0000E+00	6.1859E+01	0.0000E+00	6.1961E+01	0.0000E+00	6.2159E+01	0.0000E+00	6.2451E+01	0.0000E+00	6.2645E+01
404000	6.1614E+01	0.0000E+00	6.1693E+01	0.0000E+00	6.1794E+01	0.0000E+00	6.1990E+01	0.0000E+00	6.2280E+01	0.0000E+00	6.2473E+01
406000	6.1450E+01	0.0000E+00	6.1528E+01	0.0000E+00	6.1628E+01	0.0000E+00	6.1823E+01	0.0000E+00	6.2110E+01	0.0000E+00	6.2302E+01
408000	6.1286E+01	0.0000E+00	6.1364E+01	0.0000E+00	6.1464E+01	0.0000E+00	6.1656E+01	0.0000E+00	6.1942E+01	0.0000E+00	6.2132E+01
410000	6.1124E+01	0.0000E+00	6.1201E+01	0.0000E+00	6.1300E+01	0.0000E+00	6.1492E+01	0.0000E+00	6.1775E+01	0.0000E+00	6.1964E+01
412000	6.0963E+01	0.0000E+00	6.1039E+01	0.0000E+00	6.1138E+01	0.0000E+00	6.1328E+01	0.0000E+00	6.1609E+01	0.0000E+00	6.1797E+01
414000	6.0803E+01	0.0000E+00	6.0879E+01	0.0000E+00	6.0977E+01	0.0000E+00	6.1165E+01	0.0000E+00	6.1445E+01	0.0000E+00	6.1631E+01

Time (yrs)	Arg 1	Curve 1	Arg 2	Curve 2	Arg 3	Curve 3	Arg 4	Curve 4	Arg 5	Curve 5	Arg 6
416000	6.0644E+01	0.0000E+00	6.0720E+01	0.0000E+00	6.0817E+01	0.0000E+00	6.1004E+01	0.0000E+00	6.1281E+01	0.0000E+00	6.1466E+01
418000	6.0487E+01	0.0000E+00	6.0561E+01	0.0000E+00	6.0658E+01	0.0000E+00	6.0844E+01	0.0000E+00	6.1119E+01	0.0000E+00	6.1303E+01
420000	6.0330E+01	0.0000E+00	6.0404E+01	0.0000E+00	6.0500E+01	0.0000E+00	6.0685E+01	0.0000E+00	6.0958E+01	0.0000E+00	6.1140E+01
422000	6.0175E+01	0.0000E+00	6.0248E+01	0.0000E+00	6.0343E+01	0.0000E+00	6.0527E+01	0.0000E+00	6.0798E+01	0.0000E+00	6.0979E+01
424000	6.0020E+01	0.0000E+00	6.0094E+01	0.0000E+00	6.0188E+01	0.0000E+00	6.0370E+01	0.0000E+00	6.0640E+01	0.0000E+00	6.0819E+01
426000	5.9867E+01	0.0000E+00	5.9940E+01	0.0000E+00	6.0033E+01	0.0000E+00	6.0214E+01	0.0000E+00	6.0482E+01	0.0000E+00	6.0660E+01
428000	5.9715E+01	0.0000E+00	5.9787E+01	0.0000E+00	5.9880E+01	0.0000E+00	6.0060E+01	0.0000E+00	6.0325E+01	0.0000E+00	6.0502E+01
430000	5.9564E+01	0.0000E+00	5.9635E+01	0.0000E+00	5.9728E+01	0.0000E+00	5.9906E+01	0.0000E+00	6.0170E+01	0.0000E+00	6.0346E+01
432000	5.9414E+01	0.0000E+00	5.9485E+01	0.0000E+00	5.9577E+01	0.0000E+00	5.9754E+01	0.0000E+00	6.0016E+01	0.0000E+00	6.0190E+01
434000	5.9265E+01	0.0000E+00	5.9335E+01	0.0000E+00	5.9426E+01	0.0000E+00	5.9602E+01	0.0000E+00	5.9863E+01	0.0000E+00	6.0036E+01
436000	5.9117E+01	0.0000E+00	5.9187E+01	0.0000E+00	5.9277E+01	0.0000E+00	5.9452E+01	0.0000E+00	5.9710E+01	0.0000E+00	5.9882E+01
438000	5.8969E+01	0.0000E+00	5.9039E+01	0.0000E+00	5.9129E+01	0.0000E+00	5.9303E+01	0.0000E+00	5.9559E+01	0.0000E+00	5.9730E+01
440000	5.8823E+01	0.0000E+00	5.8893E+01	0.0000E+00	5.8982E+01	0.0000E+00	5.9154E+01	0.0000E+00	5.9409E+01	0.0000E+00	5.9579E+01
442000	5.8678E+01	0.0000E+00	5.8747E+01	0.0000E+00	5.8836E+01	0.0000E+00	5.9007E+01	0.0000E+00	5.9260E+01	0.0000E+00	5.9429E+01
444000	5.8534E+01	0.0000E+00	5.8602E+01	0.0000E+00	5.8691E+01	0.0000E+00	5.8861E+01	0.0000E+00	5.9112E+01	0.0000E+00	5.9279E+01
446000	5.8391E+01	0.0000E+00	5.8459E+01	0.0000E+00	5.8546E+01	0.0000E+00	5.8715E+01	0.0000E+00	5.8965E+01	0.0000E+00	5.9131E+01
448000	5.8249E+01	0.0000E+00	5.8316E+01	0.0000E+00	5.8403E+01	0.0000E+00	5.8571E+01	0.0000E+00	5.8819E+01	0.0000E+00	5.8984E+01
450000	5.8107E+01	0.0000E+00	5.8174E+01	0.0000E+00	5.8261E+01	0.0000E+00	5.8427E+01	0.0000E+00	5.8674E+01	0.0000E+00	5.8838E+01
452000	5.7967E+01	0.0000E+00	5.8034E+01	0.0000E+00	5.8119E+01	0.0000E+00	5.8285E+01	0.0000E+00	5.8530E+01	0.0000E+00	5.8693E+01
454000	5.7828E+01	0.0000E+00	5.7894E+01	0.0000E+00	5.7979E+01	0.0000E+00	5.8143E+01	0.0000E+00	5.8387E+01	0.0000E+00	5.8549E+01
456000	5.7689E+01	0.0000E+00	5.7755E+01	0.0000E+00	5.7839E+01	0.0000E+00	5.8003E+01	0.0000E+00	5.8244E+01	0.0000E+00	5.8405E+01
458000	5.7551E+01	0.0000E+00	5.7617E+01	0.0000E+00	5.7701E+01	0.0000E+00	5.7863E+01	0.0000E+00	5.8103E+01	0.0000E+00	5.8263E+01
460000	5.7415E+01	0.0000E+00	5.7479E+01	0.0000E+00	5.7563E+01	0.0000E+00	5.7724E+01	0.0000E+00	5.7963E+01	0.0000E+00	5.8122E+01
462000	5.7279E+01	0.0000E+00	5.7343E+01	0.0000E+00	5.7426E+01	0.0000E+00	5.7586E+01	0.0000E+00	5.7823E+01	0.0000E+00	5.7981E+01
464000	5.7144E+01	0.0000E+00	5.7208E+01	0.0000E+00	5.7290E+01	0.0000E+00	5.7449E+01	0.0000E+00	5.7685E+01	0.0000E+00	5.7842E+01
466000	5.7010E+01	0.0000E+00	5.7073E+01	0.0000E+00	5.7155E+01	0.0000E+00	5.7313E+01	0.0000E+00	5.7547E+01	0.0000E+00	5.7703E+01
468000	5.6876E+01	0.0000E+00	5.6939E+01	0.0000E+00	5.7021E+01	0.0000E+00	5.7178E+01	0.0000E+00	5.7411E+01	0.0000E+00	5.7565E+01
470000	5.6744E+01	0.0000E+00	5.6807E+01	0.0000E+00	5.6887E+01	0.0000E+00	5.7044E+01	0.0000E+00	5.7275E+01	0.0000E+00	5.7428E+01
472000	5.6612E+01	0.0000E+00	5.6674E+01	0.0000E+00	5.6755E+01	0.0000E+00	5.6910E+01	0.0000E+00	5.7140E+01	0.0000E+00	5.7292E+01
474000	5.6481E+01	0.0000E+00	5.6543E+01	0.0000E+00	5.6623E+01	0.0000E+00	5.6777E+01	0.0000E+00	5.7006E+01	0.0000E+00	5.7157E+01
476000	5.6351E+01	0.0000E+00	5.6413E+01	0.0000E+00	5.6492E+01	0.0000E+00	5.6646E+01	0.0000E+00	5.6872E+01	0.0000E+00	5.7023E+01
478000	5.6222E+01	0.0000E+00	5.6283E+01	0.0000E+00	5.6362E+01	0.0000E+00	5.6514E+01	0.0000E+00	5.6740E+01	0.0000E+00	5.6889E+01
480000	5.6094E+01	0.0000E+00	5.6154E+01	0.0000E+00	5.6233E+01	0.0000E+00	5.6384E+01	0.0000E+00	5.6608E+01	0.0000E+00	5.6757E+01
482000	5.5966E+01	0.0000E+00	5.6026E+01	0.0000E+00	5.6104E+01	0.0000E+00	5.6255E+01	0.0000E+00	5.6477E+01	0.0000E+00	5.6625E+01
484000	5.5839E+01	0.0000E+00	5.5899E+01	0.0000E+00	5.5977E+01	0.0000E+00	5.6126E+01	0.0000E+00	5.6347E+01	0.0000E+00	5.6494E+01
486000	5.5713E+01	0.0000E+00	5.5773E+01	0.0000E+00	5.5850E+01	0.0000E+00	5.5998E+01	0.0000E+00	5.6218E+01	0.0000E+00	5.6364E+01
488000	5.5588E+01	0.0000E+00	5.5647E+01	0.0000E+00	5.5724E+01	0.0000E+00	5.5871E+01	0.0000E+00	5.6090E+01	0.0000E+00	5.6235E+01
490000	5.5463E+01	0.0000E+00	5.5522E+01	0.0000E+00	5.5598E+01	0.0000E+00	5.5745E+01	0.0000E+00	5.5962E+01	0.0000E+00	5.6106E+01
492000	5.5339E+01	0.0000E+00	5.5398E+01	0.0000E+00	5.5474E+01	0.0000E+00	5.5619E+01	0.0000E+00	5.5835E+01	0.0000E+00	5.5979E+01
494000	5.5216E+01	0.0000E+00	5.5274E+01	0.0000E+00	5.5350E+01	0.0000E+00	5.5495E+01	0.0000E+00	5.5709E+01	0.0000E+00	5.5852E+01
496000	5.5094E+01	0.0000E+00	5.5152E+01	0.0000E+00	5.5227E+01	0.0000E+00	5.5371E+01	0.0000E+00	5.5584E+01	0.0000E+00	5.5725E+01
498000	5.4972E+01	0.0000E+00	5.5030E+01	0.0000E+00	5.5104E+01	0.0000E+00	5.5247E+01	0.0000E+00	5.5459E+01	0.0000E+00	5.5600E+01
500000	5.4851E+01	0.0000E+00	5.4909E+01	0.0000E+00	5.4982E+01	0.0000E+00	5.5125E+01	0.0000E+00	5.5335E+01	0.0000E+00	5.5475E+01
502000	5.4731E+01	0.0000E+00	5.4788E+01	0.0000E+00	5.4861E+01	0.0000E+00	5.5003E+01	0.0000E+00	5.5212E+01	0.0000E+00	5.5352E+01
504000	5.4611E+01	0.0000E+00	5.4668E+01	0.0000E+00	5.4741E+01	0.0000E+00	5.4882E+01	0.0000E+00	5.5090E+01	0.0000E+00	5.5228E+01
506000	5.4493E+01	0.0000E+00	5.4549E+01	0.0000E+00	5.4622E+01	0.0000E+00	5.4762E+01	0.0000E+00	5.4968E+01	0.0000E+00	5.5106E+01
508000	5.4375E+01	0.0000E+00	5.4431E+01	0.0000E+00	5.4503E+01	0.0000E+00	5.4642E+01	0.0000E+00	5.4848E+01	0.0000E+00	5.4984E+01
510000	5.4257E+01	0.0000E+00	5.4313E+01	0.0000E+00	5.4385E+01	0.0000E+00	5.4523E+01	0.0000E+00	5.4727E+01	0.0000E+00	5.4863E+01
512000	5.4140E+01	0.0000E+00	5.4196E+01	0.0000E+00	5.4267E+01	0.0000E+00	5.4405E+01	0.0000E+00	5.4608E+01	0.0000E+00	5.4743E+01
514000	5.4024E+01	0.0000E+00	5.4079E+01	0.0000E+00	5.4150E+01	0.0000E+00	5.4287E+01	0.0000E+00	5.4489E+01	0.0000E+00	5.4623E+01
516000	5.3909E+01	0.0000E+00	5.3964E+01	0.0000E+00	5.4034E+01	0.0000E+00	5.4170E+01	0.0000E+00	5.4371E+01	0.0000E+00	5.4504E+01
518000	5.3794E+01	0.0000E+00	5.3848E+01	0.0000E+00	5.3919E+01	0.0000E+00	5.4054E+01	0.0000E+00	5.4254E+01	0.0000E+00	5.4386E+01

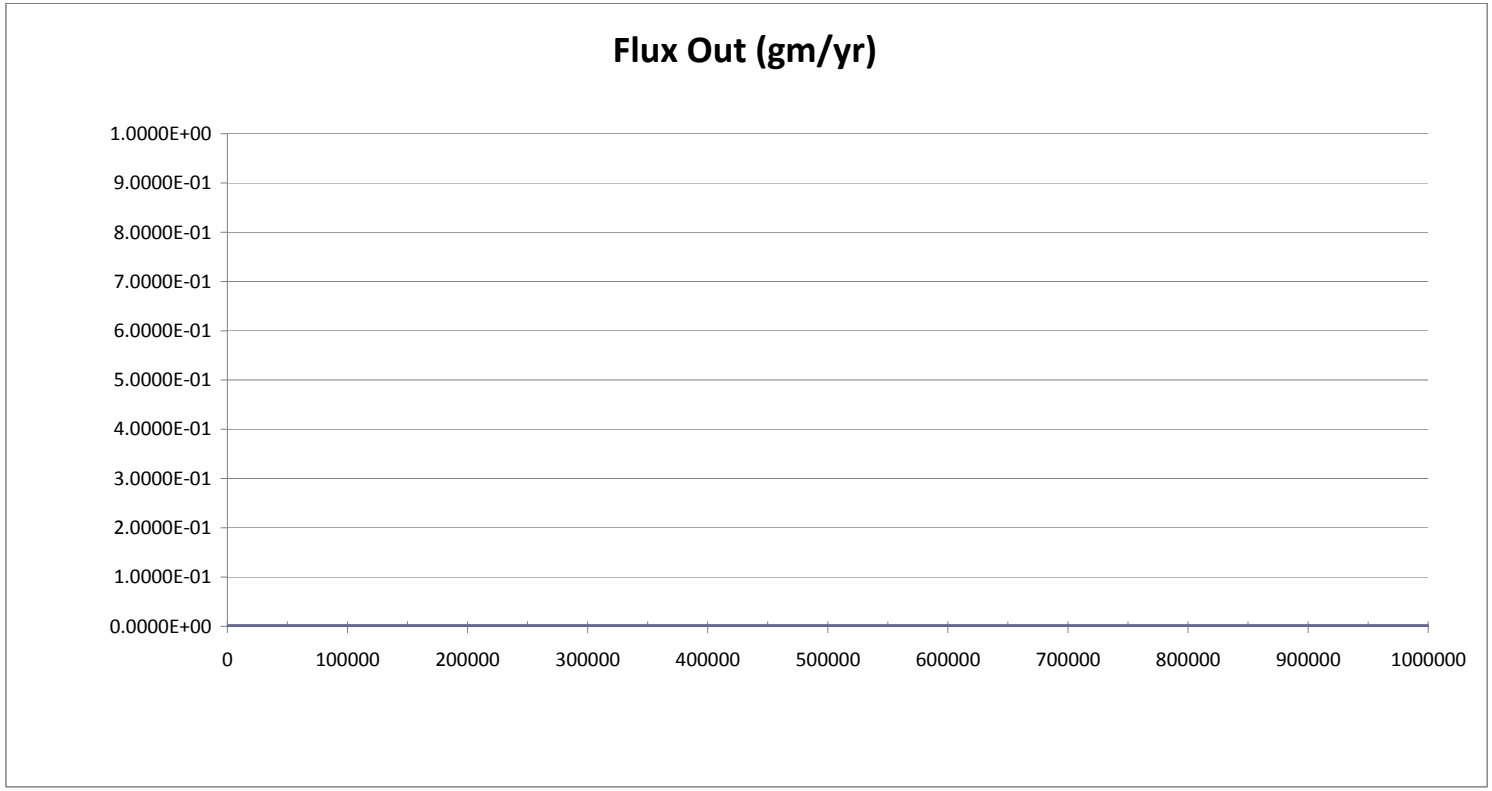
Time (yrs)	Arg 1	Curve 1	Arg 2	Curve 2	Arg 3	Curve 3	Arg 4	Curve 4	Arg 5	Curve 5	Arg 6
520000	5.3680E+01	0.0000E+00	5.3734E+01	0.0000E+00	5.3804E+01	0.0000E+00	5.3938E+01	0.0000E+00	5.4137E+01	0.0000E+00	5.4269E+01
522000	5.3566E+01	0.0000E+00	5.3620E+01	0.0000E+00	5.3690E+01	0.0000E+00	5.3823E+01	0.0000E+00	5.4021E+01	0.0000E+00	5.4152E+01
524000	5.3454E+01	0.0000E+00	5.3507E+01	0.0000E+00	5.3576E+01	0.0000E+00	5.3709E+01	0.0000E+00	5.3905E+01	0.0000E+00	5.4036E+01
526000	5.3341E+01	0.0000E+00	5.3395E+01	0.0000E+00	5.3463E+01	0.0000E+00	5.3595E+01	0.0000E+00	5.3791E+01	0.0000E+00	5.3920E+01
528000	5.3230E+01	0.0000E+00	5.3283E+01	0.0000E+00	5.3351E+01	0.0000E+00	5.3482E+01	0.0000E+00	5.3676E+01	0.0000E+00	5.3805E+01
530000	5.3119E+01	0.0000E+00	5.3171E+01	0.0000E+00	5.3239E+01	0.0000E+00	5.3370E+01	0.0000E+00	5.3563E+01	0.0000E+00	5.3691E+01
532000	5.3008E+01	0.0000E+00	5.3061E+01	0.0000E+00	5.3128E+01	0.0000E+00	5.3258E+01	0.0000E+00	5.3450E+01	0.0000E+00	5.3578E+01
534000	5.2899E+01	0.0000E+00	5.2951E+01	0.0000E+00	5.3018E+01	0.0000E+00	5.3147E+01	0.0000E+00	5.3338E+01	0.0000E+00	5.3465E+01
536000	5.2790E+01	0.0000E+00	5.2841E+01	0.0000E+00	5.2908E+01	0.0000E+00	5.3037E+01	0.0000E+00	5.3226E+01	0.0000E+00	5.3353E+01
538000	5.2681E+01	0.0000E+00	5.2733E+01	0.0000E+00	5.2799E+01	0.0000E+00	5.2927E+01	0.0000E+00	5.3115E+01	0.0000E+00	5.3241E+01
540000	5.2573E+01	0.0000E+00	5.2624E+01	0.0000E+00	5.2690E+01	0.0000E+00	5.2817E+01	0.0000E+00	5.3005E+01	0.0000E+00	5.3130E+01
542000	5.2466E+01	0.0000E+00	5.2517E+01	0.0000E+00	5.2582E+01	0.0000E+00	5.2709E+01	0.0000E+00	5.2895E+01	0.0000E+00	5.3019E+01
544000	5.2359E+01	0.0000E+00	5.2410E+01	0.0000E+00	5.2475E+01	0.0000E+00	5.2601E+01	0.0000E+00	5.2786E+01	0.0000E+00	5.2910E+01
546000	5.2253E+01	0.0000E+00	5.2303E+01	0.0000E+00	5.2368E+01	0.0000E+00	5.2493E+01	0.0000E+00	5.2678E+01	0.0000E+00	5.2800E+01
548000	5.2147E+01	0.0000E+00	5.2197E+01	0.0000E+00	5.2262E+01	0.0000E+00	5.2386E+01	0.0000E+00	5.2570E+01	0.0000E+00	5.2692E+01
550000	5.2042E+01	0.0000E+00	5.2092E+01	0.0000E+00	5.2156E+01	0.0000E+00	5.2280E+01	0.0000E+00	5.2462E+01	0.0000E+00	5.2584E+01
552000	5.1937E+01	0.0000E+00	5.1987E+01	0.0000E+00	5.2051E+01	0.0000E+00	5.2174E+01	0.0000E+00	5.2356E+01	0.0000E+00	5.2476E+01
554000	5.1833E+01	0.0000E+00	5.1883E+01	0.0000E+00	5.1946E+01	0.0000E+00	5.2069E+01	0.0000E+00	5.2250E+01	0.0000E+00	5.2370E+01
556000	5.1730E+01	0.0000E+00	5.1779E+01	0.0000E+00	5.1842E+01	0.0000E+00	5.1964E+01	0.0000E+00	5.2144E+01	0.0000E+00	5.2263E+01
558000	5.1627E+01	0.0000E+00	5.1676E+01	0.0000E+00	5.1739E+01	0.0000E+00	5.1860E+01	0.0000E+00	5.2039E+01	0.0000E+00	5.2158E+01
560000	5.1525E+01	0.0000E+00	5.1573E+01	0.0000E+00	5.1636E+01	0.0000E+00	5.1756E+01	0.0000E+00	5.1934E+01	0.0000E+00	5.2052E+01
562000	5.1423E+01	0.0000E+00	5.1471E+01	0.0000E+00	5.1534E+01	0.0000E+00	5.1653E+01	0.0000E+00	5.1830E+01	0.0000E+00	5.1948E+01
564000	5.1322E+01	0.0000E+00	5.1370E+01	0.0000E+00	5.1432E+01	0.0000E+00	5.1551E+01	0.0000E+00	5.1727E+01	0.0000E+00	5.1844E+01
566000	5.1221E+01	0.0000E+00	5.1269E+01	0.0000E+00	5.1330E+01	0.0000E+00	5.1449E+01	0.0000E+00	5.1624E+01	0.0000E+00	5.1740E+01
568000	5.1121E+01	0.0000E+00	5.1168E+01	0.0000E+00	5.1230E+01	0.0000E+00	5.1348E+01	0.0000E+00	5.1522E+01	0.0000E+00	5.1637E+01
570000	5.1021E+01	0.0000E+00	5.1068E+01	0.0000E+00	5.1129E+01	0.0000E+00	5.1247E+01	0.0000E+00	5.1420E+01	0.0000E+00	5.1535E+01
572000	5.0922E+01	0.0000E+00	5.0969E+01	0.0000E+00	5.1030E+01	0.0000E+00	5.1146E+01	0.0000E+00	5.1319E+01	0.0000E+00	5.1433E+01
574000	5.0823E+01	0.0000E+00	5.0870E+01	0.0000E+00	5.0930E+01	0.0000E+00	5.1046E+01	0.0000E+00	5.1218E+01	0.0000E+00	5.1332E+01
576000	5.0725E+01	0.0000E+00	5.0772E+01	0.0000E+00	5.0832E+01	0.0000E+00	5.0947E+01	0.0000E+00	5.1118E+01	0.0000E+00	5.1231E+01
578000	5.0627E+01	0.0000E+00	5.0674E+01	0.0000E+00	5.0733E+01	0.0000E+00	5.0848E+01	0.0000E+00	5.1018E+01	0.0000E+00	5.1131E+01
580000	5.0530E+01	0.0000E+00	5.0576E+01	0.0000E+00	5.0636E+01	0.0000E+00	5.0750E+01	0.0000E+00	5.0919E+01	0.0000E+00	5.1031E+01
582000	5.0433E+01	0.0000E+00	5.0479E+01	0.0000E+00	5.0538E+01	0.0000E+00	5.0652E+01	0.0000E+00	5.0820E+01	0.0000E+00	5.0932E+01
584000	5.0337E+01	0.0000E+00	5.0383E+01	0.0000E+00	5.0442E+01	0.0000E+00	5.0555E+01	0.0000E+00	5.0722E+01	0.0000E+00	5.0833E+01
586000	5.0241E+01	0.0000E+00	5.0287E+01	0.0000E+00	5.0345E+01	0.0000E+00	5.0458E+01	0.0000E+00	5.0624E+01	0.0000E+00	5.0735E+01
588000	5.0146E+01	0.0000E+00	5.0191E+01	0.0000E+00	5.0250E+01	0.0000E+00	5.0362E+01	0.0000E+00	5.0527E+01	0.0000E+00	5.0637E+01
590000	5.0051E+01	0.0000E+00	5.0096E+01	0.0000E+00	5.0154E+01	0.0000E+00	5.0266E+01	0.0000E+00	5.0430E+01	0.0000E+00	5.0540E+01
592000	4.9957E+01	0.0000E+00	5.0002E+01	0.0000E+00	5.0059E+01	0.0000E+00	5.0170E+01	0.0000E+00	5.0334E+01	0.0000E+00	5.0443E+01
594000	4.9863E+01	0.0000E+00	4.9908E+01	0.0000E+00	4.9965E+01	0.0000E+00	5.0075E+01	0.0000E+00	5.0239E+01	0.0000E+00	5.0347E+01
596000	4.9770E+01	0.0000E+00	4.9814E+01	0.0000E+00	4.9871E+01	0.0000E+00	4.9981E+01	0.0000E+00	5.0143E+01	0.0000E+00	5.0251E+01
598000	4.9677E+01	0.0000E+00	4.9721E+01	0.0000E+00	4.9778E+01	0.0000E+00	4.9887E+01	0.0000E+00	5.0049E+01	0.0000E+00	5.0156E+01
600000	4.9584E+01	0.0000E+00	4.9628E+01	0.0000E+00	4.9685E+01	0.0000E+00	4.9794E+01	0.0000E+00	4.9954E+01	0.0000E+00	5.0061E+01
602000	4.9492E+01	0.0000E+00	4.9536E+01	0.0000E+00	4.9592E+01	0.0000E+00	4.9700E+01	0.0000E+00	4.9860E+01	0.0000E+00	4.9966E+01
604000	4.9401E+01	0.0000E+00	4.9444E+01	0.0000E+00	4.9500E+01	0.0000E+00	4.9608E+01	0.0000E+00	4.9767E+01	0.0000E+00	4.9873E+01
606000	4.9310E+01	0.0000E+00	4.9353E+01	0.0000E+00	4.9408E+01	0.0000E+00	4.9516E+01	0.0000E+00	4.9674E+01	0.0000E+00	4.9779E+01
608000	4.9219E+01	0.0000E+00	4.9262E+01	0.0000E+00	4.9317E+01	0.0000E+00	4.9424E+01	0.0000E+00	4.9582E+01	0.0000E+00	4.9686E+01
610000	4.9129E+01	0.0000E+00	4.9171E+01	0.0000E+00	4.9227E+01	0.0000E+00	4.9333E+01	0.0000E+00	4.9490E+01	0.0000E+00	4.9594E+01
612000	4.9039E+01	0.0000E+00	4.9081E+01	0.0000E+00	4.9136E+01	0.0000E+00	4.9242E+01	0.0000E+00	4.9398E+01	0.0000E+00	4.9501E+01
614000	4.8949E+01	0.0000E+00	4.8992E+01	0.0000E+00	4.9046E+01	0.0000E+00	4.9152E+01	0.0000E+00	4.9307E+01	0.0000E+00	4.9410E+01
616000	4.8860E+01	0.0000E+00	4.8903E+01	0.0000E+00	4.8957E+01	0.0000E+00	4.9062E+01	0.0000E+00	4.9216E+01	0.0000E+00	4.9319E+01
618000	4.8772E+01	0.0000E+00	4.8814E+01	0.0000E+00	4.8868E+01	0.0000E+00	4.8972E+01	0.0000E+00	4.9126E+01	0.0000E+00	4.9228E+01
620000	4.8684E+01	0.0000E+00	4.8725E+01	0.0000E+00	4.8779E+01	0.0000E+00	4.8883E+01	0.0000E+00	4.9036E+01	0.0000E+00	4.9138E+01
622000	4.8596E+01	0.0000E+00	4.8637E+01	0.0000E+00	4.8691E+01	0.0000E+00	4.8794E+01	0.0000E+00	4.8947E+01	0.0000E+00	4.9048E+01

Time (yrs)	Arg 1	Curve 1	Arg 2	Curve 2	Arg 3	Curve 3	Arg 4	Curve 4	Arg 5	Curve 5	Arg 6
624000	4.8509E+01	0.0000E+00	4.8550E+01	0.0000E+00	4.8603E+01	0.0000E+00	4.8706E+01	0.0000E+00	4.8858E+01	0.0000E+00	4.8958E+01
626000	4.8422E+01	0.0000E+00	4.8463E+01	0.0000E+00	4.8516E+01	0.0000E+00	4.8618E+01	0.0000E+00	4.8769E+01	0.0000E+00	4.8869E+01
628000	4.8335E+01	0.0000E+00	4.8376E+01	0.0000E+00	4.8429E+01	0.0000E+00	4.8531E+01	0.0000E+00	4.8681E+01	0.0000E+00	4.8781E+01
630000	4.8249E+01	0.0000E+00	4.8290E+01	0.0000E+00	4.8342E+01	0.0000E+00	4.8444E+01	0.0000E+00	4.8593E+01	0.0000E+00	4.8692E+01
632000	4.8163E+01	0.0000E+00	4.8204E+01	0.0000E+00	4.8256E+01	0.0000E+00	4.8357E+01	0.0000E+00	4.8506E+01	0.0000E+00	4.8605E+01
634000	4.8078E+01	0.0000E+00	4.8118E+01	0.0000E+00	4.8171E+01	0.0000E+00	4.8271E+01	0.0000E+00	4.8419E+01	0.0000E+00	4.8517E+01
636000	4.7993E+01	0.0000E+00	4.8033E+01	0.0000E+00	4.8085E+01	0.0000E+00	4.8185E+01	0.0000E+00	4.8333E+01	0.0000E+00	4.8430E+01
638000	4.7908E+01	0.0000E+00	4.7949E+01	0.0000E+00	4.8000E+01	0.0000E+00	4.8100E+01	0.0000E+00	4.8246E+01	0.0000E+00	4.8344E+01
640000	4.7824E+01	0.0000E+00	4.7864E+01	0.0000E+00	4.7916E+01	0.0000E+00	4.8015E+01	0.0000E+00	4.8161E+01	0.0000E+00	4.8258E+01
642000	4.7741E+01	0.0000E+00	4.7780E+01	0.0000E+00	4.7831E+01	0.0000E+00	4.7930E+01	0.0000E+00	4.8075E+01	0.0000E+00	4.8172E+01
644000	4.7657E+01	0.0000E+00	4.7697E+01	0.0000E+00	4.7748E+01	0.0000E+00	4.7846E+01	0.0000E+00	4.7990E+01	0.0000E+00	4.8086E+01
646000	4.7574E+01	0.0000E+00	4.7614E+01	0.0000E+00	4.7664E+01	0.0000E+00	4.7762E+01	0.0000E+00	4.7906E+01	0.0000E+00	4.8001E+01
648000	4.7492E+01	0.0000E+00	4.7531E+01	0.0000E+00	4.7581E+01	0.0000E+00	4.7678E+01	0.0000E+00	4.7822E+01	0.0000E+00	4.7917E+01
650000	4.7409E+01	0.0000E+00	4.7448E+01	0.0000E+00	4.7499E+01	0.0000E+00	4.7595E+01	0.0000E+00	4.7738E+01	0.0000E+00	4.7833E+01
652000	4.7327E+01	0.0000E+00	4.7366E+01	0.0000E+00	4.7416E+01	0.0000E+00	4.7513E+01	0.0000E+00	4.7655E+01	0.0000E+00	4.7749E+01
654000	4.7246E+01	0.0000E+00	4.7284E+01	0.0000E+00	4.7334E+01	0.0000E+00	4.7430E+01	0.0000E+00	4.7572E+01	0.0000E+00	4.7665E+01
656000	4.7165E+01	0.0000E+00	4.7203E+01	0.0000E+00	4.7253E+01	0.0000E+00	4.7348E+01	0.0000E+00	4.7489E+01	0.0000E+00	4.7582E+01
658000	4.7084E+01	0.0000E+00	4.7122E+01	0.0000E+00	4.7171E+01	0.0000E+00	4.7267E+01	0.0000E+00	4.7407E+01	0.0000E+00	4.7500E+01
660000	4.7003E+01	0.0000E+00	4.7042E+01	0.0000E+00	4.7091E+01	0.0000E+00	4.7185E+01	0.0000E+00	4.7325E+01	0.0000E+00	4.7417E+01
662000	4.6923E+01	0.0000E+00	4.6961E+01	0.0000E+00	4.7010E+01	0.0000E+00	4.7104E+01	0.0000E+00	4.7243E+01	0.0000E+00	4.7336E+01
664000	4.6843E+01	0.0000E+00	4.6881E+01	0.0000E+00	4.6930E+01	0.0000E+00	4.7024E+01	0.0000E+00	4.7162E+01	0.0000E+00	4.7254E+01
666000	4.6764E+01	0.0000E+00	4.6802E+01	0.0000E+00	4.6850E+01	0.0000E+00	4.6944E+01	0.0000E+00	4.7081E+01	0.0000E+00	4.7173E+01
668000	4.6685E+01	0.0000E+00	4.6723E+01	0.0000E+00	4.6771E+01	0.0000E+00	4.6864E+01	0.0000E+00	4.7001E+01	0.0000E+00	4.7092E+01
670000	4.6606E+01	0.0000E+00	4.6644E+01	0.0000E+00	4.6692E+01	0.0000E+00	4.6784E+01	0.0000E+00	4.6921E+01	0.0000E+00	4.7011E+01
672000	4.6528E+01	0.0000E+00	4.6565E+01	0.0000E+00	4.6613E+01	0.0000E+00	4.6705E+01	0.0000E+00	4.6841E+01	0.0000E+00	4.6931E+01
674000	4.6450E+01	0.0000E+00	4.6487E+01	0.0000E+00	4.6535E+01	0.0000E+00	4.6626E+01	0.0000E+00	4.6762E+01	0.0000E+00	4.6851E+01
676000	4.6372E+01	0.0000E+00	4.6409E+01	0.0000E+00	4.6457E+01	0.0000E+00	4.6548E+01	0.0000E+00	4.6683E+01	0.0000E+00	4.6772E+01
678000	4.6295E+01	0.0000E+00	4.6332E+01	0.0000E+00	4.6379E+01	0.0000E+00	4.6470E+01	0.0000E+00	4.6604E+01	0.0000E+00	4.6693E+01
680000	4.6218E+01	0.0000E+00	4.6254E+01	0.0000E+00	4.6301E+01	0.0000E+00	4.6392E+01	0.0000E+00	4.6526E+01	0.0000E+00	4.6614E+01
682000	4.6141E+01	0.0000E+00	4.6177E+01	0.0000E+00	4.6224E+01	0.0000E+00	4.6315E+01	0.0000E+00	4.6448E+01	0.0000E+00	4.6536E+01
684000	4.6065E+01	0.0000E+00	4.6101E+01	0.0000E+00	4.6148E+01	0.0000E+00	4.6237E+01	0.0000E+00	4.6370E+01	0.0000E+00	4.6458E+01
686000	4.5989E+01	0.0000E+00	4.6025E+01	0.0000E+00	4.6071E+01	0.0000E+00	4.6161E+01	0.0000E+00	4.6293E+01	0.0000E+00	4.6380E+01
688000	4.5913E+01	0.0000E+00	4.5949E+01	0.0000E+00	4.5995E+01	0.0000E+00	4.6084E+01	0.0000E+00	4.6216E+01	0.0000E+00	4.6303E+01
690000	4.5838E+01	0.0000E+00	4.5873E+01	0.0000E+00	4.5919E+01	0.0000E+00	4.6008E+01	0.0000E+00	4.6139E+01	0.0000E+00	4.6225E+01
692000	4.5762E+01	0.0000E+00	4.5798E+01	0.0000E+00	4.5844E+01	0.0000E+00	4.5932E+01	0.0000E+00	4.6062E+01	0.0000E+00	4.6149E+01
694000	4.5688E+01	0.0000E+00	4.5723E+01	0.0000E+00	4.5769E+01	0.0000E+00	4.5857E+01	0.0000E+00	4.5986E+01	0.0000E+00	4.6072E+01
696000	4.5613E+01	0.0000E+00	4.5649E+01	0.0000E+00	4.5694E+01	0.0000E+00	4.5782E+01	0.0000E+00	4.5911E+01	0.0000E+00	4.5996E+01
698000	4.5539E+01	0.0000E+00	4.5574E+01	0.0000E+00	4.5620E+01	0.0000E+00	4.5707E+01	0.0000E+00	4.5835E+01	0.0000E+00	4.5921E+01
700000	4.5465E+01	0.0000E+00	4.5500E+01	0.0000E+00	4.5545E+01	0.0000E+00	4.5632E+01	0.0000E+00	4.5760E+01	0.0000E+00	4.5845E+01
702000	4.5392E+01	0.0000E+00	4.5427E+01	0.0000E+00	4.5471E+01	0.0000E+00	4.5558E+01	0.0000E+00	4.5685E+01	0.0000E+00	4.5770E+01
704000	4.5318E+01	0.0000E+00	4.5353E+01	0.0000E+00	4.5398E+01	0.0000E+00	4.5484E+01	0.0000E+00	4.5611E+01	0.0000E+00	4.5695E+01
706000	4.5245E+01	0.0000E+00	4.5280E+01	0.0000E+00	4.5325E+01	0.0000E+00	4.5410E+01	0.0000E+00	4.5537E+01	0.0000E+00	4.5621E+01
708000	4.5173E+01	0.0000E+00	4.5207E+01	0.0000E+00	4.5252E+01	0.0000E+00	4.5337E+01	0.0000E+00	4.5463E+01	0.0000E+00	4.5546E+01
710000	4.5100E+01	0.0000E+00	4.5135E+01	0.0000E+00	4.5179E+01	0.0000E+00	4.5264E+01	0.0000E+00	4.5389E+01	0.0000E+00	4.5473E+01
712000	4.5028E+01	0.0000E+00	4.5063E+01	0.0000E+00	4.5107E+01	0.0000E+00	4.5191E+01	0.0000E+00	4.5316E+01	0.0000E+00	4.5399E+01
714000	4.4957E+01	0.0000E+00	4.4991E+01	0.0000E+00	4.5035E+01	0.0000E+00	4.5119E+01	0.0000E+00	4.5243E+01	0.0000E+00	4.5326E+01
716000	4.4885E+01	0.0000E+00	4.4919E+01	0.0000E+00	4.4963E+01	0.0000E+00	4.5047E+01	0.0000E+00	4.5171E+01	0.0000E+00	4.5253E+01
718000	4.4814E+01	0.0000E+00	4.4848E+01	0.0000E+00	4.4891E+01	0.0000E+00	4.4975E+01	0.0000E+00	4.5098E+01	0.0000E+00	4.5180E+01
720000	4.4743E+01	0.0000E+00	4.4777E+01	0.0000E+00	4.4820E+01	0.0000E+00	4.4903E+01	0.0000E+00	4.5026E+01	0.0000E+00	4.5108E+01
722000	4.4673E+01	0.0000E+00	4.4706E+01	0.0000E+00	4.4749E+01	0.0000E+00	4.4832E+01	0.0000E+00	4.4955E+01	0.0000E+00	4.5036E+01
724000	4.4602E+01	0.0000E+00	4.4636E+01	0.0000E+00	4.4679E+01	0.0000E+00	4.4761E+01	0.0000E+00	4.4883E+01	0.0000E+00	4.4964E+01
726000	4.4532E+01	0.0000E+00	4.4565E+01	0.0000E+00	4.4608E+01	0.0000E+00	4.4691E+01	0.0000E+00	4.4812E+01	0.0000E+00	4.4892E+01

Time (yrs)	Arg 1	Curve 1	Arg 2	Curve 2	Arg 3	Curve 3	Arg 4	Curve 4	Arg 5	Curve 5	Arg 6
728000	4.4462E+01	0.0000E+00	4.4496E+01	0.0000E+00	4.4538E+01	0.0000E+00	4.4620E+01	0.0000E+00	4.4741E+01	0.0000E+00	4.4821E+01
730000	4.4393E+01	0.0000E+00	4.4426E+01	0.0000E+00	4.4468E+01	0.0000E+00	4.4550E+01	0.0000E+00	4.4670E+01	0.0000E+00	4.4750E+01
732000	4.4324E+01	0.0000E+00	4.4357E+01	0.0000E+00	4.4399E+01	0.0000E+00	4.4480E+01	0.0000E+00	4.4600E+01	0.0000E+00	4.4680E+01
734000	4.4255E+01	0.0000E+00	4.4288E+01	0.0000E+00	4.4330E+01	0.0000E+00	4.4411E+01	0.0000E+00	4.4530E+01	0.0000E+00	4.4609E+01
736000	4.4186E+01	0.0000E+00	4.4219E+01	0.0000E+00	4.4261E+01	0.0000E+00	4.4341E+01	0.0000E+00	4.4460E+01	0.0000E+00	4.4539E+01
738000	4.4118E+01	0.0000E+00	4.4150E+01	0.0000E+00	4.4192E+01	0.0000E+00	4.4272E+01	0.0000E+00	4.4391E+01	0.0000E+00	4.4469E+01
740000	4.4050E+01	0.0000E+00	4.4082E+01	0.0000E+00	4.4124E+01	0.0000E+00	4.4204E+01	0.0000E+00	4.4322E+01	0.0000E+00	4.4400E+01
742000	4.3982E+01	0.0000E+00	4.4014E+01	0.0000E+00	4.4055E+01	0.0000E+00	4.4135E+01	0.0000E+00	4.4253E+01	0.0000E+00	4.4331E+01
744000	4.3914E+01	0.0000E+00	4.3946E+01	0.0000E+00	4.3988E+01	0.0000E+00	4.4067E+01	0.0000E+00	4.4184E+01	0.0000E+00	4.4262E+01
746000	4.3847E+01	0.0000E+00	4.3879E+01	0.0000E+00	4.3920E+01	0.0000E+00	4.3999E+01	0.0000E+00	4.4116E+01	0.0000E+00	4.4193E+01
748000	4.3780E+01	0.0000E+00	4.3812E+01	0.0000E+00	4.3853E+01	0.0000E+00	4.3931E+01	0.0000E+00	4.4048E+01	0.0000E+00	4.4125E+01
750000	4.3713E+01	0.0000E+00	4.3745E+01	0.0000E+00	4.3786E+01	0.0000E+00	4.3864E+01	0.0000E+00	4.3980E+01	0.0000E+00	4.4056E+01
752000	4.3647E+01	0.0000E+00	4.3678E+01	0.0000E+00	4.3719E+01	0.0000E+00	4.3797E+01	0.0000E+00	4.3912E+01	0.0000E+00	4.3989E+01
754000	4.3580E+01	0.0000E+00	4.3612E+01	0.0000E+00	4.3652E+01	0.0000E+00	4.3730E+01	0.0000E+00	4.3845E+01	0.0000E+00	4.3921E+01
756000	4.3514E+01	0.0000E+00	4.3546E+01	0.0000E+00	4.3586E+01	0.0000E+00	4.3663E+01	0.0000E+00	4.3778E+01	0.0000E+00	4.3854E+01
758000	4.3448E+01	0.0000E+00	4.3480E+01	0.0000E+00	4.3520E+01	0.0000E+00	4.3597E+01	0.0000E+00	4.3711E+01	0.0000E+00	4.3787E+01
760000	4.3383E+01	0.0000E+00	4.3414E+01	0.0000E+00	4.3454E+01	0.0000E+00	4.3531E+01	0.0000E+00	4.3645E+01	0.0000E+00	4.3720E+01
762000	4.3318E+01	0.0000E+00	4.3349E+01	0.0000E+00	4.3388E+01	0.0000E+00	4.3465E+01	0.0000E+00	4.3578E+01	0.0000E+00	4.3653E+01
764000	4.3253E+01	0.0000E+00	4.3283E+01	0.0000E+00	4.3323E+01	0.0000E+00	4.3400E+01	0.0000E+00	4.3512E+01	0.0000E+00	4.3587E+01
766000	4.3188E+01	0.0000E+00	4.3218E+01	0.0000E+00	4.3258E+01	0.0000E+00	4.3334E+01	0.0000E+00	4.3446E+01	0.0000E+00	4.3521E+01
768000	4.3123E+01	0.0000E+00	4.3154E+01	0.0000E+00	4.3193E+01	0.0000E+00	4.3269E+01	0.0000E+00	4.3381E+01	0.0000E+00	4.3455E+01
770000	4.3059E+01	0.0000E+00	4.3089E+01	0.0000E+00	4.3129E+01	0.0000E+00	4.3204E+01	0.0000E+00	4.3316E+01	0.0000E+00	4.3389E+01
772000	4.2995E+01	0.0000E+00	4.3025E+01	0.0000E+00	4.3064E+01	0.0000E+00	4.3140E+01	0.0000E+00	4.3251E+01	0.0000E+00	4.3324E+01
774000	4.2931E+01	0.0000E+00	4.2961E+01	0.0000E+00	4.3000E+01	0.0000E+00	4.3075E+01	0.0000E+00	4.3186E+01	0.0000E+00	4.3259E+01
776000	4.2867E+01	0.0000E+00	4.2898E+01	0.0000E+00	4.2936E+01	0.0000E+00	4.3011E+01	0.0000E+00	4.3121E+01	0.0000E+00	4.3194E+01
778000	4.2804E+01	0.0000E+00	4.2834E+01	0.0000E+00	4.2873E+01	0.0000E+00	4.2947E+01	0.0000E+00	4.3057E+01	0.0000E+00	4.3130E+01
780000	4.2741E+01	0.0000E+00	4.2771E+01	0.0000E+00	4.2809E+01	0.0000E+00	4.2884E+01	0.0000E+00	4.2993E+01	0.0000E+00	4.3065E+01
782000	4.2678E+01	0.0000E+00	4.2708E+01	0.0000E+00	4.2746E+01	0.0000E+00	4.2820E+01	0.0000E+00	4.2929E+01	0.0000E+00	4.3001E+01
784000	4.2615E+01	0.0000E+00	4.2645E+01	0.0000E+00	4.2683E+01	0.0000E+00	4.2757E+01	0.0000E+00	4.2866E+01	0.0000E+00	4.2937E+01
786000	4.2553E+01	0.0000E+00	4.2583E+01	0.0000E+00	4.2621E+01	0.0000E+00	4.2694E+01	0.0000E+00	4.2802E+01	0.0000E+00	4.2874E+01
788000	4.2491E+01	0.0000E+00	4.2520E+01	0.0000E+00	4.2558E+01	0.0000E+00	4.2631E+01	0.0000E+00	4.2739E+01	0.0000E+00	4.2810E+01
790000	4.2429E+01	0.0000E+00	4.2458E+01	0.0000E+00	4.2496E+01	0.0000E+00	4.2569E+01	0.0000E+00	4.2676E+01	0.0000E+00	4.2747E+01
792000	4.2367E+01	0.0000E+00	4.2396E+01	0.0000E+00	4.2434E+01	0.0000E+00	4.2507E+01	0.0000E+00	4.2614E+01	0.0000E+00	4.2684E+01
794000	4.2306E+01	0.0000E+00	4.2335E+01	0.0000E+00	4.2372E+01	0.0000E+00	4.2445E+01	0.0000E+00	4.2551E+01	0.0000E+00	4.2622E+01
796000	4.2244E+01	0.0000E+00	4.2273E+01	0.0000E+00	4.2311E+01	0.0000E+00	4.2383E+01	0.0000E+00	4.2489E+01	0.0000E+00	4.2559E+01
798000	4.2183E+01	0.0000E+00	4.2212E+01	0.0000E+00	4.2250E+01	0.0000E+00	4.2321E+01	0.0000E+00	4.2427E+01	0.0000E+00	4.2497E+01
800000	4.2122E+01	0.0000E+00	4.2151E+01	0.0000E+00	4.2188E+01	0.0000E+00	4.2260E+01	0.0000E+00	4.2365E+01	0.0000E+00	4.2435E+01
802000	4.2062E+01	0.0000E+00	4.2091E+01	0.0000E+00	4.2128E+01	0.0000E+00	4.2199E+01	0.0000E+00	4.2304E+01	0.0000E+00	4.2373E+01
804000	4.2001E+01	0.0000E+00	4.2030E+01	0.0000E+00	4.2067E+01	0.0000E+00	4.2138E+01	0.0000E+00	4.2242E+01	0.0000E+00	4.2312E+01
806000	4.1941E+01	0.0000E+00	4.1970E+01	0.0000E+00	4.2006E+01	0.0000E+00	4.2077E+01	0.0000E+00	4.2181E+01	0.0000E+00	4.2250E+01
808000	4.1881E+01	0.0000E+00	4.1910E+01	0.0000E+00	4.1946E+01	0.0000E+00	4.2017E+01	0.0000E+00	4.2121E+01	0.0000E+00	4.2189E+01
810000	4.1821E+01	0.0000E+00	4.1850E+01	0.0000E+00	4.1886E+01	0.0000E+00	4.1957E+01	0.0000E+00	4.2060E+01	0.0000E+00	4.2128E+01
812000	4.1762E+01	0.0000E+00	4.1790E+01	0.0000E+00	4.1827E+01	0.0000E+00	4.1896E+01	0.0000E+00	4.2000E+01	0.0000E+00	4.2068E+01
814000	4.1703E+01	0.0000E+00	4.1731E+01	0.0000E+00	4.1767E+01	0.0000E+00	4.1837E+01	0.0000E+00	4.1939E+01	0.0000E+00	4.2007E+01
816000	4.1643E+01	0.0000E+00	4.1671E+01	0.0000E+00	4.1708E+01	0.0000E+00	4.1777E+01	0.0000E+00	4.1879E+01	0.0000E+00	4.1947E+01
818000	4.1585E+01	0.0000E+00	4.1612E+01	0.0000E+00	4.1648E+01	0.0000E+00	4.1718E+01	0.0000E+00	4.1820E+01	0.0000E+00	4.1887E+01
820000	4.1526E+01	0.0000E+00	4.1554E+01	0.0000E+00	4.1590E+01	0.0000E+00	4.1658E+01	0.0000E+00	4.1760E+01	0.0000E+00	4.1827E+01
822000	4.1467E+01	0.0000E+00	4.1495E+01	0.0000E+00	4.1531E+01	0.0000E+00	4.1600E+01	0.0000E+00	4.1701E+01	0.0000E+00	4.1768E+01
824000	4.1409E+01	0.0000E+00	4.1437E+01	0.0000E+00	4.1472E+01	0.0000E+00	4.1541E+01	0.0000E+00	4.1642E+01	0.0000E+00	4.1708E+01
826000	4.1351E+01	0.0000E+00	4.1378E+01	0.0000E+00	4.1414E+01	0.0000E+00	4.1482E+01	0.0000E+00	4.1583E+01	0.0000E+00	4.1649E+01
828000	4.1293E+01	0.0000E+00	4.1320E+01	0.0000E+00	4.1356E+01	0.0000E+00	4.1424E+01	0.0000E+00	4.1524E+01	0.0000E+00	4.1590E+01
830000	4.1235E+01	0.0000E+00	4.1263E+01	0.0000E+00	4.1298E+01	0.0000E+00	4.1366E+01	0.0000E+00	4.1466E+01	0.0000E+00	4.1532E+01

Time (yrs)	Arg 1	Curve 1	Arg 2	Curve 2	Arg 3	Curve 3	Arg 4	Curve 4	Arg 5	Curve 5	Arg 6
832000	4.1178E+01	0.0000E+00	4.1205E+01	0.0000E+00	4.1240E+01	0.0000E+00	4.1308E+01	0.0000E+00	4.1407E+01	0.0000E+00	4.1473E+01
834000	4.1121E+01	0.0000E+00	4.1148E+01	0.0000E+00	4.1183E+01	0.0000E+00	4.1250E+01	0.0000E+00	4.1349E+01	0.0000E+00	4.1415E+01
836000	4.1063E+01	0.0000E+00	4.1091E+01	0.0000E+00	4.1125E+01	0.0000E+00	4.1192E+01	0.0000E+00	4.1291E+01	0.0000E+00	4.1357E+01
838000	4.1007E+01	0.0000E+00	4.1034E+01	0.0000E+00	4.1068E+01	0.0000E+00	4.1135E+01	0.0000E+00	4.1234E+01	0.0000E+00	4.1299E+01
840000	4.0950E+01	0.0000E+00	4.0977E+01	0.0000E+00	4.1011E+01	0.0000E+00	4.1078E+01	0.0000E+00	4.1176E+01	0.0000E+00	4.1241E+01
842000	4.0893E+01	0.0000E+00	4.0920E+01	0.0000E+00	4.0955E+01	0.0000E+00	4.1021E+01	0.0000E+00	4.1119E+01	0.0000E+00	4.1184E+01
844000	4.0837E+01	0.0000E+00	4.0864E+01	0.0000E+00	4.0898E+01	0.0000E+00	4.0964E+01	0.0000E+00	4.1062E+01	0.0000E+00	4.1126E+01
846000	4.0781E+01	0.0000E+00	4.0807E+01	0.0000E+00	4.0842E+01	0.0000E+00	4.0908E+01	0.0000E+00	4.1005E+01	0.0000E+00	4.1069E+01
848000	4.0725E+01	0.0000E+00	4.0751E+01	0.0000E+00	4.0786E+01	0.0000E+00	4.0851E+01	0.0000E+00	4.0948E+01	0.0000E+00	4.1012E+01
850000	4.0669E+01	0.0000E+00	4.0696E+01	0.0000E+00	4.0730E+01	0.0000E+00	4.0795E+01	0.0000E+00	4.0892E+01	0.0000E+00	4.0955E+01
852000	4.0614E+01	0.0000E+00	4.0640E+01	0.0000E+00	4.0674E+01	0.0000E+00	4.0739E+01	0.0000E+00	4.0835E+01	0.0000E+00	4.0899E+01
854000	4.0558E+01	0.0000E+00	4.0585E+01	0.0000E+00	4.0618E+01	0.0000E+00	4.0683E+01	0.0000E+00	4.0779E+01	0.0000E+00	4.0843E+01
856000	4.0503E+01	0.0000E+00	4.0529E+01	0.0000E+00	4.0563E+01	0.0000E+00	4.0628E+01	0.0000E+00	4.0723E+01	0.0000E+00	4.0786E+01
858000	4.0448E+01	0.0000E+00	4.0474E+01	0.0000E+00	4.0508E+01	0.0000E+00	4.0572E+01	0.0000E+00	4.0668E+01	0.0000E+00	4.0731E+01
860000	4.0393E+01	0.0000E+00	4.0419E+01	0.0000E+00	4.0453E+01	0.0000E+00	4.0517E+01	0.0000E+00	4.0612E+01	0.0000E+00	4.0675E+01
862000	4.0339E+01	0.0000E+00	4.0365E+01	0.0000E+00	4.0398E+01	0.0000E+00	4.0462E+01	0.0000E+00	4.0557E+01	0.0000E+00	4.0619E+01
864000	4.0284E+01	0.0000E+00	4.0310E+01	0.0000E+00	4.0343E+01	0.0000E+00	4.0407E+01	0.0000E+00	4.0501E+01	0.0000E+00	4.0564E+01
866000	4.0230E+01	0.0000E+00	4.0256E+01	0.0000E+00	4.0289E+01	0.0000E+00	4.0353E+01	0.0000E+00	4.0446E+01	0.0000E+00	4.0509E+01
868000	4.0176E+01	0.0000E+00	4.0201E+01	0.0000E+00	4.0235E+01	0.0000E+00	4.0298E+01	0.0000E+00	4.0392E+01	0.0000E+00	4.0454E+01
870000	4.0122E+01	0.0000E+00	4.0147E+01	0.0000E+00	4.0180E+01	0.0000E+00	4.0244E+01	0.0000E+00	4.0337E+01	0.0000E+00	4.0399E+01
872000	4.0068E+01	0.0000E+00	4.0094E+01	0.0000E+00	4.0126E+01	0.0000E+00	4.0190E+01	0.0000E+00	4.0283E+01	0.0000E+00	4.0344E+01
874000	4.0015E+01	0.0000E+00	4.0040E+01	0.0000E+00	4.0073E+01	0.0000E+00	4.0136E+01	0.0000E+00	4.0228E+01	0.0000E+00	4.0290E+01
876000	3.9961E+01	0.0000E+00	3.9987E+01	0.0000E+00	4.0019E+01	0.0000E+00	4.0082E+01	0.0000E+00	4.0174E+01	0.0000E+00	4.0235E+01
878000	3.9908E+01	0.0000E+00	3.9933E+01	0.0000E+00	3.9966E+01	0.0000E+00	4.0028E+01	0.0000E+00	4.0120E+01	0.0000E+00	4.0181E+01
880000	3.9855E+01	0.0000E+00	3.9880E+01	0.0000E+00	3.9913E+01	0.0000E+00	3.9975E+01	0.0000E+00	4.0067E+01	0.0000E+00	4.0127E+01
882000	3.9802E+01	0.0000E+00	3.9827E+01	0.0000E+00	3.9860E+01	0.0000E+00	3.9922E+01	0.0000E+00	4.0013E+01	0.0000E+00	4.0074E+01
884000	3.9749E+01	0.0000E+00	3.9774E+01	0.0000E+00	3.9807E+01	0.0000E+00	3.9869E+01	0.0000E+00	3.9960E+01	0.0000E+00	4.0020E+01
886000	3.9697E+01	0.0000E+00	3.9722E+01	0.0000E+00	3.9754E+01	0.0000E+00	3.9816E+01	0.0000E+00	3.9906E+01	0.0000E+00	3.9967E+01
888000	3.9645E+01	0.0000E+00	3.9669E+01	0.0000E+00	3.9701E+01	0.0000E+00	3.9763E+01	0.0000E+00	3.9853E+01	0.0000E+00	3.9913E+01
890000	3.9592E+01	0.0000E+00	3.9617E+01	0.0000E+00	3.9649E+01	0.0000E+00	3.9710E+01	0.0000E+00	3.9801E+01	0.0000E+00	3.9860E+01
892000	3.9540E+01	0.0000E+00	3.9565E+01	0.0000E+00	3.9597E+01	0.0000E+00	3.9658E+01	0.0000E+00	3.9748E+01	0.0000E+00	3.9807E+01
894000	3.9489E+01	0.0000E+00	3.9513E+01	0.0000E+00	3.9545E+01	0.0000E+00	3.9606E+01	0.0000E+00	3.9695E+01	0.0000E+00	3.9755E+01
896000	3.9437E+01	0.0000E+00	3.9461E+01	0.0000E+00	3.9493E+01	0.0000E+00	3.9554E+01	0.0000E+00	3.9643E+01	0.0000E+00	3.9702E+01
898000	3.9385E+01	0.0000E+00	3.9410E+01	0.0000E+00	3.9441E+01	0.0000E+00	3.9502E+01	0.0000E+00	3.9591E+01	0.0000E+00	3.9650E+01
900000	3.9334E+01	0.0000E+00	3.9358E+01	0.0000E+00	3.9390E+01	0.0000E+00	3.9450E+01	0.0000E+00	3.9539E+01	0.0000E+00	3.9598E+01
902000	3.9283E+01	0.0000E+00	3.9307E+01	0.0000E+00	3.9338E+01	0.0000E+00	3.9399E+01	0.0000E+00	3.9487E+01	0.0000E+00	3.9546E+01
904000	3.9232E+01	0.0000E+00	3.9256E+01	0.0000E+00	3.9287E+01	0.0000E+00	3.9347E+01	0.0000E+00	3.9435E+01	0.0000E+00	3.9494E+01
906000	3.9181E+01	0.0000E+00	3.9205E+01	0.0000E+00	3.9236E+01	0.0000E+00	3.9296E+01	0.0000E+00	3.9384E+01	0.0000E+00	3.9442E+01
908000	3.9130E+01	0.0000E+00	3.9154E+01	0.0000E+00	3.9185E+01	0.0000E+00	3.9245E+01	0.0000E+00	3.9333E+01	0.0000E+00	3.9391E+01
910000	3.9080E+01	0.0000E+00	3.9104E+01	0.0000E+00	3.9135E+01	0.0000E+00	3.9194E+01	0.0000E+00	3.9281E+01	0.0000E+00	3.9339E+01
912000	3.9029E+01	0.0000E+00	3.9053E+01	0.0000E+00	3.9084E+01	0.0000E+00	3.9143E+01	0.0000E+00	3.9230E+01	0.0000E+00	3.9288E+01
914000	3.8979E+01	0.0000E+00	3.9003E+01	0.0000E+00	3.9034E+01	0.0000E+00	3.9093E+01	0.0000E+00	3.9180E+01	0.0000E+00	3.9237E+01
916000	3.8929E+01	0.0000E+00	3.8953E+01	0.0000E+00	3.8983E+01	0.0000E+00	3.9042E+01	0.0000E+00	3.9129E+01	0.0000E+00	3.9186E+01
918000	3.8879E+01	0.0000E+00	3.8903E+01	0.0000E+00	3.8933E+01	0.0000E+00	3.8992E+01	0.0000E+00	3.9078E+01	0.0000E+00	3.9135E+01
920000	3.8830E+01	0.0000E+00	3.8853E+01	0.0000E+00	3.8883E+01	0.0000E+00	3.8942E+01	0.0000E+00	3.9028E+01	0.0000E+00	3.9085E+01
922000	3.8780E+01	0.0000E+00	3.8803E+01	0.0000E+00	3.8834E+01	0.0000E+00	3.8892E+01	0.0000E+00	3.8978E+01	0.0000E+00	3.9034E+01
924000	3.8730E+01	0.0000E+00	3.8754E+01	0.0000E+00	3.8784E+01	0.0000E+00	3.8842E+01	0.0000E+00	3.8928E+01	0.0000E+00	3.8984E+01
926000	3.8681E+01	0.0000E+00	3.8705E+01	0.0000E+00	3.8735E+01	0.0000E+00	3.8793E+01	0.0000E+00	3.8878E+01	0.0000E+00	3.8934E+01
928000	3.8632E+01	0.0000E+00	3.8655E+01	0.0000E+00	3.8685E+01	0.0000E+00	3.8743E+01	0.0000E+00	3.8828E+01	0.0000E+00	3.8884E+01
930000	3.8583E+01	0.0000E+00	3.8606E+01	0.0000E+00	3.8636E+01	0.0000E+00	3.8694E+01	0.0000E+00	3.8778E+01	0.0000E+00	3.8834E+01
932000	3.8534E+01	0.0000E+00	3.8557E+01	0.0000E+00	3.8587E+01	0.0000E+00	3.8645E+01	0.0000E+00	3.8729E+01	0.0000E+00	3.8785E+01
934000	3.8486E+01	0.0000E+00	3.8509E+01	0.0000E+00	3.8538E+01	0.0000E+00	3.8596E+01	0.0000E+00	3.8680E+01	0.0000E+00	3.8735E+01

Time (yrs)	Arg 1	Curve 1	Arg 2	Curve 2	Arg 3	Curve 3	Arg 4	Curve 4	Arg 5	Curve 5	Arg 6
936000	3.8437E+01	0.0000E+00	3.8460E+01	0.0000E+00	3.8490E+01	0.0000E+00	3.8547E+01	0.0000E+00	3.8631E+01	0.0000E+00	3.8686E+01
938000	3.8389E+01	0.0000E+00	3.8412E+01	0.0000E+00	3.8441E+01	0.0000E+00	3.8498E+01	0.0000E+00	3.8582E+01	0.0000E+00	3.8637E+01
940000	3.8340E+01	0.0000E+00	3.8363E+01	0.0000E+00	3.8393E+01	0.0000E+00	3.8449E+01	0.0000E+00	3.8533E+01	0.0000E+00	3.8588E+01
942000	3.8292E+01	0.0000E+00	3.8315E+01	0.0000E+00	3.8345E+01	0.0000E+00	3.8401E+01	0.0000E+00	3.8484E+01	0.0000E+00	3.8539E+01
944000	3.8244E+01	0.0000E+00	3.8267E+01	0.0000E+00	3.8296E+01	0.0000E+00	3.8353E+01	0.0000E+00	3.8436E+01	0.0000E+00	3.8490E+01
946000	3.8197E+01	0.0000E+00	3.8219E+01	0.0000E+00	3.8248E+01	0.0000E+00	3.8305E+01	0.0000E+00	3.8387E+01	0.0000E+00	3.8442E+01
948000	3.8149E+01	0.0000E+00	3.8172E+01	0.0000E+00	3.8201E+01	0.0000E+00	3.8257E+01	0.0000E+00	3.8339E+01	0.0000E+00	3.8393E+01
950000	3.8101E+01	0.0000E+00	3.8124E+01	0.0000E+00	3.8153E+01	0.0000E+00	3.8209E+01	0.0000E+00	3.8291E+01	0.0000E+00	3.8345E+01
952000	3.8054E+01	0.0000E+00	3.8077E+01	0.0000E+00	3.8105E+01	0.0000E+00	3.8161E+01	0.0000E+00	3.8243E+01	0.0000E+00	3.8297E+01
954000	3.8007E+01	0.0000E+00	3.8029E+01	0.0000E+00	3.8058E+01	0.0000E+00	3.8114E+01	0.0000E+00	3.8195E+01	0.0000E+00	3.8249E+01
956000	3.7960E+01	0.0000E+00	3.7982E+01	0.0000E+00	3.8011E+01	0.0000E+00	3.8066E+01	0.0000E+00	3.8148E+01	0.0000E+00	3.8201E+01
958000	3.7913E+01	0.0000E+00	3.7935E+01	0.0000E+00	3.7964E+01	0.0000E+00	3.8019E+01	0.0000E+00	3.8100E+01	0.0000E+00	3.8154E+01
960000	3.7866E+01	0.0000E+00	3.7888E+01	0.0000E+00	3.7917E+01	0.0000E+00	3.7972E+01	0.0000E+00	3.8053E+01	0.0000E+00	3.8106E+01
962000	3.7819E+01	0.0000E+00	3.7841E+01	0.0000E+00	3.7870E+01	0.0000E+00	3.7925E+01	0.0000E+00	3.8005E+01	0.0000E+00	3.8059E+01
964000	3.7773E+01	0.0000E+00	3.7795E+01	0.0000E+00	3.7823E+01	0.0000E+00	3.7878E+01	0.0000E+00	3.7958E+01	0.0000E+00	3.8012E+01
966000	3.7726E+01	0.0000E+00	3.7748E+01	0.0000E+00	3.7777E+01	0.0000E+00	3.7831E+01	0.0000E+00	3.7911E+01	0.0000E+00	3.7964E+01
968000	3.7680E+01	0.0000E+00	3.7702E+01	0.0000E+00	3.7730E+01	0.0000E+00	3.7785E+01	0.0000E+00	3.7865E+01	0.0000E+00	3.7917E+01
970000	3.7634E+01	0.0000E+00	3.7656E+01	0.0000E+00	3.7684E+01	0.0000E+00	3.7738E+01	0.0000E+00	3.7818E+01	0.0000E+00	3.7871E+01
972000	3.7588E+01	0.0000E+00	3.7610E+01	0.0000E+00	3.7638E+01	0.0000E+00	3.7692E+01	0.0000E+00	3.7771E+01	0.0000E+00	3.7824E+01
974000	3.7542E+01	0.0000E+00	3.7564E+01	0.0000E+00	3.7592E+01	0.0000E+00	3.7646E+01	0.0000E+00	3.7725E+01	0.0000E+00	3.7777E+01
976000	3.7497E+01	0.0000E+00	3.7518E+01	0.0000E+00	3.7546E+01	0.0000E+00	3.7600E+01	0.0000E+00	3.7679E+01	0.0000E+00	3.7731E+01
978000	3.7451E+01	0.0000E+00	3.7473E+01	0.0000E+00	3.7500E+01	0.0000E+00	3.7554E+01	0.0000E+00	3.7633E+01	0.0000E+00	3.7685E+01
980000	3.7406E+01	0.0000E+00	3.7427E+01	0.0000E+00	3.7455E+01	0.0000E+00	3.7508E+01	0.0000E+00	3.7587E+01	0.0000E+00	3.7639E+01
982000	3.7360E+01	0.0000E+00	3.7382E+01	0.0000E+00	3.7409E+01	0.0000E+00	3.7463E+01	0.0000E+00	3.7541E+01	0.0000E+00	3.7593E+01
984000	3.7315E+01	0.0000E+00	3.7336E+01	0.0000E+00	3.7364E+01	0.0000E+00	3.7417E+01	0.0000E+00	3.7495E+01	0.0000E+00	3.7547E+01
986000	3.7270E+01	0.0000E+00	3.7291E+01	0.0000E+00	3.7319E+01	0.0000E+00	3.7372E+01	0.0000E+00	3.7450E+01	0.0000E+00	3.7501E+01
988000	3.7225E+01	0.0000E+00	3.7246E+01	0.0000E+00	3.7274E+01	0.0000E+00	3.7327E+01	0.0000E+00	3.7404E+01	0.0000E+00	3.7456E+01
990000	3.7180E+01	0.0000E+00	3.7202E+01	0.0000E+00	3.7229E+01	0.0000E+00	3.7281E+01	0.0000E+00	3.7359E+01	0.0000E+00	3.7410E+01
992000	3.7136E+01	0.0000E+00	3.7157E+01	0.0000E+00	3.7184E+01	0.0000E+00	3.7237E+01	0.0000E+00	3.7314E+01	0.0000E+00	3.7365E+01
994000	3.7091E+01	0.0000E+00	3.7112E+01	0.0000E+00	3.7139E+01	0.0000E+00	3.7192E+01	0.0000E+00	3.7269E+01	0.0000E+00	3.7320E+01
996000	3.7047E+01	0.0000E+00	3.7068E+01	0.0000E+00	3.7095E+01	0.0000E+00	3.7147E+01	0.0000E+00	3.7224E+01	0.0000E+00	3.7275E+01
998000	3.7002E+01	0.0000E+00	3.7023E+01	0.0000E+00	3.7050E+01	0.0000E+00	3.7102E+01	0.0000E+00	3.7179E+01	0.0000E+00	3.7230E+01
1000000	3.6958E+01	0.0000E+00	3.6979E+01	0.0000E+00	3.7006E+01	0.0000E+00	3.7058E+01	0.0000E+00	3.7134E+01	0.0000E+00	3.7185E+01


Flux Out (gm/yr)
1.0000E+00
9.0000E-01
8.0000E-01
7.0000E-01
6.0000E-01
5.0000E-01
4.0000E-01
3.0000E-01
2.0000E-01
1.0000E-01
0.0000E+00
0
100000
200000
300000
400000
500000
600000
700000
800000
900000
1000000

Curve 6	Arg 7	Curve 7	Arg 8	Curve 8	Arg 9	Curve 9	Arg 10	Curve 10	Arg 11	Curve 11	Arg 12	Curve 12
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	1.0778E+03	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	6.9146E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	5.4858E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	4.6854E+02	0.0000E+00	9.7516E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	4.1564E+02	0.0000E+00	6.6193E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	3.7736E+02	0.0000E+00	5.3346E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	3.4800E+02	0.0000E+00	4.5901E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	3.2456E+02	0.0000E+00	4.0894E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	3.0529E+02	0.0000E+00	3.7232E+02	0.0000E+00	1.0377E+03	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	2.8907E+02	0.0000E+00	3.4404E+02	0.0000E+00	6.8054E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	2.7519E+02	0.0000E+00	3.2134E+02	0.0000E+00	5.4307E+02	0.0000E+00	1.1790E+03	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	2.6312E+02	0.0000E+00	3.0260E+02	0.0000E+00	4.6509E+02	0.0000E+00	7.1612E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	2.5250E+02	0.0000E+00	2.8678E+02	0.0000E+00	4.1323E+02	0.0000E+00	5.6066E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	2.4307E+02	0.0000E+00	2.7321E+02	0.0000E+00	3.7555E+02	0.0000E+00	4.7600E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	2.3462E+02	0.0000E+00	2.6139E+02	0.0000E+00	3.4658E+02	0.0000E+00	4.2083E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	2.2698E+02	0.0000E+00	2.5097E+02	0.0000E+00	3.2341E+02	0.0000E+00	3.8123E+02	0.0000E+00	1.1498E+03	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	2.2005E+02	0.0000E+00	2.4170E+02	0.0000E+00	3.0433E+02	0.0000E+00	3.5104E+02	0.0000E+00	7.0944E+02	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	2.1370E+02	0.0000E+00	2.3338E+02	0.0000E+00	2.8826E+02	0.0000E+00	3.2702E+02	0.0000E+00	5.5743E+02	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	2.0787E+02	0.0000E+00	2.2587E+02	0.0000E+00	2.7448E+02	0.0000E+00	3.0733E+02	0.0000E+00	4.7402E+02	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	2.0249E+02	0.0000E+00	2.1903E+02	0.0000E+00	2.6250E+02	0.0000E+00	2.9081E+02	0.0000E+00	4.1946E+02	0.0000E+00	1.1641E+03	0.0000E+00
0.0000E+00	1.9751E+02	0.0000E+00	2.1277E+02	0.0000E+00	2.5196E+02	0.0000E+00	2.7668E+02	0.0000E+00	3.8021E+02	0.0000E+00	7.1276E+02	0.0000E+00
0.0000E+00	1.9287E+02	0.0000E+00	2.0701E+02	0.0000E+00	2.4258E+02	0.0000E+00	2.6443E+02	0.0000E+00	3.5024E+02	0.0000E+00	5.5904E+02	0.0000E+00
0.0000E+00	1.8854E+02	0.0000E+00	2.0170E+02	0.0000E+00	2.3418E+02	0.0000E+00	2.5366E+02	0.0000E+00	3.2637E+02	0.0000E+00	4.7501E+02	0.0000E+00
0.0000E+00	1.8449E+02	0.0000E+00	1.9677E+02	0.0000E+00	2.2659E+02	0.0000E+00	2.4410E+02	0.0000E+00	3.0680E+02	0.0000E+00	4.2014E+02	0.0000E+00
0.0000E+00	1.8068E+02	0.0000E+00	1.9218E+02	0.0000E+00	2.1968E+02	0.0000E+00	2.3555E+02	0.0000E+00	2.9035E+02	0.0000E+00	3.8072E+02	0.0000E+00
0.0000E+00	1.7710E+02	0.0000E+00	1.8790E+02	0.0000E+00	2.1337E+02	0.0000E+00	2.2782E+02	0.0000E+00	2.7629E+02	0.0000E+00	3.5064E+02	0.0000E+00
0.0000E+00	1.7373E+02	0.0000E+00	1.8388E+02	0.0000E+00	2.0757E+02	0.0000E+00	2.2081E+02	0.0000E+00	2.6408E+02	0.0000E+00	3.2670E+02	0.0000E+00
0.0000E+00	1.7053E+02	0.0000E+00	1.8012E+02	0.0000E+00	2.0221E+02	0.0000E+00	2.1440E+02	0.0000E+00	2.5336E+02	0.0000E+00	3.0706E+02	0.0000E+00
0.0000E+00	1.6751E+02	0.0000E+00	1.7657E+02	0.0000E+00	1.9724E+02	0.0000E+00	2.0852E+02	0.0000E+00	2.4383E+02	0.0000E+00	2.9058E+02	0.0000E+00
0.0000E+00	1.6463E+02	0.0000E+00	1.7322E+02	0.0000E+00	1.9262E+02	0.0000E+00	2.0309E+02	0.0000E+00	2.3530E+02	0.0000E+00	2.7649E+02	0.0000E+00
0.0000E+00	1.6190E+02	0.0000E+00	1.7005E+02	0.0000E+00	1.8831E+02	0.0000E+00	1.9806E+02	0.0000E+00	2.2760E+02	0.0000E+00	2.6426E+02	0.0000E+00
0.0000E+00	1.5930E+02	0.0000E+00	1.6705E+02	0.0000E+00	1.8427E+02	0.0000E+00	1.9339E+02	0.0000E+00	2.2061E+02	0.0000E+00	2.5351E+02	0.0000E+00
0.0000E+00	1.5682E+02	0.0000E+00	1.6420E+02	0.0000E+00	1.8048E+02	0.0000E+00	1.8903E+02	0.0000E+00	2.1422E+02	0.0000E+00	2.4397E+02	0.0000E+00
0.0000E+00	1.5445E+02	0.0000E+00	1.6149E+02	0.0000E+00	1.7691E+02	0.0000E+00	1.8494E+02	0.0000E+00	2.0835E+02	0.0000E+00	2.3542E+02	0.0000E+00
0.0000E+00	1.5218E+02	0.0000E+00	1.5891E+02	0.0000E+00	1.7355E+02	0.0000E+00	1.8111E+02	0.0000E+00	2.0294E+02	0.0000E+00	2.2771E+02	0.0000E+00
0.0000E+00	1.5001E+02	0.0000E+00	1.5644E+02	0.0000E+00	1.7036E+02	0.0000E+00	1.7751E+02	0.0000E+00	1.9792E+02	0.0000E+00	2.2071E+02	0.0000E+00
0.0000E+00	1.4792E+02	0.0000E+00	1.5409E+02	0.0000E+00	1.6734E+02	0.0000E+00	1.7410E+02	0.0000E+00	1.9325E+02	0.0000E+00	2.1431E+02	0.0000E+00
0.0000E+00	1.4592E+02	0.0000E+00	1.5184E+02	0.0000E+00	1.6448E+02	0.0000E+00	1.7089E+02	0.0000E+00	1.8890E+02	0.0000E+00	2.0844E+02	0.0000E+00
0.0000E+00	1.4400E+02	0.0000E+00	1.4968E+02	0.0000E+00	1.6176E+02	0.0000E+00	1.6785E+02	0.0000E+00	1.8482E+02	0.0000E+00	2.0301E+02	0.0000E+00
0.0000E+00	1.4215E+02	0.0000E+00	1.4761E+02	0.0000E+00	1.5916E+02	0.0000E+00	1.6496E+02	0.0000E+00	1.8100E+02	0.0000E+00	1.9799E+02	0.0000E+00
0.0000E+00	1.4037E+02	0.0000E+00	1.4562E+02	0.0000E+00	1.5668E+02	0.0000E+00	1.6221E+02	0.0000E+00	1.7740E+02	0.0000E+00	1.9332E+02	0.0000E+00
0.0000E+00	1.3865E+02	0.0000E+00	1.4371E+02	0.0000E+00	1.5432E+02	0.0000E+00	1.5959E+02	0.0000E+00	1.7401E+02	0.0000E+00	1.8896E+02	0.0000E+00

Curve 6	Arg 7	Curve 7	Arg 8	Curve 8	Arg 9	Curve 9	Arg 10	Curve 10	Arg 11	Curve 11	Arg 12	Curve 12
0.0000E+00	1.3699E+02	0.0000E+00	1.4187E+02	0.0000E+00	1.5206E+02	0.0000E+00	1.5710E+02	0.0000E+00	1.7080E+02	0.0000E+00	1.8488E+02	0.0000E+00
0.0000E+00	1.3539E+02	0.0000E+00	1.4010E+02	0.0000E+00	1.4989E+02	0.0000E+00	1.5471E+02	0.0000E+00	1.6776E+02	0.0000E+00	1.8105E+02	0.0000E+00
0.0000E+00	1.3385E+02	0.0000E+00	1.3839E+02	0.0000E+00	1.4781E+02	0.0000E+00	1.5243E+02	0.0000E+00	1.6487E+02	0.0000E+00	1.7745E+02	0.0000E+00
0.0000E+00	1.3235E+02	0.0000E+00	1.3674E+02	0.0000E+00	1.4581E+02	0.0000E+00	1.5025E+02	0.0000E+00	1.6213E+02	0.0000E+00	1.7406E+02	0.0000E+00
0.0000E+00	1.3091E+02	0.0000E+00	1.3515E+02	0.0000E+00	1.4390E+02	0.0000E+00	1.4816E+02	0.0000E+00	1.5952E+02	0.0000E+00	1.7084E+02	0.0000E+00
0.0000E+00	1.2950E+02	0.0000E+00	1.3361E+02	0.0000E+00	1.4205E+02	0.0000E+00	1.4615E+02	0.0000E+00	1.5702E+02	0.0000E+00	1.6780E+02	0.0000E+00
0.0000E+00	1.2814E+02	0.0000E+00	1.3213E+02	0.0000E+00	1.4027E+02	0.0000E+00	1.4422E+02	0.0000E+00	1.5464E+02	0.0000E+00	1.6491E+02	0.0000E+00
0.0000E+00	1.2683E+02	0.0000E+00	1.3069E+02	0.0000E+00	1.3856E+02	0.0000E+00	1.4236E+02	0.0000E+00	1.5237E+02	0.0000E+00	1.6217E+02	0.0000E+00
0.0000E+00	1.2555E+02	0.0000E+00	1.2929E+02	0.0000E+00	1.3691E+02	0.0000E+00	1.4057E+02	0.0000E+00	1.5019E+02	0.0000E+00	1.5955E+02	0.0000E+00
0.0000E+00	1.2431E+02	0.0000E+00	1.2794E+02	0.0000E+00	1.3531E+02	0.0000E+00	1.3885E+02	0.0000E+00	1.4810E+02	0.0000E+00	1.5706E+02	0.0000E+00
0.0000E+00	1.2310E+02	0.0000E+00	1.2663E+02	0.0000E+00	1.3376E+02	0.0000E+00	1.3718E+02	0.0000E+00	1.4609E+02	0.0000E+00	1.5468E+02	0.0000E+00
0.0000E+00	1.2193E+02	0.0000E+00	1.2535E+02	0.0000E+00	1.3227E+02	0.0000E+00	1.3558E+02	0.0000E+00	1.4416E+02	0.0000E+00	1.5240E+02	0.0000E+00
0.0000E+00	1.2079E+02	0.0000E+00	1.2412E+02	0.0000E+00	1.3083E+02	0.0000E+00	1.3402E+02	0.0000E+00	1.4230E+02	0.0000E+00	1.5022E+02	0.0000E+00
0.0000E+00	1.1968E+02	0.0000E+00	1.2292E+02	0.0000E+00	1.2943E+02	0.0000E+00	1.3252E+02	0.0000E+00	1.4052E+02	0.0000E+00	1.4813E+02	0.0000E+00
0.0000E+00	1.1860E+02	0.0000E+00	1.2175E+02	0.0000E+00	1.2807E+02	0.0000E+00	1.3107E+02	0.0000E+00	1.3879E+02	0.0000E+00	1.4612E+02	0.0000E+00
0.0000E+00	1.1754E+02	0.0000E+00	1.2061E+02	0.0000E+00	1.2676E+02	0.0000E+00	1.2966E+02	0.0000E+00	1.3713E+02	0.0000E+00	1.4419E+02	0.0000E+00
0.0000E+00	1.1652E+02	0.0000E+00	1.1951E+02	0.0000E+00	1.2548E+02	0.0000E+00	1.2830E+02	0.0000E+00	1.3553E+02	0.0000E+00	1.4233E+02	0.0000E+00
0.0000E+00	1.1552E+02	0.0000E+00	1.1843E+02	0.0000E+00	1.2424E+02	0.0000E+00	1.2698E+02	0.0000E+00	1.3398E+02	0.0000E+00	1.4054E+02	0.0000E+00
0.0000E+00	1.1454E+02	0.0000E+00	1.1738E+02	0.0000E+00	1.2303E+02	0.0000E+00	1.2569E+02	0.0000E+00	1.3248E+02	0.0000E+00	1.3882E+02	0.0000E+00
0.0000E+00	1.1359E+02	0.0000E+00	1.1636E+02	0.0000E+00	1.2186E+02	0.0000E+00	1.2445E+02	0.0000E+00	1.3103E+02	0.0000E+00	1.3716E+02	0.0000E+00
0.0000E+00	1.1266E+02	0.0000E+00	1.1536E+02	0.0000E+00	1.2072E+02	0.0000E+00	1.2324E+02	0.0000E+00	1.2962E+02	0.0000E+00	1.3555E+02	0.0000E+00
0.0000E+00	1.1175E+02	0.0000E+00	1.1439E+02	0.0000E+00	1.1962E+02	0.0000E+00	1.2206E+02	0.0000E+00	1.2826E+02	0.0000E+00	1.3400E+02	0.0000E+00
0.0000E+00	1.1087E+02	0.0000E+00	1.1344E+02	0.0000E+00	1.1854E+02	0.0000E+00	1.2092E+02	0.0000E+00	1.2694E+02	0.0000E+00	1.3250E+02	0.0000E+00
0.0000E+00	1.1000E+02	0.0000E+00	1.1252E+02	0.0000E+00	1.1749E+02	0.0000E+00	1.1980E+02	0.0000E+00	1.2566E+02	0.0000E+00	1.3105E+02	0.0000E+00
0.0000E+00	1.0915E+02	0.0000E+00	1.1162E+02	0.0000E+00	1.1646E+02	0.0000E+00	1.1872E+02	0.0000E+00	1.2441E+02	0.0000E+00	1.2964E+02	0.0000E+00
0.0000E+00	1.0833E+02	0.0000E+00	1.1073E+02	0.0000E+00	1.1546E+02	0.0000E+00	1.1766E+02	0.0000E+00	1.2320E+02	0.0000E+00	1.2828E+02	0.0000E+00
0.0000E+00	1.0752E+02	0.0000E+00	1.0987E+02	0.0000E+00	1.1449E+02	0.0000E+00	1.1663E+02	0.0000E+00	1.2203E+02	0.0000E+00	1.2696E+02	0.0000E+00
0.0000E+00	1.0672E+02	0.0000E+00	1.0903E+02	0.0000E+00	1.1354E+02	0.0000E+00	1.1563E+02	0.0000E+00	1.2088E+02	0.0000E+00	1.2567E+02	0.0000E+00
0.0000E+00	1.0595E+02	0.0000E+00	1.0820E+02	0.0000E+00	1.1261E+02	0.0000E+00	1.1465E+02	0.0000E+00	1.1977E+02	0.0000E+00	1.2443E+02	0.0000E+00
0.0000E+00	1.0519E+02	0.0000E+00	1.0739E+02	0.0000E+00	1.1170E+02	0.0000E+00	1.1370E+02	0.0000E+00	1.1869E+02	0.0000E+00	1.2322E+02	0.0000E+00
0.0000E+00	1.0444E+02	0.0000E+00	1.0660E+02	0.0000E+00	1.1082E+02	0.0000E+00	1.1277E+02	0.0000E+00	1.1763E+02	0.0000E+00	1.2204E+02	0.0000E+00
0.0000E+00	1.0372E+02	0.0000E+00	1.0583E+02	0.0000E+00	1.0995E+02	0.0000E+00	1.1186E+02	0.0000E+00	1.1660E+02	0.0000E+00	1.2090E+02	0.0000E+00
0.0000E+00	1.0300E+02	0.0000E+00	1.0507E+02	0.0000E+00	1.0911E+02	0.0000E+00	1.1097E+02	0.0000E+00	1.1560E+02	0.0000E+00	1.1979E+02	0.0000E+00
0.0000E+00	1.0230E+02	0.0000E+00	1.0433E+02	0.0000E+00	1.0828E+02	0.0000E+00	1.1010E+02	0.0000E+00	1.1462E+02	0.0000E+00	1.1870E+02	0.0000E+00
0.0000E+00	1.0161E+02	0.0000E+00	1.0360E+02	0.0000E+00	1.0747E+02	0.0000E+00	1.0925E+02	0.0000E+00	1.1367E+02	0.0000E+00	1.1765E+02	0.0000E+00
0.0000E+00	1.0094E+02	0.0000E+00	1.0289E+02	0.0000E+00	1.0668E+02	0.0000E+00	1.0842E+02	0.0000E+00	1.1274E+02	0.0000E+00	1.1662E+02	0.0000E+00
0.0000E+00	1.0028E+02	0.0000E+00	1.0219E+02	0.0000E+00	1.0591E+02	0.0000E+00	1.0761E+02	0.0000E+00	1.1183E+02	0.0000E+00	1.1562E+02	0.0000E+00
0.0000E+00	9.9630E+01	0.0000E+00	1.0151E+02	0.0000E+00	1.0515E+02	0.0000E+00	1.0681E+02	0.0000E+00	1.1094E+02	0.0000E+00	1.1464E+02	0.0000E+00
0.0000E+00	9.8994E+01	0.0000E+00	1.0084E+02	0.0000E+00	1.0440E+02	0.0000E+00	1.0604E+02	0.0000E+00	1.1007E+02	0.0000E+00	1.1368E+02	0.0000E+00
0.0000E+00	9.8369E+01	0.0000E+00	1.0018E+02	0.0000E+00	1.0368E+02	0.0000E+00	1.0527E+02	0.0000E+00	1.0923E+02	0.0000E+00	1.1275E+02	0.0000E+00
0.0000E+00	9.7756E+01	0.0000E+00	9.9531E+01	0.0000E+00	1.0296E+02	0.0000E+00	1.0453E+02	0.0000E+00	1.0840E+02	0.0000E+00	1.1184E+02	0.0000E+00
0.0000E+00	9.7153E+01	0.0000E+00	9.8896E+01	0.0000E+00	1.0226E+02	0.0000E+00	1.0380E+02	0.0000E+00	1.0758E+02	0.0000E+00	1.1096E+02	0.0000E+00
0.0000E+00	9.6561E+01	0.0000E+00	9.8273E+01	0.0000E+00	1.0158E+02	0.0000E+00	1.0308E+02	0.0000E+00	1.0679E+02	0.0000E+00	1.1009E+02	0.0000E+00
0.0000E+00	9.5979E+01	0.0000E+00	9.7661E+01	0.0000E+00	1.0090E+02	0.0000E+00	1.0238E+02	0.0000E+00	1.0601E+02	0.0000E+00	1.0924E+02	0.0000E+00
0.0000E+00	9.5407E+01	0.0000E+00	9.7060E+01	0.0000E+00	1.0024E+02	0.0000E+00	1.0169E+02	0.0000E+00	1.0525E+02	0.0000E+00	1.0841E+02	0.0000E+00
0.0000E+00	9.4845E+01	0.0000E+00	9.6470E+01	0.0000E+00	9.9595E+01	0.0000E+00	1.0102E+02	0.0000E+00	1.0451E+02	0.0000E+00	1.0760E+02	0.0000E+00
0.0000E+00	9.4292E+01	0.0000E+00	9.5890E+01	0.0000E+00	9.8959E+01	0.0000E+00	1.0035E+02	0.0000E+00	1.0378E+02	0.0000E+00	1.0680E+02	0.0000E+00
0.0000E+00	9.3749E+01	0.0000E+00	9.5319E+01	0.0000E+00	9.8335E+01	0.0000E+00	9.9704E+01	0.0000E+00	1.0306E+02	0.0000E+00	1.0603E+02	0.0000E+00
0.0000E+00	9.3214E+01	0.0000E+00	9.4759E+01	0.0000E+00	9.7722E+01	0.0000E+00	9.9067E+01	0.0000E+00	1.0236E+02	0.0000E+00	1.0526E+02	0.0000E+00
0.0000E+00	9.2689E+01	0.0000E+00	9.4208E+01	0.0000E+00	9.7120E+01	0.0000E+00	9.8440E+01	0.0000E+00	1.0167E+02	0.0000E+00	1.0452E+02	0.0000E+00
0.0000E+00	9.2171E+01	0.0000E+00	9.3666E+01	0.0000E+00	9.6528E+01	0.0000E+00	9.7826E+01	0.0000E+00	1.0100E+02	0.0000E+00	1.0379E+02	0.0000E+00
0.0000E+00	9.1662E+01	0.0000E+00	9.3132E+01	0.0000E+00	9.5947E+01	0.0000E+00	9.7222E+01	0.0000E+00	1.0033E+02	0.0000E+00	1.0307E+02	0.0000E+00

Curve 6	Arg 7	Curve 7	Arg 8	Curve 8	Arg 9	Curve 9	Arg 10	Curve 10	Arg 11	Curve 11	Arg 12	Curve 12
0.0000E+00	9.1161E+01	0.0000E+00	9.2608E+01	0.0000E+00	9.5376E+01	0.0000E+00	9.6628E+01	0.0000E+00	9.9685E+01	0.0000E+00	1.0237E+02	0.0000E+00
0.0000E+00	9.0667E+01	0.0000E+00	9.2092E+01	0.0000E+00	9.4814E+01	0.0000E+00	9.6045E+01	0.0000E+00	9.9048E+01	0.0000E+00	1.0168E+02	0.0000E+00
0.0000E+00	9.0182E+01	0.0000E+00	9.1584E+01	0.0000E+00	9.4262E+01	0.0000E+00	9.5472E+01	0.0000E+00	9.8422E+01	0.0000E+00	1.0101E+02	0.0000E+00
0.0000E+00	8.9703E+01	0.0000E+00	9.1084E+01	0.0000E+00	9.3719E+01	0.0000E+00	9.4909E+01	0.0000E+00	9.7807E+01	0.0000E+00	1.0034E+02	0.0000E+00
0.0000E+00	8.9232E+01	0.0000E+00	9.0592E+01	0.0000E+00	9.3185E+01	0.0000E+00	9.4356E+01	0.0000E+00	9.7204E+01	0.0000E+00	9.9695E+01	0.0000E+00
0.0000E+00	8.8768E+01	0.0000E+00	9.0107E+01	0.0000E+00	9.2660E+01	0.0000E+00	9.3811E+01	0.0000E+00	9.6611E+01	0.0000E+00	9.9057E+01	0.0000E+00
0.0000E+00	8.8310E+01	0.0000E+00	8.9630E+01	0.0000E+00	9.2143E+01	0.0000E+00	9.3275E+01	0.0000E+00	9.6028E+01	0.0000E+00	9.8431E+01	0.0000E+00
0.0000E+00	8.7860E+01	0.0000E+00	8.9160E+01	0.0000E+00	9.1634E+01	0.0000E+00	9.2749E+01	0.0000E+00	9.5455E+01	0.0000E+00	9.7816E+01	0.0000E+00
0.0000E+00	8.7416E+01	0.0000E+00	8.8696E+01	0.0000E+00	9.1133E+01	0.0000E+00	9.2230E+01	0.0000E+00	9.4892E+01	0.0000E+00	9.7213E+01	0.0000E+00
0.0000E+00	8.6978E+01	0.0000E+00	8.8240E+01	0.0000E+00	9.0640E+01	0.0000E+00	9.1720E+01	0.0000E+00	9.4339E+01	0.0000E+00	9.6619E+01	0.0000E+00
0.0000E+00	8.6546E+01	0.0000E+00	8.7791E+01	0.0000E+00	9.0155E+01	0.0000E+00	9.1218E+01	0.0000E+00	9.3795E+01	0.0000E+00	9.6037E+01	0.0000E+00
0.0000E+00	8.6121E+01	0.0000E+00	8.7347E+01	0.0000E+00	8.9677E+01	0.0000E+00	9.0724E+01	0.0000E+00	9.3260E+01	0.0000E+00	9.5464E+01	0.0000E+00
0.0000E+00	8.5701E+01	0.0000E+00	8.6911E+01	0.0000E+00	8.9206E+01	0.0000E+00	9.0237E+01	0.0000E+00	9.2733E+01	0.0000E+00	9.4901E+01	0.0000E+00
0.0000E+00	8.5288E+01	0.0000E+00	8.6480E+01	0.0000E+00	8.8742E+01	0.0000E+00	8.9758E+01	0.0000E+00	9.2215E+01	0.0000E+00	9.4347E+01	0.0000E+00
0.0000E+00	8.4880E+01	0.0000E+00	8.6056E+01	0.0000E+00	8.8285E+01	0.0000E+00	8.9286E+01	0.0000E+00	9.1705E+01	0.0000E+00	9.3803E+01	0.0000E+00
0.0000E+00	8.4477E+01	0.0000E+00	8.5637E+01	0.0000E+00	8.7835E+01	0.0000E+00	8.8821E+01	0.0000E+00	9.1203E+01	0.0000E+00	9.3267E+01	0.0000E+00
0.0000E+00	8.4080E+01	0.0000E+00	8.5224E+01	0.0000E+00	8.7391E+01	0.0000E+00	8.8363E+01	0.0000E+00	9.0709E+01	0.0000E+00	9.2741E+01	0.0000E+00
0.0000E+00	8.3688E+01	0.0000E+00	8.4817E+01	0.0000E+00	8.6954E+01	0.0000E+00	8.7911E+01	0.0000E+00	9.0223E+01	0.0000E+00	9.2223E+01	0.0000E+00
0.0000E+00	8.3301E+01	0.0000E+00	8.4415E+01	0.0000E+00	8.6523E+01	0.0000E+00	8.7466E+01	0.0000E+00	8.9744E+01	0.0000E+00	9.1713E+01	0.0000E+00
0.0000E+00	8.2919E+01	0.0000E+00	8.4019E+01	0.0000E+00	8.6098E+01	0.0000E+00	8.7028E+01	0.0000E+00	8.9272E+01	0.0000E+00	9.1211E+01	0.0000E+00
0.0000E+00	8.2543E+01	0.0000E+00	8.3628E+01	0.0000E+00	8.5678E+01	0.0000E+00	8.6596E+01	0.0000E+00	8.8807E+01	0.0000E+00	9.0716E+01	0.0000E+00
0.0000E+00	8.2171E+01	0.0000E+00	8.3242E+01	0.0000E+00	8.5265E+01	0.0000E+00	8.6170E+01	0.0000E+00	8.8349E+01	0.0000E+00	9.0230E+01	0.0000E+00
0.0000E+00	8.1804E+01	0.0000E+00	8.2861E+01	0.0000E+00	8.4857E+01	0.0000E+00	8.5749E+01	0.0000E+00	8.7898E+01	0.0000E+00	8.9751E+01	0.0000E+00
0.0000E+00	8.1441E+01	0.0000E+00	8.2485E+01	0.0000E+00	8.4455E+01	0.0000E+00	8.5335E+01	0.0000E+00	8.7453E+01	0.0000E+00	8.9279E+01	0.0000E+00
0.0000E+00	8.1083E+01	0.0000E+00	8.2114E+01	0.0000E+00	8.4058E+01	0.0000E+00	8.4926E+01	0.0000E+00	8.7015E+01	0.0000E+00	8.8814E+01	0.0000E+00
0.0000E+00	8.0729E+01	0.0000E+00	8.1747E+01	0.0000E+00	8.3666E+01	0.0000E+00	8.4523E+01	0.0000E+00	8.6583E+01	0.0000E+00	8.8356E+01	0.0000E+00
0.0000E+00	8.0380E+01	0.0000E+00	8.1385E+01	0.0000E+00	8.3280E+01	0.0000E+00	8.4125E+01	0.0000E+00	8.6157E+01	0.0000E+00	8.7905E+01	0.0000E+00
0.0000E+00	8.0035E+01	0.0000E+00	8.1028E+01	0.0000E+00	8.2899E+01	0.0000E+00	8.3733E+01	0.0000E+00	8.5737E+01	0.0000E+00	8.7460E+01	0.0000E+00
0.0000E+00	7.9694E+01	0.0000E+00	8.0675E+01	0.0000E+00	8.2522E+01	0.0000E+00	8.3345E+01	0.0000E+00	8.5323E+01	0.0000E+00	8.7021E+01	0.0000E+00
0.0000E+00	7.9358E+01	0.0000E+00	8.0326E+01	0.0000E+00	8.2150E+01	0.0000E+00	8.2963E+01	0.0000E+00	8.4914E+01	0.0000E+00	8.6589E+01	0.0000E+00
0.0000E+00	7.9025E+01	0.0000E+00	7.9982E+01	0.0000E+00	8.1784E+01	0.0000E+00	8.2586E+01	0.0000E+00	8.4511E+01	0.0000E+00	8.6163E+01	0.0000E+00
0.0000E+00	7.8696E+01	0.0000E+00	7.9642E+01	0.0000E+00	8.1421E+01	0.0000E+00	8.2213E+01	0.0000E+00	8.4113E+01	0.0000E+00	8.5743E+01	0.0000E+00
0.0000E+00	7.8371E+01	0.0000E+00	7.9306E+01	0.0000E+00	8.1063E+01	0.0000E+00	8.1846E+01	0.0000E+00	8.3721E+01	0.0000E+00	8.5329E+01	0.0000E+00
0.0000E+00	7.8050E+01	0.0000E+00	7.8974E+01	0.0000E+00	8.0710E+01	0.0000E+00	8.1482E+01	0.0000E+00	8.3334E+01	0.0000E+00	8.4920E+01	0.0000E+00
0.0000E+00	7.7732E+01	0.0000E+00	7.8645E+01	0.0000E+00	8.0361E+01	0.0000E+00	8.1124E+01	0.0000E+00	8.2952E+01	0.0000E+00	8.4517E+01	0.0000E+00
0.0000E+00	7.7419E+01	0.0000E+00	7.8321E+01	0.0000E+00	8.0016E+01	0.0000E+00	8.0770E+01	0.0000E+00	8.2575E+01	0.0000E+00	8.4119E+01	0.0000E+00
0.0000E+00	7.7108E+01	0.0000E+00	7.8000E+01	0.0000E+00	7.9676E+01	0.0000E+00	8.0420E+01	0.0000E+00	8.2202E+01	0.0000E+00	8.3727E+01	0.0000E+00
0.0000E+00	7.6801E+01	0.0000E+00	7.7683E+01	0.0000E+00	7.9339E+01	0.0000E+00	8.0075E+01	0.0000E+00	8.1835E+01	0.0000E+00	8.3340E+01	0.0000E+00
0.0000E+00	7.6498E+01	0.0000E+00	7.7370E+01	0.0000E+00	7.9007E+01	0.0000E+00	7.9733E+01	0.0000E+00	8.1472E+01	0.0000E+00	8.2957E+01	0.0000E+00
0.0000E+00	7.6198E+01	0.0000E+00	7.7060E+01	0.0000E+00	7.8678E+01	0.0000E+00	7.9396E+01	0.0000E+00	8.1113E+01	0.0000E+00	8.2580E+01	0.0000E+00
0.0000E+00	7.5901E+01	0.0000E+00	7.6754E+01	0.0000E+00	7.8353E+01	0.0000E+00	7.9063E+01	0.0000E+00	8.0759E+01	0.0000E+00	8.2208E+01	0.0000E+00
0.0000E+00	7.5608E+01	0.0000E+00	7.6451E+01	0.0000E+00	7.8032E+01	0.0000E+00	7.8734E+01	0.0000E+00	8.0410E+01	0.0000E+00	8.1840E+01	0.0000E+00
0.0000E+00	7.5317E+01	0.0000E+00	7.6152E+01	0.0000E+00	7.7715E+01	0.0000E+00	7.8408E+01	0.0000E+00	8.0064E+01	0.0000E+00	8.1477E+01	0.0000E+00
0.0000E+00	7.5030E+01	0.0000E+00	7.5855E+01	0.0000E+00	7.7401E+01	0.0000E+00	7.8087E+01	0.0000E+00	7.9723E+01	0.0000E+00	8.1119E+01	0.0000E+00
0.0000E+00	7.4746E+01	0.0000E+00	7.5562E+01	0.0000E+00	7.7091E+01	0.0000E+00	7.7769E+01	0.0000E+00	7.9386E+01	0.0000E+00	8.0765E+01	0.0000E+00
0.0000E+00	7.4465E+01	0.0000E+00	7.5273E+01	0.0000E+00	7.6785E+01	0.0000E+00	7.7454E+01	0.0000E+00	7.9053E+01	0.0000E+00	8.0415E+01	0.0000E+00
0.0000E+00	7.4187E+01	0.0000E+00	7.4986E+01	0.0000E+00	7.6481E+01	0.0000E+00	7.7144E+01	0.0000E+00	7.8724E+01	0.0000E+00	8.0069E+01	0.0000E+00
0.0000E+00	7.3911E+01	0.0000E+00	7.4702E+01	0.0000E+00	7.6182E+01	0.0000E+00	7.6836E+01	0.0000E+00	7.8399E+01	0.0000E+00	7.9728E+01	0.0000E+00
0.0000E+00	7.3639E+01	0.0000E+00	7.4422E+01	0.0000E+00	7.5885E+01	0.0000E+00	7.6533E+01	0.0000E+00	7.8077E+01	0.0000E+00	7.9391E+01	0.0000E+00
0.0000E+00	7.3369E+01	0.0000E+00	7.4144E+01	0.0000E+00	7.5592E+01	0.0000E+00	7.6232E+01	0.0000E+00	7.7759E+01	0.0000E+00	7.9058E+01	0.0000E+00
0.0000E+00	7.3102E+01	0.0000E+00	7.3869E+01	0.0000E+00	7.5301E+01	0.0000E+00	7.5935E+01	0.0000E+00	7.7445E+01	0.0000E+00	7.8729E+01	0.0000E+00
0.0000E+00	7.2838E+01	0.0000E+00	7.3597E+01	0.0000E+00	7.5014E+01	0.0000E+00	7.5641E+01	0.0000E+00	7.7134E+01	0.0000E+00	7.8403E+01	0.0000E+00

Curve 6	Arg 7	Curve 7	Arg 8	Curve 8	Arg 9	Curve 9	Arg 10	Curve 10	Arg 11	Curve 11	Arg 12	Curve 12
0.0000E+00	7.2577E+01	0.0000E+00	7.3328E+01	0.0000E+00	7.4730E+01	0.0000E+00	7.5351E+01	0.0000E+00	7.6827E+01	0.0000E+00	7.8082E+01	0.0000E+00
0.0000E+00	7.2318E+01	0.0000E+00	7.3061E+01	0.0000E+00	7.4449E+01	0.0000E+00	7.5063E+01	0.0000E+00	7.6524E+01	0.0000E+00	7.7764E+01	0.0000E+00
0.0000E+00	7.2062E+01	0.0000E+00	7.2798E+01	0.0000E+00	7.4171E+01	0.0000E+00	7.4778E+01	0.0000E+00	7.6223E+01	0.0000E+00	7.7450E+01	0.0000E+00
0.0000E+00	7.1808E+01	0.0000E+00	7.2537E+01	0.0000E+00	7.3896E+01	0.0000E+00	7.4497E+01	0.0000E+00	7.5926E+01	0.0000E+00	7.7139E+01	0.0000E+00
0.0000E+00	7.1557E+01	0.0000E+00	7.2278E+01	0.0000E+00	7.3624E+01	0.0000E+00	7.4218E+01	0.0000E+00	7.5632E+01	0.0000E+00	7.6832E+01	0.0000E+00
0.0000E+00	7.1308E+01	0.0000E+00	7.2022E+01	0.0000E+00	7.3355E+01	0.0000E+00	7.3943E+01	0.0000E+00	7.5342E+01	0.0000E+00	7.6528E+01	0.0000E+00
0.0000E+00	7.1061E+01	0.0000E+00	7.1769E+01	0.0000E+00	7.3088E+01	0.0000E+00	7.3670E+01	0.0000E+00	7.5054E+01	0.0000E+00	7.6228E+01	0.0000E+00
0.0000E+00	7.0817E+01	0.0000E+00	7.1518E+01	0.0000E+00	7.2824E+01	0.0000E+00	7.3400E+01	0.0000E+00	7.4770E+01	0.0000E+00	7.5931E+01	0.0000E+00
0.0000E+00	7.0575E+01	0.0000E+00	7.1269E+01	0.0000E+00	7.2562E+01	0.0000E+00	7.3133E+01	0.0000E+00	7.4489E+01	0.0000E+00	7.5637E+01	0.0000E+00
0.0000E+00	7.0336E+01	0.0000E+00	7.1023E+01	0.0000E+00	7.2304E+01	0.0000E+00	7.2869E+01	0.0000E+00	7.4210E+01	0.0000E+00	7.5346E+01	0.0000E+00
0.0000E+00	7.0099E+01	0.0000E+00	7.0780E+01	0.0000E+00	7.2048E+01	0.0000E+00	7.2607E+01	0.0000E+00	7.3935E+01	0.0000E+00	7.5059E+01	0.0000E+00
0.0000E+00	6.9864E+01	0.0000E+00	7.0538E+01	0.0000E+00	7.1794E+01	0.0000E+00	7.2348E+01	0.0000E+00	7.3662E+01	0.0000E+00	7.4774E+01	0.0000E+00
0.0000E+00	6.9631E+01	0.0000E+00	7.0299E+01	0.0000E+00	7.1543E+01	0.0000E+00	7.2091E+01	0.0000E+00	7.3392E+01	0.0000E+00	7.4493E+01	0.0000E+00
0.0000E+00	6.9400E+01	0.0000E+00	7.0062E+01	0.0000E+00	7.1294E+01	0.0000E+00	7.1837E+01	0.0000E+00	7.3125E+01	0.0000E+00	7.4214E+01	0.0000E+00
0.0000E+00	6.9172E+01	0.0000E+00	6.9828E+01	0.0000E+00	7.1048E+01	0.0000E+00	7.1585E+01	0.0000E+00	7.2861E+01	0.0000E+00	7.3939E+01	0.0000E+00
0.0000E+00	6.8945E+01	0.0000E+00	6.9595E+01	0.0000E+00	7.0804E+01	0.0000E+00	7.1336E+01	0.0000E+00	7.2599E+01	0.0000E+00	7.3666E+01	0.0000E+00
0.0000E+00	6.8721E+01	0.0000E+00	6.9365E+01	0.0000E+00	7.0562E+01	0.0000E+00	7.1089E+01	0.0000E+00	7.2340E+01	0.0000E+00	7.3396E+01	0.0000E+00
0.0000E+00	6.8499E+01	0.0000E+00	6.9137E+01	0.0000E+00	7.0323E+01	0.0000E+00	7.0845E+01	0.0000E+00	7.2083E+01	0.0000E+00	7.3129E+01	0.0000E+00
0.0000E+00	6.8278E+01	0.0000E+00	6.8911E+01	0.0000E+00	7.0086E+01	0.0000E+00	7.0603E+01	0.0000E+00	7.1829E+01	0.0000E+00	7.2865E+01	0.0000E+00
0.0000E+00	6.8060E+01	0.0000E+00	6.8687E+01	0.0000E+00	6.9851E+01	0.0000E+00	7.0363E+01	0.0000E+00	7.1578E+01	0.0000E+00	7.2603E+01	0.0000E+00
0.0000E+00	6.7844E+01	0.0000E+00	6.8464E+01	0.0000E+00	6.9618E+01	0.0000E+00	7.0126E+01	0.0000E+00	7.1329E+01	0.0000E+00	7.2344E+01	0.0000E+00
0.0000E+00	6.7629E+01	0.0000E+00	6.8244E+01	0.0000E+00	6.9388E+01	0.0000E+00	6.9891E+01	0.0000E+00	7.1082E+01	0.0000E+00	7.2087E+01	0.0000E+00
0.0000E+00	6.7416E+01	0.0000E+00	6.8026E+01	0.0000E+00	6.9159E+01	0.0000E+00	6.9658E+01	0.0000E+00	7.0838E+01	0.0000E+00	7.1833E+01	0.0000E+00
0.0000E+00	6.7205E+01	0.0000E+00	6.7810E+01	0.0000E+00	6.8933E+01	0.0000E+00	6.9427E+01	0.0000E+00	7.0596E+01	0.0000E+00	7.1582E+01	0.0000E+00
0.0000E+00	6.6996E+01	0.0000E+00	6.7596E+01	0.0000E+00	6.8709E+01	0.0000E+00	6.9198E+01	0.0000E+00	7.0356E+01	0.0000E+00	7.1332E+01	0.0000E+00
0.0000E+00	6.6789E+01	0.0000E+00	6.7383E+01	0.0000E+00	6.8487E+01	0.0000E+00	6.8971E+01	0.0000E+00	7.0119E+01	0.0000E+00	7.1086E+01	0.0000E+00
0.0000E+00	6.6584E+01	0.0000E+00	6.7173E+01	0.0000E+00	6.8266E+01	0.0000E+00	6.8747E+01	0.0000E+00	6.9884E+01	0.0000E+00	7.0842E+01	0.0000E+00
0.0000E+00	6.6380E+01	0.0000E+00	6.6964E+01	0.0000E+00	6.8048E+01	0.0000E+00	6.8524E+01	0.0000E+00	6.9651E+01	0.0000E+00	7.0600E+01	0.0000E+00
0.0000E+00	6.6178E+01	0.0000E+00	6.6757E+01	0.0000E+00	6.7832E+01	0.0000E+00	6.8304E+01	0.0000E+00	6.9420E+01	0.0000E+00	7.0360E+01	0.0000E+00
0.0000E+00	6.5978E+01	0.0000E+00	6.6552E+01	0.0000E+00	6.7617E+01	0.0000E+00	6.8085E+01	0.0000E+00	6.9191E+01	0.0000E+00	7.0122E+01	0.0000E+00
0.0000E+00	6.5779E+01	0.0000E+00	6.6349E+01	0.0000E+00	6.7405E+01	0.0000E+00	6.7868E+01	0.0000E+00	6.8965E+01	0.0000E+00	6.9887E+01	0.0000E+00
0.0000E+00	6.5582E+01	0.0000E+00	6.6147E+01	0.0000E+00	6.7194E+01	0.0000E+00	6.7654E+01	0.0000E+00	6.8740E+01	0.0000E+00	6.9654E+01	0.0000E+00
0.0000E+00	6.5387E+01	0.0000E+00	6.5947E+01	0.0000E+00	6.6985E+01	0.0000E+00	6.7441E+01	0.0000E+00	6.8518E+01	0.0000E+00	6.9423E+01	0.0000E+00
0.0000E+00	6.5193E+01	0.0000E+00	6.5748E+01	0.0000E+00	6.6778E+01	0.0000E+00	6.7230E+01	0.0000E+00	6.8297E+01	0.0000E+00	6.9195E+01	0.0000E+00
0.0000E+00	6.5001E+01	0.0000E+00	6.5552E+01	0.0000E+00	6.6572E+01	0.0000E+00	6.7020E+01	0.0000E+00	6.8078E+01	0.0000E+00	6.8968E+01	0.0000E+00
0.0000E+00	6.4810E+01	0.0000E+00	6.5357E+01	0.0000E+00	6.6369E+01	0.0000E+00	6.6813E+01	0.0000E+00	6.7862E+01	0.0000E+00	6.8743E+01	0.0000E+00
0.0000E+00	6.4621E+01	0.0000E+00	6.5163E+01	0.0000E+00	6.6167E+01	0.0000E+00	6.6607E+01	0.0000E+00	6.7647E+01	0.0000E+00	6.8521E+01	0.0000E+00
0.0000E+00	6.4433E+01	0.0000E+00	6.4971E+01	0.0000E+00	6.5967E+01	0.0000E+00	6.6403E+01	0.0000E+00	6.7434E+01	0.0000E+00	6.8300E+01	0.0000E+00
0.0000E+00	6.4247E+01	0.0000E+00	6.4781E+01	0.0000E+00	6.5768E+01	0.0000E+00	6.6201E+01	0.0000E+00	6.7223E+01	0.0000E+00	6.8082E+01	0.0000E+00
0.0000E+00	6.4063E+01	0.0000E+00	6.4592E+01	0.0000E+00	6.5571E+01	0.0000E+00	6.6001E+01	0.0000E+00	6.7014E+01	0.0000E+00	6.7865E+01	0.0000E+00
0.0000E+00	6.3880E+01	0.0000E+00	6.4404E+01	0.0000E+00	6.5376E+01	0.0000E+00	6.5802E+01	0.0000E+00	6.6807E+01	0.0000E+00	6.7650E+01	0.0000E+00
0.0000E+00	6.3698E+01	0.0000E+00	6.4219E+01	0.0000E+00	6.5182E+01	0.0000E+00	6.5605E+01	0.0000E+00	6.6601E+01	0.0000E+00	6.7437E+01	0.0000E+00
0.0000E+00	6.3518E+01	0.0000E+00	6.4034E+01	0.0000E+00	6.4990E+01	0.0000E+00	6.5409E+01	0.0000E+00	6.6397E+01	0.0000E+00	6.7226E+01	0.0000E+00
0.0000E+00	6.3339E+01	0.0000E+00	6.3851E+01	0.0000E+00	6.4800E+01	0.0000E+00	6.5215E+01	0.0000E+00	6.6195E+01	0.0000E+00	6.7017E+01	0.0000E+00
0.0000E+00	6.3161E+01	0.0000E+00	6.3670E+01	0.0000E+00	6.4611E+01	0.0000E+00	6.5023E+01	0.0000E+00	6.5995E+01	0.0000E+00	6.6810E+01	0.0000E+00
0.0000E+00	6.2985E+01	0.0000E+00	6.3490E+01	0.0000E+00	6.4423E+01	0.0000E+00	6.4832E+01	0.0000E+00	6.5796E+01	0.0000E+00	6.6604E+01	0.0000E+00
0.0000E+00	6.2810E+01	0.0000E+00	6.3311E+01	0.0000E+00	6.4237E+01	0.0000E+00	6.4643E+01	0.0000E+00	6.5599E+01	0.0000E+00	6.6400E+01	0.0000E+00
0.0000E+00	6.2637E+01	0.0000E+00	6.3134E+01	0.0000E+00	6.4053E+01	0.0000E+00	6.4455E+01	0.0000E+00	6.5403E+01	0.0000E+00	6.6198E+01	0.0000E+00
0.0000E+00	6.2464E+01	0.0000E+00	6.2958E+01	0.0000E+00	6.3870E+01	0.0000E+00	6.4269E+01	0.0000E+00	6.5209E+01	0.0000E+00	6.5998E+01	0.0000E+00
0.0000E+00	6.2294E+01	0.0000E+00	6.2783E+01	0.0000E+00	6.3688E+01	0.0000E+00	6.4084E+01	0.0000E+00	6.5017E+01	0.0000E+00	6.5799E+01	0.0000E+00
0.0000E+00	6.2124E+01	0.0000E+00	6.2610E+01	0.0000E+00	6.3508E+01	0.0000E+00	6.3901E+01	0.0000E+00	6.4826E+01	0.0000E+00	6.5602E+01	0.0000E+00
0.0000E+00	6.1956E+01	0.0000E+00	6.2438E+01	0.0000E+00	6.3329E+01	0.0000E+00	6.3719E+01	0.0000E+00	6.4637E+01	0.0000E+00	6.5406E+01	0.0000E+00

Curve 6	Arg 7	Curve 7	Arg 8	Curve 8	Arg 9	Curve 9	Arg 10	Curve 10	Arg 11	Curve 11	Arg 12	Curve 12
0.0000E+00	6.1788E+01	0.0000E+00	6.2267E+01	0.0000E+00	6.3151E+01	0.0000E+00	6.3538E+01	0.0000E+00	6.4449E+01	0.0000E+00	6.5212E+01	0.0000E+00
0.0000E+00	6.1623E+01	0.0000E+00	6.2098E+01	0.0000E+00	6.2975E+01	0.0000E+00	6.3359E+01	0.0000E+00	6.4263E+01	0.0000E+00	6.5020E+01	0.0000E+00
0.0000E+00	6.1458E+01	0.0000E+00	6.1930E+01	0.0000E+00	6.2801E+01	0.0000E+00	6.3181E+01	0.0000E+00	6.4078E+01	0.0000E+00	6.4829E+01	0.0000E+00
0.0000E+00	6.1294E+01	0.0000E+00	6.1763E+01	0.0000E+00	6.2627E+01	0.0000E+00	6.3005E+01	0.0000E+00	6.3895E+01	0.0000E+00	6.4640E+01	0.0000E+00
0.0000E+00	6.1132E+01	0.0000E+00	6.1597E+01	0.0000E+00	6.2455E+01	0.0000E+00	6.2830E+01	0.0000E+00	6.3713E+01	0.0000E+00	6.4452E+01	0.0000E+00
0.0000E+00	6.0971E+01	0.0000E+00	6.1432E+01	0.0000E+00	6.2284E+01	0.0000E+00	6.2656E+01	0.0000E+00	6.3533E+01	0.0000E+00	6.4266E+01	0.0000E+00
0.0000E+00	6.0811E+01	0.0000E+00	6.1269E+01	0.0000E+00	6.2115E+01	0.0000E+00	6.2484E+01	0.0000E+00	6.3354E+01	0.0000E+00	6.4081E+01	0.0000E+00
0.0000E+00	6.0652E+01	0.0000E+00	6.1107E+01	0.0000E+00	6.1946E+01	0.0000E+00	6.2313E+01	0.0000E+00	6.3176E+01	0.0000E+00	6.3898E+01	0.0000E+00
0.0000E+00	6.0495E+01	0.0000E+00	6.0946E+01	0.0000E+00	6.1779E+01	0.0000E+00	6.2143E+01	0.0000E+00	6.3000E+01	0.0000E+00	6.3716E+01	0.0000E+00
0.0000E+00	6.0338E+01	0.0000E+00	6.0786E+01	0.0000E+00	6.1613E+01	0.0000E+00	6.1975E+01	0.0000E+00	6.2825E+01	0.0000E+00	6.3536E+01	0.0000E+00
0.0000E+00	6.0183E+01	0.0000E+00	6.0628E+01	0.0000E+00	6.1449E+01	0.0000E+00	6.1808E+01	0.0000E+00	6.2651E+01	0.0000E+00	6.3356E+01	0.0000E+00
0.0000E+00	6.0028E+01	0.0000E+00	6.0470E+01	0.0000E+00	6.1285E+01	0.0000E+00	6.1642E+01	0.0000E+00	6.2479E+01	0.0000E+00	6.3179E+01	0.0000E+00
0.0000E+00	5.9875E+01	0.0000E+00	6.0314E+01	0.0000E+00	6.1123E+01	0.0000E+00	6.1477E+01	0.0000E+00	6.2308E+01	0.0000E+00	6.3002E+01	0.0000E+00
0.0000E+00	5.9723E+01	0.0000E+00	6.0158E+01	0.0000E+00	6.0962E+01	0.0000E+00	6.1313E+01	0.0000E+00	6.2138E+01	0.0000E+00	6.2828E+01	0.0000E+00
0.0000E+00	5.9571E+01	0.0000E+00	6.0004E+01	0.0000E+00	6.0802E+01	0.0000E+00	6.1151E+01	0.0000E+00	6.1970E+01	0.0000E+00	6.2654E+01	0.0000E+00
0.0000E+00	5.9421E+01	0.0000E+00	5.9851E+01	0.0000E+00	6.0644E+01	0.0000E+00	6.0989E+01	0.0000E+00	6.1803E+01	0.0000E+00	6.2482E+01	0.0000E+00
0.0000E+00	5.9272E+01	0.0000E+00	5.9699E+01	0.0000E+00	6.0486E+01	0.0000E+00	6.0829E+01	0.0000E+00	6.1637E+01	0.0000E+00	6.2311E+01	0.0000E+00
0.0000E+00	5.9124E+01	0.0000E+00	5.9548E+01	0.0000E+00	6.0329E+01	0.0000E+00	6.0670E+01	0.0000E+00	6.1472E+01	0.0000E+00	6.2141E+01	0.0000E+00
0.0000E+00	5.8977E+01	0.0000E+00	5.9398E+01	0.0000E+00	6.0174E+01	0.0000E+00	6.0513E+01	0.0000E+00	6.1308E+01	0.0000E+00	6.1972E+01	0.0000E+00
0.0000E+00	5.8831E+01	0.0000E+00	5.9249E+01	0.0000E+00	6.0020E+01	0.0000E+00	6.0356E+01	0.0000E+00	6.1146E+01	0.0000E+00	6.1805E+01	0.0000E+00
0.0000E+00	5.8686E+01	0.0000E+00	5.9101E+01	0.0000E+00	5.9866E+01	0.0000E+00	6.0200E+01	0.0000E+00	6.0985E+01	0.0000E+00	6.1639E+01	0.0000E+00
0.0000E+00	5.8541E+01	0.0000E+00	5.8954E+01	0.0000E+00	5.9714E+01	0.0000E+00	6.0046E+01	0.0000E+00	6.0825E+01	0.0000E+00	6.1474E+01	0.0000E+00
0.0000E+00	5.8398E+01	0.0000E+00	5.8808E+01	0.0000E+00	5.9563E+01	0.0000E+00	5.9892E+01	0.0000E+00	6.0666E+01	0.0000E+00	6.1311E+01	0.0000E+00
0.0000E+00	5.8256E+01	0.0000E+00	5.8663E+01	0.0000E+00	5.9413E+01	0.0000E+00	5.9740E+01	0.0000E+00	6.0508E+01	0.0000E+00	6.1148E+01	0.0000E+00
0.0000E+00	5.8114E+01	0.0000E+00	5.8519E+01	0.0000E+00	5.9264E+01	0.0000E+00	5.9589E+01	0.0000E+00	6.0351E+01	0.0000E+00	6.0987E+01	0.0000E+00
0.0000E+00	5.7974E+01	0.0000E+00	5.8376E+01	0.0000E+00	5.9116E+01	0.0000E+00	5.9438E+01	0.0000E+00	6.0196E+01	0.0000E+00	6.0827E+01	0.0000E+00
0.0000E+00	5.7835E+01	0.0000E+00	5.8234E+01	0.0000E+00	5.8969E+01	0.0000E+00	5.9289E+01	0.0000E+00	6.0041E+01	0.0000E+00	6.0668E+01	0.0000E+00
0.0000E+00	5.7696E+01	0.0000E+00	5.8093E+01	0.0000E+00	5.8823E+01	0.0000E+00	5.9141E+01	0.0000E+00	5.9888E+01	0.0000E+00	6.0510E+01	0.0000E+00
0.0000E+00	5.7558E+01	0.0000E+00	5.7952E+01	0.0000E+00	5.8678E+01	0.0000E+00	5.8994E+01	0.0000E+00	5.9735E+01	0.0000E+00	6.0354E+01	0.0000E+00
0.0000E+00	5.7421E+01	0.0000E+00	5.7813E+01	0.0000E+00	5.8533E+01	0.0000E+00	5.8847E+01	0.0000E+00	5.9584E+01	0.0000E+00	6.0198E+01	0.0000E+00
0.0000E+00	5.7285E+01	0.0000E+00	5.7675E+01	0.0000E+00	5.8390E+01	0.0000E+00	5.8702E+01	0.0000E+00	5.9434E+01	0.0000E+00	6.0044E+01	0.0000E+00
0.0000E+00	5.7150E+01	0.0000E+00	5.7537E+01	0.0000E+00	5.8248E+01	0.0000E+00	5.8558E+01	0.0000E+00	5.9285E+01	0.0000E+00	5.9890E+01	0.0000E+00
0.0000E+00	5.7016E+01	0.0000E+00	5.7400E+01	0.0000E+00	5.8107E+01	0.0000E+00	5.8415E+01	0.0000E+00	5.9136E+01	0.0000E+00	5.9738E+01	0.0000E+00
0.0000E+00	5.6883E+01	0.0000E+00	5.7265E+01	0.0000E+00	5.7966E+01	0.0000E+00	5.8272E+01	0.0000E+00	5.8989E+01	0.0000E+00	5.9586E+01	0.0000E+00
0.0000E+00	5.6750E+01	0.0000E+00	5.7130E+01	0.0000E+00	5.7827E+01	0.0000E+00	5.8131E+01	0.0000E+00	5.8843E+01	0.0000E+00	5.9436E+01	0.0000E+00
0.0000E+00	5.6619E+01	0.0000E+00	5.6995E+01	0.0000E+00	5.7688E+01	0.0000E+00	5.7990E+01	0.0000E+00	5.8698E+01	0.0000E+00	5.9287E+01	0.0000E+00
0.0000E+00	5.6488E+01	0.0000E+00	5.6862E+01	0.0000E+00	5.7551E+01	0.0000E+00	5.7851E+01	0.0000E+00	5.8554E+01	0.0000E+00	5.9139E+01	0.0000E+00
0.0000E+00	5.6358E+01	0.0000E+00	5.6730E+01	0.0000E+00	5.7414E+01	0.0000E+00	5.7712E+01	0.0000E+00	5.8410E+01	0.0000E+00	5.8991E+01	0.0000E+00
0.0000E+00	5.6228E+01	0.0000E+00	5.6598E+01	0.0000E+00	5.7278E+01	0.0000E+00	5.7574E+01	0.0000E+00	5.8268E+01	0.0000E+00	5.8845E+01	0.0000E+00
0.0000E+00	5.6100E+01	0.0000E+00	5.6468E+01	0.0000E+00	5.7143E+01	0.0000E+00	5.7437E+01	0.0000E+00	5.8126E+01	0.0000E+00	5.8700E+01	0.0000E+00
0.0000E+00	5.5972E+01	0.0000E+00	5.6338E+01	0.0000E+00	5.7009E+01	0.0000E+00	5.7301E+01	0.0000E+00	5.7986E+01	0.0000E+00	5.8556E+01	0.0000E+00
0.0000E+00	5.5845E+01	0.0000E+00	5.6208E+01	0.0000E+00	5.6876E+01	0.0000E+00	5.7166E+01	0.0000E+00	5.7846E+01	0.0000E+00	5.8412E+01	0.0000E+00
0.0000E+00	5.5719E+01	0.0000E+00	5.6080E+01	0.0000E+00	5.6743E+01	0.0000E+00	5.7032E+01	0.0000E+00	5.7708E+01	0.0000E+00	5.8270E+01	0.0000E+00
0.0000E+00	5.5594E+01	0.0000E+00	5.5953E+01	0.0000E+00	5.6611E+01	0.0000E+00	5.6898E+01	0.0000E+00	5.7570E+01	0.0000E+00	5.8129E+01	0.0000E+00
0.0000E+00	5.5469E+01	0.0000E+00	5.5826E+01	0.0000E+00	5.6481E+01	0.0000E+00	5.6765E+01	0.0000E+00	5.7433E+01	0.0000E+00	5.7988E+01	0.0000E+00
0.0000E+00	5.5345E+01	0.0000E+00	5.5700E+01	0.0000E+00	5.6351E+01	0.0000E+00	5.6634E+01	0.0000E+00	5.7297E+01	0.0000E+00	5.7848E+01	0.0000E+00
0.0000E+00	5.5222E+01	0.0000E+00	5.5574E+01	0.0000E+00	5.6221E+01	0.0000E+00	5.6503E+01	0.0000E+00	5.7162E+01	0.0000E+00	5.7710E+01	0.0000E+00
0.0000E+00	5.5100E+01	0.0000E+00	5.5450E+01	0.0000E+00	5.6093E+01	0.0000E+00	5.6373E+01	0.0000E+00	5.7028E+01	0.0000E+00	5.7572E+01	0.0000E+00
0.0000E+00	5.4978E+01	0.0000E+00	5.5326E+01	0.0000E+00	5.5965E+01	0.0000E+00	5.6243E+01	0.0000E+00	5.6894E+01	0.0000E+00	5.7435E+01	0.0000E+00
0.0000E+00	5.4857E+01	0.0000E+00	5.5203E+01	0.0000E+00	5.5838E+01	0.0000E+00	5.6115E+01	0.0000E+00	5.6762E+01	0.0000E+00	5.7299E+01	0.0000E+00
0.0000E+00	5.4737E+01	0.0000E+00	5.5081E+01	0.0000E+00	5.5712E+01	0.0000E+00	5.5987E+01	0.0000E+00	5.6630E+01	0.0000E+00	5.7164E+01	0.0000E+00
0.0000E+00	5.4617E+01	0.0000E+00	5.4959E+01	0.0000E+00	5.5587E+01	0.0000E+00	5.5860E+01	0.0000E+00	5.6499E+01	0.0000E+00	5.7030E+01	0.0000E+00

Curve 6	Arg 7	Curve 7	Arg 8	Curve 8	Arg 9	Curve 9	Arg 10	Curve 10	Arg 11	Curve 11	Arg 12	Curve 12
0.0000E+00	5.4499E+01	0.0000E+00	5.4839E+01	0.0000E+00	5.5462E+01	0.0000E+00	5.5734E+01	0.0000E+00	5.6369E+01	0.0000E+00	5.6896E+01	0.0000E+00
0.0000E+00	5.4380E+01	0.0000E+00	5.4718E+01	0.0000E+00	5.5339E+01	0.0000E+00	5.5608E+01	0.0000E+00	5.6239E+01	0.0000E+00	5.6764E+01	0.0000E+00
0.0000E+00	5.4263E+01	0.0000E+00	5.4599E+01	0.0000E+00	5.5215E+01	0.0000E+00	5.5484E+01	0.0000E+00	5.6111E+01	0.0000E+00	5.6632E+01	0.0000E+00
0.0000E+00	5.4146E+01	0.0000E+00	5.4480E+01	0.0000E+00	5.5093E+01	0.0000E+00	5.5360E+01	0.0000E+00	5.5983E+01	0.0000E+00	5.6501E+01	0.0000E+00
0.0000E+00	5.4030E+01	0.0000E+00	5.4362E+01	0.0000E+00	5.4971E+01	0.0000E+00	5.5236E+01	0.0000E+00	5.5856E+01	0.0000E+00	5.6371E+01	0.0000E+00
0.0000E+00	5.3915E+01	0.0000E+00	5.4245E+01	0.0000E+00	5.4851E+01	0.0000E+00	5.5114E+01	0.0000E+00	5.5730E+01	0.0000E+00	5.6241E+01	0.0000E+00
0.0000E+00	5.3800E+01	0.0000E+00	5.4128E+01	0.0000E+00	5.4730E+01	0.0000E+00	5.4992E+01	0.0000E+00	5.5604E+01	0.0000E+00	5.6113E+01	0.0000E+00
0.0000E+00	5.3686E+01	0.0000E+00	5.4012E+01	0.0000E+00	5.4611E+01	0.0000E+00	5.4871E+01	0.0000E+00	5.5480E+01	0.0000E+00	5.5985E+01	0.0000E+00
0.0000E+00	5.3572E+01	0.0000E+00	5.3897E+01	0.0000E+00	5.4492E+01	0.0000E+00	5.4751E+01	0.0000E+00	5.5356E+01	0.0000E+00	5.5858E+01	0.0000E+00
0.0000E+00	5.3459E+01	0.0000E+00	5.3782E+01	0.0000E+00	5.4374E+01	0.0000E+00	5.4631E+01	0.0000E+00	5.5233E+01	0.0000E+00	5.5732E+01	0.0000E+00
0.0000E+00	5.3347E+01	0.0000E+00	5.3668E+01	0.0000E+00	5.4256E+01	0.0000E+00	5.4512E+01	0.0000E+00	5.5110E+01	0.0000E+00	5.5606E+01	0.0000E+00
0.0000E+00	5.3235E+01	0.0000E+00	5.3555E+01	0.0000E+00	5.4140E+01	0.0000E+00	5.4394E+01	0.0000E+00	5.4988E+01	0.0000E+00	5.5482E+01	0.0000E+00
0.0000E+00	5.3124E+01	0.0000E+00	5.3442E+01	0.0000E+00	5.4024E+01	0.0000E+00	5.4276E+01	0.0000E+00	5.4867E+01	0.0000E+00	5.5358E+01	0.0000E+00
0.0000E+00	5.3014E+01	0.0000E+00	5.3330E+01	0.0000E+00	5.3908E+01	0.0000E+00	5.4160E+01	0.0000E+00	5.4747E+01	0.0000E+00	5.5234E+01	0.0000E+00
0.0000E+00	5.2904E+01	0.0000E+00	5.3218E+01	0.0000E+00	5.3793E+01	0.0000E+00	5.4043E+01	0.0000E+00	5.4628E+01	0.0000E+00	5.5112E+01	0.0000E+00
0.0000E+00	5.2795E+01	0.0000E+00	5.3107E+01	0.0000E+00	5.3679E+01	0.0000E+00	5.3928E+01	0.0000E+00	5.4509E+01	0.0000E+00	5.4990E+01	0.0000E+00
0.0000E+00	5.2686E+01	0.0000E+00	5.2997E+01	0.0000E+00	5.3566E+01	0.0000E+00	5.3813E+01	0.0000E+00	5.4390E+01	0.0000E+00	5.4869E+01	0.0000E+00
0.0000E+00	5.2578E+01	0.0000E+00	5.2887E+01	0.0000E+00	5.3453E+01	0.0000E+00	5.3699E+01	0.0000E+00	5.4273E+01	0.0000E+00	5.4749E+01	0.0000E+00
0.0000E+00	5.2471E+01	0.0000E+00	5.2778E+01	0.0000E+00	5.3341E+01	0.0000E+00	5.3585E+01	0.0000E+00	5.4156E+01	0.0000E+00	5.4629E+01	0.0000E+00
0.0000E+00	5.2364E+01	0.0000E+00	5.2670E+01	0.0000E+00	5.3229E+01	0.0000E+00	5.3472E+01	0.0000E+00	5.4040E+01	0.0000E+00	5.4510E+01	0.0000E+00
0.0000E+00	5.2258E+01	0.0000E+00	5.2562E+01	0.0000E+00	5.3118E+01	0.0000E+00	5.3360E+01	0.0000E+00	5.3924E+01	0.0000E+00	5.4392E+01	0.0000E+00
0.0000E+00	5.2152E+01	0.0000E+00	5.2454E+01	0.0000E+00	5.3008E+01	0.0000E+00	5.3248E+01	0.0000E+00	5.3809E+01	0.0000E+00	5.4275E+01	0.0000E+00
0.0000E+00	5.2047E+01	0.0000E+00	5.2348E+01	0.0000E+00	5.2898E+01	0.0000E+00	5.3137E+01	0.0000E+00	5.3695E+01	0.0000E+00	5.4158E+01	0.0000E+00
0.0000E+00	5.1943E+01	0.0000E+00	5.2242E+01	0.0000E+00	5.2789E+01	0.0000E+00	5.3027E+01	0.0000E+00	5.3582E+01	0.0000E+00	5.4042E+01	0.0000E+00
0.0000E+00	5.1839E+01	0.0000E+00	5.2136E+01	0.0000E+00	5.2680E+01	0.0000E+00	5.2917E+01	0.0000E+00	5.3469E+01	0.0000E+00	5.3926E+01	0.0000E+00
0.0000E+00	5.1735E+01	0.0000E+00	5.2031E+01	0.0000E+00	5.2573E+01	0.0000E+00	5.2808E+01	0.0000E+00	5.3356E+01	0.0000E+00	5.3811E+01	0.0000E+00
0.0000E+00	5.1632E+01	0.0000E+00	5.1926E+01	0.0000E+00	5.2465E+01	0.0000E+00	5.2699E+01	0.0000E+00	5.3245E+01	0.0000E+00	5.3697E+01	0.0000E+00
0.0000E+00	5.1530E+01	0.0000E+00	5.1823E+01	0.0000E+00	5.2358E+01	0.0000E+00	5.2591E+01	0.0000E+00	5.3134E+01	0.0000E+00	5.3583E+01	0.0000E+00
0.0000E+00	5.1428E+01	0.0000E+00	5.1719E+01	0.0000E+00	5.2252E+01	0.0000E+00	5.2483E+01	0.0000E+00	5.3023E+01	0.0000E+00	5.3470E+01	0.0000E+00
0.0000E+00	5.1327E+01	0.0000E+00	5.1616E+01	0.0000E+00	5.2147E+01	0.0000E+00	5.2376E+01	0.0000E+00	5.2913E+01	0.0000E+00	5.3358E+01	0.0000E+00
0.0000E+00	5.1226E+01	0.0000E+00	5.1514E+01	0.0000E+00	5.2041E+01	0.0000E+00	5.2270E+01	0.0000E+00	5.2804E+01	0.0000E+00	5.3246E+01	0.0000E+00
0.0000E+00	5.1126E+01	0.0000E+00	5.1412E+01	0.0000E+00	5.1937E+01	0.0000E+00	5.2164E+01	0.0000E+00	5.2696E+01	0.0000E+00	5.3135E+01	0.0000E+00
0.0000E+00	5.1026E+01	0.0000E+00	5.1311E+01	0.0000E+00	5.1833E+01	0.0000E+00	5.2059E+01	0.0000E+00	5.2588E+01	0.0000E+00	5.3025E+01	0.0000E+00
0.0000E+00	5.0927E+01	0.0000E+00	5.1210E+01	0.0000E+00	5.1730E+01	0.0000E+00	5.1955E+01	0.0000E+00	5.2480E+01	0.0000E+00	5.2915E+01	0.0000E+00
0.0000E+00	5.0828E+01	0.0000E+00	5.1110E+01	0.0000E+00	5.1627E+01	0.0000E+00	5.1851E+01	0.0000E+00	5.2373E+01	0.0000E+00	5.2806E+01	0.0000E+00
0.0000E+00	5.0730E+01	0.0000E+00	5.1011E+01	0.0000E+00	5.1524E+01	0.0000E+00	5.1747E+01	0.0000E+00	5.2267E+01	0.0000E+00	5.2697E+01	0.0000E+00
0.0000E+00	5.0632E+01	0.0000E+00	5.0911E+01	0.0000E+00	5.1423E+01	0.0000E+00	5.1644E+01	0.0000E+00	5.2161E+01	0.0000E+00	5.2589E+01	0.0000E+00
0.0000E+00	5.0535E+01	0.0000E+00	5.0813E+01	0.0000E+00	5.1321E+01	0.0000E+00	5.1542E+01	0.0000E+00	5.2056E+01	0.0000E+00	5.2482E+01	0.0000E+00
0.0000E+00	5.0438E+01	0.0000E+00	5.0715E+01	0.0000E+00	5.1221E+01	0.0000E+00	5.1440E+01	0.0000E+00	5.1952E+01	0.0000E+00	5.2375E+01	0.0000E+00
0.0000E+00	5.0342E+01	0.0000E+00	5.0617E+01	0.0000E+00	5.1120E+01	0.0000E+00	5.1338E+01	0.0000E+00	5.1847E+01	0.0000E+00	5.2269E+01	0.0000E+00
0.0000E+00	5.0246E+01	0.0000E+00	5.0520E+01	0.0000E+00	5.1021E+01	0.0000E+00	5.1238E+01	0.0000E+00	5.1744E+01	0.0000E+00	5.2163E+01	0.0000E+00
0.0000E+00	5.0151E+01	0.0000E+00	5.0423E+01	0.0000E+00	5.0921E+01	0.0000E+00	5.1137E+01	0.0000E+00	5.1641E+01	0.0000E+00	5.2058E+01	0.0000E+00
0.0000E+00	5.0056E+01	0.0000E+00	5.0327E+01	0.0000E+00	5.0823E+01	0.0000E+00	5.1037E+01	0.0000E+00	5.1539E+01	0.0000E+00	5.1953E+01	0.0000E+00
0.0000E+00	4.9962E+01	0.0000E+00	5.0231E+01	0.0000E+00	5.0724E+01	0.0000E+00	5.0938E+01	0.0000E+00	5.1437E+01	0.0000E+00	5.1849E+01	0.0000E+00
0.0000E+00	4.9868E+01	0.0000E+00	5.0136E+01	0.0000E+00	5.0627E+01	0.0000E+00	5.0839E+01	0.0000E+00	5.1335E+01	0.0000E+00	5.1746E+01	0.0000E+00
0.0000E+00	4.9774E+01	0.0000E+00	5.0041E+01	0.0000E+00	5.0530E+01	0.0000E+00	5.0741E+01	0.0000E+00	5.1235E+01	0.0000E+00	5.1643E+01	0.0000E+00
0.0000E+00	4.9681E+01	0.0000E+00	4.9947E+01	0.0000E+00	5.0433E+01	0.0000E+00	5.0643E+01	0.0000E+00	5.1134E+01	0.0000E+00	5.1540E+01	0.0000E+00
0.0000E+00	4.9589E+01	0.0000E+00	4.9853E+01	0.0000E+00	5.0337E+01	0.0000E+00	5.0546E+01	0.0000E+00	5.1035E+01	0.0000E+00	5.1438E+01	0.0000E+00
0.0000E+00	4.9497E+01	0.0000E+00	4.9760E+01	0.0000E+00	5.0241E+01	0.0000E+00	5.0449E+01	0.0000E+00	5.0935E+01	0.0000E+00	5.1337E+01	0.0000E+00
0.0000E+00	4.9405E+01	0.0000E+00	4.9667E+01	0.0000E+00	5.0146E+01	0.0000E+00	5.0353E+01	0.0000E+00	5.0836E+01	0.0000E+00	5.1236E+01	0.0000E+00
0.0000E+00	4.9314E+01	0.0000E+00	4.9575E+01	0.0000E+00	5.0051E+01	0.0000E+00	5.0257E+01	0.0000E+00	5.0738E+01	0.0000E+00	5.1136E+01	0.0000E+00
0.0000E+00	4.9223E+01	0.0000E+00	4.9483E+01	0.0000E+00	4.9957E+01	0.0000E+00	5.0162E+01	0.0000E+00	5.0640E+01	0.0000E+00	5.1036E+01	0.0000E+00

Curve 6	Arg 7	Curve 7	Arg 8	Curve 8	Arg 9	Curve 9	Arg 10	Curve 10	Arg 11	Curve 11	Arg 12	Curve 12
0.0000E+00	4.9133E+01	0.0000E+00	4.9391E+01	0.0000E+00	4.9863E+01	0.0000E+00	5.0067E+01	0.0000E+00	5.0543E+01	0.0000E+00	5.0937E+01	0.0000E+00
0.0000E+00	4.9043E+01	0.0000E+00	4.9300E+01	0.0000E+00	4.9769E+01	0.0000E+00	4.9973E+01	0.0000E+00	5.0446E+01	0.0000E+00	5.0838E+01	0.0000E+00
0.0000E+00	4.8954E+01	0.0000E+00	4.9209E+01	0.0000E+00	4.9676E+01	0.0000E+00	4.9879E+01	0.0000E+00	5.0350E+01	0.0000E+00	5.0740E+01	0.0000E+00
0.0000E+00	4.8865E+01	0.0000E+00	4.9119E+01	0.0000E+00	4.9584E+01	0.0000E+00	4.9785E+01	0.0000E+00	5.0254E+01	0.0000E+00	5.0642E+01	0.0000E+00
0.0000E+00	4.8776E+01	0.0000E+00	4.9029E+01	0.0000E+00	4.9492E+01	0.0000E+00	4.9692E+01	0.0000E+00	5.0159E+01	0.0000E+00	5.0545E+01	0.0000E+00
0.0000E+00	4.8688E+01	0.0000E+00	4.8940E+01	0.0000E+00	4.9400E+01	0.0000E+00	4.9600E+01	0.0000E+00	5.0064E+01	0.0000E+00	5.0448E+01	0.0000E+00
0.0000E+00	4.8600E+01	0.0000E+00	4.8851E+01	0.0000E+00	4.9309E+01	0.0000E+00	4.9507E+01	0.0000E+00	4.9970E+01	0.0000E+00	5.0352E+01	0.0000E+00
0.0000E+00	4.8513E+01	0.0000E+00	4.8762E+01	0.0000E+00	4.9218E+01	0.0000E+00	4.9416E+01	0.0000E+00	4.9876E+01	0.0000E+00	5.0256E+01	0.0000E+00
0.0000E+00	4.8426E+01	0.0000E+00	4.8674E+01	0.0000E+00	4.9128E+01	0.0000E+00	4.9325E+01	0.0000E+00	4.9782E+01	0.0000E+00	5.0160E+01	0.0000E+00
0.0000E+00	4.8339E+01	0.0000E+00	4.8587E+01	0.0000E+00	4.9038E+01	0.0000E+00	4.9234E+01	0.0000E+00	4.9689E+01	0.0000E+00	5.0066E+01	0.0000E+00
0.0000E+00	4.8253E+01	0.0000E+00	4.8499E+01	0.0000E+00	4.8949E+01	0.0000E+00	4.9143E+01	0.0000E+00	4.9597E+01	0.0000E+00	4.9971E+01	0.0000E+00
0.0000E+00	4.8168E+01	0.0000E+00	4.8413E+01	0.0000E+00	4.8860E+01	0.0000E+00	4.9054E+01	0.0000E+00	4.9505E+01	0.0000E+00	4.9877E+01	0.0000E+00
0.0000E+00	4.8082E+01	0.0000E+00	4.8326E+01	0.0000E+00	4.8771E+01	0.0000E+00	4.8964E+01	0.0000E+00	4.9413E+01	0.0000E+00	4.9784E+01	0.0000E+00
0.0000E+00	4.7997E+01	0.0000E+00	4.8240E+01	0.0000E+00	4.8683E+01	0.0000E+00	4.8875E+01	0.0000E+00	4.9322E+01	0.0000E+00	4.9691E+01	0.0000E+00
0.0000E+00	4.7913E+01	0.0000E+00	4.8154E+01	0.0000E+00	4.8595E+01	0.0000E+00	4.8786E+01	0.0000E+00	4.9231E+01	0.0000E+00	4.9598E+01	0.0000E+00
0.0000E+00	4.7829E+01	0.0000E+00	4.8069E+01	0.0000E+00	4.8508E+01	0.0000E+00	4.8698E+01	0.0000E+00	4.9141E+01	0.0000E+00	4.9506E+01	0.0000E+00
0.0000E+00	4.7745E+01	0.0000E+00	4.7984E+01	0.0000E+00	4.8421E+01	0.0000E+00	4.8610E+01	0.0000E+00	4.9051E+01	0.0000E+00	4.9414E+01	0.0000E+00
0.0000E+00	4.7661E+01	0.0000E+00	4.7900E+01	0.0000E+00	4.8335E+01	0.0000E+00	4.8523E+01	0.0000E+00	4.8961E+01	0.0000E+00	4.9323E+01	0.0000E+00
0.0000E+00	4.7578E+01	0.0000E+00	4.7816E+01	0.0000E+00	4.8249E+01	0.0000E+00	4.8436E+01	0.0000E+00	4.8872E+01	0.0000E+00	4.9232E+01	0.0000E+00
0.0000E+00	4.7496E+01	0.0000E+00	4.7732E+01	0.0000E+00	4.8163E+01	0.0000E+00	4.8349E+01	0.0000E+00	4.8784E+01	0.0000E+00	4.9142E+01	0.0000E+00
0.0000E+00	4.7413E+01	0.0000E+00	4.7648E+01	0.0000E+00	4.8078E+01	0.0000E+00	4.8263E+01	0.0000E+00	4.8695E+01	0.0000E+00	4.9052E+01	0.0000E+00
0.0000E+00	4.7331E+01	0.0000E+00	4.7565E+01	0.0000E+00	4.7993E+01	0.0000E+00	4.8177E+01	0.0000E+00	4.8608E+01	0.0000E+00	4.8963E+01	0.0000E+00
0.0000E+00	4.7250E+01	0.0000E+00	4.7483E+01	0.0000E+00	4.7908E+01	0.0000E+00	4.8092E+01	0.0000E+00	4.8520E+01	0.0000E+00	4.8874E+01	0.0000E+00
0.0000E+00	4.7169E+01	0.0000E+00	4.7401E+01	0.0000E+00	4.7824E+01	0.0000E+00	4.8007E+01	0.0000E+00	4.8433E+01	0.0000E+00	4.8785E+01	0.0000E+00
0.0000E+00	4.7088E+01	0.0000E+00	4.7319E+01	0.0000E+00	4.7740E+01	0.0000E+00	4.7922E+01	0.0000E+00	4.8347E+01	0.0000E+00	4.8697E+01	0.0000E+00
0.0000E+00	4.7007E+01	0.0000E+00	4.7237E+01	0.0000E+00	4.7657E+01	0.0000E+00	4.7838E+01	0.0000E+00	4.8261E+01	0.0000E+00	4.8609E+01	0.0000E+00
0.0000E+00	4.6927E+01	0.0000E+00	4.7156E+01	0.0000E+00	4.7574E+01	0.0000E+00	4.7754E+01	0.0000E+00	4.8175E+01	0.0000E+00	4.8522E+01	0.0000E+00
0.0000E+00	4.6847E+01	0.0000E+00	4.7075E+01	0.0000E+00	4.7491E+01	0.0000E+00	4.7671E+01	0.0000E+00	4.8089E+01	0.0000E+00	4.8435E+01	0.0000E+00
0.0000E+00	4.6768E+01	0.0000E+00	4.6995E+01	0.0000E+00	4.7409E+01	0.0000E+00	4.7588E+01	0.0000E+00	4.8004E+01	0.0000E+00	4.8348E+01	0.0000E+00
0.0000E+00	4.6689E+01	0.0000E+00	4.6915E+01	0.0000E+00	4.7327E+01	0.0000E+00	4.7505E+01	0.0000E+00	4.7920E+01	0.0000E+00	4.8262E+01	0.0000E+00
0.0000E+00	4.6610E+01	0.0000E+00	4.6835E+01	0.0000E+00	4.7245E+01	0.0000E+00	4.7423E+01	0.0000E+00	4.7836E+01	0.0000E+00	4.8176E+01	0.0000E+00
0.0000E+00	4.6532E+01	0.0000E+00	4.6756E+01	0.0000E+00	4.7164E+01	0.0000E+00	4.7341E+01	0.0000E+00	4.7752E+01	0.0000E+00	4.8091E+01	0.0000E+00
0.0000E+00	4.6454E+01	0.0000E+00	4.6677E+01	0.0000E+00	4.7083E+01	0.0000E+00	4.7259E+01	0.0000E+00	4.7668E+01	0.0000E+00	4.8006E+01	0.0000E+00
0.0000E+00	4.6376E+01	0.0000E+00	4.6598E+01	0.0000E+00	4.7003E+01	0.0000E+00	4.7178E+01	0.0000E+00	4.7585E+01	0.0000E+00	4.7921E+01	0.0000E+00
0.0000E+00	4.6299E+01	0.0000E+00	4.6520E+01	0.0000E+00	4.6923E+01	0.0000E+00	4.7097E+01	0.0000E+00	4.7503E+01	0.0000E+00	4.7837E+01	0.0000E+00
0.0000E+00	4.6222E+01	0.0000E+00	4.6442E+01	0.0000E+00	4.6843E+01	0.0000E+00	4.7017E+01	0.0000E+00	4.7420E+01	0.0000E+00	4.7753E+01	0.0000E+00
0.0000E+00	4.6145E+01	0.0000E+00	4.6364E+01	0.0000E+00	4.6764E+01	0.0000E+00	4.6936E+01	0.0000E+00	4.7338E+01	0.0000E+00	4.7670E+01	0.0000E+00
0.0000E+00	4.6069E+01	0.0000E+00	4.6287E+01	0.0000E+00	4.6685E+01	0.0000E+00	4.6857E+01	0.0000E+00	4.7257E+01	0.0000E+00	4.7587E+01	0.0000E+00
0.0000E+00	4.5992E+01	0.0000E+00	4.6210E+01	0.0000E+00	4.6606E+01	0.0000E+00	4.6777E+01	0.0000E+00	4.7176E+01	0.0000E+00	4.7504E+01	0.0000E+00
0.0000E+00	4.5917E+01	0.0000E+00	4.6133E+01	0.0000E+00	4.6528E+01	0.0000E+00	4.6698E+01	0.0000E+00	4.7095E+01	0.0000E+00	4.7422E+01	0.0000E+00
0.0000E+00	4.5841E+01	0.0000E+00	4.6057E+01	0.0000E+00	4.6450E+01	0.0000E+00	4.6619E+01	0.0000E+00	4.7014E+01	0.0000E+00	4.7340E+01	0.0000E+00
0.0000E+00	4.5766E+01	0.0000E+00	4.5981E+01	0.0000E+00	4.6372E+01	0.0000E+00	4.6541E+01	0.0000E+00	4.6934E+01	0.0000E+00	4.7258E+01	0.0000E+00
0.0000E+00	4.5691E+01	0.0000E+00	4.5905E+01	0.0000E+00	4.6294E+01	0.0000E+00	4.6463E+01	0.0000E+00	4.6854E+01	0.0000E+00	4.7177E+01	0.0000E+00
0.0000E+00	4.5617E+01	0.0000E+00	4.5830E+01	0.0000E+00	4.6217E+01	0.0000E+00	4.6385E+01	0.0000E+00	4.6775E+01	0.0000E+00	4.7096E+01	0.0000E+00
0.0000E+00	4.5543E+01	0.0000E+00	4.5755E+01	0.0000E+00	4.6141E+01	0.0000E+00	4.6308E+01	0.0000E+00	4.6696E+01	0.0000E+00	4.7015E+01	0.0000E+00
0.0000E+00	4.5469E+01	0.0000E+00	4.5680E+01	0.0000E+00	4.6064E+01	0.0000E+00	4.6230E+01	0.0000E+00	4.6617E+01	0.0000E+00	4.6935E+01	0.0000E+00
0.0000E+00	4.5395E+01	0.0000E+00	4.5605E+01	0.0000E+00	4.5988E+01	0.0000E+00	4.6154E+01	0.0000E+00	4.6538E+01	0.0000E+00	4.6855E+01	0.0000E+00
0.0000E+00	4.5322E+01	0.0000E+00	4.5531E+01	0.0000E+00	4.5913E+01	0.0000E+00	4.6077E+01	0.0000E+00	4.6460E+01	0.0000E+00	4.6776E+01	0.0000E+00
0.0000E+00	4.5249E+01	0.0000E+00	4.5457E+01	0.0000E+00	4.5837E+01	0.0000E+00	4.6001E+01	0.0000E+00	4.6383E+01	0.0000E+00	4.6697E+01	0.0000E+00
0.0000E+00	4.5176E+01	0.0000E+00	4.5384E+01	0.0000E+00	4.5762E+01	0.0000E+00	4.5925E+01	0.0000E+00	4.6305E+01	0.0000E+00	4.6618E+01	0.0000E+00
0.0000E+00	4.5104E+01	0.0000E+00	4.5311E+01	0.0000E+00	4.5687E+01	0.0000E+00	4.5850E+01	0.0000E+00	4.6228E+01	0.0000E+00	4.6540E+01	0.0000E+00
0.0000E+00	4.5032E+01	0.0000E+00	4.5238E+01	0.0000E+00	4.5613E+01	0.0000E+00	4.5775E+01	0.0000E+00	4.6151E+01	0.0000E+00	4.6462E+01	0.0000E+00

Curve 6	Arg 7	Curve 7	Arg 8	Curve 8	Arg 9	Curve 9	Arg 10	Curve 10	Arg 11	Curve 11	Arg 12	Curve 12
0.0000E+00	4.4960E+01	0.0000E+00	4.5165E+01	0.0000E+00	4.5539E+01	0.0000E+00	4.5700E+01	0.0000E+00	4.6075E+01	0.0000E+00	4.6384E+01	0.0000E+00
0.0000E+00	4.4889E+01	0.0000E+00	4.5093E+01	0.0000E+00	4.5465E+01	0.0000E+00	4.5625E+01	0.0000E+00	4.5999E+01	0.0000E+00	4.6306E+01	0.0000E+00
0.0000E+00	4.4818E+01	0.0000E+00	4.5021E+01	0.0000E+00	4.5391E+01	0.0000E+00	4.5551E+01	0.0000E+00	4.5923E+01	0.0000E+00	4.6229E+01	0.0000E+00
0.0000E+00	4.4747E+01	0.0000E+00	4.4949E+01	0.0000E+00	4.5318E+01	0.0000E+00	4.5477E+01	0.0000E+00	4.5848E+01	0.0000E+00	4.6153E+01	0.0000E+00
0.0000E+00	4.4676E+01	0.0000E+00	4.4878E+01	0.0000E+00	4.5245E+01	0.0000E+00	4.5404E+01	0.0000E+00	4.5773E+01	0.0000E+00	4.6076E+01	0.0000E+00
0.0000E+00	4.4606E+01	0.0000E+00	4.4807E+01	0.0000E+00	4.5172E+01	0.0000E+00	4.5330E+01	0.0000E+00	4.5698E+01	0.0000E+00	4.6000E+01	0.0000E+00
0.0000E+00	4.4536E+01	0.0000E+00	4.4736E+01	0.0000E+00	4.5100E+01	0.0000E+00	4.5257E+01	0.0000E+00	4.5623E+01	0.0000E+00	4.5924E+01	0.0000E+00
0.0000E+00	4.4466E+01	0.0000E+00	4.4665E+01	0.0000E+00	4.5028E+01	0.0000E+00	4.5185E+01	0.0000E+00	4.5549E+01	0.0000E+00	4.5849E+01	0.0000E+00
0.0000E+00	4.4396E+01	0.0000E+00	4.4595E+01	0.0000E+00	4.4956E+01	0.0000E+00	4.5112E+01	0.0000E+00	4.5475E+01	0.0000E+00	4.5774E+01	0.0000E+00
0.0000E+00	4.4327E+01	0.0000E+00	4.4525E+01	0.0000E+00	4.4885E+01	0.0000E+00	4.5040E+01	0.0000E+00	4.5402E+01	0.0000E+00	4.5699E+01	0.0000E+00
0.0000E+00	4.4258E+01	0.0000E+00	4.4455E+01	0.0000E+00	4.4814E+01	0.0000E+00	4.4969E+01	0.0000E+00	4.5328E+01	0.0000E+00	4.5624E+01	0.0000E+00
0.0000E+00	4.4190E+01	0.0000E+00	4.4386E+01	0.0000E+00	4.4743E+01	0.0000E+00	4.4897E+01	0.0000E+00	4.5255E+01	0.0000E+00	4.5550E+01	0.0000E+00
0.0000E+00	4.4121E+01	0.0000E+00	4.4317E+01	0.0000E+00	4.4672E+01	0.0000E+00	4.4826E+01	0.0000E+00	4.5183E+01	0.0000E+00	4.5476E+01	0.0000E+00
0.0000E+00	4.4053E+01	0.0000E+00	4.4248E+01	0.0000E+00	4.4602E+01	0.0000E+00	4.4755E+01	0.0000E+00	4.5110E+01	0.0000E+00	4.5403E+01	0.0000E+00
0.0000E+00	4.3985E+01	0.0000E+00	4.4179E+01	0.0000E+00	4.4532E+01	0.0000E+00	4.4684E+01	0.0000E+00	4.5038E+01	0.0000E+00	4.5329E+01	0.0000E+00
0.0000E+00	4.3918E+01	0.0000E+00	4.4111E+01	0.0000E+00	4.4462E+01	0.0000E+00	4.4614E+01	0.0000E+00	4.4966E+01	0.0000E+00	4.5256E+01	0.0000E+00
0.0000E+00	4.3850E+01	0.0000E+00	4.4043E+01	0.0000E+00	4.4393E+01	0.0000E+00	4.4544E+01	0.0000E+00	4.4895E+01	0.0000E+00	4.5184E+01	0.0000E+00
0.0000E+00	4.3783E+01	0.0000E+00	4.3975E+01	0.0000E+00	4.4323E+01	0.0000E+00	4.4474E+01	0.0000E+00	4.4824E+01	0.0000E+00	4.5111E+01	0.0000E+00
0.0000E+00	4.3716E+01	0.0000E+00	4.3907E+01	0.0000E+00	4.4255E+01	0.0000E+00	4.4404E+01	0.0000E+00	4.4753E+01	0.0000E+00	4.5039E+01	0.0000E+00
0.0000E+00	4.3650E+01	0.0000E+00	4.3840E+01	0.0000E+00	4.4186E+01	0.0000E+00	4.4335E+01	0.0000E+00	4.4682E+01	0.0000E+00	4.4967E+01	0.0000E+00
0.0000E+00	4.3584E+01	0.0000E+00	4.3773E+01	0.0000E+00	4.4117E+01	0.0000E+00	4.4266E+01	0.0000E+00	4.4612E+01	0.0000E+00	4.4896E+01	0.0000E+00
0.0000E+00	4.3517E+01	0.0000E+00	4.3706E+01	0.0000E+00	4.4049E+01	0.0000E+00	4.4198E+01	0.0000E+00	4.4542E+01	0.0000E+00	4.4825E+01	0.0000E+00
0.0000E+00	4.3452E+01	0.0000E+00	4.3640E+01	0.0000E+00	4.3982E+01	0.0000E+00	4.4129E+01	0.0000E+00	4.4472E+01	0.0000E+00	4.4754E+01	0.0000E+00
0.0000E+00	4.3386E+01	0.0000E+00	4.3573E+01	0.0000E+00	4.3914E+01	0.0000E+00	4.4061E+01	0.0000E+00	4.4402E+01	0.0000E+00	4.4683E+01	0.0000E+00
0.0000E+00	4.3321E+01	0.0000E+00	4.3507E+01	0.0000E+00	4.3847E+01	0.0000E+00	4.3993E+01	0.0000E+00	4.4333E+01	0.0000E+00	4.4613E+01	0.0000E+00
0.0000E+00	4.3256E+01	0.0000E+00	4.3441E+01	0.0000E+00	4.3780E+01	0.0000E+00	4.3925E+01	0.0000E+00	4.4264E+01	0.0000E+00	4.4543E+01	0.0000E+00
0.0000E+00	4.3191E+01	0.0000E+00	4.3376E+01	0.0000E+00	4.3713E+01	0.0000E+00	4.3858E+01	0.0000E+00	4.4195E+01	0.0000E+00	4.4473E+01	0.0000E+00
0.0000E+00	4.3126E+01	0.0000E+00	4.3311E+01	0.0000E+00	4.3646E+01	0.0000E+00	4.3791E+01	0.0000E+00	4.4127E+01	0.0000E+00	4.4403E+01	0.0000E+00
0.0000E+00	4.3062E+01	0.0000E+00	4.3246E+01	0.0000E+00	4.3580E+01	0.0000E+00	4.3724E+01	0.0000E+00	4.4059E+01	0.0000E+00	4.4334E+01	0.0000E+00
0.0000E+00	4.2998E+01	0.0000E+00	4.3181E+01	0.0000E+00	4.3514E+01	0.0000E+00	4.3657E+01	0.0000E+00	4.3991E+01	0.0000E+00	4.4265E+01	0.0000E+00
0.0000E+00	4.2934E+01	0.0000E+00	4.3116E+01	0.0000E+00	4.3448E+01	0.0000E+00	4.3591E+01	0.0000E+00	4.3923E+01	0.0000E+00	4.4196E+01	0.0000E+00
0.0000E+00	4.2871E+01	0.0000E+00	4.3052E+01	0.0000E+00	4.3383E+01	0.0000E+00	4.3525E+01	0.0000E+00	4.3856E+01	0.0000E+00	4.4128E+01	0.0000E+00
0.0000E+00	4.2807E+01	0.0000E+00	4.2988E+01	0.0000E+00	4.3317E+01	0.0000E+00	4.3459E+01	0.0000E+00	4.3789E+01	0.0000E+00	4.4060E+01	0.0000E+00
0.0000E+00	4.2744E+01	0.0000E+00	4.2924E+01	0.0000E+00	4.3252E+01	0.0000E+00	4.3394E+01	0.0000E+00	4.3722E+01	0.0000E+00	4.3992E+01	0.0000E+00
0.0000E+00	4.2681E+01	0.0000E+00	4.2861E+01	0.0000E+00	4.3187E+01	0.0000E+00	4.3328E+01	0.0000E+00	4.3655E+01	0.0000E+00	4.3924E+01	0.0000E+00
0.0000E+00	4.2619E+01	0.0000E+00	4.2797E+01	0.0000E+00	4.3123E+01	0.0000E+00	4.3263E+01	0.0000E+00	4.3589E+01	0.0000E+00	4.3857E+01	0.0000E+00
0.0000E+00	4.2556E+01	0.0000E+00	4.2734E+01	0.0000E+00	4.3059E+01	0.0000E+00	4.3198E+01	0.0000E+00	4.3523E+01	0.0000E+00	4.3790E+01	0.0000E+00
0.0000E+00	4.2494E+01	0.0000E+00	4.2671E+01	0.0000E+00	4.2995E+01	0.0000E+00	4.3134E+01	0.0000E+00	4.3457E+01	0.0000E+00	4.3723E+01	0.0000E+00
0.0000E+00	4.2432E+01	0.0000E+00	4.2609E+01	0.0000E+00	4.2931E+01	0.0000E+00	4.3069E+01	0.0000E+00	4.3392E+01	0.0000E+00	4.3656E+01	0.0000E+00
0.0000E+00	4.2370E+01	0.0000E+00	4.2546E+01	0.0000E+00	4.2867E+01	0.0000E+00	4.3005E+01	0.0000E+00	4.3326E+01	0.0000E+00	4.3590E+01	0.0000E+00
0.0000E+00	4.2309E+01	0.0000E+00	4.2484E+01	0.0000E+00	4.2804E+01	0.0000E+00	4.2942E+01	0.0000E+00	4.3261E+01	0.0000E+00	4.3524E+01	0.0000E+00
0.0000E+00	4.2247E+01	0.0000E+00	4.2422E+01	0.0000E+00	4.2741E+01	0.0000E+00	4.2878E+01	0.0000E+00	4.3196E+01	0.0000E+00	4.3458E+01	0.0000E+00
0.0000E+00	4.2186E+01	0.0000E+00	4.2361E+01	0.0000E+00	4.2678E+01	0.0000E+00	4.2814E+01	0.0000E+00	4.3132E+01	0.0000E+00	4.3393E+01	0.0000E+00
0.0000E+00	4.2125E+01	0.0000E+00	4.2299E+01	0.0000E+00	4.2615E+01	0.0000E+00	4.2751E+01	0.0000E+00	4.3068E+01	0.0000E+00	4.3327E+01	0.0000E+00
0.0000E+00	4.2065E+01	0.0000E+00	4.2238E+01	0.0000E+00	4.2553E+01	0.0000E+00	4.2688E+01	0.0000E+00	4.3003E+01	0.0000E+00	4.3262E+01	0.0000E+00
0.0000E+00	4.2004E+01	0.0000E+00	4.2177E+01	0.0000E+00	4.2490E+01	0.0000E+00	4.2626E+01	0.0000E+00	4.2940E+01	0.0000E+00	4.3197E+01	0.0000E+00
0.0000E+00	4.1944E+01	0.0000E+00	4.2116E+01	0.0000E+00	4.2429E+01	0.0000E+00	4.2563E+01	0.0000E+00	4.2876E+01	0.0000E+00	4.3133E+01	0.0000E+00
0.0000E+00	4.1884E+01	0.0000E+00	4.2055E+01	0.0000E+00	4.2367E+01	0.0000E+00	4.2501E+01	0.0000E+00	4.2813E+01	0.0000E+00	4.3069E+01	0.0000E+00
0.0000E+00	4.1824E+01	0.0000E+00	4.1995E+01	0.0000E+00	4.2305E+01	0.0000E+00	4.2439E+01	0.0000E+00	4.2749E+01	0.0000E+00	4.3004E+01	0.0000E+00
0.0000E+00	4.1765E+01	0.0000E+00	4.1935E+01	0.0000E+00	4.2244E+01	0.0000E+00	4.2377E+01	0.0000E+00	4.2687E+01	0.0000E+00	4.2941E+01	0.0000E+00
0.0000E+00	4.1706E+01	0.0000E+00	4.1875E+01	0.0000E+00	4.2183E+01	0.0000E+00	4.2316E+01	0.0000E+00	4.2624E+01	0.0000E+00	4.2877E+01	0.0000E+00
0.0000E+00	4.1646E+01	0.0000E+00	4.1815E+01	0.0000E+00	4.2122E+01	0.0000E+00	4.2254E+01	0.0000E+00	4.2561E+01	0.0000E+00	4.2814E+01	0.0000E+00

Curve 6	Arg 7	Curve 7	Arg 8	Curve 8	Arg 9	Curve 9	Arg 10	Curve 10	Arg 11	Curve 11	Arg 12	Curve 12
0.0000E+00	4.1587E+01	0.0000E+00	4.1756E+01	0.0000E+00	4.2061E+01	0.0000E+00	4.2193E+01	0.0000E+00	4.2499E+01	0.0000E+00	4.2750E+01	0.0000E+00
0.0000E+00	4.1529E+01	0.0000E+00	4.1696E+01	0.0000E+00	4.2001E+01	0.0000E+00	4.2132E+01	0.0000E+00	4.2437E+01	0.0000E+00	4.2687E+01	0.0000E+00
0.0000E+00	4.1470E+01	0.0000E+00	4.1637E+01	0.0000E+00	4.1941E+01	0.0000E+00	4.2072E+01	0.0000E+00	4.2375E+01	0.0000E+00	4.2625E+01	0.0000E+00
0.0000E+00	4.1412E+01	0.0000E+00	4.1578E+01	0.0000E+00	4.1881E+01	0.0000E+00	4.2011E+01	0.0000E+00	4.2314E+01	0.0000E+00	4.2562E+01	0.0000E+00
0.0000E+00	4.1354E+01	0.0000E+00	4.1520E+01	0.0000E+00	4.1821E+01	0.0000E+00	4.1951E+01	0.0000E+00	4.2253E+01	0.0000E+00	4.2500E+01	0.0000E+00
0.0000E+00	4.1296E+01	0.0000E+00	4.1461E+01	0.0000E+00	4.1762E+01	0.0000E+00	4.1891E+01	0.0000E+00	4.2191E+01	0.0000E+00	4.2438E+01	0.0000E+00
0.0000E+00	4.1238E+01	0.0000E+00	4.1403E+01	0.0000E+00	4.1702E+01	0.0000E+00	4.1831E+01	0.0000E+00	4.2131E+01	0.0000E+00	4.2376E+01	0.0000E+00
0.0000E+00	4.1181E+01	0.0000E+00	4.1345E+01	0.0000E+00	4.1643E+01	0.0000E+00	4.1772E+01	0.0000E+00	4.2070E+01	0.0000E+00	4.2315E+01	0.0000E+00
0.0000E+00	4.1123E+01	0.0000E+00	4.1287E+01	0.0000E+00	4.1584E+01	0.0000E+00	4.1712E+01	0.0000E+00	4.2010E+01	0.0000E+00	4.2253E+01	0.0000E+00
0.0000E+00	4.1066E+01	0.0000E+00	4.1229E+01	0.0000E+00	4.1526E+01	0.0000E+00	4.1653E+01	0.0000E+00	4.1949E+01	0.0000E+00	4.2192E+01	0.0000E+00
0.0000E+00	4.1009E+01	0.0000E+00	4.1172E+01	0.0000E+00	4.1467E+01	0.0000E+00	4.1594E+01	0.0000E+00	4.1889E+01	0.0000E+00	4.2132E+01	0.0000E+00
0.0000E+00	4.0953E+01	0.0000E+00	4.1115E+01	0.0000E+00	4.1409E+01	0.0000E+00	4.1535E+01	0.0000E+00	4.1829E+01	0.0000E+00	4.2071E+01	0.0000E+00
0.0000E+00	4.0896E+01	0.0000E+00	4.1057E+01	0.0000E+00	4.1351E+01	0.0000E+00	4.1477E+01	0.0000E+00	4.1770E+01	0.0000E+00	4.2010E+01	0.0000E+00
0.0000E+00	4.0840E+01	0.0000E+00	4.1001E+01	0.0000E+00	4.1293E+01	0.0000E+00	4.1419E+01	0.0000E+00	4.1711E+01	0.0000E+00	4.1950E+01	0.0000E+00
0.0000E+00	4.0784E+01	0.0000E+00	4.0944E+01	0.0000E+00	4.1235E+01	0.0000E+00	4.1360E+01	0.0000E+00	4.1651E+01	0.0000E+00	4.1890E+01	0.0000E+00
0.0000E+00	4.0728E+01	0.0000E+00	4.0887E+01	0.0000E+00	4.1178E+01	0.0000E+00	4.1303E+01	0.0000E+00	4.1592E+01	0.0000E+00	4.1830E+01	0.0000E+00
0.0000E+00	4.0672E+01	0.0000E+00	4.0831E+01	0.0000E+00	4.1120E+01	0.0000E+00	4.1245E+01	0.0000E+00	4.1534E+01	0.0000E+00	4.1771E+01	0.0000E+00
0.0000E+00	4.0616E+01	0.0000E+00	4.0775E+01	0.0000E+00	4.1063E+01	0.0000E+00	4.1187E+01	0.0000E+00	4.1475E+01	0.0000E+00	4.1711E+01	0.0000E+00
0.0000E+00	4.0561E+01	0.0000E+00	4.0719E+01	0.0000E+00	4.1006E+01	0.0000E+00	4.1130E+01	0.0000E+00	4.1417E+01	0.0000E+00	4.1652E+01	0.0000E+00
0.0000E+00	4.0506E+01	0.0000E+00	4.0663E+01	0.0000E+00	4.0950E+01	0.0000E+00	4.1073E+01	0.0000E+00	4.1359E+01	0.0000E+00	4.1593E+01	0.0000E+00
0.0000E+00	4.0451E+01	0.0000E+00	4.0608E+01	0.0000E+00	4.0893E+01	0.0000E+00	4.1016E+01	0.0000E+00	4.1301E+01	0.0000E+00	4.1535E+01	0.0000E+00
0.0000E+00	4.0396E+01	0.0000E+00	4.0552E+01	0.0000E+00	4.0837E+01	0.0000E+00	4.0959E+01	0.0000E+00	4.1243E+01	0.0000E+00	4.1476E+01	0.0000E+00
0.0000E+00	4.0341E+01	0.0000E+00	4.0497E+01	0.0000E+00	4.0781E+01	0.0000E+00	4.0903E+01	0.0000E+00	4.1186E+01	0.0000E+00	4.1418E+01	0.0000E+00
0.0000E+00	4.0287E+01	0.0000E+00	4.0442E+01	0.0000E+00	4.0725E+01	0.0000E+00	4.0846E+01	0.0000E+00	4.1128E+01	0.0000E+00	4.1360E+01	0.0000E+00
0.0000E+00	4.0233E+01	0.0000E+00	4.0388E+01	0.0000E+00	4.0669E+01	0.0000E+00	4.0790E+01	0.0000E+00	4.1071E+01	0.0000E+00	4.1302E+01	0.0000E+00
0.0000E+00	4.0179E+01	0.0000E+00	4.0333E+01	0.0000E+00	4.0613E+01	0.0000E+00	4.0734E+01	0.0000E+00	4.1014E+01	0.0000E+00	4.1244E+01	0.0000E+00
0.0000E+00	4.0125E+01	0.0000E+00	4.0278E+01	0.0000E+00	4.0558E+01	0.0000E+00	4.0678E+01	0.0000E+00	4.0957E+01	0.0000E+00	4.1186E+01	0.0000E+00
0.0000E+00	4.0071E+01	0.0000E+00	4.0224E+01	0.0000E+00	4.0503E+01	0.0000E+00	4.0623E+01	0.0000E+00	4.0901E+01	0.0000E+00	4.1129E+01	0.0000E+00
0.0000E+00	4.0017E+01	0.0000E+00	4.0170E+01	0.0000E+00	4.0448E+01	0.0000E+00	4.0567E+01	0.0000E+00	4.0845E+01	0.0000E+00	4.1072E+01	0.0000E+00
0.0000E+00	3.9964E+01	0.0000E+00	4.0116E+01	0.0000E+00	4.0393E+01	0.0000E+00	4.0512E+01	0.0000E+00	4.0788E+01	0.0000E+00	4.1015E+01	0.0000E+00
0.0000E+00	3.9911E+01	0.0000E+00	4.0063E+01	0.0000E+00	4.0338E+01	0.0000E+00	4.0457E+01	0.0000E+00	4.0732E+01	0.0000E+00	4.0958E+01	0.0000E+00
0.0000E+00	3.9858E+01	0.0000E+00	4.0009E+01	0.0000E+00	4.0284E+01	0.0000E+00	4.0402E+01	0.0000E+00	4.0677E+01	0.0000E+00	4.0902E+01	0.0000E+00
0.0000E+00	3.9805E+01	0.0000E+00	3.9956E+01	0.0000E+00	4.0230E+01	0.0000E+00	4.0348E+01	0.0000E+00	4.0621E+01	0.0000E+00	4.0845E+01	0.0000E+00
0.0000E+00	3.9752E+01	0.0000E+00	3.9902E+01	0.0000E+00	4.0176E+01	0.0000E+00	4.0293E+01	0.0000E+00	4.0566E+01	0.0000E+00	4.0789E+01	0.0000E+00
0.0000E+00	3.9700E+01	0.0000E+00	3.9849E+01	0.0000E+00	4.0122E+01	0.0000E+00	4.0239E+01	0.0000E+00	4.0511E+01	0.0000E+00	4.0733E+01	0.0000E+00
0.0000E+00	3.9647E+01	0.0000E+00	3.9797E+01	0.0000E+00	4.0068E+01	0.0000E+00	4.0185E+01	0.0000E+00	4.0455E+01	0.0000E+00	4.0678E+01	0.0000E+00
0.0000E+00	3.9595E+01	0.0000E+00	3.9744E+01	0.0000E+00	4.0014E+01	0.0000E+00	4.0131E+01	0.0000E+00	4.0401E+01	0.0000E+00	4.0622E+01	0.0000E+00
0.0000E+00	3.9543E+01	0.0000E+00	3.9691E+01	0.0000E+00	3.9961E+01	0.0000E+00	4.0077E+01	0.0000E+00	4.0346E+01	0.0000E+00	4.0567E+01	0.0000E+00
0.0000E+00	3.9491E+01	0.0000E+00	3.9639E+01	0.0000E+00	3.9908E+01	0.0000E+00	4.0023E+01	0.0000E+00	4.0292E+01	0.0000E+00	4.0511E+01	0.0000E+00
0.0000E+00	3.9440E+01	0.0000E+00	3.9587E+01	0.0000E+00	3.9855E+01	0.0000E+00	3.9970E+01	0.0000E+00	4.0237E+01	0.0000E+00	4.0456E+01	0.0000E+00
0.0000E+00	3.9388E+01	0.0000E+00	3.9535E+01	0.0000E+00	3.9802E+01	0.0000E+00	3.9917E+01	0.0000E+00	4.0183E+01	0.0000E+00	4.0401E+01	0.0000E+00
0.0000E+00	3.9337E+01	0.0000E+00	3.9483E+01	0.0000E+00	3.9749E+01	0.0000E+00	3.9864E+01	0.0000E+00	4.0129E+01	0.0000E+00	4.0347E+01	0.0000E+00
0.0000E+00	3.9285E+01	0.0000E+00	3.9432E+01	0.0000E+00	3.9697E+01	0.0000E+00	3.9811E+01	0.0000E+00	4.0075E+01	0.0000E+00	4.0292E+01	0.0000E+00
0.0000E+00	3.9234E+01	0.0000E+00	3.9380E+01	0.0000E+00	3.9644E+01	0.0000E+00	3.9758E+01	0.0000E+00	4.0022E+01	0.0000E+00	4.0238E+01	0.0000E+00
0.0000E+00	3.9184E+01	0.0000E+00	3.9329E+01	0.0000E+00	3.9592E+01	0.0000E+00	3.9706E+01	0.0000E+00	3.9968E+01	0.0000E+00	4.0184E+01	0.0000E+00
0.0000E+00	3.9133E+01	0.0000E+00	3.9278E+01	0.0000E+00	3.9540E+01	0.0000E+00	3.9653E+01	0.0000E+00	3.9915E+01	0.0000E+00	4.0130E+01	0.0000E+00
0.0000E+00	3.9082E+01	0.0000E+00	3.9227E+01	0.0000E+00	3.9488E+01	0.0000E+00	3.9601E+01	0.0000E+00	3.9862E+01	0.0000E+00	4.0076E+01	0.0000E+00
0.0000E+00	3.9032E+01	0.0000E+00	3.9176E+01	0.0000E+00	3.9437E+01	0.0000E+00	3.9549E+01	0.0000E+00	3.9809E+01	0.0000E+00	4.0023E+01	0.0000E+00
0.0000E+00	3.8982E+01	0.0000E+00	3.9125E+01	0.0000E+00	3.9385E+01	0.0000E+00	3.9497E+01	0.0000E+00	3.9757E+01	0.0000E+00	3.9969E+01	0.0000E+00
0.0000E+00	3.8932E+01	0.0000E+00	3.9075E+01	0.0000E+00	3.9334E+01	0.0000E+00	3.9445E+01	0.0000E+00	3.9704E+01	0.0000E+00	3.9916E+01	0.0000E+00
0.0000E+00	3.8882E+01	0.0000E+00	3.9024E+01	0.0000E+00	3.9283E+01	0.0000E+00	3.9394E+01	0.0000E+00	3.9652E+01	0.0000E+00	3.9863E+01	0.0000E+00
0.0000E+00	3.8832E+01	0.0000E+00	3.8974E+01	0.0000E+00	3.9232E+01	0.0000E+00	3.9343E+01	0.0000E+00	3.9599E+01	0.0000E+00	3.9810E+01	0.0000E+00

Curve 6	Arg 7	Curve 7	Arg 8	Curve 8	Arg 9	Curve 9	Arg 10	Curve 10	Arg 11	Curve 11	Arg 12	Curve 12
0.0000E+00	3.8782E+01	0.0000E+00	3.8924E+01	0.0000E+00	3.9181E+01	0.0000E+00	3.9291E+01	0.0000E+00	3.9547E+01	0.0000E+00	3.9757E+01	0.0000E+00
0.0000E+00	3.8733E+01	0.0000E+00	3.8874E+01	0.0000E+00	3.9130E+01	0.0000E+00	3.9240E+01	0.0000E+00	3.9496E+01	0.0000E+00	3.9705E+01	0.0000E+00
0.0000E+00	3.8684E+01	0.0000E+00	3.8824E+01	0.0000E+00	3.9080E+01	0.0000E+00	3.9189E+01	0.0000E+00	3.9444E+01	0.0000E+00	3.9652E+01	0.0000E+00
0.0000E+00	3.8635E+01	0.0000E+00	3.8775E+01	0.0000E+00	3.9029E+01	0.0000E+00	3.9139E+01	0.0000E+00	3.9392E+01	0.0000E+00	3.9600E+01	0.0000E+00
0.0000E+00	3.8586E+01	0.0000E+00	3.8725E+01	0.0000E+00	3.8979E+01	0.0000E+00	3.9088E+01	0.0000E+00	3.9341E+01	0.0000E+00	3.9548E+01	0.0000E+00
0.0000E+00	3.8537E+01	0.0000E+00	3.8676E+01	0.0000E+00	3.8929E+01	0.0000E+00	3.9038E+01	0.0000E+00	3.9290E+01	0.0000E+00	3.9496E+01	0.0000E+00
0.0000E+00	3.8488E+01	0.0000E+00	3.8627E+01	0.0000E+00	3.8879E+01	0.0000E+00	3.8987E+01	0.0000E+00	3.9239E+01	0.0000E+00	3.9445E+01	0.0000E+00
0.0000E+00	3.8439E+01	0.0000E+00	3.8578E+01	0.0000E+00	3.8829E+01	0.0000E+00	3.8937E+01	0.0000E+00	3.9188E+01	0.0000E+00	3.9393E+01	0.0000E+00
0.0000E+00	3.8391E+01	0.0000E+00	3.8529E+01	0.0000E+00	3.8780E+01	0.0000E+00	3.8887E+01	0.0000E+00	3.9137E+01	0.0000E+00	3.9342E+01	0.0000E+00
0.0000E+00	3.8343E+01	0.0000E+00	3.8480E+01	0.0000E+00	3.8730E+01	0.0000E+00	3.8838E+01	0.0000E+00	3.9087E+01	0.0000E+00	3.9291E+01	0.0000E+00
0.0000E+00	3.8295E+01	0.0000E+00	3.8432E+01	0.0000E+00	3.8681E+01	0.0000E+00	3.8788E+01	0.0000E+00	3.9036E+01	0.0000E+00	3.9240E+01	0.0000E+00
0.0000E+00	3.8247E+01	0.0000E+00	3.8384E+01	0.0000E+00	3.8632E+01	0.0000E+00	3.8739E+01	0.0000E+00	3.8986E+01	0.0000E+00	3.9189E+01	0.0000E+00
0.0000E+00	3.8199E+01	0.0000E+00	3.8335E+01	0.0000E+00	3.8583E+01	0.0000E+00	3.8689E+01	0.0000E+00	3.8936E+01	0.0000E+00	3.9138E+01	0.0000E+00
0.0000E+00	3.8151E+01	0.0000E+00	3.8287E+01	0.0000E+00	3.8534E+01	0.0000E+00	3.8640E+01	0.0000E+00	3.8886E+01	0.0000E+00	3.9087E+01	0.0000E+00
0.0000E+00	3.8104E+01	0.0000E+00	3.8239E+01	0.0000E+00	3.8485E+01	0.0000E+00	3.8591E+01	0.0000E+00	3.8836E+01	0.0000E+00	3.9037E+01	0.0000E+00
0.0000E+00	3.8056E+01	0.0000E+00	3.8192E+01	0.0000E+00	3.8437E+01	0.0000E+00	3.8542E+01	0.0000E+00	3.8787E+01	0.0000E+00	3.8987E+01	0.0000E+00
0.0000E+00	3.8009E+01	0.0000E+00	3.8144E+01	0.0000E+00	3.8388E+01	0.0000E+00	3.8494E+01	0.0000E+00	3.8737E+01	0.0000E+00	3.8937E+01	0.0000E+00
0.0000E+00	3.7962E+01	0.0000E+00	3.8096E+01	0.0000E+00	3.8340E+01	0.0000E+00	3.8445E+01	0.0000E+00	3.8688E+01	0.0000E+00	3.8887E+01	0.0000E+00
0.0000E+00	3.7915E+01	0.0000E+00	3.8049E+01	0.0000E+00	3.8292E+01	0.0000E+00	3.8397E+01	0.0000E+00	3.8639E+01	0.0000E+00	3.8837E+01	0.0000E+00
0.0000E+00	3.7868E+01	0.0000E+00	3.8002E+01	0.0000E+00	3.8244E+01	0.0000E+00	3.8348E+01	0.0000E+00	3.8590E+01	0.0000E+00	3.8787E+01	0.0000E+00
0.0000E+00	3.7822E+01	0.0000E+00	3.7955E+01	0.0000E+00	3.8196E+01	0.0000E+00	3.8300E+01	0.0000E+00	3.8541E+01	0.0000E+00	3.8738E+01	0.0000E+00
0.0000E+00	3.7775E+01	0.0000E+00	3.7908E+01	0.0000E+00	3.8149E+01	0.0000E+00	3.8252E+01	0.0000E+00	3.8492E+01	0.0000E+00	3.8689E+01	0.0000E+00
0.0000E+00	3.7729E+01	0.0000E+00	3.7861E+01	0.0000E+00	3.8101E+01	0.0000E+00	3.8204E+01	0.0000E+00	3.8444E+01	0.0000E+00	3.8639E+01	0.0000E+00
0.0000E+00	3.7682E+01	0.0000E+00	3.7814E+01	0.0000E+00	3.8054E+01	0.0000E+00	3.8157E+01	0.0000E+00	3.8395E+01	0.0000E+00	3.8590E+01	0.0000E+00
0.0000E+00	3.7636E+01	0.0000E+00	3.7768E+01	0.0000E+00	3.8007E+01	0.0000E+00	3.8109E+01	0.0000E+00	3.8347E+01	0.0000E+00	3.8542E+01	0.0000E+00
0.0000E+00	3.7590E+01	0.0000E+00	3.7722E+01	0.0000E+00	3.7960E+01	0.0000E+00	3.8062E+01	0.0000E+00	3.8299E+01	0.0000E+00	3.8493E+01	0.0000E+00
0.0000E+00	3.7545E+01	0.0000E+00	3.7675E+01	0.0000E+00	3.7913E+01	0.0000E+00	3.8015E+01	0.0000E+00	3.8251E+01	0.0000E+00	3.8444E+01	0.0000E+00
0.0000E+00	3.7499E+01	0.0000E+00	3.7629E+01	0.0000E+00	3.7866E+01	0.0000E+00	3.7968E+01	0.0000E+00	3.8203E+01	0.0000E+00	3.8396E+01	0.0000E+00
0.0000E+00	3.7453E+01	0.0000E+00	3.7583E+01	0.0000E+00	3.7819E+01	0.0000E+00	3.7921E+01	0.0000E+00	3.8155E+01	0.0000E+00	3.8348E+01	0.0000E+00
0.0000E+00	3.7408E+01	0.0000E+00	3.7537E+01	0.0000E+00	3.7773E+01	0.0000E+00	3.7874E+01	0.0000E+00	3.8108E+01	0.0000E+00	3.8300E+01	0.0000E+00
0.0000E+00	3.7362E+01	0.0000E+00	3.7492E+01	0.0000E+00	3.7726E+01	0.0000E+00	3.7827E+01	0.0000E+00	3.8060E+01	0.0000E+00	3.8252E+01	0.0000E+00
0.0000E+00	3.7317E+01	0.0000E+00	3.7446E+01	0.0000E+00	3.7680E+01	0.0000E+00	3.7780E+01	0.0000E+00	3.8013E+01	0.0000E+00	3.8204E+01	0.0000E+00
0.0000E+00	3.7272E+01	0.0000E+00	3.7401E+01	0.0000E+00	3.7634E+01	0.0000E+00	3.7734E+01	0.0000E+00	3.7966E+01	0.0000E+00	3.8156E+01	0.0000E+00

Arg 13	Curve 13	Arg 14	Curve 14	Arg 15	Curve 15	Arg 16	Curve 16	Arg 17	Curve 17	Arg 18	Curve 18
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00

Arg 13	Curve 13	Arg 14	Curve 14	Arg 15	Curve 15	Arg 16	Curve 16	Arg 17	Curve 17	Arg 18	Curve 18
2.1932E+02	0.0000E+00	8.8843E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
2.1304E+02	0.0000E+00	6.3273E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
2.0726E+02	0.0000E+00	5.1781E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
2.0193E+02	0.0000E+00	4.4892E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9698E+02	0.0000E+00	4.0175E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.9238E+02	0.0000E+00	3.6687E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.8808E+02	0.0000E+00	3.3972E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.8406E+02	0.0000E+00	3.1781E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.8028E+02	0.0000E+00	2.9964E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.7672E+02	0.0000E+00	2.8426E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.7337E+02	0.0000E+00	2.7102E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.7019E+02	0.0000E+00	2.5947E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6718E+02	0.0000E+00	2.4927E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6433E+02	0.0000E+00	2.4018E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.6161E+02	0.0000E+00	2.3202E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.5902E+02	0.0000E+00	2.2462E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.5655E+02	0.0000E+00	2.1789E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.5419E+02	0.0000E+00	2.1173E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.5194E+02	0.0000E+00	2.0605E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.4977E+02	0.0000E+00	2.0081E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.4770E+02	0.0000E+00	1.9594E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.4571E+02	0.0000E+00	1.9141E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.4379E+02	0.0000E+00	1.8718E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.4195E+02	0.0000E+00	1.8321E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.4018E+02	0.0000E+00	1.7948E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.3847E+02	0.0000E+00	1.7597E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.3682E+02	0.0000E+00	1.7265E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.3522E+02	0.0000E+00	1.6952E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.3368E+02	0.0000E+00	1.6654E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.3219E+02	0.0000E+00	1.6372E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.3075E+02	0.0000E+00	1.6103E+02	0.0000E+00	9.4263E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.2935E+02	0.0000E+00	1.5847E+02	0.0000E+00	6.5147E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.2800E+02	0.0000E+00	1.5602E+02	0.0000E+00	5.2794E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.2668E+02	0.0000E+00	1.5369E+02	0.0000E+00	4.5547E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.2541E+02	0.0000E+00	1.5145E+02	0.0000E+00	4.0644E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.2417E+02	0.0000E+00	1.4931E+02	0.0000E+00	3.7043E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.2297E+02	0.0000E+00	1.4725E+02	0.0000E+00	3.4254E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.2180E+02	0.0000E+00	1.4528E+02	0.0000E+00	3.2011E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.2066E+02	0.0000E+00	1.4338E+02	0.0000E+00	3.0157E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.1956E+02	0.0000E+00	1.4156E+02	0.0000E+00	2.8591E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.1848E+02	0.0000E+00	1.3980E+02	0.0000E+00	2.7245E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.1743E+02	0.0000E+00	1.3810E+02	0.0000E+00	2.6072E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.1641E+02	0.0000E+00	1.3646E+02	0.0000E+00	2.5038E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.1541E+02	0.0000E+00	1.3488E+02	0.0000E+00	2.4118E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.1444E+02	0.0000E+00	1.3335E+02	0.0000E+00	2.3291E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.1349E+02	0.0000E+00	1.3187E+02	0.0000E+00	2.2544E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.1256E+02	0.0000E+00	1.3044E+02	0.0000E+00	2.1863E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.1166E+02	0.0000E+00	1.2905E+02	0.0000E+00	2.1241E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.1077E+02	0.0000E+00	1.2771E+02	0.0000E+00	2.0668E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.0991E+02	0.0000E+00	1.2640E+02	0.0000E+00	2.0139E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.0906E+02	0.0000E+00	1.2513E+02	0.0000E+00	1.9648E+02	0.0000E+00	1.2689E+03	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.0824E+02	0.0000E+00	1.2390E+02	0.0000E+00	1.9191E+02	0.0000E+00	7.3492E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00

Arg 13	Curve 13	Arg 14	Curve 14	Arg 15	Curve 15	Arg 16	Curve 16	Arg 17	Curve 17	Arg 18	Curve 18
1.0743E+02	0.0000E+00	1.2271E+02	0.0000E+00	1.8765E+02	0.0000E+00	5.6955E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.0664E+02	0.0000E+00	1.2155E+02	0.0000E+00	1.8365E+02	0.0000E+00	4.8141E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.0586E+02	0.0000E+00	1.2042E+02	0.0000E+00	1.7990E+02	0.0000E+00	4.2456E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.0511E+02	0.0000E+00	1.1932E+02	0.0000E+00	1.7636E+02	0.0000E+00	3.8400E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.0436E+02	0.0000E+00	1.1825E+02	0.0000E+00	1.7302E+02	0.0000E+00	3.5319E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.0364E+02	0.0000E+00	1.1720E+02	0.0000E+00	1.6987E+02	0.0000E+00	3.2876E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.0292E+02	0.0000E+00	1.1618E+02	0.0000E+00	1.6688E+02	0.0000E+00	3.0878E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.0222E+02	0.0000E+00	1.1519E+02	0.0000E+00	1.6403E+02	0.0000E+00	2.9203E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.0154E+02	0.0000E+00	1.1423E+02	0.0000E+00	1.6133E+02	0.0000E+00	2.7774E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.0087E+02	0.0000E+00	1.1328E+02	0.0000E+00	1.5876E+02	0.0000E+00	2.6535E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.0021E+02	0.0000E+00	1.1236E+02	0.0000E+00	1.5630E+02	0.0000E+00	2.5447E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
9.9560E+01	0.0000E+00	1.1146E+02	0.0000E+00	1.5395E+02	0.0000E+00	2.4483E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
9.8925E+01	0.0000E+00	1.1058E+02	0.0000E+00	1.5170E+02	0.0000E+00	2.3620E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
9.8301E+01	0.0000E+00	1.0972E+02	0.0000E+00	1.4955E+02	0.0000E+00	2.2841E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
9.7689E+01	0.0000E+00	1.0888E+02	0.0000E+00	1.4749E+02	0.0000E+00	2.2135E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
9.7087E+01	0.0000E+00	1.0806E+02	0.0000E+00	1.4550E+02	0.0000E+00	2.1490E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
9.6496E+01	0.0000E+00	1.0725E+02	0.0000E+00	1.4360E+02	0.0000E+00	2.0897E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
9.5916E+01	0.0000E+00	1.0647E+02	0.0000E+00	1.4176E+02	0.0000E+00	2.0351E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
9.5345E+01	0.0000E+00	1.0570E+02	0.0000E+00	1.3999E+02	0.0000E+00	1.9845E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
9.4784E+01	0.0000E+00	1.0494E+02	0.0000E+00	1.3829E+02	0.0000E+00	1.9375E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
9.4232E+01	0.0000E+00	1.0420E+02	0.0000E+00	1.3665E+02	0.0000E+00	1.8936E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
9.3690E+01	0.0000E+00	1.0348E+02	0.0000E+00	1.3506E+02	0.0000E+00	1.8526E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
9.3156E+01	0.0000E+00	1.0277E+02	0.0000E+00	1.3352E+02	0.0000E+00	1.8141E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
9.2631E+01	0.0000E+00	1.0207E+02	0.0000E+00	1.3204E+02	0.0000E+00	1.7779E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
9.2115E+01	0.0000E+00	1.0139E+02	0.0000E+00	1.3060E+02	0.0000E+00	1.7437E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
9.1606E+01	0.0000E+00	1.0072E+02	0.0000E+00	1.2921E+02	0.0000E+00	1.7114E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
9.1106E+01	0.0000E+00	1.0006E+02	0.0000E+00	1.2786E+02	0.0000E+00	1.6808E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
9.0614E+01	0.0000E+00	9.9419E+01	0.0000E+00	1.2655E+02	0.0000E+00	1.6518E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
9.0129E+01	0.0000E+00	9.8787E+01	0.0000E+00	1.2528E+02	0.0000E+00	1.6242E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
8.9651E+01	0.0000E+00	9.8165E+01	0.0000E+00	1.2404E+02	0.0000E+00	1.5980E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
8.9181E+01	0.0000E+00	9.7555E+01	0.0000E+00	1.2285E+02	0.0000E+00	1.5729E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
8.8717E+01	0.0000E+00	9.6956E+01	0.0000E+00	1.2168E+02	0.0000E+00	1.5490E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
8.8261E+01	0.0000E+00	9.6368E+01	0.0000E+00	1.2055E+02	0.0000E+00	1.5261E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
8.7811E+01	0.0000E+00	9.5789E+01	0.0000E+00	1.1944E+02	0.0000E+00	1.5042E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
8.7367E+01	0.0000E+00	9.5221E+01	0.0000E+00	1.1837E+02	0.0000E+00	1.4832E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
8.6930E+01	0.0000E+00	9.4662E+01	0.0000E+00	1.1732E+02	0.0000E+00	1.4631E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
8.6499E+01	0.0000E+00	9.4112E+01	0.0000E+00	1.1630E+02	0.0000E+00	1.4437E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
8.6074E+01	0.0000E+00	9.3572E+01	0.0000E+00	1.1531E+02	0.0000E+00	1.4251E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
8.5656E+01	0.0000E+00	9.3040E+01	0.0000E+00	1.1434E+02	0.0000E+00	1.4071E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
8.5242E+01	0.0000E+00	9.2517E+01	0.0000E+00	1.1339E+02	0.0000E+00	1.3898E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
8.4835E+01	0.0000E+00	9.2002E+01	0.0000E+00	1.1246E+02	0.0000E+00	1.3731E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
8.4433E+01	0.0000E+00	9.1496E+01	0.0000E+00	1.1156E+02	0.0000E+00	1.3570E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
8.4036E+01	0.0000E+00	9.0997E+01	0.0000E+00	1.1068E+02	0.0000E+00	1.3415E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
8.3645E+01	0.0000E+00	9.0506E+01	0.0000E+00	1.0982E+02	0.0000E+00	1.3264E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
8.3259E+01	0.0000E+00	9.0023E+01	0.0000E+00	1.0898E+02	0.0000E+00	1.3118E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
8.2878E+01	0.0000E+00	8.9547E+01	0.0000E+00	1.0815E+02	0.0000E+00	1.2977E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
8.2502E+01	0.0000E+00	8.9078E+01	0.0000E+00	1.0734E+02	0.0000E+00	1.2841E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
8.2130E+01	0.0000E+00	8.8616E+01	0.0000E+00	1.0656E+02	0.0000E+00	1.2708E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
8.1763E+01	0.0000E+00	8.8161E+01	0.0000E+00	1.0578E+02	0.0000E+00	1.2579E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
8.1401E+01	0.0000E+00	8.7713E+01	0.0000E+00	1.0503E+02	0.0000E+00	1.2455E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
8.1044E+01	0.0000E+00	8.7271E+01	0.0000E+00	1.0429E+02	0.0000E+00	1.2333E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
8.0691E+01	0.0000E+00	8.6835E+01	0.0000E+00	1.0356E+02	0.0000E+00	1.2215E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00

Arg 13	Curve 13	Arg 14	Curve 14	Arg 15	Curve 15	Arg 16	Curve 16	Arg 17	Curve 17	Arg 18	Curve 18
8.0342E+01	0.0000E+00	8.6405E+01	0.0000E+00	1.0285E+02	0.0000E+00	1.2101E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
7.9997E+01	0.0000E+00	8.5982E+01	0.0000E+00	1.0215E+02	0.0000E+00	1.1989E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
7.9657E+01	0.0000E+00	8.5564E+01	0.0000E+00	1.0147E+02	0.0000E+00	1.1880E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
7.9321E+01	0.0000E+00	8.5152E+01	0.0000E+00	1.0080E+02	0.0000E+00	1.1775E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
7.8988E+01	0.0000E+00	8.4746E+01	0.0000E+00	1.0014E+02	0.0000E+00	1.1672E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
7.8660E+01	0.0000E+00	8.4345E+01	0.0000E+00	9.9493E+01	0.0000E+00	1.1571E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
7.8336E+01	0.0000E+00	8.3950E+01	0.0000E+00	9.8859E+01	0.0000E+00	1.1473E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
7.8015E+01	0.0000E+00	8.3560E+01	0.0000E+00	9.8236E+01	0.0000E+00	1.1377E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
7.7698E+01	0.0000E+00	8.3175E+01	0.0000E+00	9.7625E+01	0.0000E+00	1.1284E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
7.7384E+01	0.0000E+00	8.2795E+01	0.0000E+00	9.7025E+01	0.0000E+00	1.1193E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
7.7074E+01	0.0000E+00	8.2419E+01	0.0000E+00	9.6435E+01	0.0000E+00	1.1104E+02	0.0000E+00	3.6816E+03	0.0000E+00	0.0000E+00	0.0000E+00
7.6768E+01	0.0000E+00	8.2049E+01	0.0000E+00	9.5855E+01	0.0000E+00	1.1017E+02	0.0000E+00	8.7577E+02	0.0000E+00	0.0000E+00	0.0000E+00
7.6465E+01	0.0000E+00	8.1683E+01	0.0000E+00	9.5285E+01	0.0000E+00	1.0932E+02	0.0000E+00	6.2811E+02	0.0000E+00	0.0000E+00	0.0000E+00
7.6165E+01	0.0000E+00	8.1322E+01	0.0000E+00	9.4725E+01	0.0000E+00	1.0849E+02	0.0000E+00	5.1527E+02	0.0000E+00	0.0000E+00	0.0000E+00
7.5869E+01	0.0000E+00	8.0966E+01	0.0000E+00	9.4175E+01	0.0000E+00	1.0767E+02	0.0000E+00	4.4725E+02	0.0000E+00	0.0000E+00	0.0000E+00
7.5576E+01	0.0000E+00	8.0614E+01	0.0000E+00	9.3633E+01	0.0000E+00	1.0688E+02	0.0000E+00	4.0056E+02	0.0000E+00	0.0000E+00	0.0000E+00
7.5286E+01	0.0000E+00	8.0266E+01	0.0000E+00	9.3101E+01	0.0000E+00	1.0610E+02	0.0000E+00	3.6596E+02	0.0000E+00	0.0000E+00	0.0000E+00
7.4999E+01	0.0000E+00	7.9922E+01	0.0000E+00	9.2577E+01	0.0000E+00	1.0534E+02	0.0000E+00	3.3899E+02	0.0000E+00	0.0000E+00	0.0000E+00
7.4715E+01	0.0000E+00	7.9583E+01	0.0000E+00	9.2061E+01	0.0000E+00	1.0459E+02	0.0000E+00	3.1721E+02	0.0000E+00	0.0000E+00	0.0000E+00
7.4434E+01	0.0000E+00	7.9247E+01	0.0000E+00	9.1554E+01	0.0000E+00	1.0386E+02	0.0000E+00	2.9914E+02	0.0000E+00	0.0000E+00	0.0000E+00
7.4156E+01	0.0000E+00	7.8916E+01	0.0000E+00	9.1054E+01	0.0000E+00	1.0314E+02	0.0000E+00	2.8384E+02	0.0000E+00	0.0000E+00	0.0000E+00
7.3881E+01	0.0000E+00	7.8588E+01	0.0000E+00	9.0562E+01	0.0000E+00	1.0244E+02	0.0000E+00	2.7065E+02	0.0000E+00	0.0000E+00	0.0000E+00
7.3609E+01	0.0000E+00	7.8265E+01	0.0000E+00	9.0078E+01	0.0000E+00	1.0175E+02	0.0000E+00	2.5915E+02	0.0000E+00	0.0000E+00	0.0000E+00
7.3340E+01	0.0000E+00	7.7945E+01	0.0000E+00	8.9601E+01	0.0000E+00	1.0107E+02	0.0000E+00	2.4898E+02	0.0000E+00	0.0000E+00	0.0000E+00
7.3073E+01	0.0000E+00	7.7628E+01	0.0000E+00	8.9132E+01	0.0000E+00	1.0041E+02	0.0000E+00	2.3993E+02	0.0000E+00	0.0000E+00	0.0000E+00
7.2809E+01	0.0000E+00	7.7316E+01	0.0000E+00	8.8669E+01	0.0000E+00	9.9756E+01	0.0000E+00	2.3178E+02	0.0000E+00	0.0000E+00	0.0000E+00
7.2548E+01	0.0000E+00	7.7007E+01	0.0000E+00	8.8213E+01	0.0000E+00	9.9117E+01	0.0000E+00	2.2441E+02	0.0000E+00	0.0000E+00	0.0000E+00
7.2290E+01	0.0000E+00	7.6701E+01	0.0000E+00	8.7764E+01	0.0000E+00	9.8490E+01	0.0000E+00	2.1770E+02	0.0000E+00	0.0000E+00	0.0000E+00
7.2034E+01	0.0000E+00	7.6399E+01	0.0000E+00	8.7321E+01	0.0000E+00	9.7874E+01	0.0000E+00	2.1155E+02	0.0000E+00	0.0000E+00	0.0000E+00
7.1780E+01	0.0000E+00	7.6100E+01	0.0000E+00	8.6885E+01	0.0000E+00	9.7269E+01	0.0000E+00	2.0589E+02	0.0000E+00	0.0000E+00	0.0000E+00
7.1529E+01	0.0000E+00	7.5804E+01	0.0000E+00	8.6454E+01	0.0000E+00	9.6675E+01	0.0000E+00	2.0066E+02	0.0000E+00	0.0000E+00	0.0000E+00
7.1280E+01	0.0000E+00	7.5512E+01	0.0000E+00	8.6030E+01	0.0000E+00	9.6092E+01	0.0000E+00	1.9580E+02	0.0000E+00	0.0000E+00	0.0000E+00
7.1034E+01	0.0000E+00	7.5222E+01	0.0000E+00	8.5612E+01	0.0000E+00	9.5518E+01	0.0000E+00	1.9128E+02	0.0000E+00	0.0000E+00	0.0000E+00
7.0790E+01	0.0000E+00	7.4936E+01	0.0000E+00	8.5199E+01	0.0000E+00	9.4954E+01	0.0000E+00	1.8705E+02	0.0000E+00	0.0000E+00	0.0000E+00
7.0549E+01	0.0000E+00	7.4653E+01	0.0000E+00	8.4792E+01	0.0000E+00	9.4399E+01	0.0000E+00	1.8309E+02	0.0000E+00	0.0000E+00	0.0000E+00
7.0310E+01	0.0000E+00	7.4373E+01	0.0000E+00	8.4391E+01	0.0000E+00	9.3854E+01	0.0000E+00	1.7937E+02	0.0000E+00	0.0000E+00	0.0000E+00
7.0073E+01	0.0000E+00	7.4095E+01	0.0000E+00	8.3995E+01	0.0000E+00	9.3318E+01	0.0000E+00	1.7587E+02	0.0000E+00	0.0000E+00	0.0000E+00
6.9838E+01	0.0000E+00	7.3821E+01	0.0000E+00	8.3604E+01	0.0000E+00	9.2790E+01	0.0000E+00	1.7256E+02	0.0000E+00	0.0000E+00	0.0000E+00
6.9606E+01	0.0000E+00	7.3550E+01	0.0000E+00	8.3219E+01	0.0000E+00	9.2271E+01	0.0000E+00	1.6942E+02	0.0000E+00	0.0000E+00	0.0000E+00
6.9375E+01	0.0000E+00	7.3281E+01	0.0000E+00	8.2838E+01	0.0000E+00	9.1761E+01	0.0000E+00	1.6645E+02	0.0000E+00	0.0000E+00	0.0000E+00
6.9147E+01	0.0000E+00	7.3015E+01	0.0000E+00	8.2462E+01	0.0000E+00	9.1258E+01	0.0000E+00	1.6363E+02	0.0000E+00	0.0000E+00	0.0000E+00
6.8921E+01	0.0000E+00	7.2752E+01	0.0000E+00	8.2091E+01	0.0000E+00	9.0763E+01	0.0000E+00	1.6095E+02	0.0000E+00	0.0000E+00	0.0000E+00
6.8697E+01	0.0000E+00	7.2491E+01	0.0000E+00	8.1725E+01	0.0000E+00	9.0276E+01	0.0000E+00	1.5839E+02	0.0000E+00	0.0000E+00	0.0000E+00
6.8474E+01	0.0000E+00	7.2233E+01	0.0000E+00	8.1364E+01	0.0000E+00	8.9796E+01	0.0000E+00	1.5595E+02	0.0000E+00	0.0000E+00	0.0000E+00
6.8254E+01	0.0000E+00	7.1978E+01	0.0000E+00	8.1007E+01	0.0000E+00	8.9323E+01	0.0000E+00	1.5362E+02	0.0000E+00	0.0000E+00	0.0000E+00
6.8036E+01	0.0000E+00	7.1725E+01	0.0000E+00	8.0654E+01	0.0000E+00	8.8858E+01	0.0000E+00	1.5139E+02	0.0000E+00	0.0000E+00	0.0000E+00
6.7820E+01	0.0000E+00	7.1474E+01	0.0000E+00	8.0306E+01	0.0000E+00	8.8399E+01	0.0000E+00	1.4925E+02	0.0000E+00	0.0000E+00	0.0000E+00
6.7605E+01	0.0000E+00	7.1226E+01	0.0000E+00	7.9962E+01	0.0000E+00	8.7947E+01	0.0000E+00	1.4719E+02	0.0000E+00	0.0000E+00	0.0000E+00
6.7393E+01	0.0000E+00	7.0980E+01	0.0000E+00	7.9622E+01	0.0000E+00	8.7502E+01	0.0000E+00	1.4522E+02	0.0000E+00	0.0000E+00	0.0000E+00
6.7182E+01	0.0000E+00	7.0737E+01	0.0000E+00	7.9286E+01	0.0000E+00	8.7063E+01	0.0000E+00	1.4333E+02	0.0000E+00	0.0000E+00	0.0000E+00
6.6974E+01	0.0000E+00	7.0496E+01	0.0000E+00	7.8954E+01	0.0000E+00	8.6630E+01	0.0000E+00	1.4150E+02	0.0000E+00	0.0000E+00	0.0000E+00
6.6766E+01	0.0000E+00	7.0257E+01	0.0000E+00	7.8626E+01	0.0000E+00	8.6203E+01	0.0000E+00	1.3974E+02	0.0000E+00	0.0000E+00	0.0000E+00

Arg 13	Curve 13	Arg 14	Curve 14	Arg 15	Curve 15	Arg 16	Curve 16	Arg 17	Curve 17	Arg 18	Curve 18
6.6561E+01	0.0000E+00	7.0021E+01	0.0000E+00	7.8302E+01	0.0000E+00	8.5783E+01	0.0000E+00	1.3805E+02	0.0000E+00	0.0000E+00	0.0000E+00
6.6358E+01	0.0000E+00	6.9787E+01	0.0000E+00	7.7981E+01	0.0000E+00	8.5368E+01	0.0000E+00	1.3641E+02	0.0000E+00	0.0000E+00	0.0000E+00
6.6156E+01	0.0000E+00	6.9555E+01	0.0000E+00	7.7665E+01	0.0000E+00	8.4959E+01	0.0000E+00	1.3483E+02	0.0000E+00	0.0000E+00	0.0000E+00
6.5956E+01	0.0000E+00	6.9325E+01	0.0000E+00	7.7351E+01	0.0000E+00	8.4555E+01	0.0000E+00	1.3330E+02	0.0000E+00	0.0000E+00	0.0000E+00
6.5757E+01	0.0000E+00	6.9097E+01	0.0000E+00	7.7042E+01	0.0000E+00	8.4157E+01	0.0000E+00	1.3183E+02	0.0000E+00	0.0000E+00	0.0000E+00
6.5560E+01	0.0000E+00	6.8871E+01	0.0000E+00	7.6736E+01	0.0000E+00	8.3764E+01	0.0000E+00	1.3040E+02	0.0000E+00	0.0000E+00	0.0000E+00
6.5365E+01	0.0000E+00	6.8648E+01	0.0000E+00	7.6433E+01	0.0000E+00	8.3376E+01	0.0000E+00	1.2901E+02	0.0000E+00	0.0000E+00	0.0000E+00
6.5172E+01	0.0000E+00	6.8426E+01	0.0000E+00	7.6134E+01	0.0000E+00	8.2993E+01	0.0000E+00	1.2767E+02	0.0000E+00	0.0000E+00	0.0000E+00
6.4980E+01	0.0000E+00	6.8206E+01	0.0000E+00	7.5838E+01	0.0000E+00	8.2616E+01	0.0000E+00	1.2636E+02	0.0000E+00	0.0000E+00	0.0000E+00
6.4789E+01	0.0000E+00	6.7988E+01	0.0000E+00	7.5545E+01	0.0000E+00	8.2243E+01	0.0000E+00	1.2510E+02	0.0000E+00	0.0000E+00	0.0000E+00
6.4600E+01	0.0000E+00	6.7773E+01	0.0000E+00	7.5255E+01	0.0000E+00	8.1875E+01	0.0000E+00	1.2387E+02	0.0000E+00	0.0000E+00	0.0000E+00
6.4413E+01	0.0000E+00	6.7559E+01	0.0000E+00	7.4969E+01	0.0000E+00	8.1511E+01	0.0000E+00	1.2267E+02	0.0000E+00	0.0000E+00	0.0000E+00
6.4227E+01	0.0000E+00	6.7346E+01	0.0000E+00	7.4685E+01	0.0000E+00	8.1152E+01	0.0000E+00	1.2151E+02	0.0000E+00	0.0000E+00	0.0000E+00
6.4043E+01	0.0000E+00	6.7136E+01	0.0000E+00	7.4405E+01	0.0000E+00	8.0798E+01	0.0000E+00	1.2038E+02	0.0000E+00	0.0000E+00	0.0000E+00
6.3860E+01	0.0000E+00	6.6928E+01	0.0000E+00	7.4127E+01	0.0000E+00	8.0448E+01	0.0000E+00	1.1928E+02	0.0000E+00	0.0000E+00	0.0000E+00
6.3678E+01	0.0000E+00	6.6721E+01	0.0000E+00	7.3853E+01	0.0000E+00	8.0102E+01	0.0000E+00	1.1821E+02	0.0000E+00	0.0000E+00	0.0000E+00
6.3498E+01	0.0000E+00	6.6516E+01	0.0000E+00	7.3581E+01	0.0000E+00	7.9760E+01	0.0000E+00	1.1717E+02	0.0000E+00	0.0000E+00	0.0000E+00
6.3319E+01	0.0000E+00	6.6313E+01	0.0000E+00	7.3312E+01	0.0000E+00	7.9423E+01	0.0000E+00	1.1615E+02	0.0000E+00	0.0000E+00	0.0000E+00
6.3142E+01	0.0000E+00	6.6112E+01	0.0000E+00	7.3045E+01	0.0000E+00	7.9089E+01	0.0000E+00	1.1516E+02	0.0000E+00	0.0000E+00	0.0000E+00
6.2966E+01	0.0000E+00	6.5912E+01	0.0000E+00	7.2782E+01	0.0000E+00	7.8760E+01	0.0000E+00	1.1420E+02	0.0000E+00	0.0000E+00	0.0000E+00
6.2791E+01	0.0000E+00	6.5714E+01	0.0000E+00	7.2521E+01	0.0000E+00	7.8434E+01	0.0000E+00	1.1325E+02	0.0000E+00	0.0000E+00	0.0000E+00
6.2618E+01	0.0000E+00	6.5517E+01	0.0000E+00	7.2263E+01	0.0000E+00	7.8112E+01	0.0000E+00	1.1233E+02	0.0000E+00	0.0000E+00	0.0000E+00
6.2446E+01	0.0000E+00	6.5323E+01	0.0000E+00	7.2007E+01	0.0000E+00	7.7794E+01	0.0000E+00	1.1143E+02	0.0000E+00	0.0000E+00	0.0000E+00
6.2275E+01	0.0000E+00	6.5129E+01	0.0000E+00	7.1754E+01	0.0000E+00	7.7479E+01	0.0000E+00	1.1055E+02	0.0000E+00	0.0000E+00	0.0000E+00
6.2105E+01	0.0000E+00	6.4938E+01	0.0000E+00	7.1503E+01	0.0000E+00	7.7168E+01	0.0000E+00	1.0969E+02	0.0000E+00	0.0000E+00	0.0000E+00
6.1937E+01	0.0000E+00	6.4748E+01	0.0000E+00	7.1255E+01	0.0000E+00	7.6861E+01	0.0000E+00	1.0885E+02	0.0000E+00	0.0000E+00	0.0000E+00
6.1770E+01	0.0000E+00	6.4559E+01	0.0000E+00	7.1009E+01	0.0000E+00	7.6557E+01	0.0000E+00	1.0803E+02	0.0000E+00	0.0000E+00	0.0000E+00
6.1604E+01	0.0000E+00	6.4372E+01	0.0000E+00	7.0765E+01	0.0000E+00	7.6256E+01	0.0000E+00	1.0723E+02	0.0000E+00	0.0000E+00	0.0000E+00
6.1440E+01	0.0000E+00	6.4186E+01	0.0000E+00	7.0524E+01	0.0000E+00	7.5959E+01	0.0000E+00	1.0644E+02	0.0000E+00	0.0000E+00	0.0000E+00
6.1277E+01	0.0000E+00	6.4002E+01	0.0000E+00	7.0285E+01	0.0000E+00	7.5665E+01	0.0000E+00	1.0567E+02	0.0000E+00	0.0000E+00	0.0000E+00
6.1114E+01	0.0000E+00	6.3819E+01	0.0000E+00	7.0048E+01	0.0000E+00	7.5374E+01	0.0000E+00	1.0492E+02	0.0000E+00	0.0000E+00	0.0000E+00
6.0953E+01	0.0000E+00	6.3638E+01	0.0000E+00	6.9814E+01	0.0000E+00	7.5086E+01	0.0000E+00	1.0418E+02	0.0000E+00	0.0000E+00	0.0000E+00
6.0794E+01	0.0000E+00	6.3458E+01	0.0000E+00	6.9581E+01	0.0000E+00	7.4801E+01	0.0000E+00	1.0346E+02	0.0000E+00	0.0000E+00	0.0000E+00
6.0635E+01	0.0000E+00	6.3280E+01	0.0000E+00	6.9351E+01	0.0000E+00	7.4519E+01	0.0000E+00	1.0275E+02	0.0000E+00	0.0000E+00	0.0000E+00
6.0477E+01	0.0000E+00	6.3103E+01	0.0000E+00	6.9123E+01	0.0000E+00	7.4241E+01	0.0000E+00	1.0205E+02	0.0000E+00	0.0000E+00	0.0000E+00
6.0321E+01	0.0000E+00	6.2927E+01	0.0000E+00	6.8897E+01	0.0000E+00	7.3965E+01	0.0000E+00	1.0137E+02	0.0000E+00	0.0000E+00	0.0000E+00
6.0165E+01	0.0000E+00	6.2753E+01	0.0000E+00	6.8673E+01	0.0000E+00	7.3692E+01	0.0000E+00	1.0070E+02	0.0000E+00	0.0000E+00	0.0000E+00
6.0011E+01	0.0000E+00	6.2580E+01	0.0000E+00	6.8451E+01	0.0000E+00	7.3422E+01	0.0000E+00	1.0004E+02	0.0000E+00	0.0000E+00	0.0000E+00
5.9858E+01	0.0000E+00	6.2408E+01	0.0000E+00	6.8231E+01	0.0000E+00	7.3154E+01	0.0000E+00	9.9400E+01	0.0000E+00	0.0000E+00	0.0000E+00
5.9706E+01	0.0000E+00	6.2237E+01	0.0000E+00	6.8013E+01	0.0000E+00	7.2890E+01	0.0000E+00	9.8768E+01	0.0000E+00	0.0000E+00	0.0000E+00
5.9555E+01	0.0000E+00	6.2068E+01	0.0000E+00	6.7797E+01	0.0000E+00	7.2628E+01	0.0000E+00	9.8147E+01	0.0000E+00	0.0000E+00	0.0000E+00
5.9405E+01	0.0000E+00	6.1900E+01	0.0000E+00	6.7583E+01	0.0000E+00	7.2368E+01	0.0000E+00	9.7537E+01	0.0000E+00	0.0000E+00	0.0000E+00
5.9256E+01	0.0000E+00	6.1734E+01	0.0000E+00	6.7371E+01	0.0000E+00	7.2111E+01	0.0000E+00	9.6938E+01	0.0000E+00	0.0000E+00	0.0000E+00
5.9108E+01	0.0000E+00	6.1568E+01	0.0000E+00	6.7160E+01	0.0000E+00	7.1857E+01	0.0000E+00	9.6350E+01	0.0000E+00	0.0000E+00	0.0000E+00
5.8961E+01	0.0000E+00	6.1404E+01	0.0000E+00	6.6952E+01	0.0000E+00	7.1605E+01	0.0000E+00	9.5772E+01	0.0000E+00	0.0000E+00	0.0000E+00
5.8815E+01	0.0000E+00	6.1241E+01	0.0000E+00	6.6745E+01	0.0000E+00	7.1356E+01	0.0000E+00	9.5204E+01	0.0000E+00	1.0412E+03	0.0000E+00
5.8670E+01	0.0000E+00	6.1079E+01	0.0000E+00	6.6540E+01	0.0000E+00	7.1109E+01	0.0000E+00	9.4645E+01	0.0000E+00	6.8151E+02	0.0000E+00
5.8526E+01	0.0000E+00	6.0918E+01	0.0000E+00	6.6336E+01	0.0000E+00	7.0865E+01	0.0000E+00	9.4096E+01	0.0000E+00	5.4356E+02	0.0000E+00
5.8382E+01	0.0000E+00	6.0759E+01	0.0000E+00	6.6135E+01	0.0000E+00	7.0622E+01	0.0000E+00	9.3556E+01	0.0000E+00	4.6540E+02	0.0000E+00
5.8240E+01	0.0000E+00	6.0600E+01	0.0000E+00	6.5935E+01	0.0000E+00	7.0383E+01	0.0000E+00	9.3024E+01	0.0000E+00	4.1345E+02	0.0000E+00
5.8099E+01	0.0000E+00	6.0443E+01	0.0000E+00	6.5737E+01	0.0000E+00	7.0145E+01	0.0000E+00	9.2501E+01	0.0000E+00	3.7571E+02	0.0000E+00
5.7959E+01	0.0000E+00	6.0287E+01	0.0000E+00	6.5540E+01	0.0000E+00	6.9910E+01	0.0000E+00	9.1987E+01	0.0000E+00	3.4671E+02	0.0000E+00

Arg 13	Curve 13	Arg 14	Curve 14	Arg 15	Curve 15	Arg 16	Curve 16	Arg 17	Curve 17	Arg 18	Curve 18
5.7819E+01	0.0000E+00	6.0131E+01	0.0000E+00	6.5345E+01	0.0000E+00	6.9676E+01	0.0000E+00	9.1481E+01	0.0000E+00	3.2351E+02	0.0000E+00
5.7681E+01	0.0000E+00	5.9977E+01	0.0000E+00	6.5151E+01	0.0000E+00	6.9445E+01	0.0000E+00	9.0982E+01	0.0000E+00	3.0441E+02	0.0000E+00
5.7543E+01	0.0000E+00	5.9824E+01	0.0000E+00	6.4960E+01	0.0000E+00	6.9216E+01	0.0000E+00	9.0492E+01	0.0000E+00	2.8833E+02	0.0000E+00
5.7406E+01	0.0000E+00	5.9673E+01	0.0000E+00	6.4769E+01	0.0000E+00	6.8989E+01	0.0000E+00	9.0008E+01	0.0000E+00	2.7454E+02	0.0000E+00
5.7271E+01	0.0000E+00	5.9522E+01	0.0000E+00	6.4581E+01	0.0000E+00	6.8765E+01	0.0000E+00	8.9533E+01	0.0000E+00	2.6256E+02	0.0000E+00
5.7136E+01	0.0000E+00	5.9372E+01	0.0000E+00	6.4393E+01	0.0000E+00	6.8542E+01	0.0000E+00	8.9064E+01	0.0000E+00	2.5201E+02	0.0000E+00
5.7001E+01	0.0000E+00	5.9223E+01	0.0000E+00	6.4208E+01	0.0000E+00	6.8321E+01	0.0000E+00	8.8602E+01	0.0000E+00	2.4263E+02	0.0000E+00
5.6868E+01	0.0000E+00	5.9075E+01	0.0000E+00	6.4023E+01	0.0000E+00	6.8102E+01	0.0000E+00	8.8147E+01	0.0000E+00	2.3422E+02	0.0000E+00
5.6736E+01	0.0000E+00	5.8928E+01	0.0000E+00	6.3840E+01	0.0000E+00	6.7886E+01	0.0000E+00	8.7699E+01	0.0000E+00	2.2662E+02	0.0000E+00
5.6604E+01	0.0000E+00	5.8783E+01	0.0000E+00	6.3659E+01	0.0000E+00	6.7671E+01	0.0000E+00	8.7257E+01	0.0000E+00	2.1971E+02	0.0000E+00
5.6473E+01	0.0000E+00	5.8638E+01	0.0000E+00	6.3479E+01	0.0000E+00	6.7458E+01	0.0000E+00	8.6822E+01	0.0000E+00	2.1340E+02	0.0000E+00
5.6343E+01	0.0000E+00	5.8494E+01	0.0000E+00	6.3300E+01	0.0000E+00	6.7246E+01	0.0000E+00	8.6393E+01	0.0000E+00	2.0759E+02	0.0000E+00
5.6214E+01	0.0000E+00	5.8351E+01	0.0000E+00	6.3123E+01	0.0000E+00	6.7037E+01	0.0000E+00	8.5969E+01	0.0000E+00	2.0224E+02	0.0000E+00
5.6086E+01	0.0000E+00	5.8209E+01	0.0000E+00	6.2947E+01	0.0000E+00	6.6829E+01	0.0000E+00	8.5552E+01	0.0000E+00	1.9727E+02	0.0000E+00
5.5958E+01	0.0000E+00	5.8068E+01	0.0000E+00	6.2773E+01	0.0000E+00	6.6624E+01	0.0000E+00	8.5140E+01	0.0000E+00	1.9265E+02	0.0000E+00
5.5831E+01	0.0000E+00	5.7928E+01	0.0000E+00	6.2599E+01	0.0000E+00	6.6420E+01	0.0000E+00	8.4734E+01	0.0000E+00	1.8833E+02	0.0000E+00
5.5705E+01	0.0000E+00	5.7789E+01	0.0000E+00	6.2428E+01	0.0000E+00	6.6217E+01	0.0000E+00	8.4333E+01	0.0000E+00	1.8429E+02	0.0000E+00
5.5580E+01	0.0000E+00	5.7650E+01	0.0000E+00	6.2257E+01	0.0000E+00	6.6017E+01	0.0000E+00	8.3938E+01	0.0000E+00	1.8050E+02	0.0000E+00
5.5456E+01	0.0000E+00	5.7513E+01	0.0000E+00	6.2088E+01	0.0000E+00	6.5818E+01	0.0000E+00	8.3548E+01	0.0000E+00	1.7693E+02	0.0000E+00
5.5332E+01	0.0000E+00	5.7376E+01	0.0000E+00	6.1920E+01	0.0000E+00	6.5620E+01	0.0000E+00	8.3163E+01	0.0000E+00	1.7356E+02	0.0000E+00
5.5209E+01	0.0000E+00	5.7241E+01	0.0000E+00	6.1753E+01	0.0000E+00	6.5425E+01	0.0000E+00	8.2783E+01	0.0000E+00	1.7038E+02	0.0000E+00
5.5086E+01	0.0000E+00	5.7106E+01	0.0000E+00	6.1587E+01	0.0000E+00	6.5231E+01	0.0000E+00	8.2408E+01	0.0000E+00	1.6736E+02	0.0000E+00
5.4965E+01	0.0000E+00	5.6972E+01	0.0000E+00	6.1423E+01	0.0000E+00	6.5038E+01	0.0000E+00	8.2038E+01	0.0000E+00	1.6449E+02	0.0000E+00
5.4844E+01	0.0000E+00	5.6839E+01	0.0000E+00	6.1259E+01	0.0000E+00	6.4847E+01	0.0000E+00	8.1673E+01	0.0000E+00	1.6177E+02	0.0000E+00
5.4724E+01	0.0000E+00	5.6707E+01	0.0000E+00	6.1097E+01	0.0000E+00	6.4658E+01	0.0000E+00	8.1312E+01	0.0000E+00	1.5917E+02	0.0000E+00
5.4604E+01	0.0000E+00	5.6575E+01	0.0000E+00	6.0937E+01	0.0000E+00	6.4470E+01	0.0000E+00	8.0955E+01	0.0000E+00	1.5670E+02	0.0000E+00
5.4486E+01	0.0000E+00	5.6445E+01	0.0000E+00	6.0777E+01	0.0000E+00	6.4284E+01	0.0000E+00	8.0603E+01	0.0000E+00	1.5433E+02	0.0000E+00
5.4367E+01	0.0000E+00	5.6315E+01	0.0000E+00	6.0618E+01	0.0000E+00	6.4099E+01	0.0000E+00	8.0255E+01	0.0000E+00	1.5207E+02	0.0000E+00
5.4250E+01	0.0000E+00	5.6186E+01	0.0000E+00	6.0461E+01	0.0000E+00	6.3915E+01	0.0000E+00	7.9912E+01	0.0000E+00	1.4990E+02	0.0000E+00
5.4133E+01	0.0000E+00	5.6058E+01	0.0000E+00	6.0304E+01	0.0000E+00	6.3733E+01	0.0000E+00	7.9573E+01	0.0000E+00	1.4782E+02	0.0000E+00
5.4017E+01	0.0000E+00	5.5930E+01	0.0000E+00	6.0149E+01	0.0000E+00	6.3553E+01	0.0000E+00	7.9237E+01	0.0000E+00	1.4582E+02	0.0000E+00
5.3902E+01	0.0000E+00	5.5804E+01	0.0000E+00	5.9995E+01	0.0000E+00	6.3373E+01	0.0000E+00	7.8906E+01	0.0000E+00	1.4391E+02	0.0000E+00
5.3787E+01	0.0000E+00	5.5678E+01	0.0000E+00	5.9842E+01	0.0000E+00	6.3196E+01	0.0000E+00	7.8579E+01	0.0000E+00	1.4206E+02	0.0000E+00
5.3673E+01	0.0000E+00	5.5553E+01	0.0000E+00	5.9690E+01	0.0000E+00	6.3019E+01	0.0000E+00	7.8255E+01	0.0000E+00	1.4028E+02	0.0000E+00
5.3560E+01	0.0000E+00	5.5428E+01	0.0000E+00	5.9539E+01	0.0000E+00	6.2844E+01	0.0000E+00	7.7935E+01	0.0000E+00	1.3857E+02	0.0000E+00
5.3447E+01	0.0000E+00	5.5305E+01	0.0000E+00	5.9389E+01	0.0000E+00	6.2670E+01	0.0000E+00	7.7619E+01	0.0000E+00	1.3691E+02	0.0000E+00
5.3335E+01	0.0000E+00	5.5182E+01	0.0000E+00	5.9240E+01	0.0000E+00	6.2498E+01	0.0000E+00	7.7306E+01	0.0000E+00	1.3532E+02	0.0000E+00
5.3223E+01	0.0000E+00	5.5060E+01	0.0000E+00	5.9092E+01	0.0000E+00	6.2327E+01	0.0000E+00	7.6997E+01	0.0000E+00	1.3377E+02	0.0000E+00
5.3112E+01	0.0000E+00	5.4938E+01	0.0000E+00	5.8945E+01	0.0000E+00	6.2157E+01	0.0000E+00	7.6692E+01	0.0000E+00	1.3228E+02	0.0000E+00
5.3002E+01	0.0000E+00	5.4817E+01	0.0000E+00	5.8799E+01	0.0000E+00	6.1988E+01	0.0000E+00	7.6390E+01	0.0000E+00	1.3083E+02	0.0000E+00
5.2892E+01	0.0000E+00	5.4697E+01	0.0000E+00	5.8654E+01	0.0000E+00	6.1821E+01	0.0000E+00	7.6091E+01	0.0000E+00	1.2943E+02	0.0000E+00
5.2783E+01	0.0000E+00	5.4578E+01	0.0000E+00	5.8510E+01	0.0000E+00	6.1655E+01	0.0000E+00	7.5795E+01	0.0000E+00	1.2808E+02	0.0000E+00
5.2675E+01	0.0000E+00	5.4459E+01	0.0000E+00	5.8367E+01	0.0000E+00	6.1490E+01	0.0000E+00	7.5503E+01	0.0000E+00	1.2676E+02	0.0000E+00
5.2567E+01	0.0000E+00	5.4342E+01	0.0000E+00	5.8225E+01	0.0000E+00	6.1326E+01	0.0000E+00	7.5214E+01	0.0000E+00	1.2549E+02	0.0000E+00
5.2459E+01	0.0000E+00	5.4224E+01	0.0000E+00	5.8084E+01	0.0000E+00	6.1164E+01	0.0000E+00	7.4927E+01	0.0000E+00	1.2425E+02	0.0000E+00
5.2353E+01	0.0000E+00	5.4108E+01	0.0000E+00	5.7944E+01	0.0000E+00	6.1002E+01	0.0000E+00	7.4644E+01	0.0000E+00	1.2304E+02	0.0000E+00
5.2246E+01	0.0000E+00	5.3992E+01	0.0000E+00	5.7805E+01	0.0000E+00	6.0842E+01	0.0000E+00	7.4364E+01	0.0000E+00	1.2187E+02	0.0000E+00
5.2141E+01	0.0000E+00	5.3877E+01	0.0000E+00	5.7666E+01	0.0000E+00	6.0683E+01	0.0000E+00	7.4087E+01	0.0000E+00	1.2073E+02	0.0000E+00
5.2036E+01	0.0000E+00	5.3762E+01	0.0000E+00	5.7529E+01	0.0000E+00	6.0525E+01	0.0000E+00	7.3813E+01	0.0000E+00	1.1962E+02	0.0000E+00
5.1931E+01	0.0000E+00	5.3648E+01	0.0000E+00	5.7392E+01	0.0000E+00	6.0368E+01	0.0000E+00	7.3542E+01	0.0000E+00	1.1854E+02	0.0000E+00
5.1827E+01	0.0000E+00	5.3535E+01	0.0000E+00	5.7256E+01	0.0000E+00	6.0213E+01	0.0000E+00	7.3273E+01	0.0000E+00	1.1749E+02	0.0000E+00
5.1724E+01	0.0000E+00	5.3422E+01	0.0000E+00	5.7121E+01	0.0000E+00	6.0058E+01	0.0000E+00	7.3007E+01	0.0000E+00	1.1647E+02	0.0000E+00

Arg 13	Curve 13	Arg 14	Curve 14	Arg 15	Curve 15	Arg 16	Curve 16	Arg 17	Curve 17	Arg 18	Curve 18
5.1621E+01	0.0000E+00	5.3310E+01	0.0000E+00	5.6987E+01	0.0000E+00	5.9905E+01	0.0000E+00	7.2744E+01	0.0000E+00	1.1547E+02	0.0000E+00
5.1519E+01	0.0000E+00	5.3199E+01	0.0000E+00	5.6854E+01	0.0000E+00	5.9752E+01	0.0000E+00	7.2483E+01	0.0000E+00	1.1449E+02	0.0000E+00
5.1417E+01	0.0000E+00	5.3088E+01	0.0000E+00	5.6722E+01	0.0000E+00	5.9601E+01	0.0000E+00	7.2225E+01	0.0000E+00	1.1354E+02	0.0000E+00
5.1316E+01	0.0000E+00	5.2978E+01	0.0000E+00	5.6590E+01	0.0000E+00	5.9450E+01	0.0000E+00	7.1970E+01	0.0000E+00	1.1262E+02	0.0000E+00
5.1215E+01	0.0000E+00	5.2868E+01	0.0000E+00	5.6460E+01	0.0000E+00	5.9301E+01	0.0000E+00	7.1717E+01	0.0000E+00	1.1171E+02	0.0000E+00
5.1115E+01	0.0000E+00	5.2759E+01	0.0000E+00	5.6330E+01	0.0000E+00	5.9153E+01	0.0000E+00	7.1467E+01	0.0000E+00	1.1082E+02	0.0000E+00
5.1015E+01	0.0000E+00	5.2651E+01	0.0000E+00	5.6201E+01	0.0000E+00	5.9005E+01	0.0000E+00	7.1219E+01	0.0000E+00	1.0996E+02	0.0000E+00
5.0916E+01	0.0000E+00	5.2543E+01	0.0000E+00	5.6072E+01	0.0000E+00	5.8859E+01	0.0000E+00	7.0973E+01	0.0000E+00	1.0911E+02	0.0000E+00
5.0817E+01	0.0000E+00	5.2436E+01	0.0000E+00	5.5945E+01	0.0000E+00	5.8714E+01	0.0000E+00	7.0730E+01	0.0000E+00	1.0829E+02	0.0000E+00
5.0719E+01	0.0000E+00	5.2329E+01	0.0000E+00	5.5818E+01	0.0000E+00	5.8569E+01	0.0000E+00	7.0489E+01	0.0000E+00	1.0748E+02	0.0000E+00
5.0621E+01	0.0000E+00	5.2223E+01	0.0000E+00	5.5692E+01	0.0000E+00	5.8426E+01	0.0000E+00	7.0250E+01	0.0000E+00	1.0668E+02	0.0000E+00
5.0524E+01	0.0000E+00	5.2118E+01	0.0000E+00	5.5567E+01	0.0000E+00	5.8283E+01	0.0000E+00	7.0014E+01	0.0000E+00	1.0591E+02	0.0000E+00
5.0428E+01	0.0000E+00	5.2013E+01	0.0000E+00	5.5443E+01	0.0000E+00	5.8142E+01	0.0000E+00	6.9780E+01	0.0000E+00	1.0515E+02	0.0000E+00
5.0331E+01	0.0000E+00	5.1908E+01	0.0000E+00	5.5319E+01	0.0000E+00	5.8001E+01	0.0000E+00	6.9548E+01	0.0000E+00	1.0441E+02	0.0000E+00
5.0236E+01	0.0000E+00	5.1804E+01	0.0000E+00	5.5196E+01	0.0000E+00	5.7862E+01	0.0000E+00	6.9318E+01	0.0000E+00	1.0368E+02	0.0000E+00
5.0140E+01	0.0000E+00	5.1701E+01	0.0000E+00	5.5074E+01	0.0000E+00	5.7723E+01	0.0000E+00	6.9090E+01	0.0000E+00	1.0297E+02	0.0000E+00
5.0046E+01	0.0000E+00	5.1598E+01	0.0000E+00	5.4952E+01	0.0000E+00	5.7585E+01	0.0000E+00	6.8864E+01	0.0000E+00	1.0227E+02	0.0000E+00
4.9951E+01	0.0000E+00	5.1496E+01	0.0000E+00	5.4831E+01	0.0000E+00	5.7448E+01	0.0000E+00	6.8641E+01	0.0000E+00	1.0158E+02	0.0000E+00
4.9858E+01	0.0000E+00	5.1395E+01	0.0000E+00	5.4711E+01	0.0000E+00	5.7312E+01	0.0000E+00	6.8419E+01	0.0000E+00	1.0091E+02	0.0000E+00
4.9764E+01	0.0000E+00	5.1293E+01	0.0000E+00	5.4592E+01	0.0000E+00	5.7177E+01	0.0000E+00	6.8200E+01	0.0000E+00	1.0025E+02	0.0000E+00
4.9671E+01	0.0000E+00	5.1193E+01	0.0000E+00	5.4473E+01	0.0000E+00	5.7042E+01	0.0000E+00	6.7982E+01	0.0000E+00	9.9598E+01	0.0000E+00
4.9579E+01	0.0000E+00	5.1093E+01	0.0000E+00	5.4355E+01	0.0000E+00	5.6909E+01	0.0000E+00	6.7766E+01	0.0000E+00	9.8962E+01	0.0000E+00
4.9487E+01	0.0000E+00	5.0993E+01	0.0000E+00	5.4238E+01	0.0000E+00	5.6776E+01	0.0000E+00	6.7552E+01	0.0000E+00	9.8338E+01	0.0000E+00
4.9395E+01	0.0000E+00	5.0894E+01	0.0000E+00	5.4121E+01	0.0000E+00	5.6644E+01	0.0000E+00	6.7340E+01	0.0000E+00	9.7725E+01	0.0000E+00
4.9304E+01	0.0000E+00	5.0796E+01	0.0000E+00	5.4005E+01	0.0000E+00	5.6513E+01	0.0000E+00	6.7130E+01	0.0000E+00	9.7123E+01	0.0000E+00
4.9213E+01	0.0000E+00	5.0698E+01	0.0000E+00	5.3890E+01	0.0000E+00	5.6383E+01	0.0000E+00	6.6922E+01	0.0000E+00	9.6531E+01	0.0000E+00
4.9123E+01	0.0000E+00	5.0600E+01	0.0000E+00	5.3775E+01	0.0000E+00	5.6254E+01	0.0000E+00	6.6715E+01	0.0000E+00	9.5950E+01	0.0000E+00
4.9033E+01	0.0000E+00	5.0503E+01	0.0000E+00	5.3661E+01	0.0000E+00	5.6125E+01	0.0000E+00	6.6510E+01	0.0000E+00	9.5379E+01	0.0000E+00
4.8944E+01	0.0000E+00	5.0406E+01	0.0000E+00	5.3548E+01	0.0000E+00	5.5997E+01	0.0000E+00	6.6307E+01	0.0000E+00	9.4817E+01	0.0000E+00
4.8855E+01	0.0000E+00	5.0310E+01	0.0000E+00	5.3435E+01	0.0000E+00	5.5870E+01	0.0000E+00	6.6106E+01	0.0000E+00	9.4265E+01	0.0000E+00
4.8766E+01	0.0000E+00	5.0215E+01	0.0000E+00	5.3323E+01	0.0000E+00	5.5744E+01	0.0000E+00	6.5906E+01	0.0000E+00	9.3722E+01	0.0000E+00
4.8678E+01	0.0000E+00	5.0120E+01	0.0000E+00	5.3211E+01	0.0000E+00	5.5618E+01	0.0000E+00	6.5708E+01	0.0000E+00	9.3188E+01	0.0000E+00
4.8591E+01	0.0000E+00	5.0025E+01	0.0000E+00	5.3101E+01	0.0000E+00	5.5493E+01	0.0000E+00	6.5512E+01	0.0000E+00	9.2663E+01	0.0000E+00
4.8503E+01	0.0000E+00	4.9931E+01	0.0000E+00	5.2990E+01	0.0000E+00	5.5369E+01	0.0000E+00	6.5317E+01	0.0000E+00	9.2146E+01	0.0000E+00
4.8416E+01	0.0000E+00	4.9837E+01	0.0000E+00	5.2881E+01	0.0000E+00	5.5246E+01	0.0000E+00	6.5124E+01	0.0000E+00	9.1637E+01	0.0000E+00
4.8330E+01	0.0000E+00	4.9744E+01	0.0000E+00	5.2772E+01	0.0000E+00	5.5124E+01	0.0000E+00	6.4932E+01	0.0000E+00	9.1136E+01	0.0000E+00
4.8244E+01	0.0000E+00	4.9651E+01	0.0000E+00	5.2663E+01	0.0000E+00	5.5002E+01	0.0000E+00	6.4742E+01	0.0000E+00	9.0643E+01	0.0000E+00
4.8158E+01	0.0000E+00	4.9559E+01	0.0000E+00	5.2555E+01	0.0000E+00	5.4881E+01	0.0000E+00	6.4553E+01	0.0000E+00	9.0157E+01	0.0000E+00
4.8073E+01	0.0000E+00	4.9467E+01	0.0000E+00	5.2448E+01	0.0000E+00	5.4760E+01	0.0000E+00	6.4366E+01	0.0000E+00	8.9679E+01	0.0000E+00
4.7988E+01	0.0000E+00	4.9375E+01	0.0000E+00	5.2341E+01	0.0000E+00	5.4641E+01	0.0000E+00	6.4181E+01	0.0000E+00	8.9209E+01	0.0000E+00
4.7903E+01	0.0000E+00	4.9284E+01	0.0000E+00	5.2235E+01	0.0000E+00	5.4522E+01	0.0000E+00	6.3997E+01	0.0000E+00	8.8745E+01	0.0000E+00
4.7819E+01	0.0000E+00	4.9194E+01	0.0000E+00	5.2130E+01	0.0000E+00	5.4403E+01	0.0000E+00	6.3814E+01	0.0000E+00	8.8288E+01	0.0000E+00
4.7736E+01	0.0000E+00	4.9103E+01	0.0000E+00	5.2025E+01	0.0000E+00	5.4286E+01	0.0000E+00	6.3633E+01	0.0000E+00	8.7837E+01	0.0000E+00
4.7652E+01	0.0000E+00	4.9014E+01	0.0000E+00	5.1920E+01	0.0000E+00	5.4169E+01	0.0000E+00	6.3453E+01	0.0000E+00	8.7394E+01	0.0000E+00
4.7569E+01	0.0000E+00	4.8924E+01	0.0000E+00	5.1816E+01	0.0000E+00	5.4053E+01	0.0000E+00	6.3275E+01	0.0000E+00	8.6956E+01	0.0000E+00
4.7487E+01	0.0000E+00	4.8835E+01	0.0000E+00	5.1713E+01	0.0000E+00	5.3937E+01	0.0000E+00	6.3098E+01	0.0000E+00	8.6525E+01	0.0000E+00
4.7404E+01	0.0000E+00	4.8747E+01	0.0000E+00	5.1610E+01	0.0000E+00	5.3822E+01	0.0000E+00	6.2922E+01	0.0000E+00	8.6100E+01	0.0000E+00
4.7322E+01	0.0000E+00	4.8659E+01	0.0000E+00	5.1508E+01	0.0000E+00	5.3708E+01	0.0000E+00	6.2748E+01	0.0000E+00	8.5681E+01	0.0000E+00
4.7241E+01	0.0000E+00	4.8571E+01	0.0000E+00	5.1406E+01	0.0000E+00	5.3594E+01	0.0000E+00	6.2574E+01	0.0000E+00	8.5267E+01	0.0000E+00
4.7160E+01	0.0000E+00	4.8484E+01	0.0000E+00	5.1305E+01	0.0000E+00	5.3481E+01	0.0000E+00	6.2403E+01	0.0000E+00	8.4859E+01	0.0000E+00
4.7079E+01	0.0000E+00	4.8397E+01	0.0000E+00	5.1204E+01	0.0000E+00	5.3369E+01	0.0000E+00	6.2232E+01	0.0000E+00	8.4457E+01	0.0000E+00
4.6999E+01	0.0000E+00	4.8311E+01	0.0000E+00	5.1104E+01	0.0000E+00	5.3257E+01	0.0000E+00	6.2063E+01	0.0000E+00	8.4060E+01	0.0000E+00

Arg 13	Curve 13	Arg 14	Curve 14	Arg 15	Curve 15	Arg 16	Curve 16	Arg 17	Curve 17	Arg 18	Curve 18
4.6918E+01	0.0000E+00	4.8225E+01	0.0000E+00	5.1005E+01	0.0000E+00	5.3146E+01	0.0000E+00	6.1895E+01	0.0000E+00	8.3668E+01	0.0000E+00
4.6839E+01	0.0000E+00	4.8139E+01	0.0000E+00	5.0906E+01	0.0000E+00	5.3035E+01	0.0000E+00	6.1729E+01	0.0000E+00	8.3282E+01	0.0000E+00
4.6759E+01	0.0000E+00	4.8054E+01	0.0000E+00	5.0807E+01	0.0000E+00	5.2926E+01	0.0000E+00	6.1563E+01	0.0000E+00	8.2900E+01	0.0000E+00
4.6680E+01	0.0000E+00	4.7969E+01	0.0000E+00	5.0709E+01	0.0000E+00	5.2816E+01	0.0000E+00	6.1399E+01	0.0000E+00	8.2524E+01	0.0000E+00
4.6602E+01	0.0000E+00	4.7885E+01	0.0000E+00	5.0611E+01	0.0000E+00	5.2708E+01	0.0000E+00	6.1236E+01	0.0000E+00	8.2152E+01	0.0000E+00
4.6523E+01	0.0000E+00	4.7801E+01	0.0000E+00	5.0514E+01	0.0000E+00	5.2599E+01	0.0000E+00	6.1074E+01	0.0000E+00	8.1785E+01	0.0000E+00
4.6445E+01	0.0000E+00	4.7717E+01	0.0000E+00	5.0417E+01	0.0000E+00	5.2492E+01	0.0000E+00	6.0913E+01	0.0000E+00	8.1423E+01	0.0000E+00
4.6368E+01	0.0000E+00	4.7634E+01	0.0000E+00	5.0321E+01	0.0000E+00	5.2385E+01	0.0000E+00	6.0754E+01	0.0000E+00	8.1065E+01	0.0000E+00
4.6290E+01	0.0000E+00	4.7551E+01	0.0000E+00	5.0226E+01	0.0000E+00	5.2279E+01	0.0000E+00	6.0595E+01	0.0000E+00	8.0712E+01	0.0000E+00
4.6213E+01	0.0000E+00	4.7468E+01	0.0000E+00	5.0130E+01	0.0000E+00	5.2173E+01	0.0000E+00	6.0438E+01	0.0000E+00	8.0363E+01	0.0000E+00
4.6137E+01	0.0000E+00	4.7386E+01	0.0000E+00	5.0036E+01	0.0000E+00	5.2068E+01	0.0000E+00	6.0282E+01	0.0000E+00	8.0018E+01	0.0000E+00
4.6060E+01	0.0000E+00	4.7304E+01	0.0000E+00	4.9942E+01	0.0000E+00	5.1963E+01	0.0000E+00	6.0127E+01	0.0000E+00	7.9677E+01	0.0000E+00
4.5984E+01	0.0000E+00	4.7223E+01	0.0000E+00	4.9848E+01	0.0000E+00	5.1859E+01	0.0000E+00	5.9973E+01	0.0000E+00	7.9341E+01	0.0000E+00
4.5908E+01	0.0000E+00	4.7142E+01	0.0000E+00	4.9754E+01	0.0000E+00	5.1755E+01	0.0000E+00	5.9820E+01	0.0000E+00	7.9008E+01	0.0000E+00
4.5833E+01	0.0000E+00	4.7061E+01	0.0000E+00	4.9662E+01	0.0000E+00	5.1652E+01	0.0000E+00	5.9668E+01	0.0000E+00	7.8680E+01	0.0000E+00
4.5758E+01	0.0000E+00	4.6981E+01	0.0000E+00	4.9569E+01	0.0000E+00	5.1550E+01	0.0000E+00	5.9517E+01	0.0000E+00	7.8355E+01	0.0000E+00
4.5683E+01	0.0000E+00	4.6901E+01	0.0000E+00	4.9477E+01	0.0000E+00	5.1448E+01	0.0000E+00	5.9367E+01	0.0000E+00	7.8034E+01	0.0000E+00
4.5609E+01	0.0000E+00	4.6821E+01	0.0000E+00	4.9386E+01	0.0000E+00	5.1347E+01	0.0000E+00	5.9219E+01	0.0000E+00	7.7717E+01	0.0000E+00
4.5535E+01	0.0000E+00	4.6742E+01	0.0000E+00	4.9295E+01	0.0000E+00	5.1246E+01	0.0000E+00	5.9071E+01	0.0000E+00	7.7403E+01	0.0000E+00
4.5461E+01	0.0000E+00	4.6663E+01	0.0000E+00	4.9204E+01	0.0000E+00	5.1145E+01	0.0000E+00	5.8924E+01	0.0000E+00	7.7093E+01	0.0000E+00
4.5387E+01	0.0000E+00	4.6584E+01	0.0000E+00	4.9114E+01	0.0000E+00	5.1045E+01	0.0000E+00	5.8778E+01	0.0000E+00	7.6786E+01	0.0000E+00
4.5314E+01	0.0000E+00	4.6506E+01	0.0000E+00	4.9024E+01	0.0000E+00	5.0946E+01	0.0000E+00	5.8633E+01	0.0000E+00	7.6483E+01	0.0000E+00
4.5241E+01	0.0000E+00	4.6428E+01	0.0000E+00	4.8935E+01	0.0000E+00	5.0847E+01	0.0000E+00	5.8490E+01	0.0000E+00	7.6183E+01	0.0000E+00
4.5168E+01	0.0000E+00	4.6351E+01	0.0000E+00	4.8846E+01	0.0000E+00	5.0749E+01	0.0000E+00	5.8347E+01	0.0000E+00	7.5886E+01	0.0000E+00
4.5096E+01	0.0000E+00	4.6273E+01	0.0000E+00	4.8757E+01	0.0000E+00	5.0651E+01	0.0000E+00	5.8205E+01	0.0000E+00	7.5593E+01	0.0000E+00
4.5024E+01	0.0000E+00	4.6196E+01	0.0000E+00	4.8669E+01	0.0000E+00	5.0554E+01	0.0000E+00	5.8064E+01	0.0000E+00	7.5303E+01	0.0000E+00
4.4952E+01	0.0000E+00	4.6120E+01	0.0000E+00	4.8581E+01	0.0000E+00	5.0457E+01	0.0000E+00	5.7924E+01	0.0000E+00	7.5016E+01	0.0000E+00
4.4881E+01	0.0000E+00	4.6043E+01	0.0000E+00	4.8494E+01	0.0000E+00	5.0361E+01	0.0000E+00	5.7785E+01	0.0000E+00	7.4732E+01	0.0000E+00
4.4810E+01	0.0000E+00	4.5967E+01	0.0000E+00	4.8407E+01	0.0000E+00	5.0265E+01	0.0000E+00	5.7646E+01	0.0000E+00	7.4451E+01	0.0000E+00
4.4739E+01	0.0000E+00	4.5892E+01	0.0000E+00	4.8321E+01	0.0000E+00	5.0169E+01	0.0000E+00	5.7509E+01	0.0000E+00	7.4173E+01	0.0000E+00
4.4668E+01	0.0000E+00	4.5816E+01	0.0000E+00	4.8235E+01	0.0000E+00	5.0075E+01	0.0000E+00	5.7372E+01	0.0000E+00	7.3898E+01	0.0000E+00
4.4598E+01	0.0000E+00	4.5741E+01	0.0000E+00	4.8149E+01	0.0000E+00	4.9980E+01	0.0000E+00	5.7237E+01	0.0000E+00	7.3625E+01	0.0000E+00
4.4528E+01	0.0000E+00	4.5667E+01	0.0000E+00	4.8064E+01	0.0000E+00	4.9886E+01	0.0000E+00	5.7102E+01	0.0000E+00	7.3356E+01	0.0000E+00
4.4458E+01	0.0000E+00	4.5592E+01	0.0000E+00	4.7979E+01	0.0000E+00	4.9793E+01	0.0000E+00	5.6968E+01	0.0000E+00	7.3089E+01	0.0000E+00
4.4389E+01	0.0000E+00	4.5518E+01	0.0000E+00	4.7895E+01	0.0000E+00	4.9700E+01	0.0000E+00	5.6835E+01	0.0000E+00	7.2825E+01	0.0000E+00
4.4320E+01	0.0000E+00	4.5445E+01	0.0000E+00	4.7810E+01	0.0000E+00	4.9607E+01	0.0000E+00	5.6703E+01	0.0000E+00	7.2564E+01	0.0000E+00
4.4251E+01	0.0000E+00	4.5371E+01	0.0000E+00	4.7727E+01	0.0000E+00	4.9515E+01	0.0000E+00	5.6571E+01	0.0000E+00	7.2305E+01	0.0000E+00
4.4182E+01	0.0000E+00	4.5298E+01	0.0000E+00	4.7643E+01	0.0000E+00	4.9423E+01	0.0000E+00	5.6441E+01	0.0000E+00	7.2049E+01	0.0000E+00
4.4114E+01	0.0000E+00	4.5225E+01	0.0000E+00	4.7560E+01	0.0000E+00	4.9332E+01	0.0000E+00	5.6311E+01	0.0000E+00	7.1795E+01	0.0000E+00
4.4046E+01	0.0000E+00	4.5153E+01	0.0000E+00	4.7478E+01	0.0000E+00	4.9241E+01	0.0000E+00	5.6182E+01	0.0000E+00	7.1544E+01	0.0000E+00
4.3978E+01	0.0000E+00	4.5080E+01	0.0000E+00	4.7396E+01	0.0000E+00	4.9151E+01	0.0000E+00	5.6054E+01	0.0000E+00	7.1295E+01	0.0000E+00
4.3910E+01	0.0000E+00	4.5008E+01	0.0000E+00	4.7314E+01	0.0000E+00	4.9061E+01	0.0000E+00	5.5926E+01	0.0000E+00	7.1049E+01	0.0000E+00
4.3843E+01	0.0000E+00	4.4937E+01	0.0000E+00	4.7232E+01	0.0000E+00	4.8971E+01	0.0000E+00	5.5800E+01	0.0000E+00	7.0805E+01	0.0000E+00
4.3776E+01	0.0000E+00	4.4865E+01	0.0000E+00	4.7151E+01	0.0000E+00	4.8882E+01	0.0000E+00	5.5674E+01	0.0000E+00	7.0563E+01	0.0000E+00
4.3709E+01	0.0000E+00	4.4794E+01	0.0000E+00	4.7070E+01	0.0000E+00	4.8793E+01	0.0000E+00	5.5549E+01	0.0000E+00	7.0324E+01	0.0000E+00
4.3643E+01	0.0000E+00	4.4723E+01	0.0000E+00	4.6990E+01	0.0000E+00	4.8705E+01	0.0000E+00	5.5425E+01	0.0000E+00	7.0087E+01	0.0000E+00
4.3576E+01	0.0000E+00	4.4653E+01	0.0000E+00	4.6910E+01	0.0000E+00	4.8617E+01	0.0000E+00	5.5301E+01	0.0000E+00	6.9852E+01	0.0000E+00
4.3510E+01	0.0000E+00	4.4583E+01	0.0000E+00	4.6830E+01	0.0000E+00	4.8530E+01	0.0000E+00	5.5178E+01	0.0000E+00	6.9619E+01	0.0000E+00
4.3444E+01	0.0000E+00	4.4513E+01	0.0000E+00	4.6751E+01	0.0000E+00	4.8443E+01	0.0000E+00	5.5056E+01	0.0000E+00	6.9389E+01	0.0000E+00
4.3379E+01	0.0000E+00	4.4443E+01	0.0000E+00	4.6672E+01	0.0000E+00	4.8356E+01	0.0000E+00	5.4935E+01	0.0000E+00	6.9161E+01	0.0000E+00
4.3314E+01	0.0000E+00	4.4374E+01	0.0000E+00	4.6593E+01	0.0000E+00	4.8270E+01	0.0000E+00	5.4814E+01	0.0000E+00	6.8934E+01	0.0000E+00
4.3249E+01	0.0000E+00	4.4304E+01	0.0000E+00	4.6515E+01	0.0000E+00	4.8184E+01	0.0000E+00	5.4694E+01	0.0000E+00	6.8710E+01	0.0000E+00

Arg 13	Curve 13	Arg 14	Curve 14	Arg 15	Curve 15	Arg 16	Curve 16	Arg 17	Curve 17	Arg 18	Curve 18
4.3184E+01	0.0000E+00	4.4236E+01	0.0000E+00	4.6437E+01	0.0000E+00	4.8099E+01	0.0000E+00	5.4575E+01	0.0000E+00	6.8488E+01	0.0000E+00
4.3119E+01	0.0000E+00	4.4167E+01	0.0000E+00	4.6359E+01	0.0000E+00	4.8014E+01	0.0000E+00	5.4456E+01	0.0000E+00	6.8267E+01	0.0000E+00
4.3055E+01	0.0000E+00	4.4099E+01	0.0000E+00	4.6282E+01	0.0000E+00	4.7929E+01	0.0000E+00	5.4338E+01	0.0000E+00	6.8049E+01	0.0000E+00
4.2991E+01	0.0000E+00	4.4031E+01	0.0000E+00	4.6205E+01	0.0000E+00	4.7845E+01	0.0000E+00	5.4221E+01	0.0000E+00	6.7833E+01	0.0000E+00
4.2927E+01	0.0000E+00	4.3963E+01	0.0000E+00	4.6128E+01	0.0000E+00	4.7761E+01	0.0000E+00	5.4104E+01	0.0000E+00	6.7618E+01	0.0000E+00
4.2864E+01	0.0000E+00	4.3895E+01	0.0000E+00	4.6052E+01	0.0000E+00	4.7678E+01	0.0000E+00	5.3988E+01	0.0000E+00	6.7406E+01	0.0000E+00
4.2800E+01	0.0000E+00	4.3828E+01	0.0000E+00	4.5976E+01	0.0000E+00	4.7594E+01	0.0000E+00	5.3873E+01	0.0000E+00	6.7195E+01	0.0000E+00
4.2737E+01	0.0000E+00	4.3761E+01	0.0000E+00	4.5900E+01	0.0000E+00	4.7512E+01	0.0000E+00	5.3759E+01	0.0000E+00	6.6986E+01	0.0000E+00
4.2674E+01	0.0000E+00	4.3694E+01	0.0000E+00	4.5825E+01	0.0000E+00	4.7429E+01	0.0000E+00	5.3645E+01	0.0000E+00	6.6779E+01	0.0000E+00
4.2612E+01	0.0000E+00	4.3628E+01	0.0000E+00	4.5750E+01	0.0000E+00	4.7347E+01	0.0000E+00	5.3531E+01	0.0000E+00	6.6573E+01	0.0000E+00
4.2549E+01	0.0000E+00	4.3562E+01	0.0000E+00	4.5675E+01	0.0000E+00	4.7266E+01	0.0000E+00	5.3419E+01	0.0000E+00	6.6370E+01	0.0000E+00
4.2487E+01	0.0000E+00	4.3496E+01	0.0000E+00	4.5601E+01	0.0000E+00	4.7184E+01	0.0000E+00	5.3307E+01	0.0000E+00	6.6168E+01	0.0000E+00
4.2425E+01	0.0000E+00	4.3430E+01	0.0000E+00	4.5527E+01	0.0000E+00	4.7104E+01	0.0000E+00	5.3195E+01	0.0000E+00	6.5968E+01	0.0000E+00
4.2363E+01	0.0000E+00	4.3365E+01	0.0000E+00	4.5453E+01	0.0000E+00	4.7023E+01	0.0000E+00	5.3085E+01	0.0000E+00	6.5769E+01	0.0000E+00
4.2302E+01	0.0000E+00	4.3299E+01	0.0000E+00	4.5380E+01	0.0000E+00	4.6943E+01	0.0000E+00	5.2974E+01	0.0000E+00	6.5572E+01	0.0000E+00
4.2241E+01	0.0000E+00	4.3234E+01	0.0000E+00	4.5306E+01	0.0000E+00	4.6863E+01	0.0000E+00	5.2865E+01	0.0000E+00	6.5377E+01	0.0000E+00
4.2180E+01	0.0000E+00	4.3170E+01	0.0000E+00	4.5233E+01	0.0000E+00	4.6783E+01	0.0000E+00	5.2756E+01	0.0000E+00	6.5183E+01	0.0000E+00
4.2119E+01	0.0000E+00	4.3105E+01	0.0000E+00	4.5161E+01	0.0000E+00	4.6704E+01	0.0000E+00	5.2647E+01	0.0000E+00	6.4991E+01	0.0000E+00
4.2058E+01	0.0000E+00	4.3041E+01	0.0000E+00	4.5089E+01	0.0000E+00	4.6626E+01	0.0000E+00	5.2540E+01	0.0000E+00	6.4801E+01	0.0000E+00
4.1998E+01	0.0000E+00	4.2977E+01	0.0000E+00	4.5017E+01	0.0000E+00	4.6547E+01	0.0000E+00	5.2433E+01	0.0000E+00	6.4612E+01	0.0000E+00
4.1938E+01	0.0000E+00	4.2913E+01	0.0000E+00	4.4945E+01	0.0000E+00	4.6469E+01	0.0000E+00	5.2326E+01	0.0000E+00	6.4424E+01	0.0000E+00
4.1878E+01	0.0000E+00	4.2850E+01	0.0000E+00	4.4873E+01	0.0000E+00	4.6391E+01	0.0000E+00	5.2220E+01	0.0000E+00	6.4238E+01	0.0000E+00
4.1818E+01	0.0000E+00	4.2786E+01	0.0000E+00	4.4802E+01	0.0000E+00	4.6314E+01	0.0000E+00	5.2114E+01	0.0000E+00	6.4054E+01	0.0000E+00
4.1758E+01	0.0000E+00	4.2723E+01	0.0000E+00	4.4732E+01	0.0000E+00	4.6237E+01	0.0000E+00	5.2009E+01	0.0000E+00	6.3870E+01	0.0000E+00
4.1699E+01	0.0000E+00	4.2660E+01	0.0000E+00	4.4661E+01	0.0000E+00	4.6160E+01	0.0000E+00	5.1905E+01	0.0000E+00	6.3689E+01	0.0000E+00
4.1640E+01	0.0000E+00	4.2598E+01	0.0000E+00	4.4591E+01	0.0000E+00	4.6083E+01	0.0000E+00	5.1801E+01	0.0000E+00	6.3509E+01	0.0000E+00
4.1581E+01	0.0000E+00	4.2536E+01	0.0000E+00	4.4521E+01	0.0000E+00	4.6007E+01	0.0000E+00	5.1698E+01	0.0000E+00	6.3330E+01	0.0000E+00
4.1522E+01	0.0000E+00	4.2473E+01	0.0000E+00	4.4451E+01	0.0000E+00	4.5931E+01	0.0000E+00	5.1595E+01	0.0000E+00	6.3152E+01	0.0000E+00
4.1464E+01	0.0000E+00	4.2412E+01	0.0000E+00	4.4382E+01	0.0000E+00	4.5856E+01	0.0000E+00	5.1493E+01	0.0000E+00	6.2976E+01	0.0000E+00
4.1405E+01	0.0000E+00	4.2350E+01	0.0000E+00	4.4312E+01	0.0000E+00	4.5781E+01	0.0000E+00	5.1392E+01	0.0000E+00	6.2801E+01	0.0000E+00
4.1347E+01	0.0000E+00	4.2288E+01	0.0000E+00	4.4244E+01	0.0000E+00	4.5706E+01	0.0000E+00	5.1290E+01	0.0000E+00	6.2628E+01	0.0000E+00
4.1290E+01	0.0000E+00	4.2227E+01	0.0000E+00	4.4175E+01	0.0000E+00	4.5631E+01	0.0000E+00	5.1190E+01	0.0000E+00	6.2456E+01	0.0000E+00
4.1232E+01	0.0000E+00	4.2166E+01	0.0000E+00	4.4107E+01	0.0000E+00	4.5557E+01	0.0000E+00	5.1090E+01	0.0000E+00	6.2285E+01	0.0000E+00
4.1174E+01	0.0000E+00	4.2105E+01	0.0000E+00	4.4038E+01	0.0000E+00	4.5483E+01	0.0000E+00	5.0990E+01	0.0000E+00	6.2115E+01	0.0000E+00
4.1117E+01	0.0000E+00	4.2045E+01	0.0000E+00	4.3971E+01	0.0000E+00	4.5410E+01	0.0000E+00	5.0891E+01	0.0000E+00	6.1947E+01	0.0000E+00
4.1060E+01	0.0000E+00	4.1984E+01	0.0000E+00	4.3903E+01	0.0000E+00	4.5336E+01	0.0000E+00	5.0793E+01	0.0000E+00	6.1780E+01	0.0000E+00
4.1003E+01	0.0000E+00	4.1924E+01	0.0000E+00	4.3836E+01	0.0000E+00	4.5263E+01	0.0000E+00	5.0695E+01	0.0000E+00	6.1614E+01	0.0000E+00
4.0946E+01	0.0000E+00	4.1864E+01	0.0000E+00	4.3769E+01	0.0000E+00	4.5191E+01	0.0000E+00	5.0597E+01	0.0000E+00	6.1450E+01	0.0000E+00
4.0890E+01	0.0000E+00	4.1805E+01	0.0000E+00	4.3702E+01	0.0000E+00	4.5118E+01	0.0000E+00	5.0500E+01	0.0000E+00	6.1286E+01	0.0000E+00
4.0834E+01	0.0000E+00	4.1745E+01	0.0000E+00	4.3636E+01	0.0000E+00	4.5046E+01	0.0000E+00	5.0404E+01	0.0000E+00	6.1124E+01	0.0000E+00
4.0777E+01	0.0000E+00	4.1686E+01	0.0000E+00	4.3569E+01	0.0000E+00	4.4974E+01	0.0000E+00	5.0307E+01	0.0000E+00	6.0963E+01	0.0000E+00
4.0722E+01	0.0000E+00	4.1627E+01	0.0000E+00	4.3503E+01	0.0000E+00	4.4903E+01	0.0000E+00	5.0212E+01	0.0000E+00	6.0803E+01	0.0000E+00
4.0666E+01	0.0000E+00	4.1568E+01	0.0000E+00	4.3438E+01	0.0000E+00	4.4831E+01	0.0000E+00	5.0117E+01	0.0000E+00	6.0644E+01	0.0000E+00
4.0610E+01	0.0000E+00	4.1509E+01	0.0000E+00	4.3372E+01	0.0000E+00	4.4761E+01	0.0000E+00	5.0022E+01	0.0000E+00	6.0487E+01	0.0000E+00
4.0555E+01	0.0000E+00	4.1451E+01	0.0000E+00	4.3307E+01	0.0000E+00	4.4690E+01	0.0000E+00	4.9928E+01	0.0000E+00	6.0330E+01	0.0000E+00
4.0500E+01	0.0000E+00	4.1393E+01	0.0000E+00	4.3242E+01	0.0000E+00	4.4619E+01	0.0000E+00	4.9834E+01	0.0000E+00	6.0175E+01	0.0000E+00
4.0445E+01	0.0000E+00	4.1335E+01	0.0000E+00	4.3177E+01	0.0000E+00	4.4549E+01	0.0000E+00	4.9741E+01	0.0000E+00	6.0020E+01	0.0000E+00
4.0390E+01	0.0000E+00	4.1277E+01	0.0000E+00	4.3113E+01	0.0000E+00	4.4480E+01	0.0000E+00	4.9648E+01	0.0000E+00	5.9867E+01	0.0000E+00
4.0335E+01	0.0000E+00	4.1219E+01	0.0000E+00	4.3048E+01	0.0000E+00	4.4410E+01	0.0000E+00	4.9556E+01	0.0000E+00	5.9715E+01	0.0000E+00
4.0281E+01	0.0000E+00	4.1162E+01	0.0000E+00	4.2984E+01	0.0000E+00	4.4341E+01	0.0000E+00	4.9464E+01	0.0000E+00	5.9564E+01	0.0000E+00
4.0227E+01	0.0000E+00	4.1105E+01	0.0000E+00	4.2920E+01	0.0000E+00	4.4272E+01	0.0000E+00	4.9372E+01	0.0000E+00	5.9414E+01	0.0000E+00
4.0173E+01	0.0000E+00	4.1047E+01	0.0000E+00	4.2857E+01	0.0000E+00	4.4203E+01	0.0000E+00	4.9281E+01	0.0000E+00	5.9265E+01	0.0000E+00

Arg 13	Curve 13	Arg 14	Curve 14	Arg 15	Curve 15	Arg 16	Curve 16	Arg 17	Curve 17	Arg 18	Curve 18
4.0119E+01	0.0000E+00	4.0991E+01	0.0000E+00	4.2794E+01	0.0000E+00	4.4135E+01	0.0000E+00	4.9191E+01	0.0000E+00	5.9117E+01	0.0000E+00
4.0065E+01	0.0000E+00	4.0934E+01	0.0000E+00	4.2731E+01	0.0000E+00	4.4066E+01	0.0000E+00	4.9101E+01	0.0000E+00	5.8969E+01	0.0000E+00
4.0011E+01	0.0000E+00	4.0878E+01	0.0000E+00	4.2668E+01	0.0000E+00	4.3998E+01	0.0000E+00	4.9011E+01	0.0000E+00	5.8823E+01	0.0000E+00
3.9958E+01	0.0000E+00	4.0821E+01	0.0000E+00	4.2605E+01	0.0000E+00	4.3931E+01	0.0000E+00	4.8922E+01	0.0000E+00	5.8678E+01	0.0000E+00
3.9905E+01	0.0000E+00	4.0765E+01	0.0000E+00	4.2543E+01	0.0000E+00	4.3863E+01	0.0000E+00	4.8833E+01	0.0000E+00	5.8534E+01	0.0000E+00
3.9852E+01	0.0000E+00	4.0709E+01	0.0000E+00	4.2481E+01	0.0000E+00	4.3796E+01	0.0000E+00	4.8744E+01	0.0000E+00	5.8391E+01	0.0000E+00
3.9799E+01	0.0000E+00	4.0654E+01	0.0000E+00	4.2419E+01	0.0000E+00	4.3729E+01	0.0000E+00	4.8656E+01	0.0000E+00	5.8249E+01	0.0000E+00
3.9746E+01	0.0000E+00	4.0598E+01	0.0000E+00	4.2357E+01	0.0000E+00	4.3663E+01	0.0000E+00	4.8569E+01	0.0000E+00	5.8107E+01	0.0000E+00
3.9694E+01	0.0000E+00	4.0543E+01	0.0000E+00	4.2295E+01	0.0000E+00	4.3596E+01	0.0000E+00	4.8482E+01	0.0000E+00	5.7967E+01	0.0000E+00
3.9641E+01	0.0000E+00	4.0488E+01	0.0000E+00	4.2234E+01	0.0000E+00	4.3530E+01	0.0000E+00	4.8395E+01	0.0000E+00	5.7828E+01	0.0000E+00
3.9589E+01	0.0000E+00	4.0433E+01	0.0000E+00	4.2173E+01	0.0000E+00	4.3464E+01	0.0000E+00	4.8308E+01	0.0000E+00	5.7689E+01	0.0000E+00
3.9537E+01	0.0000E+00	4.0378E+01	0.0000E+00	4.2112E+01	0.0000E+00	4.3399E+01	0.0000E+00	4.8222E+01	0.0000E+00	5.7551E+01	0.0000E+00
3.9485E+01	0.0000E+00	4.0323E+01	0.0000E+00	4.2052E+01	0.0000E+00	4.3334E+01	0.0000E+00	4.8137E+01	0.0000E+00	5.7415E+01	0.0000E+00
3.9434E+01	0.0000E+00	4.0269E+01	0.0000E+00	4.1991E+01	0.0000E+00	4.3268E+01	0.0000E+00	4.8052E+01	0.0000E+00	5.7279E+01	0.0000E+00
3.9382E+01	0.0000E+00	4.0215E+01	0.0000E+00	4.1931E+01	0.0000E+00	4.3204E+01	0.0000E+00	4.7967E+01	0.0000E+00	5.7144E+01	0.0000E+00
3.9331E+01	0.0000E+00	4.0161E+01	0.0000E+00	4.1871E+01	0.0000E+00	4.3139E+01	0.0000E+00	4.7882E+01	0.0000E+00	5.7010E+01	0.0000E+00
3.9280E+01	0.0000E+00	4.0107E+01	0.0000E+00	4.1812E+01	0.0000E+00	4.3075E+01	0.0000E+00	4.7798E+01	0.0000E+00	5.6876E+01	0.0000E+00
3.9229E+01	0.0000E+00	4.0053E+01	0.0000E+00	4.1752E+01	0.0000E+00	4.3010E+01	0.0000E+00	4.7715E+01	0.0000E+00	5.6744E+01	0.0000E+00
3.9178E+01	0.0000E+00	4.0000E+01	0.0000E+00	4.1693E+01	0.0000E+00	4.2947E+01	0.0000E+00	4.7631E+01	0.0000E+00	5.6612E+01	0.0000E+00
3.9127E+01	0.0000E+00	3.9946E+01	0.0000E+00	4.1634E+01	0.0000E+00	4.2883E+01	0.0000E+00	4.7548E+01	0.0000E+00	5.6481E+01	0.0000E+00
3.9077E+01	0.0000E+00	3.9893E+01	0.0000E+00	4.1575E+01	0.0000E+00	4.2820E+01	0.0000E+00	4.7466E+01	0.0000E+00	5.6351E+01	0.0000E+00
3.9026E+01	0.0000E+00	3.9840E+01	0.0000E+00	4.1516E+01	0.0000E+00	4.2756E+01	0.0000E+00	4.7384E+01	0.0000E+00	5.6222E+01	0.0000E+00
3.8976E+01	0.0000E+00	3.9787E+01	0.0000E+00	4.1458E+01	0.0000E+00	4.2693E+01	0.0000E+00	4.7302E+01	0.0000E+00	5.6094E+01	0.0000E+00
3.8926E+01	0.0000E+00	3.9735E+01	0.0000E+00	4.1399E+01	0.0000E+00	4.2631E+01	0.0000E+00	4.7221E+01	0.0000E+00	5.5966E+01	0.0000E+00
3.8876E+01	0.0000E+00	3.9682E+01	0.0000E+00	4.1341E+01	0.0000E+00	4.2568E+01	0.0000E+00	4.7140E+01	0.0000E+00	5.5839E+01	0.0000E+00
3.8827E+01	0.0000E+00	3.9630E+01	0.0000E+00	4.1283E+01	0.0000E+00	4.2506E+01	0.0000E+00	4.7059E+01	0.0000E+00	5.5713E+01	0.0000E+00
3.8777E+01	0.0000E+00	3.9578E+01	0.0000E+00	4.1226E+01	0.0000E+00	4.2444E+01	0.0000E+00	4.6978E+01	0.0000E+00	5.5588E+01	0.0000E+00
3.8728E+01	0.0000E+00	3.9526E+01	0.0000E+00	4.1168E+01	0.0000E+00	4.2382E+01	0.0000E+00	4.6898E+01	0.0000E+00	5.5463E+01	0.0000E+00
3.8678E+01	0.0000E+00	3.9474E+01	0.0000E+00	4.1111E+01	0.0000E+00	4.2321E+01	0.0000E+00	4.6819E+01	0.0000E+00	5.5339E+01	0.0000E+00
3.8629E+01	0.0000E+00	3.9422E+01	0.0000E+00	4.1054E+01	0.0000E+00	4.2259E+01	0.0000E+00	4.6740E+01	0.0000E+00	5.5216E+01	0.0000E+00
3.8580E+01	0.0000E+00	3.9371E+01	0.0000E+00	4.0997E+01	0.0000E+00	4.2198E+01	0.0000E+00	4.6661E+01	0.0000E+00	5.5094E+01	0.0000E+00
3.8531E+01	0.0000E+00	3.9320E+01	0.0000E+00	4.0940E+01	0.0000E+00	4.2137E+01	0.0000E+00	4.6582E+01	0.0000E+00	5.4972E+01	0.0000E+00
3.8483E+01	0.0000E+00	3.9269E+01	0.0000E+00	4.0884E+01	0.0000E+00	4.2077E+01	0.0000E+00	4.6504E+01	0.0000E+00	5.4851E+01	0.0000E+00

Arg 19	Curve 19	Flux Out (gm/yr)	Intake (mg/kg body wt./day)
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00

Arg 19	Curve 19	Flux Out (gm/yr)	Intake (mg/kg body wt./day)
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00

Arg 19	Curve 19	Flux Out (gm/yr)	Intake (mg/kg body wt./day)
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00

Arg 19	Curve 19	Flux Out (gm/yr)	Intake (mg/kg body wt./day)
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00

Arg 19	Curve 19	Flux Out (gm/yr)	Intake (mg/kg body wt./day)
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00

Arg 19	Curve 19	Flux Out (gm/yr)	Intake (mg/kg body wt./day)
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00

Arg 19	Curve 19	Flux Out (gm/yr)	Intake (mg/kg body wt./day)
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.2565E+03	0.0000E+00	0.0000E+00	0.0000E+00
7.3249E+02	0.0000E+00	0.0000E+00	0.0000E+00
5.6841E+02	0.0000E+00	0.0000E+00	0.0000E+00
4.8072E+02	0.0000E+00	0.0000E+00	0.0000E+00
4.2409E+02	0.0000E+00	0.0000E+00	0.0000E+00
3.8365E+02	0.0000E+00	0.0000E+00	0.0000E+00
3.5292E+02	0.0000E+00	0.0000E+00	0.0000E+00
3.2854E+02	0.0000E+00	0.0000E+00	0.0000E+00
3.0860E+02	0.0000E+00	0.0000E+00	0.0000E+00
2.9188E+02	0.0000E+00	0.0000E+00	0.0000E+00
2.7761E+02	0.0000E+00	0.0000E+00	0.0000E+00
2.6523E+02	0.0000E+00	0.0000E+00	0.0000E+00
2.5437E+02	0.0000E+00	0.0000E+00	0.0000E+00
2.4474E+02	0.0000E+00	0.0000E+00	0.0000E+00
2.3612E+02	0.0000E+00	0.0000E+00	0.0000E+00
2.2834E+02	0.0000E+00	0.0000E+00	0.0000E+00
2.2128E+02	0.0000E+00	0.0000E+00	0.0000E+00
2.1483E+02	0.0000E+00	0.0000E+00	0.0000E+00
2.0892E+02	0.0000E+00	0.0000E+00	0.0000E+00
2.0346E+02	0.0000E+00	0.0000E+00	0.0000E+00
1.9840E+02	0.0000E+00	0.0000E+00	0.0000E+00
1.9370E+02	0.0000E+00	0.0000E+00	0.0000E+00
1.8932E+02	0.0000E+00	0.0000E+00	0.0000E+00
1.8522E+02	0.0000E+00	0.0000E+00	0.0000E+00
1.8137E+02	0.0000E+00	0.0000E+00	0.0000E+00
1.7775E+02	0.0000E+00	0.0000E+00	0.0000E+00
1.7434E+02	0.0000E+00	0.0000E+00	0.0000E+00
1.7111E+02	0.0000E+00	0.0000E+00	0.0000E+00
1.6805E+02	0.0000E+00	0.0000E+00	0.0000E+00

Arg 19	Curve 19	Flux Out (gm/yr)	Intake (mg/kg body wt./day)
1.6515E+02	0.0000E+00	0.0000E+00	0.0000E+00
1.6240E+02	0.0000E+00	0.0000E+00	0.0000E+00
1.5977E+02	0.0000E+00	0.0000E+00	0.0000E+00
1.5727E+02	0.0000E+00	0.0000E+00	0.0000E+00
1.5488E+02	0.0000E+00	0.0000E+00	0.0000E+00
1.5259E+02	0.0000E+00	0.0000E+00	0.0000E+00
1.5040E+02	0.0000E+00	0.0000E+00	0.0000E+00
1.4830E+02	0.0000E+00	0.0000E+00	0.0000E+00
1.4629E+02	0.0000E+00	0.0000E+00	0.0000E+00
1.4435E+02	0.0000E+00	0.0000E+00	0.0000E+00
1.4249E+02	0.0000E+00	0.0000E+00	0.0000E+00
1.4069E+02	0.0000E+00	0.0000E+00	0.0000E+00
1.3896E+02	0.0000E+00	0.0000E+00	0.0000E+00
1.3730E+02	0.0000E+00	0.0000E+00	0.0000E+00
1.3569E+02	0.0000E+00	0.0000E+00	0.0000E+00
1.3413E+02	0.0000E+00	0.0000E+00	0.0000E+00
1.3263E+02	0.0000E+00	0.0000E+00	0.0000E+00
1.3117E+02	0.0000E+00	0.0000E+00	0.0000E+00
1.2976E+02	0.0000E+00	0.0000E+00	0.0000E+00
1.2839E+02	0.0000E+00	0.0000E+00	0.0000E+00
1.2707E+02	0.0000E+00	0.0000E+00	0.0000E+00
1.2578E+02	0.0000E+00	0.0000E+00	0.0000E+00
1.2453E+02	0.0000E+00	0.0000E+00	0.0000E+00
1.2332E+02	0.0000E+00	0.0000E+00	0.0000E+00
1.2214E+02	0.0000E+00	0.0000E+00	0.0000E+00
1.2100E+02	0.0000E+00	0.0000E+00	0.0000E+00
1.1988E+02	0.0000E+00	0.0000E+00	0.0000E+00
1.1879E+02	0.0000E+00	0.0000E+00	0.0000E+00
1.1774E+02	0.0000E+00	0.0000E+00	0.0000E+00
1.1671E+02	0.0000E+00	0.0000E+00	0.0000E+00
1.1570E+02	0.0000E+00	0.0000E+00	0.0000E+00
1.1472E+02	0.0000E+00	0.0000E+00	0.0000E+00
1.1376E+02	0.0000E+00	0.0000E+00	0.0000E+00
1.1283E+02	0.0000E+00	0.0000E+00	0.0000E+00
1.1192E+02	0.0000E+00	0.0000E+00	0.0000E+00
1.1103E+02	0.0000E+00	0.0000E+00	0.0000E+00
1.1016E+02	0.0000E+00	0.0000E+00	0.0000E+00
1.0931E+02	0.0000E+00	0.0000E+00	0.0000E+00
1.0848E+02	0.0000E+00	0.0000E+00	0.0000E+00
1.0767E+02	0.0000E+00	0.0000E+00	0.0000E+00
1.0687E+02	0.0000E+00	0.0000E+00	0.0000E+00
1.0609E+02	0.0000E+00	0.0000E+00	0.0000E+00
1.0533E+02	0.0000E+00	0.0000E+00	0.0000E+00
1.0458E+02	0.0000E+00	0.0000E+00	0.0000E+00
1.0385E+02	0.0000E+00	0.0000E+00	0.0000E+00
1.0313E+02	0.0000E+00	0.0000E+00	0.0000E+00
1.0243E+02	0.0000E+00	0.0000E+00	0.0000E+00
1.0174E+02	0.0000E+00	0.0000E+00	0.0000E+00
1.0106E+02	0.0000E+00	0.0000E+00	0.0000E+00
1.0040E+02	0.0000E+00	0.0000E+00	0.0000E+00
9.9750E+01	0.0000E+00	0.0000E+00	0.0000E+00
9.9111E+01	0.0000E+00	0.0000E+00	0.0000E+00

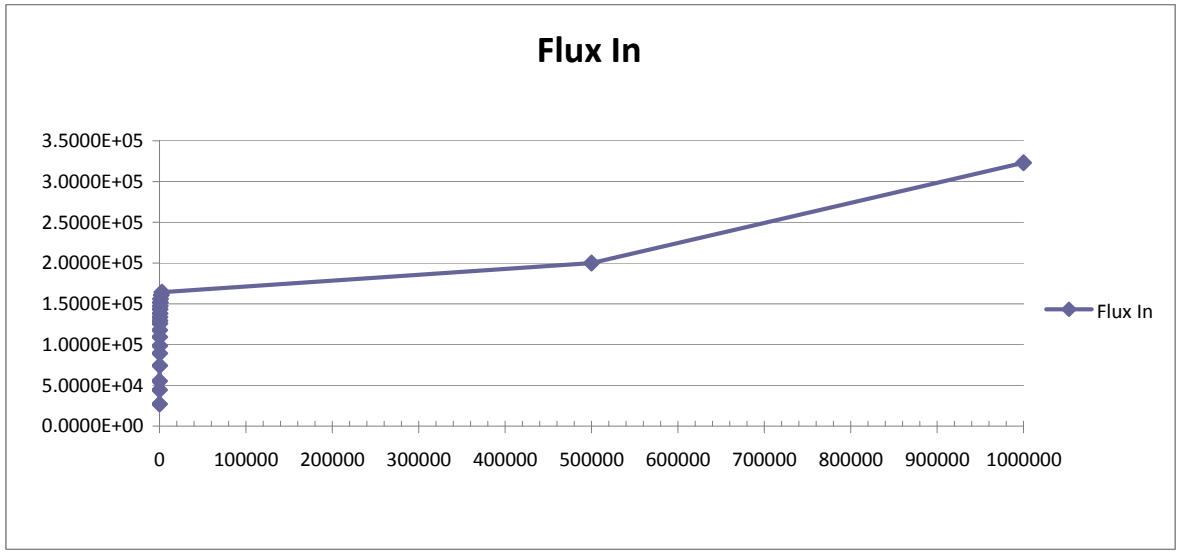
Arg 19	Curve 19	Flux Out (gm/yr)	Intake (mg/kg body wt./day)
9.8484E+01	0.0000E+00	0.0000E+00	0.0000E+00
9.7868E+01	0.0000E+00	0.0000E+00	0.0000E+00
9.7264E+01	0.0000E+00	0.0000E+00	0.0000E+00
9.6669E+01	0.0000E+00	0.0000E+00	0.0000E+00
9.6086E+01	0.0000E+00	0.0000E+00	0.0000E+00
9.5512E+01	0.0000E+00	0.0000E+00	0.0000E+00
9.4948E+01	0.0000E+00	0.0000E+00	0.0000E+00
9.4394E+01	0.0000E+00	0.0000E+00	0.0000E+00
9.3849E+01	0.0000E+00	0.0000E+00	0.0000E+00
9.3313E+01	0.0000E+00	0.0000E+00	0.0000E+00
9.2785E+01	0.0000E+00	0.0000E+00	0.0000E+00
9.2266E+01	0.0000E+00	0.0000E+00	0.0000E+00
9.1756E+01	0.0000E+00	0.0000E+00	0.0000E+00
9.1253E+01	0.0000E+00	0.0000E+00	0.0000E+00
9.0758E+01	0.0000E+00	0.0000E+00	0.0000E+00
9.0271E+01	0.0000E+00	0.0000E+00	0.0000E+00
8.9791E+01	0.0000E+00	0.0000E+00	0.0000E+00
8.9319E+01	0.0000E+00	0.0000E+00	0.0000E+00
8.8853E+01	0.0000E+00	0.0000E+00	0.0000E+00
8.8395E+01	0.0000E+00	0.0000E+00	0.0000E+00
8.7943E+01	0.0000E+00	0.0000E+00	0.0000E+00
8.7497E+01	0.0000E+00	0.0000E+00	0.0000E+00
8.7058E+01	0.0000E+00	0.0000E+00	0.0000E+00
8.6626E+01	0.0000E+00	0.0000E+00	0.0000E+00
8.6199E+01	0.0000E+00	0.0000E+00	0.0000E+00
8.5779E+01	0.0000E+00	0.0000E+00	0.0000E+00
8.5364E+01	0.0000E+00	0.0000E+00	0.0000E+00
8.4955E+01	0.0000E+00	0.0000E+00	0.0000E+00
8.4551E+01	0.0000E+00	0.0000E+00	0.0000E+00
8.4153E+01	0.0000E+00	0.0000E+00	0.0000E+00
8.3760E+01	0.0000E+00	0.0000E+00	0.0000E+00
8.3372E+01	0.0000E+00	0.0000E+00	0.0000E+00
8.2990E+01	0.0000E+00	0.0000E+00	0.0000E+00
8.2612E+01	0.0000E+00	0.0000E+00	0.0000E+00
8.2239E+01	0.0000E+00	0.0000E+00	0.0000E+00
8.1871E+01	0.0000E+00	0.0000E+00	0.0000E+00
8.1508E+01	0.0000E+00	0.0000E+00	0.0000E+00
8.1149E+01	0.0000E+00	0.0000E+00	0.0000E+00
8.0794E+01	0.0000E+00	0.0000E+00	0.0000E+00
8.0444E+01	0.0000E+00	0.0000E+00	0.0000E+00
8.0099E+01	0.0000E+00	0.0000E+00	0.0000E+00
7.9757E+01	0.0000E+00	0.0000E+00	0.0000E+00
7.9420E+01	0.0000E+00	0.0000E+00	0.0000E+00
7.9086E+01	0.0000E+00	0.0000E+00	0.0000E+00
7.8757E+01	0.0000E+00	0.0000E+00	0.0000E+00
7.8431E+01	0.0000E+00	0.0000E+00	0.0000E+00
7.8109E+01	0.0000E+00	0.0000E+00	0.0000E+00
7.7791E+01	0.0000E+00	0.0000E+00	0.0000E+00
7.7476E+01	0.0000E+00	0.0000E+00	0.0000E+00
7.7165E+01	0.0000E+00	0.0000E+00	0.0000E+00
7.6858E+01	0.0000E+00	0.0000E+00	0.0000E+00
7.6554E+01	0.0000E+00	0.0000E+00	0.0000E+00

Arg 19	Curve 19	Flux Out (gm/yr)	Intake (mg/kg body wt./day)
7.6253E+01	0.0000E+00	0.0000E+00	0.0000E+00
7.5956E+01	0.0000E+00	0.0000E+00	0.0000E+00
7.5662E+01	0.0000E+00	0.0000E+00	0.0000E+00
7.5371E+01	0.0000E+00	0.0000E+00	0.0000E+00
7.5083E+01	0.0000E+00	0.0000E+00	0.0000E+00
7.4798E+01	0.0000E+00	0.0000E+00	0.0000E+00
7.4517E+01	0.0000E+00	0.0000E+00	0.0000E+00
7.4238E+01	0.0000E+00	0.0000E+00	0.0000E+00
7.3962E+01	0.0000E+00	0.0000E+00	0.0000E+00
7.3689E+01	0.0000E+00	0.0000E+00	0.0000E+00
7.3419E+01	0.0000E+00	0.0000E+00	0.0000E+00
7.3152E+01	0.0000E+00	0.0000E+00	0.0000E+00
7.2887E+01	0.0000E+00	0.0000E+00	0.0000E+00
7.2625E+01	0.0000E+00	0.0000E+00	0.0000E+00
7.2366E+01	0.0000E+00	0.0000E+00	0.0000E+00
7.2109E+01	0.0000E+00	0.0000E+00	0.0000E+00
7.1855E+01	0.0000E+00	0.0000E+00	0.0000E+00
7.1603E+01	0.0000E+00	0.0000E+00	0.0000E+00
7.1354E+01	0.0000E+00	0.0000E+00	0.0000E+00
7.1107E+01	0.0000E+00	0.0000E+00	0.0000E+00
7.0862E+01	0.0000E+00	0.0000E+00	0.0000E+00
7.0620E+01	0.0000E+00	0.0000E+00	0.0000E+00
7.0380E+01	0.0000E+00	0.0000E+00	0.0000E+00
7.0143E+01	0.0000E+00	0.0000E+00	0.0000E+00
6.9907E+01	0.0000E+00	0.0000E+00	0.0000E+00
6.9674E+01	0.0000E+00	0.0000E+00	0.0000E+00
6.9443E+01	0.0000E+00	0.0000E+00	0.0000E+00
6.9214E+01	0.0000E+00	0.0000E+00	0.0000E+00
6.8987E+01	0.0000E+00	0.0000E+00	0.0000E+00
6.8762E+01	0.0000E+00	0.0000E+00	0.0000E+00
6.8540E+01	0.0000E+00	0.0000E+00	0.0000E+00
6.8319E+01	0.0000E+00	0.0000E+00	0.0000E+00
6.8100E+01	0.0000E+00	0.0000E+00	0.0000E+00

Combined TSPA Case, No Pumping, Present Climate
Non-Radiologic Metals Transport from 18 km to Furnace Creek Springs
Contaminant: Molybdenum
Oral Ref dose =5E-03 mg/kg body wt./day
Flow Rate of Discharge for Springs 2294 acre-ft/yr 2.8285E+09 liters/yr

Input Curve

Time (yr)	18 km Flux	Flux In	Del R
60	2.7147E+04	2.7147E+04	
70	4.4293E+04	4.4293E+04	1.7146E+04
80	5.5366E+04	5.5366E+04	1.1073E+04
100	7.4298E+04	7.4298E+04	1.8932E+04
120	8.9301E+04	8.9301E+04	1.5002E+04
140	9.8588E+04	9.8588E+04	9.2873E+03
190	1.0930E+05	1.0930E+05	1.0716E+04
240	1.1788E+05	1.1788E+05	8.5728E+03
290	1.2574E+05	1.2574E+05	7.8584E+03
360	1.2931E+05	1.2931E+05	3.5720E+03
400	1.3359E+05	1.3359E+05	4.2864E+03
480	1.3824E+05	1.3824E+05	4.6436E+03
630	1.4324E+05	1.4324E+05	5.0008E+03
700	1.4717E+05	1.4717E+05	3.9292E+03
910	1.5181E+05	1.5181E+05	4.6436E+03
1190	1.5610E+05	1.5610E+05	4.2864E+03
2010	1.6074E+05	1.6074E+05	4.6436E+03
2760	1.6431E+05	1.6431E+05	3.5720E+03
500000	2.0006E+05	2.0006E+05	3.5743E+04
1000000	3.2315E+05	3.2315E+05	1.2310E+05



Output Curve

4.61E-04		specific discharge (m/day)
1.5297E-03	v	groundwater velocity (km/yr)
5.6000E+01	L	path length (km)
1.0000E-01	D	Dispersion Coefficient (km)
1.5297E-04	Disp	Dispersivity (sq km/yr)
1.0000E+00	K	Retardation Factor (no units)
3.6609E+04	td	arrival time of the mid-point =TL (yr)
0.0000E+00	Kd	distribution coefficient =Kd (mL/gm)
1.1000E-01	ε	porosity
2.3200E+00	ρ	bulk density of solid (gm/mL)
0.0000E+00	λ	decay constant (1/yr)
NA	t1/2	halflife (yr)

Note: When λ is set to zero this is either a stable contaminant or a member of a decay chain. Decay and growth of radionuclides in decay chain members is adjusted in a separate work sheet.

Composite Curves

Time (yrs)	Arg 1	Curve 1	Arg 2	Curve 2	Arg 3	Curve 3	Arg 4	Curve 4	Arg 5	Curve 5	Arg 6
250	1.6339E+02	0.0000E+00	1.6791E+02	0.0000E+00	1.7283E+02	0.0000E+00	1.8409E+02	0.0000E+00	1.9785E+02	0.0000E+00	2.1521E+02
2000	4.8675E+01	0.0000E+00	4.8815E+01	0.0000E+00	4.8957E+01	0.0000E+00	4.9242E+01	0.0000E+00	4.9532E+01	0.0000E+00	4.9826E+01
4000	3.2185E+01	0.0000E+00	3.2236E+01	0.0000E+00	3.2287E+01	0.0000E+00	3.2390E+01	0.0000E+00	3.2493E+01	0.0000E+00	3.2597E+01
6000	2.4608E+01	0.0000E+00	2.4637E+01	0.0000E+00	2.4666E+01	0.0000E+00	2.4723E+01	0.0000E+00	2.4782E+01	0.0000E+00	2.4840E+01
8000	1.9896E+01	0.0000E+00	1.9916E+01	0.0000E+00	1.9935E+01	0.0000E+00	1.9974E+01	0.0000E+00	2.0014E+01	0.0000E+00	2.0053E+01
10000	1.6542E+01	0.0000E+00	1.6556E+01	0.0000E+00	1.6571E+01	0.0000E+00	1.6600E+01	0.0000E+00	1.6629E+01	0.0000E+00	1.6659E+01
12000	1.3961E+01	0.0000E+00	1.3973E+01	0.0000E+00	1.3984E+01	0.0000E+00	1.4007E+01	0.0000E+00	1.4030E+01	0.0000E+00	1.4053E+01
14000	1.1873E+01	0.0000E+00	1.1883E+01	0.0000E+00	1.1892E+01	0.0000E+00	1.1911E+01	0.0000E+00	1.1930E+01	0.0000E+00	1.1950E+01
16000	1.0124E+01	0.0000E+00	1.0132E+01	0.0000E+00	1.0140E+01	0.0000E+00	1.0156E+01	0.0000E+00	1.0172E+01	0.0000E+00	1.0189E+01
18000	8.6194E+00	0.0000E+00	8.6265E+00	0.0000E+00	8.6335E+00	0.0000E+00	8.6475E+00	0.0000E+00	8.6616E+00	0.0000E+00	8.6757E+00
20000	7.2999E+00	0.0000E+00	7.3061E+00	0.0000E+00	7.3123E+00	0.0000E+00	7.3247E+00	0.0000E+00	7.3372E+00	0.0000E+00	7.3497E+00
22000	6.1242E+00	0.0000E+00	6.1298E+00	0.0000E+00	6.1354E+00	0.0000E+00	6.1465E+00	0.0000E+00	6.1577E+00	0.0000E+00	6.1689E+00
24000	5.0635E+00	6.8747E-09	5.0685E+00	4.2143E-09	5.0736E+00	6.8383E-09	5.0837E+00	4.8802E-09	5.0938E+00	2.7195E-09	5.1040E+00
26000	4.0964E+00	5.9190E-05	4.1011E+00	3.6764E-05	4.1057E+00	6.0445E-05	4.1150E+00	4.4291E-05	4.1242E+00	2.5346E-05	4.1335E+00
28000	3.2072E+00	4.9236E-02	3.2114E+00	3.0900E-02	3.2157E+00	5.1334E-02	3.2243E+00	3.8404E-02	3.2328E+00	2.2440E-02	3.2414E+00
30000	2.3834E+00	6.4286E+00	2.3874E+00	4.0679E+00	2.3914E+00	6.8141E+00	2.3993E+00	5.1830E+00	2.4073E+00	3.0792E+00	2.4152E+00
32000	1.6155E+00	1.9142E+02	1.6193E+00	1.2193E+02	1.6230E+00	2.0560E+02	1.6304E+00	1.5846E+02	1.6378E+00	9.5398E+01	1.6453E+00
34000	8.9588E-01	1.7589E+03	8.9937E-01	1.1262E+03	9.0286E-01	1.9089E+03	9.0984E-01	1.4867E+03	9.1683E-01	9.0444E+02	9.2382E-01
36000	2.1820E-01	6.4951E+03	2.2149E-01	4.1752E+03	2.2479E-01	7.1047E+03	2.3138E-01	5.5772E+03	2.3797E-01	3.4199E+03	2.4457E-01
38000	-4.2260E-01	1.2430E+04	-4.1948E-01	8.0114E+03	-4.1636E-01	1.3669E+04	-4.1011E-01	1.0787E+04	-4.0387E-01	6.6502E+03	-3.9762E-01
40000	-1.0307E+00	1.5903E+04	-1.0278E+00	1.0264E+04	-1.0248E+00	1.7538E+04	-1.0189E+00	1.3880E+04	-1.0129E+00	8.5814E+03	-1.0070E+00
42000	-1.6098E+00	1.6950E+04	-1.6070E+00	1.0946E+04	-1.6041E+00	1.8711E+04	-1.5985E+00	1.4824E+04	-1.5928E+00	9.1745E+03	-1.5872E+00
44000	-2.1628E+00	1.7127E+04	-2.1601E+00	1.1061E+04	-2.1574E+00	1.8910E+04	-2.1519E+00	1.4985E+04	-2.1465E+00	9.2761E+03	-2.1411E+00
46000	-2.6922E+00	1.7144E+04	-2.6896E+00	1.1072E+04	-2.6870E+00	1.8930E+04	-2.6818E+00	1.5001E+04	-2.6766E+00	9.2865E+03	-2.6714E+00
48000	-3.2003E+00	1.7146E+04	-3.1978E+00	1.1073E+04	-3.1953E+00	1.8932E+04	-3.1903E+00	1.5002E+04	-3.1854E+00	9.2872E+03	-3.1804E+00
50000	-3.6890E+00	1.7146E+04	-3.6866E+00	1.1073E+04	-3.6842E+00	1.8932E+04	-3.6794E+00	1.5002E+04	-3.6746E+00	9.2873E+03	-3.6698E+00
52000	-4.1600E+00	1.7146E+04	-4.1577E+00	1.1073E+04	-4.1554E+00	1.8932E+04	-4.1507E+00	1.5002E+04	-4.1461E+00	9.2873E+03	-4.1415E+00
54000	-4.6147E+00	1.7146E+04	-4.6124E+00	1.1073E+04	-4.6102E+00	1.8932E+04	-4.6057E+00	1.5002E+04	-4.6013E+00	9.2873E+03	-4.5968E+00
56000	-5.0544E+00	1.7146E+04	-5.0522E+00	1.1073E+04	-5.0500E+00	1.8932E+04	-5.0457E+00	1.5002E+04	-5.0414E+00	9.2873E+03	-5.0370E+00
58000	-5.4802E+00	1.7146E+04	-5.4781E+00	1.1073E+04	-5.4760E+00	1.8932E+04	-5.4718E+00	1.5002E+04	-5.4676E+00	9.2873E+03	-5.4634E+00
60000	-5.8931E+00	1.7146E+04	-5.8911E+00	1.1073E+04	-5.8891E+00	1.8932E+04	-5.8850E+00	1.5002E+04	-5.8809E+00	9.2873E+03	-5.8769E+00
62000	-6.2942E+00	1.7146E+04	-6.2922E+00	1.1073E+04	-6.2902E+00	1.8932E+04	-6.2863E+00	1.5002E+04	-6.2823E+00	9.2873E+03	-6.2784E+00
64000	-6.6841E+00	1.7146E+04	-6.6821E+00	1.1073E+04	-6.6802E+00	1.8932E+04	-6.6764E+00	1.5002E+04	-6.6725E+00	9.2873E+03	-6.6687E+00
66000	-7.0636E+00	1.7146E+04	-7.0617E+00	1.1073E+04	-7.0598E+00	1.8932E+04	-7.0561E+00	1.5002E+04	-7.0523E+00	9.2873E+03	-7.0486E+00
68000	-7.4333E+00	1.7146E+04	-7.4315E+00	1.1073E+04	-7.4297E+00	1.8932E+04	-7.4260E+00	1.5002E+04	-7.4224E+00	9.2873E+03	-7.4187E+00
70000	-7.7939E+00	1.7146E+04	-7.7922E+00	1.1073E+04	-7.7904E+00	1.8932E+04	-7.7868E+00	1.5002E+04	-7.7833E+00	9.2873E+03	-7.7797E+00
72000	-8.1460E+00	1.7146E+04	-8.1442E+00	1.1073E+04	-8.1425E+00	1.8932E+04	-8.1390E+00	1.5002E+04	-8.1355E+00	9.2873E+03	-8.1320E+00
74000	-8.4899E+00	1.7146E+04	-8.4882E+00	1.1073E+04	-8.4865E+00	1.8932E+04	-8.4831E+00	1.5002E+04	-8.4797E+00	9.2873E+03	-8.4763E+00
76000	-8.8261E+00	1.7146E+04	-8.8245E+00	1.1073E+04	-8.8228E+00	1.8932E+04	-8.8195E+00	1.5002E+04	-8.8162E+00	9.2873E+03	-8.8128E+00
78000	-9.1552E+00	1.7146E+04	-9.1536E+00	1.1073E+04	-9.1519E+00	1.8932E+04	-9.1487E+00	1.5002E+04	-9.1454E+00	9.2873E+03	-9.1422E+00
80000	-9.4774E+00	1.7146E+04	-9.4758E+00	1.1073E+04	-9.4742E+00	1.8932E+04	-9.4710E+00	1.5002E+04	-9.4678E+00	9.2873E+03	-9.4646E+00
82000	-9.7931E+00	1.7146E+04	-9.7915E+00	1.1073E+04	-9.7899E+00	1.8932E+04	-9.7868E+00	1.5002E+04	-9.7837E+00	9.2873E+03	-9.7806E+00
84000	-1.0103E+01	1.7146E+04	-1.0101E+01	1.1073E+04	-1.0100E+01	1.8932E+04	-1.0096E+01	1.5002E+04	-1.0093E+01	9.2873E+03	-1.0090E+01
86000	-1.0406E+01	1.7146E+04	-1.0405E+01	1.1073E+04	-1.0403E+01	1.8932E+04	-1.0400E+01	1.5002E+04	-1.0397E+01	9.2873E+03	-1.0394E+01
88000	-1.0704E+01	1.7146E+04	-1.0703E+01	1.1073E+04	-1.0701E+01	1.8932E+04	-1.0698E+01	1.5002E+04	-1.0695E+01	9.2873E+03	-1.0692E+01
90000	-1.0997E+01	1.7146E+04	-1.0996E+01	1.1073E+04	-1.0994E+01	1.8932E+04	-1.0991E+01	1.5002E+04	-1.0988E+01	9.2873E+03	-1.0985E+01
92000	-1.1285E+01	1.7146E+04	-1.1283E+01	1.1073E+04	-1.1282E+01	1.8932E+04	-1.1279E+01	1.5002E+04	-1.1276E+01	9.2873E+03	-1.1273E+01
94000	-1.1567E+01	1.7146E+04	-1.1566E+01	1.1073E+04	-1.1565E+01	1.8932E+04	-1.1562E+01	1.5002E+04	-1.1559E+01	9.2873E+03	-1.1556E+01
96000	-1.1845E+01	1.7146E+04	-1.1844E+01	1.1073E+04	-1.1843E+01	1.8932E+04	-1.1840E+01	1.5002E+04	-1.1837E+01	9.2873E+03	-1.1834E+01
98000	-1.2119E+01	1.7146E+04	-1.2118E+01	1.1073E+04	-1.2116E+01	1.8932E+04	-1.2114E+01	1.5002E+04	-1.2111E+01	9.2873E+03	-1.2108E+01
100000	-1.2388E+01	1.7146E+04	-1.2387E+01	1.1073E+04	-1.2386E+01	1.8932E+04	-1.2383E+01	1.5002E+04	-1.2380E+01	9.2873E+03	-1.2378E+01
102000	-1.2654E+01	1.7146E+04	-1.2652E+01	1.1073E+04	-1.2651E+01	1.8932E+04	-1.2648E+01	1.5002E+04	-1.2646E+01	9.2873E+03	-1.2643E+01

Time (yrs)	Arg 1	Curve 1	Arg 2	Curve 2	Arg 3	Curve 3	Arg 4	Curve 4	Arg 5	Curve 5	Arg 6
104000	-1.2915E+01	1.7146E+04	-1.2914E+01	1.1073E+04	-1.2912E+01	1.8932E+04	-1.2910E+01	1.5002E+04	-1.2907E+01	9.2873E+03	-1.2905E+01
106000	-1.3173E+01	1.7146E+04	-1.3171E+01	1.1073E+04	-1.3170E+01	1.8932E+04	-1.3167E+01	1.5002E+04	-1.3165E+01	9.2873E+03	-1.3162E+01
108000	-1.3426E+01	1.7146E+04	-1.3425E+01	1.1073E+04	-1.3424E+01	1.8932E+04	-1.3421E+01	1.5002E+04	-1.3419E+01	9.2873E+03	-1.3416E+01
110000	-1.3677E+01	1.7146E+04	-1.3675E+01	1.1073E+04	-1.3674E+01	1.8932E+04	-1.3672E+01	1.5002E+04	-1.3669E+01	9.2873E+03	-1.3667E+01
112000	-1.3924E+01	1.7146E+04	-1.3922E+01	1.1073E+04	-1.3921E+01	1.8932E+04	-1.3919E+01	1.5002E+04	-1.3916E+01	9.2873E+03	-1.3914E+01
114000	-1.4167E+01	1.7146E+04	-1.4166E+01	1.1073E+04	-1.4165E+01	1.8932E+04	-1.4162E+01	1.5002E+04	-1.4160E+01	9.2873E+03	-1.4158E+01
116000	-1.4408E+01	1.7146E+04	-1.4407E+01	1.1073E+04	-1.4405E+01	1.8932E+04	-1.4403E+01	1.5002E+04	-1.4401E+01	9.2873E+03	-1.4398E+01
118000	-1.4645E+01	1.7146E+04	-1.4644E+01	1.1073E+04	-1.4643E+01	1.8932E+04	-1.4641E+01	1.5002E+04	-1.4638E+01	9.2873E+03	-1.4636E+01
120000	-1.4880E+01	1.7146E+04	-1.4879E+01	1.1073E+04	-1.4877E+01	1.8932E+04	-1.4875E+01	1.5002E+04	-1.4873E+01	9.2873E+03	-1.4870E+01
122000	-1.5111E+01	1.7146E+04	-1.5110E+01	1.1073E+04	-1.5109E+01	1.8932E+04	-1.5107E+01	1.5002E+04	-1.5104E+01	9.2873E+03	-1.5102E+01
124000	-1.5340E+01	1.7146E+04	-1.5339E+01	1.1073E+04	-1.5338E+01	1.8932E+04	-1.5336E+01	1.5002E+04	-1.5333E+01	9.2873E+03	-1.5331E+01
126000	-1.5567E+01	1.7146E+04	-1.5565E+01	1.1073E+04	-1.5564E+01	1.8932E+04	-1.5562E+01	1.5002E+04	-1.5560E+01	9.2873E+03	-1.5558E+01
128000	-1.5790E+01	1.7146E+04	-1.5789E+01	1.1073E+04	-1.5788E+01	1.8932E+04	-1.5786E+01	1.5002E+04	-1.5783E+01	9.2873E+03	-1.5781E+01
130000	-1.6011E+01	1.7146E+04	-1.6010E+01	1.1073E+04	-1.6009E+01	1.8932E+04	-1.6007E+01	1.5002E+04	-1.6005E+01	9.2873E+03	-1.6002E+01
132000	-1.6230E+01	1.7146E+04	-1.6229E+01	1.1073E+04	-1.6228E+01	1.8932E+04	-1.6226E+01	1.5002E+04	-1.6223E+01	9.2873E+03	-1.6221E+01
134000	-1.6446E+01	1.7146E+04	-1.6445E+01	1.1073E+04	-1.6444E+01	1.8932E+04	-1.6442E+01	1.5002E+04	-1.6440E+01	9.2873E+03	-1.6438E+01
136000	-1.6660E+01	1.7146E+04	-1.6659E+01	1.1073E+04	-1.6658E+01	1.8932E+04	-1.6656E+01	1.5002E+04	-1.6654E+01	9.2873E+03	-1.6652E+01
138000	-1.6872E+01	1.7146E+04	-1.6871E+01	1.1073E+04	-1.6870E+01	1.8932E+04	-1.6868E+01	1.5002E+04	-1.6866E+01	9.2873E+03	-1.6864E+01
140000	-1.7082E+01	1.7146E+04	-1.7081E+01	1.1073E+04	-1.7080E+01	1.8932E+04	-1.7078E+01	1.5002E+04	-1.7075E+01	9.2873E+03	-1.7073E+01
142000	-1.7289E+01	1.7146E+04	-1.7288E+01	1.1073E+04	-1.7287E+01	1.8932E+04	-1.7285E+01	1.5002E+04	-1.7283E+01	9.2873E+03	-1.7281E+01
144000	-1.7495E+01	1.7146E+04	-1.7494E+01	1.1073E+04	-1.7493E+01	1.8932E+04	-1.7491E+01	1.5002E+04	-1.7489E+01	9.2873E+03	-1.7486E+01
146000	-1.7698E+01	1.7146E+04	-1.7697E+01	1.1073E+04	-1.7696E+01	1.8932E+04	-1.7694E+01	1.5002E+04	-1.7692E+01	9.2873E+03	-1.7690E+01
148000	-1.7900E+01	1.7146E+04	-1.7899E+01	1.1073E+04	-1.7898E+01	1.8932E+04	-1.7896E+01	1.5002E+04	-1.7894E+01	9.2873E+03	-1.7892E+01
150000	-1.8099E+01	1.7146E+04	-1.8098E+01	1.1073E+04	-1.8097E+01	1.8932E+04	-1.8095E+01	1.5002E+04	-1.8093E+01	9.2873E+03	-1.8091E+01
152000	-1.8297E+01	1.7146E+04	-1.8296E+01	1.1073E+04	-1.8295E+01	1.8932E+04	-1.8293E+01	1.5002E+04	-1.8291E+01	9.2873E+03	-1.8289E+01
154000	-1.8493E+01	1.7146E+04	-1.8492E+01	1.1073E+04	-1.8491E+01	1.8932E+04	-1.8489E+01	1.5002E+04	-1.8487E+01	9.2873E+03	-1.8485E+01
156000	-1.8687E+01	1.7146E+04	-1.8686E+01	1.1073E+04	-1.8685E+01	1.8932E+04	-1.8683E+01	1.5002E+04	-1.8681E+01	9.2873E+03	-1.8680E+01
158000	-1.8880E+01	1.7146E+04	-1.8879E+01	1.1073E+04	-1.8878E+01	1.8932E+04	-1.8876E+01	1.5002E+04	-1.8874E+01	9.2873E+03	-1.8872E+01
160000	-1.9071E+01	1.7146E+04	-1.9070E+01	1.1073E+04	-1.9069E+01	1.8932E+04	-1.9067E+01	1.5002E+04	-1.9065E+01	9.2873E+03	-1.9063E+01
162000	-1.9260E+01	1.7146E+04	-1.9259E+01	1.1073E+04	-1.9258E+01	1.8932E+04	-1.9256E+01	1.5002E+04	-1.9254E+01	9.2873E+03	-1.9252E+01
164000	-1.9447E+01	1.7146E+04	-1.9447E+01	1.1073E+04	-1.9446E+01	1.8932E+04	-1.9444E+01	1.5002E+04	-1.9442E+01	9.2873E+03	-1.9440E+01
166000	-1.9634E+01	1.7146E+04	-1.9633E+01	1.1073E+04	-1.9632E+01	1.8932E+04	-1.9630E+01	1.5002E+04	-1.9628E+01	9.2873E+03	-1.9626E+01
168000	-1.9818E+01	1.7146E+04	-1.9817E+01	1.1073E+04	-1.9816E+01	1.8932E+04	-1.9814E+01	1.5002E+04	-1.9813E+01	9.2873E+03	-1.9811E+01
170000	-2.0001E+01	1.7146E+04	-2.0000E+01	1.1073E+04	-1.9999E+01	1.8932E+04	-1.9997E+01	1.5002E+04	-1.9996E+01	9.2873E+03	-1.9994E+01
172000	-2.0183E+01	1.7146E+04	-2.0182E+01	1.1073E+04	-2.0181E+01	1.8932E+04	-2.0179E+01	1.5002E+04	-2.0177E+01	9.2873E+03	-2.0175E+01
174000	-2.0363E+01	1.7146E+04	-2.0362E+01	1.1073E+04	-2.0361E+01	1.8932E+04	-2.0359E+01	1.5002E+04	-2.0358E+01	9.2873E+03	-2.0356E+01
176000	-2.0542E+01	1.7146E+04	-2.0541E+01	1.1073E+04	-2.0540E+01	1.8932E+04	-2.0538E+01	1.5002E+04	-2.0536E+01	9.2873E+03	-2.0535E+01
178000	-2.0719E+01	1.7146E+04	-2.0718E+01	1.1073E+04	-2.0717E+01	1.8932E+04	-2.0716E+01	1.5002E+04	-2.0714E+01	9.2873E+03	-2.0712E+01
180000	-2.0895E+01	1.7146E+04	-2.0894E+01	1.1073E+04	-2.0893E+01	1.8932E+04	-2.0892E+01	1.5002E+04	-2.0890E+01	9.2873E+03	-2.0888E+01
182000	-2.1070E+01	1.7146E+04	-2.1069E+01	1.1073E+04	-2.1068E+01	1.8932E+04	-2.1067E+01	1.5002E+04	-2.1065E+01	9.2873E+03	-2.1063E+01
184000	-2.1244E+01	1.7146E+04	-2.1243E+01	1.1073E+04	-2.1242E+01	1.8932E+04	-2.1240E+01	1.5002E+04	-2.1238E+01	9.2873E+03	-2.1237E+01
186000	-2.1416E+01	1.7146E+04	-2.1415E+01	1.1073E+04	-2.1414E+01	1.8932E+04	-2.1412E+01	1.5002E+04	-2.1411E+01	9.2873E+03	-2.1409E+01
188000	-2.1587E+01	1.7146E+04	-2.1586E+01	1.1073E+04	-2.1585E+01	1.8932E+04	-2.1583E+01	1.5002E+04	-2.1582E+01	9.2873E+03	-2.1580E+01
190000	-2.1757E+01	1.7146E+04	-2.1756E+01	1.1073E+04	-2.1755E+01	1.8932E+04	-2.1753E+01	1.5002E+04	-2.1752E+01	9.2873E+03	-2.1750E+01
192000	-2.1925E+01	1.7146E+04	-2.1924E+01	1.1073E+04	-2.1924E+01	1.8932E+04	-2.1922E+01	1.5002E+04	-2.1920E+01	9.2873E+03	-2.1919E+01
194000	-2.2093E+01	1.7146E+04	-2.2092E+01	1.1073E+04	-2.2091E+01	1.8932E+04	-2.2089E+01	1.5002E+04	-2.2088E+01	9.2873E+03	-2.2086E+01
196000	-2.2259E+01	1.7146E+04	-2.2258E+01	1.1073E+04	-2.2258E+01	1.8932E+04	-2.2256E+01	1.5002E+04	-2.2254E+01	9.2873E+03	-2.2253E+01
198000	-2.2424E+01	1.7146E+04	-2.2424E+01	1.1073E+04	-2.2423E+01	1.8932E+04	-2.2421E+01	1.5002E+04	-2.2420E+01	9.2873E+03	-2.2418E+01
200000	-2.2589E+01	1.7146E+04	-2.2588E+01	1.1073E+04	-2.2587E+01	1.8932E+04	-2.2585E+01	1.5002E+04	-2.2584E+01	9.2873E+03	-2.2582E+01
202000	-2.2752E+01	1.7146E+04	-2.2751E+01	1.1073E+04	-2.2750E+01	1.8932E+04	-2.2748E+01	1.5002E+04	-2.2747E+01	9.2873E+03	-2.2745E+01
204000	-2.2914E+01	1.7146E+04	-2.2913E+01	1.1073E+04	-2.2912E+01	1.8932E+04	-2.2911E+01	1.5002E+04	-2.2909E+01	9.2873E+03	-2.2907E+01
206000	-2.3075E+01	1.7146E+04	-2.3074E+01	1.1073E+04	-2.3073E+01	1.8932E+04	-2.3072E+01	1.5002E+04	-2.3070E+01	9.2873E+03	-2.3068E+01

Time (yrs)	Arg 1	Curve 1	Arg 2	Curve 2	Arg 3	Curve 3	Arg 4	Curve 4	Arg 5	Curve 5	Arg 6
208000	-2.3235E+01	1.7146E+04	-2.3234E+01	1.1073E+04	-2.3233E+01	1.8932E+04	-2.3232E+01	1.5002E+04	-2.3230E+01	9.2873E+03	-2.3228E+01
210000	-2.3394E+01	1.7146E+04	-2.3393E+01	1.1073E+04	-2.3392E+01	1.8932E+04	-2.3391E+01	1.5002E+04	-2.3389E+01	9.2873E+03	-2.3387E+01
212000	-2.3552E+01	1.7146E+04	-2.3551E+01	1.1073E+04	-2.3550E+01	1.8932E+04	-2.3549E+01	1.5002E+04	-2.3547E+01	9.2873E+03	-2.3545E+01
214000	-2.3709E+01	1.7146E+04	-2.3708E+01	1.1073E+04	-2.3707E+01	1.8932E+04	-2.3706E+01	1.5002E+04	-2.3704E+01	9.2873E+03	-2.3703E+01
216000	-2.3865E+01	1.7146E+04	-2.3864E+01	1.1073E+04	-2.3863E+01	1.8932E+04	-2.3862E+01	1.5002E+04	-2.3860E+01	9.2873E+03	-2.3859E+01
218000	-2.4020E+01	1.7146E+04	-2.4019E+01	1.1073E+04	-2.4019E+01	1.8932E+04	-2.4017E+01	1.5002E+04	-2.4015E+01	9.2873E+03	-2.4014E+01
220000	-2.4174E+01	1.7146E+04	-2.4174E+01	1.1073E+04	-2.4173E+01	1.8932E+04	-2.4171E+01	1.5002E+04	-2.4170E+01	9.2873E+03	-2.4168E+01
222000	-2.4328E+01	1.7146E+04	-2.4327E+01	1.1073E+04	-2.4326E+01	1.8932E+04	-2.4325E+01	1.5002E+04	-2.4323E+01	9.2873E+03	-2.4322E+01
224000	-2.4480E+01	1.7146E+04	-2.4479E+01	1.1073E+04	-2.4479E+01	1.8932E+04	-2.4477E+01	1.5002E+04	-2.4476E+01	9.2873E+03	-2.4474E+01
226000	-2.4632E+01	1.7146E+04	-2.4631E+01	1.1073E+04	-2.4630E+01	1.8932E+04	-2.4629E+01	1.5002E+04	-2.4627E+01	9.2873E+03	-2.4626E+01
228000	-2.4783E+01	1.7146E+04	-2.4782E+01	1.1073E+04	-2.4781E+01	1.8932E+04	-2.4780E+01	1.5002E+04	-2.4778E+01	9.2873E+03	-2.4777E+01
230000	-2.4932E+01	1.7146E+04	-2.4932E+01	1.1073E+04	-2.4931E+01	1.8932E+04	-2.4929E+01	1.5002E+04	-2.4928E+01	9.2873E+03	-2.4926E+01
232000	-2.5082E+01	1.7146E+04	-2.5081E+01	1.1073E+04	-2.5080E+01	1.8932E+04	-2.5079E+01	1.5002E+04	-2.5077E+01	9.2873E+03	-2.5076E+01
234000	-2.5230E+01	1.7146E+04	-2.5229E+01	1.1073E+04	-2.5228E+01	1.8932E+04	-2.5227E+01	1.5002E+04	-2.5225E+01	9.2873E+03	-2.5224E+01
236000	-2.5377E+01	1.7146E+04	-2.5377E+01	1.1073E+04	-2.5376E+01	1.8932E+04	-2.5374E+01	1.5002E+04	-2.5373E+01	9.2873E+03	-2.5371E+01
238000	-2.5524E+01	1.7146E+04	-2.5523E+01	1.1073E+04	-2.5522E+01	1.8932E+04	-2.5521E+01	1.5002E+04	-2.5520E+01	9.2873E+03	-2.5518E+01
240000	-2.5670E+01	1.7146E+04	-2.5669E+01	1.1073E+04	-2.5668E+01	1.8932E+04	-2.5667E+01	1.5002E+04	-2.5665E+01	9.2873E+03	-2.5664E+01
242000	-2.5815E+01	1.7146E+04	-2.5814E+01	1.1073E+04	-2.5814E+01	1.8932E+04	-2.5812E+01	1.5002E+04	-2.5811E+01	9.2873E+03	-2.5809E+01
244000	-2.5959E+01	1.7146E+04	-2.5959E+01	1.1073E+04	-2.5958E+01	1.8932E+04	-2.5956E+01	1.5002E+04	-2.5955E+01	9.2873E+03	-2.5954E+01
246000	-2.6103E+01	1.7146E+04	-2.6102E+01	1.1073E+04	-2.6102E+01	1.8932E+04	-2.6100E+01	1.5002E+04	-2.6099E+01	9.2873E+03	-2.6097E+01
248000	-2.6246E+01	1.7146E+04	-2.6245E+01	1.1073E+04	-2.6244E+01	1.8932E+04	-2.6243E+01	1.5002E+04	-2.6242E+01	9.2873E+03	-2.6240E+01
250000	-2.6388E+01	1.7146E+04	-2.6387E+01	1.1073E+04	-2.6387E+01	1.8932E+04	-2.6385E+01	1.5002E+04	-2.6384E+01	9.2873E+03	-2.6382E+01
252000	-2.6529E+01	1.7146E+04	-2.6529E+01	1.1073E+04	-2.6528E+01	1.8932E+04	-2.6527E+01	1.5002E+04	-2.6525E+01	9.2873E+03	-2.6524E+01
254000	-2.6670E+01	1.7146E+04	-2.6670E+01	1.1073E+04	-2.6669E+01	1.8932E+04	-2.6667E+01	1.5002E+04	-2.6666E+01	9.2873E+03	-2.6665E+01
256000	-2.6810E+01	1.7146E+04	-2.6810E+01	1.1073E+04	-2.6809E+01	1.8932E+04	-2.6808E+01	1.5002E+04	-2.6806E+01	9.2873E+03	-2.6805E+01
258000	-2.6950E+01	1.7146E+04	-2.6949E+01	1.1073E+04	-2.6948E+01	1.8932E+04	-2.6947E+01	1.5002E+04	-2.6946E+01	9.2873E+03	-2.6944E+01
260000	-2.7088E+01	1.7146E+04	-2.7088E+01	1.1073E+04	-2.7087E+01	1.8932E+04	-2.7086E+01	1.5002E+04	-2.7084E+01	9.2873E+03	-2.7083E+01
262000	-2.7226E+01	1.7146E+04	-2.7226E+01	1.1073E+04	-2.7225E+01	1.8932E+04	-2.7224E+01	1.5002E+04	-2.7222E+01	9.2873E+03	-2.7221E+01
264000	-2.7364E+01	1.7146E+04	-2.7363E+01	1.1073E+04	-2.7362E+01	1.8932E+04	-2.7361E+01	1.5002E+04	-2.7360E+01	9.2873E+03	-2.7358E+01
266000	-2.7501E+01	1.7146E+04	-2.7500E+01	1.1073E+04	-2.7499E+01	1.8932E+04	-2.7498E+01	1.5002E+04	-2.7496E+01	9.2873E+03	-2.7495E+01
268000	-2.7637E+01	1.7146E+04	-2.7636E+01	1.1073E+04	-2.7635E+01	1.8932E+04	-2.7634E+01	1.5002E+04	-2.7633E+01	9.2873E+03	-2.7631E+01
270000	-2.7772E+01	1.7146E+04	-2.7771E+01	1.1073E+04	-2.7771E+01	1.8932E+04	-2.7769E+01	1.5002E+04	-2.7768E+01	9.2873E+03	-2.7767E+01
272000	-2.7907E+01	1.7146E+04	-2.7906E+01	1.1073E+04	-2.7906E+01	1.8932E+04	-2.7904E+01	1.5002E+04	-2.7903E+01	9.2873E+03	-2.7902E+01
274000	-2.8041E+01	1.7146E+04	-2.8041E+01	1.1073E+04	-2.8040E+01	1.8932E+04	-2.8039E+01	1.5002E+04	-2.8037E+01	9.2873E+03	-2.8036E+01
276000	-2.8175E+01	1.7146E+04	-2.8174E+01	1.1073E+04	-2.8174E+01	1.8932E+04	-2.8172E+01	1.5002E+04	-2.8171E+01	9.2873E+03	-2.8170E+01
278000	-2.8308E+01	1.7146E+04	-2.8307E+01	1.1073E+04	-2.8307E+01	1.8932E+04	-2.8305E+01	1.5002E+04	-2.8304E+01	9.2873E+03	-2.8303E+01
280000	-2.8440E+01	1.7146E+04	-2.8440E+01	1.1073E+04	-2.8439E+01	1.8932E+04	-2.8438E+01	1.5002E+04	-2.8436E+01	9.2873E+03	-2.8435E+01
282000	-2.8572E+01	1.7146E+04	-2.8572E+01	1.1073E+04	-2.8571E+01	1.8932E+04	-2.8570E+01	1.5002E+04	-2.8568E+01	9.2873E+03	-2.8567E+01
284000	-2.8704E+01	1.7146E+04	-2.8703E+01	1.1073E+04	-2.8702E+01	1.8932E+04	-2.8701E+01	1.5002E+04	-2.8700E+01	9.2873E+03	-2.8698E+01
286000	-2.8834E+01	1.7146E+04	-2.8834E+01	1.1073E+04	-2.8833E+01	1.8932E+04	-2.8832E+01	1.5002E+04	-2.8830E+01	9.2873E+03	-2.8829E+01
288000	-2.8964E+01	1.7146E+04	-2.8964E+01	1.1073E+04	-2.8963E+01	1.8932E+04	-2.8962E+01	1.5002E+04	-2.8961E+01	9.2873E+03	-2.8959E+01
290000	-2.9094E+01	1.7146E+04	-2.9093E+01	1.1073E+04	-2.9093E+01	1.8932E+04	-2.9092E+01	1.5002E+04	-2.9090E+01	9.2873E+03	-2.9089E+01
292000	-2.9223E+01	1.7146E+04	-2.9223E+01	1.1073E+04	-2.9222E+01	1.8932E+04	-2.9221E+01	1.5002E+04	-2.9219E+01	9.2873E+03	-2.9218E+01
294000	-2.9352E+01	1.7146E+04	-2.9351E+01	1.1073E+04	-2.9350E+01	1.8932E+04	-2.9349E+01	1.5002E+04	-2.9348E+01	9.2873E+03	-2.9347E+01
296000	-2.9480E+01	1.7146E+04	-2.9479E+01	1.1073E+04	-2.9478E+01	1.8932E+04	-2.9477E+01	1.5002E+04	-2.9476E+01	9.2873E+03	-2.9475E+01
298000	-2.9607E+01	1.7146E+04	-2.9607E+01	1.1073E+04	-2.9606E+01	1.8932E+04	-2.9605E+01	1.5002E+04	-2.9603E+01	9.2873E+03	-2.9602E+01
300000	-2.9734E+01	1.7146E+04	-2.9734E+01	1.1073E+04	-2.9733E+01	1.8932E+04	-2.9732E+01	1.5002E+04	-2.9730E+01	9.2873E+03	-2.9729E+01
302000	-2.9861E+01	1.7146E+04	-2.9860E+01	1.1073E+04	-2.9859E+01	1.8932E+04	-2.9858E+01	1.5002E+04	-2.9857E+01	9.2873E+03	-2.9856E+01
304000	-2.9987E+01	1.7146E+04	-2.9986E+01	1.1073E+04	-2.9985E+01	1.8932E+04	-2.9984E+01	1.5002E+04	-2.9983E+01	9.2873E+03	-2.9981E+01
306000	-3.0112E+01	1.7146E+04	-3.0111E+01	1.1073E+04	-3.0111E+01	1.8932E+04	-3.0109E+01	1.5002E+04	-3.0108E+01	9.2873E+03	-3.0107E+01
308000	-3.0237E+01	1.7146E+04	-3.0236E+01	1.1073E+04	-3.0236E+01	1.8932E+04	-3.0234E+01	1.5002E+04	-3.0233E+01	9.2873E+03	-3.0232E+01
310000	-3.0361E+01	1.7146E+04	-3.0361E+01	1.1073E+04	-3.0360E+01	1.8932E+04	-3.0359E+01	1.5002E+04	-3.0358E+01	9.2873E+03	-3.0356E+01

Time (yrs)	Arg 1	Curve 1	Arg 2	Curve 2	Arg 3	Curve 3	Arg 4	Curve 4	Arg 5	Curve 5	Arg 6
312000	-3.0485E+01	1.7146E+04	-3.0485E+01	1.1073E+04	-3.0484E+01	1.8932E+04	-3.0483E+01	1.5002E+04	-3.0482E+01	9.2873E+03	-3.0480E+01
314000	-3.0609E+01	1.7146E+04	-3.0608E+01	1.1073E+04	-3.0608E+01	1.8932E+04	-3.0606E+01	1.5002E+04	-3.0605E+01	9.2873E+03	-3.0604E+01
316000	-3.0732E+01	1.7146E+04	-3.0731E+01	1.1073E+04	-3.0731E+01	1.8932E+04	-3.0729E+01	1.5002E+04	-3.0728E+01	9.2873E+03	-3.0727E+01
318000	-3.0854E+01	1.7146E+04	-3.0854E+01	1.1073E+04	-3.0853E+01	1.8932E+04	-3.0852E+01	1.5002E+04	-3.0851E+01	9.2873E+03	-3.0849E+01
320000	-3.0976E+01	1.7146E+04	-3.0976E+01	1.1073E+04	-3.0975E+01	1.8932E+04	-3.0974E+01	1.5002E+04	-3.0973E+01	9.2873E+03	-3.0971E+01
322000	-3.1098E+01	1.7146E+04	-3.1097E+01	1.1073E+04	-3.1097E+01	1.8932E+04	-3.1096E+01	1.5002E+04	-3.1094E+01	9.2873E+03	-3.1093E+01
324000	-3.1219E+01	1.7146E+04	-3.1219E+01	1.1073E+04	-3.1218E+01	1.8932E+04	-3.1217E+01	1.5002E+04	-3.1216E+01	9.2873E+03	-3.1214E+01
326000	-3.1340E+01	1.7146E+04	-3.1339E+01	1.1073E+04	-3.1339E+01	1.8932E+04	-3.1337E+01	1.5002E+04	-3.1336E+01	9.2873E+03	-3.1335E+01
328000	-3.1460E+01	1.7146E+04	-3.1460E+01	1.1073E+04	-3.1459E+01	1.8932E+04	-3.1458E+01	1.5002E+04	-3.1457E+01	9.2873E+03	-3.1455E+01
330000	-3.1580E+01	1.7146E+04	-3.1579E+01	1.1073E+04	-3.1579E+01	1.8932E+04	-3.1578E+01	1.5002E+04	-3.1576E+01	9.2873E+03	-3.1575E+01
332000	-3.1699E+01	1.7146E+04	-3.1699E+01	1.1073E+04	-3.1698E+01	1.8932E+04	-3.1697E+01	1.5002E+04	-3.1696E+01	9.2873E+03	-3.1695E+01
334000	-3.1818E+01	1.7146E+04	-3.1818E+01	1.1073E+04	-3.1817E+01	1.8932E+04	-3.1816E+01	1.5002E+04	-3.1815E+01	9.2873E+03	-3.1814E+01
336000	-3.1937E+01	1.7146E+04	-3.1936E+01	1.1073E+04	-3.1936E+01	1.8932E+04	-3.1934E+01	1.5002E+04	-3.1933E+01	9.2873E+03	-3.1932E+01
338000	-3.2055E+01	1.7146E+04	-3.2054E+01	1.1073E+04	-3.2054E+01	1.8932E+04	-3.2053E+01	1.5002E+04	-3.2051E+01	9.2873E+03	-3.2050E+01
340000	-3.2173E+01	1.7146E+04	-3.2172E+01	1.1073E+04	-3.2171E+01	1.8932E+04	-3.2170E+01	1.5002E+04	-3.2169E+01	9.2873E+03	-3.2168E+01
342000	-3.2290E+01	1.7146E+04	-3.2289E+01	1.1073E+04	-3.2289E+01	1.8932E+04	-3.2288E+01	1.5002E+04	-3.2286E+01	9.2873E+03	-3.2285E+01
344000	-3.2407E+01	1.7146E+04	-3.2406E+01	1.1073E+04	-3.2406E+01	1.8932E+04	-3.2404E+01	1.5002E+04	-3.2403E+01	9.2873E+03	-3.2402E+01
346000	-3.2523E+01	1.7146E+04	-3.2523E+01	1.1073E+04	-3.2522E+01	1.8932E+04	-3.2521E+01	1.5002E+04	-3.2520E+01	9.2873E+03	-3.2519E+01
348000	-3.2639E+01	1.7146E+04	-3.2639E+01	1.1073E+04	-3.2638E+01	1.8932E+04	-3.2637E+01	1.5002E+04	-3.2636E+01	9.2873E+03	-3.2635E+01
350000	-3.2755E+01	1.7146E+04	-3.2754E+01	1.1073E+04	-3.2754E+01	1.8932E+04	-3.2753E+01	1.5002E+04	-3.2752E+01	9.2873E+03	-3.2750E+01
352000	-3.2870E+01	1.7146E+04	-3.2870E+01	1.1073E+04	-3.2869E+01	1.8932E+04	-3.2868E+01	1.5002E+04	-3.2867E+01	9.2873E+03	-3.2866E+01
354000	-3.2985E+01	1.7146E+04	-3.2985E+01	1.1073E+04	-3.2984E+01	1.8932E+04	-3.2983E+01	1.5002E+04	-3.2982E+01	9.2873E+03	-3.2981E+01
356000	-3.3100E+01	1.7146E+04	-3.3099E+01	1.1073E+04	-3.3099E+01	1.8932E+04	-3.3097E+01	1.5002E+04	-3.3096E+01	9.2873E+03	-3.3095E+01
358000	-3.3214E+01	1.7146E+04	-3.3213E+01	1.1073E+04	-3.3213E+01	1.8932E+04	-3.3211E+01	1.5002E+04	-3.3210E+01	9.2873E+03	-3.3209E+01
360000	-3.3328E+01	1.7146E+04	-3.3327E+01	1.1073E+04	-3.3326E+01	1.8932E+04	-3.3325E+01	1.5002E+04	-3.3324E+01	9.2873E+03	-3.3323E+01
362000	-3.3441E+01	1.7146E+04	-3.3440E+01	1.1073E+04	-3.3440E+01	1.8932E+04	-3.3439E+01	1.5002E+04	-3.3437E+01	9.2873E+03	-3.3436E+01
364000	-3.3554E+01	1.7146E+04	-3.3553E+01	1.1073E+04	-3.3553E+01	1.8932E+04	-3.3552E+01	1.5002E+04	-3.3551E+01	9.2873E+03	-3.3549E+01
366000	-3.3667E+01	1.7146E+04	-3.3666E+01	1.1073E+04	-3.3665E+01	1.8932E+04	-3.3664E+01	1.5002E+04	-3.3663E+01	9.2873E+03	-3.3662E+01
368000	-3.3779E+01	1.7146E+04	-3.3778E+01	1.1073E+04	-3.3778E+01	1.8932E+04	-3.3777E+01	1.5002E+04	-3.3775E+01	9.2873E+03	-3.3774E+01
370000	-3.3891E+01	1.7146E+04	-3.3890E+01	1.1073E+04	-3.3890E+01	1.8932E+04	-3.3888E+01	1.5002E+04	-3.3887E+01	9.2873E+03	-3.3886E+01
372000	-3.4002E+01	1.7146E+04	-3.4002E+01	1.1073E+04	-3.4001E+01	1.8932E+04	-3.4000E+01	1.5002E+04	-3.3999E+01	9.2873E+03	-3.3998E+01
374000	-3.4113E+01	1.7146E+04	-3.4113E+01	1.1073E+04	-3.4112E+01	1.8932E+04	-3.4111E+01	1.5002E+04	-3.4110E+01	9.2873E+03	-3.4109E+01
376000	-3.4224E+01	1.7146E+04	-3.4224E+01	1.1073E+04	-3.4223E+01	1.8932E+04	-3.4222E+01	1.5002E+04	-3.4221E+01	9.2873E+03	-3.4220E+01
378000	-3.4335E+01	1.7146E+04	-3.4334E+01	1.1073E+04	-3.4334E+01	1.8932E+04	-3.4333E+01	1.5002E+04	-3.4332E+01	9.2873E+03	-3.4330E+01
380000	-3.4445E+01	1.7146E+04	-3.4444E+01	1.1073E+04	-3.4444E+01	1.8932E+04	-3.4443E+01	1.5002E+04	-3.4442E+01	9.2873E+03	-3.4441E+01
382000	-3.4555E+01	1.7146E+04	-3.4554E+01	1.1073E+04	-3.4554E+01	1.8932E+04	-3.4553E+01	1.5002E+04	-3.4552E+01	9.2873E+03	-3.4550E+01
384000	-3.4664E+01	1.7146E+04	-3.4664E+01	1.1073E+04	-3.4663E+01	1.8932E+04	-3.4662E+01	1.5002E+04	-3.4661E+01	9.2873E+03	-3.4660E+01
386000	-3.4773E+01	1.7146E+04	-3.4773E+01	1.1073E+04	-3.4772E+01	1.8932E+04	-3.4771E+01	1.5002E+04	-3.4770E+01	9.2873E+03	-3.4769E+01
388000	-3.4882E+01	1.7146E+04	-3.4882E+01	1.1073E+04	-3.4881E+01	1.8932E+04	-3.4880E+01	1.5002E+04	-3.4879E+01	9.2873E+03	-3.4878E+01
390000	-3.4991E+01	1.7146E+04	-3.4990E+01	1.1073E+04	-3.4990E+01	1.8932E+04	-3.4989E+01	1.5002E+04	-3.4988E+01	9.2873E+03	-3.4986E+01
392000	-3.5099E+01	1.7146E+04	-3.5098E+01	1.1073E+04	-3.5098E+01	1.8932E+04	-3.5097E+01	1.5002E+04	-3.5096E+01	9.2873E+03	-3.5095E+01
394000	-3.5207E+01	1.7146E+04	-3.5206E+01	1.1073E+04	-3.5206E+01	1.8932E+04	-3.5205E+01	1.5002E+04	-3.5204E+01	9.2873E+03	-3.5202E+01
396000	-3.5314E+01	1.7146E+04	-3.5314E+01	1.1073E+04	-3.5313E+01	1.8932E+04	-3.5312E+01	1.5002E+04	-3.5311E+01	9.2873E+03	-3.5310E+01
398000	-3.5422E+01	1.7146E+04	-3.5421E+01	1.1073E+04	-3.5420E+01	1.8932E+04	-3.5419E+01	1.5002E+04	-3.5418E+01	9.2873E+03	-3.5417E+01
400000	-3.5528E+01	1.7146E+04	-3.5528E+01	1.1073E+04	-3.5527E+01	1.8932E+04	-3.5526E+01	1.5002E+04	-3.5525E+01	9.2873E+03	-3.5524E+01
402000	-3.5635E+01	1.7146E+04	-3.5634E+01	1.1073E+04	-3.5634E+01	1.8932E+04	-3.5633E+01	1.5002E+04	-3.5632E+01	9.2873E+03	-3.5631E+01
404000	-3.5741E+01	1.7146E+04	-3.5741E+01	1.1073E+04	-3.5740E+01	1.8932E+04	-3.5739E+01	1.5002E+04	-3.5738E+01	9.2873E+03	-3.5737E+01
406000	-3.5847E+01	1.7146E+04	-3.5847E+01	1.1073E+04	-3.5846E+01	1.8932E+04	-3.5845E+01	1.5002E+04	-3.5844E+01	9.2873E+03	-3.5843E+01
408000	-3.5953E+01	1.7146E+04	-3.5952E+01	1.1073E+04	-3.5952E+01	1.8932E+04	-3.5951E+01	1.5002E+04	-3.5950E+01	9.2873E+03	-3.5949E+01
410000	-3.6058E+01	1.7146E+04	-3.6058E+01	1.1073E+04	-3.6057E+01	1.8932E+04	-3.6056E+01	1.5002E+04	-3.6055E+01	9.2873E+03	-3.6054E+01
412000	-3.6163E+01	1.7146E+04	-3.6163E+01	1.1073E+04	-3.6162E+01	1.8932E+04	-3.6161E+01	1.5002E+04	-3.6160E+01	9.2873E+03	-3.6159E+01
414000	-3.6268E+01	1.7146E+04	-3.6268E+01	1.1073E+04	-3.6267E+01	1.8932E+04	-3.6266E+01	1.5002E+04	-3.6265E+01	9.2873E+03	-3.6264E+01

Time (yrs)	Arg 1	Curve 1	Arg 2	Curve 2	Arg 3	Curve 3	Arg 4	Curve 4	Arg 5	Curve 5	Arg 6
416000	-3.6373E+01	1.7146E+04	-3.6372E+01	1.1073E+04	-3.6371E+01	1.8932E+04	-3.6370E+01	1.5002E+04	-3.6369E+01	9.2873E+03	-3.6368E+01
418000	-3.6477E+01	1.7146E+04	-3.6476E+01	1.1073E+04	-3.6476E+01	1.8932E+04	-3.6475E+01	1.5002E+04	-3.6474E+01	9.2873E+03	-3.6473E+01
420000	-3.6581E+01	1.7146E+04	-3.6580E+01	1.1073E+04	-3.6580E+01	1.8932E+04	-3.6579E+01	1.5002E+04	-3.6577E+01	9.2873E+03	-3.6576E+01
422000	-3.6684E+01	1.7146E+04	-3.6684E+01	1.1073E+04	-3.6683E+01	1.8932E+04	-3.6682E+01	1.5002E+04	-3.6681E+01	9.2873E+03	-3.6680E+01
424000	-3.6788E+01	1.7146E+04	-3.6787E+01	1.1073E+04	-3.6787E+01	1.8932E+04	-3.6785E+01	1.5002E+04	-3.6784E+01	9.2873E+03	-3.6783E+01
426000	-3.6891E+01	1.7146E+04	-3.6890E+01	1.1073E+04	-3.6890E+01	1.8932E+04	-3.6889E+01	1.5002E+04	-3.6887E+01	9.2873E+03	-3.6886E+01
428000	-3.6993E+01	1.7146E+04	-3.6993E+01	1.1073E+04	-3.6992E+01	1.8932E+04	-3.6991E+01	1.5002E+04	-3.6990E+01	9.2873E+03	-3.6989E+01
430000	-3.7096E+01	1.7146E+04	-3.7095E+01	1.1073E+04	-3.7095E+01	1.8932E+04	-3.7094E+01	1.5002E+04	-3.7093E+01	9.2873E+03	-3.7092E+01
432000	-3.7198E+01	1.7146E+04	-3.7198E+01	1.1073E+04	-3.7197E+01	1.8932E+04	-3.7196E+01	1.5002E+04	-3.7195E+01	9.2873E+03	-3.7194E+01
434000	-3.7300E+01	1.7146E+04	-3.7299E+01	1.1073E+04	-3.7299E+01	1.8932E+04	-3.7298E+01	1.5002E+04	-3.7297E+01	9.2873E+03	-3.7296E+01
436000	-3.7402E+01	1.7146E+04	-3.7401E+01	1.1073E+04	-3.7401E+01	1.8932E+04	-3.7400E+01	1.5002E+04	-3.7399E+01	9.2873E+03	-3.7398E+01
438000	-3.7503E+01	1.7146E+04	-3.7502E+01	1.1073E+04	-3.7502E+01	1.8932E+04	-3.7501E+01	1.5002E+04	-3.7500E+01	9.2873E+03	-3.7499E+01
440000	-3.7604E+01	1.7146E+04	-3.7604E+01	1.1073E+04	-3.7603E+01	1.8932E+04	-3.7602E+01	1.5002E+04	-3.7601E+01	9.2873E+03	-3.7600E+01
442000	-3.7705E+01	1.7146E+04	-3.7704E+01	1.1073E+04	-3.7704E+01	1.8932E+04	-3.7703E+01	1.5002E+04	-3.7702E+01	9.2873E+03	-3.7701E+01
444000	-3.7806E+01	1.7146E+04	-3.7805E+01	1.1073E+04	-3.7805E+01	1.8932E+04	-3.7804E+01	1.5002E+04	-3.7803E+01	9.2873E+03	-3.7802E+01
446000	-3.7906E+01	1.7146E+04	-3.7905E+01	1.1073E+04	-3.7905E+01	1.8932E+04	-3.7904E+01	1.5002E+04	-3.7903E+01	9.2873E+03	-3.7902E+01
448000	-3.8006E+01	1.7146E+04	-3.8005E+01	1.1073E+04	-3.8005E+01	1.8932E+04	-3.8004E+01	1.5002E+04	-3.8003E+01	9.2873E+03	-3.8002E+01
450000	-3.8106E+01	1.7146E+04	-3.8105E+01	1.1073E+04	-3.8105E+01	1.8932E+04	-3.8104E+01	1.5002E+04	-3.8103E+01	9.2873E+03	-3.8102E+01
452000	-3.8205E+01	1.7146E+04	-3.8205E+01	1.1073E+04	-3.8204E+01	1.8932E+04	-3.8203E+01	1.5002E+04	-3.8202E+01	9.2873E+03	-3.8201E+01
454000	-3.8305E+01	1.7146E+04	-3.8304E+01	1.1073E+04	-3.8304E+01	1.8932E+04	-3.8303E+01	1.5002E+04	-3.8302E+01	9.2873E+03	-3.8301E+01
456000	-3.8404E+01	1.7146E+04	-3.8403E+01	1.1073E+04	-3.8403E+01	1.8932E+04	-3.8402E+01	1.5002E+04	-3.8401E+01	9.2873E+03	-3.8400E+01
458000	-3.8503E+01	1.7146E+04	-3.8502E+01	1.1073E+04	-3.8502E+01	1.8932E+04	-3.8501E+01	1.5002E+04	-3.8500E+01	9.2873E+03	-3.8499E+01
460000	-3.8601E+01	1.7146E+04	-3.8601E+01	1.1073E+04	-3.8600E+01	1.8932E+04	-3.8599E+01	1.5002E+04	-3.8598E+01	9.2873E+03	-3.8597E+01
462000	-3.8699E+01	1.7146E+04	-3.8699E+01	1.1073E+04	-3.8698E+01	1.8932E+04	-3.8697E+01	1.5002E+04	-3.8697E+01	9.2873E+03	-3.8696E+01
464000	-3.8798E+01	1.7146E+04	-3.8797E+01	1.1073E+04	-3.8797E+01	1.8932E+04	-3.8796E+01	1.5002E+04	-3.8795E+01	9.2873E+03	-3.8794E+01
466000	-3.8895E+01	1.7146E+04	-3.8895E+01	1.1073E+04	-3.8894E+01	1.8932E+04	-3.8893E+01	1.5002E+04	-3.8892E+01	9.2873E+03	-3.8891E+01
468000	-3.8993E+01	1.7146E+04	-3.8992E+01	1.1073E+04	-3.8992E+01	1.8932E+04	-3.8991E+01	1.5002E+04	-3.8990E+01	9.2873E+03	-3.8989E+01
470000	-3.9090E+01	1.7146E+04	-3.9090E+01	1.1073E+04	-3.9089E+01	1.8932E+04	-3.9088E+01	1.5002E+04	-3.9087E+01	9.2873E+03	-3.9086E+01
472000	-3.9187E+01	1.7146E+04	-3.9187E+01	1.1073E+04	-3.9186E+01	1.8932E+04	-3.9185E+01	1.5002E+04	-3.9185E+01	9.2873E+03	-3.9184E+01
474000	-3.9284E+01	1.7146E+04	-3.9284E+01	1.1073E+04	-3.9283E+01	1.8932E+04	-3.9282E+01	1.5002E+04	-3.9281E+01	9.2873E+03	-3.9280E+01
476000	-3.9381E+01	1.7146E+04	-3.9380E+01	1.1073E+04	-3.9380E+01	1.8932E+04	-3.9379E+01	1.5002E+04	-3.9378E+01	9.2873E+03	-3.9377E+01
478000	-3.9477E+01	1.7146E+04	-3.9477E+01	1.1073E+04	-3.9476E+01	1.8932E+04	-3.9475E+01	1.5002E+04	-3.9474E+01	9.2873E+03	-3.9474E+01
480000	-3.9574E+01	1.7146E+04	-3.9573E+01	1.1073E+04	-3.9573E+01	1.8932E+04	-3.9572E+01	1.5002E+04	-3.9571E+01	9.2873E+03	-3.9570E+01
482000	-3.9670E+01	1.7146E+04	-3.9669E+01	1.1073E+04	-3.9669E+01	1.8932E+04	-3.9668E+01	1.5002E+04	-3.9667E+01	9.2873E+03	-3.9666E+01
484000	-3.9765E+01	1.7146E+04	-3.9765E+01	1.1073E+04	-3.9764E+01	1.8932E+04	-3.9763E+01	1.5002E+04	-3.9762E+01	9.2873E+03	-3.9761E+01
486000	-3.9861E+01	1.7146E+04	-3.9860E+01	1.1073E+04	-3.9860E+01	1.8932E+04	-3.9859E+01	1.5002E+04	-3.9858E+01	9.2873E+03	-3.9857E+01
488000	-3.9956E+01	1.7146E+04	-3.9956E+01	1.1073E+04	-3.9955E+01	1.8932E+04	-3.9954E+01	1.5002E+04	-3.9953E+01	9.2873E+03	-3.9952E+01
490000	-4.0051E+01	1.7146E+04	-4.0051E+01	1.1073E+04	-4.0050E+01	1.8932E+04	-4.0049E+01	1.5002E+04	-4.0048E+01	9.2873E+03	-4.0047E+01
492000	-4.0146E+01	1.7146E+04	-4.0145E+01	1.1073E+04	-4.0145E+01	1.8932E+04	-4.0144E+01	1.5002E+04	-4.0143E+01	9.2873E+03	-4.0142E+01
494000	-4.0241E+01	1.7146E+04	-4.0240E+01	1.1073E+04	-4.0240E+01	1.8932E+04	-4.0239E+01	1.5002E+04	-4.0238E+01	9.2873E+03	-4.0237E+01
496000	-4.0335E+01	1.7146E+04	-4.0335E+01	1.1073E+04	-4.0334E+01	1.8932E+04	-4.0333E+01	1.5002E+04	-4.0332E+01	9.2873E+03	-4.0331E+01
498000	-4.0429E+01	1.7146E+04	-4.0429E+01	1.1073E+04	-4.0428E+01	1.8932E+04	-4.0427E+01	1.5002E+04	-4.0426E+01	9.2873E+03	-4.0425E+01
500000	-4.0523E+01	1.7146E+04	-4.0523E+01	1.1073E+04	-4.0522E+01	1.8932E+04	-4.0521E+01	1.5002E+04	-4.0520E+01	9.2873E+03	-4.0519E+01
502000	-4.0617E+01	1.7146E+04	-4.0616E+01	1.1073E+04	-4.0616E+01	1.8932E+04	-4.0615E+01	1.5002E+04	-4.0614E+01	9.2873E+03	-4.0613E+01
504000	-4.0710E+01	1.7146E+04	-4.0710E+01	1.1073E+04	-4.0710E+01	1.8932E+04	-4.0709E+01	1.5002E+04	-4.0708E+01	9.2873E+03	-4.0707E+01
506000	-4.0804E+01	1.7146E+04	-4.0803E+01	1.1073E+04	-4.0803E+01	1.8932E+04	-4.0802E+01	1.5002E+04	-4.0801E+01	9.2873E+03	-4.0800E+01
508000	-4.0897E+01	1.7146E+04	-4.0896E+01	1.1073E+04	-4.0896E+01	1.8932E+04	-4.0895E+01	1.5002E+04	-4.0894E+01	9.2873E+03	-4.0893E+01
510000	-4.0990E+01	1.7146E+04	-4.0989E+01	1.1073E+04	-4.0989E+01	1.8932E+04	-4.0988E+01	1.5002E+04	-4.0987E+01	9.2873E+03	-4.0986E+01
512000	-4.1083E+01	1.7146E+04	-4.1082E+01	1.1073E+04	-4.1082E+01	1.8932E+04	-4.1081E+01	1.5002E+04	-4.1080E+01	9.2873E+03	-4.1079E+01
514000	-4.1175E+01	1.7146E+04	-4.1175E+01	1.1073E+04	-4.1174E+01	1.8932E+04	-4.1173E+01	1.5002E+04	-4.1172E+01	9.2873E+03	-4.1171E+01
516000	-4.1267E+01	1.7146E+04	-4.1267E+01	1.1073E+04	-4.1266E+01	1.8932E+04	-4.1266E+01	1.5002E+04	-4.1265E+01	9.2873E+03	-4.1264E+01
518000	-4.1359E+01	1.7146E+04	-4.1359E+01	1.1073E+04	-4.1359E+01	1.8932E+04	-4.1358E+01	1.5002E+04	-4.1357E+01	9.2873E+03	-4.1356E+01

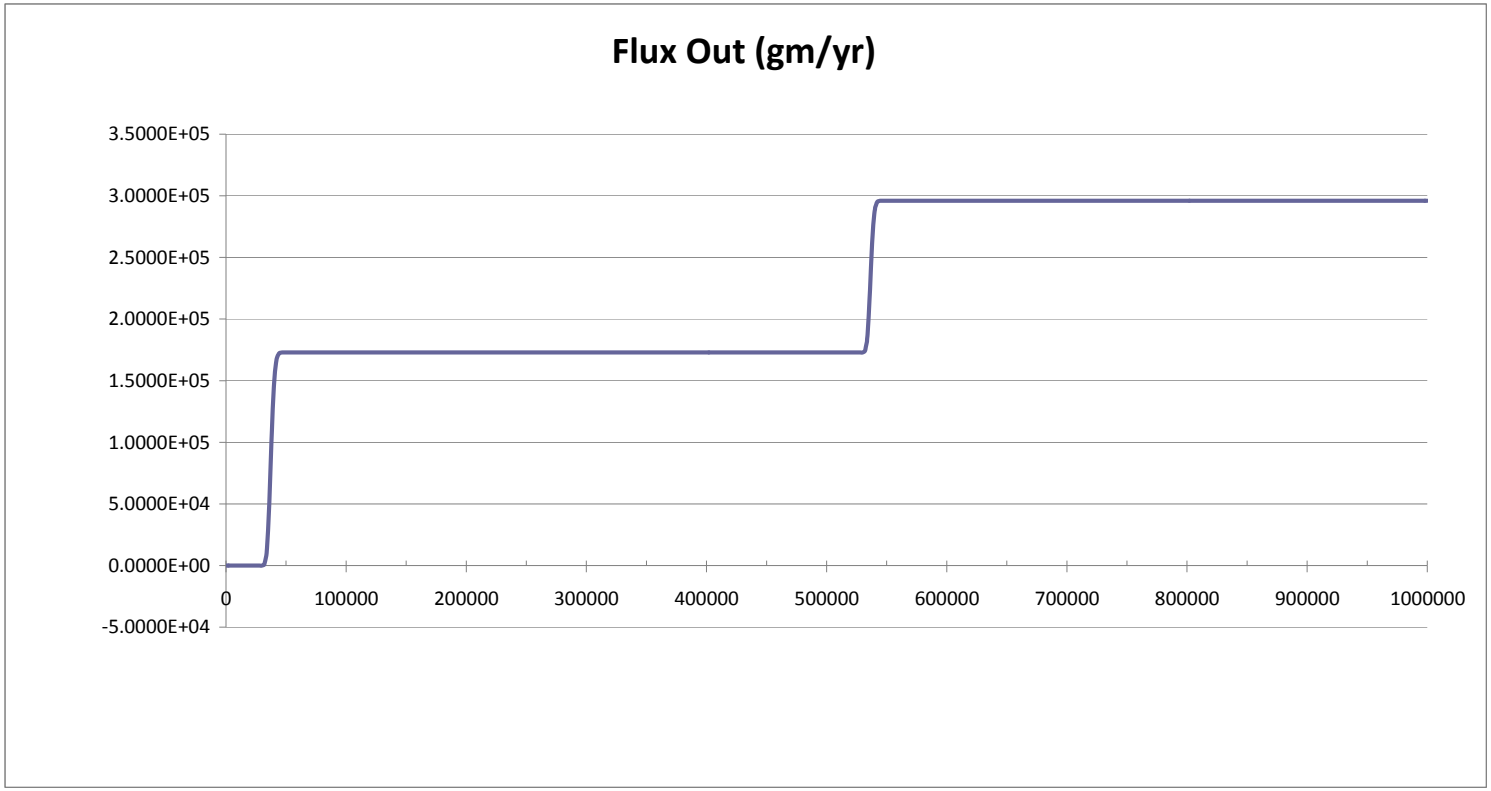
Time (yrs)	Arg 1	Curve 1	Arg 2	Curve 2	Arg 3	Curve 3	Arg 4	Curve 4	Arg 5	Curve 5	Arg 6
520000	-4.1451E+01	1.7146E+04	-4.1451E+01	1.1073E+04	-4.1450E+01	1.8932E+04	-4.1450E+01	1.5002E+04	-4.1449E+01	9.2873E+03	-4.1448E+01
522000	-4.1543E+01	1.7146E+04	-4.1543E+01	1.1073E+04	-4.1542E+01	1.8932E+04	-4.1541E+01	1.5002E+04	-4.1540E+01	9.2873E+03	-4.1539E+01
524000	-4.1635E+01	1.7146E+04	-4.1634E+01	1.1073E+04	-4.1634E+01	1.8932E+04	-4.1633E+01	1.5002E+04	-4.1632E+01	9.2873E+03	-4.1631E+01
526000	-4.1726E+01	1.7146E+04	-4.1725E+01	1.1073E+04	-4.1725E+01	1.8932E+04	-4.1724E+01	1.5002E+04	-4.1723E+01	9.2873E+03	-4.1722E+01
528000	-4.1817E+01	1.7146E+04	-4.1817E+01	1.1073E+04	-4.1816E+01	1.8932E+04	-4.1815E+01	1.5002E+04	-4.1814E+01	9.2873E+03	-4.1813E+01
530000	-4.1908E+01	1.7146E+04	-4.1907E+01	1.1073E+04	-4.1907E+01	1.8932E+04	-4.1906E+01	1.5002E+04	-4.1905E+01	9.2873E+03	-4.1904E+01
532000	-4.1999E+01	1.7146E+04	-4.1998E+01	1.1073E+04	-4.1998E+01	1.8932E+04	-4.1997E+01	1.5002E+04	-4.1996E+01	9.2873E+03	-4.1995E+01
534000	-4.2089E+01	1.7146E+04	-4.2089E+01	1.1073E+04	-4.2088E+01	1.8932E+04	-4.2087E+01	1.5002E+04	-4.2086E+01	9.2873E+03	-4.2086E+01
536000	-4.2179E+01	1.7146E+04	-4.2179E+01	1.1073E+04	-4.2179E+01	1.8932E+04	-4.2178E+01	1.5002E+04	-4.2177E+01	9.2873E+03	-4.2176E+01
538000	-4.2270E+01	1.7146E+04	-4.2269E+01	1.1073E+04	-4.2269E+01	1.8932E+04	-4.2268E+01	1.5002E+04	-4.2267E+01	9.2873E+03	-4.2266E+01
540000	-4.2360E+01	1.7146E+04	-4.2359E+01	1.1073E+04	-4.2359E+01	1.8932E+04	-4.2358E+01	1.5002E+04	-4.2357E+01	9.2873E+03	-4.2356E+01
542000	-4.2449E+01	1.7146E+04	-4.2449E+01	1.1073E+04	-4.2448E+01	1.8932E+04	-4.2448E+01	1.5002E+04	-4.2447E+01	9.2873E+03	-4.2446E+01
544000	-4.2539E+01	1.7146E+04	-4.2538E+01	1.1073E+04	-4.2538E+01	1.8932E+04	-4.2537E+01	1.5002E+04	-4.2536E+01	9.2873E+03	-4.2535E+01
546000	-4.2628E+01	1.7146E+04	-4.2628E+01	1.1073E+04	-4.2627E+01	1.8932E+04	-4.2627E+01	1.5002E+04	-4.2626E+01	9.2873E+03	-4.2625E+01
548000	-4.2718E+01	1.7146E+04	-4.2717E+01	1.1073E+04	-4.2717E+01	1.8932E+04	-4.2716E+01	1.5002E+04	-4.2715E+01	9.2873E+03	-4.2714E+01
550000	-4.2807E+01	1.7146E+04	-4.2806E+01	1.1073E+04	-4.2806E+01	1.8932E+04	-4.2805E+01	1.5002E+04	-4.2804E+01	9.2873E+03	-4.2803E+01
552000	-4.2895E+01	1.7146E+04	-4.2895E+01	1.1073E+04	-4.2895E+01	1.8932E+04	-4.2894E+01	1.5002E+04	-4.2893E+01	9.2873E+03	-4.2892E+01
554000	-4.2984E+01	1.7146E+04	-4.2984E+01	1.1073E+04	-4.2983E+01	1.8932E+04	-4.2982E+01	1.5002E+04	-4.2981E+01	9.2873E+03	-4.2981E+01
556000	-4.3073E+01	1.7146E+04	-4.3072E+01	1.1073E+04	-4.3072E+01	1.8932E+04	-4.3071E+01	1.5002E+04	-4.3070E+01	9.2873E+03	-4.3069E+01
558000	-4.3161E+01	1.7146E+04	-4.3160E+01	1.1073E+04	-4.3160E+01	1.8932E+04	-4.3159E+01	1.5002E+04	-4.3158E+01	9.2873E+03	-4.3157E+01
560000	-4.3249E+01	1.7146E+04	-4.3249E+01	1.1073E+04	-4.3248E+01	1.8932E+04	-4.3247E+01	1.5002E+04	-4.3246E+01	9.2873E+03	-4.3246E+01
562000	-4.3337E+01	1.7146E+04	-4.3337E+01	1.1073E+04	-4.3336E+01	1.8932E+04	-4.3335E+01	1.5002E+04	-4.3334E+01	9.2873E+03	-4.3333E+01
564000	-4.3425E+01	1.7146E+04	-4.3424E+01	1.1073E+04	-4.3424E+01	1.8932E+04	-4.3423E+01	1.5002E+04	-4.3422E+01	9.2873E+03	-4.3421E+01
566000	-4.3512E+01	1.7146E+04	-4.3512E+01	1.1073E+04	-4.3511E+01	1.8932E+04	-4.3511E+01	1.5002E+04	-4.3510E+01	9.2873E+03	-4.3509E+01
568000	-4.3600E+01	1.7146E+04	-4.3599E+01	1.1073E+04	-4.3599E+01	1.8932E+04	-4.3598E+01	1.5002E+04	-4.3597E+01	9.2873E+03	-4.3596E+01
570000	-4.3687E+01	1.7146E+04	-4.3687E+01	1.1073E+04	-4.3686E+01	1.8932E+04	-4.3685E+01	1.5002E+04	-4.3684E+01	9.2873E+03	-4.3684E+01
572000	-4.3774E+01	1.7146E+04	-4.3774E+01	1.1073E+04	-4.3773E+01	1.8932E+04	-4.3772E+01	1.5002E+04	-4.3772E+01	9.2873E+03	-4.3771E+01
574000	-4.3861E+01	1.7146E+04	-4.3861E+01	1.1073E+04	-4.3860E+01	1.8932E+04	-4.3859E+01	1.5002E+04	-4.3858E+01	9.2873E+03	-4.3858E+01
576000	-4.3948E+01	1.7146E+04	-4.3947E+01	1.1073E+04	-4.3947E+01	1.8932E+04	-4.3946E+01	1.5002E+04	-4.3945E+01	9.2873E+03	-4.3944E+01
578000	-4.4034E+01	1.7146E+04	-4.4034E+01	1.1073E+04	-4.4034E+01	1.8932E+04	-4.4033E+01	1.5002E+04	-4.4032E+01	9.2873E+03	-4.4031E+01
580000	-4.4121E+01	1.7146E+04	-4.4120E+01	1.1073E+04	-4.4120E+01	1.8932E+04	-4.4119E+01	1.5002E+04	-4.4118E+01	9.2873E+03	-4.4117E+01
582000	-4.4207E+01	1.7146E+04	-4.4207E+01	1.1073E+04	-4.4206E+01	1.8932E+04	-4.4205E+01	1.5002E+04	-4.4204E+01	9.2873E+03	-4.4204E+01
584000	-4.4293E+01	1.7146E+04	-4.4293E+01	1.1073E+04	-4.4292E+01	1.8932E+04	-4.4291E+01	1.5002E+04	-4.4291E+01	9.2873E+03	-4.4290E+01
586000	-4.4379E+01	1.7146E+04	-4.4379E+01	1.1073E+04	-4.4378E+01	1.8932E+04	-4.4377E+01	1.5002E+04	-4.4376E+01	9.2873E+03	-4.4376E+01
588000	-4.4465E+01	1.7146E+04	-4.4464E+01	1.1073E+04	-4.4464E+01	1.8932E+04	-4.4463E+01	1.5002E+04	-4.4462E+01	9.2873E+03	-4.4461E+01
590000	-4.4550E+01	1.7146E+04	-4.4550E+01	1.1073E+04	-4.4550E+01	1.8932E+04	-4.4549E+01	1.5002E+04	-4.4548E+01	9.2873E+03	-4.4547E+01
592000	-4.4636E+01	1.7146E+04	-4.4635E+01	1.1073E+04	-4.4635E+01	1.8932E+04	-4.4634E+01	1.5002E+04	-4.4633E+01	9.2873E+03	-4.4632E+01
594000	-4.4721E+01	1.7146E+04	-4.4721E+01	1.1073E+04	-4.4720E+01	1.8932E+04	-4.4719E+01	1.5002E+04	-4.4719E+01	9.2873E+03	-4.4718E+01
596000	-4.4806E+01	1.7146E+04	-4.4806E+01	1.1073E+04	-4.4805E+01	1.8932E+04	-4.4805E+01	1.5002E+04	-4.4804E+01	9.2873E+03	-4.4803E+01
598000	-4.4891E+01	1.7146E+04	-4.4891E+01	1.1073E+04	-4.4890E+01	1.8932E+04	-4.4889E+01	1.5002E+04	-4.4889E+01	9.2873E+03	-4.4888E+01
600000	-4.4976E+01	1.7146E+04	-4.4976E+01	1.1073E+04	-4.4975E+01	1.8932E+04	-4.4974E+01	1.5002E+04	-4.4973E+01	9.2873E+03	-4.4973E+01
602000	-4.5061E+01	1.7146E+04	-4.5060E+01	1.1073E+04	-4.5060E+01	1.8932E+04	-4.5059E+01	1.5002E+04	-4.5058E+01	9.2873E+03	-4.5057E+01
604000	-4.5145E+01	1.7146E+04	-4.5145E+01	1.1073E+04	-4.5144E+01	1.8932E+04	-4.5143E+01	1.5002E+04	-4.5143E+01	9.2873E+03	-4.5142E+01
606000	-4.5229E+01	1.7146E+04	-4.5229E+01	1.1073E+04	-4.5229E+01	1.8932E+04	-4.5228E+01	1.5002E+04	-4.5227E+01	9.2873E+03	-4.5226E+01
608000	-4.5314E+01	1.7146E+04	-4.5313E+01	1.1073E+04	-4.5313E+01	1.8932E+04	-4.5312E+01	1.5002E+04	-4.5311E+01	9.2873E+03	-4.5310E+01
610000	-4.5398E+01	1.7146E+04	-4.5397E+01	1.1073E+04	-4.5397E+01	1.8932E+04	-4.5396E+01	1.5002E+04	-4.5395E+01	9.2873E+03	-4.5394E+01
612000	-4.5481E+01	1.7146E+04	-4.5481E+01	1.1073E+04	-4.5481E+01	1.8932E+04	-4.5480E+01	1.5002E+04	-4.5479E+01	9.2873E+03	-4.5478E+01
614000	-4.5565E+01	1.7146E+04	-4.5565E+01	1.1073E+04	-4.5564E+01	1.8932E+04	-4.5563E+01	1.5002E+04	-4.5563E+01	9.2873E+03	-4.5562E+01
616000	-4.5649E+01	1.7146E+04	-4.5648E+01	1.1073E+04	-4.5648E+01	1.8932E+04	-4.5647E+01	1.5002E+04	-4.5646E+01	9.2873E+03	-4.5645E+01
618000	-4.5732E+01	1.7146E+04	-4.5732E+01	1.1073E+04	-4.5731E+01	1.8932E+04	-4.5730E+01	1.5002E+04	-4.5730E+01	9.2873E+03	-4.5729E+01
620000	-4.5815E+01	1.7146E+04	-4.5815E+01	1.1073E+04	-4.5815E+01	1.8932E+04	-4.5814E+01	1.5002E+04	-4.5813E+01	9.2873E+03	-4.5812E+01
622000	-4.5898E+01	1.7146E+04	-4.5898E+01	1.1073E+04	-4.5898E+01	1.8932E+04	-4.5897E+01	1.5002E+04	-4.5896E+01	9.2873E+03	-4.5895E+01

Time (yrs)	Arg 1	Curve 1	Arg 2	Curve 2	Arg 3	Curve 3	Arg 4	Curve 4	Arg 5	Curve 5	Arg 6
624000	-4.5981E+01	1.7146E+04	-4.5981E+01	1.1073E+04	-4.5981E+01	1.8932E+04	-4.5980E+01	1.5002E+04	-4.5979E+01	9.2873E+03	-4.5978E+01
626000	-4.6064E+01	1.7146E+04	-4.6064E+01	1.1073E+04	-4.6063E+01	1.8932E+04	-4.6063E+01	1.5002E+04	-4.6062E+01	9.2873E+03	-4.6061E+01
628000	-4.6147E+01	1.7146E+04	-4.6146E+01	1.1073E+04	-4.6146E+01	1.8932E+04	-4.6145E+01	1.5002E+04	-4.6144E+01	9.2873E+03	-4.6144E+01
630000	-4.6229E+01	1.7146E+04	-4.6229E+01	1.1073E+04	-4.6229E+01	1.8932E+04	-4.6228E+01	1.5002E+04	-4.6227E+01	9.2873E+03	-4.6226E+01
632000	-4.6312E+01	1.7146E+04	-4.6311E+01	1.1073E+04	-4.6311E+01	1.8932E+04	-4.6310E+01	1.5002E+04	-4.6309E+01	9.2873E+03	-4.6308E+01
634000	-4.6394E+01	1.7146E+04	-4.6394E+01	1.1073E+04	-4.6393E+01	1.8932E+04	-4.6392E+01	1.5002E+04	-4.6392E+01	9.2873E+03	-4.6391E+01
636000	-4.6476E+01	1.7146E+04	-4.6476E+01	1.1073E+04	-4.6475E+01	1.8932E+04	-4.6474E+01	1.5002E+04	-4.6474E+01	9.2873E+03	-4.6473E+01
638000	-4.6558E+01	1.7146E+04	-4.6558E+01	1.1073E+04	-4.6557E+01	1.8932E+04	-4.6556E+01	1.5002E+04	-4.6556E+01	9.2873E+03	-4.6555E+01
640000	-4.6640E+01	1.7146E+04	-4.6639E+01	1.1073E+04	-4.6639E+01	1.8932E+04	-4.6638E+01	1.5002E+04	-4.6637E+01	9.2873E+03	-4.6637E+01
642000	-4.6721E+01	1.7146E+04	-4.6721E+01	1.1073E+04	-4.6721E+01	1.8932E+04	-4.6720E+01	1.5002E+04	-4.6719E+01	9.2873E+03	-4.6718E+01
644000	-4.6803E+01	1.7146E+04	-4.6803E+01	1.1073E+04	-4.6802E+01	1.8932E+04	-4.6801E+01	1.5002E+04	-4.6801E+01	9.2873E+03	-4.6800E+01
646000	-4.6884E+01	1.7146E+04	-4.6884E+01	1.1073E+04	-4.6884E+01	1.8932E+04	-4.6883E+01	1.5002E+04	-4.6882E+01	9.2873E+03	-4.6881E+01
648000	-4.6966E+01	1.7146E+04	-4.6965E+01	1.1073E+04	-4.6965E+01	1.8932E+04	-4.6964E+01	1.5002E+04	-4.6963E+01	9.2873E+03	-4.6962E+01
650000	-4.7047E+01	1.7146E+04	-4.7046E+01	1.1073E+04	-4.7046E+01	1.8932E+04	-4.7045E+01	1.5002E+04	-4.7044E+01	9.2873E+03	-4.7043E+01
652000	-4.7128E+01	1.7146E+04	-4.7127E+01	1.1073E+04	-4.7127E+01	1.8932E+04	-4.7126E+01	1.5002E+04	-4.7125E+01	9.2873E+03	-4.7124E+01
654000	-4.7208E+01	1.7146E+04	-4.7208E+01	1.1073E+04	-4.7208E+01	1.8932E+04	-4.7207E+01	1.5002E+04	-4.7206E+01	9.2873E+03	-4.7205E+01
656000	-4.7289E+01	1.7146E+04	-4.7289E+01	1.1073E+04	-4.7288E+01	1.8932E+04	-4.7288E+01	1.5002E+04	-4.7287E+01	9.2873E+03	-4.7286E+01
658000	-4.7370E+01	1.7146E+04	-4.7369E+01	1.1073E+04	-4.7369E+01	1.8932E+04	-4.7368E+01	1.5002E+04	-4.7367E+01	9.2873E+03	-4.7366E+01
660000	-4.7450E+01	1.7146E+04	-4.7450E+01	1.1073E+04	-4.7449E+01	1.8932E+04	-4.7448E+01	1.5002E+04	-4.7448E+01	9.2873E+03	-4.7447E+01
662000	-4.7530E+01	1.7146E+04	-4.7530E+01	1.1073E+04	-4.7530E+01	1.8932E+04	-4.7529E+01	1.5002E+04	-4.7528E+01	9.2873E+03	-4.7527E+01
664000	-4.7611E+01	1.7146E+04	-4.7610E+01	1.1073E+04	-4.7610E+01	1.8932E+04	-4.7609E+01	1.5002E+04	-4.7608E+01	9.2873E+03	-4.7607E+01
666000	-4.7691E+01	1.7146E+04	-4.7690E+01	1.1073E+04	-4.7690E+01	1.8932E+04	-4.7689E+01	1.5002E+04	-4.7688E+01	9.2873E+03	-4.7687E+01
668000	-4.7770E+01	1.7146E+04	-4.7770E+01	1.1073E+04	-4.7770E+01	1.8932E+04	-4.7769E+01	1.5002E+04	-4.7768E+01	9.2873E+03	-4.7767E+01
670000	-4.7850E+01	1.7146E+04	-4.7850E+01	1.1073E+04	-4.7849E+01	1.8932E+04	-4.7849E+01	1.5002E+04	-4.7848E+01	9.2873E+03	-4.7847E+01
672000	-4.7930E+01	1.7146E+04	-4.7929E+01	1.1073E+04	-4.7929E+01	1.8932E+04	-4.7928E+01	1.5002E+04	-4.7927E+01	9.2873E+03	-4.7927E+01
674000	-4.8009E+01	1.7146E+04	-4.8009E+01	1.1073E+04	-4.8008E+01	1.8932E+04	-4.8008E+01	1.5002E+04	-4.8007E+01	9.2873E+03	-4.8006E+01
676000	-4.8089E+01	1.7146E+04	-4.8088E+01	1.1073E+04	-4.8088E+01	1.8932E+04	-4.8087E+01	1.5002E+04	-4.8086E+01	9.2873E+03	-4.8085E+01
678000	-4.8168E+01	1.7146E+04	-4.8167E+01	1.1073E+04	-4.8167E+01	1.8932E+04	-4.8166E+01	1.5002E+04	-4.8165E+01	9.2873E+03	-4.8165E+01
680000	-4.8247E+01	1.7146E+04	-4.8247E+01	1.1073E+04	-4.8246E+01	1.8932E+04	-4.8245E+01	1.5002E+04	-4.8245E+01	9.2873E+03	-4.8244E+01
682000	-4.8326E+01	1.7146E+04	-4.8326E+01	1.1073E+04	-4.8325E+01	1.8932E+04	-4.8324E+01	1.5002E+04	-4.8324E+01	9.2873E+03	-4.8323E+01
684000	-4.8405E+01	1.7146E+04	-4.8404E+01	1.1073E+04	-4.8404E+01	1.8932E+04	-4.8403E+01	1.5002E+04	-4.8402E+01	9.2873E+03	-4.8402E+01
686000	-4.8483E+01	1.7146E+04	-4.8483E+01	1.1073E+04	-4.8483E+01	1.8932E+04	-4.8482E+01	1.5002E+04	-4.8481E+01	9.2873E+03	-4.8480E+01
688000	-4.8562E+01	1.7146E+04	-4.8562E+01	1.1073E+04	-4.8561E+01	1.8932E+04	-4.8560E+01	1.5002E+04	-4.8560E+01	9.2873E+03	-4.8559E+01
690000	-4.8641E+01	1.7146E+04	-4.8640E+01	1.1073E+04	-4.8640E+01	1.8932E+04	-4.8639E+01	1.5002E+04	-4.8638E+01	9.2873E+03	-4.8637E+01
692000	-4.8719E+01	1.7146E+04	-4.8718E+01	1.1073E+04	-4.8718E+01	1.8932E+04	-4.8717E+01	1.5002E+04	-4.8717E+01	9.2873E+03	-4.8716E+01
694000	-4.8797E+01	1.7146E+04	-4.8797E+01	1.1073E+04	-4.8796E+01	1.8932E+04	-4.8796E+01	1.5002E+04	-4.8795E+01	9.2873E+03	-4.8794E+01
696000	-4.8875E+01	1.7146E+04	-4.8875E+01	1.1073E+04	-4.8874E+01	1.8932E+04	-4.8874E+01	1.5002E+04	-4.8873E+01	9.2873E+03	-4.8872E+01
698000	-4.8953E+01	1.7146E+04	-4.8953E+01	1.1073E+04	-4.8952E+01	1.8932E+04	-4.8952E+01	1.5002E+04	-4.8951E+01	9.2873E+03	-4.8950E+01
700000	-4.9031E+01	1.7146E+04	-4.9031E+01	1.1073E+04	-4.9030E+01	1.8932E+04	-4.9029E+01	1.5002E+04	-4.9029E+01	9.2873E+03	-4.9028E+01
702000	-4.9109E+01	1.7146E+04	-4.9108E+01	1.1073E+04	-4.9108E+01	1.8932E+04	-4.9107E+01	1.5002E+04	-4.9106E+01	9.2873E+03	-4.9106E+01
704000	-4.9186E+01	1.7146E+04	-4.9186E+01	1.1073E+04	-4.9186E+01	1.8932E+04	-4.9185E+01	1.5002E+04	-4.9184E+01	9.2873E+03	-4.9183E+01
706000	-4.9264E+01	1.7146E+04	-4.9263E+01	1.1073E+04	-4.9263E+01	1.8932E+04	-4.9262E+01	1.5002E+04	-4.9261E+01	9.2873E+03	-4.9261E+01
708000	-4.9341E+01	1.7146E+04	-4.9341E+01	1.1073E+04	-4.9340E+01	1.8932E+04	-4.9340E+01	1.5002E+04	-4.9339E+01	9.2873E+03	-4.9338E+01
710000	-4.9418E+01	1.7146E+04	-4.9418E+01	1.1073E+04	-4.9418E+01	1.8932E+04	-4.9417E+01	1.5002E+04	-4.9416E+01	9.2873E+03	-4.9415E+01
712000	-4.9495E+01	1.7146E+04	-4.9495E+01	1.1073E+04	-4.9495E+01	1.8932E+04	-4.9494E+01	1.5002E+04	-4.9493E+01	9.2873E+03	-4.9492E+01
714000	-4.9572E+01	1.7146E+04	-4.9572E+01	1.1073E+04	-4.9572E+01	1.8932E+04	-4.9571E+01	1.5002E+04	-4.9570E+01	9.2873E+03	-4.9569E+01
716000	-4.9649E+01	1.7146E+04	-4.9649E+01	1.1073E+04	-4.9649E+01	1.8932E+04	-4.9648E+01	1.5002E+04	-4.9647E+01	9.2873E+03	-4.9646E+01
718000	-4.9726E+01	1.7146E+04	-4.9726E+01	1.1073E+04	-4.9725E+01	1.8932E+04	-4.9725E+01	1.5002E+04	-4.9724E+01	9.2873E+03	-4.9723E+01
720000	-4.9803E+01	1.7146E+04	-4.9802E+01	1.1073E+04	-4.9802E+01	1.8932E+04	-4.9801E+01	1.5002E+04	-4.9800E+01	9.2873E+03	-4.9800E+01
722000	-4.9879E+01	1.7146E+04	-4.9879E+01	1.1073E+04	-4.9879E+01	1.8932E+04	-4.9878E+01	1.5002E+04	-4.9877E+01	9.2873E+03	-4.9876E+01
724000	-4.9956E+01	1.7146E+04	-4.9955E+01	1.1073E+04	-4.9955E+01	1.8932E+04	-4.9954E+01	1.5002E+04	-4.9953E+01	9.2873E+03	-4.9953E+01
726000	-5.0032E+01	1.7146E+04	-5.0032E+01	1.1073E+04	-5.0031E+01	1.8932E+04	-5.0030E+01	1.5002E+04	-5.0030E+01	9.2873E+03	-5.0029E+01

Time (yrs)	Arg 1	Curve 1	Arg 2	Curve 2	Arg 3	Curve 3	Arg 4	Curve 4	Arg 5	Curve 5	Arg 6
728000	-5.0108E+01	1.7146E+04	-5.0108E+01	1.1073E+04	-5.0107E+01	1.8932E+04	-5.0107E+01	1.5002E+04	-5.0106E+01	9.2873E+03	-5.0105E+01
730000	-5.0184E+01	1.7146E+04	-5.0184E+01	1.1073E+04	-5.0184E+01	1.8932E+04	-5.0183E+01	1.5002E+04	-5.0182E+01	9.2873E+03	-5.0181E+01
732000	-5.0260E+01	1.7146E+04	-5.0260E+01	1.1073E+04	-5.0259E+01	1.8932E+04	-5.0259E+01	1.5002E+04	-5.0258E+01	9.2873E+03	-5.0257E+01
734000	-5.0336E+01	1.7146E+04	-5.0336E+01	1.1073E+04	-5.0335E+01	1.8932E+04	-5.0335E+01	1.5002E+04	-5.0334E+01	9.2873E+03	-5.0333E+01
736000	-5.0412E+01	1.7146E+04	-5.0411E+01	1.1073E+04	-5.0411E+01	1.8932E+04	-5.0410E+01	1.5002E+04	-5.0410E+01	9.2873E+03	-5.0409E+01
738000	-5.0487E+01	1.7146E+04	-5.0487E+01	1.1073E+04	-5.0487E+01	1.8932E+04	-5.0486E+01	1.5002E+04	-5.0485E+01	9.2873E+03	-5.0484E+01
740000	-5.0563E+01	1.7146E+04	-5.0563E+01	1.1073E+04	-5.0562E+01	1.8932E+04	-5.0561E+01	1.5002E+04	-5.0561E+01	9.2873E+03	-5.0560E+01
742000	-5.0638E+01	1.7146E+04	-5.0638E+01	1.1073E+04	-5.0638E+01	1.8932E+04	-5.0637E+01	1.5002E+04	-5.0636E+01	9.2873E+03	-5.0635E+01
744000	-5.0714E+01	1.7146E+04	-5.0713E+01	1.1073E+04	-5.0713E+01	1.8932E+04	-5.0712E+01	1.5002E+04	-5.0711E+01	9.2873E+03	-5.0711E+01
746000	-5.0789E+01	1.7146E+04	-5.0788E+01	1.1073E+04	-5.0788E+01	1.8932E+04	-5.0787E+01	1.5002E+04	-5.0787E+01	9.2873E+03	-5.0786E+01
748000	-5.0864E+01	1.7146E+04	-5.0863E+01	1.1073E+04	-5.0863E+01	1.8932E+04	-5.0862E+01	1.5002E+04	-5.0862E+01	9.2873E+03	-5.0861E+01
750000	-5.0939E+01	1.7146E+04	-5.0938E+01	1.1073E+04	-5.0938E+01	1.8932E+04	-5.0937E+01	1.5002E+04	-5.0937E+01	9.2873E+03	-5.0936E+01
752000	-5.1014E+01	1.7146E+04	-5.1013E+01	1.1073E+04	-5.1013E+01	1.8932E+04	-5.1012E+01	1.5002E+04	-5.1011E+01	9.2873E+03	-5.1011E+01
754000	-5.1088E+01	1.7146E+04	-5.1088E+01	1.1073E+04	-5.1088E+01	1.8932E+04	-5.1087E+01	1.5002E+04	-5.1086E+01	9.2873E+03	-5.1085E+01
756000	-5.1163E+01	1.7146E+04	-5.1163E+01	1.1073E+04	-5.1162E+01	1.8932E+04	-5.1161E+01	1.5002E+04	-5.1161E+01	9.2873E+03	-5.1160E+01
758000	-5.1237E+01	1.7146E+04	-5.1237E+01	1.1073E+04	-5.1237E+01	1.8932E+04	-5.1236E+01	1.5002E+04	-5.1235E+01	9.2873E+03	-5.1235E+01
760000	-5.1312E+01	1.7146E+04	-5.1312E+01	1.1073E+04	-5.1311E+01	1.8932E+04	-5.1310E+01	1.5002E+04	-5.1310E+01	9.2873E+03	-5.1309E+01
762000	-5.1386E+01	1.7146E+04	-5.1386E+01	1.1073E+04	-5.1385E+01	1.8932E+04	-5.1385E+01	1.5002E+04	-5.1384E+01	9.2873E+03	-5.1383E+01
764000	-5.1460E+01	1.7146E+04	-5.1460E+01	1.1073E+04	-5.1460E+01	1.8932E+04	-5.1459E+01	1.5002E+04	-5.1458E+01	9.2873E+03	-5.1457E+01
766000	-5.1534E+01	1.7146E+04	-5.1534E+01	1.1073E+04	-5.1534E+01	1.8932E+04	-5.1533E+01	1.5002E+04	-5.1532E+01	9.2873E+03	-5.1532E+01
768000	-5.1608E+01	1.7146E+04	-5.1608E+01	1.1073E+04	-5.1608E+01	1.8932E+04	-5.1607E+01	1.5002E+04	-5.1606E+01	9.2873E+03	-5.1606E+01
770000	-5.1682E+01	1.7146E+04	-5.1682E+01	1.1073E+04	-5.1682E+01	1.8932E+04	-5.1681E+01	1.5002E+04	-5.1680E+01	9.2873E+03	-5.1679E+01
772000	-5.1756E+01	1.7146E+04	-5.1756E+01	1.1073E+04	-5.1755E+01	1.8932E+04	-5.1755E+01	1.5002E+04	-5.1754E+01	9.2873E+03	-5.1753E+01
774000	-5.1830E+01	1.7146E+04	-5.1829E+01	1.1073E+04	-5.1829E+01	1.8932E+04	-5.1828E+01	1.5002E+04	-5.1828E+01	9.2873E+03	-5.1827E+01
776000	-5.1903E+01	1.7146E+04	-5.1903E+01	1.1073E+04	-5.1903E+01	1.8932E+04	-5.1902E+01	1.5002E+04	-5.1901E+01	9.2873E+03	-5.1900E+01
778000	-5.1977E+01	1.7146E+04	-5.1976E+01	1.1073E+04	-5.1976E+01	1.8932E+04	-5.1975E+01	1.5002E+04	-5.1975E+01	9.2873E+03	-5.1974E+01
780000	-5.2050E+01	1.7146E+04	-5.2050E+01	1.1073E+04	-5.2049E+01	1.8932E+04	-5.2049E+01	1.5002E+04	-5.2048E+01	9.2873E+03	-5.2047E+01
782000	-5.2123E+01	1.7146E+04	-5.2123E+01	1.1073E+04	-5.2123E+01	1.8932E+04	-5.2122E+01	1.5002E+04	-5.2121E+01	9.2873E+03	-5.2121E+01
784000	-5.2197E+01	1.7146E+04	-5.2196E+01	1.1073E+04	-5.2196E+01	1.8932E+04	-5.2195E+01	1.5002E+04	-5.2194E+01	9.2873E+03	-5.2194E+01
786000	-5.2270E+01	1.7146E+04	-5.2269E+01	1.1073E+04	-5.2269E+01	1.8932E+04	-5.2268E+01	1.5002E+04	-5.2267E+01	9.2873E+03	-5.2267E+01
788000	-5.2343E+01	1.7146E+04	-5.2342E+01	1.1073E+04	-5.2342E+01	1.8932E+04	-5.2341E+01	1.5002E+04	-5.2340E+01	9.2873E+03	-5.2340E+01
790000	-5.2415E+01	1.7146E+04	-5.2415E+01	1.1073E+04	-5.2415E+01	1.8932E+04	-5.2414E+01	1.5002E+04	-5.2413E+01	9.2873E+03	-5.2413E+01
792000	-5.2488E+01	1.7146E+04	-5.2488E+01	1.1073E+04	-5.2487E+01	1.8932E+04	-5.2487E+01	1.5002E+04	-5.2486E+01	9.2873E+03	-5.2485E+01
794000	-5.2561E+01	1.7146E+04	-5.2561E+01	1.1073E+04	-5.2560E+01	1.8932E+04	-5.2559E+01	1.5002E+04	-5.2559E+01	9.2873E+03	-5.2558E+01
796000	-5.2633E+01	1.7146E+04	-5.2633E+01	1.1073E+04	-5.2633E+01	1.8932E+04	-5.2632E+01	1.5002E+04	-5.2631E+01	9.2873E+03	-5.2631E+01
798000	-5.2706E+01	1.7146E+04	-5.2706E+01	1.1073E+04	-5.2705E+01	1.8932E+04	-5.2704E+01	1.5002E+04	-5.2704E+01	9.2873E+03	-5.2703E+01
800000	-5.2778E+01	1.7146E+04	-5.2778E+01	1.1073E+04	-5.2778E+01	1.8932E+04	-5.2777E+01	1.5002E+04	-5.2776E+01	9.2873E+03	-5.2775E+01
802000	-5.2850E+01	1.7146E+04	-5.2850E+01	1.1073E+04	-5.2850E+01	1.8932E+04	-5.2849E+01	1.5002E+04	-5.2848E+01	9.2873E+03	-5.2848E+01
804000	-5.2923E+01	1.7146E+04	-5.2922E+01	1.1073E+04	-5.2922E+01	1.8932E+04	-5.2921E+01	1.5002E+04	-5.2920E+01	9.2873E+03	-5.2920E+01
806000	-5.2995E+01	1.7146E+04	-5.2994E+01	1.1073E+04	-5.2994E+01	1.8932E+04	-5.2993E+01	1.5002E+04	-5.2993E+01	9.2873E+03	-5.2992E+01
808000	-5.3067E+01	1.7146E+04	-5.3066E+01	1.1073E+04	-5.3066E+01	1.8932E+04	-5.3065E+01	1.5002E+04	-5.3065E+01	9.2873E+03	-5.3064E+01
810000	-5.3139E+01	1.7146E+04	-5.3138E+01	1.1073E+04	-5.3138E+01	1.8932E+04	-5.3137E+01	1.5002E+04	-5.3136E+01	9.2873E+03	-5.3136E+01
812000	-5.3210E+01	1.7146E+04	-5.3210E+01	1.1073E+04	-5.3210E+01	1.8932E+04	-5.3209E+01	1.5002E+04	-5.3208E+01	9.2873E+03	-5.3207E+01
814000	-5.3282E+01	1.7146E+04	-5.3282E+01	1.1073E+04	-5.3281E+01	1.8932E+04	-5.3281E+01	1.5002E+04	-5.3280E+01	9.2873E+03	-5.3279E+01
816000	-5.3354E+01	1.7146E+04	-5.3353E+01	1.1073E+04	-5.3353E+01	1.8932E+04	-5.3352E+01	1.5002E+04	-5.3351E+01	9.2873E+03	-5.3351E+01
818000	-5.3425E+01	1.7146E+04	-5.3425E+01	1.1073E+04	-5.3424E+01	1.8932E+04	-5.3424E+01	1.5002E+04	-5.3423E+01	9.2873E+03	-5.3422E+01
820000	-5.3496E+01	1.7146E+04	-5.3496E+01	1.1073E+04	-5.3496E+01	1.8932E+04	-5.3495E+01	1.5002E+04	-5.3494E+01	9.2873E+03	-5.3494E+01
822000	-5.3568E+01	1.7146E+04	-5.3567E+01	1.1073E+04	-5.3567E+01	1.8932E+04	-5.3566E+01	1.5002E+04	-5.3566E+01	9.2873E+03	-5.3565E+01
824000	-5.3639E+01	1.7146E+04	-5.3639E+01	1.1073E+04	-5.3638E+01	1.8932E+04	-5.3638E+01	1.5002E+04	-5.3637E+01	9.2873E+03	-5.3636E+01
826000	-5.3710E+01	1.7146E+04	-5.3710E+01	1.1073E+04	-5.3709E+01	1.8932E+04	-5.3709E+01	1.5002E+04	-5.3708E+01	9.2873E+03	-5.3707E+01
828000	-5.3781E+01	1.7146E+04	-5.3781E+01	1.1073E+04	-5.3780E+01	1.8932E+04	-5.3780E+01	1.5002E+04	-5.3779E+01	9.2873E+03	-5.3778E+01
830000	-5.3852E+01	1.7146E+04	-5.3852E+01	1.1073E+04	-5.3851E+01	1.8932E+04	-5.3851E+01	1.5002E+04	-5.3850E+01	9.2873E+03	-5.3849E+01

Time (yrs)	Arg 1	Curve 1	Arg 2	Curve 2	Arg 3	Curve 3	Arg 4	Curve 4	Arg 5	Curve 5	Arg 6
832000	-5.3923E+01	1.7146E+04	-5.3922E+01	1.1073E+04	-5.3922E+01	1.8932E+04	-5.3921E+01	1.5002E+04	-5.3921E+01	9.2873E+03	-5.3920E+01
834000	-5.3994E+01	1.7146E+04	-5.3993E+01	1.1073E+04	-5.3993E+01	1.8932E+04	-5.3992E+01	1.5002E+04	-5.3991E+01	9.2873E+03	-5.3991E+01
836000	-5.4064E+01	1.7146E+04	-5.4064E+01	1.1073E+04	-5.4063E+01	1.8932E+04	-5.4063E+01	1.5002E+04	-5.4062E+01	9.2873E+03	-5.4061E+01
838000	-5.4135E+01	1.7146E+04	-5.4134E+01	1.1073E+04	-5.4134E+01	1.8932E+04	-5.4133E+01	1.5002E+04	-5.4133E+01	9.2873E+03	-5.4132E+01
840000	-5.4205E+01	1.7146E+04	-5.4205E+01	1.1073E+04	-5.4205E+01	1.8932E+04	-5.4204E+01	1.5002E+04	-5.4203E+01	9.2873E+03	-5.4202E+01
842000	-5.4276E+01	1.7146E+04	-5.4275E+01	1.1073E+04	-5.4275E+01	1.8932E+04	-5.4274E+01	1.5002E+04	-5.4273E+01	9.2873E+03	-5.4273E+01
844000	-5.4346E+01	1.7146E+04	-5.4346E+01	1.1073E+04	-5.4345E+01	1.8932E+04	-5.4344E+01	1.5002E+04	-5.4344E+01	9.2873E+03	-5.4343E+01
846000	-5.4416E+01	1.7146E+04	-5.4416E+01	1.1073E+04	-5.4415E+01	1.8932E+04	-5.4415E+01	1.5002E+04	-5.4414E+01	9.2873E+03	-5.4413E+01
848000	-5.4486E+01	1.7146E+04	-5.4486E+01	1.1073E+04	-5.4485E+01	1.8932E+04	-5.4485E+01	1.5002E+04	-5.4484E+01	9.2873E+03	-5.4483E+01
850000	-5.4556E+01	1.7146E+04	-5.4556E+01	1.1073E+04	-5.4555E+01	1.8932E+04	-5.4555E+01	1.5002E+04	-5.4554E+01	9.2873E+03	-5.4553E+01
852000	-5.4626E+01	1.7146E+04	-5.4626E+01	1.1073E+04	-5.4625E+01	1.8932E+04	-5.4625E+01	1.5002E+04	-5.4624E+01	9.2873E+03	-5.4623E+01
854000	-5.4696E+01	1.7146E+04	-5.4696E+01	1.1073E+04	-5.4695E+01	1.8932E+04	-5.4695E+01	1.5002E+04	-5.4694E+01	9.2873E+03	-5.4693E+01
856000	-5.4766E+01	1.7146E+04	-5.4765E+01	1.1073E+04	-5.4765E+01	1.8932E+04	-5.4764E+01	1.5002E+04	-5.4764E+01	9.2873E+03	-5.4763E+01
858000	-5.4835E+01	1.7146E+04	-5.4835E+01	1.1073E+04	-5.4835E+01	1.8932E+04	-5.4834E+01	1.5002E+04	-5.4833E+01	9.2873E+03	-5.4833E+01
860000	-5.4905E+01	1.7146E+04	-5.4905E+01	1.1073E+04	-5.4904E+01	1.8932E+04	-5.4903E+01	1.5002E+04	-5.4903E+01	9.2873E+03	-5.4902E+01
862000	-5.4974E+01	1.7146E+04	-5.4974E+01	1.1073E+04	-5.4974E+01	1.8932E+04	-5.4973E+01	1.5002E+04	-5.4972E+01	9.2873E+03	-5.4972E+01
864000	-5.5044E+01	1.7146E+04	-5.5043E+01	1.1073E+04	-5.5043E+01	1.8932E+04	-5.5042E+01	1.5002E+04	-5.5042E+01	9.2873E+03	-5.5041E+01
866000	-5.5113E+01	1.7146E+04	-5.5113E+01	1.1073E+04	-5.5112E+01	1.8932E+04	-5.5112E+01	1.5002E+04	-5.5111E+01	9.2873E+03	-5.5110E+01
868000	-5.5182E+01	1.7146E+04	-5.5182E+01	1.1073E+04	-5.5182E+01	1.8932E+04	-5.5181E+01	1.5002E+04	-5.5180E+01	9.2873E+03	-5.5180E+01
870000	-5.5251E+01	1.7146E+04	-5.5251E+01	1.1073E+04	-5.5251E+01	1.8932E+04	-5.5250E+01	1.5002E+04	-5.5249E+01	9.2873E+03	-5.5249E+01
872000	-5.5320E+01	1.7146E+04	-5.5320E+01	1.1073E+04	-5.5320E+01	1.8932E+04	-5.5319E+01	1.5002E+04	-5.5318E+01	9.2873E+03	-5.5318E+01
874000	-5.5389E+01	1.7146E+04	-5.5389E+01	1.1073E+04	-5.5389E+01	1.8932E+04	-5.5388E+01	1.5002E+04	-5.5387E+01	9.2873E+03	-5.5387E+01
876000	-5.5458E+01	1.7146E+04	-5.5458E+01	1.1073E+04	-5.5458E+01	1.8932E+04	-5.5457E+01	1.5002E+04	-5.5456E+01	9.2873E+03	-5.5456E+01
878000	-5.5527E+01	1.7146E+04	-5.5527E+01	1.1073E+04	-5.5526E+01	1.8932E+04	-5.5526E+01	1.5002E+04	-5.5525E+01	9.2873E+03	-5.5524E+01
880000	-5.5596E+01	1.7146E+04	-5.5595E+01	1.1073E+04	-5.5595E+01	1.8932E+04	-5.5594E+01	1.5002E+04	-5.5594E+01	9.2873E+03	-5.5593E+01
882000	-5.5664E+01	1.7146E+04	-5.5664E+01	1.1073E+04	-5.5664E+01	1.8932E+04	-5.5663E+01	1.5002E+04	-5.5662E+01	9.2873E+03	-5.5662E+01
884000	-5.5733E+01	1.7146E+04	-5.5733E+01	1.1073E+04	-5.5732E+01	1.8932E+04	-5.5732E+01	1.5002E+04	-5.5731E+01	9.2873E+03	-5.5730E+01
886000	-5.5801E+01	1.7146E+04	-5.5801E+01	1.1073E+04	-5.5801E+01	1.8932E+04	-5.5800E+01	1.5002E+04	-5.5799E+01	9.2873E+03	-5.5799E+01
888000	-5.5870E+01	1.7146E+04	-5.5869E+01	1.1073E+04	-5.5869E+01	1.8932E+04	-5.5868E+01	1.5002E+04	-5.5868E+01	9.2873E+03	-5.5867E+01
890000	-5.5938E+01	1.7146E+04	-5.5938E+01	1.1073E+04	-5.5937E+01	1.8932E+04	-5.5937E+01	1.5002E+04	-5.5936E+01	9.2873E+03	-5.5935E+01
892000	-5.6006E+01	1.7146E+04	-5.6006E+01	1.1073E+04	-5.6006E+01	1.8932E+04	-5.6005E+01	1.5002E+04	-5.6004E+01	9.2873E+03	-5.6004E+01
894000	-5.6074E+01	1.7146E+04	-5.6074E+01	1.1073E+04	-5.6074E+01	1.8932E+04	-5.6073E+01	1.5002E+04	-5.6072E+01	9.2873E+03	-5.6072E+01
896000	-5.6142E+01	1.7146E+04	-5.6142E+01	1.1073E+04	-5.6142E+01	1.8932E+04	-5.6141E+01	1.5002E+04	-5.6140E+01	9.2873E+03	-5.6140E+01
898000	-5.6210E+01	1.7146E+04	-5.6210E+01	1.1073E+04	-5.6210E+01	1.8932E+04	-5.6209E+01	1.5002E+04	-5.6208E+01	9.2873E+03	-5.6208E+01
900000	-5.6278E+01	1.7146E+04	-5.6278E+01	1.1073E+04	-5.6278E+01	1.8932E+04	-5.6277E+01	1.5002E+04	-5.6276E+01	9.2873E+03	-5.6276E+01
902000	-5.6346E+01	1.7146E+04	-5.6346E+01	1.1073E+04	-5.6345E+01	1.8932E+04	-5.6345E+01	1.5002E+04	-5.6344E+01	9.2873E+03	-5.6343E+01
904000	-5.6414E+01	1.7146E+04	-5.6414E+01	1.1073E+04	-5.6413E+01	1.8932E+04	-5.6412E+01	1.5002E+04	-5.6412E+01	9.2873E+03	-5.6411E+01
906000	-5.6481E+01	1.7146E+04	-5.6481E+01	1.1073E+04	-5.6481E+01	1.8932E+04	-5.6480E+01	1.5002E+04	-5.6479E+01	9.2873E+03	-5.6479E+01
908000	-5.6549E+01	1.7146E+04	-5.6549E+01	1.1073E+04	-5.6548E+01	1.8932E+04	-5.6548E+01	1.5002E+04	-5.6547E+01	9.2873E+03	-5.6546E+01
910000	-5.6617E+01	1.7146E+04	-5.6616E+01	1.1073E+04	-5.6616E+01	1.8932E+04	-5.6615E+01	1.5002E+04	-5.6614E+01	9.2873E+03	-5.6614E+01
912000	-5.6684E+01	1.7146E+04	-5.6684E+01	1.1073E+04	-5.6683E+01	1.8932E+04	-5.6683E+01	1.5002E+04	-5.6682E+01	9.2873E+03	-5.6681E+01
914000	-5.6751E+01	1.7146E+04	-5.6751E+01	1.1073E+04	-5.6751E+01	1.8932E+04	-5.6750E+01	1.5002E+04	-5.6749E+01	9.2873E+03	-5.6749E+01
916000	-5.6818E+01	1.7146E+04	-5.6818E+01	1.1073E+04	-5.6818E+01	1.8932E+04	-5.6817E+01	1.5002E+04	-5.6816E+01	9.2873E+03	-5.6816E+01
918000	-5.6886E+01	1.7146E+04	-5.6885E+01	1.1073E+04	-5.6885E+01	1.8932E+04	-5.6884E+01	1.5002E+04	-5.6884E+01	9.2873E+03	-5.6883E+01
920000	-5.6953E+01	1.7146E+04	-5.6952E+01	1.1073E+04	-5.6952E+01	1.8932E+04	-5.6951E+01	1.5002E+04	-5.6951E+01	9.2873E+03	-5.6950E+01
922000	-5.7020E+01	1.7146E+04	-5.7019E+01	1.1073E+04	-5.7019E+01	1.8932E+04	-5.7018E+01	1.5002E+04	-5.7018E+01	9.2873E+03	-5.7017E+01
924000	-5.7087E+01	1.7146E+04	-5.7086E+01	1.1073E+04	-5.7086E+01	1.8932E+04	-5.7085E+01	1.5002E+04	-5.7085E+01	9.2873E+03	-5.7084E+01
926000	-5.7153E+01	1.7146E+04	-5.7153E+01	1.1073E+04	-5.7153E+01	1.8932E+04	-5.7152E+01	1.5002E+04	-5.7151E+01	9.2873E+03	-5.7151E+01
928000	-5.7220E+01	1.7146E+04	-5.7220E+01	1.1073E+04	-5.7220E+01	1.8932E+04	-5.7219E+01	1.5002E+04	-5.7218E+01	9.2873E+03	-5.7218E+01
930000	-5.7287E+01	1.7146E+04	-5.7287E+01	1.1073E+04	-5.7286E+01	1.8932E+04	-5.7286E+01	1.5002E+04	-5.7285E+01	9.2873E+03	-5.7284E+01
932000	-5.7354E+01	1.7146E+04	-5.7353E+01	1.1073E+04	-5.7353E+01	1.8932E+04	-5.7352E+01	1.5002E+04	-5.7352E+01	9.2873E+03	-5.7351E+01
934000	-5.7420E+01	1.7146E+04	-5.7420E+01	1.1073E+04	-5.7419E+01	1.8932E+04	-5.7419E+01	1.5002E+04	-5.7418E+01	9.2873E+03	-5.7417E+01

Time (yrs)	Arg 1	Curve 1	Arg 2	Curve 2	Arg 3	Curve 3	Arg 4	Curve 4	Arg 5	Curve 5	Arg 6
936000	-5.7487E+01	1.7146E+04	-5.7486E+01	1.1073E+04	-5.7486E+01	1.8932E+04	-5.7485E+01	1.5002E+04	-5.7485E+01	9.2873E+03	-5.7484E+01
938000	-5.7553E+01	1.7146E+04	-5.7553E+01	1.1073E+04	-5.7552E+01	1.8932E+04	-5.7552E+01	1.5002E+04	-5.7551E+01	9.2873E+03	-5.7550E+01
940000	-5.7619E+01	1.7146E+04	-5.7619E+01	1.1073E+04	-5.7619E+01	1.8932E+04	-5.7618E+01	1.5002E+04	-5.7617E+01	9.2873E+03	-5.7617E+01
942000	-5.7685E+01	1.7146E+04	-5.7685E+01	1.1073E+04	-5.7685E+01	1.8932E+04	-5.7684E+01	1.5002E+04	-5.7683E+01	9.2873E+03	-5.7683E+01
944000	-5.7752E+01	1.7146E+04	-5.7751E+01	1.1073E+04	-5.7751E+01	1.8932E+04	-5.7750E+01	1.5002E+04	-5.7750E+01	9.2873E+03	-5.7749E+01
946000	-5.7818E+01	1.7146E+04	-5.7817E+01	1.1073E+04	-5.7817E+01	1.8932E+04	-5.7816E+01	1.5002E+04	-5.7816E+01	9.2873E+03	-5.7815E+01
948000	-5.7884E+01	1.7146E+04	-5.7883E+01	1.1073E+04	-5.7883E+01	1.8932E+04	-5.7882E+01	1.5002E+04	-5.7882E+01	9.2873E+03	-5.7881E+01
950000	-5.7950E+01	1.7146E+04	-5.7949E+01	1.1073E+04	-5.7949E+01	1.8932E+04	-5.7948E+01	1.5002E+04	-5.7948E+01	9.2873E+03	-5.7947E+01
952000	-5.8015E+01	1.7146E+04	-5.8015E+01	1.1073E+04	-5.8015E+01	1.8932E+04	-5.8014E+01	1.5002E+04	-5.8014E+01	9.2873E+03	-5.8013E+01
954000	-5.8081E+01	1.7146E+04	-5.8081E+01	1.1073E+04	-5.8081E+01	1.8932E+04	-5.8080E+01	1.5002E+04	-5.8079E+01	9.2873E+03	-5.8079E+01
956000	-5.8147E+01	1.7146E+04	-5.8147E+01	1.1073E+04	-5.8146E+01	1.8932E+04	-5.8146E+01	1.5002E+04	-5.8145E+01	9.2873E+03	-5.8144E+01
958000	-5.8213E+01	1.7146E+04	-5.8212E+01	1.1073E+04	-5.8212E+01	1.8932E+04	-5.8211E+01	1.5002E+04	-5.8211E+01	9.2873E+03	-5.8210E+01
960000	-5.8278E+01	1.7146E+04	-5.8278E+01	1.1073E+04	-5.8278E+01	1.8932E+04	-5.8277E+01	1.5002E+04	-5.8276E+01	9.2873E+03	-5.8276E+01
962000	-5.8344E+01	1.7146E+04	-5.8343E+01	1.1073E+04	-5.8343E+01	1.8932E+04	-5.8342E+01	1.5002E+04	-5.8342E+01	9.2873E+03	-5.8341E+01
964000	-5.8409E+01	1.7146E+04	-5.8409E+01	1.1073E+04	-5.8408E+01	1.8932E+04	-5.8408E+01	1.5002E+04	-5.8407E+01	9.2873E+03	-5.8406E+01
966000	-5.8474E+01	1.7146E+04	-5.8474E+01	1.1073E+04	-5.8474E+01	1.8932E+04	-5.8473E+01	1.5002E+04	-5.8472E+01	9.2873E+03	-5.8472E+01
968000	-5.8540E+01	1.7146E+04	-5.8539E+01	1.1073E+04	-5.8539E+01	1.8932E+04	-5.8538E+01	1.5002E+04	-5.8538E+01	9.2873E+03	-5.8537E+01
970000	-5.8605E+01	1.7146E+04	-5.8605E+01	1.1073E+04	-5.8604E+01	1.8932E+04	-5.8604E+01	1.5002E+04	-5.8603E+01	9.2873E+03	-5.8602E+01
972000	-5.8670E+01	1.7146E+04	-5.8670E+01	1.1073E+04	-5.8669E+01	1.8932E+04	-5.8669E+01	1.5002E+04	-5.8668E+01	9.2873E+03	-5.8667E+01
974000	-5.8735E+01	1.7146E+04	-5.8735E+01	1.1073E+04	-5.8734E+01	1.8932E+04	-5.8734E+01	1.5002E+04	-5.8733E+01	9.2873E+03	-5.8732E+01
976000	-5.8800E+01	1.7146E+04	-5.8800E+01	1.1073E+04	-5.8799E+01	1.8932E+04	-5.8799E+01	1.5002E+04	-5.8798E+01	9.2873E+03	-5.8797E+01
978000	-5.8865E+01	1.7146E+04	-5.8865E+01	1.1073E+04	-5.8864E+01	1.8932E+04	-5.8864E+01	1.5002E+04	-5.8863E+01	9.2873E+03	-5.8862E+01
980000	-5.8930E+01	1.7146E+04	-5.8929E+01	1.1073E+04	-5.8929E+01	1.8932E+04	-5.8929E+01	1.5002E+04	-5.8928E+01	9.2873E+03	-5.8927E+01
982000	-5.8995E+01	1.7146E+04	-5.8994E+01	1.1073E+04	-5.8994E+01	1.8932E+04	-5.8993E+01	1.5002E+04	-5.8993E+01	9.2873E+03	-5.8992E+01
984000	-5.9059E+01	1.7146E+04	-5.9059E+01	1.1073E+04	-5.9059E+01	1.8932E+04	-5.9058E+01	1.5002E+04	-5.9057E+01	9.2873E+03	-5.9057E+01
986000	-5.9124E+01	1.7146E+04	-5.9124E+01	1.1073E+04	-5.9123E+01	1.8932E+04	-5.9123E+01	1.5002E+04	-5.9122E+01	9.2873E+03	-5.9121E+01
988000	-5.9188E+01	1.7146E+04	-5.9188E+01	1.1073E+04	-5.9188E+01	1.8932E+04	-5.9187E+01	1.5002E+04	-5.9187E+01	9.2873E+03	-5.9186E+01
990000	-5.9253E+01	1.7146E+04	-5.9253E+01	1.1073E+04	-5.9252E+01	1.8932E+04	-5.9252E+01	1.5002E+04	-5.9251E+01	9.2873E+03	-5.9250E+01
992000	-5.9317E+01	1.7146E+04	-5.9317E+01	1.1073E+04	-5.9317E+01	1.8932E+04	-5.9316E+01	1.5002E+04	-5.9315E+01	9.2873E+03	-5.9315E+01
994000	-5.9382E+01	1.7146E+04	-5.9381E+01	1.1073E+04	-5.9381E+01	1.8932E+04	-5.9380E+01	1.5002E+04	-5.9380E+01	9.2873E+03	-5.9379E+01
996000	-5.9446E+01	1.7146E+04	-5.9446E+01	1.1073E+04	-5.9445E+01	1.8932E+04	-5.9445E+01	1.5002E+04	-5.9444E+01	9.2873E+03	-5.9443E+01
998000	-5.9510E+01	1.7146E+04	-5.9510E+01	1.1073E+04	-5.9510E+01	1.8932E+04	-5.9509E+01	1.5002E+04	-5.9508E+01	9.2873E+03	-5.9508E+01
1000000	-5.9574E+01	1.7146E+04	-5.9574E+01	1.1073E+04	-5.9574E+01	1.8932E+04	-5.9573E+01	1.5002E+04	-5.9572E+01	9.2873E+03	-5.9572E+01


Flux Out (gm/yr)
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3.0000E+05
2.5000E+05
2.0000E+05
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1.0000E+05
5.0000E+04
0.0000E+00
-5.0000E+04
0
100000
200000
300000
400000
500000
600000
700000
800000
900000
1000000

Curve 6	Arg 7	Curve 7	Arg 8	Curve 8	Arg 9	Curve 9	Arg 10	Curve 10	Arg 11	Curve 11	Arg 12	Curve 12
0.0000E+00	2.9179E+02	0.0000E+00	7.1571E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	5.0582E+01	0.0000E+00	5.1369E+01	0.0000E+00	5.2190E+01	0.0000E+00	5.3399E+01	0.0000E+00	5.4124E+01	0.0000E+00	5.5657E+01	0.0000E+00
0.0000E+00	3.2860E+01	0.0000E+00	3.3128E+01	0.0000E+00	3.3401E+01	0.0000E+00	3.3793E+01	0.0000E+00	3.4021E+01	0.0000E+00	3.4489E+01	0.0000E+00
0.0000E+00	2.4987E+01	0.0000E+00	2.5136E+01	0.0000E+00	2.5287E+01	0.0000E+00	2.5501E+01	0.0000E+00	2.5625E+01	0.0000E+00	2.5877E+01	0.0000E+00
0.0000E+00	2.0152E+01	0.0000E+00	2.0252E+01	0.0000E+00	2.0353E+01	0.0000E+00	2.0495E+01	0.0000E+00	2.0578E+01	0.0000E+00	2.0744E+01	0.0000E+00
0.0000E+00	1.6732E+01	0.0000E+00	1.6806E+01	0.0000E+00	1.6881E+01	0.0000E+00	1.6986E+01	0.0000E+00	1.7047E+01	0.0000E+00	1.7169E+01	0.0000E+00
0.0000E+00	1.4112E+01	0.0000E+00	1.4170E+01	0.0000E+00	1.4229E+01	0.0000E+00	1.4312E+01	0.0000E+00	1.4359E+01	0.0000E+00	1.4455E+01	0.0000E+00
0.0000E+00	1.1997E+01	0.0000E+00	1.2046E+01	0.0000E+00	1.2094E+01	0.0000E+00	1.2162E+01	0.0000E+00	1.2201E+01	0.0000E+00	1.2280E+01	0.0000E+00
0.0000E+00	1.0229E+01	0.0000E+00	1.0270E+01	0.0000E+00	1.0311E+01	0.0000E+00	1.0369E+01	0.0000E+00	1.0402E+01	0.0000E+00	1.0468E+01	0.0000E+00
0.0000E+00	8.7111E+00	0.0000E+00	8.7465E+00	0.0000E+00	8.7821E+00	0.0000E+00	8.8321E+00	0.0000E+00	8.8608E+00	0.0000E+00	8.9184E+00	0.0000E+00
0.0000E+00	7.3809E+00	0.0000E+00	7.4122E+00	0.0000E+00	7.4437E+00	0.0000E+00	7.4878E+00	0.0000E+00	7.5131E+00	0.0000E+00	7.5639E+00	0.0000E+00
0.0000E+00	6.1969E+00	0.0000E+00	6.2250E+00	0.0000E+00	6.2531E+00	0.0000E+00	6.2926E+00	0.0000E+00	6.3153E+00	0.0000E+00	6.3607E+00	0.0000E+00
2.8244E-09	5.1294E+00	1.7341E-09	5.1548E+00	1.2175E-09	5.1803E+00	4.2314E-10	5.2162E+00	3.4764E-10	5.2367E+00	3.0263E-10	5.2778E+00	2.0987E-10
2.7029E-05	4.1568E+00	1.7738E-05	4.1801E+00	1.3319E-05	4.2034E+00	4.9515E-06	4.2362E+00	4.4731E-06	4.2550E+00	4.1147E-06	4.2926E+00	3.1856E-06
2.4435E-02	3.2629E+00	1.6899E-02	3.2844E+00	1.3376E-02	3.3059E+00	5.2437E-03	3.3361E+00	5.1049E-03	3.3534E+00	4.9022E-03	3.3881E+00	4.1387E-03
3.4092E+00	2.4352E+00	2.4582E+00	2.4551E+00	2.0291E+00	2.4751E+00	8.2977E-01	2.5032E+00	8.5733E-01	2.5193E+00	8.5194E-01	2.5515E+00	7.7053E-01
1.0703E+02	1.6639E+00	7.9795E+01	1.6826E+00	6.8113E+01	1.7013E+00	2.8809E+01	1.7275E+00	3.1215E+01	1.7425E+00	3.1878E+01	1.7726E+00	3.0463E+01
1.0255E+03	9.4132E-01	7.8490E+02	9.5885E-01	6.8798E+02	9.7640E-01	2.9885E+02	1.0010E+00	3.3622E+02	1.0151E+00	3.5088E+02	1.0433E+00	3.5025E+02
3.9084E+03	2.6108E-01	3.0518E+03	2.7761E-01	2.7293E+03	2.9417E-01	1.2098E+03	3.1739E-01	1.4007E+03	3.3068E-01	1.4860E+03	3.5730E-01	1.5336E+03
7.6411E+03	-3.8198E-01	6.0479E+03	-3.6632E-01	5.4835E+03	-3.5064E-01	2.4647E+03	-3.2865E-01	2.9103E+03	-3.1607E-01	3.1231E+03	-2.9087E-01	3.2985E+03
9.8887E+03	-9.9214E-01	7.8845E+03	-9.7725E-01	7.2024E+03	-9.6235E-01	3.2621E+03	-9.4146E-01	3.8941E+03	-9.2950E-01	4.2056E+03	-9.0556E-01	4.5000E+03
1.0583E+04	-1.5730E+00	8.4609E+03	-1.5588E+00	7.7504E+03	-1.5446E+00	3.5203E+03	-1.5247E+00	4.2198E+03	-1.5133E+00	4.5685E+03	-1.4905E+00	4.9132E+03
1.0703E+04	-2.1276E+00	8.5616E+03	-2.1140E+00	7.8475E+03	-2.1004E+00	3.5667E+03	-2.0814E+00	4.2795E+03	-2.0705E+00	4.6357E+03	-2.0487E+00	4.9914E+03
1.0715E+04	-2.6585E+00	8.5721E+03	-2.6455E+00	7.8577E+03	-2.6324E+00	3.5717E+03	-2.6142E+00	4.2860E+03	-2.6038E+00	4.6431E+03	-2.5829E+00	5.0002E+03
1.0716E+04	-3.1679E+00	8.5728E+03	-3.1554E+00	7.8584E+03	-3.1429E+00	3.5720E+03	-3.1254E+00	4.2864E+03	-3.1154E+00	4.6436E+03	-3.0953E+00	5.0008E+03
1.0716E+04	-3.6578E+00	8.5728E+03	-3.6458E+00	7.8584E+03	-3.6338E+00	3.5720E+03	-3.6169E+00	4.2864E+03	-3.6072E+00	4.6436E+03	-3.5879E+00	5.0008E+03
1.0716E+04	-4.1299E+00	8.5728E+03	-4.1183E+00	7.8584E+03	-4.1067E+00	3.5720E+03	-4.0904E+00	4.2864E+03	-4.0811E+00	4.6436E+03	-4.0625E+00	5.0008E+03
1.0716E+04	-4.5856E+00	8.5728E+03	-4.5744E+00	7.8584E+03	-4.5632E+00	3.5720E+03	-4.5475E+00	4.2864E+03	-4.5385E+00	4.6436E+03	-4.5205E+00	5.0008E+03
1.0716E+04	-5.0262E+00	8.5728E+03	-5.0154E+00	7.8584E+03	-5.0045E+00	3.5720E+03	-4.9893E+00	4.2864E+03	-4.9806E+00	4.6436E+03	-4.9632E+00	5.0008E+03
1.0716E+04	-5.4529E+00	8.5728E+03	-5.4424E+00	7.8584E+03	-5.4319E+00	3.5720E+03	-5.4171E+00	4.2864E+03	-5.4087E+00	4.6436E+03	-5.3918E+00	5.0008E+03
1.0716E+04	-5.8667E+00	8.5728E+03	-5.8565E+00	7.8584E+03	-5.8463E+00	3.5720E+03	-5.8320E+00	4.2864E+03	-5.8238E+00	4.6436E+03	-5.8074E+00	5.0008E+03
1.0716E+04	-6.2685E+00	8.5728E+03	-6.2585E+00	7.8584E+03	-6.2486E+00	3.5720E+03	-6.2347E+00	4.2864E+03	-6.2268E+00	4.6436E+03	-6.2109E+00	5.0008E+03
1.0716E+04	-6.6591E+00	8.5728E+03	-6.6494E+00	7.8584E+03	-6.6398E+00	3.5720E+03	-6.6263E+00	4.2864E+03	-6.6185E+00	4.6436E+03	-6.6031E+00	5.0008E+03
1.0716E+04	-7.0392E+00	8.5728E+03	-7.0298E+00	7.8584E+03	-7.0204E+00	3.5720E+03	-7.0073E+00	4.2864E+03	-6.9998E+00	4.6436E+03	-6.9847E+00	5.0008E+03
1.0716E+04	-7.4096E+00	8.5728E+03	-7.4004E+00	7.8584E+03	-7.3913E+00	3.5720E+03	-7.3785E+00	4.2864E+03	-7.3711E+00	4.6436E+03	-7.3565E+00	5.0008E+03
1.0716E+04	-7.7708E+00	8.5728E+03	-7.7618E+00	7.8584E+03	-7.7529E+00	3.5720E+03	-7.7404E+00	4.2864E+03	-7.7333E+00	4.6436E+03	-7.7189E+00	5.0008E+03
1.0716E+04	-8.1233E+00	8.5728E+03	-8.1146E+00	7.8584E+03	-8.1059E+00	3.5720E+03	-8.0937E+00	4.2864E+03	-8.0867E+00	4.6436E+03	-8.0727E+00	5.0008E+03
1.0716E+04	-8.4678E+00	8.5728E+03	-8.4592E+00	7.8584E+03	-8.4507E+00	3.5720E+03	-8.4388E+00	4.2864E+03	-8.4320E+00	4.6436E+03	-8.4183E+00	5.0008E+03
1.0716E+04	-8.8045E+00	8.5728E+03	-8.7962E+00	7.8584E+03	-8.7879E+00	3.5720E+03	-8.7762E+00	4.2864E+03	-8.7695E+00	4.6436E+03	-8.7561E+00	5.0008E+03
1.0716E+04	-9.1340E+00	8.5728E+03	-9.1259E+00	7.8584E+03	-9.1177E+00	3.5720E+03	-9.1063E+00	4.2864E+03	-9.0997E+00	4.6436E+03	-9.0867E+00	5.0008E+03
1.0716E+04	-9.4566E+00	8.5728E+03	-9.4486E+00	7.8584E+03	-9.4407E+00	3.5720E+03	-9.4295E+00	4.2864E+03	-9.4231E+00	4.6436E+03	-9.4103E+00	5.0008E+03
1.0716E+04	-9.7727E+00	8.5728E+03	-9.7649E+00	7.8584E+03	-9.7571E+00	3.5720E+03	-9.7461E+00	4.2864E+03	-9.7398E+00	4.6436E+03	-9.7273E+00	5.0008E+03
1.0716E+04	-1.0083E+01	8.5728E+03	-1.0075E+01	7.8584E+03	-1.0067E+01	3.5720E+03	-1.0057E+01	4.2864E+03	-1.0050E+01	4.6436E+03	-1.0038E+01	5.0008E+03
1.0716E+04	-1.0387E+01	8.5728E+03	-1.0379E+01	7.8584E+03	-1.0372E+01	3.5720E+03	-1.0361E+01	4.2864E+03	-1.0355E+01	4.6436E+03	-1.0343E+01	5.0008E+03
1.0716E+04	-1.0685E+01	8.5728E+03	-1.0678E+01	7.8584E+03	-1.0670E+01	3.5720E+03	-1.0660E+01	4.2864E+03	-1.0654E+01	4.6436E+03	-1.0642E+01	5.0008E+03
1.0716E+04	-1.0978E+01	8.5728E+03	-1.0971E+01	7.8584E+03	-1.0964E+01	3.5720E+03	-1.0953E+01	4.2864E+03	-1.0948E+01	4.6436E+03	-1.0936E+01	5.0008E+03
1.0716E+04	-1.1266E+01	8.5728E+03	-1.1259E+01	7.8584E+03	-1.1252E+01	3.5720E+03	-1.1242E+01	4.2864E+03	-1.1236E+01	4.6436E+03	-1.1225E+01	5.0008E+03
1.0716E+04	-1.1549E+01	8.5728E+03	-1.1542E+01	7.8584E+03	-1.1535E+01	3.5720E+03	-1.1525E+01	4.2864E+03	-1.1520E+01	4.6436E+03	-1.1508E+01	5.0008E+03
1.0716E+04	-1.1828E+01	8.5728E+03	-1.1821E+01	7.8584E+03	-1.1814E+01	3.5720E+03	-1.1804E+01	4.2864E+03	-1.1799E+01	4.6436E+03	-1.1787E+01	5.0008E+03
1.0716E+04	-1.2101E+01	8.5728E+03	-1.2095E+01	7.8584E+03	-1.2088E+01	3.5720E+03	-1.2078E+01	4.2864E+03	-1.2073E+01	4.6436E+03	-1.2062E+01	5.0008E+03
1.0716E+04	-1.2371E+01	8.5728E+03	-1.2364E+01	7.8584E+03	-1.2358E+01	3.5720E+03	-1.2348E+01	4.2864E+03	-1.2343E+01	4.6436E+03	-1.2332E+01	5.0008E+03
1.0716E+04	-1.2637E+01	8.5728E+03	-1.2630E+01	7.8584E+03	-1.2623E+01	3.5720E+03	-1.2614E+01	4.2864E+03	-1.2609E+01	4.6436E+03	-1.2598E+01	5.0008E+03

Curve 6	Arg 7	Curve 7	Arg 8	Curve 8	Arg 9	Curve 9	Arg 10	Curve 10	Arg 11	Curve 11	Arg 12	Curve 12
1.0716E+04	-1.2898E+01	8.5728E+03	-1.2892E+01	7.8584E+03	-1.2885E+01	3.5720E+03	-1.2876E+01	4.2864E+03	-1.2871E+01	4.6436E+03	-1.2860E+01	5.0008E+03
1.0716E+04	-1.3156E+01	8.5728E+03	-1.3149E+01	7.8584E+03	-1.3143E+01	3.5720E+03	-1.3134E+01	4.2864E+03	-1.3129E+01	4.6436E+03	-1.3119E+01	5.0008E+03
1.0716E+04	-1.3410E+01	8.5728E+03	-1.3404E+01	7.8584E+03	-1.3397E+01	3.5720E+03	-1.3389E+01	4.2864E+03	-1.3383E+01	4.6436E+03	-1.3373E+01	5.0008E+03
1.0716E+04	-1.3661E+01	8.5728E+03	-1.3654E+01	7.8584E+03	-1.3648E+01	3.5720E+03	-1.3639E+01	4.2864E+03	-1.3634E+01	4.6436E+03	-1.3624E+01	5.0008E+03
1.0716E+04	-1.3908E+01	8.5728E+03	-1.3902E+01	7.8584E+03	-1.3895E+01	3.5720E+03	-1.3887E+01	4.2864E+03	-1.3882E+01	4.6436E+03	-1.3872E+01	5.0008E+03
1.0716E+04	-1.4152E+01	8.5728E+03	-1.4145E+01	7.8584E+03	-1.4139E+01	3.5720E+03	-1.4131E+01	4.2864E+03	-1.4126E+01	4.6436E+03	-1.4116E+01	5.0008E+03
1.0716E+04	-1.4392E+01	8.5728E+03	-1.4386E+01	7.8584E+03	-1.4380E+01	3.5720E+03	-1.4372E+01	4.2864E+03	-1.4367E+01	4.6436E+03	-1.4358E+01	5.0008E+03
1.0716E+04	-1.4630E+01	8.5728E+03	-1.4624E+01	7.8584E+03	-1.4618E+01	3.5720E+03	-1.4610E+01	4.2864E+03	-1.4605E+01	4.6436E+03	-1.4596E+01	5.0008E+03
1.0716E+04	-1.4865E+01	8.5728E+03	-1.4859E+01	7.8584E+03	-1.4853E+01	3.5720E+03	-1.4845E+01	4.2864E+03	-1.4840E+01	4.6436E+03	-1.4831E+01	5.0008E+03
1.0716E+04	-1.5096E+01	8.5728E+03	-1.5091E+01	7.8584E+03	-1.5085E+01	3.5720E+03	-1.5077E+01	4.2864E+03	-1.5072E+01	4.6436E+03	-1.5063E+01	5.0008E+03
1.0716E+04	-1.5325E+01	8.5728E+03	-1.5320E+01	7.8584E+03	-1.5314E+01	3.5720E+03	-1.5306E+01	4.2864E+03	-1.5302E+01	4.6436E+03	-1.5292E+01	5.0008E+03
1.0716E+04	-1.5552E+01	8.5728E+03	-1.5546E+01	7.8584E+03	-1.5541E+01	3.5720E+03	-1.5533E+01	4.2864E+03	-1.5528E+01	4.6436E+03	-1.5519E+01	5.0008E+03
1.0716E+04	-1.5776E+01	8.5728E+03	-1.5770E+01	7.8584E+03	-1.5765E+01	3.5720E+03	-1.5757E+01	4.2864E+03	-1.5752E+01	4.6436E+03	-1.5743E+01	5.0008E+03
1.0716E+04	-1.5997E+01	8.5728E+03	-1.5991E+01	7.8584E+03	-1.5986E+01	3.5720E+03	-1.5978E+01	4.2864E+03	-1.5974E+01	4.6436E+03	-1.5965E+01	5.0008E+03
1.0716E+04	-1.6216E+01	8.5728E+03	-1.6210E+01	7.8584E+03	-1.6205E+01	3.5720E+03	-1.6197E+01	4.2864E+03	-1.6193E+01	4.6436E+03	-1.6184E+01	5.0008E+03
1.0716E+04	-1.6432E+01	8.5728E+03	-1.6427E+01	7.8584E+03	-1.6421E+01	3.5720E+03	-1.6414E+01	4.2864E+03	-1.6410E+01	4.6436E+03	-1.6401E+01	5.0008E+03
1.0716E+04	-1.6646E+01	8.5728E+03	-1.6641E+01	7.8584E+03	-1.6636E+01	3.5720E+03	-1.6628E+01	4.2864E+03	-1.6624E+01	4.6436E+03	-1.6616E+01	5.0008E+03
1.0716E+04	-1.6858E+01	8.5728E+03	-1.6853E+01	7.8584E+03	-1.6848E+01	3.5720E+03	-1.6840E+01	4.2864E+03	-1.6836E+01	4.6436E+03	-1.6828E+01	5.0008E+03
1.0716E+04	-1.7068E+01	8.5728E+03	-1.7063E+01	7.8584E+03	-1.7058E+01	3.5720E+03	-1.7050E+01	4.2864E+03	-1.7046E+01	4.6436E+03	-1.7038E+01	5.0008E+03
1.0716E+04	-1.7276E+01	8.5728E+03	-1.7271E+01	7.8584E+03	-1.7265E+01	3.5720E+03	-1.7258E+01	4.2864E+03	-1.7254E+01	4.6436E+03	-1.7246E+01	5.0008E+03
1.0716E+04	-1.7481E+01	8.5728E+03	-1.7476E+01	7.8584E+03	-1.7471E+01	3.5720E+03	-1.7464E+01	4.2864E+03	-1.7460E+01	4.6436E+03	-1.7452E+01	5.0008E+03
1.0716E+04	-1.7685E+01	8.5728E+03	-1.7680E+01	7.8584E+03	-1.7675E+01	3.5720E+03	-1.7668E+01	4.2864E+03	-1.7664E+01	4.6436E+03	-1.7656E+01	5.0008E+03
1.0716E+04	-1.7887E+01	8.5728E+03	-1.7882E+01	7.8584E+03	-1.7877E+01	3.5720E+03	-1.7870E+01	4.2864E+03	-1.7866E+01	4.6436E+03	-1.7857E+01	5.0008E+03
1.0716E+04	-1.8086E+01	8.5728E+03	-1.8081E+01	7.8584E+03	-1.8076E+01	3.5720E+03	-1.8069E+01	4.2864E+03	-1.8065E+01	4.6436E+03	-1.8057E+01	5.0008E+03
1.0716E+04	-1.8284E+01	8.5728E+03	-1.8279E+01	7.8584E+03	-1.8274E+01	3.5720E+03	-1.8267E+01	4.2864E+03	-1.8264E+01	4.6436E+03	-1.8256E+01	5.0008E+03
1.0716E+04	-1.8480E+01	8.5728E+03	-1.8475E+01	7.8584E+03	-1.8471E+01	3.5720E+03	-1.8464E+01	4.2864E+03	-1.8460E+01	4.6436E+03	-1.8452E+01	5.0008E+03
1.0716E+04	-1.8675E+01	8.5728E+03	-1.8670E+01	7.8584E+03	-1.8665E+01	3.5720E+03	-1.8658E+01	4.2864E+03	-1.8654E+01	4.6436E+03	-1.8647E+01	5.0008E+03
1.0716E+04	-1.8867E+01	8.5728E+03	-1.8863E+01	7.8584E+03	-1.8858E+01	3.5720E+03	-1.8851E+01	4.2864E+03	-1.8847E+01	4.6436E+03	-1.8839E+01	5.0008E+03
1.0716E+04	-1.9058E+01	8.5728E+03	-1.9053E+01	7.8584E+03	-1.9049E+01	3.5720E+03	-1.9042E+01	4.2864E+03	-1.9038E+01	4.6436E+03	-1.9031E+01	5.0008E+03
1.0716E+04	-1.9248E+01	8.5728E+03	-1.9243E+01	7.8584E+03	-1.9238E+01	3.5720E+03	-1.9232E+01	4.2864E+03	-1.9228E+01	4.6436E+03	-1.9220E+01	5.0008E+03
1.0716E+04	-1.9435E+01	8.5728E+03	-1.9431E+01	7.8584E+03	-1.9426E+01	3.5720E+03	-1.9419E+01	4.2864E+03	-1.9416E+01	4.6436E+03	-1.9408E+01	5.0008E+03
1.0716E+04	-1.9621E+01	8.5728E+03	-1.9617E+01	7.8584E+03	-1.9612E+01	3.5720E+03	-1.9606E+01	4.2864E+03	-1.9602E+01	4.6436E+03	-1.9595E+01	5.0008E+03
1.0716E+04	-1.9806E+01	8.5728E+03	-1.9802E+01	7.8584E+03	-1.9797E+01	3.5720E+03	-1.9790E+01	4.2864E+03	-1.9787E+01	4.6436E+03	-1.9779E+01	5.0008E+03
1.0716E+04	-1.9989E+01	8.5728E+03	-1.9985E+01	7.8584E+03	-1.9980E+01	3.5720E+03	-1.9974E+01	4.2864E+03	-1.9970E+01	4.6436E+03	-1.9963E+01	5.0008E+03
1.0716E+04	-2.0171E+01	8.5728E+03	-2.0166E+01	7.8584E+03	-2.0162E+01	3.5720E+03	-2.0156E+01	4.2864E+03	-2.0152E+01	4.6436E+03	-2.0145E+01	5.0008E+03
1.0716E+04	-2.0351E+01	8.5728E+03	-2.0347E+01	7.8584E+03	-2.0342E+01	3.5720E+03	-2.0336E+01	4.2864E+03	-2.0332E+01	4.6436E+03	-2.0325E+01	5.0008E+03
1.0716E+04	-2.0530E+01	8.5728E+03	-2.0526E+01	7.8584E+03	-2.0521E+01	3.5720E+03	-2.0515E+01	4.2864E+03	-2.0511E+01	4.6436E+03	-2.0504E+01	5.0008E+03
1.0716E+04	-2.0708E+01	8.5728E+03	-2.0703E+01	7.8584E+03	-2.0699E+01	3.5720E+03	-2.0693E+01	4.2864E+03	-2.0689E+01	4.6436E+03	-2.0682E+01	5.0008E+03
1.0716E+04	-2.0884E+01	8.5728E+03	-2.0879E+01	7.8584E+03	-2.0875E+01	3.5720E+03	-2.0869E+01	4.2864E+03	-2.0865E+01	4.6436E+03	-2.0858E+01	5.0008E+03
1.0716E+04	-2.1059E+01	8.5728E+03	-2.1054E+01	7.8584E+03	-2.1050E+01	3.5720E+03	-2.1044E+01	4.2864E+03	-2.1040E+01	4.6436E+03	-2.1033E+01	5.0008E+03
1.0716E+04	-2.1232E+01	8.5728E+03	-2.1228E+01	7.8584E+03	-2.1224E+01	3.5720E+03	-2.1218E+01	4.2864E+03	-2.1214E+01	4.6436E+03	-2.1207E+01	5.0008E+03
1.0716E+04	-2.1405E+01	8.5728E+03	-2.1400E+01	7.8584E+03	-2.1396E+01	3.5720E+03	-2.1390E+01	4.2864E+03	-2.1387E+01	4.6436E+03	-2.1380E+01	5.0008E+03
1.0716E+04	-2.1576E+01	8.5728E+03	-2.1571E+01	7.8584E+03	-2.1567E+01	3.5720E+03	-2.1561E+01	4.2864E+03	-2.1558E+01	4.6436E+03	-2.1551E+01	5.0008E+03
1.0716E+04	-2.1746E+01	8.5728E+03	-2.1741E+01	7.8584E+03	-2.1737E+01	3.5720E+03	-2.1731E+01	4.2864E+03	-2.1728E+01	4.6436E+03	-2.1721E+01	5.0008E+03
1.0716E+04	-2.1914E+01	8.5728E+03	-2.1910E+01	7.8584E+03	-2.1906E+01	3.5720E+03	-2.1900E+01	4.2864E+03	-2.1897E+01	4.6436E+03	-2.1890E+01	5.0008E+03
1.0716E+04	-2.2082E+01	8.5728E+03	-2.2078E+01	7.8584E+03	-2.2074E+01	3.5720E+03	-2.2068E+01	4.2864E+03	-2.2064E+01	4.6436E+03	-2.2058E+01	5.0008E+03
1.0716E+04	-2.2248E+01	8.5728E+03	-2.2244E+01	7.8584E+03	-2.2240E+01	3.5720E+03	-2.2234E+01	4.2864E+03	-2.2231E+01	4.6436E+03	-2.2224E+01	5.0008E+03
1.0716E+04	-2.2414E+01	8.5728E+03	-2.2410E+01	7.8584E+03	-2.2406E+01	3.5720E+03	-2.2400E+01	4.2864E+03	-2.2396E+01	4.6436E+03	-2.2390E+01	5.0008E+03
1.0716E+04	-2.2578E+01	8.5728E+03	-2.2574E+01	7.8584E+03	-2.2570E+01	3.5720E+03	-2.2564E+01	4.2864E+03	-2.2561E+01	4.6436E+03	-2.2554E+01	5.0008E+03
1.0716E+04	-2.2741E+01	8.5728E+03	-2.2737E+01	7.8584E+03	-2.2733E+01	3.5720E+03	-2.2727E+01	4.2864E+03	-2.2724E+01	4.6436E+03	-2.2718E+01	5.0008E+03
1.0716E+04	-2.2903E+01	8.5728E+03	-2.2899E+01	7.8584E+03	-2.2895E+01	3.5720E+03	-2.2889E+01	4.2864E+03	-2.2886E+01	4.6436E+03	-2.2880E+01	5.0008E+03
1.0716E+04	-2.3064E+01	8.5728E+03	-2.3060E+01	7.8584E+03	-2.3056E+01	3.5720E+03	-2.3051E+01	4.2864E+03	-2.3047E+01	4.6436E+03	-2.3041E+01	5.0008E+03

Curve 6	Arg 7	Curve 7	Arg 8	Curve 8	Arg 9	Curve 9	Arg 10	Curve 10	Arg 11	Curve 11	Arg 12	Curve 12
1.0716E+04	-2.3224E+01	8.5728E+03	-2.3220E+01	7.8584E+03	-2.3216E+01	3.5720E+03	-2.3211E+01	4.2864E+03	-2.3208E+01	4.6436E+03	-2.3201E+01	5.0008E+03
1.0716E+04	-2.3383E+01	8.5728E+03	-2.3379E+01	7.8584E+03	-2.3375E+01	3.5720E+03	-2.3370E+01	4.2864E+03	-2.3367E+01	4.6436E+03	-2.3360E+01	5.0008E+03
1.0716E+04	-2.3541E+01	8.5728E+03	-2.3538E+01	7.8584E+03	-2.3534E+01	3.5720E+03	-2.3528E+01	4.2864E+03	-2.3525E+01	4.6436E+03	-2.3519E+01	5.0008E+03
1.0716E+04	-2.3699E+01	8.5728E+03	-2.3695E+01	7.8584E+03	-2.3691E+01	3.5720E+03	-2.3685E+01	4.2864E+03	-2.3682E+01	4.6436E+03	-2.3676E+01	5.0008E+03
1.0716E+04	-2.3855E+01	8.5728E+03	-2.3851E+01	7.8584E+03	-2.3847E+01	3.5720E+03	-2.3842E+01	4.2864E+03	-2.3838E+01	4.6436E+03	-2.3832E+01	5.0008E+03
1.0716E+04	-2.4010E+01	8.5728E+03	-2.4006E+01	7.8584E+03	-2.4002E+01	3.5720E+03	-2.3997E+01	4.2864E+03	-2.3994E+01	4.6436E+03	-2.3988E+01	5.0008E+03
1.0716E+04	-2.4164E+01	8.5728E+03	-2.4160E+01	7.8584E+03	-2.4157E+01	3.5720E+03	-2.4151E+01	4.2864E+03	-2.4148E+01	4.6436E+03	-2.4142E+01	5.0008E+03
1.0716E+04	-2.4318E+01	8.5728E+03	-2.4314E+01	7.8584E+03	-2.4310E+01	3.5720E+03	-2.4305E+01	4.2864E+03	-2.4302E+01	4.6436E+03	-2.4296E+01	5.0008E+03
1.0716E+04	-2.4470E+01	8.5728E+03	-2.4466E+01	7.8584E+03	-2.4463E+01	3.5720E+03	-2.4457E+01	4.2864E+03	-2.4454E+01	4.6436E+03	-2.4448E+01	5.0008E+03
1.0716E+04	-2.4622E+01	8.5728E+03	-2.4618E+01	7.8584E+03	-2.4614E+01	3.5720E+03	-2.4609E+01	4.2864E+03	-2.4606E+01	4.6436E+03	-2.4600E+01	5.0008E+03
1.0716E+04	-2.4773E+01	8.5728E+03	-2.4769E+01	7.8584E+03	-2.4765E+01	3.5720E+03	-2.4760E+01	4.2864E+03	-2.4757E+01	4.6436E+03	-2.4751E+01	5.0008E+03
1.0716E+04	-2.4923E+01	8.5728E+03	-2.4919E+01	7.8584E+03	-2.4915E+01	3.5720E+03	-2.4910E+01	4.2864E+03	-2.4907E+01	4.6436E+03	-2.4901E+01	5.0008E+03
1.0716E+04	-2.5072E+01	8.5728E+03	-2.5068E+01	7.8584E+03	-2.5064E+01	3.5720E+03	-2.5059E+01	4.2864E+03	-2.5056E+01	4.6436E+03	-2.5050E+01	5.0008E+03
1.0716E+04	-2.5220E+01	8.5728E+03	-2.5216E+01	7.8584E+03	-2.5213E+01	3.5720E+03	-2.5208E+01	4.2864E+03	-2.5205E+01	4.6436E+03	-2.5199E+01	5.0008E+03
1.0716E+04	-2.5368E+01	8.5728E+03	-2.5364E+01	7.8584E+03	-2.5360E+01	3.5720E+03	-2.5355E+01	4.2864E+03	-2.5352E+01	4.6436E+03	-2.5346E+01	5.0008E+03
1.0716E+04	-2.5514E+01	8.5728E+03	-2.5511E+01	7.8584E+03	-2.5507E+01	3.5720E+03	-2.5502E+01	4.2864E+03	-2.5499E+01	4.6436E+03	-2.5493E+01	5.0008E+03
1.0716E+04	-2.5660E+01	8.5728E+03	-2.5657E+01	7.8584E+03	-2.5653E+01	3.5720E+03	-2.5648E+01	4.2864E+03	-2.5645E+01	4.6436E+03	-2.5639E+01	5.0008E+03
1.0716E+04	-2.5806E+01	8.5728E+03	-2.5802E+01	7.8584E+03	-2.5798E+01	3.5720E+03	-2.5793E+01	4.2864E+03	-2.5790E+01	4.6436E+03	-2.5785E+01	5.0008E+03
1.0716E+04	-2.5950E+01	8.5728E+03	-2.5946E+01	7.8584E+03	-2.5943E+01	3.5720E+03	-2.5938E+01	4.2864E+03	-2.5935E+01	4.6436E+03	-2.5929E+01	5.0008E+03
1.0716E+04	-2.6094E+01	8.5728E+03	-2.6090E+01	7.8584E+03	-2.6086E+01	3.5720E+03	-2.6081E+01	4.2864E+03	-2.6079E+01	4.6436E+03	-2.6073E+01	5.0008E+03
1.0716E+04	-2.6237E+01	8.5728E+03	-2.6233E+01	7.8584E+03	-2.6229E+01	3.5720E+03	-2.6224E+01	4.2864E+03	-2.6222E+01	4.6436E+03	-2.6216E+01	5.0008E+03
1.0716E+04	-2.6379E+01	8.5728E+03	-2.6375E+01	7.8584E+03	-2.6372E+01	3.5720E+03	-2.6367E+01	4.2864E+03	-2.6364E+01	4.6436E+03	-2.6358E+01	5.0008E+03
1.0716E+04	-2.6520E+01	8.5728E+03	-2.6517E+01	7.8584E+03	-2.6513E+01	3.5720E+03	-2.6508E+01	4.2864E+03	-2.6505E+01	4.6436E+03	-2.6500E+01	5.0008E+03
1.0716E+04	-2.6661E+01	8.5728E+03	-2.6658E+01	7.8584E+03	-2.6654E+01	3.5720E+03	-2.6649E+01	4.2864E+03	-2.6646E+01	4.6436E+03	-2.6641E+01	5.0008E+03
1.0716E+04	-2.6801E+01	8.5728E+03	-2.6798E+01	7.8584E+03	-2.6794E+01	3.5720E+03	-2.6789E+01	4.2864E+03	-2.6787E+01	4.6436E+03	-2.6781E+01	5.0008E+03
1.0716E+04	-2.6941E+01	8.5728E+03	-2.6937E+01	7.8584E+03	-2.6934E+01	3.5720E+03	-2.6929E+01	4.2864E+03	-2.6926E+01	4.6436E+03	-2.6920E+01	5.0008E+03
1.0716E+04	-2.7079E+01	8.5728E+03	-2.7076E+01	7.8584E+03	-2.7072E+01	3.5720E+03	-2.7068E+01	4.2864E+03	-2.7065E+01	4.6436E+03	-2.7059E+01	5.0008E+03
1.0716E+04	-2.7217E+01	8.5728E+03	-2.7214E+01	7.8584E+03	-2.7211E+01	3.5720E+03	-2.7206E+01	4.2864E+03	-2.7203E+01	4.6436E+03	-2.7197E+01	5.0008E+03
1.0716E+04	-2.7355E+01	8.5728E+03	-2.7351E+01	7.8584E+03	-2.7348E+01	3.5720E+03	-2.7343E+01	4.2864E+03	-2.7341E+01	4.6436E+03	-2.7335E+01	5.0008E+03
1.0716E+04	-2.7492E+01	8.5728E+03	-2.7488E+01	7.8584E+03	-2.7485E+01	3.5720E+03	-2.7480E+01	4.2864E+03	-2.7477E+01	4.6436E+03	-2.7472E+01	5.0008E+03
1.0716E+04	-2.7628E+01	8.5728E+03	-2.7624E+01	7.8584E+03	-2.7621E+01	3.5720E+03	-2.7616E+01	4.2864E+03	-2.7614E+01	4.6436E+03	-2.7608E+01	5.0008E+03
1.0716E+04	-2.7763E+01	8.5728E+03	-2.7760E+01	7.8584E+03	-2.7757E+01	3.5720E+03	-2.7752E+01	4.2864E+03	-2.7749E+01	4.6436E+03	-2.7744E+01	5.0008E+03
1.0716E+04	-2.7898E+01	8.5728E+03	-2.7895E+01	7.8584E+03	-2.7892E+01	3.5720E+03	-2.7887E+01	4.2864E+03	-2.7884E+01	4.6436E+03	-2.7879E+01	5.0008E+03
1.0716E+04	-2.8033E+01	8.5728E+03	-2.8029E+01	7.8584E+03	-2.8026E+01	3.5720E+03	-2.8021E+01	4.2864E+03	-2.8018E+01	4.6436E+03	-2.8013E+01	5.0008E+03
1.0716E+04	-2.8166E+01	8.5728E+03	-2.8163E+01	7.8584E+03	-2.8160E+01	3.5720E+03	-2.8155E+01	4.2864E+03	-2.8152E+01	4.6436E+03	-2.8147E+01	5.0008E+03
1.0716E+04	-2.8299E+01	8.5728E+03	-2.8296E+01	7.8584E+03	-2.8293E+01	3.5720E+03	-2.8288E+01	4.2864E+03	-2.8285E+01	4.6436E+03	-2.8280E+01	5.0008E+03
1.0716E+04	-2.8432E+01	8.5728E+03	-2.8429E+01	7.8584E+03	-2.8425E+01	3.5720E+03	-2.8421E+01	4.2864E+03	-2.8418E+01	4.6436E+03	-2.8413E+01	5.0008E+03
1.0716E+04	-2.8564E+01	8.5728E+03	-2.8560E+01	7.8584E+03	-2.8557E+01	3.5720E+03	-2.8553E+01	4.2864E+03	-2.8550E+01	4.6436E+03	-2.8545E+01	5.0008E+03
1.0716E+04	-2.8695E+01	8.5728E+03	-2.8692E+01	7.8584E+03	-2.8689E+01	3.5720E+03	-2.8684E+01	4.2864E+03	-2.8681E+01	4.6436E+03	-2.8676E+01	5.0008E+03
1.0716E+04	-2.8826E+01	8.5728E+03	-2.8823E+01	7.8584E+03	-2.8819E+01	3.5720E+03	-2.8815E+01	4.2864E+03	-2.8812E+01	4.6436E+03	-2.8807E+01	5.0008E+03
1.0716E+04	-2.8956E+01	8.5728E+03	-2.8953E+01	7.8584E+03	-2.8950E+01	3.5720E+03	-2.8945E+01	4.2864E+03	-2.8942E+01	4.6436E+03	-2.8937E+01	5.0008E+03
1.0716E+04	-2.9086E+01	8.5728E+03	-2.9082E+01	7.8584E+03	-2.9079E+01	3.5720E+03	-2.9075E+01	4.2864E+03	-2.9072E+01	4.6436E+03	-2.9067E+01	5.0008E+03
1.0716E+04	-2.9215E+01	8.5728E+03	-2.9212E+01	7.8584E+03	-2.9208E+01	3.5720E+03	-2.9204E+01	4.2864E+03	-2.9201E+01	4.6436E+03	-2.9196E+01	5.0008E+03
1.0716E+04	-2.9343E+01	8.5728E+03	-2.9340E+01	7.8584E+03	-2.9337E+01	3.5720E+03	-2.9332E+01	4.2864E+03	-2.9330E+01	4.6436E+03	-2.9325E+01	5.0008E+03
1.0716E+04	-2.9471E+01	8.5728E+03	-2.9468E+01	7.8584E+03	-2.9465E+01	3.5720E+03	-2.9461E+01	4.2864E+03	-2.9458E+01	4.6436E+03	-2.9453E+01	5.0008E+03
1.0716E+04	-2.9599E+01	8.5728E+03	-2.9596E+01	7.8584E+03	-2.9593E+01	3.5720E+03	-2.9588E+01	4.2864E+03	-2.9586E+01	4.6436E+03	-2.9580E+01	5.0008E+03
1.0716E+04	-2.9726E+01	8.5728E+03	-2.9723E+01	7.8584E+03	-2.9720E+01	3.5720E+03	-2.9715E+01	4.2864E+03	-2.9713E+01	4.6436E+03	-2.9708E+01	5.0008E+03
1.0716E+04	-2.9852E+01	8.5728E+03	-2.9849E+01	7.8584E+03	-2.9846E+01	3.5720E+03	-2.9842E+01	4.2864E+03	-2.9839E+01	4.6436E+03	-2.9834E+01	5.0008E+03
1.0716E+04	-2.9978E+01	8.5728E+03	-2.9975E+01	7.8584E+03	-2.9972E+01	3.5720E+03	-2.9968E+01	4.2864E+03	-2.9965E+01	4.6436E+03	-2.9960E+01	5.0008E+03
1.0716E+04	-3.0104E+01	8.5728E+03	-3.0101E+01	7.8584E+03	-3.0098E+01	3.5720E+03	-3.0093E+01	4.2864E+03	-3.0091E+01	4.6436E+03	-3.0086E+01	5.0008E+03
1.0716E+04	-3.0229E+01	8.5728E+03	-3.0226E+01	7.8584E+03	-3.0223E+01	3.5720E+03	-3.0218E+01	4.2864E+03	-3.0216E+01	4.6436E+03	-3.0211E+01	5.0008E+03
1.0716E+04	-3.0353E+01	8.5728E+03	-3.0350E+01	7.8584E+03	-3.0347E+01	3.5720E+03	-3.0343E+01	4.2864E+03	-3.0340E+01	4.6436E+03	-3.0335E+01	5.0008E+03

Curve 6	Arg 7	Curve 7	Arg 8	Curve 8	Arg 9	Curve 9	Arg 10	Curve 10	Arg 11	Curve 11	Arg 12	Curve 12
1.0716E+04	-3.0477E+01	8.5728E+03	-3.0474E+01	7.8584E+03	-3.0471E+01	3.5720E+03	-3.0467E+01	4.2864E+03	-3.0464E+01	4.6436E+03	-3.0459E+01	5.0008E+03
1.0716E+04	-3.0601E+01	8.5728E+03	-3.0598E+01	7.8584E+03	-3.0595E+01	3.5720E+03	-3.0590E+01	4.2864E+03	-3.0588E+01	4.6436E+03	-3.0583E+01	5.0008E+03
1.0716E+04	-3.0724E+01	8.5728E+03	-3.0721E+01	7.8584E+03	-3.0718E+01	3.5720E+03	-3.0713E+01	4.2864E+03	-3.0711E+01	4.6436E+03	-3.0706E+01	5.0008E+03
1.0716E+04	-3.0846E+01	8.5728E+03	-3.0843E+01	7.8584E+03	-3.0840E+01	3.5720E+03	-3.0836E+01	4.2864E+03	-3.0834E+01	4.6436E+03	-3.0829E+01	5.0008E+03
1.0716E+04	-3.0968E+01	8.5728E+03	-3.0965E+01	7.8584E+03	-3.0962E+01	3.5720E+03	-3.0958E+01	4.2864E+03	-3.0956E+01	4.6436E+03	-3.0951E+01	5.0008E+03
1.0716E+04	-3.1090E+01	8.5728E+03	-3.1087E+01	7.8584E+03	-3.1084E+01	3.5720E+03	-3.1080E+01	4.2864E+03	-3.1077E+01	4.6436E+03	-3.1072E+01	5.0008E+03
1.0716E+04	-3.1211E+01	8.5728E+03	-3.1208E+01	7.8584E+03	-3.1205E+01	3.5720E+03	-3.1201E+01	4.2864E+03	-3.1199E+01	4.6436E+03	-3.1194E+01	5.0008E+03
1.0716E+04	-3.1332E+01	8.5728E+03	-3.1329E+01	7.8584E+03	-3.1326E+01	3.5720E+03	-3.1322E+01	4.2864E+03	-3.1319E+01	4.6436E+03	-3.1315E+01	5.0008E+03
1.0716E+04	-3.1452E+01	8.5728E+03	-3.1449E+01	7.8584E+03	-3.1446E+01	3.5720E+03	-3.1442E+01	4.2864E+03	-3.1440E+01	4.6436E+03	-3.1435E+01	5.0008E+03
1.0716E+04	-3.1572E+01	8.5728E+03	-3.1569E+01	7.8584E+03	-3.1566E+01	3.5720E+03	-3.1562E+01	4.2864E+03	-3.1560E+01	4.6436E+03	-3.1555E+01	5.0008E+03
1.0716E+04	-3.1692E+01	8.5728E+03	-3.1689E+01	7.8584E+03	-3.1686E+01	3.5720E+03	-3.1681E+01	4.2864E+03	-3.1679E+01	4.6436E+03	-3.1674E+01	5.0008E+03
1.0716E+04	-3.1811E+01	8.5728E+03	-3.1808E+01	7.8584E+03	-3.1805E+01	3.5720E+03	-3.1800E+01	4.2864E+03	-3.1798E+01	4.6436E+03	-3.1793E+01	5.0008E+03
1.0716E+04	-3.1929E+01	8.5728E+03	-3.1926E+01	7.8584E+03	-3.1923E+01	3.5720E+03	-3.1919E+01	4.2864E+03	-3.1917E+01	4.6436E+03	-3.1912E+01	5.0008E+03
1.0716E+04	-3.2047E+01	8.5728E+03	-3.2044E+01	7.8584E+03	-3.2041E+01	3.5720E+03	-3.2037E+01	4.2864E+03	-3.2035E+01	4.6436E+03	-3.2030E+01	5.0008E+03
1.0716E+04	-3.2165E+01	8.5728E+03	-3.2162E+01	7.8584E+03	-3.2159E+01	3.5720E+03	-3.2155E+01	4.2864E+03	-3.2153E+01	4.6436E+03	-3.2148E+01	5.0008E+03
1.0716E+04	-3.2282E+01	8.5728E+03	-3.2279E+01	7.8584E+03	-3.2276E+01	3.5720E+03	-3.2272E+01	4.2864E+03	-3.2270E+01	4.6436E+03	-3.2265E+01	5.0008E+03
1.0716E+04	-3.2399E+01	8.5728E+03	-3.2396E+01	7.8584E+03	-3.2393E+01	3.5720E+03	-3.2389E+01	4.2864E+03	-3.2387E+01	4.6436E+03	-3.2382E+01	5.0008E+03
1.0716E+04	-3.2516E+01	8.5728E+03	-3.2513E+01	7.8584E+03	-3.2510E+01	3.5720E+03	-3.2506E+01	4.2864E+03	-3.2503E+01	4.6436E+03	-3.2499E+01	5.0008E+03
1.0716E+04	-3.2632E+01	8.5728E+03	-3.2629E+01	7.8584E+03	-3.2626E+01	3.5720E+03	-3.2622E+01	4.2864E+03	-3.2620E+01	4.6436E+03	-3.2615E+01	5.0008E+03
1.0716E+04	-3.2747E+01	8.5728E+03	-3.2745E+01	7.8584E+03	-3.2742E+01	3.5720E+03	-3.2738E+01	4.2864E+03	-3.2735E+01	4.6436E+03	-3.2731E+01	5.0008E+03
1.0716E+04	-3.2863E+01	8.5728E+03	-3.2860E+01	7.8584E+03	-3.2857E+01	3.5720E+03	-3.2853E+01	4.2864E+03	-3.2851E+01	4.6436E+03	-3.2846E+01	5.0008E+03
1.0716E+04	-3.2978E+01	8.5728E+03	-3.2975E+01	7.8584E+03	-3.2972E+01	3.5720E+03	-3.2968E+01	4.2864E+03	-3.2966E+01	4.6436E+03	-3.2961E+01	5.0008E+03
1.0716E+04	-3.3092E+01	8.5728E+03	-3.3089E+01	7.8584E+03	-3.3086E+01	3.5720E+03	-3.3082E+01	4.2864E+03	-3.3080E+01	4.6436E+03	-3.3076E+01	5.0008E+03
1.0716E+04	-3.3206E+01	8.5728E+03	-3.3204E+01	7.8584E+03	-3.3201E+01	3.5720E+03	-3.3197E+01	4.2864E+03	-3.3194E+01	4.6436E+03	-3.3190E+01	5.0008E+03
1.0716E+04	-3.3320E+01	8.5728E+03	-3.3317E+01	7.8584E+03	-3.3314E+01	3.5720E+03	-3.3310E+01	4.2864E+03	-3.3308E+01	4.6436E+03	-3.3304E+01	5.0008E+03
1.0716E+04	-3.3434E+01	8.5728E+03	-3.3431E+01	7.8584E+03	-3.3428E+01	3.5720E+03	-3.3424E+01	4.2864E+03	-3.3422E+01	4.6436E+03	-3.3417E+01	5.0008E+03
1.0716E+04	-3.3547E+01	8.5728E+03	-3.3544E+01	7.8584E+03	-3.3541E+01	3.5720E+03	-3.3537E+01	4.2864E+03	-3.3535E+01	4.6436E+03	-3.3530E+01	5.0008E+03
1.0716E+04	-3.3659E+01	8.5728E+03	-3.3656E+01	7.8584E+03	-3.3654E+01	3.5720E+03	-3.3650E+01	4.2864E+03	-3.3647E+01	4.6436E+03	-3.3643E+01	5.0008E+03
1.0716E+04	-3.3772E+01	8.5728E+03	-3.3769E+01	7.8584E+03	-3.3766E+01	3.5720E+03	-3.3762E+01	4.2864E+03	-3.3760E+01	4.6436E+03	-3.3755E+01	5.0008E+03
1.0716E+04	-3.3883E+01	8.5728E+03	-3.3881E+01	7.8584E+03	-3.3878E+01	3.5720E+03	-3.3874E+01	4.2864E+03	-3.3872E+01	4.6436E+03	-3.3867E+01	5.0008E+03
1.0716E+04	-3.3995E+01	8.5728E+03	-3.3992E+01	7.8584E+03	-3.3989E+01	3.5720E+03	-3.3986E+01	4.2864E+03	-3.3983E+01	4.6436E+03	-3.3979E+01	5.0008E+03
1.0716E+04	-3.4106E+01	8.5728E+03	-3.4103E+01	7.8584E+03	-3.4101E+01	3.5720E+03	-3.4097E+01	4.2864E+03	-3.4095E+01	4.6436E+03	-3.4090E+01	5.0008E+03
1.0716E+04	-3.4217E+01	8.5728E+03	-3.4214E+01	7.8584E+03	-3.4212E+01	3.5720E+03	-3.4208E+01	4.2864E+03	-3.4206E+01	4.6436E+03	-3.4201E+01	5.0008E+03
1.0716E+04	-3.4328E+01	8.5728E+03	-3.4325E+01	7.8584E+03	-3.4322E+01	3.5720E+03	-3.4318E+01	4.2864E+03	-3.4316E+01	4.6436E+03	-3.4312E+01	5.0008E+03
1.0716E+04	-3.4438E+01	8.5728E+03	-3.4435E+01	7.8584E+03	-3.4432E+01	3.5720E+03	-3.4428E+01	4.2864E+03	-3.4426E+01	4.6436E+03	-3.4422E+01	5.0008E+03
1.0716E+04	-3.4548E+01	8.5728E+03	-3.4545E+01	7.8584E+03	-3.4542E+01	3.5720E+03	-3.4538E+01	4.2864E+03	-3.4536E+01	4.6436E+03	-3.4532E+01	5.0008E+03
1.0716E+04	-3.4657E+01	8.5728E+03	-3.4654E+01	7.8584E+03	-3.4652E+01	3.5720E+03	-3.4648E+01	4.2864E+03	-3.4646E+01	4.6436E+03	-3.4641E+01	5.0008E+03
1.0716E+04	-3.4766E+01	8.5728E+03	-3.4764E+01	7.8584E+03	-3.4761E+01	3.5720E+03	-3.4757E+01	4.2864E+03	-3.4755E+01	4.6436E+03	-3.4751E+01	5.0008E+03
1.0716E+04	-3.4875E+01	8.5728E+03	-3.4872E+01	7.8584E+03	-3.4870E+01	3.5720E+03	-3.4866E+01	4.2864E+03	-3.4864E+01	4.6436E+03	-3.4859E+01	5.0008E+03
1.0716E+04	-3.4984E+01	8.5728E+03	-3.4981E+01	7.8584E+03	-3.4978E+01	3.5720E+03	-3.4975E+01	4.2864E+03	-3.4972E+01	4.6436E+03	-3.4968E+01	5.0008E+03
1.0716E+04	-3.5092E+01	8.5728E+03	-3.5089E+01	7.8584E+03	-3.5087E+01	3.5720E+03	-3.5083E+01	4.2864E+03	-3.5081E+01	4.6436E+03	-3.5076E+01	5.0008E+03
1.0716E+04	-3.5200E+01	8.5728E+03	-3.5197E+01	7.8584E+03	-3.5194E+01	3.5720E+03	-3.5191E+01	4.2864E+03	-3.5188E+01	4.6436E+03	-3.5184E+01	5.0008E+03
1.0716E+04	-3.5307E+01	8.5728E+03	-3.5305E+01	7.8584E+03	-3.5302E+01	3.5720E+03	-3.5298E+01	4.2864E+03	-3.5296E+01	4.6436E+03	-3.5292E+01	5.0008E+03
1.0716E+04	-3.5415E+01	8.5728E+03	-3.5412E+01	7.8584E+03	-3.5409E+01	3.5720E+03	-3.5405E+01	4.2864E+03	-3.5403E+01	4.6436E+03	-3.5399E+01	5.0008E+03
1.0716E+04	-3.5521E+01	8.5728E+03	-3.5519E+01	7.8584E+03	-3.5516E+01	3.5720E+03	-3.5512E+01	4.2864E+03	-3.5510E+01	4.6436E+03	-3.5506E+01	5.0008E+03
1.0716E+04	-3.5628E+01	8.5728E+03	-3.5625E+01	7.8584E+03	-3.5623E+01	3.5720E+03	-3.5619E+01	4.2864E+03	-3.5617E+01	4.6436E+03	-3.5613E+01	5.0008E+03
1.0716E+04	-3.5734E+01	8.5728E+03	-3.5732E+01	7.8584E+03	-3.5729E+01	3.5720E+03	-3.5725E+01	4.2864E+03	-3.5723E+01	4.6436E+03	-3.5719E+01	5.0008E+03
1.0716E+04	-3.5840E+01	8.5728E+03	-3.5838E+01	7.8584E+03	-3.5835E+01	3.5720E+03	-3.5831E+01	4.2864E+03	-3.5829E+01	4.6436E+03	-3.5825E+01	5.0008E+03
1.0716E+04	-3.5946E+01	8.5728E+03	-3.5943E+01	7.8584E+03	-3.5941E+01	3.5720E+03	-3.5937E+01	4.2864E+03	-3.5935E+01	4.6436E+03	-3.5931E+01	5.0008E+03
1.0716E+04	-3.6051E+01	8.5728E+03	-3.6049E+01	7.8584E+03	-3.6046E+01	3.5720E+03	-3.6042E+01	4.2864E+03	-3.6040E+01	4.6436E+03	-3.6036E+01	5.0008E+03
1.0716E+04	-3.6156E+01	8.5728E+03	-3.6154E+01	7.8584E+03	-3.6151E+01	3.5720E+03	-3.6148E+01	4.2864E+03	-3.6145E+01	4.6436E+03	-3.6141E+01	5.0008E+03
1.0716E+04	-3.6261E+01	8.5728E+03	-3.6259E+01	7.8584E+03	-3.6256E+01	3.5720E+03	-3.6252E+01	4.2864E+03	-3.6250E+01	4.6436E+03	-3.6246E+01	5.0008E+03

Curve 6	Arg 7	Curve 7	Arg 8	Curve 8	Arg 9	Curve 9	Arg 10	Curve 10	Arg 11	Curve 11	Arg 12	Curve 12
1.0716E+04	-3.6366E+01	8.5728E+03	-3.6363E+01	7.8584E+03	-3.6361E+01	3.5720E+03	-3.6357E+01	4.2864E+03	-3.6355E+01	4.6436E+03	-3.6351E+01	5.0008E+03
1.0716E+04	-3.6470E+01	8.5728E+03	-3.6467E+01	7.8584E+03	-3.6465E+01	3.5720E+03	-3.6461E+01	4.2864E+03	-3.6459E+01	4.6436E+03	-3.6455E+01	5.0008E+03
1.0716E+04	-3.6574E+01	8.5728E+03	-3.6571E+01	7.8584E+03	-3.6569E+01	3.5720E+03	-3.6565E+01	4.2864E+03	-3.6563E+01	4.6436E+03	-3.6559E+01	5.0008E+03
1.0716E+04	-3.6677E+01	8.5728E+03	-3.6675E+01	7.8584E+03	-3.6672E+01	3.5720E+03	-3.6669E+01	4.2864E+03	-3.6667E+01	4.6436E+03	-3.6662E+01	5.0008E+03
1.0716E+04	-3.6781E+01	8.5728E+03	-3.6778E+01	7.8584E+03	-3.6776E+01	3.5720E+03	-3.6772E+01	4.2864E+03	-3.6770E+01	4.6436E+03	-3.6766E+01	5.0008E+03
1.0716E+04	-3.6884E+01	8.5728E+03	-3.6881E+01	7.8584E+03	-3.6879E+01	3.5720E+03	-3.6875E+01	4.2864E+03	-3.6873E+01	4.6436E+03	-3.6869E+01	5.0008E+03
1.0716E+04	-3.6987E+01	8.5728E+03	-3.6984E+01	7.8584E+03	-3.6982E+01	3.5720E+03	-3.6978E+01	4.2864E+03	-3.6976E+01	4.6436E+03	-3.6972E+01	5.0008E+03
1.0716E+04	-3.7089E+01	8.5728E+03	-3.7087E+01	7.8584E+03	-3.7084E+01	3.5720E+03	-3.7080E+01	4.2864E+03	-3.7078E+01	4.6436E+03	-3.7074E+01	5.0008E+03
1.0716E+04	-3.7191E+01	8.5728E+03	-3.7189E+01	7.8584E+03	-3.7186E+01	3.5720E+03	-3.7183E+01	4.2864E+03	-3.7181E+01	4.6436E+03	-3.7177E+01	5.0008E+03
1.0716E+04	-3.7293E+01	8.5728E+03	-3.7291E+01	7.8584E+03	-3.7288E+01	3.5720E+03	-3.7285E+01	4.2864E+03	-3.7283E+01	4.6436E+03	-3.7279E+01	5.0008E+03
1.0716E+04	-3.7395E+01	8.5728E+03	-3.7392E+01	7.8584E+03	-3.7390E+01	3.5720E+03	-3.7386E+01	4.2864E+03	-3.7384E+01	4.6436E+03	-3.7380E+01	5.0008E+03
1.0716E+04	-3.7496E+01	8.5728E+03	-3.7494E+01	7.8584E+03	-3.7491E+01	3.5720E+03	-3.7488E+01	4.2864E+03	-3.7486E+01	4.6436E+03	-3.7482E+01	5.0008E+03
1.0716E+04	-3.7598E+01	8.5728E+03	-3.7595E+01	7.8584E+03	-3.7593E+01	3.5720E+03	-3.7589E+01	4.2864E+03	-3.7587E+01	4.6436E+03	-3.7583E+01	5.0008E+03
1.0716E+04	-3.7698E+01	8.5728E+03	-3.7696E+01	7.8584E+03	-3.7693E+01	3.5720E+03	-3.7690E+01	4.2864E+03	-3.7688E+01	4.6436E+03	-3.7684E+01	5.0008E+03
1.0716E+04	-3.7799E+01	8.5728E+03	-3.7797E+01	7.8584E+03	-3.7794E+01	3.5720E+03	-3.7791E+01	4.2864E+03	-3.7789E+01	4.6436E+03	-3.7784E+01	5.0008E+03
1.0716E+04	-3.7899E+01	8.5728E+03	-3.7897E+01	7.8584E+03	-3.7894E+01	3.5720E+03	-3.7891E+01	4.2864E+03	-3.7889E+01	4.6436E+03	-3.7885E+01	5.0008E+03
1.0716E+04	-3.8000E+01	8.5728E+03	-3.7997E+01	7.8584E+03	-3.7995E+01	3.5720E+03	-3.7991E+01	4.2864E+03	-3.7989E+01	4.6436E+03	-3.7985E+01	5.0008E+03
1.0716E+04	-3.8099E+01	8.5728E+03	-3.8097E+01	7.8584E+03	-3.8094E+01	3.5720E+03	-3.8091E+01	4.2864E+03	-3.8089E+01	4.6436E+03	-3.8085E+01	5.0008E+03
1.0716E+04	-3.8199E+01	8.5728E+03	-3.8196E+01	7.8584E+03	-3.8194E+01	3.5720E+03	-3.8190E+01	4.2864E+03	-3.8188E+01	4.6436E+03	-3.8184E+01	5.0008E+03
1.0716E+04	-3.8298E+01	8.5728E+03	-3.8296E+01	7.8584E+03	-3.8293E+01	3.5720E+03	-3.8290E+01	4.2864E+03	-3.8288E+01	4.6436E+03	-3.8284E+01	5.0008E+03
1.0716E+04	-3.8397E+01	8.5728E+03	-3.8395E+01	7.8584E+03	-3.8392E+01	3.5720E+03	-3.8389E+01	4.2864E+03	-3.8387E+01	4.6436E+03	-3.8383E+01	5.0008E+03
1.0716E+04	-3.8496E+01	8.5728E+03	-3.8494E+01	7.8584E+03	-3.8491E+01	3.5720E+03	-3.8488E+01	4.2864E+03	-3.8486E+01	4.6436E+03	-3.8482E+01	5.0008E+03
1.0716E+04	-3.8595E+01	8.5728E+03	-3.8592E+01	7.8584E+03	-3.8590E+01	3.5720E+03	-3.8586E+01	4.2864E+03	-3.8584E+01	4.6436E+03	-3.8580E+01	5.0008E+03
1.0716E+04	-3.8693E+01	8.5728E+03	-3.8691E+01	7.8584E+03	-3.8688E+01	3.5720E+03	-3.8685E+01	4.2864E+03	-3.8683E+01	4.6436E+03	-3.8679E+01	5.0008E+03
1.0716E+04	-3.8791E+01	8.5728E+03	-3.8789E+01	7.8584E+03	-3.8786E+01	3.5720E+03	-3.8783E+01	4.2864E+03	-3.8781E+01	4.6436E+03	-3.8777E+01	5.0008E+03
1.0716E+04	-3.8889E+01	8.5728E+03	-3.8887E+01	7.8584E+03	-3.8884E+01	3.5720E+03	-3.8881E+01	4.2864E+03	-3.8879E+01	4.6436E+03	-3.8875E+01	5.0008E+03
1.0716E+04	-3.8987E+01	8.5728E+03	-3.8984E+01	7.8584E+03	-3.8982E+01	3.5720E+03	-3.8978E+01	4.2864E+03	-3.8976E+01	4.6436E+03	-3.8972E+01	5.0008E+03
1.0716E+04	-3.9084E+01	8.5728E+03	-3.9082E+01	7.8584E+03	-3.9079E+01	3.5720E+03	-3.9076E+01	4.2864E+03	-3.9074E+01	4.6436E+03	-3.9070E+01	5.0008E+03
1.0716E+04	-3.9181E+01	8.5728E+03	-3.9179E+01	7.8584E+03	-3.9176E+01	3.5720E+03	-3.9173E+01	4.2864E+03	-3.9171E+01	4.6436E+03	-3.9167E+01	5.0008E+03
1.0716E+04	-3.9278E+01	8.5728E+03	-3.9276E+01	7.8584E+03	-3.9273E+01	3.5720E+03	-3.9270E+01	4.2864E+03	-3.9268E+01	4.6436E+03	-3.9264E+01	5.0008E+03
1.0716E+04	-3.9375E+01	8.5728E+03	-3.9372E+01	7.8584E+03	-3.9370E+01	3.5720E+03	-3.9366E+01	4.2864E+03	-3.9365E+01	4.6436E+03	-3.9361E+01	5.0008E+03
1.0716E+04	-3.9471E+01	8.5728E+03	-3.9469E+01	7.8584E+03	-3.9466E+01	3.5720E+03	-3.9463E+01	4.2864E+03	-3.9461E+01	4.6436E+03	-3.9457E+01	5.0008E+03
1.0716E+04	-3.9567E+01	8.5728E+03	-3.9565E+01	7.8584E+03	-3.9563E+01	3.5720E+03	-3.9559E+01	4.2864E+03	-3.9557E+01	4.6436E+03	-3.9553E+01	5.0008E+03
1.0716E+04	-3.9663E+01	8.5728E+03	-3.9661E+01	7.8584E+03	-3.9659E+01	3.5720E+03	-3.9655E+01	4.2864E+03	-3.9653E+01	4.6436E+03	-3.9649E+01	5.0008E+03
1.0716E+04	-3.9759E+01	8.5728E+03	-3.9757E+01	7.8584E+03	-3.9754E+01	3.5720E+03	-3.9751E+01	4.2864E+03	-3.9749E+01	4.6436E+03	-3.9745E+01	5.0008E+03
1.0716E+04	-3.9855E+01	8.5728E+03	-3.9852E+01	7.8584E+03	-3.9850E+01	3.5720E+03	-3.9846E+01	4.2864E+03	-3.9845E+01	4.6436E+03	-3.9841E+01	5.0008E+03
1.0716E+04	-3.9950E+01	8.5728E+03	-3.9947E+01	7.8584E+03	-3.9945E+01	3.5720E+03	-3.9942E+01	4.2864E+03	-3.9940E+01	4.6436E+03	-3.9936E+01	5.0008E+03
1.0716E+04	-4.0045E+01	8.5728E+03	-4.0043E+01	7.8584E+03	-4.0040E+01	3.5720E+03	-4.0037E+01	4.2864E+03	-4.0035E+01	4.6436E+03	-4.0031E+01	5.0008E+03
1.0716E+04	-4.0140E+01	8.5728E+03	-4.0137E+01	7.8584E+03	-4.0135E+01	3.5720E+03	-4.0132E+01	4.2864E+03	-4.0130E+01	4.6436E+03	-4.0126E+01	5.0008E+03
1.0716E+04	-4.0234E+01	8.5728E+03	-4.0232E+01	7.8584E+03	-4.0230E+01	3.5720E+03	-4.0226E+01	4.2864E+03	-4.0225E+01	4.6436E+03	-4.0221E+01	5.0008E+03
1.0716E+04	-4.0329E+01	8.5728E+03	-4.0326E+01	7.8584E+03	-4.0324E+01	3.5720E+03	-4.0321E+01	4.2864E+03	-4.0319E+01	4.6436E+03	-4.0315E+01	5.0008E+03
1.0716E+04	-4.0423E+01	8.5728E+03	-4.0421E+01	7.8584E+03	-4.0418E+01	3.5720E+03	-4.0415E+01	4.2864E+03	-4.0413E+01	4.6436E+03	-4.0409E+01	5.0008E+03
1.0716E+04	-4.0517E+01	8.5728E+03	-4.0515E+01	7.8584E+03	-4.0512E+01	3.5720E+03	-4.0509E+01	4.2864E+03	-4.0507E+01	4.6436E+03	-4.0503E+01	5.0008E+03
1.0716E+04	-4.0611E+01	8.5728E+03	-4.0608E+01	7.8584E+03	-4.0606E+01	3.5720E+03	-4.0603E+01	4.2864E+03	-4.0601E+01	4.6436E+03	-4.0597E+01	5.0008E+03
1.0716E+04	-4.0704E+01	8.5728E+03	-4.0702E+01	7.8584E+03	-4.0700E+01	3.5720E+03	-4.0696E+01	4.2864E+03	-4.0695E+01	4.6436E+03	-4.0691E+01	5.0008E+03
1.0716E+04	-4.0798E+01	8.5728E+03	-4.0795E+01	7.8584E+03	-4.0793E+01	3.5720E+03	-4.0790E+01	4.2864E+03	-4.0788E+01	4.6436E+03	-4.0784E+01	5.0008E+03
1.0716E+04	-4.0891E+01	8.5728E+03	-4.0889E+01	7.8584E+03	-4.0886E+01	3.5720E+03	-4.0883E+01	4.2864E+03	-4.0881E+01	4.6436E+03	-4.0877E+01	5.0008E+03
1.0716E+04	-4.0984E+01	8.5728E+03	-4.0981E+01	7.8584E+03	-4.0979E+01	3.5720E+03	-4.0976E+01	4.2864E+03	-4.0974E+01	4.6436E+03	-4.0970E+01	5.0008E+03
1.0716E+04	-4.1077E+01	8.5728E+03	-4.1074E+01	7.8584E+03	-4.1072E+01	3.5720E+03	-4.1069E+01	4.2864E+03	-4.1067E+01	4.6436E+03	-4.1063E+01	5.0008E+03
1.0716E+04	-4.1169E+01	8.5728E+03	-4.1167E+01	7.8584E+03	-4.1164E+01	3.5720E+03	-4.1161E+01	4.2864E+03	-4.1159E+01	4.6436E+03	-4.1156E+01	5.0008E+03
1.0716E+04	-4.1261E+01	8.5728E+03	-4.1259E+01	7.8584E+03	-4.1257E+01	3.5720E+03	-4.1254E+01	4.2864E+03	-4.1252E+01	4.6436E+03	-4.1248E+01	5.0008E+03
1.0716E+04	-4.1353E+01	8.5728E+03	-4.1351E+01	7.8584E+03	-4.1349E+01	3.5720E+03	-4.1346E+01	4.2864E+03	-4.1344E+01	4.6436E+03	-4.1340E+01	5.0008E+03

Curve 6	Arg 7	Curve 7	Arg 8	Curve 8	Arg 9	Curve 9	Arg 10	Curve 10	Arg 11	Curve 11	Arg 12	Curve 12
1.0716E+04	-4.1445E+01	8.5728E+03	-4.1443E+01	7.8584E+03	-4.1441E+01	3.5720E+03	-4.1438E+01	4.2864E+03	-4.1436E+01	4.6436E+03	-4.1432E+01	5.0008E+03
1.0716E+04	-4.1537E+01	8.5728E+03	-4.1535E+01	7.8584E+03	-4.1533E+01	3.5720E+03	-4.1529E+01	4.2864E+03	-4.1527E+01	4.6436E+03	-4.1524E+01	5.0008E+03
1.0716E+04	-4.1629E+01	8.5728E+03	-4.1626E+01	7.8584E+03	-4.1624E+01	3.5720E+03	-4.1621E+01	4.2864E+03	-4.1619E+01	4.6436E+03	-4.1615E+01	5.0008E+03
1.0716E+04	-4.1720E+01	8.5728E+03	-4.1718E+01	7.8584E+03	-4.1715E+01	3.5720E+03	-4.1712E+01	4.2864E+03	-4.1710E+01	4.6436E+03	-4.1707E+01	5.0008E+03
1.0716E+04	-4.1811E+01	8.5728E+03	-4.1809E+01	7.8584E+03	-4.1806E+01	3.5720E+03	-4.1803E+01	4.2864E+03	-4.1801E+01	4.6436E+03	-4.1798E+01	5.0008E+03
1.0716E+04	-4.1902E+01	8.5728E+03	-4.1900E+01	7.8584E+03	-4.1897E+01	3.5720E+03	-4.1894E+01	4.2864E+03	-4.1892E+01	4.6436E+03	-4.1889E+01	5.0008E+03
1.0716E+04	-4.1993E+01	8.5728E+03	-4.1990E+01	7.8584E+03	-4.1988E+01	3.5720E+03	-4.1985E+01	4.2864E+03	-4.1983E+01	4.6436E+03	-4.1980E+01	5.0008E+03
1.0716E+04	-4.2083E+01	8.5728E+03	-4.2081E+01	7.8584E+03	-4.2079E+01	3.5720E+03	-4.2076E+01	4.2864E+03	-4.2074E+01	4.6436E+03	-4.2070E+01	5.0008E+03
1.0716E+04	-4.2174E+01	8.5728E+03	-4.2171E+01	7.8584E+03	-4.2169E+01	3.5720E+03	-4.2166E+01	4.2864E+03	-4.2164E+01	4.6436E+03	-4.2161E+01	5.0008E+03
1.0716E+04	-4.2264E+01	8.5728E+03	-4.2262E+01	7.8584E+03	-4.2259E+01	3.5720E+03	-4.2256E+01	4.2864E+03	-4.2254E+01	4.6436E+03	-4.2251E+01	5.0008E+03
1.0716E+04	-4.2354E+01	8.5728E+03	-4.2351E+01	7.8584E+03	-4.2349E+01	3.5720E+03	-4.2346E+01	4.2864E+03	-4.2344E+01	4.6436E+03	-4.2341E+01	5.0008E+03
1.0716E+04	-4.2444E+01	8.5728E+03	-4.2441E+01	7.8584E+03	-4.2439E+01	3.5720E+03	-4.2436E+01	4.2864E+03	-4.2434E+01	4.6436E+03	-4.2431E+01	5.0008E+03
1.0716E+04	-4.2533E+01	8.5728E+03	-4.2531E+01	7.8584E+03	-4.2529E+01	3.5720E+03	-4.2526E+01	4.2864E+03	-4.2524E+01	4.6436E+03	-4.2520E+01	5.0008E+03
1.0716E+04	-4.2623E+01	8.5728E+03	-4.2620E+01	7.8584E+03	-4.2618E+01	3.5720E+03	-4.2615E+01	4.2864E+03	-4.2613E+01	4.6436E+03	-4.2610E+01	5.0008E+03
1.0716E+04	-4.2712E+01	8.5728E+03	-4.2710E+01	7.8584E+03	-4.2707E+01	3.5720E+03	-4.2704E+01	4.2864E+03	-4.2702E+01	4.6436E+03	-4.2699E+01	5.0008E+03
1.0716E+04	-4.2801E+01	8.5728E+03	-4.2799E+01	7.8584E+03	-4.2796E+01	3.5720E+03	-4.2793E+01	4.2864E+03	-4.2791E+01	4.6436E+03	-4.2788E+01	5.0008E+03
1.0716E+04	-4.2890E+01	8.5728E+03	-4.2887E+01	7.8584E+03	-4.2885E+01	3.5720E+03	-4.2882E+01	4.2864E+03	-4.2880E+01	4.6436E+03	-4.2877E+01	5.0008E+03
1.0716E+04	-4.2978E+01	8.5728E+03	-4.2976E+01	7.8584E+03	-4.2974E+01	3.5720E+03	-4.2971E+01	4.2864E+03	-4.2969E+01	4.6436E+03	-4.2965E+01	5.0008E+03
1.0716E+04	-4.3067E+01	8.5728E+03	-4.3065E+01	7.8584E+03	-4.3062E+01	3.5720E+03	-4.3059E+01	4.2864E+03	-4.3058E+01	4.6436E+03	-4.3054E+01	5.0008E+03
1.0716E+04	-4.3155E+01	8.5728E+03	-4.3153E+01	7.8584E+03	-4.3151E+01	3.5720E+03	-4.3148E+01	4.2864E+03	-4.3146E+01	4.6436E+03	-4.3142E+01	5.0008E+03
1.0716E+04	-4.3243E+01	8.5728E+03	-4.3241E+01	7.8584E+03	-4.3239E+01	3.5720E+03	-4.3236E+01	4.2864E+03	-4.3234E+01	4.6436E+03	-4.3231E+01	5.0008E+03
1.0716E+04	-4.3331E+01	8.5728E+03	-4.3329E+01	7.8584E+03	-4.3327E+01	3.5720E+03	-4.3324E+01	4.2864E+03	-4.3322E+01	4.6436E+03	-4.3319E+01	5.0008E+03
1.0716E+04	-4.3419E+01	8.5728E+03	-4.3417E+01	7.8584E+03	-4.3415E+01	3.5720E+03	-4.3412E+01	4.2864E+03	-4.3410E+01	4.6436E+03	-4.3406E+01	5.0008E+03
1.0716E+04	-4.3507E+01	8.5728E+03	-4.3504E+01	7.8584E+03	-4.3502E+01	3.5720E+03	-4.3499E+01	4.2864E+03	-4.3497E+01	4.6436E+03	-4.3494E+01	5.0008E+03
1.0716E+04	-4.3594E+01	8.5728E+03	-4.3592E+01	7.8584E+03	-4.3590E+01	3.5720E+03	-4.3587E+01	4.2864E+03	-4.3585E+01	4.6436E+03	-4.3581E+01	5.0008E+03
1.0716E+04	-4.3681E+01	8.5728E+03	-4.3679E+01	7.8584E+03	-4.3677E+01	3.5720E+03	-4.3674E+01	4.2864E+03	-4.3672E+01	4.6436E+03	-4.3669E+01	5.0008E+03
1.0716E+04	-4.3769E+01	8.5728E+03	-4.3766E+01	7.8584E+03	-4.3764E+01	3.5720E+03	-4.3761E+01	4.2864E+03	-4.3759E+01	4.6436E+03	-4.3756E+01	5.0008E+03
1.0716E+04	-4.3855E+01	8.5728E+03	-4.3853E+01	7.8584E+03	-4.3851E+01	3.5720E+03	-4.3848E+01	4.2864E+03	-4.3846E+01	4.6436E+03	-4.3843E+01	5.0008E+03
1.0716E+04	-4.3942E+01	8.5728E+03	-4.3940E+01	7.8584E+03	-4.3938E+01	3.5720E+03	-4.3935E+01	4.2864E+03	-4.3933E+01	4.6436E+03	-4.3930E+01	5.0008E+03
1.0716E+04	-4.4029E+01	8.5728E+03	-4.4027E+01	7.8584E+03	-4.4024E+01	3.5720E+03	-4.4021E+01	4.2864E+03	-4.4020E+01	4.6436E+03	-4.4016E+01	5.0008E+03
1.0716E+04	-4.4115E+01	8.5728E+03	-4.4113E+01	7.8584E+03	-4.4111E+01	3.5720E+03	-4.4108E+01	4.2864E+03	-4.4106E+01	4.6436E+03	-4.4103E+01	5.0008E+03
1.0716E+04	-4.4201E+01	8.5728E+03	-4.4199E+01	7.8584E+03	-4.4197E+01	3.5720E+03	-4.4194E+01	4.2864E+03	-4.4192E+01	4.6436E+03	-4.4189E+01	5.0008E+03
1.0716E+04	-4.4288E+01	8.5728E+03	-4.4285E+01	7.8584E+03	-4.4283E+01	3.5720E+03	-4.4280E+01	4.2864E+03	-4.4279E+01	4.6436E+03	-4.4275E+01	5.0008E+03
1.0716E+04	-4.4373E+01	8.5728E+03	-4.4371E+01	7.8584E+03	-4.4369E+01	3.5720E+03	-4.4366E+01	4.2864E+03	-4.4364E+01	4.6436E+03	-4.4361E+01	5.0008E+03
1.0716E+04	-4.4459E+01	8.5728E+03	-4.4457E+01	7.8584E+03	-4.4455E+01	3.5720E+03	-4.4452E+01	4.2864E+03	-4.4450E+01	4.6436E+03	-4.4447E+01	5.0008E+03
1.0716E+04	-4.4545E+01	8.5728E+03	-4.4543E+01	7.8584E+03	-4.4541E+01	3.5720E+03	-4.4538E+01	4.2864E+03	-4.4536E+01	4.6436E+03	-4.4532E+01	5.0008E+03
1.0716E+04	-4.4630E+01	8.5728E+03	-4.4628E+01	7.8584E+03	-4.4626E+01	3.5720E+03	-4.4623E+01	4.2864E+03	-4.4621E+01	4.6436E+03	-4.4618E+01	5.0008E+03
1.0716E+04	-4.4716E+01	8.5728E+03	-4.4713E+01	7.8584E+03	-4.4711E+01	3.5720E+03	-4.4708E+01	4.2864E+03	-4.4707E+01	4.6436E+03	-4.4703E+01	5.0008E+03
1.0716E+04	-4.4801E+01	8.5728E+03	-4.4799E+01	7.8584E+03	-4.4796E+01	3.5720E+03	-4.4793E+01	4.2864E+03	-4.4792E+01	4.6436E+03	-4.4788E+01	5.0008E+03
1.0716E+04	-4.4886E+01	8.5728E+03	-4.4884E+01	7.8584E+03	-4.4881E+01	3.5720E+03	-4.4878E+01	4.2864E+03	-4.4877E+01	4.6436E+03	-4.4873E+01	5.0008E+03
1.0716E+04	-4.4970E+01	8.5728E+03	-4.4968E+01	7.8584E+03	-4.4966E+01	3.5720E+03	-4.4963E+01	4.2864E+03	-4.4962E+01	4.6436E+03	-4.4958E+01	5.0008E+03
1.0716E+04	-4.5055E+01	8.5728E+03	-4.5053E+01	7.8584E+03	-4.5051E+01	3.5720E+03	-4.5048E+01	4.2864E+03	-4.5046E+01	4.6436E+03	-4.5043E+01	5.0008E+03
1.0716E+04	-4.5140E+01	8.5728E+03	-4.5137E+01	7.8584E+03	-4.5135E+01	3.5720E+03	-4.5132E+01	4.2864E+03	-4.5131E+01	4.6436E+03	-4.5127E+01	5.0008E+03
1.0716E+04	-4.5224E+01	8.5728E+03	-4.5222E+01	7.8584E+03	-4.5220E+01	3.5720E+03	-4.5217E+01	4.2864E+03	-4.5215E+01	4.6436E+03	-4.5212E+01	5.0008E+03
1.0716E+04	-4.5308E+01	8.5728E+03	-4.5306E+01	7.8584E+03	-4.5304E+01	3.5720E+03	-4.5301E+01	4.2864E+03	-4.5299E+01	4.6436E+03	-4.5296E+01	5.0008E+03
1.0716E+04	-4.5392E+01	8.5728E+03	-4.5390E+01	7.8584E+03	-4.5388E+01	3.5720E+03	-4.5385E+01	4.2864E+03	-4.5383E+01	4.6436E+03	-4.5380E+01	5.0008E+03
1.0716E+04	-4.5476E+01	8.5728E+03	-4.5474E+01	7.8584E+03	-4.5472E+01	3.5720E+03	-4.5469E+01	4.2864E+03	-4.5467E+01	4.6436E+03	-4.5464E+01	5.0008E+03
1.0716E+04	-4.5560E+01	8.5728E+03	-4.5558E+01	7.8584E+03	-4.5556E+01	3.5720E+03	-4.5553E+01	4.2864E+03	-4.5551E+01	4.6436E+03	-4.5548E+01	5.0008E+03
1.0716E+04	-4.5643E+01	8.5728E+03	-4.5641E+01	7.8584E+03	-4.5639E+01	3.5720E+03	-4.5636E+01	4.2864E+03	-4.5634E+01	4.6436E+03	-4.5631E+01	5.0008E+03
1.0716E+04	-4.5727E+01	8.5728E+03	-4.5725E+01	7.8584E+03	-4.5722E+01	3.5720E+03	-4.5720E+01	4.2864E+03	-4.5718E+01	4.6436E+03	-4.5715E+01	5.0008E+03
1.0716E+04	-4.5810E+01	8.5728E+03	-4.5808E+01	7.8584E+03	-4.5806E+01	3.5720E+03	-4.5803E+01	4.2864E+03	-4.5801E+01	4.6436E+03	-4.5798E+01	5.0008E+03
1.0716E+04	-4.5893E+01	8.5728E+03	-4.5891E+01	7.8584E+03	-4.5889E+01	3.5720E+03	-4.5886E+01	4.2864E+03	-4.5884E+01	4.6436E+03	-4.5881E+01	5.0008E+03

Curve 6	Arg 7	Curve 7	Arg 8	Curve 8	Arg 9	Curve 9	Arg 10	Curve 10	Arg 11	Curve 11	Arg 12	Curve 12
1.0716E+04	-4.5976E+01	8.5728E+03	-4.5974E+01	7.8584E+03	-4.5972E+01	3.5720E+03	-4.5969E+01	4.2864E+03	-4.5967E+01	4.6436E+03	-4.5964E+01	5.0008E+03
1.0716E+04	-4.6059E+01	8.5728E+03	-4.6057E+01	7.8584E+03	-4.6055E+01	3.5720E+03	-4.6052E+01	4.2864E+03	-4.6050E+01	4.6436E+03	-4.6047E+01	5.0008E+03
1.0716E+04	-4.6141E+01	8.5728E+03	-4.6139E+01	7.8584E+03	-4.6137E+01	3.5720E+03	-4.6134E+01	4.2864E+03	-4.6133E+01	4.6436E+03	-4.6130E+01	5.0008E+03
1.0716E+04	-4.6224E+01	8.5728E+03	-4.6222E+01	7.8584E+03	-4.6220E+01	3.5720E+03	-4.6217E+01	4.2864E+03	-4.6215E+01	4.6436E+03	-4.6212E+01	5.0008E+03
1.0716E+04	-4.6306E+01	8.5728E+03	-4.6304E+01	7.8584E+03	-4.6302E+01	3.5720E+03	-4.6299E+01	4.2864E+03	-4.6298E+01	4.6436E+03	-4.6294E+01	5.0008E+03
1.0716E+04	-4.6389E+01	8.5728E+03	-4.6387E+01	7.8584E+03	-4.6385E+01	3.5720E+03	-4.6382E+01	4.2864E+03	-4.6380E+01	4.6436E+03	-4.6377E+01	5.0008E+03
1.0716E+04	-4.6471E+01	8.5728E+03	-4.6469E+01	7.8584E+03	-4.6467E+01	3.5720E+03	-4.6464E+01	4.2864E+03	-4.6462E+01	4.6436E+03	-4.6459E+01	5.0008E+03
1.0716E+04	-4.6553E+01	8.5728E+03	-4.6551E+01	7.8584E+03	-4.6549E+01	3.5720E+03	-4.6546E+01	4.2864E+03	-4.6544E+01	4.6436E+03	-4.6541E+01	5.0008E+03
1.0716E+04	-4.6634E+01	8.5728E+03	-4.6632E+01	7.8584E+03	-4.6630E+01	3.5720E+03	-4.6628E+01	4.2864E+03	-4.6626E+01	4.6436E+03	-4.6623E+01	5.0008E+03
1.0716E+04	-4.6716E+01	8.5728E+03	-4.6714E+01	7.8584E+03	-4.6712E+01	3.5720E+03	-4.6709E+01	4.2864E+03	-4.6708E+01	4.6436E+03	-4.6704E+01	5.0008E+03
1.0716E+04	-4.6798E+01	8.5728E+03	-4.6796E+01	7.8584E+03	-4.6794E+01	3.5720E+03	-4.6791E+01	4.2864E+03	-4.6789E+01	4.6436E+03	-4.6786E+01	5.0008E+03
1.0716E+04	-4.6879E+01	8.5728E+03	-4.6877E+01	7.8584E+03	-4.6875E+01	3.5720E+03	-4.6872E+01	4.2864E+03	-4.6871E+01	4.6436E+03	-4.6867E+01	5.0008E+03
1.0716E+04	-4.6960E+01	8.5728E+03	-4.6958E+01	7.8584E+03	-4.6956E+01	3.5720E+03	-4.6953E+01	4.2864E+03	-4.6952E+01	4.6436E+03	-4.6949E+01	5.0008E+03
1.0716E+04	-4.7041E+01	8.5728E+03	-4.7039E+01	7.8584E+03	-4.7037E+01	3.5720E+03	-4.7035E+01	4.2864E+03	-4.7033E+01	4.6436E+03	-4.7030E+01	5.0008E+03
1.0716E+04	-4.7122E+01	8.5728E+03	-4.7120E+01	7.8584E+03	-4.7118E+01	3.5720E+03	-4.7115E+01	4.2864E+03	-4.7114E+01	4.6436E+03	-4.7111E+01	5.0008E+03
1.0716E+04	-4.7203E+01	8.5728E+03	-4.7201E+01	7.8584E+03	-4.7199E+01	3.5720E+03	-4.7196E+01	4.2864E+03	-4.7195E+01	4.6436E+03	-4.7191E+01	5.0008E+03
1.0716E+04	-4.7284E+01	8.5728E+03	-4.7282E+01	7.8584E+03	-4.7280E+01	3.5720E+03	-4.7277E+01	4.2864E+03	-4.7275E+01	4.6436E+03	-4.7272E+01	5.0008E+03
1.0716E+04	-4.7364E+01	8.5728E+03	-4.7362E+01	7.8584E+03	-4.7360E+01	3.5720E+03	-4.7358E+01	4.2864E+03	-4.7356E+01	4.6436E+03	-4.7353E+01	5.0008E+03
1.0716E+04	-4.7445E+01	8.5728E+03	-4.7443E+01	7.8584E+03	-4.7441E+01	3.5720E+03	-4.7438E+01	4.2864E+03	-4.7436E+01	4.6436E+03	-4.7433E+01	5.0008E+03
1.0716E+04	-4.7525E+01	8.5728E+03	-4.7523E+01	7.8584E+03	-4.7521E+01	3.5720E+03	-4.7518E+01	4.2864E+03	-4.7517E+01	4.6436E+03	-4.7514E+01	5.0008E+03
1.0716E+04	-4.7605E+01	8.5728E+03	-4.7603E+01	7.8584E+03	-4.7601E+01	3.5720E+03	-4.7599E+01	4.2864E+03	-4.7597E+01	4.6436E+03	-4.7594E+01	5.0008E+03
1.0716E+04	-4.7685E+01	8.5728E+03	-4.7683E+01	7.8584E+03	-4.7681E+01	3.5720E+03	-4.7679E+01	4.2864E+03	-4.7677E+01	4.6436E+03	-4.7674E+01	5.0008E+03
1.0716E+04	-4.7765E+01	8.5728E+03	-4.7763E+01	7.8584E+03	-4.7761E+01	3.5720E+03	-4.7758E+01	4.2864E+03	-4.7757E+01	4.6436E+03	-4.7754E+01	5.0008E+03
1.0716E+04	-4.7845E+01	8.5728E+03	-4.7843E+01	7.8584E+03	-4.7841E+01	3.5720E+03	-4.7838E+01	4.2864E+03	-4.7837E+01	4.6436E+03	-4.7833E+01	5.0008E+03
1.0716E+04	-4.7925E+01	8.5728E+03	-4.7923E+01	7.8584E+03	-4.7921E+01	3.5720E+03	-4.7918E+01	4.2864E+03	-4.7916E+01	4.6436E+03	-4.7913E+01	5.0008E+03
1.0716E+04	-4.8004E+01	8.5728E+03	-4.8002E+01	7.8584E+03	-4.8000E+01	3.5720E+03	-4.7997E+01	4.2864E+03	-4.7996E+01	4.6436E+03	-4.7993E+01	5.0008E+03
1.0716E+04	-4.8083E+01	8.5728E+03	-4.8081E+01	7.8584E+03	-4.8079E+01	3.5720E+03	-4.8077E+01	4.2864E+03	-4.8075E+01	4.6436E+03	-4.8072E+01	5.0008E+03
1.0716E+04	-4.8163E+01	8.5728E+03	-4.8161E+01	7.8584E+03	-4.8159E+01	3.5720E+03	-4.8156E+01	4.2864E+03	-4.8154E+01	4.6436E+03	-4.8151E+01	5.0008E+03
1.0716E+04	-4.8242E+01	8.5728E+03	-4.8240E+01	7.8584E+03	-4.8238E+01	3.5720E+03	-4.8235E+01	4.2864E+03	-4.8234E+01	4.6436E+03	-4.8230E+01	5.0008E+03
1.0716E+04	-4.8321E+01	8.5728E+03	-4.8319E+01	7.8584E+03	-4.8317E+01	3.5720E+03	-4.8314E+01	4.2864E+03	-4.8312E+01	4.6436E+03	-4.8309E+01	5.0008E+03
1.0716E+04	-4.8400E+01	8.5728E+03	-4.8398E+01	7.8584E+03	-4.8396E+01	3.5720E+03	-4.8393E+01	4.2864E+03	-4.8391E+01	4.6436E+03	-4.8388E+01	5.0008E+03
1.0716E+04	-4.8478E+01	8.5728E+03	-4.8476E+01	7.8584E+03	-4.8474E+01	3.5720E+03	-4.8472E+01	4.2864E+03	-4.8470E+01	4.6436E+03	-4.8467E+01	5.0008E+03
1.0716E+04	-4.8557E+01	8.5728E+03	-4.8555E+01	7.8584E+03	-4.8553E+01	3.5720E+03	-4.8550E+01	4.2864E+03	-4.8549E+01	4.6436E+03	-4.8546E+01	5.0008E+03
1.0716E+04	-4.8635E+01	8.5728E+03	-4.8633E+01	7.8584E+03	-4.8632E+01	3.5720E+03	-4.8629E+01	4.2864E+03	-4.8627E+01	4.6436E+03	-4.8624E+01	5.0008E+03
1.0716E+04	-4.8714E+01	8.5728E+03	-4.8712E+01	7.8584E+03	-4.8710E+01	3.5720E+03	-4.8707E+01	4.2864E+03	-4.8706E+01	4.6436E+03	-4.8702E+01	5.0008E+03
1.0716E+04	-4.8792E+01	8.5728E+03	-4.8790E+01	7.8584E+03	-4.8788E+01	3.5720E+03	-4.8785E+01	4.2864E+03	-4.8784E+01	4.6436E+03	-4.8781E+01	5.0008E+03
1.0716E+04	-4.8870E+01	8.5728E+03	-4.8868E+01	7.8584E+03	-4.8866E+01	3.5720E+03	-4.8863E+01	4.2864E+03	-4.8862E+01	4.6436E+03	-4.8859E+01	5.0008E+03
1.0716E+04	-4.8948E+01	8.5728E+03	-4.8946E+01	7.8584E+03	-4.8944E+01	3.5720E+03	-4.8941E+01	4.2864E+03	-4.8940E+01	4.6436E+03	-4.8937E+01	5.0008E+03
1.0716E+04	-4.9026E+01	8.5728E+03	-4.9024E+01	7.8584E+03	-4.9022E+01	3.5720E+03	-4.9019E+01	4.2864E+03	-4.9018E+01	4.6436E+03	-4.9015E+01	5.0008E+03
1.0716E+04	-4.9104E+01	8.5728E+03	-4.9102E+01	7.8584E+03	-4.9100E+01	3.5720E+03	-4.9097E+01	4.2864E+03	-4.9095E+01	4.6436E+03	-4.9092E+01	5.0008E+03
1.0716E+04	-4.9181E+01	8.5728E+03	-4.9179E+01	7.8584E+03	-4.9177E+01	3.5720E+03	-4.9175E+01	4.2864E+03	-4.9173E+01	4.6436E+03	-4.9170E+01	5.0008E+03
1.0716E+04	-4.9259E+01	8.5728E+03	-4.9257E+01	7.8584E+03	-4.9255E+01	3.5720E+03	-4.9252E+01	4.2864E+03	-4.9251E+01	4.6436E+03	-4.9248E+01	5.0008E+03
1.0716E+04	-4.9336E+01	8.5728E+03	-4.9334E+01	7.8584E+03	-4.9332E+01	3.5720E+03	-4.9330E+01	4.2864E+03	-4.9328E+01	4.6436E+03	-4.9325E+01	5.0008E+03
1.0716E+04	-4.9413E+01	8.5728E+03	-4.9411E+01	7.8584E+03	-4.9409E+01	3.5720E+03	-4.9407E+01	4.2864E+03	-4.9405E+01	4.6436E+03	-4.9402E+01	5.0008E+03
1.0716E+04	-4.9490E+01	8.5728E+03	-4.9489E+01	7.8584E+03	-4.9487E+01	3.5720E+03	-4.9484E+01	4.2864E+03	-4.9482E+01	4.6436E+03	-4.9479E+01	5.0008E+03
1.0716E+04	-4.9567E+01	8.5728E+03	-4.9566E+01	7.8584E+03	-4.9564E+01	3.5720E+03	-4.9561E+01	4.2864E+03	-4.9559E+01	4.6436E+03	-4.9556E+01	5.0008E+03
1.0716E+04	-4.9644E+01	8.5728E+03	-4.9642E+01	7.8584E+03	-4.9641E+01	3.5720E+03	-4.9638E+01	4.2864E+03	-4.9636E+01	4.6436E+03	-4.9633E+01	5.0008E+03
1.0716E+04	-4.9721E+01	8.5728E+03	-4.9719E+01	7.8584E+03	-4.9717E+01	3.5720E+03	-4.9715E+01	4.2864E+03	-4.9713E+01	4.6436E+03	-4.9710E+01	5.0008E+03
1.0716E+04	-4.9798E+01	8.5728E+03	-4.9796E+01	7.8584E+03	-4.9794E+01	3.5720E+03	-4.9791E+01	4.2864E+03	-4.9790E+01	4.6436E+03	-4.9787E+01	5.0008E+03
1.0716E+04	-4.9874E+01	8.5728E+03	-4.9872E+01	7.8584E+03	-4.9871E+01	3.5720E+03	-4.9868E+01	4.2864E+03	-4.9866E+01	4.6436E+03	-4.9863E+01	5.0008E+03
1.0716E+04	-4.9951E+01	8.5728E+03	-4.9949E+01	7.8584E+03	-4.9947E+01	3.5720E+03	-4.9944E+01	4.2864E+03	-4.9943E+01	4.6436E+03	-4.9940E+01	5.0008E+03
1.0716E+04	-5.0027E+01	8.5728E+03	-5.0025E+01	7.8584E+03	-5.0023E+01	3.5720E+03	-5.0021E+01	4.2864E+03	-5.0019E+01	4.6436E+03	-5.0016E+01	5.0008E+03

Curve 6	Arg 7	Curve 7	Arg 8	Curve 8	Arg 9	Curve 9	Arg 10	Curve 10	Arg 11	Curve 11	Arg 12	Curve 12
1.0716E+04	-5.0103E+01	8.5728E+03	-5.0101E+01	7.8584E+03	-5.0099E+01	3.5720E+03	-5.0097E+01	4.2864E+03	-5.0095E+01	4.6436E+03	-5.0092E+01	5.0008E+03
1.0716E+04	-5.0179E+01	8.5728E+03	-5.0177E+01	7.8584E+03	-5.0176E+01	3.5720E+03	-5.0173E+01	4.2864E+03	-5.0171E+01	4.6436E+03	-5.0168E+01	5.0008E+03
1.0716E+04	-5.0255E+01	8.5728E+03	-5.0253E+01	7.8584E+03	-5.0251E+01	3.5720E+03	-5.0249E+01	4.2864E+03	-5.0247E+01	4.6436E+03	-5.0244E+01	5.0008E+03
1.0716E+04	-5.0331E+01	8.5728E+03	-5.0329E+01	7.8584E+03	-5.0327E+01	3.5720E+03	-5.0325E+01	4.2864E+03	-5.0323E+01	4.6436E+03	-5.0320E+01	5.0008E+03
1.0716E+04	-5.0407E+01	8.5728E+03	-5.0405E+01	7.8584E+03	-5.0403E+01	3.5720E+03	-5.0400E+01	4.2864E+03	-5.0399E+01	4.6436E+03	-5.0396E+01	5.0008E+03
1.0716E+04	-5.0483E+01	8.5728E+03	-5.0481E+01	7.8584E+03	-5.0479E+01	3.5720E+03	-5.0476E+01	4.2864E+03	-5.0475E+01	4.6436E+03	-5.0472E+01	5.0008E+03
1.0716E+04	-5.0558E+01	8.5728E+03	-5.0556E+01	7.8584E+03	-5.0554E+01	3.5720E+03	-5.0552E+01	4.2864E+03	-5.0550E+01	4.6436E+03	-5.0547E+01	5.0008E+03
1.0716E+04	-5.0633E+01	8.5728E+03	-5.0632E+01	7.8584E+03	-5.0630E+01	3.5720E+03	-5.0627E+01	4.2864E+03	-5.0625E+01	4.6436E+03	-5.0622E+01	5.0008E+03
1.0716E+04	-5.0709E+01	8.5728E+03	-5.0707E+01	7.8584E+03	-5.0705E+01	3.5720E+03	-5.0702E+01	4.2864E+03	-5.0701E+01	4.6436E+03	-5.0698E+01	5.0008E+03
1.0716E+04	-5.0784E+01	8.5728E+03	-5.0782E+01	7.8584E+03	-5.0780E+01	3.5720E+03	-5.0777E+01	4.2864E+03	-5.0776E+01	4.6436E+03	-5.0773E+01	5.0008E+03
1.0716E+04	-5.0859E+01	8.5728E+03	-5.0857E+01	7.8584E+03	-5.0855E+01	3.5720E+03	-5.0853E+01	4.2864E+03	-5.0851E+01	4.6436E+03	-5.0848E+01	5.0008E+03
1.0716E+04	-5.0934E+01	8.5728E+03	-5.0932E+01	7.8584E+03	-5.0930E+01	3.5720E+03	-5.0928E+01	4.2864E+03	-5.0926E+01	4.6436E+03	-5.0923E+01	5.0008E+03
1.0716E+04	-5.1009E+01	8.5728E+03	-5.1007E+01	7.8584E+03	-5.1005E+01	3.5720E+03	-5.1002E+01	4.2864E+03	-5.1001E+01	4.6436E+03	-5.0998E+01	5.0008E+03
1.0716E+04	-5.1083E+01	8.5728E+03	-5.1082E+01	7.8584E+03	-5.1080E+01	3.5720E+03	-5.1077E+01	4.2864E+03	-5.1076E+01	4.6436E+03	-5.1073E+01	5.0008E+03
1.0716E+04	-5.1158E+01	8.5728E+03	-5.1156E+01	7.8584E+03	-5.1154E+01	3.5720E+03	-5.1152E+01	4.2864E+03	-5.1150E+01	4.6436E+03	-5.1147E+01	5.0008E+03
1.0716E+04	-5.1233E+01	8.5728E+03	-5.1231E+01	7.8584E+03	-5.1229E+01	3.5720E+03	-5.1226E+01	4.2864E+03	-5.1225E+01	4.6436E+03	-5.1222E+01	5.0008E+03
1.0716E+04	-5.1307E+01	8.5728E+03	-5.1305E+01	7.8584E+03	-5.1303E+01	3.5720E+03	-5.1301E+01	4.2864E+03	-5.1299E+01	4.6436E+03	-5.1296E+01	5.0008E+03
1.0716E+04	-5.1381E+01	8.5728E+03	-5.1380E+01	7.8584E+03	-5.1378E+01	3.5720E+03	-5.1375E+01	4.2864E+03	-5.1374E+01	4.6436E+03	-5.1371E+01	5.0008E+03
1.0716E+04	-5.1456E+01	8.5728E+03	-5.1454E+01	7.8584E+03	-5.1452E+01	3.5720E+03	-5.1449E+01	4.2864E+03	-5.1448E+01	4.6436E+03	-5.1445E+01	5.0008E+03
1.0716E+04	-5.1530E+01	8.5728E+03	-5.1528E+01	7.8584E+03	-5.1526E+01	3.5720E+03	-5.1523E+01	4.2864E+03	-5.1522E+01	4.6436E+03	-5.1519E+01	5.0008E+03
1.0716E+04	-5.1604E+01	8.5728E+03	-5.1602E+01	7.8584E+03	-5.1600E+01	3.5720E+03	-5.1597E+01	4.2864E+03	-5.1596E+01	4.6436E+03	-5.1593E+01	5.0008E+03
1.0716E+04	-5.1678E+01	8.5728E+03	-5.1676E+01	7.8584E+03	-5.1674E+01	3.5720E+03	-5.1671E+01	4.2864E+03	-5.1670E+01	4.6436E+03	-5.1667E+01	5.0008E+03
1.0716E+04	-5.1751E+01	8.5728E+03	-5.1749E+01	7.8584E+03	-5.1748E+01	3.5720E+03	-5.1745E+01	4.2864E+03	-5.1744E+01	4.6436E+03	-5.1741E+01	5.0008E+03
1.0716E+04	-5.1825E+01	8.5728E+03	-5.1823E+01	7.8584E+03	-5.1821E+01	3.5720E+03	-5.1819E+01	4.2864E+03	-5.1817E+01	4.6436E+03	-5.1814E+01	5.0008E+03
1.0716E+04	-5.1899E+01	8.5728E+03	-5.1897E+01	7.8584E+03	-5.1895E+01	3.5720E+03	-5.1892E+01	4.2864E+03	-5.1891E+01	4.6436E+03	-5.1888E+01	5.0008E+03
1.0716E+04	-5.1972E+01	8.5728E+03	-5.1970E+01	7.8584E+03	-5.1968E+01	3.5720E+03	-5.1966E+01	4.2864E+03	-5.1964E+01	4.6436E+03	-5.1961E+01	5.0008E+03
1.0716E+04	-5.2045E+01	8.5728E+03	-5.2044E+01	7.8584E+03	-5.2042E+01	3.5720E+03	-5.2039E+01	4.2864E+03	-5.2038E+01	4.6436E+03	-5.2035E+01	5.0008E+03
1.0716E+04	-5.2119E+01	8.5728E+03	-5.2117E+01	7.8584E+03	-5.2115E+01	3.5720E+03	-5.2112E+01	4.2864E+03	-5.2111E+01	4.6436E+03	-5.2108E+01	5.0008E+03
1.0716E+04	-5.2192E+01	8.5728E+03	-5.2190E+01	7.8584E+03	-5.2188E+01	3.5720E+03	-5.2186E+01	4.2864E+03	-5.2184E+01	4.6436E+03	-5.2181E+01	5.0008E+03
1.0716E+04	-5.2265E+01	8.5728E+03	-5.2263E+01	7.8584E+03	-5.2261E+01	3.5720E+03	-5.2259E+01	4.2864E+03	-5.2257E+01	4.6436E+03	-5.2254E+01	5.0008E+03
1.0716E+04	-5.2338E+01	8.5728E+03	-5.2336E+01	7.8584E+03	-5.2334E+01	3.5720E+03	-5.2332E+01	4.2864E+03	-5.2330E+01	4.6436E+03	-5.2327E+01	5.0008E+03
1.0716E+04	-5.2411E+01	8.5728E+03	-5.2409E+01	7.8584E+03	-5.2407E+01	3.5720E+03	-5.2405E+01	4.2864E+03	-5.2403E+01	4.6436E+03	-5.2400E+01	5.0008E+03
1.0716E+04	-5.2483E+01	8.5728E+03	-5.2482E+01	7.8584E+03	-5.2480E+01	3.5720E+03	-5.2477E+01	4.2864E+03	-5.2476E+01	4.6436E+03	-5.2473E+01	5.0008E+03
1.0716E+04	-5.2556E+01	8.5728E+03	-5.2554E+01	7.8584E+03	-5.2553E+01	3.5720E+03	-5.2550E+01	4.2864E+03	-5.2549E+01	4.6436E+03	-5.2546E+01	5.0008E+03
1.0716E+04	-5.2629E+01	8.5728E+03	-5.2627E+01	7.8584E+03	-5.2625E+01	3.5720E+03	-5.2623E+01	4.2864E+03	-5.2621E+01	4.6436E+03	-5.2618E+01	5.0008E+03
1.0716E+04	-5.2701E+01	8.5728E+03	-5.2699E+01	7.8584E+03	-5.2698E+01	3.5720E+03	-5.2695E+01	4.2864E+03	-5.2694E+01	4.6436E+03	-5.2691E+01	5.0008E+03
1.0716E+04	-5.2774E+01	8.5728E+03	-5.2772E+01	7.8584E+03	-5.2770E+01	3.5720E+03	-5.2767E+01	4.2864E+03	-5.2766E+01	4.6436E+03	-5.2763E+01	5.0008E+03
1.0716E+04	-5.2846E+01	8.5728E+03	-5.2844E+01	7.8584E+03	-5.2842E+01	3.5720E+03	-5.2840E+01	4.2864E+03	-5.2838E+01	4.6436E+03	-5.2835E+01	5.0008E+03
1.0716E+04	-5.2918E+01	8.5728E+03	-5.2916E+01	7.8584E+03	-5.2914E+01	3.5720E+03	-5.2912E+01	4.2864E+03	-5.2910E+01	4.6436E+03	-5.2907E+01	5.0008E+03
1.0716E+04	-5.2990E+01	8.5728E+03	-5.2988E+01	7.8584E+03	-5.2986E+01	3.5720E+03	-5.2984E+01	4.2864E+03	-5.2982E+01	4.6436E+03	-5.2980E+01	5.0008E+03
1.0716E+04	-5.3062E+01	8.5728E+03	-5.3060E+01	7.8584E+03	-5.3058E+01	3.5720E+03	-5.3056E+01	4.2864E+03	-5.3054E+01	4.6436E+03	-5.3052E+01	5.0008E+03
1.0716E+04	-5.3134E+01	8.5728E+03	-5.3132E+01	7.8584E+03	-5.3130E+01	3.5720E+03	-5.3128E+01	4.2864E+03	-5.3126E+01	4.6436E+03	-5.3123E+01	5.0008E+03
1.0716E+04	-5.3206E+01	8.5728E+03	-5.3204E+01	7.8584E+03	-5.3202E+01	3.5720E+03	-5.3200E+01	4.2864E+03	-5.3198E+01	4.6436E+03	-5.3195E+01	5.0008E+03
1.0716E+04	-5.3277E+01	8.5728E+03	-5.3276E+01	7.8584E+03	-5.3274E+01	3.5720E+03	-5.3271E+01	4.2864E+03	-5.3270E+01	4.6436E+03	-5.3267E+01	5.0008E+03
1.0716E+04	-5.3349E+01	8.5728E+03	-5.3347E+01	7.8584E+03	-5.3345E+01	3.5720E+03	-5.3343E+01	4.2864E+03	-5.3341E+01	4.6436E+03	-5.3339E+01	5.0008E+03
1.0716E+04	-5.3420E+01	8.5728E+03	-5.3419E+01	7.8584E+03	-5.3417E+01	3.5720E+03	-5.3414E+01	4.2864E+03	-5.3413E+01	4.6436E+03	-5.3410E+01	5.0008E+03
1.0716E+04	-5.3492E+01	8.5728E+03	-5.3490E+01	7.8584E+03	-5.3488E+01	3.5720E+03	-5.3486E+01	4.2864E+03	-5.3484E+01	4.6436E+03	-5.3481E+01	5.0008E+03
1.0716E+04	-5.3563E+01	8.5728E+03	-5.3561E+01	7.8584E+03	-5.3560E+01	3.5720E+03	-5.3557E+01	4.2864E+03	-5.3556E+01	4.6436E+03	-5.3553E+01	5.0008E+03
1.0716E+04	-5.3634E+01	8.5728E+03	-5.3633E+01	7.8584E+03	-5.3631E+01	3.5720E+03	-5.3628E+01	4.2864E+03	-5.3627E+01	4.6436E+03	-5.3624E+01	5.0008E+03
1.0716E+04	-5.3705E+01	8.5728E+03	-5.3704E+01	7.8584E+03	-5.3702E+01	3.5720E+03	-5.3699E+01	4.2864E+03	-5.3698E+01	4.6436E+03	-5.3695E+01	5.0008E+03
1.0716E+04	-5.3776E+01	8.5728E+03	-5.3775E+01	7.8584E+03	-5.3773E+01	3.5720E+03	-5.3770E+01	4.2864E+03	-5.3769E+01	4.6436E+03	-5.3766E+01	5.0008E+03
1.0716E+04	-5.3847E+01	8.5728E+03	-5.3846E+01	7.8584E+03	-5.3844E+01	3.5720E+03	-5.3841E+01	4.2864E+03	-5.3840E+01	4.6436E+03	-5.3837E+01	5.0008E+03

Curve 6	Arg 7	Curve 7	Arg 8	Curve 8	Arg 9	Curve 9	Arg 10	Curve 10	Arg 11	Curve 11	Arg 12	Curve 12
1.0716E+04	-5.3918E+01	8.5728E+03	-5.3916E+01	7.8584E+03	-5.3915E+01	3.5720E+03	-5.3912E+01	4.2864E+03	-5.3911E+01	4.6436E+03	-5.3908E+01	5.0008E+03
1.0716E+04	-5.3989E+01	8.5728E+03	-5.3987E+01	7.8584E+03	-5.3985E+01	3.5720E+03	-5.3983E+01	4.2864E+03	-5.3982E+01	4.6436E+03	-5.3979E+01	5.0008E+03
1.0716E+04	-5.4060E+01	8.5728E+03	-5.4058E+01	7.8584E+03	-5.4056E+01	3.5720E+03	-5.4054E+01	4.2864E+03	-5.4052E+01	4.6436E+03	-5.4049E+01	5.0008E+03
1.0716E+04	-5.4130E+01	8.5728E+03	-5.4128E+01	7.8584E+03	-5.4127E+01	3.5720E+03	-5.4124E+01	4.2864E+03	-5.4123E+01	4.6436E+03	-5.4120E+01	5.0008E+03
1.0716E+04	-5.4201E+01	8.5728E+03	-5.4199E+01	7.8584E+03	-5.4197E+01	3.5720E+03	-5.4195E+01	4.2864E+03	-5.4193E+01	4.6436E+03	-5.4190E+01	5.0008E+03
1.0716E+04	-5.4271E+01	8.5728E+03	-5.4269E+01	7.8584E+03	-5.4267E+01	3.5720E+03	-5.4265E+01	4.2864E+03	-5.4264E+01	4.6436E+03	-5.4261E+01	5.0008E+03
1.0716E+04	-5.4341E+01	8.5728E+03	-5.4340E+01	7.8584E+03	-5.4338E+01	3.5720E+03	-5.4335E+01	4.2864E+03	-5.4334E+01	4.6436E+03	-5.4331E+01	5.0008E+03
1.0716E+04	-5.4411E+01	8.5728E+03	-5.4410E+01	7.8584E+03	-5.4408E+01	3.5720E+03	-5.4406E+01	4.2864E+03	-5.4404E+01	4.6436E+03	-5.4401E+01	5.0008E+03
1.0716E+04	-5.4482E+01	8.5728E+03	-5.4480E+01	7.8584E+03	-5.4478E+01	3.5720E+03	-5.4476E+01	4.2864E+03	-5.4474E+01	4.6436E+03	-5.4471E+01	5.0008E+03
1.0716E+04	-5.4552E+01	8.5728E+03	-5.4550E+01	7.8584E+03	-5.4548E+01	3.5720E+03	-5.4546E+01	4.2864E+03	-5.4544E+01	4.6436E+03	-5.4541E+01	5.0008E+03
1.0716E+04	-5.4622E+01	8.5728E+03	-5.4620E+01	7.8584E+03	-5.4618E+01	3.5720E+03	-5.4616E+01	4.2864E+03	-5.4614E+01	4.6436E+03	-5.4611E+01	5.0008E+03
1.0716E+04	-5.4691E+01	8.5728E+03	-5.4690E+01	7.8584E+03	-5.4688E+01	3.5720E+03	-5.4685E+01	4.2864E+03	-5.4684E+01	4.6436E+03	-5.4681E+01	5.0008E+03
1.0716E+04	-5.4761E+01	8.5728E+03	-5.4759E+01	7.8584E+03	-5.4758E+01	3.5720E+03	-5.4755E+01	4.2864E+03	-5.4754E+01	4.6436E+03	-5.4751E+01	5.0008E+03
1.0716E+04	-5.4831E+01	8.5728E+03	-5.4829E+01	7.8584E+03	-5.4827E+01	3.5720E+03	-5.4825E+01	4.2864E+03	-5.4823E+01	4.6436E+03	-5.4821E+01	5.0008E+03
1.0716E+04	-5.4900E+01	8.5728E+03	-5.4899E+01	7.8584E+03	-5.4897E+01	3.5720E+03	-5.4894E+01	4.2864E+03	-5.4893E+01	4.6436E+03	-5.4890E+01	5.0008E+03
1.0716E+04	-5.4970E+01	8.5728E+03	-5.4968E+01	7.8584E+03	-5.4966E+01	3.5720E+03	-5.4964E+01	4.2864E+03	-5.4963E+01	4.6436E+03	-5.4960E+01	5.0008E+03
1.0716E+04	-5.5039E+01	8.5728E+03	-5.5038E+01	7.8584E+03	-5.5036E+01	3.5720E+03	-5.5033E+01	4.2864E+03	-5.5032E+01	4.6436E+03	-5.5029E+01	5.0008E+03
1.0716E+04	-5.5109E+01	8.5728E+03	-5.5107E+01	7.8584E+03	-5.5105E+01	3.5720E+03	-5.5103E+01	4.2864E+03	-5.5101E+01	4.6436E+03	-5.5099E+01	5.0008E+03
1.0716E+04	-5.5178E+01	8.5728E+03	-5.5176E+01	7.8584E+03	-5.5174E+01	3.5720E+03	-5.5172E+01	4.2864E+03	-5.5171E+01	4.6436E+03	-5.5168E+01	5.0008E+03
1.0716E+04	-5.5247E+01	8.5728E+03	-5.5245E+01	7.8584E+03	-5.5243E+01	3.5720E+03	-5.5241E+01	4.2864E+03	-5.5240E+01	4.6436E+03	-5.5237E+01	5.0008E+03
1.0716E+04	-5.5316E+01	8.5728E+03	-5.5314E+01	7.8584E+03	-5.5313E+01	3.5720E+03	-5.5310E+01	4.2864E+03	-5.5309E+01	4.6436E+03	-5.5306E+01	5.0008E+03
1.0716E+04	-5.5385E+01	8.5728E+03	-5.5383E+01	7.8584E+03	-5.5382E+01	3.5720E+03	-5.5379E+01	4.2864E+03	-5.5378E+01	4.6436E+03	-5.5375E+01	5.0008E+03
1.0716E+04	-5.5454E+01	8.5728E+03	-5.5452E+01	7.8584E+03	-5.5450E+01	3.5720E+03	-5.5448E+01	4.2864E+03	-5.5447E+01	4.6436E+03	-5.5444E+01	5.0008E+03
1.0716E+04	-5.5523E+01	8.5728E+03	-5.5521E+01	7.8584E+03	-5.5519E+01	3.5720E+03	-5.5517E+01	4.2864E+03	-5.5515E+01	4.6436E+03	-5.5513E+01	5.0008E+03
1.0716E+04	-5.5591E+01	8.5728E+03	-5.5590E+01	7.8584E+03	-5.5588E+01	3.5720E+03	-5.5586E+01	4.2864E+03	-5.5584E+01	4.6436E+03	-5.5581E+01	5.0008E+03
1.0716E+04	-5.5660E+01	8.5728E+03	-5.5658E+01	7.8584E+03	-5.5657E+01	3.5720E+03	-5.5654E+01	4.2864E+03	-5.5653E+01	4.6436E+03	-5.5650E+01	5.0008E+03
1.0716E+04	-5.5729E+01	8.5728E+03	-5.5727E+01	7.8584E+03	-5.5725E+01	3.5720E+03	-5.5723E+01	4.2864E+03	-5.5721E+01	4.6436E+03	-5.5719E+01	5.0008E+03
1.0716E+04	-5.5797E+01	8.5728E+03	-5.5795E+01	7.8584E+03	-5.5794E+01	3.5720E+03	-5.5791E+01	4.2864E+03	-5.5790E+01	4.6436E+03	-5.5787E+01	5.0008E+03
1.0716E+04	-5.5865E+01	8.5728E+03	-5.5864E+01	7.8584E+03	-5.5862E+01	3.5720E+03	-5.5860E+01	4.2864E+03	-5.5858E+01	4.6436E+03	-5.5855E+01	5.0008E+03
1.0716E+04	-5.5934E+01	8.5728E+03	-5.5932E+01	7.8584E+03	-5.5930E+01	3.5720E+03	-5.5928E+01	4.2864E+03	-5.5927E+01	4.6436E+03	-5.5924E+01	5.0008E+03
1.0716E+04	-5.6002E+01	8.5728E+03	-5.6000E+01	7.8584E+03	-5.5998E+01	3.5720E+03	-5.5996E+01	4.2864E+03	-5.5995E+01	4.6436E+03	-5.5992E+01	5.0008E+03
1.0716E+04	-5.6070E+01	8.5728E+03	-5.6068E+01	7.8584E+03	-5.6067E+01	3.5720E+03	-5.6064E+01	4.2864E+03	-5.6063E+01	4.6436E+03	-5.6060E+01	5.0008E+03
1.0716E+04	-5.6138E+01	8.5728E+03	-5.6136E+01	7.8584E+03	-5.6135E+01	3.5720E+03	-5.6132E+01	4.2864E+03	-5.6131E+01	4.6436E+03	-5.6128E+01	5.0008E+03
1.0716E+04	-5.6206E+01	8.5728E+03	-5.6204E+01	7.8584E+03	-5.6203E+01	3.5720E+03	-5.6200E+01	4.2864E+03	-5.6199E+01	4.6436E+03	-5.6196E+01	5.0008E+03
1.0716E+04	-5.6274E+01	8.5728E+03	-5.6272E+01	7.8584E+03	-5.6271E+01	3.5720E+03	-5.6268E+01	4.2864E+03	-5.6267E+01	4.6436E+03	-5.6264E+01	5.0008E+03
1.0716E+04	-5.6342E+01	8.5728E+03	-5.6340E+01	7.8584E+03	-5.6338E+01	3.5720E+03	-5.6336E+01	4.2864E+03	-5.6335E+01	4.6436E+03	-5.6332E+01	5.0008E+03
1.0716E+04	-5.6409E+01	8.5728E+03	-5.6408E+01	7.8584E+03	-5.6406E+01	3.5720E+03	-5.6404E+01	4.2864E+03	-5.6402E+01	4.6436E+03	-5.6400E+01	5.0008E+03
1.0716E+04	-5.6477E+01	8.5728E+03	-5.6475E+01	7.8584E+03	-5.6474E+01	3.5720E+03	-5.6471E+01	4.2864E+03	-5.6470E+01	4.6436E+03	-5.6467E+01	5.0008E+03
1.0716E+04	-5.6545E+01	8.5728E+03	-5.6543E+01	7.8584E+03	-5.6541E+01	3.5720E+03	-5.6539E+01	4.2864E+03	-5.6538E+01	4.6436E+03	-5.6535E+01	5.0008E+03
1.0716E+04	-5.6612E+01	8.5728E+03	-5.6610E+01	7.8584E+03	-5.6609E+01	3.5720E+03	-5.6606E+01	4.2864E+03	-5.6605E+01	4.6436E+03	-5.6602E+01	5.0008E+03
1.0716E+04	-5.6680E+01	8.5728E+03	-5.6678E+01	7.8584E+03	-5.6676E+01	3.5720E+03	-5.6674E+01	4.2864E+03	-5.6672E+01	4.6436E+03	-5.6670E+01	5.0008E+03
1.0716E+04	-5.6747E+01	8.5728E+03	-5.6745E+01	7.8584E+03	-5.6743E+01	3.5720E+03	-5.6741E+01	4.2864E+03	-5.6740E+01	4.6436E+03	-5.6737E+01	5.0008E+03
1.0716E+04	-5.6814E+01	8.5728E+03	-5.6812E+01	7.8584E+03	-5.6811E+01	3.5720E+03	-5.6808E+01	4.2864E+03	-5.6807E+01	4.6436E+03	-5.6804E+01	5.0008E+03
1.0716E+04	-5.6881E+01	8.5728E+03	-5.6880E+01	7.8584E+03	-5.6878E+01	3.5720E+03	-5.6876E+01	4.2864E+03	-5.6874E+01	4.6436E+03	-5.6872E+01	5.0008E+03
1.0716E+04	-5.6948E+01	8.5728E+03	-5.6947E+01	7.8584E+03	-5.6945E+01	3.5720E+03	-5.6943E+01	4.2864E+03	-5.6941E+01	4.6436E+03	-5.6939E+01	5.0008E+03
1.0716E+04	-5.7015E+01	8.5728E+03	-5.7014E+01	7.8584E+03	-5.7012E+01	3.5720E+03	-5.7010E+01	4.2864E+03	-5.7008E+01	4.6436E+03	-5.7006E+01	5.0008E+03
1.0716E+04	-5.7082E+01	8.5728E+03	-5.7081E+01	7.8584E+03	-5.7079E+01	3.5720E+03	-5.7077E+01	4.2864E+03	-5.7075E+01	4.6436E+03	-5.7073E+01	5.0008E+03
1.0716E+04	-5.7149E+01	8.5728E+03	-5.7147E+01	7.8584E+03	-5.7146E+01	3.5720E+03	-5.7143E+01	4.2864E+03	-5.7142E+01	4.6436E+03	-5.7139E+01	5.0008E+03
1.0716E+04	-5.7216E+01	8.5728E+03	-5.7214E+01	7.8584E+03	-5.7213E+01	3.5720E+03	-5.7210E+01	4.2864E+03	-5.7209E+01	4.6436E+03	-5.7206E+01	5.0008E+03
1.0716E+04	-5.7283E+01	8.5728E+03	-5.7281E+01	7.8584E+03	-5.7279E+01	3.5720E+03	-5.7277E+01	4.2864E+03	-5.7276E+01	4.6436E+03	-5.7273E+01	5.0008E+03
1.0716E+04	-5.7349E+01	8.5728E+03	-5.7348E+01	7.8584E+03	-5.7346E+01	3.5720E+03	-5.7344E+01	4.2864E+03	-5.7342E+01	4.6436E+03	-5.7340E+01	5.0008E+03
1.0716E+04	-5.7416E+01	8.5728E+03	-5.7414E+01	7.8584E+03	-5.7412E+01	3.5720E+03	-5.7410E+01	4.2864E+03	-5.7409E+01	4.6436E+03	-5.7406E+01	5.0008E+03

Curve 6	Arg 7	Curve 7	Arg 8	Curve 8	Arg 9	Curve 9	Arg 10	Curve 10	Arg 11	Curve 11	Arg 12	Curve 12
1.0716E+04	-5.7482E+01	8.5728E+03	-5.7481E+01	7.8584E+03	-5.7479E+01	3.5720E+03	-5.7477E+01	4.2864E+03	-5.7475E+01	4.6436E+03	-5.7473E+01	5.0008E+03
1.0716E+04	-5.7549E+01	8.5728E+03	-5.7547E+01	7.8584E+03	-5.7545E+01	3.5720E+03	-5.7543E+01	4.2864E+03	-5.7542E+01	4.6436E+03	-5.7539E+01	5.0008E+03
1.0716E+04	-5.7615E+01	8.5728E+03	-5.7613E+01	7.8584E+03	-5.7612E+01	3.5720E+03	-5.7609E+01	4.2864E+03	-5.7608E+01	4.6436E+03	-5.7605E+01	5.0008E+03
1.0716E+04	-5.7681E+01	8.5728E+03	-5.7680E+01	7.8584E+03	-5.7678E+01	3.5720E+03	-5.7676E+01	4.2864E+03	-5.7674E+01	4.6436E+03	-5.7672E+01	5.0008E+03
1.0716E+04	-5.7747E+01	8.5728E+03	-5.7746E+01	7.8584E+03	-5.7744E+01	3.5720E+03	-5.7742E+01	4.2864E+03	-5.7740E+01	4.6436E+03	-5.7738E+01	5.0008E+03
1.0716E+04	-5.7813E+01	8.5728E+03	-5.7812E+01	7.8584E+03	-5.7810E+01	3.5720E+03	-5.7808E+01	4.2864E+03	-5.7806E+01	4.6436E+03	-5.7804E+01	5.0008E+03
1.0716E+04	-5.7879E+01	8.5728E+03	-5.7878E+01	7.8584E+03	-5.7876E+01	3.5720E+03	-5.7874E+01	4.2864E+03	-5.7872E+01	4.6436E+03	-5.7870E+01	5.0008E+03
1.0716E+04	-5.7945E+01	8.5728E+03	-5.7944E+01	7.8584E+03	-5.7942E+01	3.5720E+03	-5.7940E+01	4.2864E+03	-5.7938E+01	4.6436E+03	-5.7936E+01	5.0008E+03
1.0716E+04	-5.8011E+01	8.5728E+03	-5.8010E+01	7.8584E+03	-5.8008E+01	3.5720E+03	-5.8006E+01	4.2864E+03	-5.8004E+01	4.6436E+03	-5.8002E+01	5.0008E+03
1.0716E+04	-5.8077E+01	8.5728E+03	-5.8075E+01	7.8584E+03	-5.8074E+01	3.5720E+03	-5.8071E+01	4.2864E+03	-5.8070E+01	4.6436E+03	-5.8067E+01	5.0008E+03
1.0716E+04	-5.8143E+01	8.5728E+03	-5.8141E+01	7.8584E+03	-5.8139E+01	3.5720E+03	-5.8137E+01	4.2864E+03	-5.8136E+01	4.6436E+03	-5.8133E+01	5.0008E+03
1.0716E+04	-5.8208E+01	8.5728E+03	-5.8207E+01	7.8584E+03	-5.8205E+01	3.5720E+03	-5.8203E+01	4.2864E+03	-5.8201E+01	4.6436E+03	-5.8199E+01	5.0008E+03
1.0716E+04	-5.8274E+01	8.5728E+03	-5.8272E+01	7.8584E+03	-5.8271E+01	3.5720E+03	-5.8268E+01	4.2864E+03	-5.8267E+01	4.6436E+03	-5.8264E+01	5.0008E+03
1.0716E+04	-5.8339E+01	8.5728E+03	-5.8338E+01	7.8584E+03	-5.8336E+01	3.5720E+03	-5.8334E+01	4.2864E+03	-5.8333E+01	4.6436E+03	-5.8330E+01	5.0008E+03
1.0716E+04	-5.8405E+01	8.5728E+03	-5.8403E+01	7.8584E+03	-5.8402E+01	3.5720E+03	-5.8399E+01	4.2864E+03	-5.8398E+01	4.6436E+03	-5.8395E+01	5.0008E+03
1.0716E+04	-5.8470E+01	8.5728E+03	-5.8469E+01	7.8584E+03	-5.8467E+01	3.5720E+03	-5.8465E+01	4.2864E+03	-5.8463E+01	4.6436E+03	-5.8461E+01	5.0008E+03
1.0716E+04	-5.8535E+01	8.5728E+03	-5.8534E+01	7.8584E+03	-5.8532E+01	3.5720E+03	-5.8530E+01	4.2864E+03	-5.8529E+01	4.6436E+03	-5.8526E+01	5.0008E+03
1.0716E+04	-5.8601E+01	8.5728E+03	-5.8599E+01	7.8584E+03	-5.8597E+01	3.5720E+03	-5.8595E+01	4.2864E+03	-5.8594E+01	4.6436E+03	-5.8591E+01	5.0008E+03
1.0716E+04	-5.8666E+01	8.5728E+03	-5.8664E+01	7.8584E+03	-5.8663E+01	3.5720E+03	-5.8660E+01	4.2864E+03	-5.8659E+01	4.6436E+03	-5.8656E+01	5.0008E+03
1.0716E+04	-5.8731E+01	8.5728E+03	-5.8729E+01	7.8584E+03	-5.8728E+01	3.5720E+03	-5.8725E+01	4.2864E+03	-5.8724E+01	4.6436E+03	-5.8721E+01	5.0008E+03
1.0716E+04	-5.8796E+01	8.5728E+03	-5.8794E+01	7.8584E+03	-5.8793E+01	3.5720E+03	-5.8790E+01	4.2864E+03	-5.8789E+01	4.6436E+03	-5.8786E+01	5.0008E+03
1.0716E+04	-5.8861E+01	8.5728E+03	-5.8859E+01	7.8584E+03	-5.8857E+01	3.5720E+03	-5.8855E+01	4.2864E+03	-5.8854E+01	4.6436E+03	-5.8851E+01	5.0008E+03
1.0716E+04	-5.8926E+01	8.5728E+03	-5.8924E+01	7.8584E+03	-5.8922E+01	3.5720E+03	-5.8920E+01	4.2864E+03	-5.8919E+01	4.6436E+03	-5.8916E+01	5.0008E+03
1.0716E+04	-5.8990E+01	8.5728E+03	-5.8989E+01	7.8584E+03	-5.8987E+01	3.5720E+03	-5.8985E+01	4.2864E+03	-5.8984E+01	4.6436E+03	-5.8981E+01	5.0008E+03
1.0716E+04	-5.9055E+01	8.5728E+03	-5.9053E+01	7.8584E+03	-5.9052E+01	3.5720E+03	-5.9050E+01	4.2864E+03	-5.9048E+01	4.6436E+03	-5.9046E+01	5.0008E+03
1.0716E+04	-5.9120E+01	8.5728E+03	-5.9118E+01	7.8584E+03	-5.9116E+01	3.5720E+03	-5.9114E+01	4.2864E+03	-5.9113E+01	4.6436E+03	-5.9110E+01	5.0008E+03
1.0716E+04	-5.9184E+01	8.5728E+03	-5.9183E+01	7.8584E+03	-5.9181E+01	3.5720E+03	-5.9179E+01	4.2864E+03	-5.9177E+01	4.6436E+03	-5.9175E+01	5.0008E+03
1.0716E+04	-5.9249E+01	8.5728E+03	-5.9247E+01	7.8584E+03	-5.9246E+01	3.5720E+03	-5.9243E+01	4.2864E+03	-5.9242E+01	4.6436E+03	-5.9239E+01	5.0008E+03
1.0716E+04	-5.9313E+01	8.5728E+03	-5.9312E+01	7.8584E+03	-5.9310E+01	3.5720E+03	-5.9308E+01	4.2864E+03	-5.9306E+01	4.6436E+03	-5.9304E+01	5.0008E+03
1.0716E+04	-5.9378E+01	8.5728E+03	-5.9376E+01	7.8584E+03	-5.9374E+01	3.5720E+03	-5.9372E+01	4.2864E+03	-5.9371E+01	4.6436E+03	-5.9368E+01	5.0008E+03
1.0716E+04	-5.9442E+01	8.5728E+03	-5.9440E+01	7.8584E+03	-5.9439E+01	3.5720E+03	-5.9436E+01	4.2864E+03	-5.9435E+01	4.6436E+03	-5.9432E+01	5.0008E+03
1.0716E+04	-5.9506E+01	8.5728E+03	-5.9504E+01	7.8584E+03	-5.9503E+01	3.5720E+03	-5.9501E+01	4.2864E+03	-5.9499E+01	4.6436E+03	-5.9497E+01	5.0008E+03
1.0716E+04	-5.9570E+01	8.5728E+03	-5.9569E+01	7.8584E+03	-5.9567E+01	3.5720E+03	-5.9565E+01	4.2864E+03	-5.9563E+01	4.6436E+03	-5.9561E+01	5.0008E+03

Arg 13	Curve 13	Arg 14	Curve 14	Arg 15	Curve 15	Arg 16	Curve 16	Arg 17	Curve 17	Arg 18	Curve 18
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
5.8875E+01	0.0000E+00	6.0560E+01	0.0000E+00	6.6530E+01	0.0000E+00	7.7785E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
3.5408E+01	0.0000E+00	3.5857E+01	0.0000E+00	3.7289E+01	0.0000E+00	3.9429E+01	0.0000E+00	4.7991E+01	0.0000E+00	6.2113E+01	0.0000E+00
2.6362E+01	0.0000E+00	2.6595E+01	0.0000E+00	2.7320E+01	0.0000E+00	2.8354E+01	0.0000E+00	3.1934E+01	0.0000E+00	3.6253E+01	0.0000E+00
2.1062E+01	0.0000E+00	2.1213E+01	0.0000E+00	2.1679E+01	0.0000E+00	2.2330E+01	0.0000E+00	2.4465E+01	0.0000E+00	2.6798E+01	0.0000E+00
1.7402E+01	0.0000E+00	1.7512E+01	0.0000E+00	1.7849E+01	0.0000E+00	1.8315E+01	0.0000E+00	1.9799E+01	0.0000E+00	2.1345E+01	0.0000E+00
1.4637E+01	0.0000E+00	1.4723E+01	0.0000E+00	1.4985E+01	0.0000E+00	1.5345E+01	0.0000E+00	1.6469E+01	0.0000E+00	1.7607E+01	0.0000E+00
1.2429E+01	0.0000E+00	1.2499E+01	0.0000E+00	1.2712E+01	0.0000E+00	1.3003E+01	0.0000E+00	1.3904E+01	0.0000E+00	1.4798E+01	0.0000E+00
1.0594E+01	0.0000E+00	1.0653E+01	0.0000E+00	1.0833E+01	0.0000E+00	1.1077E+01	0.0000E+00	1.1826E+01	0.0000E+00	1.2559E+01	0.0000E+00
9.0272E+00	0.0000E+00	9.0783E+00	0.0000E+00	9.2333E+00	0.0000E+00	9.4434E+00	0.0000E+00	1.0084E+01	0.0000E+00	1.0704E+01	0.0000E+00
7.6598E+00	0.0000E+00	7.7048E+00	0.0000E+00	7.8411E+00	0.0000E+00	8.0255E+00	0.0000E+00	8.5844E+00	0.0000E+00	9.1224E+00	0.0000E+00
6.4465E+00	0.0000E+00	6.4867E+00	0.0000E+00	6.6084E+00	0.0000E+00	6.7727E+00	0.0000E+00	7.2689E+00	0.0000E+00	7.7436E+00	0.0000E+00
5.3554E+00	7.1324E-11	5.3918E+00	5.6452E-11	5.5017E+00	1.5466E-11	5.6501E+00	3.0933E-12	6.0964E+00	0.0000E+00	6.5213E+00	0.0000E+00
4.3635E+00	1.3338E-06	4.3967E+00	1.1696E-06	4.4971E+00	4.3282E-07	4.6323E+00	1.3261E-07	5.0382E+00	1.8572E-09	5.4231E+00	3.0952E-10
3.4535E+00	2.0430E-03	3.4841E+00	1.9364E-03	3.5765E+00	9.0859E-04	3.7008E+00	3.8560E-04	4.0733E+00	1.4975E-05	4.4253E+00	6.9531E-06
2.6121E+00	4.3354E-01	2.6405E+00	4.3712E-01	2.7262E+00	2.4763E-01	2.8414E+00	1.3607E-01	3.1858E+00	1.1830E-02	3.5104E+00	1.2312E-02
1.8292E+00	1.9029E+01	1.8557E+00	2.0157E+01	1.9356E+00	1.3275E+01	2.0430E+00	8.9656E+00	2.3636E+00	1.4823E+00	2.6649E+00	2.9318E+00
1.0965E+00	2.3770E+02	1.1213E+00	2.6186E+02	1.1963E+00	1.9436E+02	1.2970E+00	1.5470E+02	1.5970E+00	4.2712E+01	1.8785E+00	1.4109E+02
4.0738E-01	1.1091E+03	4.3082E-01	1.2592E+03	5.0143E-01	1.0250E+03	5.9625E-01	9.2664E+02	8.7845E-01	3.8242E+02	1.1427E+00	1.8960E+03
-2.4347E-01	2.4939E+03	-2.2128E-01	2.8922E+03	-1.5448E-01	2.5138E+03	-6.4812E-02	2.4914E+03	2.0175E-01	1.3849E+03	4.5095E-01	9.3582E+03
-8.6053E-01	3.4899E+03	-8.3946E-01	4.0976E+03	-7.7603E-01	3.7025E+03	-6.9093E-01	3.8809E+03	-4.3818E-01	2.6157E+03	-2.0223E-01	2.1895E+04
-1.4475E+00	3.8494E+03	-1.4275E+00	4.5426E+03	-1.3671E+00	4.1724E+03	-1.2860E+00	4.4835E+03	-1.0456E+00	3.3233E+03	-8.2137E-01	3.1357E+04
-2.0077E+00	3.9203E+03	-1.9885E+00	4.6322E+03	-1.9308E+00	4.2729E+03	-1.8534E+00	4.6233E+03	-1.6239E+00	3.5334E+03	-1.4102E+00	3.4919E+04
-2.5436E+00	3.9286E+03	-2.5252E+00	4.6428E+03	-2.4699E+00	4.2854E+03	-2.3958E+00	4.6420E+03	-2.1763E+00	3.5683E+03	-1.9720E+00	3.5648E+04
-3.0576E+00	3.9292E+03	-3.0399E+00	4.6436E+03	-2.9868E+00	4.2864E+03	-2.9157E+00	4.6435E+03	-2.7052E+00	3.5718E+03	-2.5094E+00	3.5736E+04
-3.5516E+00	3.9292E+03	-3.5346E+00	4.6436E+03	-3.4836E+00	4.2864E+03	-3.4152E+00	4.6436E+03	-3.2128E+00	3.5720E+03	-3.0248E+00	3.5742E+04
-4.0275E+00	3.9292E+03	-4.0111E+00	4.6436E+03	-3.9619E+00	4.2864E+03	-3.8960E+00	4.6436E+03	-3.7010E+00	3.5720E+03	-3.5201E+00	3.5743E+04
-4.4867E+00	3.9292E+03	-4.4709E+00	4.6436E+03	-4.4233E+00	4.2864E+03	-4.3597E+00	4.6436E+03	-4.1716E+00	3.5720E+03	-3.9971E+00	3.5743E+04
-4.9305E+00	3.9292E+03	-4.9152E+00	4.6436E+03	-4.8692E+00	4.2864E+03	-4.8077E+00	4.6436E+03	-4.6258E+00	3.5720E+03	-4.4573E+00	3.5743E+04
-5.3602E+00	3.9292E+03	-5.3454E+00	4.6436E+03	-5.3008E+00	4.2864E+03	-5.2412E+00	4.6436E+03	-5.0652E+00	3.5720E+03	-4.9021E+00	3.5743E+04
-5.7767E+00	3.9292E+03	-5.7623E+00	4.6436E+03	-5.7191E+00	4.2864E+03	-5.6613E+00	4.6436E+03	-5.4906E+00	3.5720E+03	-5.3326E+00	3.5743E+04
-6.1810E+00	3.9292E+03	-6.1671E+00	4.6436E+03	-6.1251E+00	4.2864E+03	-6.0690E+00	4.6436E+03	-5.9033E+00	3.5720E+03	-5.7500E+00	3.5743E+04
-6.5740E+00	3.9292E+03	-6.5605E+00	4.6436E+03	-6.5197E+00	4.2864E+03	-6.4651E+00	4.6436E+03	-6.3041E+00	3.5720E+03	-6.1551E+00	3.5743E+04
-6.9564E+00	3.9292E+03	-6.9432E+00	4.6436E+03	-6.9035E+00	4.2864E+03	-6.8504E+00	4.6436E+03	-6.6937E+00	3.5720E+03	-6.5488E+00	3.5743E+04
-7.3289E+00	3.9292E+03	-7.3160E+00	4.6436E+03	-7.2773E+00	4.2864E+03	-7.2256E+00	4.6436E+03	-7.0729E+00	3.5720E+03	-6.9319E+00	3.5743E+04
-7.6921E+00	3.9292E+03	-7.6795E+00	4.6436E+03	-7.6418E+00	4.2864E+03	-7.5913E+00	4.6436E+03	-7.4424E+00	3.5720E+03	-7.3050E+00	3.5743E+04
-8.0465E+00	3.9292E+03	-8.0342E+00	4.6436E+03	-7.9974E+00	4.2864E+03	-7.9481E+00	4.6436E+03	-7.8028E+00	3.5720E+03	-7.6687E+00	3.5743E+04
-8.3927E+00	3.9292E+03	-8.3807E+00	4.6436E+03	-8.3447E+00	4.2864E+03	-8.2965E+00	4.6436E+03	-8.1547E+00	3.5720E+03	-8.0237E+00	3.5743E+04
-8.7311E+00	3.9292E+03	-8.7193E+00	4.6436E+03	-8.6841E+00	4.2864E+03	-8.6371E+00	4.6436E+03	-8.4984E+00	3.5720E+03	-8.3704E+00	3.5743E+04
-9.0621E+00	3.9292E+03	-9.0507E+00	4.6436E+03	-9.0162E+00	4.2864E+03	-8.9701E+00	4.6436E+03	-8.8345E+00	3.5720E+03	-8.7093E+00	3.5743E+04
-9.3862E+00	3.9292E+03	-9.3750E+00	4.6436E+03	-9.3413E+00	4.2864E+03	-9.2962E+00	4.6436E+03	-9.1633E+00	3.5720E+03	-9.0408E+00	3.5743E+04
-9.7037E+00	3.9292E+03	-9.6927E+00	4.6436E+03	-9.6597E+00	4.2864E+03	-9.6155E+00	4.6436E+03	-9.4853E+00	3.5720E+03	-9.3654E+00	3.5743E+04
-1.0015E+01	3.9292E+03	-1.0004E+01	4.6436E+03	-9.9718E+00	4.2864E+03	-9.9284E+00	4.6436E+03	-9.8009E+00	3.5720E+03	-9.6833E+00	3.5743E+04
-1.0320E+01	3.9292E+03	-1.0310E+01	4.6436E+03	-1.0278E+01	4.2864E+03	-1.0235E+01	4.6436E+03	-1.0110E+01	3.5720E+03	-9.9949E+00	3.5743E+04
-1.0620E+01	3.9292E+03	-1.0610E+01	4.6436E+03	-1.0578E+01	4.2864E+03	-1.0537E+01	4.6436E+03	-1.0414E+01	3.5720E+03	-1.0301E+01	3.5743E+04
-1.0914E+01	3.9292E+03	-1.0904E+01	4.6436E+03	-1.0873E+01	4.2864E+03	-1.0832E+01	4.6436E+03	-1.0712E+01	3.5720E+03	-1.0601E+01	3.5743E+04
-1.1203E+01	3.9292E+03	-1.1193E+01	4.6436E+03	-1.1163E+01	4.2864E+03	-1.1123E+01	4.6436E+03	-1.1004E+01	3.5720E+03	-1.0895E+01	3.5743E+04
-1.1487E+01	3.9292E+03	-1.1477E+01	4.6436E+03	-1.1448E+01	4.2864E+03	-1.1408E+01	4.6436E+03	-1.1292E+01	3.5720E+03	-1.1185E+01	3.5743E+04
-1.1767E+01	3.9292E+03	-1.1757E+01	4.6436E+03	-1.1728E+01	4.2864E+03	-1.1689E+01	4.6436E+03	-1.1574E+01	3.5720E+03	-1.1469E+01	3.5743E+04
-1.2042E+01	3.9292E+03	-1.2032E+01	4.6436E+03	-1.2003E+01	4.2864E+03	-1.1965E+01	4.6436E+03	-1.1852E+01	3.5720E+03	-1.1749E+01	3.5743E+04
-1.2312E+01	3.9292E+03	-1.2303E+01	4.6436E+03	-1.2275E+01	4.2864E+03	-1.2237E+01	4.6436E+03	-1.2126E+01	3.5720E+03	-1.2024E+01	3.5743E+04
-1.2579E+01	3.9292E+03	-1.2569E+01	4.6436E+03	-1.2541E+01	4.2864E+03	-1.2504E+01	4.6436E+03	-1.2395E+01	3.5720E+03	-1.2295E+01	3.5743E+04

Arg 13	Curve 13	Arg 14	Curve 14	Arg 15	Curve 15	Arg 16	Curve 16	Arg 17	Curve 17	Arg 18	Curve 18
-1.2841E+01	3.9292E+03	-1.2832E+01	4.6436E+03	-1.2804E+01	4.2864E+03	-1.2768E+01	4.6436E+03	-1.2660E+01	3.5720E+03	-1.2561E+01	3.5743E+04
-1.3100E+01	3.9292E+03	-1.3091E+01	4.6436E+03	-1.3064E+01	4.2864E+03	-1.3027E+01	4.6436E+03	-1.2921E+01	3.5720E+03	-1.2824E+01	3.5743E+04
-1.3354E+01	3.9292E+03	-1.3346E+01	4.6436E+03	-1.3319E+01	4.2864E+03	-1.3283E+01	4.6436E+03	-1.3179E+01	3.5720E+03	-1.3083E+01	3.5743E+04
-1.3606E+01	3.9292E+03	-1.3597E+01	4.6436E+03	-1.3571E+01	4.2864E+03	-1.3536E+01	4.6436E+03	-1.3433E+01	3.5720E+03	-1.3338E+01	3.5743E+04
-1.3854E+01	3.9292E+03	-1.3845E+01	4.6436E+03	-1.3819E+01	4.2864E+03	-1.3785E+01	4.6436E+03	-1.3683E+01	3.5720E+03	-1.3589E+01	3.5743E+04
-1.4098E+01	3.9292E+03	-1.4090E+01	4.6436E+03	-1.4064E+01	4.2864E+03	-1.4030E+01	4.6436E+03	-1.3930E+01	3.5720E+03	-1.3838E+01	3.5743E+04
-1.4340E+01	3.9292E+03	-1.4331E+01	4.6436E+03	-1.4306E+01	4.2864E+03	-1.4272E+01	4.6436E+03	-1.4173E+01	3.5720E+03	-1.4082E+01	3.5743E+04
-1.4578E+01	3.9292E+03	-1.4570E+01	4.6436E+03	-1.4545E+01	4.2864E+03	-1.4511E+01	4.6436E+03	-1.4414E+01	3.5720E+03	-1.4324E+01	3.5743E+04
-1.4813E+01	3.9292E+03	-1.4805E+01	4.6436E+03	-1.4780E+01	4.2864E+03	-1.4748E+01	4.6436E+03	-1.4651E+01	3.5720E+03	-1.4562E+01	3.5743E+04
-1.5046E+01	3.9292E+03	-1.5038E+01	4.6436E+03	-1.5013E+01	4.2864E+03	-1.4981E+01	4.6436E+03	-1.4886E+01	3.5720E+03	-1.4798E+01	3.5743E+04
-1.5275E+01	3.9292E+03	-1.5267E+01	4.6436E+03	-1.5243E+01	4.2864E+03	-1.5211E+01	4.6436E+03	-1.5117E+01	3.5720E+03	-1.5031E+01	3.5743E+04
-1.5502E+01	3.9292E+03	-1.5494E+01	4.6436E+03	-1.5471E+01	4.2864E+03	-1.5439E+01	4.6436E+03	-1.5346E+01	3.5720E+03	-1.5260E+01	3.5743E+04
-1.5727E+01	3.9292E+03	-1.5719E+01	4.6436E+03	-1.5695E+01	4.2864E+03	-1.5664E+01	4.6436E+03	-1.5572E+01	3.5720E+03	-1.5488E+01	3.5743E+04
-1.5948E+01	3.9292E+03	-1.5941E+01	4.6436E+03	-1.5918E+01	4.2864E+03	-1.5887E+01	4.6436E+03	-1.5796E+01	3.5720E+03	-1.5712E+01	3.5743E+04
-1.6168E+01	3.9292E+03	-1.6160E+01	4.6436E+03	-1.6137E+01	4.2864E+03	-1.6107E+01	4.6436E+03	-1.6017E+01	3.5720E+03	-1.5934E+01	3.5743E+04
-1.6385E+01	3.9292E+03	-1.6377E+01	4.6436E+03	-1.6355E+01	4.2864E+03	-1.6324E+01	4.6436E+03	-1.6235E+01	3.5720E+03	-1.6154E+01	3.5743E+04
-1.6600E+01	3.9292E+03	-1.6592E+01	4.6436E+03	-1.6570E+01	4.2864E+03	-1.6540E+01	4.6436E+03	-1.6452E+01	3.5720E+03	-1.6371E+01	3.5743E+04
-1.6812E+01	3.9292E+03	-1.6805E+01	4.6436E+03	-1.6782E+01	4.2864E+03	-1.6753E+01	4.6436E+03	-1.6666E+01	3.5720E+03	-1.6586E+01	3.5743E+04
-1.7022E+01	3.9292E+03	-1.7015E+01	4.6436E+03	-1.6993E+01	4.2864E+03	-1.6964E+01	4.6436E+03	-1.6877E+01	3.5720E+03	-1.6798E+01	3.5743E+04
-1.7230E+01	3.9292E+03	-1.7223E+01	4.6436E+03	-1.7201E+01	4.2864E+03	-1.7172E+01	4.6436E+03	-1.7087E+01	3.5720E+03	-1.7009E+01	3.5743E+04
-1.7436E+01	3.9292E+03	-1.7429E+01	4.6436E+03	-1.7408E+01	4.2864E+03	-1.7379E+01	4.6436E+03	-1.7294E+01	3.5720E+03	-1.7217E+01	3.5743E+04
-1.7640E+01	3.9292E+03	-1.7633E+01	4.6436E+03	-1.7612E+01	4.2864E+03	-1.7583E+01	4.6436E+03	-1.7500E+01	3.5720E+03	-1.7423E+01	3.5743E+04
-1.7842E+01	3.9292E+03	-1.7835E+01	4.6436E+03	-1.7814E+01	4.2864E+03	-1.7786E+01	4.6436E+03	-1.7703E+01	3.5720E+03	-1.7627E+01	3.5743E+04
-1.8043E+01	3.9292E+03	-1.8036E+01	4.6436E+03	-1.8015E+01	4.2864E+03	-1.7987E+01	4.6436E+03	-1.7905E+01	3.5720E+03	-1.7829E+01	3.5743E+04
-1.8241E+01	3.9292E+03	-1.8234E+01	4.6436E+03	-1.8213E+01	4.2864E+03	-1.8186E+01	4.6436E+03	-1.8104E+01	3.5720E+03	-1.8030E+01	3.5743E+04
-1.8437E+01	3.9292E+03	-1.8431E+01	4.6436E+03	-1.8410E+01	4.2864E+03	-1.8383E+01	4.6436E+03	-1.8302E+01	3.5720E+03	-1.8228E+01	3.5743E+04
-1.8632E+01	3.9292E+03	-1.8625E+01	4.6436E+03	-1.8605E+01	4.2864E+03	-1.8578E+01	4.6436E+03	-1.8498E+01	3.5720E+03	-1.8425E+01	3.5743E+04
-1.8825E+01	3.9292E+03	-1.8818E+01	4.6436E+03	-1.8798E+01	4.2864E+03	-1.8771E+01	4.6436E+03	-1.8692E+01	3.5720E+03	-1.8619E+01	3.5743E+04
-1.9016E+01	3.9292E+03	-1.9010E+01	4.6436E+03	-1.8990E+01	4.2864E+03	-1.8963E+01	4.6436E+03	-1.8885E+01	3.5720E+03	-1.8813E+01	3.5743E+04
-1.9206E+01	3.9292E+03	-1.9199E+01	4.6436E+03	-1.9180E+01	4.2864E+03	-1.9153E+01	4.6436E+03	-1.9075E+01	3.5720E+03	-1.9004E+01	3.5743E+04
-1.9394E+01	3.9292E+03	-1.9388E+01	4.6436E+03	-1.9368E+01	4.2864E+03	-1.9342E+01	4.6436E+03	-1.9265E+01	3.5720E+03	-1.9194E+01	3.5743E+04
-1.9581E+01	3.9292E+03	-1.9574E+01	4.6436E+03	-1.9555E+01	4.2864E+03	-1.9529E+01	4.6436E+03	-1.9452E+01	3.5720E+03	-1.9382E+01	3.5743E+04
-1.9766E+01	3.9292E+03	-1.9759E+01	4.6436E+03	-1.9740E+01	4.2864E+03	-1.9714E+01	4.6436E+03	-1.9638E+01	3.5720E+03	-1.9569E+01	3.5743E+04
-1.9949E+01	3.9292E+03	-1.9943E+01	4.6436E+03	-1.9923E+01	4.2864E+03	-1.9898E+01	4.6436E+03	-1.9823E+01	3.5720E+03	-1.9754E+01	3.5743E+04
-2.0131E+01	3.9292E+03	-2.0125E+01	4.6436E+03	-2.0106E+01	4.2864E+03	-2.0080E+01	4.6436E+03	-2.0006E+01	3.5720E+03	-1.9937E+01	3.5743E+04
-2.0312E+01	3.9292E+03	-2.0305E+01	4.6436E+03	-2.0286E+01	4.2864E+03	-2.0261E+01	4.6436E+03	-2.0187E+01	3.5720E+03	-2.0119E+01	3.5743E+04
-2.0491E+01	3.9292E+03	-2.0485E+01	4.6436E+03	-2.0466E+01	4.2864E+03	-2.0441E+01	4.6436E+03	-2.0367E+01	3.5720E+03	-2.0300E+01	3.5743E+04
-2.0669E+01	3.9292E+03	-2.0662E+01	4.6436E+03	-2.0644E+01	4.2864E+03	-2.0619E+01	4.6436E+03	-2.0546E+01	3.5720E+03	-2.0479E+01	3.5743E+04
-2.0845E+01	3.9292E+03	-2.0839E+01	4.6436E+03	-2.0821E+01	4.2864E+03	-2.0796E+01	4.6436E+03	-2.0724E+01	3.5720E+03	-2.0657E+01	3.5743E+04
-2.1020E+01	3.9292E+03	-2.1014E+01	4.6436E+03	-2.0996E+01	4.2864E+03	-2.0971E+01	4.6436E+03	-2.0900E+01	3.5720E+03	-2.0834E+01	3.5743E+04
-2.1194E+01	3.9292E+03	-2.1188E+01	4.6436E+03	-2.1170E+01	4.2864E+03	-2.1146E+01	4.6436E+03	-2.1074E+01	3.5720E+03	-2.1009E+01	3.5743E+04
-2.1367E+01	3.9292E+03	-2.1361E+01	4.6436E+03	-2.1343E+01	4.2864E+03	-2.1319E+01	4.6436E+03	-2.1248E+01	3.5720E+03	-2.1183E+01	3.5743E+04
-2.1538E+01	3.9292E+03	-2.1532E+01	4.6436E+03	-2.1514E+01	4.2864E+03	-2.1490E+01	4.6436E+03	-2.1420E+01	3.5720E+03	-2.1356E+01	3.5743E+04
-2.1708E+01	3.9292E+03	-2.1702E+01	4.6436E+03	-2.1685E+01	4.2864E+03	-2.1661E+01	4.6436E+03	-2.1591E+01	3.5720E+03	-2.1527E+01	3.5743E+04
-2.1877E+01	3.9292E+03	-2.1871E+01	4.6436E+03	-2.1854E+01	4.2864E+03	-2.1830E+01	4.6436E+03	-2.1761E+01	3.5720E+03	-2.1697E+01	3.5743E+04
-2.2045E+01	3.9292E+03	-2.2039E+01	4.6436E+03	-2.2022E+01	4.2864E+03	-2.1998E+01	4.6436E+03	-2.1930E+01	3.5720E+03	-2.1866E+01	3.5743E+04
-2.2212E+01	3.9292E+03	-2.2206E+01	4.6436E+03	-2.2189E+01	4.2864E+03	-2.2165E+01	4.6436E+03	-2.2097E+01	3.5720E+03	-2.2034E+01	3.5743E+04
-2.2377E+01	3.9292E+03	-2.2372E+01	4.6436E+03	-2.2354E+01	4.2864E+03	-2.2331E+01	4.6436E+03	-2.2263E+01	3.5720E+03	-2.2201E+01	3.5743E+04
-2.2542E+01	3.9292E+03	-2.2536E+01	4.6436E+03	-2.2519E+01	4.2864E+03	-2.2496E+01	4.6436E+03	-2.2429E+01	3.5720E+03	-2.2367E+01	3.5743E+04
-2.2705E+01	3.9292E+03	-2.2700E+01	4.6436E+03	-2.2683E+01	4.2864E+03	-2.2660E+01	4.6436E+03	-2.2593E+01	3.5720E+03	-2.2531E+01	3.5743E+04
-2.2868E+01	3.9292E+03	-2.2862E+01	4.6436E+03	-2.2845E+01	4.2864E+03	-2.2822E+01	4.6436E+03	-2.2756E+01	3.5720E+03	-2.2695E+01	3.5743E+04
-2.3029E+01	3.9292E+03	-2.3023E+01	4.6436E+03	-2.3006E+01	4.2864E+03	-2.2984E+01	4.6436E+03	-2.2918E+01	3.5720E+03	-2.2857E+01	3.5743E+04

Arg 13	Curve 13	Arg 14	Curve 14	Arg 15	Curve 15	Arg 16	Curve 16	Arg 17	Curve 17	Arg 18	Curve 18
-2.3189E+01	3.9292E+03	-2.3184E+01	4.6436E+03	-2.3167E+01	4.2864E+03	-2.3144E+01	4.6436E+03	-2.3079E+01	3.5720E+03	-2.3019E+01	3.5743E+04
-2.3349E+01	3.9292E+03	-2.3343E+01	4.6436E+03	-2.3326E+01	4.2864E+03	-2.3304E+01	4.6436E+03	-2.3239E+01	3.5720E+03	-2.3179E+01	3.5743E+04
-2.3507E+01	3.9292E+03	-2.3501E+01	4.6436E+03	-2.3485E+01	4.2864E+03	-2.3463E+01	4.6436E+03	-2.3398E+01	3.5720E+03	-2.3338E+01	3.5743E+04
-2.3664E+01	3.9292E+03	-2.3659E+01	4.6436E+03	-2.3642E+01	4.2864E+03	-2.3620E+01	4.6436E+03	-2.3556E+01	3.5720E+03	-2.3497E+01	3.5743E+04
-2.3821E+01	3.9292E+03	-2.3815E+01	4.6436E+03	-2.3799E+01	4.2864E+03	-2.3777E+01	4.6436E+03	-2.3713E+01	3.5720E+03	-2.3654E+01	3.5743E+04
-2.3976E+01	3.9292E+03	-2.3971E+01	4.6436E+03	-2.3954E+01	4.2864E+03	-2.3933E+01	4.6436E+03	-2.3869E+01	3.5720E+03	-2.3810E+01	3.5743E+04
-2.4130E+01	3.9292E+03	-2.4125E+01	4.6436E+03	-2.4109E+01	4.2864E+03	-2.4087E+01	4.6436E+03	-2.4024E+01	3.5720E+03	-2.3966E+01	3.5743E+04
-2.4284E+01	3.9292E+03	-2.4279E+01	4.6436E+03	-2.4263E+01	4.2864E+03	-2.4241E+01	4.6436E+03	-2.4178E+01	3.5720E+03	-2.4120E+01	3.5743E+04
-2.4437E+01	3.9292E+03	-2.4431E+01	4.6436E+03	-2.4415E+01	4.2864E+03	-2.4394E+01	4.6436E+03	-2.4332E+01	3.5720E+03	-2.4274E+01	3.5743E+04
-2.4589E+01	3.9292E+03	-2.4583E+01	4.6436E+03	-2.4567E+01	4.2864E+03	-2.4546E+01	4.6436E+03	-2.4484E+01	3.5720E+03	-2.4427E+01	3.5743E+04
-2.4740E+01	3.9292E+03	-2.4734E+01	4.6436E+03	-2.4719E+01	4.2864E+03	-2.4697E+01	4.6436E+03	-2.4636E+01	3.5720E+03	-2.4579E+01	3.5743E+04
-2.4890E+01	3.9292E+03	-2.4885E+01	4.6436E+03	-2.4869E+01	4.2864E+03	-2.4848E+01	4.6436E+03	-2.4786E+01	3.5720E+03	-2.4730E+01	3.5743E+04
-2.5039E+01	3.9292E+03	-2.5034E+01	4.6436E+03	-2.5018E+01	4.2864E+03	-2.4997E+01	4.6436E+03	-2.4936E+01	3.5720E+03	-2.4880E+01	3.5743E+04
-2.5188E+01	3.9292E+03	-2.5182E+01	4.6436E+03	-2.5167E+01	4.2864E+03	-2.5146E+01	4.6436E+03	-2.5085E+01	3.5720E+03	-2.5029E+01	3.5743E+04
-2.5335E+01	3.9292E+03	-2.5330E+01	4.6436E+03	-2.5315E+01	4.2864E+03	-2.5294E+01	4.6436E+03	-2.5233E+01	3.5720E+03	-2.5178E+01	3.5743E+04
-2.5482E+01	3.9292E+03	-2.5477E+01	4.6436E+03	-2.5462E+01	4.2864E+03	-2.5441E+01	4.6436E+03	-2.5381E+01	3.5720E+03	-2.5326E+01	3.5743E+04
-2.5628E+01	3.9292E+03	-2.5623E+01	4.6436E+03	-2.5608E+01	4.2864E+03	-2.5587E+01	4.6436E+03	-2.5528E+01	3.5720E+03	-2.5473E+01	3.5743E+04
-2.5774E+01	3.9292E+03	-2.5769E+01	4.6436E+03	-2.5753E+01	4.2864E+03	-2.5733E+01	4.6436E+03	-2.5673E+01	3.5720E+03	-2.5619E+01	3.5743E+04
-2.5918E+01	3.9292E+03	-2.5913E+01	4.6436E+03	-2.5898E+01	4.2864E+03	-2.5878E+01	4.6436E+03	-2.5819E+01	3.5720E+03	-2.5764E+01	3.5743E+04
-2.6062E+01	3.9292E+03	-2.6057E+01	4.6436E+03	-2.6042E+01	4.2864E+03	-2.6022E+01	4.6436E+03	-2.5963E+01	3.5720E+03	-2.5909E+01	3.5743E+04
-2.6205E+01	3.9292E+03	-2.6200E+01	4.6436E+03	-2.6185E+01	4.2864E+03	-2.6165E+01	4.6436E+03	-2.6107E+01	3.5720E+03	-2.6053E+01	3.5743E+04
-2.6348E+01	3.9292E+03	-2.6343E+01	4.6436E+03	-2.6328E+01	4.2864E+03	-2.6308E+01	4.6436E+03	-2.6249E+01	3.5720E+03	-2.6196E+01	3.5743E+04
-2.6489E+01	3.9292E+03	-2.6484E+01	4.6436E+03	-2.6469E+01	4.2864E+03	-2.6450E+01	4.6436E+03	-2.6392E+01	3.5720E+03	-2.6338E+01	3.5743E+04
-2.6630E+01	3.9292E+03	-2.6625E+01	4.6436E+03	-2.6610E+01	4.2864E+03	-2.6591E+01	4.6436E+03	-2.6533E+01	3.5720E+03	-2.6480E+01	3.5743E+04
-2.6770E+01	3.9292E+03	-2.6766E+01	4.6436E+03	-2.6751E+01	4.2864E+03	-2.6731E+01	4.6436E+03	-2.6674E+01	3.5720E+03	-2.6621E+01	3.5743E+04
-2.6910E+01	3.9292E+03	-2.6905E+01	4.6436E+03	-2.6891E+01	4.2864E+03	-2.6871E+01	4.6436E+03	-2.6814E+01	3.5720E+03	-2.6761E+01	3.5743E+04
-2.7049E+01	3.9292E+03	-2.7044E+01	4.6436E+03	-2.7030E+01	4.2864E+03	-2.7010E+01	4.6436E+03	-2.6953E+01	3.5720E+03	-2.6901E+01	3.5743E+04
-2.7187E+01	3.9292E+03	-2.7182E+01	4.6436E+03	-2.7168E+01	4.2864E+03	-2.7149E+01	4.6436E+03	-2.7092E+01	3.5720E+03	-2.7040E+01	3.5743E+04
-2.7325E+01	3.9292E+03	-2.7320E+01	4.6436E+03	-2.7306E+01	4.2864E+03	-2.7286E+01	4.6436E+03	-2.7230E+01	3.5720E+03	-2.7178E+01	3.5743E+04
-2.7462E+01	3.9292E+03	-2.7457E+01	4.6436E+03	-2.7443E+01	4.2864E+03	-2.7423E+01	4.6436E+03	-2.7367E+01	3.5720E+03	-2.7316E+01	3.5743E+04
-2.7598E+01	3.9292E+03	-2.7593E+01	4.6436E+03	-2.7579E+01	4.2864E+03	-2.7560E+01	4.6436E+03	-2.7504E+01	3.5720E+03	-2.7453E+01	3.5743E+04
-2.7734E+01	3.9292E+03	-2.7729E+01	4.6436E+03	-2.7715E+01	4.2864E+03	-2.7696E+01	4.6436E+03	-2.7640E+01	3.5720E+03	-2.7589E+01	3.5743E+04
-2.7869E+01	3.9292E+03	-2.7864E+01	4.6436E+03	-2.7850E+01	4.2864E+03	-2.7831E+01	4.6436E+03	-2.7776E+01	3.5720E+03	-2.7725E+01	3.5743E+04
-2.8003E+01	3.9292E+03	-2.7998E+01	4.6436E+03	-2.7984E+01	4.2864E+03	-2.7965E+01	4.6436E+03	-2.7910E+01	3.5720E+03	-2.7860E+01	3.5743E+04
-2.8137E+01	3.9292E+03	-2.8132E+01	4.6436E+03	-2.8118E+01	4.2864E+03	-2.8099E+01	4.6436E+03	-2.8045E+01	3.5720E+03	-2.7994E+01	3.5743E+04
-2.8270E+01	3.9292E+03	-2.8265E+01	4.6436E+03	-2.8251E+01	4.2864E+03	-2.8233E+01	4.6436E+03	-2.8178E+01	3.5720E+03	-2.8128E+01	3.5743E+04
-2.8403E+01	3.9292E+03	-2.8398E+01	4.6436E+03	-2.8384E+01	4.2864E+03	-2.8366E+01	4.6436E+03	-2.8311E+01	3.5720E+03	-2.8261E+01	3.5743E+04
-2.8535E+01	3.9292E+03	-2.8530E+01	4.6436E+03	-2.8516E+01	4.2864E+03	-2.8498E+01	4.6436E+03	-2.8444E+01	3.5720E+03	-2.8394E+01	3.5743E+04
-2.8666E+01	3.9292E+03	-2.8662E+01	4.6436E+03	-2.8648E+01	4.2864E+03	-2.8629E+01	4.6436E+03	-2.8576E+01	3.5720E+03	-2.8526E+01	3.5743E+04
-2.8797E+01	3.9292E+03	-2.8793E+01	4.6436E+03	-2.8779E+01	4.2864E+03	-2.8761E+01	4.6436E+03	-2.8707E+01	3.5720E+03	-2.8658E+01	3.5743E+04
-2.8927E+01	3.9292E+03	-2.8923E+01	4.6436E+03	-2.8909E+01	4.2864E+03	-2.8891E+01	4.6436E+03	-2.8838E+01	3.5720E+03	-2.8789E+01	3.5743E+04
-2.9057E+01	3.9292E+03	-2.9053E+01	4.6436E+03	-2.9039E+01	4.2864E+03	-2.9021E+01	4.6436E+03	-2.8968E+01	3.5720E+03	-2.8919E+01	3.5743E+04
-2.9186E+01	3.9292E+03	-2.9182E+01	4.6436E+03	-2.9168E+01	4.2864E+03	-2.9150E+01	4.6436E+03	-2.9097E+01	3.5720E+03	-2.9049E+01	3.5743E+04
-2.9315E+01	3.9292E+03	-2.9311E+01	4.6436E+03	-2.9297E+01	4.2864E+03	-2.9279E+01	4.6436E+03	-2.9226E+01	3.5720E+03	-2.9178E+01	3.5743E+04
-2.9443E+01	3.9292E+03	-2.9439E+01	4.6436E+03	-2.9425E+01	4.2864E+03	-2.9407E+01	4.6436E+03	-2.9355E+01	3.5720E+03	-2.9307E+01	3.5743E+04
-2.9571E+01	3.9292E+03	-2.9566E+01	4.6436E+03	-2.9553E+01	4.2864E+03	-2.9535E+01	4.6436E+03	-2.9483E+01	3.5720E+03	-2.9435E+01	3.5743E+04
-2.9698E+01	3.9292E+03	-2.9694E+01	4.6436E+03	-2.9680E+01	4.2864E+03	-2.9662E+01	4.6436E+03	-2.9610E+01	3.5720E+03	-2.9563E+01	3.5743E+04
-2.9825E+01	3.9292E+03	-2.9820E+01	4.6436E+03	-2.9807E+01	4.2864E+03	-2.9789E+01	4.6436E+03	-2.9737E+01	3.5720E+03	-2.9690E+01	3.5743E+04
-2.9951E+01	3.9292E+03	-2.9946E+01	4.6436E+03	-2.9933E+01	4.2864E+03	-2.9915E+01	4.6436E+03	-2.9864E+01	3.5720E+03	-2.9816E+01	3.5743E+04
-3.0076E+01	3.9292E+03	-3.0072E+01	4.6436E+03	-3.0059E+01	4.2864E+03	-3.0041E+01	4.6436E+03	-2.9990E+01	3.5720E+03	-2.9943E+01	3.5743E+04
-3.0201E+01	3.9292E+03	-3.0197E+01	4.6436E+03	-3.0184E+01	4.2864E+03	-3.0166E+01	4.6436E+03	-3.0115E+01	3.5720E+03	-3.0068E+01	3.5743E+04
-3.0326E+01	3.9292E+03	-3.0322E+01	4.6436E+03	-3.0308E+01	4.2864E+03	-3.0291E+01	4.6436E+03	-3.0240E+01	3.5720E+03	-3.0193E+01	3.5743E+04

Arg 13	Curve 13	Arg 14	Curve 14	Arg 15	Curve 15	Arg 16	Curve 16	Arg 17	Curve 17	Arg 18	Curve 18
-3.0450E+01	3.9292E+03	-3.0446E+01	4.6436E+03	-3.0433E+01	4.2864E+03	-3.0415E+01	4.6436E+03	-3.0364E+01	3.5720E+03	-3.0318E+01	3.5743E+04
-3.0574E+01	3.9292E+03	-3.0569E+01	4.6436E+03	-3.0556E+01	4.2864E+03	-3.0539E+01	4.6436E+03	-3.0488E+01	3.5720E+03	-3.0442E+01	3.5743E+04
-3.0697E+01	3.9292E+03	-3.0692E+01	4.6436E+03	-3.0680E+01	4.2864E+03	-3.0662E+01	4.6436E+03	-3.0612E+01	3.5720E+03	-3.0566E+01	3.5743E+04
-3.0819E+01	3.9292E+03	-3.0815E+01	4.6436E+03	-3.0802E+01	4.2864E+03	-3.0785E+01	4.6436E+03	-3.0735E+01	3.5720E+03	-3.0689E+01	3.5743E+04
-3.0942E+01	3.9292E+03	-3.0937E+01	4.6436E+03	-3.0925E+01	4.2864E+03	-3.0907E+01	4.6436E+03	-3.0857E+01	3.5720E+03	-3.0811E+01	3.5743E+04
-3.1063E+01	3.9292E+03	-3.1059E+01	4.6436E+03	-3.1046E+01	4.2864E+03	-3.1029E+01	4.6436E+03	-3.0979E+01	3.5720E+03	-3.0934E+01	3.5743E+04
-3.1185E+01	3.9292E+03	-3.1180E+01	4.6436E+03	-3.1168E+01	4.2864E+03	-3.1151E+01	4.6436E+03	-3.1101E+01	3.5720E+03	-3.1055E+01	3.5743E+04
-3.1305E+01	3.9292E+03	-3.1301E+01	4.6436E+03	-3.1289E+01	4.2864E+03	-3.1272E+01	4.6436E+03	-3.1222E+01	3.5720E+03	-3.1177E+01	3.5743E+04
-3.1426E+01	3.9292E+03	-3.1422E+01	4.6436E+03	-3.1409E+01	4.2864E+03	-3.1392E+01	4.6436E+03	-3.1343E+01	3.5720E+03	-3.1298E+01	3.5743E+04
-3.1546E+01	3.9292E+03	-3.1542E+01	4.6436E+03	-3.1529E+01	4.2864E+03	-3.1512E+01	4.6436E+03	-3.1463E+01	3.5720E+03	-3.1418E+01	3.5743E+04
-3.1665E+01	3.9292E+03	-3.1661E+01	4.6436E+03	-3.1649E+01	4.2864E+03	-3.1632E+01	4.6436E+03	-3.1583E+01	3.5720E+03	-3.1538E+01	3.5743E+04
-3.1784E+01	3.9292E+03	-3.1780E+01	4.6436E+03	-3.1768E+01	4.2864E+03	-3.1751E+01	4.6436E+03	-3.1702E+01	3.5720E+03	-3.1658E+01	3.5743E+04
-3.1903E+01	3.9292E+03	-3.1899E+01	4.6436E+03	-3.1886E+01	4.2864E+03	-3.1870E+01	4.6436E+03	-3.1821E+01	3.5720E+03	-3.1777E+01	3.5743E+04
-3.2021E+01	3.9292E+03	-3.2017E+01	4.6436E+03	-3.2005E+01	4.2864E+03	-3.1988E+01	4.6436E+03	-3.1940E+01	3.5720E+03	-3.1895E+01	3.5743E+04
-3.2139E+01	3.9292E+03	-3.2135E+01	4.6436E+03	-3.2123E+01	4.2864E+03	-3.2106E+01	4.6436E+03	-3.2058E+01	3.5720E+03	-3.2014E+01	3.5743E+04
-3.2257E+01	3.9292E+03	-3.2252E+01	4.6436E+03	-3.2240E+01	4.2864E+03	-3.2224E+01	4.6436E+03	-3.2176E+01	3.5720E+03	-3.2131E+01	3.5743E+04
-3.2373E+01	3.9292E+03	-3.2369E+01	4.6436E+03	-3.2357E+01	4.2864E+03	-3.2341E+01	4.6436E+03	-3.2293E+01	3.5720E+03	-3.2249E+01	3.5743E+04
-3.2490E+01	3.9292E+03	-3.2486E+01	4.6436E+03	-3.2474E+01	4.2864E+03	-3.2457E+01	4.6436E+03	-3.2410E+01	3.5720E+03	-3.2366E+01	3.5743E+04
-3.2606E+01	3.9292E+03	-3.2602E+01	4.6436E+03	-3.2590E+01	4.2864E+03	-3.2574E+01	4.6436E+03	-3.2526E+01	3.5720E+03	-3.2483E+01	3.5743E+04
-3.2722E+01	3.9292E+03	-3.2718E+01	4.6436E+03	-3.2706E+01	4.2864E+03	-3.2690E+01	4.6436E+03	-3.2642E+01	3.5720E+03	-3.2599E+01	3.5743E+04
-3.2837E+01	3.9292E+03	-3.2833E+01	4.6436E+03	-3.2821E+01	4.2864E+03	-3.2805E+01	4.6436E+03	-3.2758E+01	3.5720E+03	-3.2715E+01	3.5743E+04
-3.2952E+01	3.9292E+03	-3.2948E+01	4.6436E+03	-3.2936E+01	4.2864E+03	-3.2920E+01	4.6436E+03	-3.2873E+01	3.5720E+03	-3.2830E+01	3.5743E+04
-3.3067E+01	3.9292E+03	-3.3063E+01	4.6436E+03	-3.3051E+01	4.2864E+03	-3.3035E+01	4.6436E+03	-3.2988E+01	3.5720E+03	-3.2945E+01	3.5743E+04
-3.3181E+01	3.9292E+03	-3.3177E+01	4.6436E+03	-3.3165E+01	4.2864E+03	-3.3149E+01	4.6436E+03	-3.3103E+01	3.5720E+03	-3.3060E+01	3.5743E+04
-3.3295E+01	3.9292E+03	-3.3291E+01	4.6436E+03	-3.3279E+01	4.2864E+03	-3.3263E+01	4.6436E+03	-3.3217E+01	3.5720E+03	-3.3174E+01	3.5743E+04
-3.3409E+01	3.9292E+03	-3.3405E+01	4.6436E+03	-3.3393E+01	4.2864E+03	-3.3377E+01	4.6436E+03	-3.3330E+01	3.5720E+03	-3.3288E+01	3.5743E+04
-3.3522E+01	3.9292E+03	-3.3518E+01	4.6436E+03	-3.3506E+01	4.2864E+03	-3.3490E+01	4.6436E+03	-3.3444E+01	3.5720E+03	-3.3401E+01	3.5743E+04
-3.3634E+01	3.9292E+03	-3.3631E+01	4.6436E+03	-3.3619E+01	4.2864E+03	-3.3603E+01	4.6436E+03	-3.3557E+01	3.5720E+03	-3.3514E+01	3.5743E+04
-3.3747E+01	3.9292E+03	-3.3743E+01	4.6436E+03	-3.3731E+01	4.2864E+03	-3.3715E+01	4.6436E+03	-3.3669E+01	3.5720E+03	-3.3627E+01	3.5743E+04
-3.3859E+01	3.9292E+03	-3.3855E+01	4.6436E+03	-3.3843E+01	4.2864E+03	-3.3828E+01	4.6436E+03	-3.3782E+01	3.5720E+03	-3.3740E+01	3.5743E+04
-3.3971E+01	3.9292E+03	-3.3967E+01	4.6436E+03	-3.3955E+01	4.2864E+03	-3.3939E+01	4.6436E+03	-3.3894E+01	3.5720E+03	-3.3852E+01	3.5743E+04
-3.4082E+01	3.9292E+03	-3.4078E+01	4.6436E+03	-3.4066E+01	4.2864E+03	-3.4051E+01	4.6436E+03	-3.4005E+01	3.5720E+03	-3.3963E+01	3.5743E+04
-3.4193E+01	3.9292E+03	-3.4189E+01	4.6436E+03	-3.4177E+01	4.2864E+03	-3.4162E+01	4.6436E+03	-3.4116E+01	3.5720E+03	-3.4075E+01	3.5743E+04
-3.4303E+01	3.9292E+03	-3.4300E+01	4.6436E+03	-3.4288E+01	4.2864E+03	-3.4272E+01	4.6436E+03	-3.4227E+01	3.5720E+03	-3.4186E+01	3.5743E+04
-3.4414E+01	3.9292E+03	-3.4410E+01	4.6436E+03	-3.4398E+01	4.2864E+03	-3.4383E+01	4.6436E+03	-3.4338E+01	3.5720E+03	-3.4296E+01	3.5743E+04
-3.4524E+01	3.9292E+03	-3.4520E+01	4.6436E+03	-3.4508E+01	4.2864E+03	-3.4493E+01	4.6436E+03	-3.4448E+01	3.5720E+03	-3.4406E+01	3.5743E+04
-3.4633E+01	3.9292E+03	-3.4629E+01	4.6436E+03	-3.4618E+01	4.2864E+03	-3.4602E+01	4.6436E+03	-3.4558E+01	3.5720E+03	-3.4516E+01	3.5743E+04
-3.4742E+01	3.9292E+03	-3.4739E+01	4.6436E+03	-3.4727E+01	4.2864E+03	-3.4712E+01	4.6436E+03	-3.4667E+01	3.5720E+03	-3.4626E+01	3.5743E+04
-3.4851E+01	3.9292E+03	-3.4847E+01	4.6436E+03	-3.4836E+01	4.2864E+03	-3.4821E+01	4.6436E+03	-3.4776E+01	3.5720E+03	-3.4735E+01	3.5743E+04
-3.4960E+01	3.9292E+03	-3.4956E+01	4.6436E+03	-3.4945E+01	4.2864E+03	-3.4930E+01	4.6436E+03	-3.4885E+01	3.5720E+03	-3.4844E+01	3.5743E+04
-3.5068E+01	3.9292E+03	-3.5064E+01	4.6436E+03	-3.5053E+01	4.2864E+03	-3.5038E+01	4.6436E+03	-3.4993E+01	3.5720E+03	-3.4953E+01	3.5743E+04
-3.5176E+01	3.9292E+03	-3.5172E+01	4.6436E+03	-3.5161E+01	4.2864E+03	-3.5146E+01	4.6436E+03	-3.5102E+01	3.5720E+03	-3.5061E+01	3.5743E+04
-3.5284E+01	3.9292E+03	-3.5280E+01	4.6436E+03	-3.5269E+01	4.2864E+03	-3.5254E+01	4.6436E+03	-3.5209E+01	3.5720E+03	-3.5169E+01	3.5743E+04
-3.5391E+01	3.9292E+03	-3.5387E+01	4.6436E+03	-3.5376E+01	4.2864E+03	-3.5361E+01	4.6436E+03	-3.5317E+01	3.5720E+03	-3.5277E+01	3.5743E+04
-3.5498E+01	3.9292E+03	-3.5494E+01	4.6436E+03	-3.5483E+01	4.2864E+03	-3.5468E+01	4.6436E+03	-3.5424E+01	3.5720E+03	-3.5384E+01	3.5743E+04
-3.5605E+01	3.9292E+03	-3.5601E+01	4.6436E+03	-3.5590E+01	4.2864E+03	-3.5575E+01	4.6436E+03	-3.5531E+01	3.5720E+03	-3.5491E+01	3.5743E+04
-3.5711E+01	3.9292E+03	-3.5707E+01	4.6436E+03	-3.5696E+01	4.2864E+03	-3.5681E+01	4.6436E+03	-3.5638E+01	3.5720E+03	-3.5598E+01	3.5743E+04
-3.5817E+01	3.9292E+03	-3.5813E+01	4.6436E+03	-3.5802E+01	4.2864E+03	-3.5787E+01	4.6436E+03	-3.5744E+01	3.5720E+03	-3.5704E+01	3.5743E+04
-3.5923E+01	3.9292E+03	-3.5919E+01	4.6436E+03	-3.5908E+01	4.2864E+03	-3.5893E+01	4.6436E+03	-3.5850E+01	3.5720E+03	-3.5810E+01	3.5743E+04
-3.6028E+01	3.9292E+03	-3.6025E+01	4.6436E+03	-3.6014E+01	4.2864E+03	-3.5999E+01	4.6436E+03	-3.5956E+01	3.5720E+03	-3.5916E+01	3.5743E+04
-3.6133E+01	3.9292E+03	-3.6130E+01	4.6436E+03	-3.6119E+01	4.2864E+03	-3.6104E+01	4.6436E+03	-3.6061E+01	3.5720E+03	-3.6021E+01	3.5743E+04
-3.6238E+01	3.9292E+03	-3.6235E+01	4.6436E+03	-3.6224E+01	4.2864E+03	-3.6209E+01	4.6436E+03	-3.6166E+01	3.5720E+03	-3.6127E+01	3.5743E+04

Arg 13	Curve 13	Arg 14	Curve 14	Arg 15	Curve 15	Arg 16	Curve 16	Arg 17	Curve 17	Arg 18	Curve 18
-3.6343E+01	3.9292E+03	-3.6339E+01	4.6436E+03	-3.6328E+01	4.2864E+03	-3.6314E+01	4.6436E+03	-3.6271E+01	3.5720E+03	-3.6231E+01	3.5743E+04
-3.6447E+01	3.9292E+03	-3.6443E+01	4.6436E+03	-3.6432E+01	4.2864E+03	-3.6418E+01	4.6436E+03	-3.6375E+01	3.5720E+03	-3.6336E+01	3.5743E+04
-3.6551E+01	3.9292E+03	-3.6547E+01	4.6436E+03	-3.6536E+01	4.2864E+03	-3.6522E+01	4.6436E+03	-3.6479E+01	3.5720E+03	-3.6440E+01	3.5743E+04
-3.6655E+01	3.9292E+03	-3.6651E+01	4.6436E+03	-3.6640E+01	4.2864E+03	-3.6626E+01	4.6436E+03	-3.6583E+01	3.5720E+03	-3.6544E+01	3.5743E+04
-3.6758E+01	3.9292E+03	-3.6755E+01	4.6436E+03	-3.6744E+01	4.2864E+03	-3.6729E+01	4.6436E+03	-3.6687E+01	3.5720E+03	-3.6648E+01	3.5743E+04
-3.6861E+01	3.9292E+03	-3.6858E+01	4.6436E+03	-3.6847E+01	4.2864E+03	-3.6832E+01	4.6436E+03	-3.6790E+01	3.5720E+03	-3.6751E+01	3.5743E+04
-3.6964E+01	3.9292E+03	-3.6960E+01	4.6436E+03	-3.6950E+01	4.2864E+03	-3.6935E+01	4.6436E+03	-3.6893E+01	3.5720E+03	-3.6855E+01	3.5743E+04
-3.7067E+01	3.9292E+03	-3.7063E+01	4.6436E+03	-3.7052E+01	4.2864E+03	-3.7038E+01	4.6436E+03	-3.6996E+01	3.5720E+03	-3.6957E+01	3.5743E+04
-3.7169E+01	3.9292E+03	-3.7165E+01	4.6436E+03	-3.7155E+01	4.2864E+03	-3.7140E+01	4.6436E+03	-3.7098E+01	3.5720E+03	-3.7060E+01	3.5743E+04
-3.7271E+01	3.9292E+03	-3.7267E+01	4.6436E+03	-3.7257E+01	4.2864E+03	-3.7242E+01	4.6436E+03	-3.7201E+01	3.5720E+03	-3.7162E+01	3.5743E+04
-3.7373E+01	3.9292E+03	-3.7369E+01	4.6436E+03	-3.7358E+01	4.2864E+03	-3.7344E+01	4.6436E+03	-3.7302E+01	3.5720E+03	-3.7264E+01	3.5743E+04
-3.7474E+01	3.9292E+03	-3.7471E+01	4.6436E+03	-3.7460E+01	4.2864E+03	-3.7446E+01	4.6436E+03	-3.7404E+01	3.5720E+03	-3.7366E+01	3.5743E+04
-3.7575E+01	3.9292E+03	-3.7572E+01	4.6436E+03	-3.7561E+01	4.2864E+03	-3.7547E+01	4.6436E+03	-3.7506E+01	3.5720E+03	-3.7468E+01	3.5743E+04
-3.7676E+01	3.9292E+03	-3.7673E+01	4.6436E+03	-3.7662E+01	4.2864E+03	-3.7648E+01	4.6436E+03	-3.7607E+01	3.5720E+03	-3.7569E+01	3.5743E+04
-3.7777E+01	3.9292E+03	-3.7773E+01	4.6436E+03	-3.7763E+01	4.2864E+03	-3.7749E+01	4.6436E+03	-3.7708E+01	3.5720E+03	-3.7670E+01	3.5743E+04
-3.7877E+01	3.9292E+03	-3.7874E+01	4.6436E+03	-3.7863E+01	4.2864E+03	-3.7849E+01	4.6436E+03	-3.7808E+01	3.5720E+03	-3.7770E+01	3.5743E+04
-3.7978E+01	3.9292E+03	-3.7974E+01	4.6436E+03	-3.7963E+01	4.2864E+03	-3.7949E+01	4.6436E+03	-3.7908E+01	3.5720E+03	-3.7871E+01	3.5743E+04
-3.8077E+01	3.9292E+03	-3.8074E+01	4.6436E+03	-3.8063E+01	4.2864E+03	-3.8049E+01	4.6436E+03	-3.8008E+01	3.5720E+03	-3.7971E+01	3.5743E+04
-3.8177E+01	3.9292E+03	-3.8174E+01	4.6436E+03	-3.8163E+01	4.2864E+03	-3.8149E+01	4.6436E+03	-3.8108E+01	3.5720E+03	-3.8071E+01	3.5743E+04
-3.8276E+01	3.9292E+03	-3.8273E+01	4.6436E+03	-3.8263E+01	4.2864E+03	-3.8249E+01	4.6436E+03	-3.8208E+01	3.5720E+03	-3.8171E+01	3.5743E+04
-3.8376E+01	3.9292E+03	-3.8372E+01	4.6436E+03	-3.8362E+01	4.2864E+03	-3.8348E+01	4.6436E+03	-3.8307E+01	3.5720E+03	-3.8270E+01	3.5743E+04
-3.8474E+01	3.9292E+03	-3.8471E+01	4.6436E+03	-3.8461E+01	4.2864E+03	-3.8447E+01	4.6436E+03	-3.8406E+01	3.5720E+03	-3.8369E+01	3.5743E+04
-3.8573E+01	3.9292E+03	-3.8570E+01	4.6436E+03	-3.8559E+01	4.2864E+03	-3.8545E+01	4.6436E+03	-3.8505E+01	3.5720E+03	-3.8468E+01	3.5743E+04
-3.8671E+01	3.9292E+03	-3.8668E+01	4.6436E+03	-3.8658E+01	4.2864E+03	-3.8644E+01	4.6436E+03	-3.8604E+01	3.5720E+03	-3.8567E+01	3.5743E+04
-3.8770E+01	3.9292E+03	-3.8766E+01	4.6436E+03	-3.8756E+01	4.2864E+03	-3.8742E+01	4.6436E+03	-3.8702E+01	3.5720E+03	-3.8665E+01	3.5743E+04
-3.8868E+01	3.9292E+03	-3.8864E+01	4.6436E+03	-3.8854E+01	4.2864E+03	-3.8840E+01	4.6436E+03	-3.8800E+01	3.5720E+03	-3.8763E+01	3.5743E+04
-3.8965E+01	3.9292E+03	-3.8962E+01	4.6436E+03	-3.8952E+01	4.2864E+03	-3.8938E+01	4.6436E+03	-3.8898E+01	3.5720E+03	-3.8861E+01	3.5743E+04
-3.9063E+01	3.9292E+03	-3.9059E+01	4.6436E+03	-3.9049E+01	4.2864E+03	-3.9035E+01	4.6436E+03	-3.8995E+01	3.5720E+03	-3.8959E+01	3.5743E+04
-3.9160E+01	3.9292E+03	-3.9156E+01	4.6436E+03	-3.9146E+01	4.2864E+03	-3.9133E+01	4.6436E+03	-3.9093E+01	3.5720E+03	-3.9056E+01	3.5743E+04
-3.9257E+01	3.9292E+03	-3.9253E+01	4.6436E+03	-3.9243E+01	4.2864E+03	-3.9230E+01	4.6436E+03	-3.9190E+01	3.5720E+03	-3.9153E+01	3.5743E+04
-3.9353E+01	3.9292E+03	-3.9350E+01	4.6436E+03	-3.9340E+01	4.2864E+03	-3.9326E+01	4.6436E+03	-3.9287E+01	3.5720E+03	-3.9250E+01	3.5743E+04
-3.9450E+01	3.9292E+03	-3.9447E+01	4.6436E+03	-3.9436E+01	4.2864E+03	-3.9423E+01	4.6436E+03	-3.9383E+01	3.5720E+03	-3.9347E+01	3.5743E+04
-3.9546E+01	3.9292E+03	-3.9543E+01	4.6436E+03	-3.9533E+01	4.2864E+03	-3.9519E+01	4.6436E+03	-3.9480E+01	3.5720E+03	-3.9444E+01	3.5743E+04
-3.9642E+01	3.9292E+03	-3.9639E+01	4.6436E+03	-3.9629E+01	4.2864E+03	-3.9615E+01	4.6436E+03	-3.9576E+01	3.5720E+03	-3.9540E+01	3.5743E+04
-3.9738E+01	3.9292E+03	-3.9735E+01	4.6436E+03	-3.9725E+01	4.2864E+03	-3.9711E+01	4.6436E+03	-3.9672E+01	3.5720E+03	-3.9636E+01	3.5743E+04
-3.9834E+01	3.9292E+03	-3.9830E+01	4.6436E+03	-3.9820E+01	4.2864E+03	-3.9807E+01	4.6436E+03	-3.9768E+01	3.5720E+03	-3.9732E+01	3.5743E+04
-3.9929E+01	3.9292E+03	-3.9926E+01	4.6436E+03	-3.9916E+01	4.2864E+03	-3.9902E+01	4.6436E+03	-3.9863E+01	3.5720E+03	-3.9827E+01	3.5743E+04
-4.0024E+01	3.9292E+03	-4.0021E+01	4.6436E+03	-4.0011E+01	4.2864E+03	-3.9997E+01	4.6436E+03	-3.9958E+01	3.5720E+03	-3.9923E+01	3.5743E+04
-4.0119E+01	3.9292E+03	-4.0116E+01	4.6436E+03	-4.0106E+01	4.2864E+03	-4.0092E+01	4.6436E+03	-4.0053E+01	3.5720E+03	-4.0018E+01	3.5743E+04
-4.0214E+01	3.9292E+03	-4.0210E+01	4.6436E+03	-4.0200E+01	4.2864E+03	-4.0187E+01	4.6436E+03	-4.0148E+01	3.5720E+03	-4.0113E+01	3.5743E+04
-4.0308E+01	3.9292E+03	-4.0305E+01	4.6436E+03	-4.0295E+01	4.2864E+03	-4.0282E+01	4.6436E+03	-4.0243E+01	3.5720E+03	-4.0207E+01	3.5743E+04
-4.0402E+01	3.9292E+03	-4.0399E+01	4.6436E+03	-4.0389E+01	4.2864E+03	-4.0376E+01	4.6436E+03	-4.0337E+01	3.5720E+03	-4.0302E+01	3.5743E+04
-4.0496E+01	3.9292E+03	-4.0493E+01	4.6436E+03	-4.0483E+01	4.2864E+03	-4.0470E+01	4.6436E+03	-4.0432E+01	3.5720E+03	-4.0396E+01	3.5743E+04
-4.0590E+01	3.9292E+03	-4.0587E+01	4.6436E+03	-4.0577E+01	4.2864E+03	-4.0564E+01	4.6436E+03	-4.0525E+01	3.5720E+03	-4.0490E+01	3.5743E+04
-4.0684E+01	3.9292E+03	-4.0681E+01	4.6436E+03	-4.0671E+01	4.2864E+03	-4.0658E+01	4.6436E+03	-4.0619E+01	3.5720E+03	-4.0584E+01	3.5743E+04
-4.0777E+01	3.9292E+03	-4.0774E+01	4.6436E+03	-4.0764E+01	4.2864E+03	-4.0751E+01	4.6436E+03	-4.0713E+01	3.5720E+03	-4.0678E+01	3.5743E+04
-4.0870E+01	3.9292E+03	-4.0867E+01	4.6436E+03	-4.0857E+01	4.2864E+03	-4.0844E+01	4.6436E+03	-4.0806E+01	3.5720E+03	-4.0771E+01	3.5743E+04
-4.0963E+01	3.9292E+03	-4.0960E+01	4.6436E+03	-4.0950E+01	4.2864E+03	-4.0937E+01	4.6436E+03	-4.0899E+01	3.5720E+03	-4.0864E+01	3.5743E+04
-4.1056E+01	3.9292E+03	-4.1053E+01	4.6436E+03	-4.1043E+01	4.2864E+03	-4.1030E+01	4.6436E+03	-4.0992E+01	3.5720E+03	-4.0957E+01	3.5743E+04
-4.1149E+01	3.9292E+03	-4.1145E+01	4.6436E+03	-4.1136E+01	4.2864E+03	-4.1123E+01	4.6436E+03	-4.1085E+01	3.5720E+03	-4.1050E+01	3.5743E+04
-4.1241E+01	3.9292E+03	-4.1238E+01	4.6436E+03	-4.1228E+01	4.2864E+03	-4.1215E+01	4.6436E+03	-4.1177E+01	3.5720E+03	-4.1143E+01	3.5743E+04
-4.1333E+01	3.9292E+03	-4.1330E+01	4.6436E+03	-4.1320E+01	4.2864E+03	-4.1307E+01	4.6436E+03	-4.1270E+01	3.5720E+03	-4.1235E+01	3.5743E+04

Arg 13	Curve 13	Arg 14	Curve 14	Arg 15	Curve 15	Arg 16	Curve 16	Arg 17	Curve 17	Arg 18	Curve 18
-4.1425E+01	3.9292E+03	-4.1422E+01	4.6436E+03	-4.1412E+01	4.2864E+03	-4.1399E+01	4.6436E+03	-4.1362E+01	3.5720E+03	-4.1327E+01	3.5743E+04
-4.1517E+01	3.9292E+03	-4.1514E+01	4.6436E+03	-4.1504E+01	4.2864E+03	-4.1491E+01	4.6436E+03	-4.1454E+01	3.5720E+03	-4.1419E+01	3.5743E+04
-4.1608E+01	3.9292E+03	-4.1605E+01	4.6436E+03	-4.1596E+01	4.2864E+03	-4.1583E+01	4.6436E+03	-4.1545E+01	3.5720E+03	-4.1511E+01	3.5743E+04
-4.1700E+01	3.9292E+03	-4.1697E+01	4.6436E+03	-4.1687E+01	4.2864E+03	-4.1674E+01	4.6436E+03	-4.1637E+01	3.5720E+03	-4.1603E+01	3.5743E+04
-4.1791E+01	3.9292E+03	-4.1788E+01	4.6436E+03	-4.1778E+01	4.2864E+03	-4.1766E+01	4.6436E+03	-4.1728E+01	3.5720E+03	-4.1694E+01	3.5743E+04
-4.1882E+01	3.9292E+03	-4.1879E+01	4.6436E+03	-4.1869E+01	4.2864E+03	-4.1857E+01	4.6436E+03	-4.1819E+01	3.5720E+03	-4.1785E+01	3.5743E+04
-4.1973E+01	3.9292E+03	-4.1970E+01	4.6436E+03	-4.1960E+01	4.2864E+03	-4.1947E+01	4.6436E+03	-4.1910E+01	3.5720E+03	-4.1876E+01	3.5743E+04
-4.2063E+01	3.9292E+03	-4.2060E+01	4.6436E+03	-4.2051E+01	4.2864E+03	-4.2038E+01	4.6436E+03	-4.2001E+01	3.5720E+03	-4.1967E+01	3.5743E+04
-4.2154E+01	3.9292E+03	-4.2151E+01	4.6436E+03	-4.2141E+01	4.2864E+03	-4.2128E+01	4.6436E+03	-4.2091E+01	3.5720E+03	-4.2057E+01	3.5743E+04
-4.2244E+01	3.9292E+03	-4.2241E+01	4.6436E+03	-4.2231E+01	4.2864E+03	-4.2219E+01	4.6436E+03	-4.2182E+01	3.5720E+03	-4.2148E+01	3.5743E+04
-4.2334E+01	3.9292E+03	-4.2331E+01	4.6436E+03	-4.2321E+01	4.2864E+03	-4.2309E+01	4.6436E+03	-4.2272E+01	3.5720E+03	-4.2238E+01	3.5743E+04
-4.2424E+01	3.9292E+03	-4.2421E+01	4.6436E+03	-4.2411E+01	4.2864E+03	-4.2399E+01	4.6436E+03	-4.2362E+01	3.5720E+03	-4.2328E+01	3.5743E+04
-4.2513E+01	3.9292E+03	-4.2510E+01	4.6436E+03	-4.2501E+01	4.2864E+03	-4.2488E+01	4.6436E+03	-4.2452E+01	3.5720E+03	-4.2418E+01	3.5743E+04
-4.2603E+01	3.9292E+03	-4.2600E+01	4.6436E+03	-4.2590E+01	4.2864E+03	-4.2578E+01	4.6436E+03	-4.2541E+01	3.5720E+03	-4.2508E+01	3.5743E+04
-4.2692E+01	3.9292E+03	-4.2689E+01	4.6436E+03	-4.2680E+01	4.2864E+03	-4.2667E+01	4.6436E+03	-4.2631E+01	3.5720E+03	-4.2597E+01	3.5743E+04
-4.2781E+01	3.9292E+03	-4.2778E+01	4.6436E+03	-4.2769E+01	4.2864E+03	-4.2756E+01	4.6436E+03	-4.2720E+01	3.5720E+03	-4.2686E+01	3.5743E+04
-4.2870E+01	3.9292E+03	-4.2867E+01	4.6436E+03	-4.2858E+01	4.2864E+03	-4.2845E+01	4.6436E+03	-4.2809E+01	3.5720E+03	-4.2775E+01	3.5743E+04
-4.2959E+01	3.9292E+03	-4.2956E+01	4.6436E+03	-4.2946E+01	4.2864E+03	-4.2934E+01	4.6436E+03	-4.2898E+01	3.5720E+03	-4.2864E+01	3.5743E+04
-4.3047E+01	3.9292E+03	-4.3044E+01	4.6436E+03	-4.3035E+01	4.2864E+03	-4.3023E+01	4.6436E+03	-4.2986E+01	3.5720E+03	-4.2953E+01	3.5743E+04
-4.3136E+01	3.9292E+03	-4.3133E+01	4.6436E+03	-4.3123E+01	4.2864E+03	-4.3111E+01	4.6436E+03	-4.3075E+01	3.5720E+03	-4.3042E+01	3.5743E+04
-4.3224E+01	3.9292E+03	-4.3221E+01	4.6436E+03	-4.3212E+01	4.2864E+03	-4.3199E+01	4.6436E+03	-4.3163E+01	3.5720E+03	-4.3130E+01	3.5743E+04
-4.3312E+01	3.9292E+03	-4.3309E+01	4.6436E+03	-4.3300E+01	4.2864E+03	-4.3287E+01	4.6436E+03	-4.3251E+01	3.5720E+03	-4.3218E+01	3.5743E+04
-4.3400E+01	3.9292E+03	-4.3397E+01	4.6436E+03	-4.3387E+01	4.2864E+03	-4.3375E+01	4.6436E+03	-4.3339E+01	3.5720E+03	-4.3306E+01	3.5743E+04
-4.3487E+01	3.9292E+03	-4.3484E+01	4.6436E+03	-4.3475E+01	4.2864E+03	-4.3463E+01	4.6436E+03	-4.3427E+01	3.5720E+03	-4.3394E+01	3.5743E+04
-4.3575E+01	3.9292E+03	-4.3572E+01	4.6436E+03	-4.3563E+01	4.2864E+03	-4.3550E+01	4.6436E+03	-4.3515E+01	3.5720E+03	-4.3482E+01	3.5743E+04
-4.3662E+01	3.9292E+03	-4.3659E+01	4.6436E+03	-4.3650E+01	4.2864E+03	-4.3638E+01	4.6436E+03	-4.3602E+01	3.5720E+03	-4.3569E+01	3.5743E+04
-4.3749E+01	3.9292E+03	-4.3746E+01	4.6436E+03	-4.3737E+01	4.2864E+03	-4.3725E+01	4.6436E+03	-4.3689E+01	3.5720E+03	-4.3657E+01	3.5743E+04
-4.3836E+01	3.9292E+03	-4.3833E+01	4.6436E+03	-4.3824E+01	4.2864E+03	-4.3812E+01	4.6436E+03	-4.3776E+01	3.5720E+03	-4.3744E+01	3.5743E+04
-4.3923E+01	3.9292E+03	-4.3920E+01	4.6436E+03	-4.3911E+01	4.2864E+03	-4.3899E+01	4.6436E+03	-4.3863E+01	3.5720E+03	-4.3831E+01	3.5743E+04
-4.4010E+01	3.9292E+03	-4.4007E+01	4.6436E+03	-4.3998E+01	4.2864E+03	-4.3986E+01	4.6436E+03	-4.3950E+01	3.5720E+03	-4.3917E+01	3.5743E+04
-4.4096E+01	3.9292E+03	-4.4093E+01	4.6436E+03	-4.4084E+01	4.2864E+03	-4.4072E+01	4.6436E+03	-4.4037E+01	3.5720E+03	-4.4004E+01	3.5743E+04
-4.4183E+01	3.9292E+03	-4.4179E+01	4.6436E+03	-4.4170E+01	4.2864E+03	-4.4158E+01	4.6436E+03	-4.4123E+01	3.5720E+03	-4.4091E+01	3.5743E+04
-4.4269E+01	3.9292E+03	-4.4266E+01	4.6436E+03	-4.4257E+01	4.2864E+03	-4.4245E+01	4.6436E+03	-4.4209E+01	3.5720E+03	-4.4177E+01	3.5743E+04
-4.4355E+01	3.9292E+03	-4.4352E+01	4.6436E+03	-4.4343E+01	4.2864E+03	-4.4331E+01	4.6436E+03	-4.4295E+01	3.5720E+03	-4.4263E+01	3.5743E+04
-4.4440E+01	3.9292E+03	-4.4437E+01	4.6436E+03	-4.4428E+01	4.2864E+03	-4.4416E+01	4.6436E+03	-4.4381E+01	3.5720E+03	-4.4349E+01	3.5743E+04
-4.4526E+01	3.9292E+03	-4.4523E+01	4.6436E+03	-4.4514E+01	4.2864E+03	-4.4502E+01	4.6436E+03	-4.4467E+01	3.5720E+03	-4.4435E+01	3.5743E+04
-4.4612E+01	3.9292E+03	-4.4609E+01	4.6436E+03	-4.4600E+01	4.2864E+03	-4.4588E+01	4.6436E+03	-4.4553E+01	3.5720E+03	-4.4520E+01	3.5743E+04
-4.4697E+01	3.9292E+03	-4.4694E+01	4.6436E+03	-4.4685E+01	4.2864E+03	-4.4673E+01	4.6436E+03	-4.4638E+01	3.5720E+03	-4.4606E+01	3.5743E+04
-4.4782E+01	3.9292E+03	-4.4779E+01	4.6436E+03	-4.4770E+01	4.2864E+03	-4.4758E+01	4.6436E+03	-4.4723E+01	3.5720E+03	-4.4691E+01	3.5743E+04
-4.4867E+01	3.9292E+03	-4.4864E+01	4.6436E+03	-4.4855E+01	4.2864E+03	-4.4843E+01	4.6436E+03	-4.4808E+01	3.5720E+03	-4.4776E+01	3.5743E+04
-4.4952E+01	3.9292E+03	-4.4949E+01	4.6436E+03	-4.4940E+01	4.2864E+03	-4.4928E+01	4.6436E+03	-4.4893E+01	3.5720E+03	-4.4861E+01	3.5743E+04
-4.5036E+01	3.9292E+03	-4.5034E+01	4.6436E+03	-4.5025E+01	4.2864E+03	-4.5013E+01	4.6436E+03	-4.4978E+01	3.5720E+03	-4.4946E+01	3.5743E+04
-4.5121E+01	3.9292E+03	-4.5118E+01	4.6436E+03	-4.5109E+01	4.2864E+03	-4.5097E+01	4.6436E+03	-4.5063E+01	3.5720E+03	-4.5031E+01	3.5743E+04
-4.5205E+01	3.9292E+03	-4.5202E+01	4.6436E+03	-4.5194E+01	4.2864E+03	-4.5182E+01	4.6436E+03	-4.5147E+01	3.5720E+03	-4.5116E+01	3.5743E+04
-4.5290E+01	3.9292E+03	-4.5287E+01	4.6436E+03	-4.5278E+01	4.2864E+03	-4.5266E+01	4.6436E+03	-4.5231E+01	3.5720E+03	-4.5200E+01	3.5743E+04
-4.5374E+01	3.9292E+03	-4.5371E+01	4.6436E+03	-4.5362E+01	4.2864E+03	-4.5350E+01	4.6436E+03	-4.5316E+01	3.5720E+03	-4.5284E+01	3.5743E+04
-4.5458E+01	3.9292E+03	-4.5455E+01	4.6436E+03	-4.5446E+01	4.2864E+03	-4.5434E+01	4.6436E+03	-4.5400E+01	3.5720E+03	-4.5368E+01	3.5743E+04
-4.5541E+01	3.9292E+03	-4.5538E+01	4.6436E+03	-4.5530E+01	4.2864E+03	-4.5518E+01	4.6436E+03	-4.5484E+01	3.5720E+03	-4.5452E+01	3.5743E+04
-4.5625E+01	3.9292E+03	-4.5622E+01	4.6436E+03	-4.5613E+01	4.2864E+03	-4.5601E+01	4.6436E+03	-4.5567E+01	3.5720E+03	-4.5536E+01	3.5743E+04
-4.5708E+01	3.9292E+03	-4.5705E+01	4.6436E+03	-4.5697E+01	4.2864E+03	-4.5685E+01	4.6436E+03	-4.5651E+01	3.5720E+03	-4.5619E+01	3.5743E+04
-4.5792E+01	3.9292E+03	-4.5789E+01	4.6436E+03	-4.5780E+01	4.2864E+03	-4.5768E+01	4.6436E+03	-4.5734E+01	3.5720E+03	-4.5703E+01	3.5743E+04
-4.5875E+01	3.9292E+03	-4.5872E+01	4.6436E+03	-4.5863E+01	4.2864E+03	-4.5852E+01	4.6436E+03	-4.5817E+01	3.5720E+03	-4.5786E+01	3.5743E+04

Arg 13	Curve 13	Arg 14	Curve 14	Arg 15	Curve 15	Arg 16	Curve 16	Arg 17	Curve 17	Arg 18	Curve 18
-4.5958E+01	3.9292E+03	-4.5955E+01	4.6436E+03	-4.5946E+01	4.2864E+03	-4.5935E+01	4.6436E+03	-4.5901E+01	3.5720E+03	-4.5869E+01	3.5743E+04
-4.6041E+01	3.9292E+03	-4.6038E+01	4.6436E+03	-4.6029E+01	4.2864E+03	-4.6017E+01	4.6436E+03	-4.5983E+01	3.5720E+03	-4.5952E+01	3.5743E+04
-4.6123E+01	3.9292E+03	-4.6120E+01	4.6436E+03	-4.6112E+01	4.2864E+03	-4.6100E+01	4.6436E+03	-4.6066E+01	3.5720E+03	-4.6035E+01	3.5743E+04
-4.6206E+01	3.9292E+03	-4.6203E+01	4.6436E+03	-4.6194E+01	4.2864E+03	-4.6183E+01	4.6436E+03	-4.6149E+01	3.5720E+03	-4.6118E+01	3.5743E+04
-4.6288E+01	3.9292E+03	-4.6285E+01	4.6436E+03	-4.6277E+01	4.2864E+03	-4.6265E+01	4.6436E+03	-4.6231E+01	3.5720E+03	-4.6201E+01	3.5743E+04
-4.6371E+01	3.9292E+03	-4.6368E+01	4.6436E+03	-4.6359E+01	4.2864E+03	-4.6348E+01	4.6436E+03	-4.6314E+01	3.5720E+03	-4.6283E+01	3.5743E+04
-4.6453E+01	3.9292E+03	-4.6450E+01	4.6436E+03	-4.6441E+01	4.2864E+03	-4.6430E+01	4.6436E+03	-4.6396E+01	3.5720E+03	-4.6365E+01	3.5743E+04
-4.6535E+01	3.9292E+03	-4.6532E+01	4.6436E+03	-4.6523E+01	4.2864E+03	-4.6512E+01	4.6436E+03	-4.6478E+01	3.5720E+03	-4.6447E+01	3.5743E+04
-4.6616E+01	3.9292E+03	-4.6614E+01	4.6436E+03	-4.6605E+01	4.2864E+03	-4.6594E+01	4.6436E+03	-4.6560E+01	3.5720E+03	-4.6529E+01	3.5743E+04
-4.6698E+01	3.9292E+03	-4.6695E+01	4.6436E+03	-4.6687E+01	4.2864E+03	-4.6675E+01	4.6436E+03	-4.6642E+01	3.5720E+03	-4.6611E+01	3.5743E+04
-4.6780E+01	3.9292E+03	-4.6777E+01	4.6436E+03	-4.6768E+01	4.2864E+03	-4.6757E+01	4.6436E+03	-4.6723E+01	3.5720E+03	-4.6693E+01	3.5743E+04
-4.6861E+01	3.9292E+03	-4.6858E+01	4.6436E+03	-4.6850E+01	4.2864E+03	-4.6838E+01	4.6436E+03	-4.6805E+01	3.5720E+03	-4.6774E+01	3.5743E+04
-4.6942E+01	3.9292E+03	-4.6940E+01	4.6436E+03	-4.6931E+01	4.2864E+03	-4.6920E+01	4.6436E+03	-4.6886E+01	3.5720E+03	-4.6856E+01	3.5743E+04
-4.7024E+01	3.9292E+03	-4.7021E+01	4.6436E+03	-4.7012E+01	4.2864E+03	-4.7001E+01	4.6436E+03	-4.6968E+01	3.5720E+03	-4.6937E+01	3.5743E+04
-4.7105E+01	3.9292E+03	-4.7102E+01	4.6436E+03	-4.7093E+01	4.2864E+03	-4.7082E+01	4.6436E+03	-4.7049E+01	3.5720E+03	-4.7018E+01	3.5743E+04
-4.7185E+01	3.9292E+03	-4.7183E+01	4.6436E+03	-4.7174E+01	4.2864E+03	-4.7163E+01	4.6436E+03	-4.7130E+01	3.5720E+03	-4.7099E+01	3.5743E+04
-4.7266E+01	3.9292E+03	-4.7263E+01	4.6436E+03	-4.7255E+01	4.2864E+03	-4.7244E+01	4.6436E+03	-4.7210E+01	3.5720E+03	-4.7180E+01	3.5743E+04
-4.7347E+01	3.9292E+03	-4.7344E+01	4.6436E+03	-4.7335E+01	4.2864E+03	-4.7324E+01	4.6436E+03	-4.7291E+01	3.5720E+03	-4.7261E+01	3.5743E+04
-4.7427E+01	3.9292E+03	-4.7424E+01	4.6436E+03	-4.7416E+01	4.2864E+03	-4.7405E+01	4.6436E+03	-4.7372E+01	3.5720E+03	-4.7342E+01	3.5743E+04
-4.7508E+01	3.9292E+03	-4.7505E+01	4.6436E+03	-4.7496E+01	4.2864E+03	-4.7485E+01	4.6436E+03	-4.7452E+01	3.5720E+03	-4.7422E+01	3.5743E+04
-4.7588E+01	3.9292E+03	-4.7585E+01	4.6436E+03	-4.7576E+01	4.2864E+03	-4.7565E+01	4.6436E+03	-4.7532E+01	3.5720E+03	-4.7502E+01	3.5743E+04
-4.7668E+01	3.9292E+03	-4.7665E+01	4.6436E+03	-4.7657E+01	4.2864E+03	-4.7645E+01	4.6436E+03	-4.7613E+01	3.5720E+03	-4.7582E+01	3.5743E+04
-4.7748E+01	3.9292E+03	-4.7745E+01	4.6436E+03	-4.7736E+01	4.2864E+03	-4.7725E+01	4.6436E+03	-4.7693E+01	3.5720E+03	-4.7663E+01	3.5743E+04
-4.7827E+01	3.9292E+03	-4.7825E+01	4.6436E+03	-4.7816E+01	4.2864E+03	-4.7805E+01	4.6436E+03	-4.7772E+01	3.5720E+03	-4.7742E+01	3.5743E+04
-4.7907E+01	3.9292E+03	-4.7904E+01	4.6436E+03	-4.7896E+01	4.2864E+03	-4.7885E+01	4.6436E+03	-4.7852E+01	3.5720E+03	-4.7822E+01	3.5743E+04
-4.7987E+01	3.9292E+03	-4.7984E+01	4.6436E+03	-4.7975E+01	4.2864E+03	-4.7964E+01	4.6436E+03	-4.7932E+01	3.5720E+03	-4.7902E+01	3.5743E+04
-4.8066E+01	3.9292E+03	-4.8063E+01	4.6436E+03	-4.8055E+01	4.2864E+03	-4.8044E+01	4.6436E+03	-4.8011E+01	3.5720E+03	-4.7981E+01	3.5743E+04
-4.8145E+01	3.9292E+03	-4.8143E+01	4.6436E+03	-4.8134E+01	4.2864E+03	-4.8123E+01	4.6436E+03	-4.8091E+01	3.5720E+03	-4.8061E+01	3.5743E+04
-4.8224E+01	3.9292E+03	-4.8222E+01	4.6436E+03	-4.8213E+01	4.2864E+03	-4.8202E+01	4.6436E+03	-4.8170E+01	3.5720E+03	-4.8140E+01	3.5743E+04
-4.8303E+01	3.9292E+03	-4.8301E+01	4.6436E+03	-4.8292E+01	4.2864E+03	-4.8281E+01	4.6436E+03	-4.8249E+01	3.5720E+03	-4.8219E+01	3.5743E+04
-4.8382E+01	3.9292E+03	-4.8380E+01	4.6436E+03	-4.8371E+01	4.2864E+03	-4.8360E+01	4.6436E+03	-4.8328E+01	3.5720E+03	-4.8298E+01	3.5743E+04
-4.8461E+01	3.9292E+03	-4.8458E+01	4.6436E+03	-4.8450E+01	4.2864E+03	-4.8439E+01	4.6436E+03	-4.8407E+01	3.5720E+03	-4.8377E+01	3.5743E+04
-4.8540E+01	3.9292E+03	-4.8537E+01	4.6436E+03	-4.8529E+01	4.2864E+03	-4.8518E+01	4.6436E+03	-4.8485E+01	3.5720E+03	-4.8456E+01	3.5743E+04
-4.8618E+01	3.9292E+03	-4.8615E+01	4.6436E+03	-4.8607E+01	4.2864E+03	-4.8596E+01	4.6436E+03	-4.8564E+01	3.5720E+03	-4.8535E+01	3.5743E+04
-4.8697E+01	3.9292E+03	-4.8694E+01	4.6436E+03	-4.8686E+01	4.2864E+03	-4.8675E+01	4.6436E+03	-4.8642E+01	3.5720E+03	-4.8613E+01	3.5743E+04
-4.8775E+01	3.9292E+03	-4.8772E+01	4.6436E+03	-4.8764E+01	4.2864E+03	-4.8753E+01	4.6436E+03	-4.8721E+01	3.5720E+03	-4.8691E+01	3.5743E+04
-4.8853E+01	3.9292E+03	-4.8850E+01	4.6436E+03	-4.8842E+01	4.2864E+03	-4.8831E+01	4.6436E+03	-4.8799E+01	3.5720E+03	-4.8770E+01	3.5743E+04
-4.8931E+01	3.9292E+03	-4.8928E+01	4.6436E+03	-4.8920E+01	4.2864E+03	-4.8909E+01	4.6436E+03	-4.8877E+01	3.5720E+03	-4.8848E+01	3.5743E+04
-4.9009E+01	3.9292E+03	-4.9006E+01	4.6436E+03	-4.8998E+01	4.2864E+03	-4.8987E+01	4.6436E+03	-4.8955E+01	3.5720E+03	-4.8926E+01	3.5743E+04
-4.9087E+01	3.9292E+03	-4.9084E+01	4.6436E+03	-4.9076E+01	4.2864E+03	-4.9065E+01	4.6436E+03	-4.9033E+01	3.5720E+03	-4.9004E+01	3.5743E+04
-4.9164E+01	3.9292E+03	-4.9161E+01	4.6436E+03	-4.9153E+01	4.2864E+03	-4.9142E+01	4.6436E+03	-4.9111E+01	3.5720E+03	-4.9082E+01	3.5743E+04
-4.9242E+01	3.9292E+03	-4.9239E+01	4.6436E+03	-4.9231E+01	4.2864E+03	-4.9220E+01	4.6436E+03	-4.9188E+01	3.5720E+03	-4.9159E+01	3.5743E+04
-4.9319E+01	3.9292E+03	-4.9316E+01	4.6436E+03	-4.9308E+01	4.2864E+03	-4.9297E+01	4.6436E+03	-4.9266E+01	3.5720E+03	-4.9237E+01	3.5743E+04
-4.9396E+01	3.9292E+03	-4.9394E+01	4.6436E+03	-4.9386E+01	4.2864E+03	-4.9375E+01	4.6436E+03	-4.9343E+01	3.5720E+03	-4.9314E+01	3.5743E+04
-4.9474E+01	3.9292E+03	-4.9471E+01	4.6436E+03	-4.9463E+01	4.2864E+03	-4.9452E+01	4.6436E+03	-4.9420E+01	3.5720E+03	-4.9391E+01	3.5743E+04
-4.9551E+01	3.9292E+03	-4.9548E+01	4.6436E+03	-4.9540E+01	4.2864E+03	-4.9529E+01	4.6436E+03	-4.9497E+01	3.5720E+03	-4.9469E+01	3.5743E+04
-4.9627E+01	3.9292E+03	-4.9625E+01	4.6436E+03	-4.9617E+01	4.2864E+03	-4.9606E+01	4.6436E+03	-4.9574E+01	3.5720E+03	-4.9546E+01	3.5743E+04
-4.9704E+01	3.9292E+03	-4.9702E+01	4.6436E+03	-4.9694E+01	4.2864E+03	-4.9683E+01	4.6436E+03	-4.9651E+01	3.5720E+03	-4.9622E+01	3.5743E+04
-4.9781E+01	3.9292E+03	-4.9778E+01	4.6436E+03	-4.9770E+01	4.2864E+03	-4.9759E+01	4.6436E+03	-4.9728E+01	3.5720E+03	-4.9699E+01	3.5743E+04
-4.9858E+01	3.9292E+03	-4.9855E+01	4.6436E+03	-4.9847E+01	4.2864E+03	-4.9836E+01	4.6436E+03	-4.9805E+01	3.5720E+03	-4.9776E+01	3.5743E+04
-4.9934E+01	3.9292E+03	-4.9931E+01	4.6436E+03	-4.9923E+01	4.2864E+03	-4.9913E+01	4.6436E+03	-4.9881E+01	3.5720E+03	-4.9853E+01	3.5743E+04
-5.0010E+01	3.9292E+03	-5.0008E+01	4.6436E+03	-5.0000E+01	4.2864E+03	-4.9989E+01	4.6436E+03	-4.9958E+01	3.5720E+03	-4.9929E+01	3.5743E+04

Arg 13	Curve 13	Arg 14	Curve 14	Arg 15	Curve 15	Arg 16	Curve 16	Arg 17	Curve 17	Arg 18	Curve 18
-5.0087E+01	3.9292E+03	-5.0084E+01	4.6436E+03	-5.0076E+01	4.2864E+03	-5.0065E+01	4.6436E+03	-5.0034E+01	3.5720E+03	-5.0005E+01	3.5743E+04
-5.0163E+01	3.9292E+03	-5.0160E+01	4.6436E+03	-5.0152E+01	4.2864E+03	-5.0141E+01	4.6436E+03	-5.0110E+01	3.5720E+03	-5.0082E+01	3.5743E+04
-5.0239E+01	3.9292E+03	-5.0236E+01	4.6436E+03	-5.0228E+01	4.2864E+03	-5.0217E+01	4.6436E+03	-5.0186E+01	3.5720E+03	-5.0158E+01	3.5743E+04
-5.0314E+01	3.9292E+03	-5.0312E+01	4.6436E+03	-5.0304E+01	4.2864E+03	-5.0293E+01	4.6436E+03	-5.0262E+01	3.5720E+03	-5.0234E+01	3.5743E+04
-5.0390E+01	3.9292E+03	-5.0388E+01	4.6436E+03	-5.0380E+01	4.2864E+03	-5.0369E+01	4.6436E+03	-5.0338E+01	3.5720E+03	-5.0310E+01	3.5743E+04
-5.0466E+01	3.9292E+03	-5.0463E+01	4.6436E+03	-5.0455E+01	4.2864E+03	-5.0445E+01	4.6436E+03	-5.0414E+01	3.5720E+03	-5.0385E+01	3.5743E+04
-5.0541E+01	3.9292E+03	-5.0539E+01	4.6436E+03	-5.0531E+01	4.2864E+03	-5.0520E+01	4.6436E+03	-5.0489E+01	3.5720E+03	-5.0461E+01	3.5743E+04
-5.0617E+01	3.9292E+03	-5.0614E+01	4.6436E+03	-5.0606E+01	4.2864E+03	-5.0596E+01	4.6436E+03	-5.0565E+01	3.5720E+03	-5.0537E+01	3.5743E+04
-5.0692E+01	3.9292E+03	-5.0690E+01	4.6436E+03	-5.0682E+01	4.2864E+03	-5.0671E+01	4.6436E+03	-5.0640E+01	3.5720E+03	-5.0612E+01	3.5743E+04
-5.0767E+01	3.9292E+03	-5.0765E+01	4.6436E+03	-5.0757E+01	4.2864E+03	-5.0746E+01	4.6436E+03	-5.0715E+01	3.5720E+03	-5.0687E+01	3.5743E+04
-5.0842E+01	3.9292E+03	-5.0840E+01	4.6436E+03	-5.0832E+01	4.2864E+03	-5.0821E+01	4.6436E+03	-5.0791E+01	3.5720E+03	-5.0762E+01	3.5743E+04
-5.0917E+01	3.9292E+03	-5.0915E+01	4.6436E+03	-5.0907E+01	4.2864E+03	-5.0896E+01	4.6436E+03	-5.0866E+01	3.5720E+03	-5.0838E+01	3.5743E+04
-5.0992E+01	3.9292E+03	-5.0990E+01	4.6436E+03	-5.0982E+01	4.2864E+03	-5.0971E+01	4.6436E+03	-5.0941E+01	3.5720E+03	-5.0913E+01	3.5743E+04
-5.1067E+01	3.9292E+03	-5.1064E+01	4.6436E+03	-5.1057E+01	4.2864E+03	-5.1046E+01	4.6436E+03	-5.1015E+01	3.5720E+03	-5.0987E+01	3.5743E+04
-5.1142E+01	3.9292E+03	-5.1139E+01	4.6436E+03	-5.1131E+01	4.2864E+03	-5.1121E+01	4.6436E+03	-5.1090E+01	3.5720E+03	-5.1062E+01	3.5743E+04
-5.1216E+01	3.9292E+03	-5.1214E+01	4.6436E+03	-5.1206E+01	4.2864E+03	-5.1195E+01	4.6436E+03	-5.1165E+01	3.5720E+03	-5.1137E+01	3.5743E+04
-5.1291E+01	3.9292E+03	-5.1288E+01	4.6436E+03	-5.1280E+01	4.2864E+03	-5.1270E+01	4.6436E+03	-5.1239E+01	3.5720E+03	-5.1211E+01	3.5743E+04
-5.1365E+01	3.9292E+03	-5.1362E+01	4.6436E+03	-5.1355E+01	4.2864E+03	-5.1344E+01	4.6436E+03	-5.1314E+01	3.5720E+03	-5.1286E+01	3.5743E+04
-5.1439E+01	3.9292E+03	-5.1437E+01	4.6436E+03	-5.1429E+01	4.2864E+03	-5.1418E+01	4.6436E+03	-5.1388E+01	3.5720E+03	-5.1360E+01	3.5743E+04
-5.1513E+01	3.9292E+03	-5.1511E+01	4.6436E+03	-5.1503E+01	4.2864E+03	-5.1493E+01	4.6436E+03	-5.1462E+01	3.5720E+03	-5.1434E+01	3.5743E+04
-5.1587E+01	3.9292E+03	-5.1585E+01	4.6436E+03	-5.1577E+01	4.2864E+03	-5.1567E+01	4.6436E+03	-5.1536E+01	3.5720E+03	-5.1509E+01	3.5743E+04
-5.1661E+01	3.9292E+03	-5.1659E+01	4.6436E+03	-5.1651E+01	4.2864E+03	-5.1641E+01	4.6436E+03	-5.1610E+01	3.5720E+03	-5.1583E+01	3.5743E+04
-5.1735E+01	3.9292E+03	-5.1733E+01	4.6436E+03	-5.1725E+01	4.2864E+03	-5.1714E+01	4.6436E+03	-5.1684E+01	3.5720E+03	-5.1656E+01	3.5743E+04
-5.1809E+01	3.9292E+03	-5.1806E+01	4.6436E+03	-5.1798E+01	4.2864E+03	-5.1788E+01	4.6436E+03	-5.1758E+01	3.5720E+03	-5.1730E+01	3.5743E+04
-5.1882E+01	3.9292E+03	-5.1880E+01	4.6436E+03	-5.1872E+01	4.2864E+03	-5.1862E+01	4.6436E+03	-5.1832E+01	3.5720E+03	-5.1804E+01	3.5743E+04
-5.1956E+01	3.9292E+03	-5.1953E+01	4.6436E+03	-5.1946E+01	4.2864E+03	-5.1935E+01	4.6436E+03	-5.1905E+01	3.5720E+03	-5.1878E+01	3.5743E+04
-5.2029E+01	3.9292E+03	-5.2027E+01	4.6436E+03	-5.2019E+01	4.2864E+03	-5.2009E+01	4.6436E+03	-5.1979E+01	3.5720E+03	-5.1951E+01	3.5743E+04
-5.2103E+01	3.9292E+03	-5.2100E+01	4.6436E+03	-5.2092E+01	4.2864E+03	-5.2082E+01	4.6436E+03	-5.2052E+01	3.5720E+03	-5.2025E+01	3.5743E+04
-5.2176E+01	3.9292E+03	-5.2173E+01	4.6436E+03	-5.2166E+01	4.2864E+03	-5.2155E+01	4.6436E+03	-5.2125E+01	3.5720E+03	-5.2098E+01	3.5743E+04
-5.2249E+01	3.9292E+03	-5.2246E+01	4.6436E+03	-5.2239E+01	4.2864E+03	-5.2228E+01	4.6436E+03	-5.2198E+01	3.5720E+03	-5.2171E+01	3.5743E+04
-5.2322E+01	3.9292E+03	-5.2319E+01	4.6436E+03	-5.2312E+01	4.2864E+03	-5.2301E+01	4.6436E+03	-5.2271E+01	3.5720E+03	-5.2244E+01	3.5743E+04
-5.2395E+01	3.9292E+03	-5.2392E+01	4.6436E+03	-5.2385E+01	4.2864E+03	-5.2374E+01	4.6436E+03	-5.2344E+01	3.5720E+03	-5.2317E+01	3.5743E+04
-5.2467E+01	3.9292E+03	-5.2465E+01	4.6436E+03	-5.2457E+01	4.2864E+03	-5.2447E+01	4.6436E+03	-5.2417E+01	3.5720E+03	-5.2390E+01	3.5743E+04
-5.2540E+01	3.9292E+03	-5.2538E+01	4.6436E+03	-5.2530E+01	4.2864E+03	-5.2520E+01	4.6436E+03	-5.2490E+01	3.5720E+03	-5.2463E+01	3.5743E+04
-5.2613E+01	3.9292E+03	-5.2610E+01	4.6436E+03	-5.2603E+01	4.2864E+03	-5.2592E+01	4.6436E+03	-5.2563E+01	3.5720E+03	-5.2535E+01	3.5743E+04
-5.2685E+01	3.9292E+03	-5.2683E+01	4.6436E+03	-5.2675E+01	4.2864E+03	-5.2665E+01	4.6436E+03	-5.2635E+01	3.5720E+03	-5.2608E+01	3.5743E+04
-5.2758E+01	3.9292E+03	-5.2755E+01	4.6436E+03	-5.2747E+01	4.2864E+03	-5.2737E+01	4.6436E+03	-5.2708E+01	3.5720E+03	-5.2681E+01	3.5743E+04
-5.2830E+01	3.9292E+03	-5.2827E+01	4.6436E+03	-5.2820E+01	4.2864E+03	-5.2810E+01	4.6436E+03	-5.2780E+01	3.5720E+03	-5.2753E+01	3.5743E+04
-5.2902E+01	3.9292E+03	-5.2900E+01	4.6436E+03	-5.2892E+01	4.2864E+03	-5.2882E+01	4.6436E+03	-5.2852E+01	3.5720E+03	-5.2825E+01	3.5743E+04
-5.2974E+01	3.9292E+03	-5.2972E+01	4.6436E+03	-5.2964E+01	4.2864E+03	-5.2954E+01	4.6436E+03	-5.2924E+01	3.5720E+03	-5.2897E+01	3.5743E+04
-5.3046E+01	3.9292E+03	-5.3044E+01	4.6436E+03	-5.3036E+01	4.2864E+03	-5.3026E+01	4.6436E+03	-5.2997E+01	3.5720E+03	-5.2969E+01	3.5743E+04
-5.3118E+01	3.9292E+03	-5.3116E+01	4.6436E+03	-5.3108E+01	4.2864E+03	-5.3098E+01	4.6436E+03	-5.3068E+01	3.5720E+03	-5.3041E+01	3.5743E+04
-5.3190E+01	3.9292E+03	-5.3187E+01	4.6436E+03	-5.3180E+01	4.2864E+03	-5.3170E+01	4.6436E+03	-5.3140E+01	3.5720E+03	-5.3113E+01	3.5743E+04
-5.3262E+01	3.9292E+03	-5.3259E+01	4.6436E+03	-5.3252E+01	4.2864E+03	-5.3241E+01	4.6436E+03	-5.3212E+01	3.5720E+03	-5.3185E+01	3.5743E+04
-5.3333E+01	3.9292E+03	-5.3331E+01	4.6436E+03	-5.3323E+01	4.2864E+03	-5.3313E+01	4.6436E+03	-5.3284E+01	3.5720E+03	-5.3257E+01	3.5743E+04
-5.3405E+01	3.9292E+03	-5.3402E+01	4.6436E+03	-5.3395E+01	4.2864E+03	-5.3385E+01	4.6436E+03	-5.3355E+01	3.5720E+03	-5.3329E+01	3.5743E+04
-5.3476E+01	3.9292E+03	-5.3474E+01	4.6436E+03	-5.3466E+01	4.2864E+03	-5.3456E+01	4.6436E+03	-5.3427E+01	3.5720E+03	-5.3400E+01	3.5743E+04
-5.3547E+01	3.9292E+03	-5.3545E+01	4.6436E+03	-5.3537E+01	4.2864E+03	-5.3527E+01	4.6436E+03	-5.3498E+01	3.5720E+03	-5.3471E+01	3.5743E+04
-5.3619E+01	3.9292E+03	-5.3616E+01	4.6436E+03	-5.3609E+01	4.2864E+03	-5.3599E+01	4.6436E+03	-5.3570E+01	3.5720E+03	-5.3543E+01	3.5743E+04
-5.3690E+01	3.9292E+03	-5.3687E+01	4.6436E+03	-5.3680E+01	4.2864E+03	-5.3670E+01	4.6436E+03	-5.3641E+01	3.5720E+03	-5.3614E+01	3.5743E+04
-5.3761E+01	3.9292E+03	-5.3758E+01	4.6436E+03	-5.3751E+01	4.2864E+03	-5.3741E+01	4.6436E+03	-5.3712E+01	3.5720E+03	-5.3685E+01	3.5743E+04
-5.3832E+01	3.9292E+03	-5.3829E+01	4.6436E+03	-5.3822E+01	4.2864E+03	-5.3812E+01	4.6436E+03	-5.3783E+01	3.5720E+03	-5.3756E+01	3.5743E+04

Arg 13	Curve 13	Arg 14	Curve 14	Arg 15	Curve 15	Arg 16	Curve 16	Arg 17	Curve 17	Arg 18	Curve 18
-5.3903E+01	3.9292E+03	-5.3900E+01	4.6436E+03	-5.3893E+01	4.2864E+03	-5.3883E+01	4.6436E+03	-5.3854E+01	3.5720E+03	-5.3827E+01	3.5743E+04
-5.3973E+01	3.9292E+03	-5.3971E+01	4.6436E+03	-5.3963E+01	4.2864E+03	-5.3954E+01	4.6436E+03	-5.3925E+01	3.5720E+03	-5.3898E+01	3.5743E+04
-5.4044E+01	3.9292E+03	-5.4042E+01	4.6436E+03	-5.4034E+01	4.2864E+03	-5.4024E+01	4.6436E+03	-5.3995E+01	3.5720E+03	-5.3969E+01	3.5743E+04
-5.4115E+01	3.9292E+03	-5.4112E+01	4.6436E+03	-5.4105E+01	4.2864E+03	-5.4095E+01	4.6436E+03	-5.4066E+01	3.5720E+03	-5.4039E+01	3.5743E+04
-5.4185E+01	3.9292E+03	-5.4183E+01	4.6436E+03	-5.4175E+01	4.2864E+03	-5.4165E+01	4.6436E+03	-5.4137E+01	3.5720E+03	-5.4110E+01	3.5743E+04
-5.4256E+01	3.9292E+03	-5.4253E+01	4.6436E+03	-5.4246E+01	4.2864E+03	-5.4236E+01	4.6436E+03	-5.4207E+01	3.5720E+03	-5.4181E+01	3.5743E+04
-5.4326E+01	3.9292E+03	-5.4323E+01	4.6436E+03	-5.4316E+01	4.2864E+03	-5.4306E+01	4.6436E+03	-5.4277E+01	3.5720E+03	-5.4251E+01	3.5743E+04
-5.4396E+01	3.9292E+03	-5.4394E+01	4.6436E+03	-5.4386E+01	4.2864E+03	-5.4376E+01	4.6436E+03	-5.4348E+01	3.5720E+03	-5.4321E+01	3.5743E+04
-5.4466E+01	3.9292E+03	-5.4464E+01	4.6436E+03	-5.4456E+01	4.2864E+03	-5.4447E+01	4.6436E+03	-5.4418E+01	3.5720E+03	-5.4391E+01	3.5743E+04
-5.4536E+01	3.9292E+03	-5.4534E+01	4.6436E+03	-5.4526E+01	4.2864E+03	-5.4517E+01	4.6436E+03	-5.4488E+01	3.5720E+03	-5.4462E+01	3.5743E+04
-5.4606E+01	3.9292E+03	-5.4604E+01	4.6436E+03	-5.4596E+01	4.2864E+03	-5.4587E+01	4.6436E+03	-5.4558E+01	3.5720E+03	-5.4532E+01	3.5743E+04
-5.4676E+01	3.9292E+03	-5.4674E+01	4.6436E+03	-5.4666E+01	4.2864E+03	-5.4656E+01	4.6436E+03	-5.4628E+01	3.5720E+03	-5.4602E+01	3.5743E+04
-5.4746E+01	3.9292E+03	-5.4743E+01	4.6436E+03	-5.4736E+01	4.2864E+03	-5.4726E+01	4.6436E+03	-5.4698E+01	3.5720E+03	-5.4671E+01	3.5743E+04
-5.4815E+01	3.9292E+03	-5.4813E+01	4.6436E+03	-5.4806E+01	4.2864E+03	-5.4796E+01	4.6436E+03	-5.4767E+01	3.5720E+03	-5.4741E+01	3.5743E+04
-5.4885E+01	3.9292E+03	-5.4883E+01	4.6436E+03	-5.4875E+01	4.2864E+03	-5.4866E+01	4.6436E+03	-5.4837E+01	3.5720E+03	-5.4811E+01	3.5743E+04
-5.4955E+01	3.9292E+03	-5.4952E+01	4.6436E+03	-5.4945E+01	4.2864E+03	-5.4935E+01	4.6436E+03	-5.4907E+01	3.5720E+03	-5.4881E+01	3.5743E+04
-5.5024E+01	3.9292E+03	-5.5022E+01	4.6436E+03	-5.5014E+01	4.2864E+03	-5.5005E+01	4.6436E+03	-5.4976E+01	3.5720E+03	-5.4950E+01	3.5743E+04
-5.5093E+01	3.9292E+03	-5.5091E+01	4.6436E+03	-5.5084E+01	4.2864E+03	-5.5074E+01	4.6436E+03	-5.5045E+01	3.5720E+03	-5.5019E+01	3.5743E+04
-5.5163E+01	3.9292E+03	-5.5160E+01	4.6436E+03	-5.5153E+01	4.2864E+03	-5.5143E+01	4.6436E+03	-5.5115E+01	3.5720E+03	-5.5089E+01	3.5743E+04
-5.5232E+01	3.9292E+03	-5.5229E+01	4.6436E+03	-5.5222E+01	4.2864E+03	-5.5212E+01	4.6436E+03	-5.5184E+01	3.5720E+03	-5.5158E+01	3.5743E+04
-5.5301E+01	3.9292E+03	-5.5298E+01	4.6436E+03	-5.5291E+01	4.2864E+03	-5.5281E+01	4.6436E+03	-5.5253E+01	3.5720E+03	-5.5227E+01	3.5743E+04
-5.5370E+01	3.9292E+03	-5.5367E+01	4.6436E+03	-5.5360E+01	4.2864E+03	-5.5350E+01	4.6436E+03	-5.5322E+01	3.5720E+03	-5.5296E+01	3.5743E+04
-5.5439E+01	3.9292E+03	-5.5436E+01	4.6436E+03	-5.5429E+01	4.2864E+03	-5.5419E+01	4.6436E+03	-5.5391E+01	3.5720E+03	-5.5365E+01	3.5743E+04
-5.5508E+01	3.9292E+03	-5.5505E+01	4.6436E+03	-5.5498E+01	4.2864E+03	-5.5488E+01	4.6436E+03	-5.5460E+01	3.5720E+03	-5.5434E+01	3.5743E+04
-5.5576E+01	3.9292E+03	-5.5574E+01	4.6436E+03	-5.5567E+01	4.2864E+03	-5.5557E+01	4.6436E+03	-5.5529E+01	3.5720E+03	-5.5503E+01	3.5743E+04
-5.5645E+01	3.9292E+03	-5.5642E+01	4.6436E+03	-5.5635E+01	4.2864E+03	-5.5626E+01	4.6436E+03	-5.5598E+01	3.5720E+03	-5.5572E+01	3.5743E+04
-5.5713E+01	3.9292E+03	-5.5711E+01	4.6436E+03	-5.5704E+01	4.2864E+03	-5.5694E+01	4.6436E+03	-5.5666E+01	3.5720E+03	-5.5640E+01	3.5743E+04
-5.5782E+01	3.9292E+03	-5.5780E+01	4.6436E+03	-5.5772E+01	4.2864E+03	-5.5763E+01	4.6436E+03	-5.5735E+01	3.5720E+03	-5.5709E+01	3.5743E+04
-5.5850E+01	3.9292E+03	-5.5848E+01	4.6436E+03	-5.5841E+01	4.2864E+03	-5.5831E+01	4.6436E+03	-5.5803E+01	3.5720E+03	-5.5777E+01	3.5743E+04
-5.5919E+01	3.9292E+03	-5.5916E+01	4.6436E+03	-5.5909E+01	4.2864E+03	-5.5900E+01	4.6436E+03	-5.5872E+01	3.5720E+03	-5.5846E+01	3.5743E+04
-5.5987E+01	3.9292E+03	-5.5984E+01	4.6436E+03	-5.5977E+01	4.2864E+03	-5.5968E+01	4.6436E+03	-5.5940E+01	3.5720E+03	-5.5914E+01	3.5743E+04
-5.6055E+01	3.9292E+03	-5.6053E+01	4.6436E+03	-5.6045E+01	4.2864E+03	-5.6036E+01	4.6436E+03	-5.6008E+01	3.5720E+03	-5.5982E+01	3.5743E+04
-5.6123E+01	3.9292E+03	-5.6121E+01	4.6436E+03	-5.6114E+01	4.2864E+03	-5.6104E+01	4.6436E+03	-5.6076E+01	3.5720E+03	-5.6051E+01	3.5743E+04
-5.6191E+01	3.9292E+03	-5.6189E+01	4.6436E+03	-5.6182E+01	4.2864E+03	-5.6172E+01	4.6436E+03	-5.6144E+01	3.5720E+03	-5.6119E+01	3.5743E+04
-5.6259E+01	3.9292E+03	-5.6257E+01	4.6436E+03	-5.6249E+01	4.2864E+03	-5.6240E+01	4.6436E+03	-5.6212E+01	3.5720E+03	-5.6187E+01	3.5743E+04
-5.6327E+01	3.9292E+03	-5.6324E+01	4.6436E+03	-5.6317E+01	4.2864E+03	-5.6308E+01	4.6436E+03	-5.6280E+01	3.5720E+03	-5.6255E+01	3.5743E+04
-5.6395E+01	3.9292E+03	-5.6392E+01	4.6436E+03	-5.6385E+01	4.2864E+03	-5.6376E+01	4.6436E+03	-5.6348E+01	3.5720E+03	-5.6322E+01	3.5743E+04
-5.6462E+01	3.9292E+03	-5.6460E+01	4.6436E+03	-5.6453E+01	4.2864E+03	-5.6443E+01	4.6436E+03	-5.6416E+01	3.5720E+03	-5.6390E+01	3.5743E+04
-5.6530E+01	3.9292E+03	-5.6527E+01	4.6436E+03	-5.6520E+01	4.2864E+03	-5.6511E+01	4.6436E+03	-5.6483E+01	3.5720E+03	-5.6458E+01	3.5743E+04
-5.6597E+01	3.9292E+03	-5.6595E+01	4.6436E+03	-5.6588E+01	4.2864E+03	-5.6578E+01	4.6436E+03	-5.6551E+01	3.5720E+03	-5.6525E+01	3.5743E+04
-5.6665E+01	3.9292E+03	-5.6662E+01	4.6436E+03	-5.6655E+01	4.2864E+03	-5.6646E+01	4.6436E+03	-5.6618E+01	3.5720E+03	-5.6593E+01	3.5743E+04
-5.6732E+01	3.9292E+03	-5.6730E+01	4.6436E+03	-5.6723E+01	4.2864E+03	-5.6713E+01	4.6436E+03	-5.6686E+01	3.5720E+03	-5.6660E+01	3.5743E+04
-5.6799E+01	3.9292E+03	-5.6797E+01	4.6436E+03	-5.6790E+01	4.2864E+03	-5.6780E+01	4.6436E+03	-5.6753E+01	3.5720E+03	-5.6728E+01	3.5743E+04
-5.6866E+01	3.9292E+03	-5.6864E+01	4.6436E+03	-5.6857E+01	4.2864E+03	-5.6848E+01	4.6436E+03	-5.6820E+01	3.5720E+03	-5.6795E+01	3.5743E+04
-5.6934E+01	3.9292E+03	-5.6931E+01	4.6436E+03	-5.6924E+01	4.2864E+03	-5.6915E+01	4.6436E+03	-5.6887E+01	3.5720E+03	-5.6862E+01	3.5743E+04
-5.7001E+01	3.9292E+03	-5.6998E+01	4.6436E+03	-5.6991E+01	4.2864E+03	-5.6982E+01	4.6436E+03	-5.6954E+01	3.5720E+03	-5.6929E+01	3.5743E+04
-5.7068E+01	3.9292E+03	-5.7065E+01	4.6436E+03	-5.7058E+01	4.2864E+03	-5.7049E+01	4.6436E+03	-5.7021E+01	3.5720E+03	-5.6996E+01	3.5743E+04
-5.7134E+01	3.9292E+03	-5.7132E+01	4.6436E+03	-5.7125E+01	4.2864E+03	-5.7116E+01	4.6436E+03	-5.7088E+01	3.5720E+03	-5.7063E+01	3.5743E+04
-5.7201E+01	3.9292E+03	-5.7199E+01	4.6436E+03	-5.7192E+01	4.2864E+03	-5.7183E+01	4.6436E+03	-5.7155E+01	3.5720E+03	-5.7130E+01	3.5743E+04
-5.7268E+01	3.9292E+03	-5.7266E+01	4.6436E+03	-5.7259E+01	4.2864E+03	-5.7249E+01	4.6436E+03	-5.7222E+01	3.5720E+03	-5.7197E+01	3.5743E+04
-5.7335E+01	3.9292E+03	-5.7332E+01	4.6436E+03	-5.7325E+01	4.2864E+03	-5.7316E+01	4.6436E+03	-5.7289E+01	3.5720E+03	-5.7264E+01	3.5743E+04
-5.7401E+01	3.9292E+03	-5.7399E+01	4.6436E+03	-5.7392E+01	4.2864E+03	-5.7382E+01	4.6436E+03	-5.7355E+01	3.5720E+03	-5.7330E+01	3.5743E+04

Arg 13	Curve 13	Arg 14	Curve 14	Arg 15	Curve 15	Arg 16	Curve 16	Arg 17	Curve 17	Arg 18	Curve 18
-5.7468E+01	3.9292E+03	-5.7465E+01	4.6436E+03	-5.7458E+01	4.2864E+03	-5.7449E+01	4.6436E+03	-5.7422E+01	3.5720E+03	-5.7397E+01	3.5743E+04
-5.7534E+01	3.9292E+03	-5.7532E+01	4.6436E+03	-5.7525E+01	4.2864E+03	-5.7515E+01	4.6436E+03	-5.7488E+01	3.5720E+03	-5.7463E+01	3.5743E+04
-5.7600E+01	3.9292E+03	-5.7598E+01	4.6436E+03	-5.7591E+01	4.2864E+03	-5.7582E+01	4.6436E+03	-5.7555E+01	3.5720E+03	-5.7530E+01	3.5743E+04
-5.7667E+01	3.9292E+03	-5.7664E+01	4.6436E+03	-5.7657E+01	4.2864E+03	-5.7648E+01	4.6436E+03	-5.7621E+01	3.5720E+03	-5.7596E+01	3.5743E+04
-5.7733E+01	3.9292E+03	-5.7730E+01	4.6436E+03	-5.7724E+01	4.2864E+03	-5.7714E+01	4.6436E+03	-5.7687E+01	3.5720E+03	-5.7662E+01	3.5743E+04
-5.7799E+01	3.9292E+03	-5.7797E+01	4.6436E+03	-5.7790E+01	4.2864E+03	-5.7780E+01	4.6436E+03	-5.7753E+01	3.5720E+03	-5.7728E+01	3.5743E+04
-5.7865E+01	3.9292E+03	-5.7863E+01	4.6436E+03	-5.7856E+01	4.2864E+03	-5.7846E+01	4.6436E+03	-5.7819E+01	3.5720E+03	-5.7795E+01	3.5743E+04
-5.7931E+01	3.9292E+03	-5.7929E+01	4.6436E+03	-5.7922E+01	4.2864E+03	-5.7912E+01	4.6436E+03	-5.7885E+01	3.5720E+03	-5.7861E+01	3.5743E+04
-5.7997E+01	3.9292E+03	-5.7994E+01	4.6436E+03	-5.7988E+01	4.2864E+03	-5.7978E+01	4.6436E+03	-5.7951E+01	3.5720E+03	-5.7927E+01	3.5743E+04
-5.8063E+01	3.9292E+03	-5.8060E+01	4.6436E+03	-5.8053E+01	4.2864E+03	-5.8044E+01	4.6436E+03	-5.8017E+01	3.5720E+03	-5.7992E+01	3.5743E+04
-5.8128E+01	3.9292E+03	-5.8126E+01	4.6436E+03	-5.8119E+01	4.2864E+03	-5.8110E+01	4.6436E+03	-5.8083E+01	3.5720E+03	-5.8058E+01	3.5743E+04
-5.8194E+01	3.9292E+03	-5.8192E+01	4.6436E+03	-5.8185E+01	4.2864E+03	-5.8176E+01	4.6436E+03	-5.8149E+01	3.5720E+03	-5.8124E+01	3.5743E+04
-5.8260E+01	3.9292E+03	-5.8257E+01	4.6436E+03	-5.8250E+01	4.2864E+03	-5.8241E+01	4.6436E+03	-5.8214E+01	3.5720E+03	-5.8190E+01	3.5743E+04
-5.8325E+01	3.9292E+03	-5.8323E+01	4.6436E+03	-5.8316E+01	4.2864E+03	-5.8307E+01	4.6436E+03	-5.8280E+01	3.5720E+03	-5.8255E+01	3.5743E+04
-5.8390E+01	3.9292E+03	-5.8388E+01	4.6436E+03	-5.8381E+01	4.2864E+03	-5.8372E+01	4.6436E+03	-5.8345E+01	3.5720E+03	-5.8321E+01	3.5743E+04
-5.8456E+01	3.9292E+03	-5.8454E+01	4.6436E+03	-5.8447E+01	4.2864E+03	-5.8438E+01	4.6436E+03	-5.8411E+01	3.5720E+03	-5.8386E+01	3.5743E+04
-5.8521E+01	3.9292E+03	-5.8519E+01	4.6436E+03	-5.8512E+01	4.2864E+03	-5.8503E+01	4.6436E+03	-5.8476E+01	3.5720E+03	-5.8452E+01	3.5743E+04
-5.8586E+01	3.9292E+03	-5.8584E+01	4.6436E+03	-5.8577E+01	4.2864E+03	-5.8568E+01	4.6436E+03	-5.8541E+01	3.5720E+03	-5.8517E+01	3.5743E+04
-5.8651E+01	3.9292E+03	-5.8649E+01	4.6436E+03	-5.8642E+01	4.2864E+03	-5.8633E+01	4.6436E+03	-5.8607E+01	3.5720E+03	-5.8582E+01	3.5743E+04
-5.8717E+01	3.9292E+03	-5.8714E+01	4.6436E+03	-5.8707E+01	4.2864E+03	-5.8698E+01	4.6436E+03	-5.8672E+01	3.5720E+03	-5.8647E+01	3.5743E+04
-5.8782E+01	3.9292E+03	-5.8779E+01	4.6436E+03	-5.8772E+01	4.2864E+03	-5.8763E+01	4.6436E+03	-5.8737E+01	3.5720E+03	-5.8712E+01	3.5743E+04
-5.8846E+01	3.9292E+03	-5.8844E+01	4.6436E+03	-5.8837E+01	4.2864E+03	-5.8828E+01	4.6436E+03	-5.8802E+01	3.5720E+03	-5.8777E+01	3.5743E+04
-5.8911E+01	3.9292E+03	-5.8909E+01	4.6436E+03	-5.8902E+01	4.2864E+03	-5.8893E+01	4.6436E+03	-5.8867E+01	3.5720E+03	-5.8842E+01	3.5743E+04
-5.8976E+01	3.9292E+03	-5.8974E+01	4.6436E+03	-5.8967E+01	4.2864E+03	-5.8958E+01	4.6436E+03	-5.8931E+01	3.5720E+03	-5.8907E+01	3.5743E+04
-5.9041E+01	3.9292E+03	-5.9039E+01	4.6436E+03	-5.9032E+01	4.2864E+03	-5.9023E+01	4.6436E+03	-5.8996E+01	3.5720E+03	-5.8972E+01	3.5743E+04
-5.9105E+01	3.9292E+03	-5.9103E+01	4.6436E+03	-5.9096E+01	4.2864E+03	-5.9087E+01	4.6436E+03	-5.9061E+01	3.5720E+03	-5.9037E+01	3.5743E+04
-5.9170E+01	3.9292E+03	-5.9168E+01	4.6436E+03	-5.9161E+01	4.2864E+03	-5.9152E+01	4.6436E+03	-5.9126E+01	3.5720E+03	-5.9101E+01	3.5743E+04
-5.9235E+01	3.9292E+03	-5.9232E+01	4.6436E+03	-5.9226E+01	4.2864E+03	-5.9217E+01	4.6436E+03	-5.9190E+01	3.5720E+03	-5.9166E+01	3.5743E+04
-5.9299E+01	3.9292E+03	-5.9297E+01	4.6436E+03	-5.9290E+01	4.2864E+03	-5.9281E+01	4.6436E+03	-5.9255E+01	3.5720E+03	-5.9230E+01	3.5743E+04
-5.9363E+01	3.9292E+03	-5.9361E+01	4.6436E+03	-5.9354E+01	4.2864E+03	-5.9345E+01	4.6436E+03	-5.9319E+01	3.5720E+03	-5.9295E+01	3.5743E+04
-5.9428E+01	3.9292E+03	-5.9425E+01	4.6436E+03	-5.9419E+01	4.2864E+03	-5.9410E+01	4.6436E+03	-5.9383E+01	3.5720E+03	-5.9359E+01	3.5743E+04
-5.9492E+01	3.9292E+03	-5.9490E+01	4.6436E+03	-5.9483E+01	4.2864E+03	-5.9474E+01	4.6436E+03	-5.9448E+01	3.5720E+03	-5.9423E+01	3.5743E+04
-5.9556E+01	3.9292E+03	-5.9554E+01	4.6436E+03	-5.9547E+01	4.2864E+03	-5.9538E+01	4.6436E+03	-5.9512E+01	3.5720E+03	-5.9488E+01	3.5743E+04

Intake

Arg 19	Curve 19	Flux Out (gm/yr)	(mg/kg body wt./day) Recycle
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	3.2733E-08	3.3064E-16
0.0000E+00	0.0000E+00	3.0392E-04	3.0700E-12
0.0000E+00	0.0000E+00	2.7171E-01	2.7446E-09
0.0000E+00	0.0000E+00	3.8057E+01	3.8443E-07
0.0000E+00	0.0000E+00	1.2160E+03	1.2283E-05
0.0000E+00	0.0000E+00	1.2052E+04	1.2174E-04
0.0000E+00	0.0000E+00	4.8690E+04	4.9183E-04
0.0000E+00	0.0000E+00	1.0365E+05	1.0470E-03
0.0000E+00	0.0000E+00	1.4669E+05	1.4817E-03
0.0000E+00	0.0000E+00	1.6635E+05	1.6803E-03
0.0000E+00	0.0000E+00	1.7184E+05	1.7358E-03
0.0000E+00	0.0000E+00	1.7280E+05	1.7455E-03
0.0000E+00	0.0000E+00	1.7290E+05	1.7465E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03

Arg 19	Curve 19	Flux Out (gm/yr)	(mg/kg body wt./day) Recycle
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03

Arg 19	Curve 19	Flux Out (gm/yr)	(mg/kg body wt./day) Recycle
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03

Arg 19	Curve 19	Flux Out (gm/yr)	(mg/kg body wt./day) Recycle
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03

Arg 19	Curve 19	Flux Out (gm/yr)	(mg/kg body wt./day) Recycle
0.0000E+00	0.0000E+00	1.7291E+05	1.7466E-03

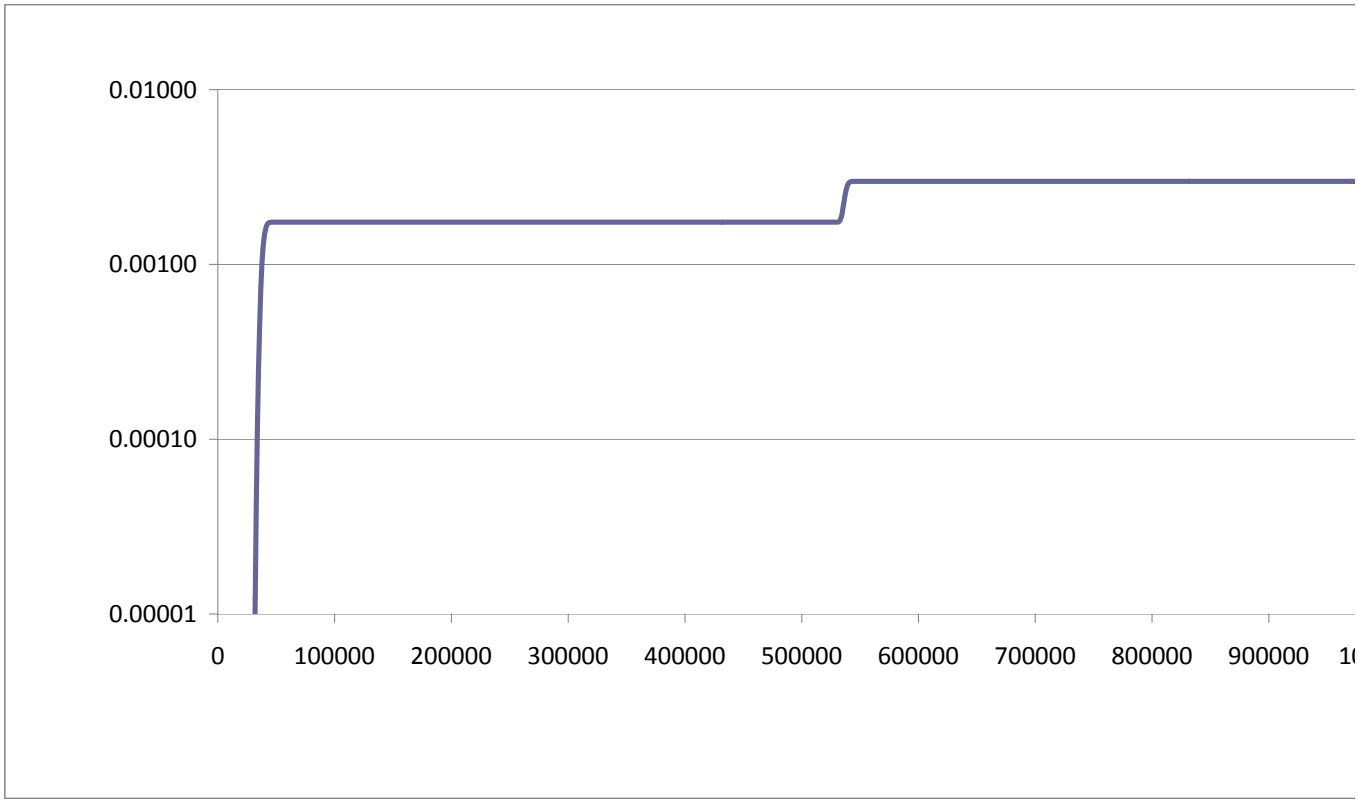
Arg 19	Curve 19	Flux Out (gm/yr)	(mg/kg body wt./day) Recycle
7.2627E+00	0.0000E+00	1.7291E+05	1.7466E-03
6.0908E+00	0.0000E+00	1.7291E+05	1.7466E-03
5.0332E+00	6.7396E-08	1.7291E+05	1.7466E-03
4.0687E+00	5.3642E-04	1.7291E+05	1.7466E-03
3.1816E+00	4.1941E-01	1.7291E+05	1.7466E-03
2.3596E+00	5.2125E+01	1.7296E+05	1.7471E-03
1.5933E+00	1.4921E+03	1.7440E+05	1.7617E-03
8.7497E-01	1.3291E+04	1.8620E+05	1.8808E-03
1.9846E-01	4.7944E+04	2.2085E+05	2.2309E-03
-4.4130E-01	9.0318E+04	2.6323E+05	2.6589E-03
-1.0485E+00	1.1460E+05	2.8750E+05	2.9042E-03
-1.6268E+00	1.2178E+05	2.9469E+05	2.9767E-03
-2.1790E+00	1.2297E+05	2.9588E+05	2.9887E-03
-2.7077E+00	1.2309E+05	2.9600E+05	2.9899E-03
-3.2153E+00	1.2310E+05	2.9600E+05	2.9900E-03
-3.7034E+00	1.2310E+05	2.9600E+05	2.9900E-03
-4.1739E+00	1.2310E+05	2.9600E+05	2.9900E-03
-4.6281E+00	1.2310E+05	2.9600E+05	2.9900E-03
-5.0673E+00	1.2310E+05	2.9600E+05	2.9900E-03
-5.4927E+00	1.2310E+05	2.9600E+05	2.9900E-03
-5.9053E+00	1.2310E+05	2.9600E+05	2.9900E-03
-6.3060E+00	1.2310E+05	2.9600E+05	2.9900E-03
-6.6956E+00	1.2310E+05	2.9600E+05	2.9900E-03
-7.0748E+00	1.2310E+05	2.9600E+05	2.9900E-03
-7.4443E+00	1.2310E+05	2.9600E+05	2.9900E-03
-7.8046E+00	1.2310E+05	2.9600E+05	2.9900E-03
-8.1564E+00	1.2310E+05	2.9600E+05	2.9900E-03
-8.5001E+00	1.2310E+05	2.9600E+05	2.9900E-03
-8.8361E+00	1.2310E+05	2.9600E+05	2.9900E-03
-9.1649E+00	1.2310E+05	2.9600E+05	2.9900E-03
-9.4869E+00	1.2310E+05	2.9600E+05	2.9900E-03
-9.8024E+00	1.2310E+05	2.9600E+05	2.9900E-03
-1.0112E+01	1.2310E+05	2.9600E+05	2.9900E-03
-1.0415E+01	1.2310E+05	2.9600E+05	2.9900E-03
-1.0713E+01	1.2310E+05	2.9600E+05	2.9900E-03
-1.1006E+01	1.2310E+05	2.9600E+05	2.9900E-03
-1.1293E+01	1.2310E+05	2.9600E+05	2.9900E-03
-1.1576E+01	1.2310E+05	2.9600E+05	2.9900E-03
-1.1854E+01	1.2310E+05	2.9600E+05	2.9900E-03
-1.2127E+01	1.2310E+05	2.9600E+05	2.9900E-03
-1.2396E+01	1.2310E+05	2.9600E+05	2.9900E-03
-1.2662E+01	1.2310E+05	2.9600E+05	2.9900E-03
-1.2923E+01	1.2310E+05	2.9600E+05	2.9900E-03
-1.3180E+01	1.2310E+05	2.9600E+05	2.9900E-03
-1.3434E+01	1.2310E+05	2.9600E+05	2.9900E-03
-1.3684E+01	1.2310E+05	2.9600E+05	2.9900E-03
-1.3931E+01	1.2310E+05	2.9600E+05	2.9900E-03
-1.4175E+01	1.2310E+05	2.9600E+05	2.9900E-03
-1.4415E+01	1.2310E+05	2.9600E+05	2.9900E-03
-1.4652E+01	1.2310E+05	2.9600E+05	2.9900E-03
-1.4887E+01	1.2310E+05	2.9600E+05	2.9900E-03
-1.5118E+01	1.2310E+05	2.9600E+05	2.9900E-03

Arg 19	Curve 19	Flux Out (gm/yr)	(mg/kg body wt./day) Recycle
-1.5347E+01	1.2310E+05	2.9600E+05	2.9900E-03
-1.5573E+01	1.2310E+05	2.9600E+05	2.9900E-03
-1.5797E+01	1.2310E+05	2.9600E+05	2.9900E-03
-1.6018E+01	1.2310E+05	2.9600E+05	2.9900E-03
-1.6236E+01	1.2310E+05	2.9600E+05	2.9900E-03
-1.6453E+01	1.2310E+05	2.9600E+05	2.9900E-03
-1.6667E+01	1.2310E+05	2.9600E+05	2.9900E-03
-1.6878E+01	1.2310E+05	2.9600E+05	2.9900E-03
-1.7088E+01	1.2310E+05	2.9600E+05	2.9900E-03
-1.7295E+01	1.2310E+05	2.9600E+05	2.9900E-03
-1.7501E+01	1.2310E+05	2.9600E+05	2.9900E-03
-1.7704E+01	1.2310E+05	2.9600E+05	2.9900E-03
-1.7906E+01	1.2310E+05	2.9600E+05	2.9900E-03
-1.8105E+01	1.2310E+05	2.9600E+05	2.9900E-03
-1.8303E+01	1.2310E+05	2.9600E+05	2.9900E-03
-1.8499E+01	1.2310E+05	2.9600E+05	2.9900E-03
-1.8693E+01	1.2310E+05	2.9600E+05	2.9900E-03
-1.8886E+01	1.2310E+05	2.9600E+05	2.9900E-03
-1.9076E+01	1.2310E+05	2.9600E+05	2.9900E-03
-1.9265E+01	1.2310E+05	2.9600E+05	2.9900E-03
-1.9453E+01	1.2310E+05	2.9600E+05	2.9900E-03
-1.9639E+01	1.2310E+05	2.9600E+05	2.9900E-03
-1.9824E+01	1.2310E+05	2.9600E+05	2.9900E-03
-2.0007E+01	1.2310E+05	2.9600E+05	2.9900E-03
-2.0188E+01	1.2310E+05	2.9600E+05	2.9900E-03
-2.0368E+01	1.2310E+05	2.9600E+05	2.9900E-03
-2.0547E+01	1.2310E+05	2.9600E+05	2.9900E-03
-2.0724E+01	1.2310E+05	2.9600E+05	2.9900E-03
-2.0900E+01	1.2310E+05	2.9600E+05	2.9900E-03
-2.1075E+01	1.2310E+05	2.9600E+05	2.9900E-03
-2.1249E+01	1.2310E+05	2.9600E+05	2.9900E-03
-2.1421E+01	1.2310E+05	2.9600E+05	2.9900E-03
-2.1592E+01	1.2310E+05	2.9600E+05	2.9900E-03
-2.1762E+01	1.2310E+05	2.9600E+05	2.9900E-03
-2.1930E+01	1.2310E+05	2.9600E+05	2.9900E-03
-2.2098E+01	1.2310E+05	2.9600E+05	2.9900E-03
-2.2264E+01	1.2310E+05	2.9600E+05	2.9900E-03
-2.2429E+01	1.2310E+05	2.9600E+05	2.9900E-03
-2.2594E+01	1.2310E+05	2.9600E+05	2.9900E-03
-2.2757E+01	1.2310E+05	2.9600E+05	2.9900E-03
-2.2919E+01	1.2310E+05	2.9600E+05	2.9900E-03
-2.3080E+01	1.2310E+05	2.9600E+05	2.9900E-03
-2.3240E+01	1.2310E+05	2.9600E+05	2.9900E-03
-2.3398E+01	1.2310E+05	2.9600E+05	2.9900E-03
-2.3556E+01	1.2310E+05	2.9600E+05	2.9900E-03
-2.3713E+01	1.2310E+05	2.9600E+05	2.9900E-03
-2.3870E+01	1.2310E+05	2.9600E+05	2.9900E-03
-2.4025E+01	1.2310E+05	2.9600E+05	2.9900E-03
-2.4179E+01	1.2310E+05	2.9600E+05	2.9900E-03
-2.4332E+01	1.2310E+05	2.9600E+05	2.9900E-03
-2.4485E+01	1.2310E+05	2.9600E+05	2.9900E-03
-2.4636E+01	1.2310E+05	2.9600E+05	2.9900E-03

Arg 19	Curve 19	Flux Out (gm/yr)	(mg/kg body wt./day) Recycle
-2.4787E+01	1.2310E+05	2.9600E+05	2.9900E-03
-2.4937E+01	1.2310E+05	2.9600E+05	2.9900E-03
-2.5086E+01	1.2310E+05	2.9600E+05	2.9900E-03
-2.5234E+01	1.2310E+05	2.9600E+05	2.9900E-03
-2.5382E+01	1.2310E+05	2.9600E+05	2.9900E-03
-2.5528E+01	1.2310E+05	2.9600E+05	2.9900E-03
-2.5674E+01	1.2310E+05	2.9600E+05	2.9900E-03
-2.5819E+01	1.2310E+05	2.9600E+05	2.9900E-03
-2.5964E+01	1.2310E+05	2.9600E+05	2.9900E-03
-2.6107E+01	1.2310E+05	2.9600E+05	2.9900E-03
-2.6250E+01	1.2310E+05	2.9600E+05	2.9900E-03
-2.6392E+01	1.2310E+05	2.9600E+05	2.9900E-03
-2.6534E+01	1.2310E+05	2.9600E+05	2.9900E-03
-2.6674E+01	1.2310E+05	2.9600E+05	2.9900E-03
-2.6814E+01	1.2310E+05	2.9600E+05	2.9900E-03
-2.6954E+01	1.2310E+05	2.9600E+05	2.9900E-03
-2.7093E+01	1.2310E+05	2.9600E+05	2.9900E-03
-2.7231E+01	1.2310E+05	2.9600E+05	2.9900E-03
-2.7368E+01	1.2310E+05	2.9600E+05	2.9900E-03
-2.7505E+01	1.2310E+05	2.9600E+05	2.9900E-03
-2.7641E+01	1.2310E+05	2.9600E+05	2.9900E-03
-2.7776E+01	1.2310E+05	2.9600E+05	2.9900E-03
-2.7911E+01	1.2310E+05	2.9600E+05	2.9900E-03
-2.8045E+01	1.2310E+05	2.9600E+05	2.9900E-03
-2.8179E+01	1.2310E+05	2.9600E+05	2.9900E-03
-2.8312E+01	1.2310E+05	2.9600E+05	2.9900E-03
-2.8444E+01	1.2310E+05	2.9600E+05	2.9900E-03
-2.8576E+01	1.2310E+05	2.9600E+05	2.9900E-03
-2.8708E+01	1.2310E+05	2.9600E+05	2.9900E-03
-2.8838E+01	1.2310E+05	2.9600E+05	2.9900E-03
-2.8968E+01	1.2310E+05	2.9600E+05	2.9900E-03
-2.9098E+01	1.2310E+05	2.9600E+05	2.9900E-03
-2.9227E+01	1.2310E+05	2.9600E+05	2.9900E-03
-2.9356E+01	1.2310E+05	2.9600E+05	2.9900E-03
-2.9484E+01	1.2310E+05	2.9600E+05	2.9900E-03
-2.9611E+01	1.2310E+05	2.9600E+05	2.9900E-03
-2.9738E+01	1.2310E+05	2.9600E+05	2.9900E-03
-2.9864E+01	1.2310E+05	2.9600E+05	2.9900E-03
-2.9990E+01	1.2310E+05	2.9600E+05	2.9900E-03
-3.0116E+01	1.2310E+05	2.9600E+05	2.9900E-03
-3.0241E+01	1.2310E+05	2.9600E+05	2.9900E-03
-3.0365E+01	1.2310E+05	2.9600E+05	2.9900E-03
-3.0489E+01	1.2310E+05	2.9600E+05	2.9900E-03
-3.0612E+01	1.2310E+05	2.9600E+05	2.9900E-03
-3.0735E+01	1.2310E+05	2.9600E+05	2.9900E-03
-3.0858E+01	1.2310E+05	2.9600E+05	2.9900E-03
-3.0980E+01	1.2310E+05	2.9600E+05	2.9900E-03
-3.1102E+01	1.2310E+05	2.9600E+05	2.9900E-03
-3.1223E+01	1.2310E+05	2.9600E+05	2.9900E-03
-3.1343E+01	1.2310E+05	2.9600E+05	2.9900E-03
-3.1464E+01	1.2310E+05	2.9600E+05	2.9900E-03
-3.1584E+01	1.2310E+05	2.9600E+05	2.9900E-03

Arg 19	Curve 19	Flux Out (gm/yr)	(mg/kg body wt./day) Recycle
-3.1703E+01	1.2310E+05	2.9600E+05	2.9900E-03
-3.1822E+01	1.2310E+05	2.9600E+05	2.9900E-03
-3.1940E+01	1.2310E+05	2.9600E+05	2.9900E-03
-3.2058E+01	1.2310E+05	2.9600E+05	2.9900E-03
-3.2176E+01	1.2310E+05	2.9600E+05	2.9900E-03
-3.2293E+01	1.2310E+05	2.9600E+05	2.9900E-03
-3.2410E+01	1.2310E+05	2.9600E+05	2.9900E-03
-3.2527E+01	1.2310E+05	2.9600E+05	2.9900E-03
-3.2643E+01	1.2310E+05	2.9600E+05	2.9900E-03
-3.2758E+01	1.2310E+05	2.9600E+05	2.9900E-03
-3.2874E+01	1.2310E+05	2.9600E+05	2.9900E-03
-3.2989E+01	1.2310E+05	2.9600E+05	2.9900E-03
-3.3103E+01	1.2310E+05	2.9600E+05	2.9900E-03
-3.3217E+01	1.2310E+05	2.9600E+05	2.9900E-03
-3.3331E+01	1.2310E+05	2.9600E+05	2.9900E-03
-3.3444E+01	1.2310E+05	2.9600E+05	2.9900E-03
-3.3557E+01	1.2310E+05	2.9600E+05	2.9900E-03
-3.3670E+01	1.2310E+05	2.9600E+05	2.9900E-03
-3.3782E+01	1.2310E+05	2.9600E+05	2.9900E-03
-3.3894E+01	1.2310E+05	2.9600E+05	2.9900E-03
-3.4006E+01	1.2310E+05	2.9600E+05	2.9900E-03
-3.4117E+01	1.2310E+05	2.9600E+05	2.9900E-03
-3.4228E+01	1.2310E+05	2.9600E+05	2.9900E-03
-3.4338E+01	1.2310E+05	2.9600E+05	2.9900E-03
-3.4448E+01	1.2310E+05	2.9600E+05	2.9900E-03
-3.4558E+01	1.2310E+05	2.9600E+05	2.9900E-03
-3.4668E+01	1.2310E+05	2.9600E+05	2.9900E-03
-3.4777E+01	1.2310E+05	2.9600E+05	2.9900E-03
-3.4886E+01	1.2310E+05	2.9600E+05	2.9900E-03
-3.4994E+01	1.2310E+05	2.9600E+05	2.9900E-03
-3.5102E+01	1.2310E+05	2.9600E+05	2.9900E-03
-3.5210E+01	1.2310E+05	2.9600E+05	2.9900E-03
-3.5318E+01	1.2310E+05	2.9600E+05	2.9900E-03
-3.5425E+01	1.2310E+05	2.9600E+05	2.9900E-03
-3.5532E+01	1.2310E+05	2.9600E+05	2.9900E-03
-3.5638E+01	1.2310E+05	2.9600E+05	2.9900E-03
-3.5744E+01	1.2310E+05	2.9600E+05	2.9900E-03
-3.5850E+01	1.2310E+05	2.9600E+05	2.9900E-03
-3.5956E+01	1.2310E+05	2.9600E+05	2.9900E-03
-3.6061E+01	1.2310E+05	2.9600E+05	2.9900E-03
-3.6166E+01	1.2310E+05	2.9600E+05	2.9900E-03
-3.6271E+01	1.2310E+05	2.9600E+05	2.9900E-03
-3.6376E+01	1.2310E+05	2.9600E+05	2.9900E-03
-3.6480E+01	1.2310E+05	2.9600E+05	2.9900E-03
-3.6584E+01	1.2310E+05	2.9600E+05	2.9900E-03
-3.6687E+01	1.2310E+05	2.9600E+05	2.9900E-03
-3.6791E+01	1.2310E+05	2.9600E+05	2.9900E-03
-3.6894E+01	1.2310E+05	2.9600E+05	2.9900E-03
-3.6996E+01	1.2310E+05	2.9600E+05	2.9900E-03
-3.7099E+01	1.2310E+05	2.9600E+05	2.9900E-03
-3.7201E+01	1.2310E+05	2.9600E+05	2.9900E-03
-3.7303E+01	1.2310E+05	2.9600E+05	2.9900E-03

Arg 19	Curve 19	Flux Out (gm/yr)	(mg/kg body wt./day) Recycle	
-3.7405E+01	1.2310E+05	2.9600E+05		2.9900E-03
-3.7506E+01	1.2310E+05	2.9600E+05		2.9900E-03
-3.7607E+01	1.2310E+05	2.9600E+05		2.9900E-03
-3.7708E+01	1.2310E+05	2.9600E+05		2.9900E-03
-3.7809E+01	1.2310E+05	2.9600E+05		2.9900E-03
-3.7909E+01	1.2310E+05	2.9600E+05		2.9900E-03
-3.8009E+01	1.2310E+05	2.9600E+05		2.9900E-03
-3.8109E+01	1.2310E+05	2.9600E+05		2.9900E-03
-3.8208E+01	1.2310E+05	2.9600E+05		2.9900E-03
-3.8308E+01	1.2310E+05	2.9600E+05		2.9900E-03
-3.8407E+01	1.2310E+05	2.9600E+05		2.9900E-03
-3.8506E+01	1.2310E+05	2.9600E+05		2.9900E-03
-3.8604E+01	1.2310E+05	2.9600E+05		2.9900E-03
-3.8702E+01	1.2310E+05	2.9600E+05		2.9900E-03
-3.8800E+01	1.2310E+05	2.9600E+05		2.9900E-03
-3.8898E+01	1.2310E+05	2.9600E+05		2.9900E-03
-3.8996E+01	1.2310E+05	2.9600E+05		2.9900E-03
-3.9093E+01	1.2310E+05	2.9600E+05		2.9900E-03
-3.9190E+01	1.2310E+05	2.9600E+05		2.9900E-03
-3.9287E+01	1.2310E+05	2.9600E+05		2.9900E-03
-3.9384E+01	1.2310E+05	2.9600E+05		2.9900E-03
-3.9480E+01	1.2310E+05	2.9600E+05		2.9900E-03
-3.9576E+01	1.2310E+05	2.9600E+05		2.9900E-03
-3.9672E+01	1.2310E+05	2.9600E+05		2.9900E-03
-3.9768E+01	1.2310E+05	2.9600E+05		2.9900E-03
-3.9864E+01	1.2310E+05	2.9600E+05		2.9900E-03
-3.9959E+01	1.2310E+05	2.9600E+05		2.9900E-03
-4.0054E+01	1.2310E+05	2.9600E+05		2.9900E-03
-4.0149E+01	1.2310E+05	2.9600E+05		2.9900E-03
-4.0243E+01	1.2310E+05	2.9600E+05		2.9900E-03
-4.0338E+01	1.2310E+05	2.9600E+05		2.9900E-03
-4.0432E+01	1.2310E+05	2.9600E+05		2.9900E-03
-4.0526E+01	1.2310E+05	2.9600E+05		2.9900E-03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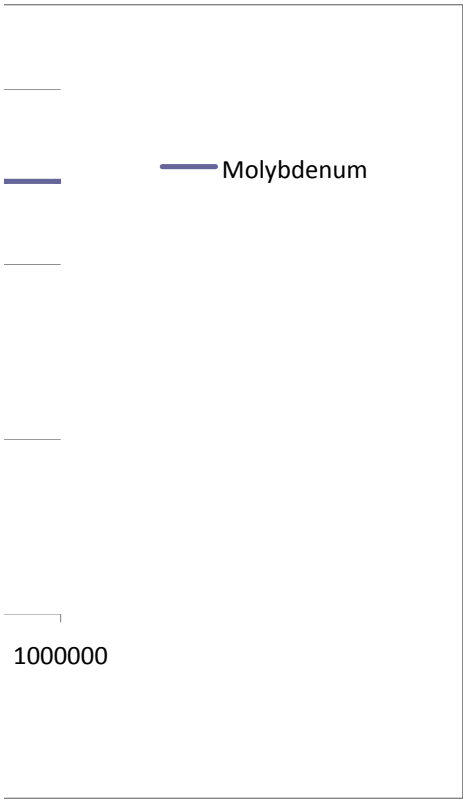
Molybdenum
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Combined TSPA Case, No Pumping, Wet Climate
Non-Radiologic Metals Transport from 18 km to Furnace Creek Springs

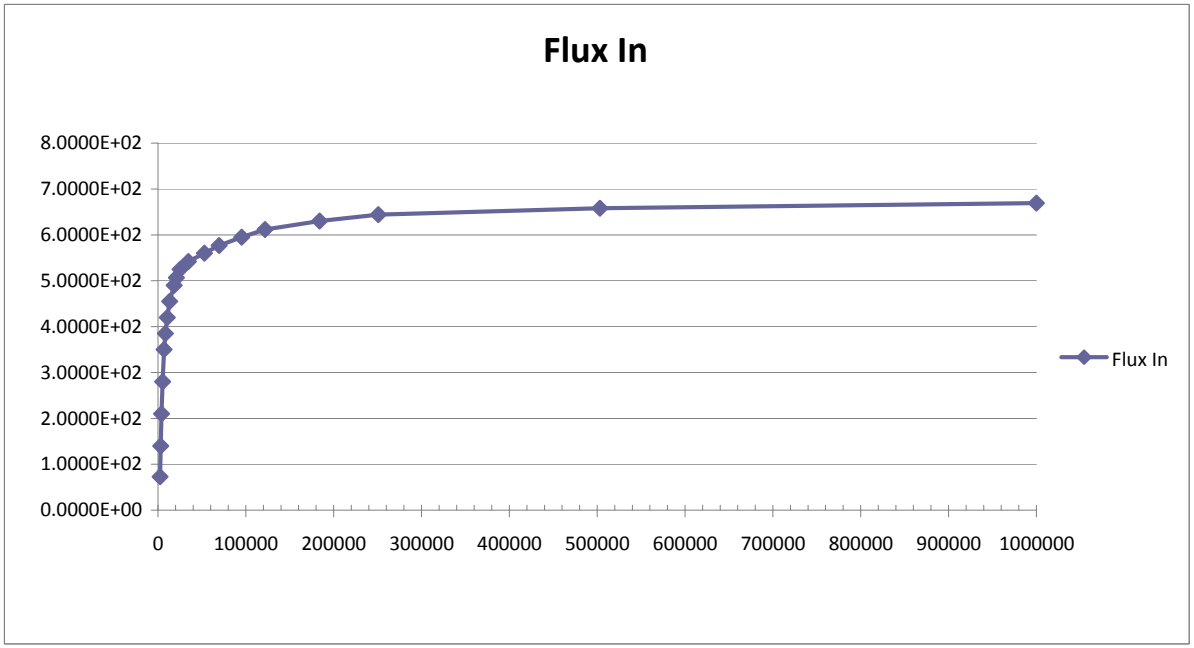
specific discharge (m/day)=		1.80E-03	
path length (km)	5.6000E+01		
Fraction of 18 km flux diverted to this path		1	
Flow Rate of Discharge for Springs		8946.6	acre-ft/yr

DIRS 173179-Belcher 2004, p. 109 (Table C-2) multiplied by 3.9 for wet climate

Combined TSPA Case, No Pumping, Wet Climate
Non-Radiologic Metals Transport from 18 km to Furnace Creek Springs
Contaminant: Vanadium
Oral Ref dose =7E-03 mg/kg body wt./day
Flow Rate of Discharge for Springs 8946.6 acre-ft/yr 11031157800 liters/yr

Input Curve

Time (yr)	18 km Flux	Flux In	Del R
2400	7.2800E+01	7.2800E+01	
3010	1.4000E+02	1.4000E+02	6.7200E+01
4040	2.1000E+02	2.1000E+02	7.0000E+01
5270	2.8000E+02	2.8000E+02	7.0000E+01
6940	3.5000E+02	3.5000E+02	7.0000E+01
8290	3.8500E+02	3.8500E+02	3.5000E+01
10630	4.2000E+02	4.2000E+02	3.5000E+01
13210	4.5500E+02	4.5500E+02	3.5000E+01
18470	4.9000E+02	4.9000E+02	3.5000E+01
20860	5.0680E+02	5.0680E+02	1.6800E+01
25180	5.2500E+02	5.2500E+02	1.8200E+01
34520	5.4180E+02	5.4180E+02	1.6800E+01
52880	5.6000E+02	5.6000E+02	1.8200E+01
69550	5.7680E+02	5.7680E+02	1.6800E+01
95350	5.9500E+02	5.9500E+02	1.8200E+01
121790	6.1180E+02	6.1180E+02	1.6800E+01
183930	6.3000E+02	6.3000E+02	1.8200E+01
250910	6.4400E+02	6.4400E+02	1.4000E+01
503020	6.5800E+02	6.5800E+02	1.4000E+01
1000000	6.6920E+02	6.6920E+02	1.1200E+01



Output Curve

1.80E-03		specific discharge (m/day)
5.9658E-03	v	groundwater velocity (km/yr)
5.6000E+01	L	path length (km)
1.0000E-01	D	Dispersion Coefficient (km)
5.9658E-04	Disp	Dispersivity (sq km/yr)
1.6973E+02	K	Retardation Factor (no units)
1.5932E+06	td	arrival time of the mid-point =TL (yr)
8.0000E+00	Kd	distribution coefficient =Kd (mL/gm)
1.1000E-01	ε	porosity
2.3200E+00	ρ	bulk density of solid (gm/mL)
0.0000E+00	λ	decay constant (1/yr)
NA	t1/2	halflife (yr)

Note: When λ is set to zero this is either a stable contaminant or a member of a decay chain. Decay and growth of radionuclides in decay chain members is adjusted in a separate work sheet.

Composite Curves

Time (yrs)	Arg 1	Curve 1	Arg 2	Curve 2	Arg 3	Curve 3	Arg 4	Curve 4	Arg 5	Curve 5	Arg 6
250	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
2000	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
4000	3.7300E+02	#NAME?	4.7437E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
6000	2.4835E+02	#NAME?	2.7261E+02	#NAME?	3.3693E+02	#NAME?	5.5251E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00
8000	1.9887E+02	#NAME?	2.1076E+02	#NAME?	2.3674E+02	#NAME?	2.8535E+02	#NAME?	4.5842E+02	#NAME?	0.0000E+00
10000	1.7050E+02	#NAME?	1.7785E+02	#NAME?	1.9273E+02	#NAME?	2.1651E+02	#NAME?	2.6947E+02	#NAME?	3.6078E+02
12000	1.5151E+02	#NAME?	1.5663E+02	#NAME?	1.6656E+02	#NAME?	1.8128E+02	#NAME?	2.0929E+02	#NAME?	2.4463E+02
14000	1.3766E+02	#NAME?	1.4148E+02	#NAME?	1.4871E+02	#NAME?	1.5897E+02	#NAME?	1.7696E+02	#NAME?	1.9694E+02
16000	1.2697E+02	#NAME?	1.2997E+02	#NAME?	1.3554E+02	#NAME?	1.4321E+02	#NAME?	1.5601E+02	#NAME?	1.6926E+02
18000	1.1840E+02	#NAME?	1.2084E+02	#NAME?	1.2530E+02	#NAME?	1.3131E+02	#NAME?	1.4103E+02	#NAME?	1.5064E+02
20000	1.1133E+02	#NAME?	1.1336E+02	#NAME?	1.1703E+02	#NAME?	1.2192E+02	#NAME?	1.2961E+02	#NAME?	1.3700E+02
22000	1.0537E+02	#NAME?	1.0709E+02	#NAME?	1.1019E+02	#NAME?	1.1425E+02	#NAME?	1.2055E+02	#NAME?	1.2645E+02
24000	1.0024E+02	#NAME?	1.0173E+02	#NAME?	1.0439E+02	#NAME?	1.0784E+02	#NAME?	1.1312E+02	#NAME?	1.1798E+02
26000	9.5778E+01	#NAME?	9.7078E+01	#NAME?	9.9393E+01	#NAME?	1.0238E+02	#NAME?	1.0688E+02	#NAME?	1.1098E+02
28000	9.1843E+01	#NAME?	9.2993E+01	#NAME?	9.5033E+01	#NAME?	9.7647E+01	#NAME?	1.0155E+02	#NAME?	1.0506E+02
30000	8.8340E+01	#NAME?	8.9367E+01	#NAME?	9.1183E+01	#NAME?	9.3496E+01	#NAME?	9.6926E+01	#NAME?	9.9980E+01
32000	8.5194E+01	#NAME?	8.6120E+01	#NAME?	8.7749E+01	#NAME?	8.9816E+01	#NAME?	9.2859E+01	#NAME?	9.5548E+01
34000	8.2349E+01	#NAME?	8.3188E+01	#NAME?	8.4661E+01	#NAME?	8.6523E+01	#NAME?	8.9248E+01	#NAME?	9.1640E+01
36000	7.9758E+01	#NAME?	8.0524E+01	#NAME?	8.1865E+01	#NAME?	8.3553E+01	#NAME?	8.6012E+01	#NAME?	8.8158E+01
38000	7.7386E+01	#NAME?	7.8088E+01	#NAME?	7.9316E+01	#NAME?	8.0856E+01	#NAME?	8.3090E+01	#NAME?	8.5030E+01
40000	7.5203E+01	#NAME?	7.5850E+01	#NAME?	7.6980E+01	#NAME?	7.8393E+01	#NAME?	8.0435E+01	#NAME?	8.2200E+01
42000	7.3185E+01	#NAME?	7.3784E+01	#NAME?	7.4828E+01	#NAME?	7.6131E+01	#NAME?	7.8007E+01	#NAME?	7.9622E+01
44000	7.1312E+01	#NAME?	7.1869E+01	#NAME?	7.2838E+01	#NAME?	7.4044E+01	#NAME?	7.5775E+01	#NAME?	7.7261E+01
46000	6.9568E+01	#NAME?	7.0087E+01	#NAME?	7.0989E+01	#NAME?	7.2110E+01	#NAME?	7.3715E+01	#NAME?	7.5088E+01
48000	6.7937E+01	#NAME?	6.8423E+01	#NAME?	6.9266E+01	#NAME?	7.0312E+01	#NAME?	7.1805E+01	#NAME?	7.3078E+01
50000	6.6409E+01	#NAME?	6.6865E+01	#NAME?	6.7655E+01	#NAME?	6.8633E+01	#NAME?	7.0027E+01	#NAME?	7.1213E+01
52000	6.4972E+01	#NAME?	6.5401E+01	#NAME?	6.6143E+01	#NAME?	6.7062E+01	#NAME?	6.8367E+01	#NAME?	6.9475E+01
54000	6.3618E+01	#NAME?	6.4022E+01	#NAME?	6.4722E+01	#NAME?	6.5586E+01	#NAME?	6.6812E+01	#NAME?	6.7850E+01
56000	6.2338E+01	#NAME?	6.2721E+01	#NAME?	6.3382E+01	#NAME?	6.4197E+01	#NAME?	6.5351E+01	#NAME?	6.6327E+01
58000	6.1128E+01	#NAME?	6.1490E+01	#NAME?	6.2116E+01	#NAME?	6.2886E+01	#NAME?	6.3976E+01	#NAME?	6.4895E+01
60000	5.9979E+01	#NAME?	6.0323E+01	#NAME?	6.0916E+01	#NAME?	6.1646E+01	#NAME?	6.2677E+01	#NAME?	6.3545E+01
62000	5.8887E+01	#NAME?	5.9214E+01	#NAME?	5.9778E+01	#NAME?	6.0471E+01	#NAME?	6.1448E+01	#NAME?	6.2270E+01
64000	5.7848E+01	#NAME?	5.8159E+01	#NAME?	5.8696E+01	#NAME?	5.9355E+01	#NAME?	6.0283E+01	#NAME?	6.1063E+01
66000	5.6857E+01	#NAME?	5.7154E+01	#NAME?	5.7666E+01	#NAME?	5.8294E+01	#NAME?	5.9176E+01	#NAME?	5.9917E+01
68000	5.5910E+01	#NAME?	5.6194E+01	#NAME?	5.6683E+01	#NAME?	5.7282E+01	#NAME?	5.8123E+01	#NAME?	5.8829E+01
70000	5.5004E+01	#NAME?	5.5276E+01	#NAME?	5.5744E+01	#NAME?	5.6316E+01	#NAME?	5.7120E+01	#NAME?	5.7792E+01
72000	5.4137E+01	#NAME?	5.4398E+01	#NAME?	5.4846E+01	#NAME?	5.5393E+01	#NAME?	5.6161E+01	#NAME?	5.6803E+01
74000	5.3306E+01	#NAME?	5.3556E+01	#NAME?	5.3985E+01	#NAME?	5.4510E+01	#NAME?	5.5245E+01	#NAME?	5.5859E+01
76000	5.2507E+01	#NAME?	5.2748E+01	#NAME?	5.3160E+01	#NAME?	5.3663E+01	#NAME?	5.4368E+01	#NAME?	5.4956E+01
78000	5.1740E+01	#NAME?	5.1971E+01	#NAME?	5.2367E+01	#NAME?	5.2851E+01	#NAME?	5.3527E+01	#NAME?	5.4091E+01
80000	5.1002E+01	#NAME?	5.1224E+01	#NAME?	5.1605E+01	#NAME?	5.2070E+01	#NAME?	5.2720E+01	#NAME?	5.3261E+01
82000	5.0290E+01	#NAME?	5.0505E+01	#NAME?	5.0872E+01	#NAME?	5.1319E+01	#NAME?	5.1944E+01	#NAME?	5.2464E+01
84000	4.9605E+01	#NAME?	4.9811E+01	#NAME?	5.0165E+01	#NAME?	5.0597E+01	#NAME?	5.1198E+01	#NAME?	5.1699E+01
86000	4.8943E+01	#NAME?	4.9142E+01	#NAME?	4.9484E+01	#NAME?	4.9900E+01	#NAME?	5.0480E+01	#NAME?	5.0962E+01
88000	4.8304E+01	#NAME?	4.8496E+01	#NAME?	4.8826E+01	#NAME?	4.9228E+01	#NAME?	4.9787E+01	#NAME?	5.0252E+01
90000	4.7686E+01	#NAME?	4.7872E+01	#NAME?	4.8191E+01	#NAME?	4.8579E+01	#NAME?	4.9119E+01	#NAME?	4.9568E+01
92000	4.7088E+01	#NAME?	4.7268E+01	#NAME?	4.7577E+01	#NAME?	4.7952E+01	#NAME?	4.8474E+01	#NAME?	4.8907E+01
94000	4.6509E+01	#NAME?	4.6684E+01	#NAME?	4.6982E+01	#NAME?	4.7346E+01	#NAME?	4.7851E+01	#NAME?	4.8269E+01
96000	4.5948E+01	#NAME?	4.6117E+01	#NAME?	4.6407E+01	#NAME?	4.6759E+01	#NAME?	4.7247E+01	#NAME?	4.7652E+01
98000	4.5404E+01	#NAME?	4.5568E+01	#NAME?	4.5849E+01	#NAME?	4.6190E+01	#NAME?	4.6664E+01	#NAME?	4.7056E+01
100000	4.4877E+01	#NAME?	4.5036E+01	#NAME?	4.5308E+01	#NAME?	4.5639E+01	#NAME?	4.6098E+01	#NAME?	4.6478E+01
102000	4.4364E+01	#NAME?	4.4519E+01	#NAME?	4.4783E+01	#NAME?	4.5104E+01	#NAME?	4.5550E+01	#NAME?	4.5918E+01

Time (yrs)	Arg 1	Curve 1	Arg 2	Curve 2	Arg 3	Curve 3	Arg 4	Curve 4	Arg 5	Curve 5	Arg 6
104000	4.3867E+01	#NAME?	4.4017E+01	#NAME?	4.4274E+01	#NAME?	4.4585E+01	#NAME?	4.5018E+01	#NAME?	4.5375E+01
106000	4.3383E+01	#NAME?	4.3529E+01	#NAME?	4.3779E+01	#NAME?	4.4082E+01	#NAME?	4.4501E+01	#NAME?	4.4848E+01
108000	4.2913E+01	#NAME?	4.3055E+01	#NAME?	4.3297E+01	#NAME?	4.3592E+01	#NAME?	4.4000E+01	#NAME?	4.4337E+01
110000	4.2455E+01	#NAME?	4.2593E+01	#NAME?	4.2829E+01	#NAME?	4.3116E+01	#NAME?	4.3512E+01	#NAME?	4.3840E+01
112000	4.2009E+01	#NAME?	4.2144E+01	#NAME?	4.2374E+01	#NAME?	4.2652E+01	#NAME?	4.3038E+01	#NAME?	4.3357E+01
114000	4.1575E+01	#NAME?	4.1706E+01	#NAME?	4.1930E+01	#NAME?	4.2201E+01	#NAME?	4.2577E+01	#NAME?	4.2887E+01
116000	4.1152E+01	#NAME?	4.1279E+01	#NAME?	4.1498E+01	#NAME?	4.1762E+01	#NAME?	4.2128E+01	#NAME?	4.2430E+01
118000	4.0739E+01	#NAME?	4.0864E+01	#NAME?	4.1076E+01	#NAME?	4.1334E+01	#NAME?	4.1691E+01	#NAME?	4.1985E+01
120000	4.0336E+01	#NAME?	4.0458E+01	#NAME?	4.0666E+01	#NAME?	4.0917E+01	#NAME?	4.1265E+01	#NAME?	4.1551E+01
122000	3.9943E+01	#NAME?	4.0062E+01	#NAME?	4.0265E+01	#NAME?	4.0510E+01	#NAME?	4.0849E+01	#NAME?	4.1129E+01
124000	3.9560E+01	#NAME?	3.9676E+01	#NAME?	3.9874E+01	#NAME?	4.0113E+01	#NAME?	4.0444E+01	#NAME?	4.0716E+01
126000	3.9185E+01	#NAME?	3.9298E+01	#NAME?	3.9492E+01	#NAME?	3.9726E+01	#NAME?	4.0049E+01	#NAME?	4.0314E+01
128000	3.8819E+01	#NAME?	3.8930E+01	#NAME?	3.9119E+01	#NAME?	3.9347E+01	#NAME?	3.9662E+01	#NAME?	3.9922E+01
130000	3.8461E+01	#NAME?	3.8569E+01	#NAME?	3.8754E+01	#NAME?	3.8977E+01	#NAME?	3.9285E+01	#NAME?	3.9539E+01
132000	3.8111E+01	#NAME?	3.8217E+01	#NAME?	3.8397E+01	#NAME?	3.8616E+01	#NAME?	3.8917E+01	#NAME?	3.9165E+01
134000	3.7769E+01	#NAME?	3.7872E+01	#NAME?	3.8049E+01	#NAME?	3.8262E+01	#NAME?	3.8557E+01	#NAME?	3.8799E+01
136000	3.7434E+01	#NAME?	3.7535E+01	#NAME?	3.7708E+01	#NAME?	3.7917E+01	#NAME?	3.8205E+01	#NAME?	3.8442E+01
138000	3.7106E+01	#NAME?	3.7205E+01	#NAME?	3.7374E+01	#NAME?	3.7578E+01	#NAME?	3.7860E+01	#NAME?	3.8092E+01
140000	3.6784E+01	#NAME?	3.6882E+01	#NAME?	3.7047E+01	#NAME?	3.7247E+01	#NAME?	3.7523E+01	#NAME?	3.7750E+01
142000	3.6470E+01	#NAME?	3.6565E+01	#NAME?	3.6727E+01	#NAME?	3.6923E+01	#NAME?	3.7193E+01	#NAME?	3.7415E+01
144000	3.6161E+01	#NAME?	3.6255E+01	#NAME?	3.6414E+01	#NAME?	3.6606E+01	#NAME?	3.6870E+01	#NAME?	3.7088E+01
146000	3.5859E+01	#NAME?	3.5951E+01	#NAME?	3.6107E+01	#NAME?	3.6295E+01	#NAME?	3.6554E+01	#NAME?	3.6767E+01
148000	3.5563E+01	#NAME?	3.5653E+01	#NAME?	3.5806E+01	#NAME?	3.5990E+01	#NAME?	3.6244E+01	#NAME?	3.6453E+01
150000	3.5272E+01	#NAME?	3.5361E+01	#NAME?	3.5510E+01	#NAME?	3.5691E+01	#NAME?	3.5940E+01	#NAME?	3.6145E+01
152000	3.4987E+01	#NAME?	3.5074E+01	#NAME?	3.5221E+01	#NAME?	3.5398E+01	#NAME?	3.5642E+01	#NAME?	3.5843E+01
154000	3.4708E+01	#NAME?	3.4792E+01	#NAME?	3.4937E+01	#NAME?	3.5111E+01	#NAME?	3.5350E+01	#NAME?	3.5547E+01
156000	3.4433E+01	#NAME?	3.4516E+01	#NAME?	3.4658E+01	#NAME?	3.4829E+01	#NAME?	3.5064E+01	#NAME?	3.5257E+01
158000	3.4164E+01	#NAME?	3.4245E+01	#NAME?	3.4384E+01	#NAME?	3.4552E+01	#NAME?	3.4783E+01	#NAME?	3.4972E+01
160000	3.3899E+01	#NAME?	3.3979E+01	#NAME?	3.4116E+01	#NAME?	3.4280E+01	#NAME?	3.4507E+01	#NAME?	3.4693E+01
162000	3.3639E+01	#NAME?	3.3718E+01	#NAME?	3.3852E+01	#NAME?	3.4014E+01	#NAME?	3.4236E+01	#NAME?	3.4418E+01
164000	3.3384E+01	#NAME?	3.3461E+01	#NAME?	3.3593E+01	#NAME?	3.3751E+01	#NAME?	3.3970E+01	#NAME?	3.4149E+01
166000	3.3132E+01	#NAME?	3.3209E+01	#NAME?	3.3338E+01	#NAME?	3.3494E+01	#NAME?	3.3709E+01	#NAME?	3.3885E+01
168000	3.2886E+01	#NAME?	3.2961E+01	#NAME?	3.3088E+01	#NAME?	3.3241E+01	#NAME?	3.3452E+01	#NAME?	3.3625E+01
170000	3.2643E+01	#NAME?	3.2717E+01	#NAME?	3.2842E+01	#NAME?	3.2993E+01	#NAME?	3.3200E+01	#NAME?	3.3370E+01
172000	3.2405E+01	#NAME?	3.2477E+01	#NAME?	3.2600E+01	#NAME?	3.2748E+01	#NAME?	3.2952E+01	#NAME?	3.3119E+01
174000	3.2170E+01	#NAME?	3.2241E+01	#NAME?	3.2362E+01	#NAME?	3.2508E+01	#NAME?	3.2708E+01	#NAME?	3.2872E+01
176000	3.1939E+01	#NAME?	3.2009E+01	#NAME?	3.2128E+01	#NAME?	3.2272E+01	#NAME?	3.2469E+01	#NAME?	3.2630E+01
178000	3.1712E+01	#NAME?	3.1781E+01	#NAME?	3.1898E+01	#NAME?	3.2039E+01	#NAME?	3.2233E+01	#NAME?	3.2392E+01
180000	3.1488E+01	#NAME?	3.1556E+01	#NAME?	3.1671E+01	#NAME?	3.1810E+01	#NAME?	3.2001E+01	#NAME?	3.2157E+01
182000	3.1268E+01	#NAME?	3.1335E+01	#NAME?	3.1449E+01	#NAME?	3.1585E+01	#NAME?	3.1773E+01	#NAME?	3.1926E+01
184000	3.1052E+01	#NAME?	3.1117E+01	#NAME?	3.1229E+01	#NAME?	3.1364E+01	#NAME?	3.1548E+01	#NAME?	3.1700E+01
186000	3.0838E+01	#NAME?	3.0903E+01	#NAME?	3.1013E+01	#NAME?	3.1145E+01	#NAME?	3.1327E+01	#NAME?	3.1476E+01
188000	3.0628E+01	#NAME?	3.0692E+01	#NAME?	3.0800E+01	#NAME?	3.0931E+01	#NAME?	3.1110E+01	#NAME?	3.1256E+01
190000	3.0421E+01	#NAME?	3.0484E+01	#NAME?	3.0591E+01	#NAME?	3.0719E+01	#NAME?	3.0896E+01	#NAME?	3.1040E+01
192000	3.0217E+01	#NAME?	3.0279E+01	#NAME?	3.0384E+01	#NAME?	3.0511E+01	#NAME?	3.0685E+01	#NAME?	3.0827E+01
194000	3.0016E+01	#NAME?	3.0077E+01	#NAME?	3.0181E+01	#NAME?	3.0306E+01	#NAME?	3.0477E+01	#NAME?	3.0617E+01
196000	2.9818E+01	#NAME?	2.9878E+01	#NAME?	2.9980E+01	#NAME?	3.0103E+01	#NAME?	3.0272E+01	#NAME?	3.0410E+01
198000	2.9623E+01	#NAME?	2.9682E+01	#NAME?	2.9783E+01	#NAME?	2.9904E+01	#NAME?	3.0070E+01	#NAME?	3.0206E+01
200000	2.9431E+01	#NAME?	2.9489E+01	#NAME?	2.9588E+01	#NAME?	2.9708E+01	#NAME?	2.9871E+01	#NAME?	3.0005E+01
202000	2.9241E+01	#NAME?	2.9298E+01	#NAME?	2.9396E+01	#NAME?	2.9514E+01	#NAME?	2.9675E+01	#NAME?	2.9807E+01
204000	2.9054E+01	#NAME?	2.9110E+01	#NAME?	2.9207E+01	#NAME?	2.9323E+01	#NAME?	2.9482E+01	#NAME?	2.9612E+01
206000	2.8869E+01	#NAME?	2.8925E+01	#NAME?	2.9020E+01	#NAME?	2.9135E+01	#NAME?	2.9292E+01	#NAME?	2.9420E+01

Time (yrs)	Arg 1	Curve 1	Arg 2	Curve 2	Arg 3	Curve 3	Arg 4	Curve 4	Arg 5	Curve 5	Arg 6
208000	2.8687E+01	#NAME?	2.8742E+01	#NAME?	2.8836E+01	#NAME?	2.8949E+01	#NAME?	2.9104E+01	#NAME?	2.9230E+01
210000	2.8507E+01	#NAME?	2.8562E+01	#NAME?	2.8654E+01	#NAME?	2.8766E+01	#NAME?	2.8919E+01	#NAME?	2.9043E+01
212000	2.8330E+01	#NAME?	2.8384E+01	#NAME?	2.8475E+01	#NAME?	2.8585E+01	#NAME?	2.8736E+01	#NAME?	2.8859E+01
214000	2.8155E+01	#NAME?	2.8208E+01	#NAME?	2.8298E+01	#NAME?	2.8407E+01	#NAME?	2.8556E+01	#NAME?	2.8677E+01
216000	2.7982E+01	#NAME?	2.8035E+01	#NAME?	2.8124E+01	#NAME?	2.8231E+01	#NAME?	2.8378E+01	#NAME?	2.8497E+01
218000	2.7812E+01	#NAME?	2.7864E+01	#NAME?	2.7951E+01	#NAME?	2.8057E+01	#NAME?	2.8202E+01	#NAME?	2.8320E+01
220000	2.7644E+01	#NAME?	2.7695E+01	#NAME?	2.7781E+01	#NAME?	2.7886E+01	#NAME?	2.8029E+01	#NAME?	2.8145E+01
222000	2.7477E+01	#NAME?	2.7528E+01	#NAME?	2.7613E+01	#NAME?	2.7717E+01	#NAME?	2.7858E+01	#NAME?	2.7973E+01
224000	2.7313E+01	#NAME?	2.7363E+01	#NAME?	2.7448E+01	#NAME?	2.7549E+01	#NAME?	2.7689E+01	#NAME?	2.7803E+01
226000	2.7151E+01	#NAME?	2.7200E+01	#NAME?	2.7284E+01	#NAME?	2.7384E+01	#NAME?	2.7522E+01	#NAME?	2.7634E+01
228000	2.6991E+01	#NAME?	2.7040E+01	#NAME?	2.7122E+01	#NAME?	2.7221E+01	#NAME?	2.7357E+01	#NAME?	2.7468E+01
230000	2.6833E+01	#NAME?	2.6881E+01	#NAME?	2.6963E+01	#NAME?	2.7061E+01	#NAME?	2.7195E+01	#NAME?	2.7304E+01
232000	2.6677E+01	#NAME?	2.6724E+01	#NAME?	2.6805E+01	#NAME?	2.6902E+01	#NAME?	2.7034E+01	#NAME?	2.7142E+01
234000	2.6522E+01	#NAME?	2.6569E+01	#NAME?	2.6649E+01	#NAME?	2.6744E+01	#NAME?	2.6875E+01	#NAME?	2.6982E+01
236000	2.6370E+01	#NAME?	2.6416E+01	#NAME?	2.6495E+01	#NAME?	2.6589E+01	#NAME?	2.6719E+01	#NAME?	2.6824E+01
238000	2.6219E+01	#NAME?	2.6265E+01	#NAME?	2.6342E+01	#NAME?	2.6436E+01	#NAME?	2.6564E+01	#NAME?	2.6668E+01
240000	2.6070E+01	#NAME?	2.6115E+01	#NAME?	2.6192E+01	#NAME?	2.6284E+01	#NAME?	2.6411E+01	#NAME?	2.6514E+01
242000	2.5923E+01	#NAME?	2.5967E+01	#NAME?	2.6043E+01	#NAME?	2.6135E+01	#NAME?	2.6260E+01	#NAME?	2.6361E+01
244000	2.5777E+01	#NAME?	2.5821E+01	#NAME?	2.5896E+01	#NAME?	2.5986E+01	#NAME?	2.6110E+01	#NAME?	2.6211E+01
246000	2.5633E+01	#NAME?	2.5677E+01	#NAME?	2.5751E+01	#NAME?	2.5840E+01	#NAME?	2.5962E+01	#NAME?	2.6062E+01
248000	2.5490E+01	#NAME?	2.5534E+01	#NAME?	2.5607E+01	#NAME?	2.5695E+01	#NAME?	2.5816E+01	#NAME?	2.5915E+01
250000	2.5350E+01	#NAME?	2.5392E+01	#NAME?	2.5465E+01	#NAME?	2.5552E+01	#NAME?	2.5672E+01	#NAME?	2.5769E+01
252000	2.5210E+01	#NAME?	2.5253E+01	#NAME?	2.5324E+01	#NAME?	2.5411E+01	#NAME?	2.5529E+01	#NAME?	2.5625E+01
254000	2.5073E+01	#NAME?	2.5114E+01	#NAME?	2.5185E+01	#NAME?	2.5271E+01	#NAME?	2.5388E+01	#NAME?	2.5483E+01
256000	2.4936E+01	#NAME?	2.4978E+01	#NAME?	2.5048E+01	#NAME?	2.5132E+01	#NAME?	2.5248E+01	#NAME?	2.5342E+01
258000	2.4801E+01	#NAME?	2.4842E+01	#NAME?	2.4912E+01	#NAME?	2.4995E+01	#NAME?	2.5110E+01	#NAME?	2.5203E+01
260000	2.4668E+01	#NAME?	2.4709E+01	#NAME?	2.4777E+01	#NAME?	2.4860E+01	#NAME?	2.4973E+01	#NAME?	2.5065E+01
262000	2.4536E+01	#NAME?	2.4576E+01	#NAME?	2.4644E+01	#NAME?	2.4726E+01	#NAME?	2.4838E+01	#NAME?	2.4929E+01
264000	2.4405E+01	#NAME?	2.4445E+01	#NAME?	2.4512E+01	#NAME?	2.4593E+01	#NAME?	2.4704E+01	#NAME?	2.4794E+01
266000	2.4276E+01	#NAME?	2.4315E+01	#NAME?	2.4382E+01	#NAME?	2.4462E+01	#NAME?	2.4572E+01	#NAME?	2.4661E+01
268000	2.4148E+01	#NAME?	2.4187E+01	#NAME?	2.4253E+01	#NAME?	2.4332E+01	#NAME?	2.4441E+01	#NAME?	2.4529E+01
270000	2.4022E+01	#NAME?	2.4060E+01	#NAME?	2.4125E+01	#NAME?	2.4204E+01	#NAME?	2.4311E+01	#NAME?	2.4398E+01
272000	2.3896E+01	#NAME?	2.3934E+01	#NAME?	2.3999E+01	#NAME?	2.4076E+01	#NAME?	2.4183E+01	#NAME?	2.4269E+01
274000	2.3772E+01	#NAME?	2.3810E+01	#NAME?	2.3874E+01	#NAME?	2.3951E+01	#NAME?	2.4056E+01	#NAME?	2.4141E+01
276000	2.3649E+01	#NAME?	2.3687E+01	#NAME?	2.3750E+01	#NAME?	2.3826E+01	#NAME?	2.3930E+01	#NAME?	2.4015E+01
278000	2.3527E+01	#NAME?	2.3564E+01	#NAME?	2.3627E+01	#NAME?	2.3702E+01	#NAME?	2.3805E+01	#NAME?	2.3889E+01
280000	2.3407E+01	#NAME?	2.3444E+01	#NAME?	2.3506E+01	#NAME?	2.3580E+01	#NAME?	2.3682E+01	#NAME?	2.3765E+01
282000	2.3288E+01	#NAME?	2.3324E+01	#NAME?	2.3385E+01	#NAME?	2.3459E+01	#NAME?	2.3560E+01	#NAME?	2.3642E+01
284000	2.3169E+01	#NAME?	2.3205E+01	#NAME?	2.3266E+01	#NAME?	2.3339E+01	#NAME?	2.3439E+01	#NAME?	2.3521E+01
286000	2.3052E+01	#NAME?	2.3088E+01	#NAME?	2.3148E+01	#NAME?	2.3221E+01	#NAME?	2.3320E+01	#NAME?	2.3400E+01
288000	2.2937E+01	#NAME?	2.2972E+01	#NAME?	2.3031E+01	#NAME?	2.3103E+01	#NAME?	2.3201E+01	#NAME?	2.3281E+01
290000	2.2822E+01	#NAME?	2.2857E+01	#NAME?	2.2916E+01	#NAME?	2.2987E+01	#NAME?	2.3084E+01	#NAME?	2.3163E+01
292000	2.2708E+01	#NAME?	2.2742E+01	#NAME?	2.2801E+01	#NAME?	2.2871E+01	#NAME?	2.2968E+01	#NAME?	2.3046E+01
294000	2.2595E+01	#NAME?	2.2629E+01	#NAME?	2.2688E+01	#NAME?	2.2757E+01	#NAME?	2.2853E+01	#NAME?	2.2930E+01
296000	2.2483E+01	#NAME?	2.2517E+01	#NAME?	2.2575E+01	#NAME?	2.2644E+01	#NAME?	2.2738E+01	#NAME?	2.2815E+01
298000	2.2373E+01	#NAME?	2.2406E+01	#NAME?	2.2463E+01	#NAME?	2.2532E+01	#NAME?	2.2625E+01	#NAME?	2.2702E+01
300000	2.2263E+01	#NAME?	2.2296E+01	#NAME?	2.2353E+01	#NAME?	2.2421E+01	#NAME?	2.2514E+01	#NAME?	2.2589E+01
302000	2.2154E+01	#NAME?	2.2187E+01	#NAME?	2.2243E+01	#NAME?	2.2311E+01	#NAME?	2.2403E+01	#NAME?	2.2477E+01
304000	2.2047E+01	#NAME?	2.2079E+01	#NAME?	2.2135E+01	#NAME?	2.2202E+01	#NAME?	2.2293E+01	#NAME?	2.2367E+01
306000	2.1940E+01	#NAME?	2.1972E+01	#NAME?	2.2027E+01	#NAME?	2.2093E+01	#NAME?	2.2184E+01	#NAME?	2.2257E+01
308000	2.1834E+01	#NAME?	2.1866E+01	#NAME?	2.1921E+01	#NAME?	2.1986E+01	#NAME?	2.2076E+01	#NAME?	2.2148E+01
310000	2.1729E+01	#NAME?	2.1761E+01	#NAME?	2.1815E+01	#NAME?	2.1880E+01	#NAME?	2.1969E+01	#NAME?	2.2041E+01

Time (yrs)	Arg 1	Curve 1	Arg 2	Curve 2	Arg 3	Curve 3	Arg 4	Curve 4	Arg 5	Curve 5	Arg 6
312000	2.1625E+01	#NAME?	2.1657E+01	#NAME?	2.1710E+01	#NAME?	2.1775E+01	#NAME?	2.1863E+01	#NAME?	2.1934E+01
314000	2.1522E+01	#NAME?	2.1553E+01	#NAME?	2.1607E+01	#NAME?	2.1670E+01	#NAME?	2.1757E+01	#NAME?	2.1828E+01
316000	2.1420E+01	#NAME?	2.1451E+01	#NAME?	2.1504E+01	#NAME?	2.1567E+01	#NAME?	2.1653E+01	#NAME?	2.1723E+01
318000	2.1319E+01	#NAME?	2.1349E+01	#NAME?	2.1402E+01	#NAME?	2.1464E+01	#NAME?	2.1550E+01	#NAME?	2.1620E+01
320000	2.1218E+01	#NAME?	2.1249E+01	#NAME?	2.1300E+01	#NAME?	2.1363E+01	#NAME?	2.1447E+01	#NAME?	2.1516E+01
322000	2.1118E+01	#NAME?	2.1149E+01	#NAME?	2.1200E+01	#NAME?	2.1262E+01	#NAME?	2.1346E+01	#NAME?	2.1414E+01
324000	2.1020E+01	#NAME?	2.1050E+01	#NAME?	2.1101E+01	#NAME?	2.1162E+01	#NAME?	2.1245E+01	#NAME?	2.1313E+01
326000	2.0922E+01	#NAME?	2.0951E+01	#NAME?	2.1002E+01	#NAME?	2.1062E+01	#NAME?	2.1145E+01	#NAME?	2.1213E+01
328000	2.0824E+01	#NAME?	2.0854E+01	#NAME?	2.0904E+01	#NAME?	2.0964E+01	#NAME?	2.1046E+01	#NAME?	2.1113E+01
330000	2.0728E+01	#NAME?	2.0757E+01	#NAME?	2.0807E+01	#NAME?	2.0867E+01	#NAME?	2.0948E+01	#NAME?	2.1014E+01
332000	2.0632E+01	#NAME?	2.0661E+01	#NAME?	2.0711E+01	#NAME?	2.0770E+01	#NAME?	2.0851E+01	#NAME?	2.0916E+01
334000	2.0537E+01	#NAME?	2.0566E+01	#NAME?	2.0615E+01	#NAME?	2.0674E+01	#NAME?	2.0754E+01	#NAME?	2.0819E+01
336000	2.0443E+01	#NAME?	2.0472E+01	#NAME?	2.0520E+01	#NAME?	2.0579E+01	#NAME?	2.0658E+01	#NAME?	2.0723E+01
338000	2.0350E+01	#NAME?	2.0378E+01	#NAME?	2.0426E+01	#NAME?	2.0484E+01	#NAME?	2.0563E+01	#NAME?	2.0627E+01
340000	2.0257E+01	#NAME?	2.0285E+01	#NAME?	2.0333E+01	#NAME?	2.0390E+01	#NAME?	2.0469E+01	#NAME?	2.0532E+01
342000	2.0165E+01	#NAME?	2.0193E+01	#NAME?	2.0241E+01	#NAME?	2.0298E+01	#NAME?	2.0375E+01	#NAME?	2.0438E+01
344000	2.0074E+01	#NAME?	2.0102E+01	#NAME?	2.0149E+01	#NAME?	2.0205E+01	#NAME?	2.0282E+01	#NAME?	2.0345E+01
346000	1.9984E+01	#NAME?	2.0011E+01	#NAME?	2.0058E+01	#NAME?	2.0114E+01	#NAME?	2.0190E+01	#NAME?	2.0252E+01
348000	1.9894E+01	#NAME?	1.9921E+01	#NAME?	1.9967E+01	#NAME?	2.0023E+01	#NAME?	2.0099E+01	#NAME?	2.0160E+01
350000	1.9805E+01	#NAME?	1.9832E+01	#NAME?	1.9878E+01	#NAME?	1.9933E+01	#NAME?	2.0008E+01	#NAME?	2.0069E+01
352000	1.9716E+01	#NAME?	1.9743E+01	#NAME?	1.9789E+01	#NAME?	1.9843E+01	#NAME?	1.9918E+01	#NAME?	1.9979E+01
354000	1.9629E+01	#NAME?	1.9655E+01	#NAME?	1.9701E+01	#NAME?	1.9755E+01	#NAME?	1.9829E+01	#NAME?	1.9889E+01
356000	1.9541E+01	#NAME?	1.9568E+01	#NAME?	1.9613E+01	#NAME?	1.9667E+01	#NAME?	1.9740E+01	#NAME?	1.9800E+01
358000	1.9455E+01	#NAME?	1.9481E+01	#NAME?	1.9526E+01	#NAME?	1.9579E+01	#NAME?	1.9652E+01	#NAME?	1.9712E+01
360000	1.9369E+01	#NAME?	1.9395E+01	#NAME?	1.9440E+01	#NAME?	1.9493E+01	#NAME?	1.9565E+01	#NAME?	1.9624E+01
362000	1.9284E+01	#NAME?	1.9310E+01	#NAME?	1.9354E+01	#NAME?	1.9406E+01	#NAME?	1.9478E+01	#NAME?	1.9537E+01
364000	1.9199E+01	#NAME?	1.9225E+01	#NAME?	1.9269E+01	#NAME?	1.9321E+01	#NAME?	1.9392E+01	#NAME?	1.9450E+01
366000	1.9115E+01	#NAME?	1.9141E+01	#NAME?	1.9184E+01	#NAME?	1.9236E+01	#NAME?	1.9307E+01	#NAME?	1.9364E+01
368000	1.9032E+01	#NAME?	1.9057E+01	#NAME?	1.9100E+01	#NAME?	1.9152E+01	#NAME?	1.9222E+01	#NAME?	1.9279E+01
370000	1.8949E+01	#NAME?	1.8974E+01	#NAME?	1.9017E+01	#NAME?	1.9068E+01	#NAME?	1.9138E+01	#NAME?	1.9195E+01
372000	1.8867E+01	#NAME?	1.8892E+01	#NAME?	1.8934E+01	#NAME?	1.8985E+01	#NAME?	1.9054E+01	#NAME?	1.9111E+01
374000	1.8786E+01	#NAME?	1.8810E+01	#NAME?	1.8852E+01	#NAME?	1.8903E+01	#NAME?	1.8972E+01	#NAME?	1.9027E+01
376000	1.8704E+01	#NAME?	1.8729E+01	#NAME?	1.8771E+01	#NAME?	1.8821E+01	#NAME?	1.8889E+01	#NAME?	1.8945E+01
378000	1.8624E+01	#NAME?	1.8649E+01	#NAME?	1.8690E+01	#NAME?	1.8740E+01	#NAME?	1.8807E+01	#NAME?	1.8863E+01
380000	1.8544E+01	#NAME?	1.8568E+01	#NAME?	1.8610E+01	#NAME?	1.8659E+01	#NAME?	1.8726E+01	#NAME?	1.8781E+01
382000	1.8465E+01	#NAME?	1.8489E+01	#NAME?	1.8530E+01	#NAME?	1.8579E+01	#NAME?	1.8646E+01	#NAME?	1.8700E+01
384000	1.8386E+01	#NAME?	1.8410E+01	#NAME?	1.8451E+01	#NAME?	1.8499E+01	#NAME?	1.8566E+01	#NAME?	1.8620E+01
386000	1.8308E+01	#NAME?	1.8332E+01	#NAME?	1.8372E+01	#NAME?	1.8420E+01	#NAME?	1.8486E+01	#NAME?	1.8540E+01
388000	1.8230E+01	#NAME?	1.8254E+01	#NAME?	1.8294E+01	#NAME?	1.8342E+01	#NAME?	1.8407E+01	#NAME?	1.8460E+01
390000	1.8153E+01	#NAME?	1.8176E+01	#NAME?	1.8216E+01	#NAME?	1.8264E+01	#NAME?	1.8329E+01	#NAME?	1.8382E+01
392000	1.8076E+01	#NAME?	1.8099E+01	#NAME?	1.8139E+01	#NAME?	1.8186E+01	#NAME?	1.8251E+01	#NAME?	1.8303E+01
394000	1.8000E+01	#NAME?	1.8023E+01	#NAME?	1.8062E+01	#NAME?	1.8109E+01	#NAME?	1.8174E+01	#NAME?	1.8226E+01
396000	1.7924E+01	#NAME?	1.7947E+01	#NAME?	1.7986E+01	#NAME?	1.8033E+01	#NAME?	1.8097E+01	#NAME?	1.8149E+01
398000	1.7849E+01	#NAME?	1.7872E+01	#NAME?	1.7911E+01	#NAME?	1.7957E+01	#NAME?	1.8020E+01	#NAME?	1.8072E+01
400000	1.7774E+01	#NAME?	1.7797E+01	#NAME?	1.7836E+01	#NAME?	1.7882E+01	#NAME?	1.7945E+01	#NAME?	1.7996E+01
402000	1.7700E+01	#NAME?	1.7723E+01	#NAME?	1.7761E+01	#NAME?	1.7807E+01	#NAME?	1.7869E+01	#NAME?	1.7920E+01
404000	1.7626E+01	#NAME?	1.7649E+01	#NAME?	1.7687E+01	#NAME?	1.7732E+01	#NAME?	1.7795E+01	#NAME?	1.7845E+01
406000	1.7553E+01	#NAME?	1.7576E+01	#NAME?	1.7613E+01	#NAME?	1.7658E+01	#NAME?	1.7720E+01	#NAME?	1.7770E+01
408000	1.7480E+01	#NAME?	1.7503E+01	#NAME?	1.7540E+01	#NAME?	1.7585E+01	#NAME?	1.7646E+01	#NAME?	1.7696E+01
410000	1.7408E+01	#NAME?	1.7430E+01	#NAME?	1.7467E+01	#NAME?	1.7512E+01	#NAME?	1.7573E+01	#NAME?	1.7622E+01
412000	1.7336E+01	#NAME?	1.7358E+01	#NAME?	1.7395E+01	#NAME?	1.7440E+01	#NAME?	1.7500E+01	#NAME?	1.7549E+01
414000	1.7265E+01	#NAME?	1.7287E+01	#NAME?	1.7323E+01	#NAME?	1.7368E+01	#NAME?	1.7428E+01	#NAME?	1.7476E+01

Time (yrs)	Arg 1	Curve 1	Arg 2	Curve 2	Arg 3	Curve 3	Arg 4	Curve 4	Arg 5	Curve 5	Arg 6
416000	1.7194E+01	#NAME?	1.7216E+01	#NAME?	1.7252E+01	#NAME?	1.7296E+01	#NAME?	1.7356E+01	#NAME?	1.7404E+01
418000	1.7123E+01	#NAME?	1.7145E+01	#NAME?	1.7181E+01	#NAME?	1.7225E+01	#NAME?	1.7284E+01	#NAME?	1.7332E+01
420000	1.7053E+01	#NAME?	1.7075E+01	#NAME?	1.7111E+01	#NAME?	1.7154E+01	#NAME?	1.7213E+01	#NAME?	1.7261E+01
422000	1.6984E+01	#NAME?	1.7005E+01	#NAME?	1.7041E+01	#NAME?	1.7084E+01	#NAME?	1.7142E+01	#NAME?	1.7190E+01
424000	1.6915E+01	#NAME?	1.6936E+01	#NAME?	1.6971E+01	#NAME?	1.7014E+01	#NAME?	1.7072E+01	#NAME?	1.7120E+01
426000	1.6846E+01	#NAME?	1.6867E+01	#NAME?	1.6902E+01	#NAME?	1.6945E+01	#NAME?	1.7003E+01	#NAME?	1.7050E+01
428000	1.6777E+01	#NAME?	1.6798E+01	#NAME?	1.6833E+01	#NAME?	1.6876E+01	#NAME?	1.6933E+01	#NAME?	1.6980E+01
430000	1.6709E+01	#NAME?	1.6730E+01	#NAME?	1.6765E+01	#NAME?	1.6807E+01	#NAME?	1.6864E+01	#NAME?	1.6911E+01
432000	1.6642E+01	#NAME?	1.6662E+01	#NAME?	1.6697E+01	#NAME?	1.6739E+01	#NAME?	1.6796E+01	#NAME?	1.6842E+01
434000	1.6575E+01	#NAME?	1.6595E+01	#NAME?	1.6630E+01	#NAME?	1.6671E+01	#NAME?	1.6728E+01	#NAME?	1.6774E+01
436000	1.6508E+01	#NAME?	1.6528E+01	#NAME?	1.6563E+01	#NAME?	1.6604E+01	#NAME?	1.6660E+01	#NAME?	1.6706E+01
438000	1.6442E+01	#NAME?	1.6462E+01	#NAME?	1.6496E+01	#NAME?	1.6537E+01	#NAME?	1.6593E+01	#NAME?	1.6638E+01
440000	1.6376E+01	#NAME?	1.6396E+01	#NAME?	1.6430E+01	#NAME?	1.6471E+01	#NAME?	1.6526E+01	#NAME?	1.6571E+01
442000	1.6310E+01	#NAME?	1.6330E+01	#NAME?	1.6364E+01	#NAME?	1.6404E+01	#NAME?	1.6460E+01	#NAME?	1.6504E+01
444000	1.6245E+01	#NAME?	1.6265E+01	#NAME?	1.6298E+01	#NAME?	1.6339E+01	#NAME?	1.6394E+01	#NAME?	1.6438E+01
446000	1.6180E+01	#NAME?	1.6200E+01	#NAME?	1.6233E+01	#NAME?	1.6273E+01	#NAME?	1.6328E+01	#NAME?	1.6372E+01
448000	1.6116E+01	#NAME?	1.6135E+01	#NAME?	1.6169E+01	#NAME?	1.6208E+01	#NAME?	1.6263E+01	#NAME?	1.6307E+01
450000	1.6052E+01	#NAME?	1.6071E+01	#NAME?	1.6104E+01	#NAME?	1.6144E+01	#NAME?	1.6198E+01	#NAME?	1.6241E+01
452000	1.5988E+01	#NAME?	1.6007E+01	#NAME?	1.6040E+01	#NAME?	1.6079E+01	#NAME?	1.6133E+01	#NAME?	1.6177E+01
454000	1.5925E+01	#NAME?	1.5944E+01	#NAME?	1.5977E+01	#NAME?	1.6016E+01	#NAME?	1.6069E+01	#NAME?	1.6112E+01
456000	1.5862E+01	#NAME?	1.5881E+01	#NAME?	1.5913E+01	#NAME?	1.5952E+01	#NAME?	1.6005E+01	#NAME?	1.6048E+01
458000	1.5799E+01	#NAME?	1.5818E+01	#NAME?	1.5850E+01	#NAME?	1.5889E+01	#NAME?	1.5942E+01	#NAME?	1.5984E+01
460000	1.5737E+01	#NAME?	1.5756E+01	#NAME?	1.5788E+01	#NAME?	1.5826E+01	#NAME?	1.5879E+01	#NAME?	1.5921E+01
462000	1.5675E+01	#NAME?	1.5694E+01	#NAME?	1.5726E+01	#NAME?	1.5764E+01	#NAME?	1.5816E+01	#NAME?	1.5858E+01
464000	1.5613E+01	#NAME?	1.5632E+01	#NAME?	1.5664E+01	#NAME?	1.5702E+01	#NAME?	1.5754E+01	#NAME?	1.5796E+01
466000	1.5552E+01	#NAME?	1.5571E+01	#NAME?	1.5602E+01	#NAME?	1.5640E+01	#NAME?	1.5691E+01	#NAME?	1.5733E+01
468000	1.5491E+01	#NAME?	1.5510E+01	#NAME?	1.5541E+01	#NAME?	1.5579E+01	#NAME?	1.5630E+01	#NAME?	1.5671E+01
470000	1.5430E+01	#NAME?	1.5449E+01	#NAME?	1.5480E+01	#NAME?	1.5518E+01	#NAME?	1.5568E+01	#NAME?	1.5610E+01
472000	1.5370E+01	#NAME?	1.5389E+01	#NAME?	1.5420E+01	#NAME?	1.5457E+01	#NAME?	1.5507E+01	#NAME?	1.5549E+01
474000	1.5310E+01	#NAME?	1.5329E+01	#NAME?	1.5359E+01	#NAME?	1.5396E+01	#NAME?	1.5447E+01	#NAME?	1.5488E+01
476000	1.5251E+01	#NAME?	1.5269E+01	#NAME?	1.5300E+01	#NAME?	1.5336E+01	#NAME?	1.5386E+01	#NAME?	1.5427E+01
478000	1.5191E+01	#NAME?	1.5209E+01	#NAME?	1.5240E+01	#NAME?	1.5277E+01	#NAME?	1.5326E+01	#NAME?	1.5367E+01
480000	1.5132E+01	#NAME?	1.5150E+01	#NAME?	1.5181E+01	#NAME?	1.5217E+01	#NAME?	1.5267E+01	#NAME?	1.5307E+01
482000	1.5074E+01	#NAME?	1.5092E+01	#NAME?	1.5122E+01	#NAME?	1.5158E+01	#NAME?	1.5207E+01	#NAME?	1.5247E+01
484000	1.5015E+01	#NAME?	1.5033E+01	#NAME?	1.5063E+01	#NAME?	1.5099E+01	#NAME?	1.5148E+01	#NAME?	1.5188E+01
486000	1.4957E+01	#NAME?	1.4975E+01	#NAME?	1.5005E+01	#NAME?	1.5041E+01	#NAME?	1.5090E+01	#NAME?	1.5129E+01
488000	1.4900E+01	#NAME?	1.4917E+01	#NAME?	1.4947E+01	#NAME?	1.4983E+01	#NAME?	1.5031E+01	#NAME?	1.5071E+01
490000	1.4842E+01	#NAME?	1.4860E+01	#NAME?	1.4889E+01	#NAME?	1.4925E+01	#NAME?	1.4973E+01	#NAME?	1.5012E+01
492000	1.4785E+01	#NAME?	1.4802E+01	#NAME?	1.4832E+01	#NAME?	1.4867E+01	#NAME?	1.4915E+01	#NAME?	1.4954E+01
494000	1.4728E+01	#NAME?	1.4746E+01	#NAME?	1.4775E+01	#NAME?	1.4810E+01	#NAME?	1.4858E+01	#NAME?	1.4896E+01
496000	1.4672E+01	#NAME?	1.4689E+01	#NAME?	1.4718E+01	#NAME?	1.4753E+01	#NAME?	1.4800E+01	#NAME?	1.4839E+01
498000	1.4615E+01	#NAME?	1.4633E+01	#NAME?	1.4662E+01	#NAME?	1.4696E+01	#NAME?	1.4744E+01	#NAME?	1.4782E+01
500000	1.4559E+01	#NAME?	1.4576E+01	#NAME?	1.4605E+01	#NAME?	1.4640E+01	#NAME?	1.4687E+01	#NAME?	1.4725E+01
502000	1.4504E+01	#NAME?	1.4521E+01	#NAME?	1.4549E+01	#NAME?	1.4584E+01	#NAME?	1.4631E+01	#NAME?	1.4669E+01
504000	1.4448E+01	#NAME?	1.4465E+01	#NAME?	1.4494E+01	#NAME?	1.4528E+01	#NAME?	1.4575E+01	#NAME?	1.4612E+01
506000	1.4393E+01	#NAME?	1.4410E+01	#NAME?	1.4438E+01	#NAME?	1.4472E+01	#NAME?	1.4519E+01	#NAME?	1.4556E+01
508000	1.4338E+01	#NAME?	1.4355E+01	#NAME?	1.4383E+01	#NAME?	1.4417E+01	#NAME?	1.4463E+01	#NAME?	1.4501E+01
510000	1.4284E+01	#NAME?	1.4300E+01	#NAME?	1.4328E+01	#NAME?	1.4362E+01	#NAME?	1.4408E+01	#NAME?	1.4445E+01
512000	1.4229E+01	#NAME?	1.4246E+01	#NAME?	1.4274E+01	#NAME?	1.4307E+01	#NAME?	1.4353E+01	#NAME?	1.4390E+01
514000	1.4175E+01	#NAME?	1.4192E+01	#NAME?	1.4220E+01	#NAME?	1.4253E+01	#NAME?	1.4298E+01	#NAME?	1.4335E+01
516000	1.4122E+01	#NAME?	1.4138E+01	#NAME?	1.4166E+01	#NAME?	1.4199E+01	#NAME?	1.4244E+01	#NAME?	1.4281E+01
518000	1.4068E+01	#NAME?	1.4084E+01	#NAME?	1.4112E+01	#NAME?	1.4145E+01	#NAME?	1.4190E+01	#NAME?	1.4226E+01

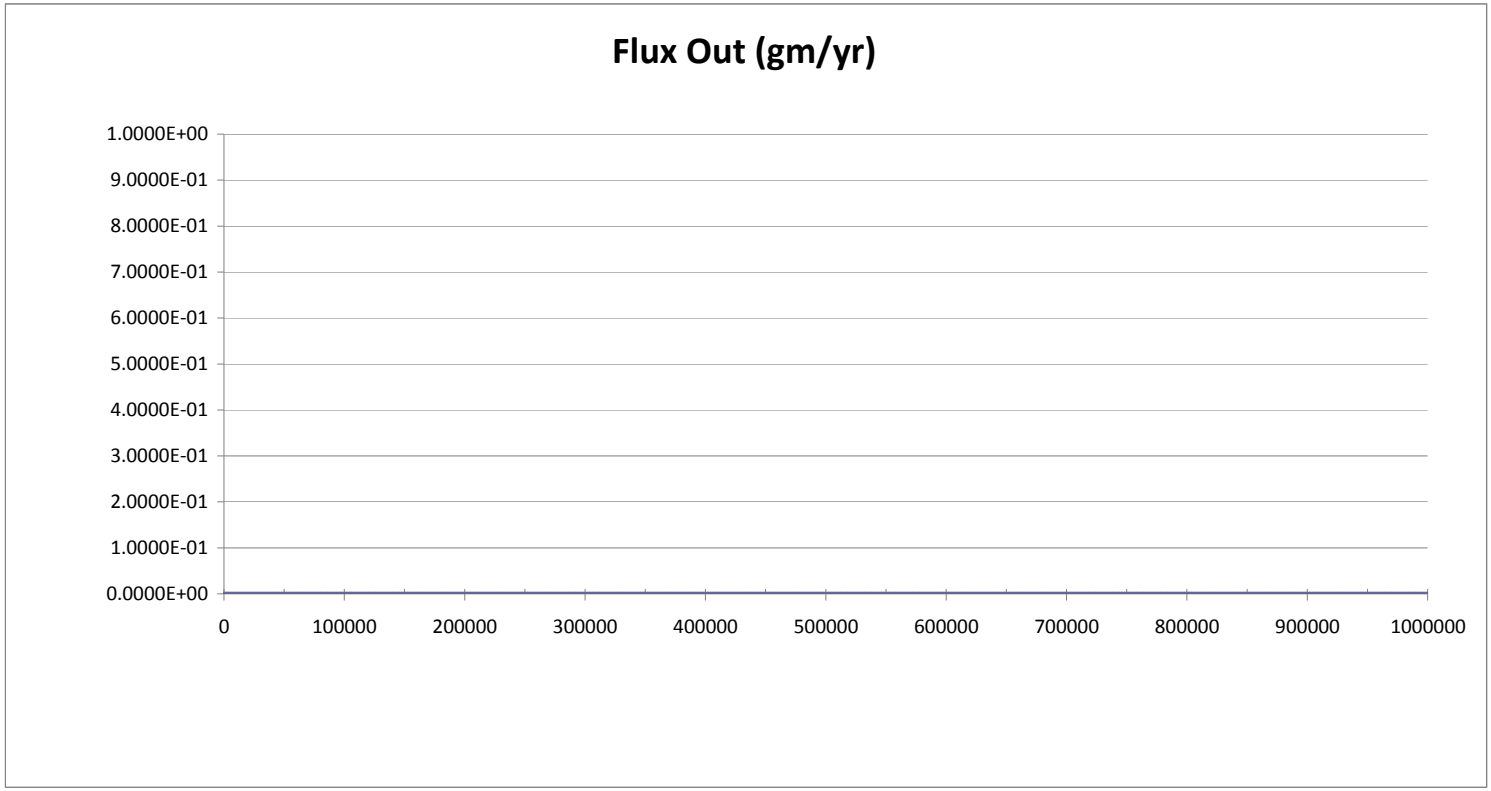
Time (yrs)	Arg 1	Curve 1	Arg 2	Curve 2	Arg 3	Curve 3	Arg 4	Curve 4	Arg 5	Curve 5	Arg 6
520000	1.4015E+01	#NAME?	1.4031E+01	#NAME?	1.4058E+01	#NAME?	1.4091E+01	#NAME?	1.4136E+01	#NAME?	1.4172E+01
522000	1.3962E+01	#NAME?	1.3978E+01	#NAME?	1.4005E+01	#NAME?	1.4038E+01	#NAME?	1.4082E+01	#NAME?	1.4119E+01
524000	1.3909E+01	#NAME?	1.3925E+01	#NAME?	1.3952E+01	#NAME?	1.3985E+01	#NAME?	1.4029E+01	#NAME?	1.4065E+01
526000	1.3857E+01	#NAME?	1.3873E+01	#NAME?	1.3900E+01	#NAME?	1.3932E+01	#NAME?	1.3976E+01	#NAME?	1.4012E+01
528000	1.3804E+01	#NAME?	1.3820E+01	#NAME?	1.3847E+01	#NAME?	1.3879E+01	#NAME?	1.3923E+01	#NAME?	1.3959E+01
530000	1.3752E+01	#NAME?	1.3768E+01	#NAME?	1.3795E+01	#NAME?	1.3827E+01	#NAME?	1.3871E+01	#NAME?	1.3906E+01
532000	1.3701E+01	#NAME?	1.3716E+01	#NAME?	1.3743E+01	#NAME?	1.3775E+01	#NAME?	1.3818E+01	#NAME?	1.3854E+01
534000	1.3649E+01	#NAME?	1.3665E+01	#NAME?	1.3691E+01	#NAME?	1.3723E+01	#NAME?	1.3766E+01	#NAME?	1.3801E+01
536000	1.3598E+01	#NAME?	1.3613E+01	#NAME?	1.3640E+01	#NAME?	1.3671E+01	#NAME?	1.3714E+01	#NAME?	1.3749E+01
538000	1.3547E+01	#NAME?	1.3562E+01	#NAME?	1.3589E+01	#NAME?	1.3620E+01	#NAME?	1.3663E+01	#NAME?	1.3698E+01
540000	1.3496E+01	#NAME?	1.3511E+01	#NAME?	1.3538E+01	#NAME?	1.3569E+01	#NAME?	1.3612E+01	#NAME?	1.3646E+01
542000	1.3445E+01	#NAME?	1.3461E+01	#NAME?	1.3487E+01	#NAME?	1.3518E+01	#NAME?	1.3560E+01	#NAME?	1.3595E+01
544000	1.3395E+01	#NAME?	1.3410E+01	#NAME?	1.3436E+01	#NAME?	1.3467E+01	#NAME?	1.3510E+01	#NAME?	1.3544E+01
546000	1.3345E+01	#NAME?	1.3360E+01	#NAME?	1.3386E+01	#NAME?	1.3417E+01	#NAME?	1.3459E+01	#NAME?	1.3493E+01
548000	1.3295E+01	#NAME?	1.3310E+01	#NAME?	1.3336E+01	#NAME?	1.3367E+01	#NAME?	1.3409E+01	#NAME?	1.3443E+01
550000	1.3245E+01	#NAME?	1.3261E+01	#NAME?	1.3286E+01	#NAME?	1.3317E+01	#NAME?	1.3358E+01	#NAME?	1.3392E+01
552000	1.3196E+01	#NAME?	1.3211E+01	#NAME?	1.3237E+01	#NAME?	1.3267E+01	#NAME?	1.3309E+01	#NAME?	1.3342E+01
554000	1.3147E+01	#NAME?	1.3162E+01	#NAME?	1.3187E+01	#NAME?	1.3217E+01	#NAME?	1.3259E+01	#NAME?	1.3292E+01
556000	1.3098E+01	#NAME?	1.3113E+01	#NAME?	1.3138E+01	#NAME?	1.3168E+01	#NAME?	1.3209E+01	#NAME?	1.3243E+01
558000	1.3049E+01	#NAME?	1.3064E+01	#NAME?	1.3089E+01	#NAME?	1.3119E+01	#NAME?	1.3160E+01	#NAME?	1.3193E+01
560000	1.3001E+01	#NAME?	1.3015E+01	#NAME?	1.3040E+01	#NAME?	1.3070E+01	#NAME?	1.3111E+01	#NAME?	1.3144E+01
562000	1.2952E+01	#NAME?	1.2967E+01	#NAME?	1.2992E+01	#NAME?	1.3022E+01	#NAME?	1.3062E+01	#NAME?	1.3095E+01
564000	1.2904E+01	#NAME?	1.2919E+01	#NAME?	1.2944E+01	#NAME?	1.2973E+01	#NAME?	1.3014E+01	#NAME?	1.3046E+01
566000	1.2856E+01	#NAME?	1.2871E+01	#NAME?	1.2896E+01	#NAME?	1.2925E+01	#NAME?	1.2965E+01	#NAME?	1.2998E+01
568000	1.2809E+01	#NAME?	1.2823E+01	#NAME?	1.2848E+01	#NAME?	1.2877E+01	#NAME?	1.2917E+01	#NAME?	1.2950E+01
570000	1.2761E+01	#NAME?	1.2776E+01	#NAME?	1.2800E+01	#NAME?	1.2829E+01	#NAME?	1.2869E+01	#NAME?	1.2902E+01
572000	1.2714E+01	#NAME?	1.2728E+01	#NAME?	1.2753E+01	#NAME?	1.2782E+01	#NAME?	1.2821E+01	#NAME?	1.2854E+01
574000	1.2667E+01	#NAME?	1.2681E+01	#NAME?	1.2705E+01	#NAME?	1.2734E+01	#NAME?	1.2774E+01	#NAME?	1.2806E+01
576000	1.2620E+01	#NAME?	1.2634E+01	#NAME?	1.2658E+01	#NAME?	1.2687E+01	#NAME?	1.2727E+01	#NAME?	1.2759E+01
578000	1.2573E+01	#NAME?	1.2588E+01	#NAME?	1.2612E+01	#NAME?	1.2640E+01	#NAME?	1.2680E+01	#NAME?	1.2711E+01
580000	1.2527E+01	#NAME?	1.2541E+01	#NAME?	1.2565E+01	#NAME?	1.2594E+01	#NAME?	1.2633E+01	#NAME?	1.2664E+01
582000	1.2481E+01	#NAME?	1.2495E+01	#NAME?	1.2519E+01	#NAME?	1.2547E+01	#NAME?	1.2586E+01	#NAME?	1.2617E+01
584000	1.2435E+01	#NAME?	1.2449E+01	#NAME?	1.2472E+01	#NAME?	1.2501E+01	#NAME?	1.2539E+01	#NAME?	1.2571E+01
586000	1.2389E+01	#NAME?	1.2403E+01	#NAME?	1.2426E+01	#NAME?	1.2455E+01	#NAME?	1.2493E+01	#NAME?	1.2524E+01
588000	1.2343E+01	#NAME?	1.2357E+01	#NAME?	1.2380E+01	#NAME?	1.2409E+01	#NAME?	1.2447E+01	#NAME?	1.2478E+01
590000	1.2298E+01	#NAME?	1.2311E+01	#NAME?	1.2335E+01	#NAME?	1.2363E+01	#NAME?	1.2401E+01	#NAME?	1.2432E+01
592000	1.2252E+01	#NAME?	1.2266E+01	#NAME?	1.2289E+01	#NAME?	1.2317E+01	#NAME?	1.2355E+01	#NAME?	1.2386E+01
594000	1.2207E+01	#NAME?	1.2221E+01	#NAME?	1.2244E+01	#NAME?	1.2272E+01	#NAME?	1.2310E+01	#NAME?	1.2340E+01
596000	1.2162E+01	#NAME?	1.2176E+01	#NAME?	1.2199E+01	#NAME?	1.2227E+01	#NAME?	1.2264E+01	#NAME?	1.2295E+01
598000	1.2117E+01	#NAME?	1.2131E+01	#NAME?	1.2154E+01	#NAME?	1.2182E+01	#NAME?	1.2219E+01	#NAME?	1.2250E+01
600000	1.2073E+01	#NAME?	1.2086E+01	#NAME?	1.2109E+01	#NAME?	1.2137E+01	#NAME?	1.2174E+01	#NAME?	1.2205E+01
602000	1.2029E+01	#NAME?	1.2042E+01	#NAME?	1.2065E+01	#NAME?	1.2092E+01	#NAME?	1.2130E+01	#NAME?	1.2160E+01
604000	1.1984E+01	#NAME?	1.1998E+01	#NAME?	1.2021E+01	#NAME?	1.2048E+01	#NAME?	1.2085E+01	#NAME?	1.2115E+01
606000	1.1940E+01	#NAME?	1.1954E+01	#NAME?	1.1976E+01	#NAME?	1.2004E+01	#NAME?	1.2041E+01	#NAME?	1.2070E+01
608000	1.1897E+01	#NAME?	1.1910E+01	#NAME?	1.1932E+01	#NAME?	1.1959E+01	#NAME?	1.1996E+01	#NAME?	1.2026E+01
610000	1.1853E+01	#NAME?	1.1866E+01	#NAME?	1.1889E+01	#NAME?	1.1916E+01	#NAME?	1.1952E+01	#NAME?	1.1982E+01
612000	1.1809E+01	#NAME?	1.1823E+01	#NAME?	1.1845E+01	#NAME?	1.1872E+01	#NAME?	1.1908E+01	#NAME?	1.1938E+01
614000	1.1766E+01	#NAME?	1.1779E+01	#NAME?	1.1802E+01	#NAME?	1.1828E+01	#NAME?	1.1865E+01	#NAME?	1.1894E+01
616000	1.1723E+01	#NAME?	1.1736E+01	#NAME?	1.1758E+01	#NAME?	1.1785E+01	#NAME?	1.1821E+01	#NAME?	1.1851E+01
618000	1.1680E+01	#NAME?	1.1693E+01	#NAME?	1.1715E+01	#NAME?	1.1742E+01	#NAME?	1.1778E+01	#NAME?	1.1807E+01
620000	1.1637E+01	#NAME?	1.1650E+01	#NAME?	1.1672E+01	#NAME?	1.1699E+01	#NAME?	1.1735E+01	#NAME?	1.1764E+01
622000	1.1595E+01	#NAME?	1.1608E+01	#NAME?	1.1630E+01	#NAME?	1.1656E+01	#NAME?	1.1692E+01	#NAME?	1.1721E+01

Time (yrs)	Arg 1	Curve 1	Arg 2	Curve 2	Arg 3	Curve 3	Arg 4	Curve 4	Arg 5	Curve 5	Arg 6
624000	1.1552E+01	#NAME?	1.1565E+01	#NAME?	1.1587E+01	#NAME?	1.1613E+01	#NAME?	1.1649E+01	#NAME?	1.1678E+01
626000	1.1510E+01	#NAME?	1.1523E+01	#NAME?	1.1545E+01	#NAME?	1.1571E+01	#NAME?	1.1606E+01	#NAME?	1.1635E+01
628000	1.1468E+01	#NAME?	1.1481E+01	#NAME?	1.1502E+01	#NAME?	1.1528E+01	#NAME?	1.1564E+01	#NAME?	1.1592E+01
630000	1.1426E+01	#NAME?	1.1439E+01	#NAME?	1.1460E+01	#NAME?	1.1486E+01	#NAME?	1.1521E+01	#NAME?	1.1550E+01
632000	1.1384E+01	#NAME?	1.1397E+01	#NAME?	1.1418E+01	#NAME?	1.1444E+01	#NAME?	1.1479E+01	#NAME?	1.1508E+01
634000	1.1342E+01	#NAME?	1.1355E+01	#NAME?	1.1377E+01	#NAME?	1.1402E+01	#NAME?	1.1437E+01	#NAME?	1.1465E+01
636000	1.1301E+01	#NAME?	1.1314E+01	#NAME?	1.1335E+01	#NAME?	1.1361E+01	#NAME?	1.1395E+01	#NAME?	1.1424E+01
638000	1.1260E+01	#NAME?	1.1272E+01	#NAME?	1.1294E+01	#NAME?	1.1319E+01	#NAME?	1.1354E+01	#NAME?	1.1382E+01
640000	1.1219E+01	#NAME?	1.1231E+01	#NAME?	1.1252E+01	#NAME?	1.1278E+01	#NAME?	1.1312E+01	#NAME?	1.1340E+01
642000	1.1178E+01	#NAME?	1.1190E+01	#NAME?	1.1211E+01	#NAME?	1.1236E+01	#NAME?	1.1271E+01	#NAME?	1.1299E+01
644000	1.1137E+01	#NAME?	1.1149E+01	#NAME?	1.1170E+01	#NAME?	1.1195E+01	#NAME?	1.1230E+01	#NAME?	1.1257E+01
646000	1.1096E+01	#NAME?	1.1108E+01	#NAME?	1.1129E+01	#NAME?	1.1154E+01	#NAME?	1.1189E+01	#NAME?	1.1216E+01
648000	1.1055E+01	#NAME?	1.1068E+01	#NAME?	1.1089E+01	#NAME?	1.1114E+01	#NAME?	1.1148E+01	#NAME?	1.1175E+01
650000	1.1015E+01	#NAME?	1.1027E+01	#NAME?	1.1048E+01	#NAME?	1.1073E+01	#NAME?	1.1107E+01	#NAME?	1.1134E+01
652000	1.0975E+01	#NAME?	1.0987E+01	#NAME?	1.1008E+01	#NAME?	1.1033E+01	#NAME?	1.1066E+01	#NAME?	1.1094E+01
654000	1.0935E+01	#NAME?	1.0947E+01	#NAME?	1.0968E+01	#NAME?	1.0992E+01	#NAME?	1.1026E+01	#NAME?	1.1053E+01
656000	1.0895E+01	#NAME?	1.0907E+01	#NAME?	1.0928E+01	#NAME?	1.0952E+01	#NAME?	1.0986E+01	#NAME?	1.1013E+01
658000	1.0855E+01	#NAME?	1.0867E+01	#NAME?	1.0888E+01	#NAME?	1.0912E+01	#NAME?	1.0946E+01	#NAME?	1.0973E+01
660000	1.0815E+01	#NAME?	1.0827E+01	#NAME?	1.0848E+01	#NAME?	1.0872E+01	#NAME?	1.0906E+01	#NAME?	1.0933E+01
662000	1.0776E+01	#NAME?	1.0788E+01	#NAME?	1.0808E+01	#NAME?	1.0833E+01	#NAME?	1.0866E+01	#NAME?	1.0893E+01
664000	1.0737E+01	#NAME?	1.0749E+01	#NAME?	1.0769E+01	#NAME?	1.0793E+01	#NAME?	1.0826E+01	#NAME?	1.0853E+01
666000	1.0697E+01	#NAME?	1.0709E+01	#NAME?	1.0729E+01	#NAME?	1.0754E+01	#NAME?	1.0787E+01	#NAME?	1.0813E+01
668000	1.0658E+01	#NAME?	1.0670E+01	#NAME?	1.0690E+01	#NAME?	1.0714E+01	#NAME?	1.0747E+01	#NAME?	1.0774E+01
670000	1.0619E+01	#NAME?	1.0631E+01	#NAME?	1.0651E+01	#NAME?	1.0675E+01	#NAME?	1.0708E+01	#NAME?	1.0734E+01
672000	1.0581E+01	#NAME?	1.0592E+01	#NAME?	1.0612E+01	#NAME?	1.0636E+01	#NAME?	1.0669E+01	#NAME?	1.0695E+01
674000	1.0542E+01	#NAME?	1.0554E+01	#NAME?	1.0574E+01	#NAME?	1.0597E+01	#NAME?	1.0630E+01	#NAME?	1.0656E+01
676000	1.0503E+01	#NAME?	1.0515E+01	#NAME?	1.0535E+01	#NAME?	1.0559E+01	#NAME?	1.0591E+01	#NAME?	1.0617E+01
678000	1.0465E+01	#NAME?	1.0477E+01	#NAME?	1.0497E+01	#NAME?	1.0520E+01	#NAME?	1.0552E+01	#NAME?	1.0578E+01
680000	1.0427E+01	#NAME?	1.0438E+01	#NAME?	1.0458E+01	#NAME?	1.0482E+01	#NAME?	1.0514E+01	#NAME?	1.0540E+01
682000	1.0389E+01	#NAME?	1.0400E+01	#NAME?	1.0420E+01	#NAME?	1.0443E+01	#NAME?	1.0475E+01	#NAME?	1.0501E+01
684000	1.0351E+01	#NAME?	1.0362E+01	#NAME?	1.0382E+01	#NAME?	1.0405E+01	#NAME?	1.0437E+01	#NAME?	1.0463E+01
686000	1.0313E+01	#NAME?	1.0324E+01	#NAME?	1.0344E+01	#NAME?	1.0367E+01	#NAME?	1.0399E+01	#NAME?	1.0425E+01
688000	1.0275E+01	#NAME?	1.0287E+01	#NAME?	1.0306E+01	#NAME?	1.0329E+01	#NAME?	1.0361E+01	#NAME?	1.0387E+01
690000	1.0238E+01	#NAME?	1.0249E+01	#NAME?	1.0268E+01	#NAME?	1.0292E+01	#NAME?	1.0323E+01	#NAME?	1.0349E+01
692000	1.0200E+01	#NAME?	1.0212E+01	#NAME?	1.0231E+01	#NAME?	1.0254E+01	#NAME?	1.0285E+01	#NAME?	1.0311E+01
694000	1.0163E+01	#NAME?	1.0174E+01	#NAME?	1.0194E+01	#NAME?	1.0217E+01	#NAME?	1.0248E+01	#NAME?	1.0273E+01
696000	1.0126E+01	#NAME?	1.0137E+01	#NAME?	1.0156E+01	#NAME?	1.0179E+01	#NAME?	1.0210E+01	#NAME?	1.0236E+01
698000	1.0089E+01	#NAME?	1.0100E+01	#NAME?	1.0119E+01	#NAME?	1.0142E+01	#NAME?	1.0173E+01	#NAME?	1.0198E+01
700000	1.0052E+01	#NAME?	1.0063E+01	#NAME?	1.0082E+01	#NAME?	1.0105E+01	#NAME?	1.0136E+01	#NAME?	1.0161E+01
702000	1.0015E+01	#NAME?	1.0026E+01	#NAME?	1.0045E+01	#NAME?	1.0068E+01	#NAME?	1.0099E+01	#NAME?	1.0124E+01
704000	9.9784E+00	#NAME?	9.9895E+00	#NAME?	1.0008E+01	#NAME?	1.0031E+01	#NAME?	1.0062E+01	#NAME?	1.0087E+01
706000	9.9418E+00	#NAME?	9.9529E+00	#NAME?	9.9718E+00	#NAME?	9.9943E+00	#NAME?	1.0025E+01	#NAME?	1.0050E+01
708000	9.9054E+00	#NAME?	9.9165E+00	#NAME?	9.9352E+00	#NAME?	9.9577E+00	#NAME?	9.9882E+00	#NAME?	1.0013E+01
710000	9.8691E+00	#NAME?	9.8802E+00	#NAME?	9.8988E+00	#NAME?	9.9212E+00	#NAME?	9.9517E+00	#NAME?	9.9763E+00
712000	9.8329E+00	#NAME?	9.8439E+00	#NAME?	9.8626E+00	#NAME?	9.8849E+00	#NAME?	9.9152E+00	#NAME?	9.9398E+00
714000	9.7969E+00	#NAME?	9.8079E+00	#NAME?	9.8264E+00	#NAME?	9.8486E+00	#NAME?	9.8789E+00	#NAME?	9.9034E+00
716000	9.7609E+00	#NAME?	9.7719E+00	#NAME?	9.7904E+00	#NAME?	9.8125E+00	#NAME?	9.8427E+00	#NAME?	9.8671E+00
718000	9.7251E+00	#NAME?	9.7360E+00	#NAME?	9.7545E+00	#NAME?	9.7766E+00	#NAME?	9.8066E+00	#NAME?	9.8309E+00
720000	9.6894E+00	#NAME?	9.7003E+00	#NAME?	9.7187E+00	#NAME?	9.7407E+00	#NAME?	9.7706E+00	#NAME?	9.7949E+00
722000	9.6539E+00	#NAME?	9.6647E+00	#NAME?	9.6830E+00	#NAME?	9.7049E+00	#NAME?	9.7348E+00	#NAME?	9.7590E+00
724000	9.6184E+00	#NAME?	9.6292E+00	#NAME?	9.6475E+00	#NAME?	9.6693E+00	#NAME?	9.6991E+00	#NAME?	9.7232E+00
726000	9.5831E+00	#NAME?	9.5938E+00	#NAME?	9.6120E+00	#NAME?	9.6338E+00	#NAME?	9.6634E+00	#NAME?	9.6875E+00

Time (yrs)	Arg 1	Curve 1	Arg 2	Curve 2	Arg 3	Curve 3	Arg 4	Curve 4	Arg 5	Curve 5	Arg 6
728000	9.5478E+00	#NAME?	9.5586E+00	#NAME?	9.5767E+00	#NAME?	9.5984E+00	#NAME?	9.6280E+00	#NAME?	9.6519E+00
730000	9.5127E+00	#NAME?	9.5234E+00	#NAME?	9.5415E+00	#NAME?	9.5631E+00	#NAME?	9.5926E+00	#NAME?	9.6164E+00
732000	9.4777E+00	#NAME?	9.4884E+00	#NAME?	9.5064E+00	#NAME?	9.5280E+00	#NAME?	9.5573E+00	#NAME?	9.5811E+00
734000	9.4428E+00	#NAME?	9.4535E+00	#NAME?	9.4714E+00	#NAME?	9.4929E+00	#NAME?	9.5222E+00	#NAME?	9.5459E+00
736000	9.4081E+00	#NAME?	9.4187E+00	#NAME?	9.4366E+00	#NAME?	9.4580E+00	#NAME?	9.4872E+00	#NAME?	9.5108E+00
738000	9.3734E+00	#NAME?	9.3840E+00	#NAME?	9.4018E+00	#NAME?	9.4232E+00	#NAME?	9.4522E+00	#NAME?	9.4758E+00
740000	9.3389E+00	#NAME?	9.3494E+00	#NAME?	9.3672E+00	#NAME?	9.3885E+00	#NAME?	9.4174E+00	#NAME?	9.4409E+00
742000	9.3044E+00	#NAME?	9.3149E+00	#NAME?	9.3327E+00	#NAME?	9.3539E+00	#NAME?	9.3828E+00	#NAME?	9.4062E+00
744000	9.2701E+00	#NAME?	9.2806E+00	#NAME?	9.2982E+00	#NAME?	9.3194E+00	#NAME?	9.3482E+00	#NAME?	9.3715E+00
746000	9.2359E+00	#NAME?	9.2463E+00	#NAME?	9.2639E+00	#NAME?	9.2850E+00	#NAME?	9.3137E+00	#NAME?	9.3370E+00
748000	9.2018E+00	#NAME?	9.2122E+00	#NAME?	9.2297E+00	#NAME?	9.2508E+00	#NAME?	9.2794E+00	#NAME?	9.3025E+00
750000	9.1678E+00	#NAME?	9.1781E+00	#NAME?	9.1957E+00	#NAME?	9.2166E+00	#NAME?	9.2451E+00	#NAME?	9.2682E+00
752000	9.1339E+00	#NAME?	9.1442E+00	#NAME?	9.1617E+00	#NAME?	9.1826E+00	#NAME?	9.2110E+00	#NAME?	9.2340E+00
754000	9.1001E+00	#NAME?	9.1104E+00	#NAME?	9.1278E+00	#NAME?	9.1486E+00	#NAME?	9.1770E+00	#NAME?	9.1999E+00
756000	9.0664E+00	#NAME?	9.0767E+00	#NAME?	9.0940E+00	#NAME?	9.1148E+00	#NAME?	9.1430E+00	#NAME?	9.1659E+00
758000	9.0328E+00	#NAME?	9.0431E+00	#NAME?	9.0604E+00	#NAME?	9.0811E+00	#NAME?	9.1092E+00	#NAME?	9.1320E+00
760000	8.9994E+00	#NAME?	9.0096E+00	#NAME?	9.0268E+00	#NAME?	9.0474E+00	#NAME?	9.0755E+00	#NAME?	9.0982E+00
762000	8.9660E+00	#NAME?	8.9762E+00	#NAME?	8.9934E+00	#NAME?	9.0139E+00	#NAME?	9.0419E+00	#NAME?	9.0646E+00
764000	8.9327E+00	#NAME?	8.9429E+00	#NAME?	8.9600E+00	#NAME?	8.9805E+00	#NAME?	9.0084E+00	#NAME?	9.0310E+00
766000	8.8996E+00	#NAME?	8.9097E+00	#NAME?	8.9268E+00	#NAME?	8.9472E+00	#NAME?	8.9750E+00	#NAME?	8.9975E+00
768000	8.8665E+00	#NAME?	8.8766E+00	#NAME?	8.8936E+00	#NAME?	8.9140E+00	#NAME?	8.9417E+00	#NAME?	8.9642E+00
770000	8.8336E+00	#NAME?	8.8436E+00	#NAME?	8.8606E+00	#NAME?	8.8809E+00	#NAME?	8.9085E+00	#NAME?	8.9309E+00
772000	8.8007E+00	#NAME?	8.8107E+00	#NAME?	8.8276E+00	#NAME?	8.8479E+00	#NAME?	8.8754E+00	#NAME?	8.8978E+00
774000	8.7680E+00	#NAME?	8.7779E+00	#NAME?	8.7948E+00	#NAME?	8.8150E+00	#NAME?	8.8425E+00	#NAME?	8.8647E+00
776000	8.7353E+00	#NAME?	8.7453E+00	#NAME?	8.7621E+00	#NAME?	8.7822E+00	#NAME?	8.8096E+00	#NAME?	8.8318E+00
778000	8.7027E+00	#NAME?	8.7127E+00	#NAME?	8.7294E+00	#NAME?	8.7495E+00	#NAME?	8.7768E+00	#NAME?	8.7989E+00
780000	8.6703E+00	#NAME?	8.6802E+00	#NAME?	8.6969E+00	#NAME?	8.7169E+00	#NAME?	8.7441E+00	#NAME?	8.7662E+00
782000	8.6379E+00	#NAME?	8.6478E+00	#NAME?	8.6645E+00	#NAME?	8.6844E+00	#NAME?	8.7115E+00	#NAME?	8.7335E+00
784000	8.6057E+00	#NAME?	8.6155E+00	#NAME?	8.6321E+00	#NAME?	8.6520E+00	#NAME?	8.6790E+00	#NAME?	8.7010E+00
786000	8.5735E+00	#NAME?	8.5833E+00	#NAME?	8.5999E+00	#NAME?	8.6197E+00	#NAME?	8.6466E+00	#NAME?	8.6685E+00
788000	8.5414E+00	#NAME?	8.5512E+00	#NAME?	8.5677E+00	#NAME?	8.5875E+00	#NAME?	8.6144E+00	#NAME?	8.6361E+00
790000	8.5094E+00	#NAME?	8.5192E+00	#NAME?	8.5357E+00	#NAME?	8.5554E+00	#NAME?	8.5822E+00	#NAME?	8.6039E+00
792000	8.4776E+00	#NAME?	8.4873E+00	#NAME?	8.5037E+00	#NAME?	8.5233E+00	#NAME?	8.5501E+00	#NAME?	8.5717E+00
794000	8.4458E+00	#NAME?	8.4555E+00	#NAME?	8.4718E+00	#NAME?	8.4914E+00	#NAME?	8.5181E+00	#NAME?	8.5397E+00
796000	8.4141E+00	#NAME?	8.4237E+00	#NAME?	8.4401E+00	#NAME?	8.4596E+00	#NAME?	8.4862E+00	#NAME?	8.5077E+00
798000	8.3825E+00	#NAME?	8.3921E+00	#NAME?	8.4084E+00	#NAME?	8.4278E+00	#NAME?	8.4543E+00	#NAME?	8.4758E+00
800000	8.3510E+00	#NAME?	8.3606E+00	#NAME?	8.3768E+00	#NAME?	8.3962E+00	#NAME?	8.4226E+00	#NAME?	8.4440E+00
802000	8.3195E+00	#NAME?	8.3291E+00	#NAME?	8.3453E+00	#NAME?	8.3647E+00	#NAME?	8.3910E+00	#NAME?	8.4123E+00
804000	8.2882E+00	#NAME?	8.2978E+00	#NAME?	8.3139E+00	#NAME?	8.3332E+00	#NAME?	8.3595E+00	#NAME?	8.3807E+00
806000	8.2570E+00	#NAME?	8.2665E+00	#NAME?	8.2826E+00	#NAME?	8.3018E+00	#NAME?	8.3280E+00	#NAME?	8.3492E+00
808000	8.2258E+00	#NAME?	8.2353E+00	#NAME?	8.2514E+00	#NAME?	8.2706E+00	#NAME?	8.2967E+00	#NAME?	8.3178E+00
810000	8.1948E+00	#NAME?	8.2043E+00	#NAME?	8.2202E+00	#NAME?	8.2394E+00	#NAME?	8.2654E+00	#NAME?	8.2865E+00
812000	8.1638E+00	#NAME?	8.1733E+00	#NAME?	8.1892E+00	#NAME?	8.2083E+00	#NAME?	8.2342E+00	#NAME?	8.2553E+00
814000	8.1329E+00	#NAME?	8.1424E+00	#NAME?	8.1583E+00	#NAME?	8.1773E+00	#NAME?	8.2032E+00	#NAME?	8.2241E+00
816000	8.1022E+00	#NAME?	8.1115E+00	#NAME?	8.1274E+00	#NAME?	8.1464E+00	#NAME?	8.1722E+00	#NAME?	8.1931E+00
818000	8.0715E+00	#NAME?	8.0808E+00	#NAME?	8.0966E+00	#NAME?	8.1155E+00	#NAME?	8.1413E+00	#NAME?	8.1621E+00
820000	8.0408E+00	#NAME?	8.0502E+00	#NAME?	8.0659E+00	#NAME?	8.0848E+00	#NAME?	8.1105E+00	#NAME?	8.1313E+00
822000	8.0103E+00	#NAME?	8.0196E+00	#NAME?	8.0353E+00	#NAME?	8.0542E+00	#NAME?	8.0797E+00	#NAME?	8.1005E+00
824000	7.9799E+00	#NAME?	7.9892E+00	#NAME?	8.0048E+00	#NAME?	8.0236E+00	#NAME?	8.0491E+00	#NAME?	8.0698E+00
826000	7.9495E+00	#NAME?	7.9588E+00	#NAME?	7.9744E+00	#NAME?	7.9931E+00	#NAME?	8.0186E+00	#NAME?	8.0392E+00
828000	7.9193E+00	#NAME?	7.9285E+00	#NAME?	7.9441E+00	#NAME?	7.9627E+00	#NAME?	7.9881E+00	#NAME?	8.0086E+00
830000	7.8891E+00	#NAME?	7.8983E+00	#NAME?	7.9138E+00	#NAME?	7.9324E+00	#NAME?	7.9577E+00	#NAME?	7.9782E+00

Time (yrs)	Arg 1	Curve 1	Arg 2	Curve 2	Arg 3	Curve 3	Arg 4	Curve 4	Arg 5	Curve 5	Arg 6
832000	7.8590E+00	#NAME?	7.8682E+00	#NAME?	7.8837E+00	#NAME?	7.9022E+00	#NAME?	7.9274E+00	#NAME?	7.9479E+00
834000	7.8290E+00	#NAME?	7.8381E+00	#NAME?	7.8536E+00	#NAME?	7.8721E+00	#NAME?	7.8972E+00	#NAME?	7.9176E+00
836000	7.7990E+00	#NAME?	7.8082E+00	#NAME?	7.8236E+00	#NAME?	7.8420E+00	#NAME?	7.8671E+00	#NAME?	7.8874E+00
838000	7.7692E+00	#NAME?	7.7783E+00	#NAME?	7.7937E+00	#NAME?	7.8120E+00	#NAME?	7.8371E+00	#NAME?	7.8573E+00
840000	7.7394E+00	#NAME?	7.7485E+00	#NAME?	7.7638E+00	#NAME?	7.7822E+00	#NAME?	7.8071E+00	#NAME?	7.8273E+00
842000	7.7097E+00	#NAME?	7.7188E+00	#NAME?	7.7341E+00	#NAME?	7.7524E+00	#NAME?	7.7772E+00	#NAME?	7.7974E+00
844000	7.6801E+00	#NAME?	7.6892E+00	#NAME?	7.7044E+00	#NAME?	7.7226E+00	#NAME?	7.7474E+00	#NAME?	7.7675E+00
846000	7.6506E+00	#NAME?	7.6596E+00	#NAME?	7.6748E+00	#NAME?	7.6930E+00	#NAME?	7.7177E+00	#NAME?	7.7378E+00
848000	7.6212E+00	#NAME?	7.6301E+00	#NAME?	7.6453E+00	#NAME?	7.6634E+00	#NAME?	7.6881E+00	#NAME?	7.7081E+00
850000	7.5918E+00	#NAME?	7.6008E+00	#NAME?	7.6159E+00	#NAME?	7.6340E+00	#NAME?	7.6586E+00	#NAME?	7.6785E+00
852000	7.5625E+00	#NAME?	7.5715E+00	#NAME?	7.5865E+00	#NAME?	7.6046E+00	#NAME?	7.6291E+00	#NAME?	7.6490E+00
854000	7.5333E+00	#NAME?	7.5422E+00	#NAME?	7.5573E+00	#NAME?	7.5753E+00	#NAME?	7.5997E+00	#NAME?	7.6196E+00
856000	7.5042E+00	#NAME?	7.5131E+00	#NAME?	7.5281E+00	#NAME?	7.5460E+00	#NAME?	7.5704E+00	#NAME?	7.5902E+00
858000	7.4752E+00	#NAME?	7.4840E+00	#NAME?	7.4990E+00	#NAME?	7.5169E+00	#NAME?	7.5412E+00	#NAME?	7.5609E+00
860000	7.4462E+00	#NAME?	7.4550E+00	#NAME?	7.4699E+00	#NAME?	7.4878E+00	#NAME?	7.5121E+00	#NAME?	7.5317E+00
862000	7.4173E+00	#NAME?	7.4261E+00	#NAME?	7.4410E+00	#NAME?	7.4588E+00	#NAME?	7.4830E+00	#NAME?	7.5026E+00
864000	7.3885E+00	#NAME?	7.3973E+00	#NAME?	7.4121E+00	#NAME?	7.4299E+00	#NAME?	7.4540E+00	#NAME?	7.4736E+00
866000	7.3598E+00	#NAME?	7.3685E+00	#NAME?	7.3833E+00	#NAME?	7.4010E+00	#NAME?	7.4251E+00	#NAME?	7.4446E+00
868000	7.3311E+00	#NAME?	7.3398E+00	#NAME?	7.3546E+00	#NAME?	7.3722E+00	#NAME?	7.3963E+00	#NAME?	7.4157E+00
870000	7.3025E+00	#NAME?	7.3112E+00	#NAME?	7.3259E+00	#NAME?	7.3436E+00	#NAME?	7.3675E+00	#NAME?	7.3869E+00
872000	7.2740E+00	#NAME?	7.2827E+00	#NAME?	7.2974E+00	#NAME?	7.3149E+00	#NAME?	7.3388E+00	#NAME?	7.3582E+00
874000	7.2456E+00	#NAME?	7.2542E+00	#NAME?	7.2689E+00	#NAME?	7.2864E+00	#NAME?	7.3102E+00	#NAME?	7.3295E+00
876000	7.2172E+00	#NAME?	7.2259E+00	#NAME?	7.2405E+00	#NAME?	7.2579E+00	#NAME?	7.2817E+00	#NAME?	7.3009E+00
878000	7.1889E+00	#NAME?	7.1976E+00	#NAME?	7.2121E+00	#NAME?	7.2295E+00	#NAME?	7.2532E+00	#NAME?	7.2724E+00
880000	7.1607E+00	#NAME?	7.1693E+00	#NAME?	7.1839E+00	#NAME?	7.2012E+00	#NAME?	7.2249E+00	#NAME?	7.2440E+00
882000	7.1326E+00	#NAME?	7.1412E+00	#NAME?	7.1557E+00	#NAME?	7.1730E+00	#NAME?	7.1966E+00	#NAME?	7.2157E+00
884000	7.1045E+00	#NAME?	7.1131E+00	#NAME?	7.1275E+00	#NAME?	7.1448E+00	#NAME?	7.1683E+00	#NAME?	7.1874E+00
886000	7.0765E+00	#NAME?	7.0851E+00	#NAME?	7.0995E+00	#NAME?	7.1167E+00	#NAME?	7.1402E+00	#NAME?	7.1592E+00
888000	7.0486E+00	#NAME?	7.0571E+00	#NAME?	7.0715E+00	#NAME?	7.0887E+00	#NAME?	7.1121E+00	#NAME?	7.1310E+00
890000	7.0208E+00	#NAME?	7.0293E+00	#NAME?	7.0436E+00	#NAME?	7.0608E+00	#NAME?	7.0841E+00	#NAME?	7.1030E+00
892000	6.9930E+00	#NAME?	7.0015E+00	#NAME?	7.0158E+00	#NAME?	7.0329E+00	#NAME?	7.0562E+00	#NAME?	7.0750E+00
894000	6.9653E+00	#NAME?	6.9737E+00	#NAME?	6.9880E+00	#NAME?	7.0051E+00	#NAME?	7.0283E+00	#NAME?	7.0471E+00
896000	6.9377E+00	#NAME?	6.9461E+00	#NAME?	6.9603E+00	#NAME?	6.9773E+00	#NAME?	7.0005E+00	#NAME?	7.0192E+00
898000	6.9101E+00	#NAME?	6.9185E+00	#NAME?	6.9327E+00	#NAME?	6.9497E+00	#NAME?	6.9728E+00	#NAME?	6.9915E+00
900000	6.8826E+00	#NAME?	6.8910E+00	#NAME?	6.9052E+00	#NAME?	6.9221E+00	#NAME?	6.9451E+00	#NAME?	6.9638E+00
902000	6.8552E+00	#NAME?	6.8636E+00	#NAME?	6.8777E+00	#NAME?	6.8946E+00	#NAME?	6.9175E+00	#NAME?	6.9362E+00
904000	6.8278E+00	#NAME?	6.8362E+00	#NAME?	6.8503E+00	#NAME?	6.8671E+00	#NAME?	6.8900E+00	#NAME?	6.9086E+00
906000	6.8006E+00	#NAME?	6.8089E+00	#NAME?	6.8229E+00	#NAME?	6.8397E+00	#NAME?	6.8626E+00	#NAME?	6.8811E+00
908000	6.7733E+00	#NAME?	6.7816E+00	#NAME?	6.7957E+00	#NAME?	6.8124E+00	#NAME?	6.8352E+00	#NAME?	6.8537E+00
910000	6.7462E+00	#NAME?	6.7545E+00	#NAME?	6.7685E+00	#NAME?	6.7852E+00	#NAME?	6.8079E+00	#NAME?	6.8263E+00
912000	6.7191E+00	#NAME?	6.7274E+00	#NAME?	6.7413E+00	#NAME?	6.7580E+00	#NAME?	6.7807E+00	#NAME?	6.7991E+00
914000	6.6921E+00	#NAME?	6.7003E+00	#NAME?	6.7143E+00	#NAME?	6.7309E+00	#NAME?	6.7535E+00	#NAME?	6.7718E+00
916000	6.6652E+00	#NAME?	6.6734E+00	#NAME?	6.6873E+00	#NAME?	6.7039E+00	#NAME?	6.7264E+00	#NAME?	6.7447E+00
918000	6.6383E+00	#NAME?	6.6465E+00	#NAME?	6.6603E+00	#NAME?	6.6769E+00	#NAME?	6.6994E+00	#NAME?	6.7176E+00
920000	6.6115E+00	#NAME?	6.6196E+00	#NAME?	6.6335E+00	#NAME?	6.6500E+00	#NAME?	6.6724E+00	#NAME?	6.6906E+00
922000	6.5847E+00	#NAME?	6.5929E+00	#NAME?	6.6067E+00	#NAME?	6.6231E+00	#NAME?	6.6455E+00	#NAME?	6.6637E+00
924000	6.5581E+00	#NAME?	6.5662E+00	#NAME?	6.5799E+00	#NAME?	6.5964E+00	#NAME?	6.6187E+00	#NAME?	6.6368E+00
926000	6.5314E+00	#NAME?	6.5396E+00	#NAME?	6.5533E+00	#NAME?	6.5697E+00	#NAME?	6.5919E+00	#NAME?	6.6100E+00
928000	6.5049E+00	#NAME?	6.5130E+00	#NAME?	6.5267E+00	#NAME?	6.5430E+00	#NAME?	6.5653E+00	#NAME?	6.5833E+00
930000	6.4784E+00	#NAME?	6.4865E+00	#NAME?	6.5001E+00	#NAME?	6.5164E+00	#NAME?	6.5386E+00	#NAME?	6.5566E+00
932000	6.4520E+00	#NAME?	6.4600E+00	#NAME?	6.4737E+00	#NAME?	6.4899E+00	#NAME?	6.5121E+00	#NAME?	6.5300E+00
934000	6.4256E+00	#NAME?	6.4337E+00	#NAME?	6.4472E+00	#NAME?	6.4635E+00	#NAME?	6.4856E+00	#NAME?	6.5034E+00

Time (yrs)	Arg 1	Curve 1	Arg 2	Curve 2	Arg 3	Curve 3	Arg 4	Curve 4	Arg 5	Curve 5	Arg 6
936000	6.3994E+00	#NAME?	6.4074E+00	#NAME?	6.4209E+00	#NAME?	6.4371E+00	#NAME?	6.4591E+00	#NAME?	6.4770E+00
938000	6.3731E+00	#NAME?	6.3811E+00	#NAME?	6.3946E+00	#NAME?	6.4108E+00	#NAME?	6.4328E+00	#NAME?	6.4505E+00
940000	6.3470E+00	#NAME?	6.3549E+00	#NAME?	6.3684E+00	#NAME?	6.3845E+00	#NAME?	6.4064E+00	#NAME?	6.4242E+00
942000	6.3209E+00	#NAME?	6.3288E+00	#NAME?	6.3423E+00	#NAME?	6.3583E+00	#NAME?	6.3802E+00	#NAME?	6.3979E+00
944000	6.2948E+00	#NAME?	6.3028E+00	#NAME?	6.3162E+00	#NAME?	6.3322E+00	#NAME?	6.3540E+00	#NAME?	6.3717E+00
946000	6.2689E+00	#NAME?	6.2768E+00	#NAME?	6.2901E+00	#NAME?	6.3061E+00	#NAME?	6.3279E+00	#NAME?	6.3455E+00
948000	6.2429E+00	#NAME?	6.2508E+00	#NAME?	6.2642E+00	#NAME?	6.2801E+00	#NAME?	6.3019E+00	#NAME?	6.3194E+00
950000	6.2171E+00	#NAME?	6.2250E+00	#NAME?	6.2383E+00	#NAME?	6.2542E+00	#NAME?	6.2759E+00	#NAME?	6.2934E+00
952000	6.1913E+00	#NAME?	6.1992E+00	#NAME?	6.2124E+00	#NAME?	6.2283E+00	#NAME?	6.2499E+00	#NAME?	6.2674E+00
954000	6.1656E+00	#NAME?	6.1734E+00	#NAME?	6.1867E+00	#NAME?	6.2025E+00	#NAME?	6.2241E+00	#NAME?	6.2415E+00
956000	6.1399E+00	#NAME?	6.1477E+00	#NAME?	6.1609E+00	#NAME?	6.1768E+00	#NAME?	6.1983E+00	#NAME?	6.2157E+00
958000	6.1143E+00	#NAME?	6.1221E+00	#NAME?	6.1353E+00	#NAME?	6.1511E+00	#NAME?	6.1725E+00	#NAME?	6.1899E+00
960000	6.0887E+00	#NAME?	6.0965E+00	#NAME?	6.1097E+00	#NAME?	6.1254E+00	#NAME?	6.1468E+00	#NAME?	6.1642E+00
962000	6.0633E+00	#NAME?	6.0710E+00	#NAME?	6.0842E+00	#NAME?	6.0999E+00	#NAME?	6.1212E+00	#NAME?	6.1385E+00
964000	6.0378E+00	#NAME?	6.0456E+00	#NAME?	6.0587E+00	#NAME?	6.0743E+00	#NAME?	6.0956E+00	#NAME?	6.1129E+00
966000	6.0125E+00	#NAME?	6.0202E+00	#NAME?	6.0333E+00	#NAME?	6.0489E+00	#NAME?	6.0701E+00	#NAME?	6.0873E+00
968000	5.9872E+00	#NAME?	5.9949E+00	#NAME?	6.0079E+00	#NAME?	6.0235E+00	#NAME?	6.0447E+00	#NAME?	6.0619E+00
970000	5.9619E+00	#NAME?	5.9696E+00	#NAME?	5.9826E+00	#NAME?	5.9982E+00	#NAME?	6.0193E+00	#NAME?	6.0364E+00
972000	5.9367E+00	#NAME?	5.9444E+00	#NAME?	5.9574E+00	#NAME?	5.9729E+00	#NAME?	5.9940E+00	#NAME?	6.0111E+00
974000	5.9116E+00	#NAME?	5.9192E+00	#NAME?	5.9322E+00	#NAME?	5.9477E+00	#NAME?	5.9687E+00	#NAME?	5.9858E+00
976000	5.8865E+00	#NAME?	5.8941E+00	#NAME?	5.9071E+00	#NAME?	5.9225E+00	#NAME?	5.9435E+00	#NAME?	5.9605E+00
978000	5.8615E+00	#NAME?	5.8691E+00	#NAME?	5.8820E+00	#NAME?	5.8974E+00	#NAME?	5.9184E+00	#NAME?	5.9353E+00
980000	5.8365E+00	#NAME?	5.8441E+00	#NAME?	5.8570E+00	#NAME?	5.8724E+00	#NAME?	5.8933E+00	#NAME?	5.9102E+00
982000	5.8116E+00	#NAME?	5.8192E+00	#NAME?	5.8320E+00	#NAME?	5.8474E+00	#NAME?	5.8682E+00	#NAME?	5.8851E+00
984000	5.7868E+00	#NAME?	5.7943E+00	#NAME?	5.8071E+00	#NAME?	5.8224E+00	#NAME?	5.8433E+00	#NAME?	5.8601E+00
986000	5.7620E+00	#NAME?	5.7695E+00	#NAME?	5.7823E+00	#NAME?	5.7976E+00	#NAME?	5.8183E+00	#NAME?	5.8352E+00
988000	5.7373E+00	#NAME?	5.7448E+00	#NAME?	5.7575E+00	#NAME?	5.7728E+00	#NAME?	5.7935E+00	#NAME?	5.8103E+00
990000	5.7126E+00	#NAME?	5.7201E+00	#NAME?	5.7328E+00	#NAME?	5.7480E+00	#NAME?	5.7687E+00	#NAME?	5.7854E+00
992000	5.6880E+00	#NAME?	5.6955E+00	#NAME?	5.7081E+00	#NAME?	5.7233E+00	#NAME?	5.7439E+00	#NAME?	5.7606E+00
994000	5.6634E+00	#NAME?	5.6709E+00	#NAME?	5.6835E+00	#NAME?	5.6987E+00	#NAME?	5.7192E+00	#NAME?	5.7359E+00
996000	5.6389E+00	#NAME?	5.6463E+00	#NAME?	5.6590E+00	#NAME?	5.6741E+00	#NAME?	5.6946E+00	#NAME?	5.7112E+00
998000	5.6144E+00	#NAME?	5.6219E+00	#NAME?	5.6345E+00	#NAME?	5.6495E+00	#NAME?	5.6700E+00	#NAME?	5.6866E+00
1000000	5.5900E+00	#NAME?	5.5975E+00	#NAME?	5.6100E+00	#NAME?	5.6251E+00	#NAME?	5.6455E+00	#NAME?	5.6620E+00


Flux Out (gm/yr)
1.0000E+00
9.0000E-01
8.0000E-01
7.0000E-01
6.0000E-01
5.0000E-01
4.0000E-01
3.0000E-01
2.0000E-01
1.0000E-01
0.0000E+00
0
100000
200000
300000
400000
500000
600000
700000
800000
900000
1000000

Curve 6	Arg 7	Curve 7	Arg 8	Curve 8	Arg 9	Curve 9	Arg 10	Curve 10	Arg 11	Curve 11	Arg 12	Curve 12
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
#NAME?	4.0315E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
#NAME?	2.5672E+02	#NAME?	5.3109E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
#NAME?	2.0312E+02	#NAME?	2.8225E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
#NAME?	1.7316E+02	#NAME?	2.1514E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
#NAME?	1.5338E+02	#NAME?	1.8047E+02	#NAME?	3.8145E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
#NAME?	1.3906E+02	#NAME?	1.5842E+02	#NAME?	2.5081E+02	#NAME?	4.4202E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
#NAME?	1.2808E+02	#NAME?	1.4280E+02	#NAME?	2.0014E+02	#NAME?	2.6600E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
#NAME?	1.1930E+02	#NAME?	1.3100E+02	#NAME?	1.7130E+02	#NAME?	2.0764E+02	#NAME?	5.2128E+02	#NAME?	0.0000E+00	0.0000E+00
#NAME?	1.1208E+02	#NAME?	1.2167E+02	#NAME?	1.5207E+02	#NAME?	1.7595E+02	#NAME?	2.8074E+02	#NAME?	0.0000E+00	0.0000E+00
#NAME?	1.0600E+02	#NAME?	1.1404E+02	#NAME?	1.3808E+02	#NAME?	1.5532E+02	#NAME?	2.1447E+02	#NAME?	0.0000E+00	0.0000E+00
#NAME?	1.0079E+02	#NAME?	1.0767E+02	#NAME?	1.2731E+02	#NAME?	1.4051E+02	#NAME?	1.8007E+02	#NAME?	0.0000E+00	0.0000E+00
#NAME?	9.6262E+01	#NAME?	1.0223E+02	#NAME?	1.1868E+02	#NAME?	1.2921E+02	#NAME?	1.5815E+02	#NAME?	0.0000E+00	0.0000E+00
#NAME?	9.2272E+01	#NAME?	9.7515E+01	#NAME?	1.1156E+02	#NAME?	1.2022E+02	#NAME?	1.4260E+02	#NAME?	3.8785E+02	#NAME?
#NAME?	8.8723E+01	#NAME?	9.3380E+01	#NAME?	1.0556E+02	#NAME?	1.1285E+02	#NAME?	1.3084E+02	#NAME?	2.5262E+02	#NAME?
#NAME?	8.5540E+01	#NAME?	8.9712E+01	#NAME?	1.0041E+02	#NAME?	1.0665E+02	#NAME?	1.2154E+02	#NAME?	2.0105E+02	#NAME?
#NAME?	8.2662E+01	#NAME?	8.6429E+01	#NAME?	9.5924E+01	#NAME?	1.0136E+02	#NAME?	1.1394E+02	#NAME?	1.7187E+02	#NAME?
#NAME?	8.0044E+01	#NAME?	8.3468E+01	#NAME?	9.1973E+01	#NAME?	9.6753E+01	#NAME?	1.0758E+02	#NAME?	1.5248E+02	#NAME?
#NAME?	7.7649E+01	#NAME?	8.0779E+01	#NAME?	8.8456E+01	#NAME?	9.2707E+01	#NAME?	1.0215E+02	#NAME?	1.3839E+02	#NAME?
#NAME?	7.5445E+01	#NAME?	7.8322E+01	#NAME?	8.5299E+01	#NAME?	8.9112E+01	#NAME?	9.7449E+01	#NAME?	1.2755E+02	#NAME?
#NAME?	7.3409E+01	#NAME?	7.6066E+01	#NAME?	8.2444E+01	#NAME?	8.5889E+01	#NAME?	9.3321E+01	#NAME?	1.1887E+02	#NAME?
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#NAME?	6.9762E+01	#NAME?	7.2054E+01	#NAME?	7.7466E+01	#NAME?	8.0333E+01	#NAME?	8.6383E+01	#NAME?	1.0570E+02	#NAME?
#NAME?	6.8119E+01	#NAME?	7.0260E+01	#NAME?	7.5276E+01	#NAME?	7.7914E+01	#NAME?	8.3426E+01	#NAME?	1.0053E+02	#NAME?
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#NAME?	6.3769E+01	#NAME?	6.5543E+01	#NAME?	6.9627E+01	#NAME?	7.1731E+01	#NAME?	7.6033E+01	#NAME?	8.8539E+01	#NAME?
#NAME?	6.2482E+01	#NAME?	6.4157E+01	#NAME?	6.7992E+01	#NAME?	6.9958E+01	#NAME?	7.3954E+01	#NAME?	8.5374E+01	#NAME?
#NAME?	6.1264E+01	#NAME?	6.2848E+01	#NAME?	6.6461E+01	#NAME?	6.8303E+01	#NAME?	7.2027E+01	#NAME?	8.2512E+01	#NAME?
#NAME?	6.0108E+01	#NAME?	6.1610E+01	#NAME?	6.5021E+01	#NAME?	6.6752E+01	#NAME?	7.0234E+01	#NAME?	7.9907E+01	#NAME?
#NAME?	5.9010E+01	#NAME?	6.0437E+01	#NAME?	6.3664E+01	#NAME?	6.5295E+01	#NAME?	6.8560E+01	#NAME?	7.7523E+01	#NAME?
#NAME?	5.7965E+01	#NAME?	5.9323E+01	#NAME?	6.2382E+01	#NAME?	6.3922E+01	#NAME?	6.6993E+01	#NAME?	7.5329E+01	#NAME?
#NAME?	5.6968E+01	#NAME?	5.8263E+01	#NAME?	6.1169E+01	#NAME?	6.2626E+01	#NAME?	6.5522E+01	#NAME?	7.3302E+01	#NAME?
#NAME?	5.6017E+01	#NAME?	5.7252E+01	#NAME?	6.0018E+01	#NAME?	6.1400E+01	#NAME?	6.4136E+01	#NAME?	7.1421E+01	#NAME?
#NAME?	5.5107E+01	#NAME?	5.6288E+01	#NAME?	5.8924E+01	#NAME?	6.0238E+01	#NAME?	6.2829E+01	#NAME?	6.9669E+01	#NAME?
#NAME?	5.4235E+01	#NAME?	5.5366E+01	#NAME?	5.7883E+01	#NAME?	5.9133E+01	#NAME?	6.1592E+01	#NAME?	6.8032E+01	#NAME?
#NAME?	5.3400E+01	#NAME?	5.4484E+01	#NAME?	5.6890E+01	#NAME?	5.8082E+01	#NAME?	6.0420E+01	#NAME?	6.6498E+01	#NAME?
#NAME?	5.2598E+01	#NAME?	5.3638E+01	#NAME?	5.5942E+01	#NAME?	5.7080E+01	#NAME?	5.9306E+01	#NAME?	6.5056E+01	#NAME?
#NAME?	5.1827E+01	#NAME?	5.2827E+01	#NAME?	5.5036E+01	#NAME?	5.6124E+01	#NAME?	5.8247E+01	#NAME?	6.3697E+01	#NAME?
#NAME?	5.1085E+01	#NAME?	5.2047E+01	#NAME?	5.4167E+01	#NAME?	5.5209E+01	#NAME?	5.7238E+01	#NAME?	6.2413E+01	#NAME?
#NAME?	5.0371E+01	#NAME?	5.1297E+01	#NAME?	5.3334E+01	#NAME?	5.4334E+01	#NAME?	5.6274E+01	#NAME?	6.1198E+01	#NAME?
#NAME?	4.9682E+01	#NAME?	5.0575E+01	#NAME?	5.2535E+01	#NAME?	5.3494E+01	#NAME?	5.5353E+01	#NAME?	6.0046E+01	#NAME?
#NAME?	4.9018E+01	#NAME?	4.9879E+01	#NAME?	5.1766E+01	#NAME?	5.2688E+01	#NAME?	5.4471E+01	#NAME?	5.8951E+01	#NAME?
#NAME?	4.8376E+01	#NAME?	4.9208E+01	#NAME?	5.1027E+01	#NAME?	5.1914E+01	#NAME?	5.3626E+01	#NAME?	5.7909E+01	#NAME?
#NAME?	4.7756E+01	#NAME?	4.8560E+01	#NAME?	5.0315E+01	#NAME?	5.1169E+01	#NAME?	5.2815E+01	#NAME?	5.6915E+01	#NAME?
#NAME?	4.7156E+01	#NAME?	4.7934E+01	#NAME?	4.9628E+01	#NAME?	5.0452E+01	#NAME?	5.2036E+01	#NAME?	5.5965E+01	#NAME?
#NAME?	4.6575E+01	#NAME?	4.7328E+01	#NAME?	4.8966E+01	#NAME?	4.9760E+01	#NAME?	5.1286E+01	#NAME?	5.5058E+01	#NAME?

Curve 6	Arg 7	Curve 7	Arg 8	Curve 8	Arg 9	Curve 9	Arg 10	Curve 10	Arg 11	Curve 11	Arg 12	Curve 12
#NAME?	4.6012E+01	#NAME?	4.6741E+01	#NAME?	4.8326E+01	#NAME?	4.9093E+01	#NAME?	5.0565E+01	#NAME?	5.4188E+01	#NAME?
#NAME?	4.5466E+01	#NAME?	4.6173E+01	#NAME?	4.7707E+01	#NAME?	4.8449E+01	#NAME?	4.9869E+01	#NAME?	5.3355E+01	#NAME?
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#NAME?	4.4423E+01	#NAME?	4.5089E+01	#NAME?	4.6529E+01	#NAME?	4.7224E+01	#NAME?	4.8550E+01	#NAME?	5.1785E+01	#NAME?
#NAME?	4.3923E+01	#NAME?	4.4570E+01	#NAME?	4.5968E+01	#NAME?	4.6641E+01	#NAME?	4.7924E+01	#NAME?	5.1045E+01	#NAME?
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#NAME?	4.2966E+01	#NAME?	4.3577E+01	#NAME?	4.4895E+01	#NAME?	4.5528E+01	#NAME?	4.6733E+01	#NAME?	4.9645E+01	#NAME?
#NAME?	4.2507E+01	#NAME?	4.3102E+01	#NAME?	4.4382E+01	#NAME?	4.4997E+01	#NAME?	4.6165E+01	#NAME?	4.8982E+01	#NAME?
#NAME?	4.2060E+01	#NAME?	4.2639E+01	#NAME?	4.3884E+01	#NAME?	4.4481E+01	#NAME?	4.5614E+01	#NAME?	4.8341E+01	#NAME?
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#NAME?	3.9988E+01	#NAME?	4.0498E+01	#NAME?	4.1590E+01	#NAME?	4.2111E+01	#NAME?	4.3095E+01	#NAME?	4.5437E+01	#NAME?
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#NAME?	3.4740E+01	#NAME?	3.5102E+01	#NAME?	3.5870E+01	#NAME?	3.6232E+01	#NAME?	3.6909E+01	#NAME?	3.8482E+01	#NAME?
#NAME?	3.4465E+01	#NAME?	3.4820E+01	#NAME?	3.5573E+01	#NAME?	3.5928E+01	#NAME?	3.6592E+01	#NAME?	3.8132E+01	#NAME?
#NAME?	3.4194E+01	#NAME?	3.4544E+01	#NAME?	3.5283E+01	#NAME?	3.5631E+01	#NAME?	3.6281E+01	#NAME?	3.7789E+01	#NAME?
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#NAME?	3.3161E+01	#NAME?	3.3486E+01	#NAME?	3.4173E+01	#NAME?	3.4496E+01	#NAME?	3.5098E+01	#NAME?	3.6488E+01	#NAME?
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#NAME?	3.2671E+01	#NAME?	3.2985E+01	#NAME?	3.3648E+01	#NAME?	3.3959E+01	#NAME?	3.4540E+01	#NAME?	3.5877E+01	#NAME?
#NAME?	3.2432E+01	#NAME?	3.2741E+01	#NAME?	3.3392E+01	#NAME?	3.3698E+01	#NAME?	3.4268E+01	#NAME?	3.5581E+01	#NAME?
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#NAME?	3.1965E+01	#NAME?	3.2264E+01	#NAME?	3.2894E+01	#NAME?	3.3190E+01	#NAME?	3.3740E+01	#NAME?	3.5004E+01	#NAME?
#NAME?	3.1738E+01	#NAME?	3.2032E+01	#NAME?	3.2652E+01	#NAME?	3.2942E+01	#NAME?	3.3483E+01	#NAME?	3.4724E+01	#NAME?
#NAME?	3.1514E+01	#NAME?	3.1803E+01	#NAME?	3.2413E+01	#NAME?	3.2699E+01	#NAME?	3.3230E+01	#NAME?	3.4450E+01	#NAME?
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#NAME?	3.0241E+01	#NAME?	3.0505E+01	#NAME?	3.1059E+01	#NAME?	3.1319E+01	#NAME?	3.1800E+01	#NAME?	3.2900E+01	#NAME?
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#NAME?	2.9841E+01	#NAME?	3.0097E+01	#NAME?	3.0635E+01	#NAME?	3.0887E+01	#NAME?	3.1354E+01	#NAME?	3.2419E+01	#NAME?
#NAME?	2.9645E+01	#NAME?	2.9898E+01	#NAME?	3.0428E+01	#NAME?	3.0676E+01	#NAME?	3.1136E+01	#NAME?	3.2184E+01	#NAME?

Curve 6	Arg 7	Curve 7	Arg 8	Curve 8	Arg 9	Curve 9	Arg 10	Curve 10	Arg 11	Curve 11	Arg 12	Curve 12
#NAME?	2.9453E+01	#NAME?	2.9702E+01	#NAME?	3.0224E+01	#NAME?	3.0469E+01	#NAME?	3.0921E+01	#NAME?	3.1953E+01	#NAME?
#NAME?	2.9262E+01	#NAME?	2.9508E+01	#NAME?	3.0023E+01	#NAME?	3.0264E+01	#NAME?	3.0710E+01	#NAME?	3.1725E+01	#NAME?
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#NAME?	2.8890E+01	#NAME?	2.9129E+01	#NAME?	2.9630E+01	#NAME?	2.9864E+01	#NAME?	3.0296E+01	#NAME?	3.1281E+01	#NAME?
#NAME?	2.8708E+01	#NAME?	2.8943E+01	#NAME?	2.9437E+01	#NAME?	2.9668E+01	#NAME?	3.0094E+01	#NAME?	3.1065E+01	#NAME?
#NAME?	2.8528E+01	#NAME?	2.8760E+01	#NAME?	2.9247E+01	#NAME?	2.9475E+01	#NAME?	2.9895E+01	#NAME?	3.0851E+01	#NAME?
#NAME?	2.8350E+01	#NAME?	2.8580E+01	#NAME?	2.9060E+01	#NAME?	2.9284E+01	#NAME?	2.9699E+01	#NAME?	3.0641E+01	#NAME?
#NAME?	2.8175E+01	#NAME?	2.8401E+01	#NAME?	2.8875E+01	#NAME?	2.9096E+01	#NAME?	2.9505E+01	#NAME?	3.0434E+01	#NAME?
#NAME?	2.8002E+01	#NAME?	2.8226E+01	#NAME?	2.8693E+01	#NAME?	2.8911E+01	#NAME?	2.9314E+01	#NAME?	3.0229E+01	#NAME?
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#NAME?	2.7170E+01	#NAME?	2.7379E+01	#NAME?	2.7818E+01	#NAME?	2.8022E+01	#NAME?	2.8399E+01	#NAME?	2.9252E+01	#NAME?
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#NAME?	2.6087E+01	#NAME?	2.6280E+01	#NAME?	2.6682E+01	#NAME?	2.6869E+01	#NAME?	2.7214E+01	#NAME?	2.7993E+01	#NAME?
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#NAME?	2.5366E+01	#NAME?	2.5548E+01	#NAME?	2.5928E+01	#NAME?	2.6104E+01	#NAME?	2.6429E+01	#NAME?	2.7161E+01	#NAME?
#NAME?	2.5226E+01	#NAME?	2.5407E+01	#NAME?	2.5782E+01	#NAME?	2.5956E+01	#NAME?	2.6278E+01	#NAME?	2.7001E+01	#NAME?
#NAME?	2.5088E+01	#NAME?	2.5267E+01	#NAME?	2.5638E+01	#NAME?	2.5810E+01	#NAME?	2.6128E+01	#NAME?	2.6842E+01	#NAME?
#NAME?	2.4952E+01	#NAME?	2.5128E+01	#NAME?	2.5495E+01	#NAME?	2.5666E+01	#NAME?	2.5980E+01	#NAME?	2.6686E+01	#NAME?
#NAME?	2.4817E+01	#NAME?	2.4991E+01	#NAME?	2.5355E+01	#NAME?	2.5523E+01	#NAME?	2.5834E+01	#NAME?	2.6532E+01	#NAME?
#NAME?	2.4683E+01	#NAME?	2.4856E+01	#NAME?	2.5215E+01	#NAME?	2.5382E+01	#NAME?	2.5689E+01	#NAME?	2.6379E+01	#NAME?
#NAME?	2.4551E+01	#NAME?	2.4722E+01	#NAME?	2.5077E+01	#NAME?	2.5242E+01	#NAME?	2.5546E+01	#NAME?	2.6228E+01	#NAME?
#NAME?	2.4420E+01	#NAME?	2.4589E+01	#NAME?	2.4941E+01	#NAME?	2.5104E+01	#NAME?	2.5404E+01	#NAME?	2.6079E+01	#NAME?
#NAME?	2.4291E+01	#NAME?	2.4458E+01	#NAME?	2.4806E+01	#NAME?	2.4968E+01	#NAME?	2.5265E+01	#NAME?	2.5931E+01	#NAME?
#NAME?	2.4163E+01	#NAME?	2.4328E+01	#NAME?	2.4673E+01	#NAME?	2.4832E+01	#NAME?	2.5126E+01	#NAME?	2.5786E+01	#NAME?
#NAME?	2.4036E+01	#NAME?	2.4200E+01	#NAME?	2.4541E+01	#NAME?	2.4699E+01	#NAME?	2.4989E+01	#NAME?	2.5641E+01	#NAME?
#NAME?	2.3911E+01	#NAME?	2.4073E+01	#NAME?	2.4410E+01	#NAME?	2.4566E+01	#NAME?	2.4854E+01	#NAME?	2.5499E+01	#NAME?
#NAME?	2.3786E+01	#NAME?	2.3947E+01	#NAME?	2.4281E+01	#NAME?	2.4435E+01	#NAME?	2.4720E+01	#NAME?	2.5358E+01	#NAME?
#NAME?	2.3663E+01	#NAME?	2.3822E+01	#NAME?	2.4153E+01	#NAME?	2.4306E+01	#NAME?	2.4587E+01	#NAME?	2.5219E+01	#NAME?
#NAME?	2.3541E+01	#NAME?	2.3699E+01	#NAME?	2.4026E+01	#NAME?	2.4178E+01	#NAME?	2.4456E+01	#NAME?	2.5081E+01	#NAME?
#NAME?	2.3421E+01	#NAME?	2.3577E+01	#NAME?	2.3901E+01	#NAME?	2.4051E+01	#NAME?	2.4326E+01	#NAME?	2.4944E+01	#NAME?
#NAME?	2.3301E+01	#NAME?	2.3456E+01	#NAME?	2.3776E+01	#NAME?	2.3925E+01	#NAME?	2.4198E+01	#NAME?	2.4810E+01	#NAME?
#NAME?	2.3183E+01	#NAME?	2.3336E+01	#NAME?	2.3653E+01	#NAME?	2.3800E+01	#NAME?	2.4071E+01	#NAME?	2.4676E+01	#NAME?
#NAME?	2.3066E+01	#NAME?	2.3217E+01	#NAME?	2.3532E+01	#NAME?	2.3677E+01	#NAME?	2.3945E+01	#NAME?	2.4544E+01	#NAME?
#NAME?	2.2950E+01	#NAME?	2.3100E+01	#NAME?	2.3411E+01	#NAME?	2.3555E+01	#NAME?	2.3820E+01	#NAME?	2.4413E+01	#NAME?
#NAME?	2.2835E+01	#NAME?	2.2983E+01	#NAME?	2.3292E+01	#NAME?	2.3435E+01	#NAME?	2.3697E+01	#NAME?	2.4284E+01	#NAME?
#NAME?	2.2721E+01	#NAME?	2.2868E+01	#NAME?	2.3174E+01	#NAME?	2.3315E+01	#NAME?	2.3575E+01	#NAME?	2.4156E+01	#NAME?
#NAME?	2.2608E+01	#NAME?	2.2754E+01	#NAME?	2.3057E+01	#NAME?	2.3197E+01	#NAME?	2.3454E+01	#NAME?	2.4029E+01	#NAME?
#NAME?	2.2496E+01	#NAME?	2.2641E+01	#NAME?	2.2941E+01	#NAME?	2.3079E+01	#NAME?	2.3334E+01	#NAME?	2.3904E+01	#NAME?
#NAME?	2.2385E+01	#NAME?	2.2529E+01	#NAME?	2.2826E+01	#NAME?	2.2963E+01	#NAME?	2.3215E+01	#NAME?	2.3779E+01	#NAME?
#NAME?	2.2276E+01	#NAME?	2.2417E+01	#NAME?	2.2712E+01	#NAME?	2.2848E+01	#NAME?	2.3098E+01	#NAME?	2.3656E+01	#NAME?
#NAME?	2.2167E+01	#NAME?	2.2307E+01	#NAME?	2.2599E+01	#NAME?	2.2734E+01	#NAME?	2.2982E+01	#NAME?	2.3535E+01	#NAME?

Curve 6	Arg 7	Curve 7	Arg 8	Curve 8	Arg 9	Curve 9	Arg 10	Curve 10	Arg 11	Curve 11	Arg 12	Curve 12
#NAME?	2.2059E+01	#NAME?	2.2198E+01	#NAME?	2.2487E+01	#NAME?	2.2621E+01	#NAME?	2.2866E+01	#NAME?	2.3414E+01	#NAME?
#NAME?	2.1952E+01	#NAME?	2.2090E+01	#NAME?	2.2377E+01	#NAME?	2.2509E+01	#NAME?	2.2752E+01	#NAME?	2.3295E+01	#NAME?
#NAME?	2.1846E+01	#NAME?	2.1983E+01	#NAME?	2.2267E+01	#NAME?	2.2398E+01	#NAME?	2.2639E+01	#NAME?	2.3177E+01	#NAME?
#NAME?	2.1741E+01	#NAME?	2.1877E+01	#NAME?	2.2158E+01	#NAME?	2.2288E+01	#NAME?	2.2527E+01	#NAME?	2.3059E+01	#NAME?
#NAME?	2.1637E+01	#NAME?	2.1772E+01	#NAME?	2.2050E+01	#NAME?	2.2179E+01	#NAME?	2.2416E+01	#NAME?	2.2943E+01	#NAME?
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#NAME?	2.1432E+01	#NAME?	2.1564E+01	#NAME?	2.1838E+01	#NAME?	2.1964E+01	#NAME?	2.2197E+01	#NAME?	2.2715E+01	#NAME?
#NAME?	2.1330E+01	#NAME?	2.1461E+01	#NAME?	2.1733E+01	#NAME?	2.1858E+01	#NAME?	2.2089E+01	#NAME?	2.2602E+01	#NAME?
#NAME?	2.1230E+01	#NAME?	2.1360E+01	#NAME?	2.1629E+01	#NAME?	2.1753E+01	#NAME?	2.1981E+01	#NAME?	2.2490E+01	#NAME?
#NAME?	2.1130E+01	#NAME?	2.1259E+01	#NAME?	2.1526E+01	#NAME?	2.1649E+01	#NAME?	2.1875E+01	#NAME?	2.2379E+01	#NAME?
#NAME?	2.1031E+01	#NAME?	2.1159E+01	#NAME?	2.1423E+01	#NAME?	2.1546E+01	#NAME?	2.1770E+01	#NAME?	2.2270E+01	#NAME?
#NAME?	2.0933E+01	#NAME?	2.1060E+01	#NAME?	2.1322E+01	#NAME?	2.1443E+01	#NAME?	2.1666E+01	#NAME?	2.2161E+01	#NAME?
#NAME?	2.0835E+01	#NAME?	2.0961E+01	#NAME?	2.1222E+01	#NAME?	2.1342E+01	#NAME?	2.1562E+01	#NAME?	2.2053E+01	#NAME?
#NAME?	2.0739E+01	#NAME?	2.0864E+01	#NAME?	2.1122E+01	#NAME?	2.1241E+01	#NAME?	2.1460E+01	#NAME?	2.1946E+01	#NAME?
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#NAME?	2.0454E+01	#NAME?	2.0576E+01	#NAME?	2.0828E+01	#NAME?	2.0944E+01	#NAME?	2.1157E+01	#NAME?	2.1631E+01	#NAME?
#NAME?	2.0361E+01	#NAME?	2.0481E+01	#NAME?	2.0731E+01	#NAME?	2.0847E+01	#NAME?	2.1058E+01	#NAME?	2.1528E+01	#NAME?
#NAME?	2.0268E+01	#NAME?	2.0388E+01	#NAME?	2.0636E+01	#NAME?	2.0750E+01	#NAME?	2.0960E+01	#NAME?	2.1426E+01	#NAME?
#NAME?	2.0176E+01	#NAME?	2.0295E+01	#NAME?	2.0541E+01	#NAME?	2.0654E+01	#NAME?	2.0862E+01	#NAME?	2.1325E+01	#NAME?
#NAME?	2.0085E+01	#NAME?	2.0203E+01	#NAME?	2.0447E+01	#NAME?	2.0559E+01	#NAME?	2.0765E+01	#NAME?	2.1224E+01	#NAME?
#NAME?	1.9994E+01	#NAME?	2.0111E+01	#NAME?	2.0353E+01	#NAME?	2.0465E+01	#NAME?	2.0670E+01	#NAME?	2.1124E+01	#NAME?
#NAME?	1.9904E+01	#NAME?	2.0020E+01	#NAME?	2.0261E+01	#NAME?	2.0371E+01	#NAME?	2.0574E+01	#NAME?	2.1025E+01	#NAME?
#NAME?	1.9815E+01	#NAME?	1.9930E+01	#NAME?	2.0169E+01	#NAME?	2.0279E+01	#NAME?	2.0480E+01	#NAME?	2.0927E+01	#NAME?
#NAME?	1.9726E+01	#NAME?	1.9841E+01	#NAME?	2.0077E+01	#NAME?	2.0186E+01	#NAME?	2.0386E+01	#NAME?	2.0830E+01	#NAME?
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#NAME?	1.9465E+01	#NAME?	1.9577E+01	#NAME?	1.9808E+01	#NAME?	1.9915E+01	#NAME?	2.0110E+01	#NAME?	2.0543E+01	#NAME?
#NAME?	1.9379E+01	#NAME?	1.9490E+01	#NAME?	1.9719E+01	#NAME?	1.9825E+01	#NAME?	2.0019E+01	#NAME?	2.0449E+01	#NAME?
#NAME?	1.9294E+01	#NAME?	1.9404E+01	#NAME?	1.9632E+01	#NAME?	1.9737E+01	#NAME?	1.9929E+01	#NAME?	2.0356E+01	#NAME?
#NAME?	1.9209E+01	#NAME?	1.9318E+01	#NAME?	1.9545E+01	#NAME?	1.9649E+01	#NAME?	1.9839E+01	#NAME?	2.0263E+01	#NAME?
#NAME?	1.9125E+01	#NAME?	1.9234E+01	#NAME?	1.9458E+01	#NAME?	1.9561E+01	#NAME?	1.9751E+01	#NAME?	2.0171E+01	#NAME?
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#NAME?	1.8959E+01	#NAME?	1.9066E+01	#NAME?	1.9287E+01	#NAME?	1.9389E+01	#NAME?	1.9575E+01	#NAME?	1.9989E+01	#NAME?
#NAME?	1.8877E+01	#NAME?	1.8983E+01	#NAME?	1.9202E+01	#NAME?	1.9304E+01	#NAME?	1.9489E+01	#NAME?	1.9899E+01	#NAME?
#NAME?	1.8795E+01	#NAME?	1.8900E+01	#NAME?	1.9118E+01	#NAME?	1.9219E+01	#NAME?	1.9403E+01	#NAME?	1.9810E+01	#NAME?
#NAME?	1.8714E+01	#NAME?	1.8818E+01	#NAME?	1.9035E+01	#NAME?	1.9135E+01	#NAME?	1.9317E+01	#NAME?	1.9722E+01	#NAME?
#NAME?	1.8633E+01	#NAME?	1.8737E+01	#NAME?	1.8952E+01	#NAME?	1.9051E+01	#NAME?	1.9232E+01	#NAME?	1.9634E+01	#NAME?
#NAME?	1.8553E+01	#NAME?	1.8657E+01	#NAME?	1.8870E+01	#NAME?	1.8968E+01	#NAME?	1.9148E+01	#NAME?	1.9547E+01	#NAME?
#NAME?	1.8474E+01	#NAME?	1.8576E+01	#NAME?	1.8788E+01	#NAME?	1.8886E+01	#NAME?	1.9064E+01	#NAME?	1.9460E+01	#NAME?
#NAME?	1.8395E+01	#NAME?	1.8497E+01	#NAME?	1.8707E+01	#NAME?	1.8804E+01	#NAME?	1.8981E+01	#NAME?	1.9374E+01	#NAME?
#NAME?	1.8317E+01	#NAME?	1.8418E+01	#NAME?	1.8627E+01	#NAME?	1.8723E+01	#NAME?	1.8899E+01	#NAME?	1.9289E+01	#NAME?
#NAME?	1.8239E+01	#NAME?	1.8339E+01	#NAME?	1.8547E+01	#NAME?	1.8642E+01	#NAME?	1.8817E+01	#NAME?	1.9204E+01	#NAME?
#NAME?	1.8162E+01	#NAME?	1.8261E+01	#NAME?	1.8468E+01	#NAME?	1.8562E+01	#NAME?	1.8736E+01	#NAME?	1.9120E+01	#NAME?
#NAME?	1.8085E+01	#NAME?	1.8184E+01	#NAME?	1.8389E+01	#NAME?	1.8483E+01	#NAME?	1.8655E+01	#NAME?	1.9037E+01	#NAME?
#NAME?	1.8009E+01	#NAME?	1.8107E+01	#NAME?	1.8310E+01	#NAME?	1.8404E+01	#NAME?	1.8575E+01	#NAME?	1.8954E+01	#NAME?
#NAME?	1.7933E+01	#NAME?	1.8031E+01	#NAME?	1.8233E+01	#NAME?	1.8326E+01	#NAME?	1.8496E+01	#NAME?	1.8872E+01	#NAME?
#NAME?	1.7858E+01	#NAME?	1.7955E+01	#NAME?	1.8155E+01	#NAME?	1.8248E+01	#NAME?	1.8417E+01	#NAME?	1.8790E+01	#NAME?
#NAME?	1.7783E+01	#NAME?	1.7879E+01	#NAME?	1.8079E+01	#NAME?	1.8170E+01	#NAME?	1.8338E+01	#NAME?	1.8709E+01	#NAME?
#NAME?	1.7709E+01	#NAME?	1.7805E+01	#NAME?	1.8003E+01	#NAME?	1.8094E+01	#NAME?	1.8260E+01	#NAME?	1.8629E+01	#NAME?
#NAME?	1.7635E+01	#NAME?	1.7730E+01	#NAME?	1.7927E+01	#NAME?	1.8017E+01	#NAME?	1.8183E+01	#NAME?	1.8549E+01	#NAME?
#NAME?	1.7562E+01	#NAME?	1.7656E+01	#NAME?	1.7852E+01	#NAME?	1.7942E+01	#NAME?	1.8106E+01	#NAME?	1.8470E+01	#NAME?

Curve 6	Arg 7	Curve 7	Arg 8	Curve 8	Arg 9	Curve 9	Arg 10	Curve 10	Arg 11	Curve 11	Arg 12	Curve 12
#NAME?	1.7489E+01	#NAME?	1.7583E+01	#NAME?	1.7777E+01	#NAME?	1.7866E+01	#NAME?	1.8030E+01	#NAME?	1.8391E+01	#NAME?
#NAME?	1.7416E+01	#NAME?	1.7510E+01	#NAME?	1.7703E+01	#NAME?	1.7792E+01	#NAME?	1.7954E+01	#NAME?	1.8312E+01	#NAME?
#NAME?	1.7345E+01	#NAME?	1.7437E+01	#NAME?	1.7629E+01	#NAME?	1.7717E+01	#NAME?	1.7878E+01	#NAME?	1.8235E+01	#NAME?
#NAME?	1.7273E+01	#NAME?	1.7365E+01	#NAME?	1.7556E+01	#NAME?	1.7643E+01	#NAME?	1.7803E+01	#NAME?	1.8157E+01	#NAME?
#NAME?	1.7202E+01	#NAME?	1.7294E+01	#NAME?	1.7483E+01	#NAME?	1.7570E+01	#NAME?	1.7729E+01	#NAME?	1.8081E+01	#NAME?
#NAME?	1.7132E+01	#NAME?	1.7223E+01	#NAME?	1.7411E+01	#NAME?	1.7497E+01	#NAME?	1.7655E+01	#NAME?	1.8004E+01	#NAME?
#NAME?	1.7061E+01	#NAME?	1.7152E+01	#NAME?	1.7339E+01	#NAME?	1.7425E+01	#NAME?	1.7582E+01	#NAME?	1.7929E+01	#NAME?
#NAME?	1.6992E+01	#NAME?	1.7082E+01	#NAME?	1.7267E+01	#NAME?	1.7353E+01	#NAME?	1.7509E+01	#NAME?	1.7854E+01	#NAME?
#NAME?	1.6923E+01	#NAME?	1.7012E+01	#NAME?	1.7196E+01	#NAME?	1.7281E+01	#NAME?	1.7436E+01	#NAME?	1.7779E+01	#NAME?
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#NAME?	1.6785E+01	#NAME?	1.6874E+01	#NAME?	1.7056E+01	#NAME?	1.7140E+01	#NAME?	1.7293E+01	#NAME?	1.7631E+01	#NAME?
#NAME?	1.6717E+01	#NAME?	1.6805E+01	#NAME?	1.6986E+01	#NAME?	1.7069E+01	#NAME?	1.7222E+01	#NAME?	1.7558E+01	#NAME?
#NAME?	1.6650E+01	#NAME?	1.6737E+01	#NAME?	1.6917E+01	#NAME?	1.7000E+01	#NAME?	1.7151E+01	#NAME?	1.7485E+01	#NAME?
#NAME?	1.6582E+01	#NAME?	1.6669E+01	#NAME?	1.6848E+01	#NAME?	1.6930E+01	#NAME?	1.7081E+01	#NAME?	1.7412E+01	#NAME?
#NAME?	1.6516E+01	#NAME?	1.6602E+01	#NAME?	1.6780E+01	#NAME?	1.6862E+01	#NAME?	1.7011E+01	#NAME?	1.7341E+01	#NAME?
#NAME?	1.6449E+01	#NAME?	1.6535E+01	#NAME?	1.6712E+01	#NAME?	1.6793E+01	#NAME?	1.6942E+01	#NAME?	1.7269E+01	#NAME?
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#NAME?	1.6318E+01	#NAME?	1.6402E+01	#NAME?	1.6577E+01	#NAME?	1.6657E+01	#NAME?	1.6804E+01	#NAME?	1.7128E+01	#NAME?
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#NAME?	1.5806E+01	#NAME?	1.5887E+01	#NAME?	1.6054E+01	#NAME?	1.6131E+01	#NAME?	1.6270E+01	#NAME?	1.6579E+01	#NAME?
#NAME?	1.5744E+01	#NAME?	1.5824E+01	#NAME?	1.5990E+01	#NAME?	1.6066E+01	#NAME?	1.6205E+01	#NAME?	1.6512E+01	#NAME?
#NAME?	1.5682E+01	#NAME?	1.5762E+01	#NAME?	1.5927E+01	#NAME?	1.6003E+01	#NAME?	1.6141E+01	#NAME?	1.6446E+01	#NAME?
#NAME?	1.5620E+01	#NAME?	1.5700E+01	#NAME?	1.5864E+01	#NAME?	1.5939E+01	#NAME?	1.6077E+01	#NAME?	1.6380E+01	#NAME?
#NAME?	1.5559E+01	#NAME?	1.5638E+01	#NAME?	1.5801E+01	#NAME?	1.5876E+01	#NAME?	1.6013E+01	#NAME?	1.6314E+01	#NAME?
#NAME?	1.5498E+01	#NAME?	1.5577E+01	#NAME?	1.5739E+01	#NAME?	1.5813E+01	#NAME?	1.5949E+01	#NAME?	1.6249E+01	#NAME?
#NAME?	1.5437E+01	#NAME?	1.5516E+01	#NAME?	1.5677E+01	#NAME?	1.5751E+01	#NAME?	1.5886E+01	#NAME?	1.6184E+01	#NAME?
#NAME?	1.5377E+01	#NAME?	1.5455E+01	#NAME?	1.5615E+01	#NAME?	1.5689E+01	#NAME?	1.5823E+01	#NAME?	1.6120E+01	#NAME?
#NAME?	1.5317E+01	#NAME?	1.5395E+01	#NAME?	1.5554E+01	#NAME?	1.5627E+01	#NAME?	1.5761E+01	#NAME?	1.6055E+01	#NAME?
#NAME?	1.5258E+01	#NAME?	1.5335E+01	#NAME?	1.5493E+01	#NAME?	1.5566E+01	#NAME?	1.5699E+01	#NAME?	1.5992E+01	#NAME?
#NAME?	1.5198E+01	#NAME?	1.5275E+01	#NAME?	1.5433E+01	#NAME?	1.5505E+01	#NAME?	1.5637E+01	#NAME?	1.5928E+01	#NAME?
#NAME?	1.5139E+01	#NAME?	1.5215E+01	#NAME?	1.5372E+01	#NAME?	1.5444E+01	#NAME?	1.5576E+01	#NAME?	1.5865E+01	#NAME?
#NAME?	1.5081E+01	#NAME?	1.5156E+01	#NAME?	1.5312E+01	#NAME?	1.5384E+01	#NAME?	1.5515E+01	#NAME?	1.5803E+01	#NAME?
#NAME?	1.5022E+01	#NAME?	1.5097E+01	#NAME?	1.5253E+01	#NAME?	1.5324E+01	#NAME?	1.5454E+01	#NAME?	1.5740E+01	#NAME?
#NAME?	1.4964E+01	#NAME?	1.5039E+01	#NAME?	1.5193E+01	#NAME?	1.5264E+01	#NAME?	1.5394E+01	#NAME?	1.5679E+01	#NAME?
#NAME?	1.4906E+01	#NAME?	1.4981E+01	#NAME?	1.5134E+01	#NAME?	1.5205E+01	#NAME?	1.5334E+01	#NAME?	1.5617E+01	#NAME?
#NAME?	1.4849E+01	#NAME?	1.4923E+01	#NAME?	1.5076E+01	#NAME?	1.5146E+01	#NAME?	1.5274E+01	#NAME?	1.5556E+01	#NAME?
#NAME?	1.4792E+01	#NAME?	1.4865E+01	#NAME?	1.5017E+01	#NAME?	1.5087E+01	#NAME?	1.5214E+01	#NAME?	1.5495E+01	#NAME?
#NAME?	1.4735E+01	#NAME?	1.4808E+01	#NAME?	1.4959E+01	#NAME?	1.5029E+01	#NAME?	1.5155E+01	#NAME?	1.5434E+01	#NAME?
#NAME?	1.4678E+01	#NAME?	1.4751E+01	#NAME?	1.4902E+01	#NAME?	1.4971E+01	#NAME?	1.5097E+01	#NAME?	1.5374E+01	#NAME?
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#NAME?	1.4566E+01	#NAME?	1.4638E+01	#NAME?	1.4787E+01	#NAME?	1.4855E+01	#NAME?	1.4980E+01	#NAME?	1.5254E+01	#NAME?
#NAME?	1.4510E+01	#NAME?	1.4582E+01	#NAME?	1.4730E+01	#NAME?	1.4798E+01	#NAME?	1.4922E+01	#NAME?	1.5195E+01	#NAME?
#NAME?	1.4455E+01	#NAME?	1.4526E+01	#NAME?	1.4674E+01	#NAME?	1.4741E+01	#NAME?	1.4865E+01	#NAME?	1.5136E+01	#NAME?
#NAME?	1.4400E+01	#NAME?	1.4471E+01	#NAME?	1.4617E+01	#NAME?	1.4685E+01	#NAME?	1.4807E+01	#NAME?	1.5077E+01	#NAME?
#NAME?	1.4345E+01	#NAME?	1.4415E+01	#NAME?	1.4561E+01	#NAME?	1.4628E+01	#NAME?	1.4750E+01	#NAME?	1.5019E+01	#NAME?
#NAME?	1.4290E+01	#NAME?	1.4360E+01	#NAME?	1.4506E+01	#NAME?	1.4572E+01	#NAME?	1.4694E+01	#NAME?	1.4961E+01	#NAME?

Curve 6	Arg 7	Curve 7	Arg 8	Curve 8	Arg 9	Curve 9	Arg 10	Curve 10	Arg 11	Curve 11	Arg 12	Curve 12
#NAME?	1.4236E+01	#NAME?	1.4306E+01	#NAME?	1.4450E+01	#NAME?	1.4517E+01	#NAME?	1.4637E+01	#NAME?	1.4903E+01	#NAME?
#NAME?	1.4182E+01	#NAME?	1.4251E+01	#NAME?	1.4395E+01	#NAME?	1.4461E+01	#NAME?	1.4581E+01	#NAME?	1.4846E+01	#NAME?
#NAME?	1.4128E+01	#NAME?	1.4197E+01	#NAME?	1.4340E+01	#NAME?	1.4406E+01	#NAME?	1.4525E+01	#NAME?	1.4788E+01	#NAME?
#NAME?	1.4074E+01	#NAME?	1.4143E+01	#NAME?	1.4286E+01	#NAME?	1.4351E+01	#NAME?	1.4470E+01	#NAME?	1.4732E+01	#NAME?
#NAME?	1.4021E+01	#NAME?	1.4090E+01	#NAME?	1.4231E+01	#NAME?	1.4296E+01	#NAME?	1.4415E+01	#NAME?	1.4675E+01	#NAME?
#NAME?	1.3968E+01	#NAME?	1.4036E+01	#NAME?	1.4177E+01	#NAME?	1.4242E+01	#NAME?	1.4360E+01	#NAME?	1.4619E+01	#NAME?
#NAME?	1.3915E+01	#NAME?	1.3983E+01	#NAME?	1.4123E+01	#NAME?	1.4188E+01	#NAME?	1.4305E+01	#NAME?	1.4563E+01	#NAME?
#NAME?	1.3863E+01	#NAME?	1.3930E+01	#NAME?	1.4070E+01	#NAME?	1.4134E+01	#NAME?	1.4251E+01	#NAME?	1.4507E+01	#NAME?
#NAME?	1.3810E+01	#NAME?	1.3878E+01	#NAME?	1.4017E+01	#NAME?	1.4080E+01	#NAME?	1.4196E+01	#NAME?	1.4452E+01	#NAME?
#NAME?	1.3758E+01	#NAME?	1.3825E+01	#NAME?	1.3964E+01	#NAME?	1.4027E+01	#NAME?	1.4143E+01	#NAME?	1.4396E+01	#NAME?
#NAME?	1.3706E+01	#NAME?	1.3773E+01	#NAME?	1.3911E+01	#NAME?	1.3974E+01	#NAME?	1.4089E+01	#NAME?	1.4342E+01	#NAME?
#NAME?	1.3655E+01	#NAME?	1.3721E+01	#NAME?	1.3858E+01	#NAME?	1.3921E+01	#NAME?	1.4036E+01	#NAME?	1.4287E+01	#NAME?
#NAME?	1.3604E+01	#NAME?	1.3670E+01	#NAME?	1.3806E+01	#NAME?	1.3869E+01	#NAME?	1.3982E+01	#NAME?	1.4233E+01	#NAME?
#NAME?	1.3553E+01	#NAME?	1.3618E+01	#NAME?	1.3754E+01	#NAME?	1.3816E+01	#NAME?	1.3930E+01	#NAME?	1.4179E+01	#NAME?
#NAME?	1.3502E+01	#NAME?	1.3567E+01	#NAME?	1.3702E+01	#NAME?	1.3764E+01	#NAME?	1.3877E+01	#NAME?	1.4125E+01	#NAME?
#NAME?	1.3451E+01	#NAME?	1.3516E+01	#NAME?	1.3651E+01	#NAME?	1.3712E+01	#NAME?	1.3825E+01	#NAME?	1.4071E+01	#NAME?
#NAME?	1.3401E+01	#NAME?	1.3466E+01	#NAME?	1.3600E+01	#NAME?	1.3661E+01	#NAME?	1.3773E+01	#NAME?	1.4018E+01	#NAME?
#NAME?	1.3351E+01	#NAME?	1.3415E+01	#NAME?	1.3548E+01	#NAME?	1.3610E+01	#NAME?	1.3721E+01	#NAME?	1.3965E+01	#NAME?
#NAME?	1.3301E+01	#NAME?	1.3365E+01	#NAME?	1.3498E+01	#NAME?	1.3558E+01	#NAME?	1.3669E+01	#NAME?	1.3912E+01	#NAME?
#NAME?	1.3251E+01	#NAME?	1.3315E+01	#NAME?	1.3447E+01	#NAME?	1.3508E+01	#NAME?	1.3618E+01	#NAME?	1.3860E+01	#NAME?
#NAME?	1.3202E+01	#NAME?	1.3266E+01	#NAME?	1.3397E+01	#NAME?	1.3457E+01	#NAME?	1.3567E+01	#NAME?	1.3807E+01	#NAME?
#NAME?	1.3152E+01	#NAME?	1.3216E+01	#NAME?	1.3347E+01	#NAME?	1.3407E+01	#NAME?	1.3516E+01	#NAME?	1.3755E+01	#NAME?
#NAME?	1.3103E+01	#NAME?	1.3167E+01	#NAME?	1.3297E+01	#NAME?	1.3356E+01	#NAME?	1.3465E+01	#NAME?	1.3704E+01	#NAME?
#NAME?	1.3055E+01	#NAME?	1.3118E+01	#NAME?	1.3247E+01	#NAME?	1.3307E+01	#NAME?	1.3415E+01	#NAME?	1.3652E+01	#NAME?
#NAME?	1.3006E+01	#NAME?	1.3069E+01	#NAME?	1.3198E+01	#NAME?	1.3257E+01	#NAME?	1.3364E+01	#NAME?	1.3601E+01	#NAME?
#NAME?	1.2958E+01	#NAME?	1.3020E+01	#NAME?	1.3149E+01	#NAME?	1.3207E+01	#NAME?	1.3314E+01	#NAME?	1.3550E+01	#NAME?
#NAME?	1.2910E+01	#NAME?	1.2972E+01	#NAME?	1.3100E+01	#NAME?	1.3158E+01	#NAME?	1.3265E+01	#NAME?	1.3499E+01	#NAME?
#NAME?	1.2862E+01	#NAME?	1.2924E+01	#NAME?	1.3051E+01	#NAME?	1.3109E+01	#NAME?	1.3215E+01	#NAME?	1.3448E+01	#NAME?
#NAME?	1.2814E+01	#NAME?	1.2876E+01	#NAME?	1.3002E+01	#NAME?	1.3060E+01	#NAME?	1.3166E+01	#NAME?	1.3398E+01	#NAME?
#NAME?	1.2767E+01	#NAME?	1.2828E+01	#NAME?	1.2954E+01	#NAME?	1.3012E+01	#NAME?	1.3117E+01	#NAME?	1.3348E+01	#NAME?
#NAME?	1.2719E+01	#NAME?	1.2780E+01	#NAME?	1.2906E+01	#NAME?	1.2963E+01	#NAME?	1.3068E+01	#NAME?	1.3298E+01	#NAME?
#NAME?	1.2672E+01	#NAME?	1.2733E+01	#NAME?	1.2858E+01	#NAME?	1.2915E+01	#NAME?	1.3019E+01	#NAME?	1.3248E+01	#NAME?
#NAME?	1.2625E+01	#NAME?	1.2686E+01	#NAME?	1.2810E+01	#NAME?	1.2867E+01	#NAME?	1.2971E+01	#NAME?	1.3199E+01	#NAME?
#NAME?	1.2579E+01	#NAME?	1.2639E+01	#NAME?	1.2763E+01	#NAME?	1.2820E+01	#NAME?	1.2923E+01	#NAME?	1.3150E+01	#NAME?
#NAME?	1.2532E+01	#NAME?	1.2592E+01	#NAME?	1.2716E+01	#NAME?	1.2772E+01	#NAME?	1.2875E+01	#NAME?	1.3101E+01	#NAME?
#NAME?	1.2486E+01	#NAME?	1.2546E+01	#NAME?	1.2668E+01	#NAME?	1.2725E+01	#NAME?	1.2827E+01	#NAME?	1.3052E+01	#NAME?
#NAME?	1.2440E+01	#NAME?	1.2499E+01	#NAME?	1.2622E+01	#NAME?	1.2678E+01	#NAME?	1.2780E+01	#NAME?	1.3004E+01	#NAME?
#NAME?	1.2394E+01	#NAME?	1.2453E+01	#NAME?	1.2575E+01	#NAME?	1.2631E+01	#NAME?	1.2732E+01	#NAME?	1.2955E+01	#NAME?
#NAME?	1.2348E+01	#NAME?	1.2407E+01	#NAME?	1.2528E+01	#NAME?	1.2584E+01	#NAME?	1.2685E+01	#NAME?	1.2907E+01	#NAME?
#NAME?	1.2303E+01	#NAME?	1.2361E+01	#NAME?	1.2482E+01	#NAME?	1.2538E+01	#NAME?	1.2638E+01	#NAME?	1.2859E+01	#NAME?
#NAME?	1.2257E+01	#NAME?	1.2316E+01	#NAME?	1.2436E+01	#NAME?	1.2491E+01	#NAME?	1.2591E+01	#NAME?	1.2811E+01	#NAME?
#NAME?	1.2212E+01	#NAME?	1.2271E+01	#NAME?	1.2390E+01	#NAME?	1.2445E+01	#NAME?	1.2545E+01	#NAME?	1.2764E+01	#NAME?
#NAME?	1.2167E+01	#NAME?	1.2225E+01	#NAME?	1.2345E+01	#NAME?	1.2399E+01	#NAME?	1.2499E+01	#NAME?	1.2717E+01	#NAME?
#NAME?	1.2123E+01	#NAME?	1.2180E+01	#NAME?	1.2299E+01	#NAME?	1.2353E+01	#NAME?	1.2452E+01	#NAME?	1.2670E+01	#NAME?
#NAME?	1.2078E+01	#NAME?	1.2136E+01	#NAME?	1.2254E+01	#NAME?	1.2308E+01	#NAME?	1.2407E+01	#NAME?	1.2623E+01	#NAME?
#NAME?	1.2034E+01	#NAME?	1.2091E+01	#NAME?	1.2209E+01	#NAME?	1.2263E+01	#NAME?	1.2361E+01	#NAME?	1.2576E+01	#NAME?
#NAME?	1.1989E+01	#NAME?	1.2047E+01	#NAME?	1.2164E+01	#NAME?	1.2217E+01	#NAME?	1.2315E+01	#NAME?	1.2530E+01	#NAME?
#NAME?	1.1945E+01	#NAME?	1.2002E+01	#NAME?	1.2119E+01	#NAME?	1.2173E+01	#NAME?	1.2270E+01	#NAME?	1.2483E+01	#NAME?
#NAME?	1.1902E+01	#NAME?	1.1958E+01	#NAME?	1.2074E+01	#NAME?	1.2128E+01	#NAME?	1.2225E+01	#NAME?	1.2437E+01	#NAME?
#NAME?	1.1858E+01	#NAME?	1.1914E+01	#NAME?	1.2030E+01	#NAME?	1.2083E+01	#NAME?	1.2180E+01	#NAME?	1.2391E+01	#NAME?
#NAME?	1.1814E+01	#NAME?	1.1871E+01	#NAME?	1.1986E+01	#NAME?	1.2039E+01	#NAME?	1.2135E+01	#NAME?	1.2346E+01	#NAME?
#NAME?	1.1771E+01	#NAME?	1.1827E+01	#NAME?	1.1942E+01	#NAME?	1.1995E+01	#NAME?	1.2090E+01	#NAME?	1.2300E+01	#NAME?

Curve 6	Arg 7	Curve 7	Arg 8	Curve 8	Arg 9	Curve 9	Arg 10	Curve 10	Arg 11	Curve 11	Arg 12	Curve 12
#NAME?	1.1728E+01	#NAME?	1.1784E+01	#NAME?	1.1898E+01	#NAME?	1.1950E+01	#NAME?	1.2046E+01	#NAME?	1.2255E+01	#NAME?
#NAME?	1.1685E+01	#NAME?	1.1740E+01	#NAME?	1.1854E+01	#NAME?	1.1907E+01	#NAME?	1.2002E+01	#NAME?	1.2210E+01	#NAME?
#NAME?	1.1642E+01	#NAME?	1.1697E+01	#NAME?	1.1811E+01	#NAME?	1.1863E+01	#NAME?	1.1958E+01	#NAME?	1.2165E+01	#NAME?
#NAME?	1.1600E+01	#NAME?	1.1655E+01	#NAME?	1.1768E+01	#NAME?	1.1819E+01	#NAME?	1.1914E+01	#NAME?	1.2120E+01	#NAME?
#NAME?	1.1557E+01	#NAME?	1.1612E+01	#NAME?	1.1725E+01	#NAME?	1.1776E+01	#NAME?	1.1870E+01	#NAME?	1.2076E+01	#NAME?
#NAME?	1.1515E+01	#NAME?	1.1569E+01	#NAME?	1.1682E+01	#NAME?	1.1733E+01	#NAME?	1.1826E+01	#NAME?	1.2031E+01	#NAME?
#NAME?	1.1473E+01	#NAME?	1.1527E+01	#NAME?	1.1639E+01	#NAME?	1.1690E+01	#NAME?	1.1783E+01	#NAME?	1.1987E+01	#NAME?
#NAME?	1.1431E+01	#NAME?	1.1485E+01	#NAME?	1.1596E+01	#NAME?	1.1647E+01	#NAME?	1.1740E+01	#NAME?	1.1943E+01	#NAME?
#NAME?	1.1389E+01	#NAME?	1.1443E+01	#NAME?	1.1554E+01	#NAME?	1.1604E+01	#NAME?	1.1697E+01	#NAME?	1.1899E+01	#NAME?
#NAME?	1.1347E+01	#NAME?	1.1401E+01	#NAME?	1.1511E+01	#NAME?	1.1562E+01	#NAME?	1.1654E+01	#NAME?	1.1856E+01	#NAME?
#NAME?	1.1306E+01	#NAME?	1.1359E+01	#NAME?	1.1469E+01	#NAME?	1.1520E+01	#NAME?	1.1611E+01	#NAME?	1.1812E+01	#NAME?
#NAME?	1.1264E+01	#NAME?	1.1318E+01	#NAME?	1.1427E+01	#NAME?	1.1477E+01	#NAME?	1.1569E+01	#NAME?	1.1769E+01	#NAME?
#NAME?	1.1223E+01	#NAME?	1.1276E+01	#NAME?	1.1386E+01	#NAME?	1.1435E+01	#NAME?	1.1526E+01	#NAME?	1.1726E+01	#NAME?
#NAME?	1.1182E+01	#NAME?	1.1235E+01	#NAME?	1.1344E+01	#NAME?	1.1394E+01	#NAME?	1.1484E+01	#NAME?	1.1683E+01	#NAME?
#NAME?	1.1141E+01	#NAME?	1.1194E+01	#NAME?	1.1302E+01	#NAME?	1.1352E+01	#NAME?	1.1442E+01	#NAME?	1.1640E+01	#NAME?
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#NAME?	1.1060E+01	#NAME?	1.1112E+01	#NAME?	1.1220E+01	#NAME?	1.1269E+01	#NAME?	1.1359E+01	#NAME?	1.1555E+01	#NAME?
#NAME?	1.1020E+01	#NAME?	1.1072E+01	#NAME?	1.1179E+01	#NAME?	1.1228E+01	#NAME?	1.1317E+01	#NAME?	1.1512E+01	#NAME?
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#NAME?	1.0939E+01	#NAME?	1.0991E+01	#NAME?	1.1097E+01	#NAME?	1.1146E+01	#NAME?	1.1235E+01	#NAME?	1.1428E+01	#NAME?
#NAME?	1.0899E+01	#NAME?	1.0951E+01	#NAME?	1.1057E+01	#NAME?	1.1105E+01	#NAME?	1.1193E+01	#NAME?	1.1387E+01	#NAME?
#NAME?	1.0860E+01	#NAME?	1.0911E+01	#NAME?	1.1016E+01	#NAME?	1.1065E+01	#NAME?	1.1153E+01	#NAME?	1.1345E+01	#NAME?
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#NAME?	1.0780E+01	#NAME?	1.0831E+01	#NAME?	1.0936E+01	#NAME?	1.0984E+01	#NAME?	1.1071E+01	#NAME?	1.1262E+01	#NAME?
#NAME?	1.0741E+01	#NAME?	1.0792E+01	#NAME?	1.0896E+01	#NAME?	1.0944E+01	#NAME?	1.1031E+01	#NAME?	1.1221E+01	#NAME?
#NAME?	1.0702E+01	#NAME?	1.0752E+01	#NAME?	1.0856E+01	#NAME?	1.0904E+01	#NAME?	1.0991E+01	#NAME?	1.1180E+01	#NAME?
#NAME?	1.0663E+01	#NAME?	1.0713E+01	#NAME?	1.0817E+01	#NAME?	1.0864E+01	#NAME?	1.0950E+01	#NAME?	1.1139E+01	#NAME?
#NAME?	1.0624E+01	#NAME?	1.0674E+01	#NAME?	1.0777E+01	#NAME?	1.0825E+01	#NAME?	1.0910E+01	#NAME?	1.1098E+01	#NAME?
#NAME?	1.0585E+01	#NAME?	1.0635E+01	#NAME?	1.0738E+01	#NAME?	1.0785E+01	#NAME?	1.0871E+01	#NAME?	1.1058E+01	#NAME?
#NAME?	1.0546E+01	#NAME?	1.0596E+01	#NAME?	1.0699E+01	#NAME?	1.0746E+01	#NAME?	1.0831E+01	#NAME?	1.1017E+01	#NAME?
#NAME?	1.0508E+01	#NAME?	1.0558E+01	#NAME?	1.0660E+01	#NAME?	1.0706E+01	#NAME?	1.0791E+01	#NAME?	1.0977E+01	#NAME?
#NAME?	1.0469E+01	#NAME?	1.0519E+01	#NAME?	1.0621E+01	#NAME?	1.0667E+01	#NAME?	1.0752E+01	#NAME?	1.0937E+01	#NAME?
#NAME?	1.0431E+01	#NAME?	1.0481E+01	#NAME?	1.0582E+01	#NAME?	1.0628E+01	#NAME?	1.0713E+01	#NAME?	1.0897E+01	#NAME?
#NAME?	1.0393E+01	#NAME?	1.0442E+01	#NAME?	1.0543E+01	#NAME?	1.0589E+01	#NAME?	1.0674E+01	#NAME?	1.0857E+01	#NAME?
#NAME?	1.0355E+01	#NAME?	1.0404E+01	#NAME?	1.0505E+01	#NAME?	1.0551E+01	#NAME?	1.0635E+01	#NAME?	1.0818E+01	#NAME?
#NAME?	1.0317E+01	#NAME?	1.0366E+01	#NAME?	1.0466E+01	#NAME?	1.0512E+01	#NAME?	1.0596E+01	#NAME?	1.0778E+01	#NAME?
#NAME?	1.0280E+01	#NAME?	1.0328E+01	#NAME?	1.0428E+01	#NAME?	1.0474E+01	#NAME?	1.0557E+01	#NAME?	1.0739E+01	#NAME?
#NAME?	1.0242E+01	#NAME?	1.0291E+01	#NAME?	1.0390E+01	#NAME?	1.0436E+01	#NAME?	1.0518E+01	#NAME?	1.0700E+01	#NAME?
#NAME?	1.0205E+01	#NAME?	1.0253E+01	#NAME?	1.0352E+01	#NAME?	1.0397E+01	#NAME?	1.0480E+01	#NAME?	1.0661E+01	#NAME?
#NAME?	1.0167E+01	#NAME?	1.0215E+01	#NAME?	1.0314E+01	#NAME?	1.0359E+01	#NAME?	1.0442E+01	#NAME?	1.0622E+01	#NAME?
#NAME?	1.0130E+01	#NAME?	1.0178E+01	#NAME?	1.0277E+01	#NAME?	1.0322E+01	#NAME?	1.0404E+01	#NAME?	1.0583E+01	#NAME?
#NAME?	1.0093E+01	#NAME?	1.0141E+01	#NAME?	1.0239E+01	#NAME?	1.0284E+01	#NAME?	1.0366E+01	#NAME?	1.0544E+01	#NAME?
#NAME?	1.0056E+01	#NAME?	1.0104E+01	#NAME?	1.0202E+01	#NAME?	1.0246E+01	#NAME?	1.0328E+01	#NAME?	1.0506E+01	#NAME?
#NAME?	1.0019E+01	#NAME?	1.0067E+01	#NAME?	1.0164E+01	#NAME?	1.0209E+01	#NAME?	1.0290E+01	#NAME?	1.0467E+01	#NAME?
#NAME?	9.9826E+00	#NAME?	1.0030E+01	#NAME?	1.0127E+01	#NAME?	1.0172E+01	#NAME?	1.0252E+01	#NAME?	1.0429E+01	#NAME?
#NAME?	9.9460E+00	#NAME?	9.9932E+00	#NAME?	1.0090E+01	#NAME?	1.0134E+01	#NAME?	1.0215E+01	#NAME?	1.0391E+01	#NAME?
#NAME?	9.9096E+00	#NAME?	9.9566E+00	#NAME?	1.0053E+01	#NAME?	1.0097E+01	#NAME?	1.0177E+01	#NAME?	1.0353E+01	#NAME?
#NAME?	9.8733E+00	#NAME?	9.9201E+00	#NAME?	1.0016E+01	#NAME?	1.0060E+01	#NAME?	1.0140E+01	#NAME?	1.0315E+01	#NAME?
#NAME?	9.8371E+00	#NAME?	9.8838E+00	#NAME?	9.9796E+00	#NAME?	1.0023E+01	#NAME?	1.0103E+01	#NAME?	1.0278E+01	#NAME?
#NAME?	9.8010E+00	#NAME?	9.8476E+00	#NAME?	9.9431E+00	#NAME?	9.9868E+00	#NAME?	1.0066E+01	#NAME?	1.0240E+01	#NAME?
#NAME?	9.7651E+00	#NAME?	9.8115E+00	#NAME?	9.9067E+00	#NAME?	9.9502E+00	#NAME?	1.0029E+01	#NAME?	1.0202E+01	#NAME?
#NAME?	9.7292E+00	#NAME?	9.7755E+00	#NAME?	9.8704E+00	#NAME?	9.9138E+00	#NAME?	9.9926E+00	#NAME?	1.0165E+01	#NAME?

Curve 6	Arg 7	Curve 7	Arg 8	Curve 8	Arg 9	Curve 9	Arg 10	Curve 10	Arg 11	Curve 11	Arg 12	Curve 12
#NAME?	9.6935E+00	#NAME?	9.7396E+00	#NAME?	9.8342E+00	#NAME?	9.8774E+00	#NAME?	9.9560E+00	#NAME?	1.0128E+01	#NAME?
#NAME?	9.6579E+00	#NAME?	9.7039E+00	#NAME?	9.7981E+00	#NAME?	9.8412E+00	#NAME?	9.9196E+00	#NAME?	1.0091E+01	#NAME?
#NAME?	9.6225E+00	#NAME?	9.6682E+00	#NAME?	9.7622E+00	#NAME?	9.8051E+00	#NAME?	9.8832E+00	#NAME?	1.0054E+01	#NAME?
#NAME?	9.5871E+00	#NAME?	9.6327E+00	#NAME?	9.7264E+00	#NAME?	9.7692E+00	#NAME?	9.8470E+00	#NAME?	1.0017E+01	#NAME?
#NAME?	9.5519E+00	#NAME?	9.5974E+00	#NAME?	9.6907E+00	#NAME?	9.7333E+00	#NAME?	9.8109E+00	#NAME?	9.9805E+00	#NAME?
#NAME?	9.5168E+00	#NAME?	9.5621E+00	#NAME?	9.6551E+00	#NAME?	9.6976E+00	#NAME?	9.7749E+00	#NAME?	9.9440E+00	#NAME?
#NAME?	9.4817E+00	#NAME?	9.5269E+00	#NAME?	9.6196E+00	#NAME?	9.6620E+00	#NAME?	9.7391E+00	#NAME?	9.9076E+00	#NAME?
#NAME?	9.4468E+00	#NAME?	9.4919E+00	#NAME?	9.5843E+00	#NAME?	9.6265E+00	#NAME?	9.7033E+00	#NAME?	9.8713E+00	#NAME?
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#NAME?	9.1040E+00	#NAME?	9.1476E+00	#NAME?	9.2371E+00	#NAME?	9.2780E+00	#NAME?	9.3523E+00	#NAME?	9.5148E+00	#NAME?
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#NAME?	9.0032E+00	#NAME?	9.0464E+00	#NAME?	9.1351E+00	#NAME?	9.1756E+00	#NAME?	9.2492E+00	#NAME?	9.4102E+00	#NAME?
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#NAME?	8.7391E+00	#NAME?	8.7812E+00	#NAME?	8.8677E+00	#NAME?	8.9072E+00	#NAME?	8.9790E+00	#NAME?	9.1359E+00	#NAME?
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#NAME?	8.4494E+00	#NAME?	8.4905E+00	#NAME?	8.5746E+00	#NAME?	8.6131E+00	#NAME?	8.6829E+00	#NAME?	8.8355E+00	#NAME?
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#NAME?	8.3232E+00	#NAME?	8.3637E+00	#NAME?	8.4469E+00	#NAME?	8.4849E+00	#NAME?	8.5539E+00	#NAME?	8.7047E+00	#NAME?
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#NAME?	8.2606E+00	#NAME?	8.3009E+00	#NAME?	8.3836E+00	#NAME?	8.4214E+00	#NAME?	8.4900E+00	#NAME?	8.6399E+00	#NAME?
#NAME?	8.2294E+00	#NAME?	8.2696E+00	#NAME?	8.3521E+00	#NAME?	8.3897E+00	#NAME?	8.4582E+00	#NAME?	8.6076E+00	#NAME?
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#NAME?	8.1057E+00	#NAME?	8.1454E+00	#NAME?	8.2269E+00	#NAME?	8.2642E+00	#NAME?	8.3318E+00	#NAME?	8.4795E+00	#NAME?
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Curve 6	Arg 7	Curve 7	Arg 8	Curve 8	Arg 9	Curve 9	Arg 10	Curve 10	Arg 11	Curve 11	Arg 12	Curve 12
#NAME?	7.9834E+00	#NAME?	8.0227E+00	#NAME?	8.1032E+00	#NAME?	8.1400E+00	#NAME?	8.2069E+00	#NAME?	8.3529E+00	#NAME?
#NAME?	7.9530E+00	#NAME?	7.9922E+00	#NAME?	8.0725E+00	#NAME?	8.1092E+00	#NAME?	8.1759E+00	#NAME?	8.3214E+00	#NAME?
#NAME?	7.9227E+00	#NAME?	7.9618E+00	#NAME?	8.0419E+00	#NAME?	8.0785E+00	#NAME?	8.1450E+00	#NAME?	8.2901E+00	#NAME?
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#NAME?	7.8324E+00	#NAME?	7.8712E+00	#NAME?	7.9506E+00	#NAME?	7.9869E+00	#NAME?	8.0528E+00	#NAME?	8.1966E+00	#NAME?
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#NAME?	7.7726E+00	#NAME?	7.8111E+00	#NAME?	7.8901E+00	#NAME?	7.9262E+00	#NAME?	7.9917E+00	#NAME?	8.1348E+00	#NAME?
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#NAME?	7.5952E+00	#NAME?	7.6331E+00	#NAME?	7.7108E+00	#NAME?	7.7463E+00	#NAME?	7.8107E+00	#NAME?	7.9513E+00	#NAME?
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#NAME?	7.5075E+00	#NAME?	7.5451E+00	#NAME?	7.6222E+00	#NAME?	7.6574E+00	#NAME?	7.7213E+00	#NAME?	7.8608E+00	#NAME?
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#NAME?	7.3918E+00	#NAME?	7.4290E+00	#NAME?	7.5052E+00	#NAME?	7.5400E+00	#NAME?	7.6033E+00	#NAME?	7.7412E+00	#NAME?
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#NAME?	7.1922E+00	#NAME?	7.2287E+00	#NAME?	7.3035E+00	#NAME?	7.3377E+00	#NAME?	7.3997E+00	#NAME?	7.5351E+00	#NAME?
#NAME?	7.1640E+00	#NAME?	7.2004E+00	#NAME?	7.2750E+00	#NAME?	7.3091E+00	#NAME?	7.3710E+00	#NAME?	7.5059E+00	#NAME?
#NAME?	7.1358E+00	#NAME?	7.1721E+00	#NAME?	7.2466E+00	#NAME?	7.2806E+00	#NAME?	7.3423E+00	#NAME?	7.4769E+00	#NAME?
#NAME?	7.1078E+00	#NAME?	7.1440E+00	#NAME?	7.2182E+00	#NAME?	7.2521E+00	#NAME?	7.3137E+00	#NAME?	7.4479E+00	#NAME?
#NAME?	7.0798E+00	#NAME?	7.1159E+00	#NAME?	7.1899E+00	#NAME?	7.2237E+00	#NAME?	7.2851E+00	#NAME?	7.4190E+00	#NAME?
#NAME?	7.0518E+00	#NAME?	7.0879E+00	#NAME?	7.1617E+00	#NAME?	7.1954E+00	#NAME?	7.2567E+00	#NAME?	7.3902E+00	#NAME?
#NAME?	7.0240E+00	#NAME?	7.0599E+00	#NAME?	7.1336E+00	#NAME?	7.1672E+00	#NAME?	7.2283E+00	#NAME?	7.3615E+00	#NAME?
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#NAME?	6.9685E+00	#NAME?	7.0042E+00	#NAME?	7.0775E+00	#NAME?	7.1110E+00	#NAME?	7.1717E+00	#NAME?	7.3042E+00	#NAME?
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#NAME?	6.9133E+00	#NAME?	6.9489E+00	#NAME?	7.0218E+00	#NAME?	7.0550E+00	#NAME?	7.1155E+00	#NAME?	7.2473E+00	#NAME?
#NAME?	6.8858E+00	#NAME?	6.9213E+00	#NAME?	6.9940E+00	#NAME?	7.0272E+00	#NAME?	7.0874E+00	#NAME?	7.2189E+00	#NAME?
#NAME?	6.8583E+00	#NAME?	6.8937E+00	#NAME?	6.9663E+00	#NAME?	6.9994E+00	#NAME?	7.0595E+00	#NAME?	7.1906E+00	#NAME?
#NAME?	6.8310E+00	#NAME?	6.8663E+00	#NAME?	6.9386E+00	#NAME?	6.9717E+00	#NAME?	7.0316E+00	#NAME?	7.1624E+00	#NAME?
#NAME?	6.8037E+00	#NAME?	6.8389E+00	#NAME?	6.9111E+00	#NAME?	6.9440E+00	#NAME?	7.0038E+00	#NAME?	7.1343E+00	#NAME?
#NAME?	6.7765E+00	#NAME?	6.8116E+00	#NAME?	6.8836E+00	#NAME?	6.9164E+00	#NAME?	6.9761E+00	#NAME?	7.1062E+00	#NAME?
#NAME?	6.7493E+00	#NAME?	6.7844E+00	#NAME?	6.8562E+00	#NAME?	6.8889E+00	#NAME?	6.9484E+00	#NAME?	7.0782E+00	#NAME?
#NAME?	6.7222E+00	#NAME?	6.7572E+00	#NAME?	6.8288E+00	#NAME?	6.8615E+00	#NAME?	6.9208E+00	#NAME?	7.0503E+00	#NAME?
#NAME?	6.6952E+00	#NAME?	6.7301E+00	#NAME?	6.8015E+00	#NAME?	6.8341E+00	#NAME?	6.8933E+00	#NAME?	7.0224E+00	#NAME?
#NAME?	6.6683E+00	#NAME?	6.7030E+00	#NAME?	6.7743E+00	#NAME?	6.8068E+00	#NAME?	6.8659E+00	#NAME?	6.9947E+00	#NAME?
#NAME?	6.6414E+00	#NAME?	6.6761E+00	#NAME?	6.7471E+00	#NAME?	6.7796E+00	#NAME?	6.8385E+00	#NAME?	6.9670E+00	#NAME?
#NAME?	6.6146E+00	#NAME?	6.6492E+00	#NAME?	6.7201E+00	#NAME?	6.7524E+00	#NAME?	6.8112E+00	#NAME?	6.9393E+00	#NAME?
#NAME?	6.5878E+00	#NAME?	6.6223E+00	#NAME?	6.6931E+00	#NAME?	6.7253E+00	#NAME?	6.7840E+00	#NAME?	6.9118E+00	#NAME?
#NAME?	6.5611E+00	#NAME?	6.5956E+00	#NAME?	6.6661E+00	#NAME?	6.6983E+00	#NAME?	6.7568E+00	#NAME?	6.8843E+00	#NAME?
#NAME?	6.5345E+00	#NAME?	6.5689E+00	#NAME?	6.6392E+00	#NAME?	6.6714E+00	#NAME?	6.7297E+00	#NAME?	6.8568E+00	#NAME?

Curve 6	Arg 7	Curve 7	Arg 8	Curve 8	Arg 9	Curve 9	Arg 10	Curve 10	Arg 11	Curve 11	Arg 12	Curve 12
#NAME?	6.5079E+00	#NAME?	6.5422E+00	#NAME?	6.6124E+00	#NAME?	6.6445E+00	#NAME?	6.7026E+00	#NAME?	6.8295E+00	#NAME?
#NAME?	6.4815E+00	#NAME?	6.5156E+00	#NAME?	6.5857E+00	#NAME?	6.6176E+00	#NAME?	6.6757E+00	#NAME?	6.8022E+00	#NAME?
#NAME?	6.4550E+00	#NAME?	6.4891E+00	#NAME?	6.5590E+00	#NAME?	6.5909E+00	#NAME?	6.6488E+00	#NAME?	6.7750E+00	#NAME?
#NAME?	6.4287E+00	#NAME?	6.4627E+00	#NAME?	6.5324E+00	#NAME?	6.5642E+00	#NAME?	6.6219E+00	#NAME?	6.7478E+00	#NAME?
#NAME?	6.4024E+00	#NAME?	6.4363E+00	#NAME?	6.5058E+00	#NAME?	6.5376E+00	#NAME?	6.5952E+00	#NAME?	6.7207E+00	#NAME?
#NAME?	6.3761E+00	#NAME?	6.4100E+00	#NAME?	6.4793E+00	#NAME?	6.5110E+00	#NAME?	6.5685E+00	#NAME?	6.6937E+00	#NAME?
#NAME?	6.3500E+00	#NAME?	6.3837E+00	#NAME?	6.4529E+00	#NAME?	6.4845E+00	#NAME?	6.5418E+00	#NAME?	6.6668E+00	#NAME?
#NAME?	6.3239E+00	#NAME?	6.3576E+00	#NAME?	6.4266E+00	#NAME?	6.4581E+00	#NAME?	6.5152E+00	#NAME?	6.6399E+00	#NAME?
#NAME?	6.2978E+00	#NAME?	6.3314E+00	#NAME?	6.4003E+00	#NAME?	6.4317E+00	#NAME?	6.4887E+00	#NAME?	6.6131E+00	#NAME?
#NAME?	6.2718E+00	#NAME?	6.3054E+00	#NAME?	6.3740E+00	#NAME?	6.4054E+00	#NAME?	6.4623E+00	#NAME?	6.5863E+00	#NAME?
#NAME?	6.2459E+00	#NAME?	6.2794E+00	#NAME?	6.3479E+00	#NAME?	6.3792E+00	#NAME?	6.4359E+00	#NAME?	6.5597E+00	#NAME?
#NAME?	6.2201E+00	#NAME?	6.2534E+00	#NAME?	6.3218E+00	#NAME?	6.3530E+00	#NAME?	6.4096E+00	#NAME?	6.5330E+00	#NAME?
#NAME?	6.1943E+00	#NAME?	6.2276E+00	#NAME?	6.2957E+00	#NAME?	6.3269E+00	#NAME?	6.3833E+00	#NAME?	6.5065E+00	#NAME?
#NAME?	6.1685E+00	#NAME?	6.2017E+00	#NAME?	6.2698E+00	#NAME?	6.3008E+00	#NAME?	6.3572E+00	#NAME?	6.4800E+00	#NAME?
#NAME?	6.1429E+00	#NAME?	6.1760E+00	#NAME?	6.2438E+00	#NAME?	6.2748E+00	#NAME?	6.3310E+00	#NAME?	6.4536E+00	#NAME?
#NAME?	6.1172E+00	#NAME?	6.1503E+00	#NAME?	6.2180E+00	#NAME?	6.2489E+00	#NAME?	6.3050E+00	#NAME?	6.4272E+00	#NAME?
#NAME?	6.0917E+00	#NAME?	6.1247E+00	#NAME?	6.1922E+00	#NAME?	6.2230E+00	#NAME?	6.2790E+00	#NAME?	6.4009E+00	#NAME?
#NAME?	6.0662E+00	#NAME?	6.0991E+00	#NAME?	6.1665E+00	#NAME?	6.1972E+00	#NAME?	6.2530E+00	#NAME?	6.3747E+00	#NAME?
#NAME?	6.0408E+00	#NAME?	6.0736E+00	#NAME?	6.1408E+00	#NAME?	6.1715E+00	#NAME?	6.2272E+00	#NAME?	6.3485E+00	#NAME?
#NAME?	6.0154E+00	#NAME?	6.0481E+00	#NAME?	6.1152E+00	#NAME?	6.1458E+00	#NAME?	6.2013E+00	#NAME?	6.3224E+00	#NAME?
#NAME?	5.9901E+00	#NAME?	6.0227E+00	#NAME?	6.0896E+00	#NAME?	6.1202E+00	#NAME?	6.1756E+00	#NAME?	6.2964E+00	#NAME?
#NAME?	5.9648E+00	#NAME?	5.9974E+00	#NAME?	6.0642E+00	#NAME?	6.0946E+00	#NAME?	6.1499E+00	#NAME?	6.2704E+00	#NAME?
#NAME?	5.9396E+00	#NAME?	5.9721E+00	#NAME?	6.0387E+00	#NAME?	6.0691E+00	#NAME?	6.1243E+00	#NAME?	6.2445E+00	#NAME?
#NAME?	5.9145E+00	#NAME?	5.9469E+00	#NAME?	6.0134E+00	#NAME?	6.0437E+00	#NAME?	6.0987E+00	#NAME?	6.2186E+00	#NAME?
#NAME?	5.8894E+00	#NAME?	5.9218E+00	#NAME?	5.9880E+00	#NAME?	6.0183E+00	#NAME?	6.0732E+00	#NAME?	6.1928E+00	#NAME?
#NAME?	5.8644E+00	#NAME?	5.8967E+00	#NAME?	5.9628E+00	#NAME?	5.9930E+00	#NAME?	6.0477E+00	#NAME?	6.1671E+00	#NAME?
#NAME?	5.8394E+00	#NAME?	5.8716E+00	#NAME?	5.9376E+00	#NAME?	5.9677E+00	#NAME?	6.0224E+00	#NAME?	6.1414E+00	#NAME?
#NAME?	5.8145E+00	#NAME?	5.8466E+00	#NAME?	5.9125E+00	#NAME?	5.9425E+00	#NAME?	5.9970E+00	#NAME?	6.1158E+00	#NAME?
#NAME?	5.7896E+00	#NAME?	5.8217E+00	#NAME?	5.8874E+00	#NAME?	5.9174E+00	#NAME?	5.9717E+00	#NAME?	6.0903E+00	#NAME?
#NAME?	5.7648E+00	#NAME?	5.7968E+00	#NAME?	5.8624E+00	#NAME?	5.8923E+00	#NAME?	5.9465E+00	#NAME?	6.0648E+00	#NAME?
#NAME?	5.7401E+00	#NAME?	5.7720E+00	#NAME?	5.8374E+00	#NAME?	5.8672E+00	#NAME?	5.9214E+00	#NAME?	6.0394E+00	#NAME?
#NAME?	5.7154E+00	#NAME?	5.7473E+00	#NAME?	5.8125E+00	#NAME?	5.8423E+00	#NAME?	5.8963E+00	#NAME?	6.0140E+00	#NAME?
#NAME?	5.6908E+00	#NAME?	5.7226E+00	#NAME?	5.7876E+00	#NAME?	5.8173E+00	#NAME?	5.8712E+00	#NAME?	5.9887E+00	#NAME?

Arg 13	Curve 13	Arg 14	Curve 14	Arg 15	Curve 15	Arg 16	Curve 16	Arg 17	Curve 17	Arg 18	Curve 18
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
4.4595E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
2.6685E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
2.0805E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.7620E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.5549E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.4064E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.2931E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.2031E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.1292E+02	#NAME?	7.0384E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.0671E+02	#NAME?	3.0127E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.0140E+02	#NAME?	2.2326E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
9.6796E+01	#NAME?	1.8521E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
9.2745E+01	#NAME?	1.6161E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
8.9146E+01	#NAME?	1.4514E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
8.5920E+01	#NAME?	1.3280E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
8.3007E+01	#NAME?	1.2311E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
8.0359E+01	#NAME?	1.1524E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
7.7937E+01	#NAME?	1.0868E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
7.5711E+01	#NAME?	1.0310E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
7.3655E+01	#NAME?	9.8272E+01	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
7.1749E+01	#NAME?	9.4047E+01	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
6.9975E+01	#NAME?	9.0306E+01	#NAME?	5.8555E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
6.8319E+01	#NAME?	8.6963E+01	#NAME?	2.8964E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
6.6767E+01	#NAME?	8.3951E+01	#NAME?	2.1838E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
6.5309E+01	#NAME?	8.1219E+01	#NAME?	1.8238E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00

Arg 13	Curve 13	Arg 14	Curve 14	Arg 15	Curve 15	Arg 16	Curve 16	Arg 17	Curve 17	Arg 18	Curve 18
6.3936E+01	#NAME?	7.8725E+01	#NAME?	1.5971E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
6.2639E+01	#NAME?	7.6437E+01	#NAME?	1.4375E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
6.1412E+01	#NAME?	7.4326E+01	#NAME?	1.3173E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
6.0249E+01	#NAME?	7.2372E+01	#NAME?	1.2226E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
5.9144E+01	#NAME?	7.0556E+01	#NAME?	1.1453E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
5.8093E+01	#NAME?	6.8861E+01	#NAME?	1.0808E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
5.7090E+01	#NAME?	6.7276E+01	#NAME?	1.0258E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
5.6133E+01	#NAME?	6.5787E+01	#NAME?	9.7825E+01	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
5.5218E+01	#NAME?	6.4387E+01	#NAME?	9.3653E+01	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
5.4342E+01	#NAME?	6.3065E+01	#NAME?	8.9955E+01	#NAME?	1.0305E+03	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
5.3502E+01	#NAME?	6.1816E+01	#NAME?	8.6648E+01	#NAME?	3.1725E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
5.2696E+01	#NAME?	6.0632E+01	#NAME?	8.3666E+01	#NAME?	2.2957E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
5.1922E+01	#NAME?	5.9508E+01	#NAME?	8.0959E+01	#NAME?	1.8878E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
5.1176E+01	#NAME?	5.8439E+01	#NAME?	7.8487E+01	#NAME?	1.6398E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
5.0459E+01	#NAME?	5.7421E+01	#NAME?	7.6218E+01	#NAME?	1.4686E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
4.9767E+01	#NAME?	5.6449E+01	#NAME?	7.4124E+01	#NAME?	1.3412E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
4.9100E+01	#NAME?	5.5520E+01	#NAME?	7.2185E+01	#NAME?	1.2417E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
4.8455E+01	#NAME?	5.4631E+01	#NAME?	7.0381E+01	#NAME?	1.1611E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
4.7832E+01	#NAME?	5.3780E+01	#NAME?	6.8698E+01	#NAME?	1.0941E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
4.7230E+01	#NAME?	5.2963E+01	#NAME?	6.7123E+01	#NAME?	1.0372E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
4.6646E+01	#NAME?	5.2178E+01	#NAME?	6.5643E+01	#NAME?	9.8817E+01	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
4.6081E+01	#NAME?	5.1423E+01	#NAME?	6.4251E+01	#NAME?	9.4526E+01	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
4.5533E+01	#NAME?	5.0696E+01	#NAME?	6.2937E+01	#NAME?	9.0733E+01	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
4.5002E+01	#NAME?	4.9996E+01	#NAME?	6.1695E+01	#NAME?	8.7346E+01	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
4.4486E+01	#NAME?	4.9321E+01	#NAME?	6.0517E+01	#NAME?	8.4297E+01	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
4.3985E+01	#NAME?	4.8669E+01	#NAME?	5.9399E+01	#NAME?	8.1533E+01	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
4.3498E+01	#NAME?	4.8039E+01	#NAME?	5.8335E+01	#NAME?	7.9013E+01	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
4.3024E+01	#NAME?	4.7429E+01	#NAME?	5.7322E+01	#NAME?	7.6701E+01	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
4.2564E+01	#NAME?	4.6840E+01	#NAME?	5.6354E+01	#NAME?	7.4571E+01	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
4.2115E+01	#NAME?	4.6269E+01	#NAME?	5.5430E+01	#NAME?	7.2599E+01	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
4.1678E+01	#NAME?	4.5715E+01	#NAME?	5.4545E+01	#NAME?	7.0767E+01	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
4.1252E+01	#NAME?	4.5178E+01	#NAME?	5.3697E+01	#NAME?	6.9059E+01	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
4.0837E+01	#NAME?	4.4657E+01	#NAME?	5.2883E+01	#NAME?	6.7461E+01	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
4.0432E+01	#NAME?	4.4151E+01	#NAME?	5.2101E+01	#NAME?	6.5961E+01	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
4.0037E+01	#NAME?	4.3660E+01	#NAME?	5.1349E+01	#NAME?	6.4550E+01	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
3.9651E+01	#NAME?	4.3182E+01	#NAME?	5.0625E+01	#NAME?	6.3220E+01	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
3.9274E+01	#NAME?	4.2717E+01	#NAME?	4.9927E+01	#NAME?	6.1962E+01	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
3.8906E+01	#NAME?	4.2264E+01	#NAME?	4.9254E+01	#NAME?	6.0771E+01	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
3.8546E+01	#NAME?	4.1823E+01	#NAME?	4.8605E+01	#NAME?	5.9640E+01	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
3.8194E+01	#NAME?	4.1394E+01	#NAME?	4.7977E+01	#NAME?	5.8565E+01	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
3.7850E+01	#NAME?	4.0975E+01	#NAME?	4.7369E+01	#NAME?	5.7540E+01	#NAME?	1.7850E+03	#NAME?	0.0000E+00	0.0000E+00
3.7513E+01	#NAME?	4.0567E+01	#NAME?	4.6782E+01	#NAME?	5.6563E+01	#NAME?	3.2783E+02	#NAME?	0.0000E+00	0.0000E+00
3.7184E+01	#NAME?	4.0168E+01	#NAME?	4.6212E+01	#NAME?	5.5630E+01	#NAME?	2.3350E+02	#NAME?	0.0000E+00	0.0000E+00
3.6861E+01	#NAME?	3.9779E+01	#NAME?	4.5661E+01	#NAME?	5.4736E+01	#NAME?	1.9096E+02	#NAME?	0.0000E+00	0.0000E+00
3.6545E+01	#NAME?	3.9399E+01	#NAME?	4.5125E+01	#NAME?	5.3880E+01	#NAME?	1.6541E+02	#NAME?	0.0000E+00	0.0000E+00
3.6235E+01	#NAME?	3.9028E+01	#NAME?	4.4606E+01	#NAME?	5.3059E+01	#NAME?	1.4789E+02	#NAME?	0.0000E+00	0.0000E+00
3.5931E+01	#NAME?	3.8666E+01	#NAME?	4.4101E+01	#NAME?	5.2270E+01	#NAME?	1.3491E+02	#NAME?	0.0000E+00	0.0000E+00
3.5634E+01	#NAME?	3.8311E+01	#NAME?	4.3611E+01	#NAME?	5.1512E+01	#NAME?	1.2480E+02	#NAME?	0.0000E+00	0.0000E+00
3.5342E+01	#NAME?	3.7965E+01	#NAME?	4.3134E+01	#NAME?	5.0782E+01	#NAME?	1.1662E+02	#NAME?	0.0000E+00	0.0000E+00
3.5055E+01	#NAME?	3.7625E+01	#NAME?	4.2671E+01	#NAME?	5.0079E+01	#NAME?	1.0984E+02	#NAME?	0.0000E+00	0.0000E+00
3.4774E+01	#NAME?	3.7293E+01	#NAME?	4.2219E+01	#NAME?	4.9400E+01	#NAME?	1.0409E+02	#NAME?	0.0000E+00	0.0000E+00
3.4499E+01	#NAME?	3.6968E+01	#NAME?	4.1780E+01	#NAME?	4.8746E+01	#NAME?	9.9138E+01	#NAME?	0.0000E+00	0.0000E+00

Arg 13	Curve 13	Arg 14	Curve 14	Arg 15	Curve 15	Arg 16	Curve 16	Arg 17	Curve 17	Arg 18	Curve 18
3.4228E+01	#NAME?	3.6650E+01	#NAME?	4.1351E+01	#NAME?	4.8113E+01	#NAME?	9.4809E+01	#NAME?	0.0000E+00	0.0000E+00
3.3962E+01	#NAME?	3.6338E+01	#NAME?	4.0934E+01	#NAME?	4.7501E+01	#NAME?	9.0984E+01	#NAME?	0.0000E+00	0.0000E+00
3.3701E+01	#NAME?	3.6032E+01	#NAME?	4.0526E+01	#NAME?	4.6909E+01	#NAME?	8.7571E+01	#NAME?	0.0000E+00	0.0000E+00
3.3444E+01	#NAME?	3.5733E+01	#NAME?	4.0129E+01	#NAME?	4.6336E+01	#NAME?	8.4500E+01	#NAME?	0.0000E+00	0.0000E+00
3.3192E+01	#NAME?	3.5439E+01	#NAME?	3.9741E+01	#NAME?	4.5781E+01	#NAME?	8.1718E+01	#NAME?	0.0000E+00	0.0000E+00
3.2945E+01	#NAME?	3.5151E+01	#NAME?	3.9362E+01	#NAME?	4.5242E+01	#NAME?	7.9182E+01	#NAME?	0.0000E+00	0.0000E+00
3.2701E+01	#NAME?	3.4868E+01	#NAME?	3.8992E+01	#NAME?	4.4719E+01	#NAME?	7.6857E+01	#NAME?	0.0000E+00	0.0000E+00
3.2461E+01	#NAME?	3.4590E+01	#NAME?	3.8630E+01	#NAME?	4.4211E+01	#NAME?	7.4715E+01	#NAME?	0.0000E+00	0.0000E+00
3.2226E+01	#NAME?	3.4318E+01	#NAME?	3.8276E+01	#NAME?	4.3718E+01	#NAME?	7.2733E+01	#NAME?	0.0000E+00	0.0000E+00
3.1994E+01	#NAME?	3.4051E+01	#NAME?	3.7930E+01	#NAME?	4.3238E+01	#NAME?	7.0891E+01	#NAME?	0.0000E+00	0.0000E+00
3.1766E+01	#NAME?	3.3788E+01	#NAME?	3.7592E+01	#NAME?	4.2772E+01	#NAME?	6.9175E+01	#NAME?	0.0000E+00	0.0000E+00
3.1542E+01	#NAME?	3.3530E+01	#NAME?	3.7261E+01	#NAME?	4.2318E+01	#NAME?	6.7569E+01	#NAME?	0.0000E+00	0.0000E+00
3.1321E+01	#NAME?	3.3276E+01	#NAME?	3.6936E+01	#NAME?	4.1875E+01	#NAME?	6.6063E+01	#NAME?	0.0000E+00	0.0000E+00
3.1103E+01	#NAME?	3.3027E+01	#NAME?	3.6618E+01	#NAME?	4.1445E+01	#NAME?	6.4646E+01	#NAME?	0.0000E+00	0.0000E+00
3.0889E+01	#NAME?	3.2782E+01	#NAME?	3.6307E+01	#NAME?	4.1025E+01	#NAME?	6.3311E+01	#NAME?	0.0000E+00	0.0000E+00
3.0678E+01	#NAME?	3.2541E+01	#NAME?	3.6002E+01	#NAME?	4.0615E+01	#NAME?	6.2048E+01	#NAME?	0.0000E+00	0.0000E+00
3.0471E+01	#NAME?	3.2304E+01	#NAME?	3.5703E+01	#NAME?	4.0215E+01	#NAME?	6.0852E+01	#NAME?	0.0000E+00	0.0000E+00
3.0266E+01	#NAME?	3.2071E+01	#NAME?	3.5410E+01	#NAME?	3.9825E+01	#NAME?	5.9717E+01	#NAME?	0.0000E+00	0.0000E+00
3.0064E+01	#NAME?	3.1842E+01	#NAME?	3.5122E+01	#NAME?	3.9445E+01	#NAME?	5.8638E+01	#NAME?	0.0000E+00	0.0000E+00
2.9866E+01	#NAME?	3.1616E+01	#NAME?	3.4840E+01	#NAME?	3.9073E+01	#NAME?	5.7611E+01	#NAME?	0.0000E+00	0.0000E+00
2.9670E+01	#NAME?	3.1394E+01	#NAME?	3.4563E+01	#NAME?	3.8709E+01	#NAME?	5.6630E+01	#NAME?	0.0000E+00	0.0000E+00
2.9477E+01	#NAME?	3.1176E+01	#NAME?	3.4291E+01	#NAME?	3.8353E+01	#NAME?	5.5694E+01	#NAME?	0.0000E+00	0.0000E+00
2.9286E+01	#NAME?	3.0961E+01	#NAME?	3.4024E+01	#NAME?	3.8006E+01	#NAME?	5.4797E+01	#NAME?	4.5205E+02	#NAME?
2.9098E+01	#NAME?	3.0749E+01	#NAME?	3.3762E+01	#NAME?	3.7666E+01	#NAME?	5.3939E+01	#NAME?	2.6815E+02	#NAME?
2.8913E+01	#NAME?	3.0540E+01	#NAME?	3.3504E+01	#NAME?	3.7333E+01	#NAME?	5.3115E+01	#NAME?	2.0867E+02	#NAME?
2.8730E+01	#NAME?	3.0334E+01	#NAME?	3.3251E+01	#NAME?	3.7007E+01	#NAME?	5.2324E+01	#NAME?	1.7658E+02	#NAME?
2.8550E+01	#NAME?	3.0132E+01	#NAME?	3.3002E+01	#NAME?	3.6688E+01	#NAME?	5.1564E+01	#NAME?	1.5575E+02	#NAME?
2.8372E+01	#NAME?	2.9932E+01	#NAME?	3.2758E+01	#NAME?	3.6375E+01	#NAME?	5.0832E+01	#NAME?	1.4083E+02	#NAME?
2.8197E+01	#NAME?	2.9735E+01	#NAME?	3.2517E+01	#NAME?	3.6069E+01	#NAME?	5.0127E+01	#NAME?	1.2946E+02	#NAME?
2.8024E+01	#NAME?	2.9541E+01	#NAME?	3.2281E+01	#NAME?	3.5768E+01	#NAME?	4.9447E+01	#NAME?	1.2043E+02	#NAME?
2.7853E+01	#NAME?	2.9350E+01	#NAME?	3.2048E+01	#NAME?	3.5474E+01	#NAME?	4.8791E+01	#NAME?	1.1302E+02	#NAME?
2.7684E+01	#NAME?	2.9161E+01	#NAME?	3.1819E+01	#NAME?	3.5185E+01	#NAME?	4.8157E+01	#NAME?	1.0680E+02	#NAME?
2.7517E+01	#NAME?	2.8975E+01	#NAME?	3.1594E+01	#NAME?	3.4902E+01	#NAME?	4.7543E+01	#NAME?	1.0148E+02	#NAME?
2.7352E+01	#NAME?	2.8791E+01	#NAME?	3.1372E+01	#NAME?	3.4623E+01	#NAME?	4.6950E+01	#NAME?	9.6861E+01	#NAME?
2.7190E+01	#NAME?	2.8610E+01	#NAME?	3.1154E+01	#NAME?	3.4350E+01	#NAME?	4.6376E+01	#NAME?	9.2802E+01	#NAME?
2.7029E+01	#NAME?	2.8432E+01	#NAME?	3.0939E+01	#NAME?	3.4082E+01	#NAME?	4.5819E+01	#NAME?	8.9197E+01	#NAME?
2.6871E+01	#NAME?	2.8255E+01	#NAME?	3.0728E+01	#NAME?	3.3819E+01	#NAME?	4.5279E+01	#NAME?	8.5966E+01	#NAME?
2.6714E+01	#NAME?	2.8081E+01	#NAME?	3.0519E+01	#NAME?	3.3561E+01	#NAME?	4.4755E+01	#NAME?	8.3049E+01	#NAME?
2.6559E+01	#NAME?	2.7910E+01	#NAME?	3.0314E+01	#NAME?	3.3306E+01	#NAME?	4.4246E+01	#NAME?	8.0397E+01	#NAME?
2.6406E+01	#NAME?	2.7740E+01	#NAME?	3.0111E+01	#NAME?	3.3057E+01	#NAME?	4.3752E+01	#NAME?	7.7972E+01	#NAME?
2.6255E+01	#NAME?	2.7573E+01	#NAME?	2.9912E+01	#NAME?	3.2811E+01	#NAME?	4.3271E+01	#NAME?	7.5743E+01	#NAME?
2.6106E+01	#NAME?	2.7407E+01	#NAME?	2.9715E+01	#NAME?	3.2570E+01	#NAME?	4.2804E+01	#NAME?	7.3685E+01	#NAME?
2.5958E+01	#NAME?	2.7244E+01	#NAME?	2.9522E+01	#NAME?	3.2333E+01	#NAME?	4.2349E+01	#NAME?	7.1777E+01	#NAME?
2.5812E+01	#NAME?	2.7083E+01	#NAME?	2.9331E+01	#NAME?	3.2099E+01	#NAME?	4.1906E+01	#NAME?	7.0001E+01	#NAME?
2.5667E+01	#NAME?	2.6924E+01	#NAME?	2.9142E+01	#NAME?	3.1869E+01	#NAME?	4.1474E+01	#NAME?	6.8343E+01	#NAME?
2.5525E+01	#NAME?	2.6766E+01	#NAME?	2.8956E+01	#NAME?	3.1643E+01	#NAME?	4.1054E+01	#NAME?	6.6789E+01	#NAME?
2.5383E+01	#NAME?	2.6611E+01	#NAME?	2.8773E+01	#NAME?	3.1421E+01	#NAME?	4.0643E+01	#NAME?	6.5330E+01	#NAME?
2.5244E+01	#NAME?	2.6457E+01	#NAME?	2.8592E+01	#NAME?	3.1202E+01	#NAME?	4.0243E+01	#NAME?	6.3956E+01	#NAME?
2.5106E+01	#NAME?	2.6305E+01	#NAME?	2.8414E+01	#NAME?	3.0986E+01	#NAME?	3.9852E+01	#NAME?	6.2658E+01	#NAME?
2.4969E+01	#NAME?	2.6155E+01	#NAME?	2.8238E+01	#NAME?	3.0774E+01	#NAME?	3.9471E+01	#NAME?	6.1430E+01	#NAME?
2.4834E+01	#NAME?	2.6007E+01	#NAME?	2.8064E+01	#NAME?	3.0565E+01	#NAME?	3.9098E+01	#NAME?	6.0266E+01	#NAME?
2.4700E+01	#NAME?	2.5860E+01	#NAME?	2.7893E+01	#NAME?	3.0359E+01	#NAME?	3.8734E+01	#NAME?	5.9160E+01	#NAME?

Arg 13	Curve 13	Arg 14	Curve 14	Arg 15	Curve 15	Arg 16	Curve 16	Arg 17	Curve 17	Arg 18	Curve 18
2.4568E+01	#NAME?	2.5716E+01	#NAME?	2.7723E+01	#NAME?	3.0156E+01	#NAME?	3.8378E+01	#NAME?	5.8108E+01	#NAME?
2.4437E+01	#NAME?	2.5572E+01	#NAME?	2.7556E+01	#NAME?	2.9956E+01	#NAME?	3.8030E+01	#NAME?	5.7105E+01	#NAME?
2.4307E+01	#NAME?	2.5430E+01	#NAME?	2.7391E+01	#NAME?	2.9758E+01	#NAME?	3.7689E+01	#NAME?	5.6147E+01	#NAME?
2.4179E+01	#NAME?	2.5290E+01	#NAME?	2.7228E+01	#NAME?	2.9564E+01	#NAME?	3.7356E+01	#NAME?	5.5232E+01	#NAME?
2.4052E+01	#NAME?	2.5152E+01	#NAME?	2.7067E+01	#NAME?	2.9372E+01	#NAME?	3.7030E+01	#NAME?	5.4355E+01	#NAME?
2.3926E+01	#NAME?	2.5014E+01	#NAME?	2.6908E+01	#NAME?	2.9183E+01	#NAME?	3.6710E+01	#NAME?	5.3515E+01	#NAME?
2.3802E+01	#NAME?	2.4879E+01	#NAME?	2.6751E+01	#NAME?	2.8997E+01	#NAME?	3.6397E+01	#NAME?	5.2708E+01	#NAME?
2.3679E+01	#NAME?	2.4745E+01	#NAME?	2.6595E+01	#NAME?	2.8813E+01	#NAME?	3.6090E+01	#NAME?	5.1933E+01	#NAME?
2.3557E+01	#NAME?	2.4612E+01	#NAME?	2.6442E+01	#NAME?	2.8632E+01	#NAME?	3.5789E+01	#NAME?	5.1187E+01	#NAME?
2.3436E+01	#NAME?	2.4480E+01	#NAME?	2.6290E+01	#NAME?	2.8453E+01	#NAME?	3.5494E+01	#NAME?	5.0469E+01	#NAME?
2.3316E+01	#NAME?	2.4350E+01	#NAME?	2.6140E+01	#NAME?	2.8276E+01	#NAME?	3.5205E+01	#NAME?	4.9777E+01	#NAME?
2.3198E+01	#NAME?	2.4222E+01	#NAME?	2.5992E+01	#NAME?	2.8102E+01	#NAME?	3.4921E+01	#NAME?	4.9109E+01	#NAME?
2.3080E+01	#NAME?	2.4094E+01	#NAME?	2.5846E+01	#NAME?	2.7930E+01	#NAME?	3.4643E+01	#NAME?	4.8465E+01	#NAME?
2.2964E+01	#NAME?	2.3968E+01	#NAME?	2.5701E+01	#NAME?	2.7760E+01	#NAME?	3.4369E+01	#NAME?	4.7841E+01	#NAME?
2.2849E+01	#NAME?	2.3843E+01	#NAME?	2.5558E+01	#NAME?	2.7593E+01	#NAME?	3.4101E+01	#NAME?	4.7238E+01	#NAME?
2.2735E+01	#NAME?	2.3720E+01	#NAME?	2.5416E+01	#NAME?	2.7427E+01	#NAME?	3.3837E+01	#NAME?	4.6655E+01	#NAME?
2.2622E+01	#NAME?	2.3597E+01	#NAME?	2.5276E+01	#NAME?	2.7264E+01	#NAME?	3.3579E+01	#NAME?	4.6090E+01	#NAME?
2.2510E+01	#NAME?	2.3476E+01	#NAME?	2.5138E+01	#NAME?	2.7102E+01	#NAME?	3.3324E+01	#NAME?	4.5541E+01	#NAME?
2.2399E+01	#NAME?	2.3356E+01	#NAME?	2.5001E+01	#NAME?	2.6943E+01	#NAME?	3.3074E+01	#NAME?	4.5010E+01	#NAME?
2.2289E+01	#NAME?	2.3237E+01	#NAME?	2.4865E+01	#NAME?	2.6785E+01	#NAME?	3.2828E+01	#NAME?	4.4494E+01	#NAME?
2.2180E+01	#NAME?	2.3120E+01	#NAME?	2.4731E+01	#NAME?	2.6629E+01	#NAME?	3.2587E+01	#NAME?	4.3992E+01	#NAME?
2.2072E+01	#NAME?	2.3003E+01	#NAME?	2.4599E+01	#NAME?	2.6476E+01	#NAME?	3.2349E+01	#NAME?	4.3505E+01	#NAME?
2.1965E+01	#NAME?	2.2888E+01	#NAME?	2.4467E+01	#NAME?	2.6324E+01	#NAME?	3.2115E+01	#NAME?	4.3031E+01	#NAME?
2.1859E+01	#NAME?	2.2773E+01	#NAME?	2.4337E+01	#NAME?	2.6173E+01	#NAME?	3.1885E+01	#NAME?	4.2570E+01	#NAME?
2.1754E+01	#NAME?	2.2660E+01	#NAME?	2.4209E+01	#NAME?	2.6025E+01	#NAME?	3.1659E+01	#NAME?	4.2122E+01	#NAME?
2.1650E+01	#NAME?	2.2548E+01	#NAME?	2.4082E+01	#NAME?	2.5878E+01	#NAME?	3.1436E+01	#NAME?	4.1684E+01	#NAME?
2.1547E+01	#NAME?	2.2436E+01	#NAME?	2.3956E+01	#NAME?	2.5733E+01	#NAME?	3.1217E+01	#NAME?	4.1258E+01	#NAME?
2.1444E+01	#NAME?	2.2326E+01	#NAME?	2.3831E+01	#NAME?	2.5589E+01	#NAME?	3.1001E+01	#NAME?	4.0843E+01	#NAME?
2.1343E+01	#NAME?	2.2217E+01	#NAME?	2.3707E+01	#NAME?	2.5447E+01	#NAME?	3.0789E+01	#NAME?	4.0438E+01	#NAME?
2.1242E+01	#NAME?	2.2109E+01	#NAME?	2.3585E+01	#NAME?	2.5307E+01	#NAME?	3.0579E+01	#NAME?	4.0043E+01	#NAME?
2.1142E+01	#NAME?	2.2001E+01	#NAME?	2.3464E+01	#NAME?	2.5168E+01	#NAME?	3.0373E+01	#NAME?	3.9657E+01	#NAME?
2.1043E+01	#NAME?	2.1895E+01	#NAME?	2.3344E+01	#NAME?	2.5031E+01	#NAME?	3.0170E+01	#NAME?	3.9280E+01	#NAME?
2.0945E+01	#NAME?	2.1789E+01	#NAME?	2.3225E+01	#NAME?	2.4895E+01	#NAME?	2.9970E+01	#NAME?	3.8912E+01	#NAME?
2.0848E+01	#NAME?	2.1685E+01	#NAME?	2.3108E+01	#NAME?	2.4761E+01	#NAME?	2.9772E+01	#NAME?	3.8552E+01	#NAME?
2.0751E+01	#NAME?	2.1581E+01	#NAME?	2.2991E+01	#NAME?	2.4628E+01	#NAME?	2.9578E+01	#NAME?	3.8200E+01	#NAME?
2.0655E+01	#NAME?	2.1479E+01	#NAME?	2.2876E+01	#NAME?	2.4496E+01	#NAME?	2.9386E+01	#NAME?	3.7855E+01	#NAME?
2.0560E+01	#NAME?	2.1377E+01	#NAME?	2.2762E+01	#NAME?	2.4366E+01	#NAME?	2.9197E+01	#NAME?	3.7518E+01	#NAME?
2.0466E+01	#NAME?	2.1276E+01	#NAME?	2.2649E+01	#NAME?	2.4237E+01	#NAME?	2.9010E+01	#NAME?	3.7189E+01	#NAME?
2.0372E+01	#NAME?	2.1176E+01	#NAME?	2.2536E+01	#NAME?	2.4109E+01	#NAME?	2.8826E+01	#NAME?	3.6866E+01	#NAME?
2.0279E+01	#NAME?	2.1076E+01	#NAME?	2.2425E+01	#NAME?	2.3983E+01	#NAME?	2.8644E+01	#NAME?	3.6549E+01	#NAME?
2.0187E+01	#NAME?	2.0978E+01	#NAME?	2.2315E+01	#NAME?	2.3858E+01	#NAME?	2.8465E+01	#NAME?	3.6240E+01	#NAME?
2.0096E+01	#NAME?	2.0880E+01	#NAME?	2.2206E+01	#NAME?	2.3734E+01	#NAME?	2.8289E+01	#NAME?	3.5936E+01	#NAME?
2.0005E+01	#NAME?	2.0783E+01	#NAME?	2.2098E+01	#NAME?	2.3612E+01	#NAME?	2.8114E+01	#NAME?	3.5638E+01	#NAME?
1.9915E+01	#NAME?	2.0687E+01	#NAME?	2.1991E+01	#NAME?	2.3491E+01	#NAME?	2.7942E+01	#NAME?	3.5346E+01	#NAME?
1.9826E+01	#NAME?	2.0592E+01	#NAME?	2.1884E+01	#NAME?	2.3370E+01	#NAME?	2.7772E+01	#NAME?	3.5060E+01	#NAME?
1.9738E+01	#NAME?	2.0497E+01	#NAME?	2.1779E+01	#NAME?	2.3252E+01	#NAME?	2.7604E+01	#NAME?	3.4779E+01	#NAME?
1.9650E+01	#NAME?	2.0404E+01	#NAME?	2.1675E+01	#NAME?	2.3134E+01	#NAME?	2.7439E+01	#NAME?	3.4503E+01	#NAME?
1.9562E+01	#NAME?	2.0310E+01	#NAME?	2.1571E+01	#NAME?	2.3017E+01	#NAME?	2.7275E+01	#NAME?	3.4232E+01	#NAME?
1.9476E+01	#NAME?	2.0218E+01	#NAME?	2.1468E+01	#NAME?	2.2901E+01	#NAME?	2.7113E+01	#NAME?	3.3966E+01	#NAME?
1.9390E+01	#NAME?	2.0127E+01	#NAME?	2.1367E+01	#NAME?	2.2787E+01	#NAME?	2.6954E+01	#NAME?	3.3705E+01	#NAME?
1.9304E+01	#NAME?	2.0036E+01	#NAME?	2.1266E+01	#NAME?	2.2673E+01	#NAME?	2.6796E+01	#NAME?	3.3448E+01	#NAME?
1.9220E+01	#NAME?	1.9945E+01	#NAME?	2.1166E+01	#NAME?	2.2561E+01	#NAME?	2.6640E+01	#NAME?	3.3196E+01	#NAME?

Arg 13	Curve 13	Arg 14	Curve 14	Arg 15	Curve 15	Arg 16	Curve 16	Arg 17	Curve 17	Arg 18	Curve 18
1.9136E+01	#NAME?	1.9856E+01	#NAME?	2.1066E+01	#NAME?	2.2450E+01	#NAME?	2.6486E+01	#NAME?	3.2948E+01	#NAME?
1.9052E+01	#NAME?	1.9767E+01	#NAME?	2.0968E+01	#NAME?	2.2339E+01	#NAME?	2.6334E+01	#NAME?	3.2705E+01	#NAME?
1.8969E+01	#NAME?	1.9679E+01	#NAME?	2.0870E+01	#NAME?	2.2230E+01	#NAME?	2.6184E+01	#NAME?	3.2465E+01	#NAME?
1.8887E+01	#NAME?	1.9591E+01	#NAME?	2.0774E+01	#NAME?	2.2121E+01	#NAME?	2.6035E+01	#NAME?	3.2229E+01	#NAME?
1.8805E+01	#NAME?	1.9505E+01	#NAME?	2.0678E+01	#NAME?	2.2014E+01	#NAME?	2.5888E+01	#NAME?	3.1998E+01	#NAME?
1.8724E+01	#NAME?	1.9418E+01	#NAME?	2.0582E+01	#NAME?	2.1908E+01	#NAME?	2.5743E+01	#NAME?	3.1770E+01	#NAME?
1.8643E+01	#NAME?	1.9333E+01	#NAME?	2.0488E+01	#NAME?	2.1802E+01	#NAME?	2.5599E+01	#NAME?	3.1545E+01	#NAME?
1.8563E+01	#NAME?	1.9248E+01	#NAME?	2.0394E+01	#NAME?	2.1697E+01	#NAME?	2.5457E+01	#NAME?	3.1324E+01	#NAME?
1.8484E+01	#NAME?	1.9164E+01	#NAME?	2.0301E+01	#NAME?	2.1594E+01	#NAME?	2.5317E+01	#NAME?	3.1107E+01	#NAME?
1.8405E+01	#NAME?	1.9080E+01	#NAME?	2.0209E+01	#NAME?	2.1491E+01	#NAME?	2.5178E+01	#NAME?	3.0892E+01	#NAME?
1.8326E+01	#NAME?	1.8997E+01	#NAME?	2.0117E+01	#NAME?	2.1389E+01	#NAME?	2.5040E+01	#NAME?	3.0681E+01	#NAME?
1.8249E+01	#NAME?	1.8914E+01	#NAME?	2.0027E+01	#NAME?	2.1288E+01	#NAME?	2.4904E+01	#NAME?	3.0474E+01	#NAME?
1.8171E+01	#NAME?	1.8832E+01	#NAME?	1.9936E+01	#NAME?	2.1188E+01	#NAME?	2.4770E+01	#NAME?	3.0269E+01	#NAME?
1.8094E+01	#NAME?	1.8751E+01	#NAME?	1.9847E+01	#NAME?	2.1088E+01	#NAME?	2.4637E+01	#NAME?	3.0067E+01	#NAME?
1.8018E+01	#NAME?	1.8670E+01	#NAME?	1.9758E+01	#NAME?	2.0990E+01	#NAME?	2.4505E+01	#NAME?	2.9869E+01	#NAME?
1.7942E+01	#NAME?	1.8590E+01	#NAME?	1.9670E+01	#NAME?	2.0892E+01	#NAME?	2.4375E+01	#NAME?	2.9673E+01	#NAME?
1.7867E+01	#NAME?	1.8510E+01	#NAME?	1.9583E+01	#NAME?	2.0795E+01	#NAME?	2.4246E+01	#NAME?	2.9479E+01	#NAME?
1.7792E+01	#NAME?	1.8431E+01	#NAME?	1.9496E+01	#NAME?	2.0699E+01	#NAME?	2.4118E+01	#NAME?	2.9289E+01	#NAME?
1.7718E+01	#NAME?	1.8353E+01	#NAME?	1.9410E+01	#NAME?	2.0603E+01	#NAME?	2.3992E+01	#NAME?	2.9101E+01	#NAME?
1.7644E+01	#NAME?	1.8275E+01	#NAME?	1.9324E+01	#NAME?	2.0509E+01	#NAME?	2.3867E+01	#NAME?	2.8916E+01	#NAME?
1.7571E+01	#NAME?	1.8197E+01	#NAME?	1.9239E+01	#NAME?	2.0415E+01	#NAME?	2.3743E+01	#NAME?	2.8733E+01	#NAME?
1.7498E+01	#NAME?	1.8120E+01	#NAME?	1.9155E+01	#NAME?	2.0322E+01	#NAME?	2.3620E+01	#NAME?	2.8553E+01	#NAME?
1.7425E+01	#NAME?	1.8044E+01	#NAME?	1.9072E+01	#NAME?	2.0229E+01	#NAME?	2.3499E+01	#NAME?	2.8375E+01	#NAME?
1.7354E+01	#NAME?	1.7968E+01	#NAME?	1.8989E+01	#NAME?	2.0138E+01	#NAME?	2.3379E+01	#NAME?	2.8199E+01	#NAME?
1.7282E+01	#NAME?	1.7892E+01	#NAME?	1.8906E+01	#NAME?	2.0047E+01	#NAME?	2.3260E+01	#NAME?	2.8026E+01	#NAME?
1.7211E+01	#NAME?	1.7817E+01	#NAME?	1.8824E+01	#NAME?	1.9956E+01	#NAME?	2.3142E+01	#NAME?	2.7855E+01	#NAME?
1.7140E+01	#NAME?	1.7743E+01	#NAME?	1.8743E+01	#NAME?	1.9867E+01	#NAME?	2.3025E+01	#NAME?	2.7686E+01	#NAME?
1.7070E+01	#NAME?	1.7669E+01	#NAME?	1.8662E+01	#NAME?	1.9778E+01	#NAME?	2.2909E+01	#NAME?	2.7520E+01	#NAME?
1.7000E+01	#NAME?	1.7595E+01	#NAME?	1.8582E+01	#NAME?	1.9690E+01	#NAME?	2.2795E+01	#NAME?	2.7355E+01	#NAME?
1.6931E+01	#NAME?	1.7522E+01	#NAME?	1.8502E+01	#NAME?	1.9602E+01	#NAME?	2.2681E+01	#NAME?	2.7192E+01	#NAME?
1.6862E+01	#NAME?	1.7450E+01	#NAME?	1.8423E+01	#NAME?	1.9515E+01	#NAME?	2.2569E+01	#NAME?	2.7032E+01	#NAME?
1.6794E+01	#NAME?	1.7378E+01	#NAME?	1.8345E+01	#NAME?	1.9429E+01	#NAME?	2.2457E+01	#NAME?	2.6873E+01	#NAME?
1.6726E+01	#NAME?	1.7306E+01	#NAME?	1.8267E+01	#NAME?	1.9343E+01	#NAME?	2.2347E+01	#NAME?	2.6716E+01	#NAME?
1.6658E+01	#NAME?	1.7235E+01	#NAME?	1.8189E+01	#NAME?	1.9258E+01	#NAME?	2.2237E+01	#NAME?	2.6562E+01	#NAME?
1.6591E+01	#NAME?	1.7164E+01	#NAME?	1.8112E+01	#NAME?	1.9174E+01	#NAME?	2.2129E+01	#NAME?	2.6408E+01	#NAME?
1.6524E+01	#NAME?	1.7094E+01	#NAME?	1.8036E+01	#NAME?	1.9090E+01	#NAME?	2.2022E+01	#NAME?	2.6257E+01	#NAME?
1.6458E+01	#NAME?	1.7024E+01	#NAME?	1.7960E+01	#NAME?	1.9007E+01	#NAME?	2.1915E+01	#NAME?	2.6108E+01	#NAME?
1.6392E+01	#NAME?	1.6954E+01	#NAME?	1.7885E+01	#NAME?	1.8924E+01	#NAME?	2.1809E+01	#NAME?	2.5960E+01	#NAME?
1.6326E+01	#NAME?	1.6885E+01	#NAME?	1.7810E+01	#NAME?	1.8842E+01	#NAME?	2.1705E+01	#NAME?	2.5814E+01	#NAME?
1.6261E+01	#NAME?	1.6817E+01	#NAME?	1.7735E+01	#NAME?	1.8761E+01	#NAME?	2.1601E+01	#NAME?	2.5669E+01	#NAME?
1.6196E+01	#NAME?	1.6748E+01	#NAME?	1.7661E+01	#NAME?	1.8680E+01	#NAME?	2.1498E+01	#NAME?	2.5527E+01	#NAME?
1.6131E+01	#NAME?	1.6681E+01	#NAME?	1.7588E+01	#NAME?	1.8600E+01	#NAME?	2.1396E+01	#NAME?	2.5385E+01	#NAME?
1.6067E+01	#NAME?	1.6613E+01	#NAME?	1.7515E+01	#NAME?	1.8520E+01	#NAME?	2.1295E+01	#NAME?	2.5246E+01	#NAME?
1.6003E+01	#NAME?	1.6546E+01	#NAME?	1.7442E+01	#NAME?	1.8441E+01	#NAME?	2.1195E+01	#NAME?	2.5108E+01	#NAME?
1.5940E+01	#NAME?	1.6480E+01	#NAME?	1.7370E+01	#NAME?	1.8362E+01	#NAME?	2.1095E+01	#NAME?	2.4971E+01	#NAME?
1.5877E+01	#NAME?	1.6414E+01	#NAME?	1.7299E+01	#NAME?	1.8284E+01	#NAME?	2.0996E+01	#NAME?	2.4836E+01	#NAME?
1.5814E+01	#NAME?	1.6348E+01	#NAME?	1.7228E+01	#NAME?	1.8206E+01	#NAME?	2.0899E+01	#NAME?	2.4702E+01	#NAME?
1.5752E+01	#NAME?	1.6282E+01	#NAME?	1.7157E+01	#NAME?	1.8129E+01	#NAME?	2.0802E+01	#NAME?	2.4570E+01	#NAME?
1.5690E+01	#NAME?	1.6217E+01	#NAME?	1.7087E+01	#NAME?	1.8053E+01	#NAME?	2.0705E+01	#NAME?	2.4439E+01	#NAME?
1.5628E+01	#NAME?	1.6153E+01	#NAME?	1.7017E+01	#NAME?	1.7977E+01	#NAME?	2.0610E+01	#NAME?	2.4309E+01	#NAME?
1.5567E+01	#NAME?	1.6088E+01	#NAME?	1.6947E+01	#NAME?	1.7901E+01	#NAME?	2.0515E+01	#NAME?	2.4181E+01	#NAME?
1.5506E+01	#NAME?	1.6025E+01	#NAME?	1.6878E+01	#NAME?	1.7826E+01	#NAME?	2.0421E+01	#NAME?	2.4054E+01	#NAME?

Arg 13	Curve 13	Arg 14	Curve 14	Arg 15	Curve 15	Arg 16	Curve 16	Arg 17	Curve 17	Arg 18	Curve 18
1.5445E+01	#NAME?	1.5961E+01	#NAME?	1.6810E+01	#NAME?	1.7752E+01	#NAME?	2.0328E+01	#NAME?	2.3928E+01	#NAME?
1.5385E+01	#NAME?	1.5898E+01	#NAME?	1.6742E+01	#NAME?	1.7678E+01	#NAME?	2.0236E+01	#NAME?	2.3804E+01	#NAME?
1.5325E+01	#NAME?	1.5835E+01	#NAME?	1.6674E+01	#NAME?	1.7604E+01	#NAME?	2.0144E+01	#NAME?	2.3680E+01	#NAME?
1.5265E+01	#NAME?	1.5772E+01	#NAME?	1.6607E+01	#NAME?	1.7531E+01	#NAME?	2.0053E+01	#NAME?	2.3558E+01	#NAME?
1.5206E+01	#NAME?	1.5710E+01	#NAME?	1.6540E+01	#NAME?	1.7458E+01	#NAME?	1.9963E+01	#NAME?	2.3438E+01	#NAME?
1.5147E+01	#NAME?	1.5649E+01	#NAME?	1.6473E+01	#NAME?	1.7386E+01	#NAME?	1.9873E+01	#NAME?	2.3318E+01	#NAME?
1.5088E+01	#NAME?	1.5587E+01	#NAME?	1.6407E+01	#NAME?	1.7314E+01	#NAME?	1.9784E+01	#NAME?	2.3200E+01	#NAME?
1.5029E+01	#NAME?	1.5526E+01	#NAME?	1.6341E+01	#NAME?	1.7243E+01	#NAME?	1.9696E+01	#NAME?	2.3082E+01	#NAME?
1.4971E+01	#NAME?	1.5465E+01	#NAME?	1.6276E+01	#NAME?	1.7172E+01	#NAME?	1.9608E+01	#NAME?	2.2966E+01	#NAME?
1.4913E+01	#NAME?	1.5405E+01	#NAME?	1.6211E+01	#NAME?	1.7102E+01	#NAME?	1.9521E+01	#NAME?	2.2851E+01	#NAME?
1.4856E+01	#NAME?	1.5345E+01	#NAME?	1.6146E+01	#NAME?	1.7032E+01	#NAME?	1.9435E+01	#NAME?	2.2737E+01	#NAME?
1.4799E+01	#NAME?	1.5285E+01	#NAME?	1.6082E+01	#NAME?	1.6963E+01	#NAME?	1.9349E+01	#NAME?	2.2624E+01	#NAME?
1.4742E+01	#NAME?	1.5225E+01	#NAME?	1.6018E+01	#NAME?	1.6894E+01	#NAME?	1.9264E+01	#NAME?	2.2512E+01	#NAME?
1.4685E+01	#NAME?	1.5166E+01	#NAME?	1.5955E+01	#NAME?	1.6825E+01	#NAME?	1.9180E+01	#NAME?	2.2401E+01	#NAME?
1.4629E+01	#NAME?	1.5107E+01	#NAME?	1.5892E+01	#NAME?	1.6757E+01	#NAME?	1.9096E+01	#NAME?	2.2291E+01	#NAME?
1.4573E+01	#NAME?	1.5049E+01	#NAME?	1.5829E+01	#NAME?	1.6689E+01	#NAME?	1.9013E+01	#NAME?	2.2182E+01	#NAME?
1.4517E+01	#NAME?	1.4991E+01	#NAME?	1.5766E+01	#NAME?	1.6621E+01	#NAME?	1.8930E+01	#NAME?	2.2074E+01	#NAME?
1.4462E+01	#NAME?	1.4933E+01	#NAME?	1.5704E+01	#NAME?	1.6554E+01	#NAME?	1.8848E+01	#NAME?	2.1967E+01	#NAME?
1.4406E+01	#NAME?	1.4875E+01	#NAME?	1.5642E+01	#NAME?	1.6488E+01	#NAME?	1.8766E+01	#NAME?	2.1861E+01	#NAME?
1.4351E+01	#NAME?	1.4818E+01	#NAME?	1.5581E+01	#NAME?	1.6422E+01	#NAME?	1.8686E+01	#NAME?	2.1756E+01	#NAME?
1.4297E+01	#NAME?	1.4761E+01	#NAME?	1.5520E+01	#NAME?	1.6356E+01	#NAME?	1.8605E+01	#NAME?	2.1652E+01	#NAME?
1.4242E+01	#NAME?	1.4704E+01	#NAME?	1.5459E+01	#NAME?	1.6290E+01	#NAME?	1.8525E+01	#NAME?	2.1548E+01	#NAME?
1.4188E+01	#NAME?	1.4648E+01	#NAME?	1.5399E+01	#NAME?	1.6225E+01	#NAME?	1.8446E+01	#NAME?	2.1446E+01	#NAME?
1.4134E+01	#NAME?	1.4592E+01	#NAME?	1.5339E+01	#NAME?	1.6160E+01	#NAME?	1.8368E+01	#NAME?	2.1344E+01	#NAME?
1.4081E+01	#NAME?	1.4536E+01	#NAME?	1.5279E+01	#NAME?	1.6096E+01	#NAME?	1.8289E+01	#NAME?	2.1244E+01	#NAME?
1.4028E+01	#NAME?	1.4480E+01	#NAME?	1.5220E+01	#NAME?	1.6032E+01	#NAME?	1.8212E+01	#NAME?	2.1144E+01	#NAME?
1.3974E+01	#NAME?	1.4425E+01	#NAME?	1.5160E+01	#NAME?	1.5969E+01	#NAME?	1.8135E+01	#NAME?	2.1045E+01	#NAME?
1.3922E+01	#NAME?	1.4370E+01	#NAME?	1.5102E+01	#NAME?	1.5905E+01	#NAME?	1.8058E+01	#NAME?	2.0946E+01	#NAME?
1.3869E+01	#NAME?	1.4315E+01	#NAME?	1.5043E+01	#NAME?	1.5842E+01	#NAME?	1.7982E+01	#NAME?	2.0849E+01	#NAME?
1.3817E+01	#NAME?	1.4261E+01	#NAME?	1.4985E+01	#NAME?	1.5780E+01	#NAME?	1.7907E+01	#NAME?	2.0752E+01	#NAME?
1.3765E+01	#NAME?	1.4206E+01	#NAME?	1.4927E+01	#NAME?	1.5718E+01	#NAME?	1.7831E+01	#NAME?	2.0657E+01	#NAME?
1.3713E+01	#NAME?	1.4152E+01	#NAME?	1.4869E+01	#NAME?	1.5656E+01	#NAME?	1.7757E+01	#NAME?	2.0562E+01	#NAME?
1.3661E+01	#NAME?	1.4099E+01	#NAME?	1.4812E+01	#NAME?	1.5594E+01	#NAME?	1.7683E+01	#NAME?	2.0467E+01	#NAME?
1.3610E+01	#NAME?	1.4045E+01	#NAME?	1.4755E+01	#NAME?	1.5533E+01	#NAME?	1.7609E+01	#NAME?	2.0374E+01	#NAME?
1.3559E+01	#NAME?	1.3992E+01	#NAME?	1.4698E+01	#NAME?	1.5473E+01	#NAME?	1.7536E+01	#NAME?	2.0281E+01	#NAME?
1.3508E+01	#NAME?	1.3939E+01	#NAME?	1.4642E+01	#NAME?	1.5412E+01	#NAME?	1.7463E+01	#NAME?	2.0189E+01	#NAME?
1.3457E+01	#NAME?	1.3887E+01	#NAME?	1.4586E+01	#NAME?	1.5352E+01	#NAME?	1.7391E+01	#NAME?	2.0097E+01	#NAME?
1.3407E+01	#NAME?	1.3834E+01	#NAME?	1.4530E+01	#NAME?	1.5292E+01	#NAME?	1.7320E+01	#NAME?	2.0007E+01	#NAME?
1.3357E+01	#NAME?	1.3782E+01	#NAME?	1.4475E+01	#NAME?	1.5233E+01	#NAME?	1.7248E+01	#NAME?	1.9917E+01	#NAME?
1.3307E+01	#NAME?	1.3730E+01	#NAME?	1.4419E+01	#NAME?	1.5173E+01	#NAME?	1.7177E+01	#NAME?	1.9827E+01	#NAME?
1.3257E+01	#NAME?	1.3679E+01	#NAME?	1.4364E+01	#NAME?	1.5115E+01	#NAME?	1.7107E+01	#NAME?	1.9739E+01	#NAME?
1.3208E+01	#NAME?	1.3627E+01	#NAME?	1.4310E+01	#NAME?	1.5056E+01	#NAME?	1.7037E+01	#NAME?	1.9651E+01	#NAME?
1.3159E+01	#NAME?	1.3576E+01	#NAME?	1.4255E+01	#NAME?	1.4998E+01	#NAME?	1.6967E+01	#NAME?	1.9564E+01	#NAME?
1.3110E+01	#NAME?	1.3525E+01	#NAME?	1.4201E+01	#NAME?	1.4940E+01	#NAME?	1.6898E+01	#NAME?	1.9477E+01	#NAME?
1.3061E+01	#NAME?	1.3474E+01	#NAME?	1.4147E+01	#NAME?	1.4882E+01	#NAME?	1.6830E+01	#NAME?	1.9391E+01	#NAME?
1.3012E+01	#NAME?	1.3424E+01	#NAME?	1.4093E+01	#NAME?	1.4825E+01	#NAME?	1.6761E+01	#NAME?	1.9306E+01	#NAME?
1.2964E+01	#NAME?	1.3374E+01	#NAME?	1.4040E+01	#NAME?	1.4768E+01	#NAME?	1.6694E+01	#NAME?	1.9221E+01	#NAME?
1.2916E+01	#NAME?	1.3324E+01	#NAME?	1.3987E+01	#NAME?	1.4711E+01	#NAME?	1.6626E+01	#NAME?	1.9137E+01	#NAME?
1.2868E+01	#NAME?	1.3274E+01	#NAME?	1.3934E+01	#NAME?	1.4654E+01	#NAME?	1.6559E+01	#NAME?	1.9053E+01	#NAME?
1.2820E+01	#NAME?	1.3224E+01	#NAME?	1.3881E+01	#NAME?	1.4598E+01	#NAME?	1.6492E+01	#NAME?	1.8970E+01	#NAME?
1.2773E+01	#NAME?	1.3175E+01	#NAME?	1.3829E+01	#NAME?	1.4542E+01	#NAME?	1.6426E+01	#NAME?	1.8888E+01	#NAME?
1.2725E+01	#NAME?	1.3126E+01	#NAME?	1.3777E+01	#NAME?	1.4487E+01	#NAME?	1.6360E+01	#NAME?	1.8806E+01	#NAME?

Arg 13	Curve 13	Arg 14	Curve 14	Arg 15	Curve 15	Arg 16	Curve 16	Arg 17	Curve 17	Arg 18	Curve 18
1.2678E+01	#NAME?	1.3077E+01	#NAME?	1.3725E+01	#NAME?	1.4431E+01	#NAME?	1.6295E+01	#NAME?	1.8725E+01	#NAME?
1.2631E+01	#NAME?	1.3028E+01	#NAME?	1.3673E+01	#NAME?	1.4376E+01	#NAME?	1.6230E+01	#NAME?	1.8644E+01	#NAME?
1.2584E+01	#NAME?	1.2980E+01	#NAME?	1.3622E+01	#NAME?	1.4322E+01	#NAME?	1.6165E+01	#NAME?	1.8564E+01	#NAME?
1.2538E+01	#NAME?	1.2932E+01	#NAME?	1.3571E+01	#NAME?	1.4267E+01	#NAME?	1.6101E+01	#NAME?	1.8485E+01	#NAME?
1.2492E+01	#NAME?	1.2884E+01	#NAME?	1.3520E+01	#NAME?	1.4213E+01	#NAME?	1.6037E+01	#NAME?	1.8406E+01	#NAME?
1.2446E+01	#NAME?	1.2836E+01	#NAME?	1.3469E+01	#NAME?	1.4159E+01	#NAME?	1.5973E+01	#NAME?	1.8328E+01	#NAME?
1.2400E+01	#NAME?	1.2788E+01	#NAME?	1.3419E+01	#NAME?	1.4105E+01	#NAME?	1.5910E+01	#NAME?	1.8250E+01	#NAME?
1.2354E+01	#NAME?	1.2741E+01	#NAME?	1.3369E+01	#NAME?	1.4052E+01	#NAME?	1.5847E+01	#NAME?	1.8172E+01	#NAME?
1.2308E+01	#NAME?	1.2694E+01	#NAME?	1.3319E+01	#NAME?	1.3999E+01	#NAME?	1.5784E+01	#NAME?	1.8096E+01	#NAME?
1.2263E+01	#NAME?	1.2647E+01	#NAME?	1.3269E+01	#NAME?	1.3946E+01	#NAME?	1.5722E+01	#NAME?	1.8019E+01	#NAME?
1.2218E+01	#NAME?	1.2600E+01	#NAME?	1.3219E+01	#NAME?	1.3893E+01	#NAME?	1.5660E+01	#NAME?	1.7943E+01	#NAME?
1.2173E+01	#NAME?	1.2554E+01	#NAME?	1.3170E+01	#NAME?	1.3841E+01	#NAME?	1.5599E+01	#NAME?	1.7868E+01	#NAME?
1.2128E+01	#NAME?	1.2507E+01	#NAME?	1.3121E+01	#NAME?	1.3788E+01	#NAME?	1.5538E+01	#NAME?	1.7793E+01	#NAME?
1.2084E+01	#NAME?	1.2461E+01	#NAME?	1.3072E+01	#NAME?	1.3736E+01	#NAME?	1.5477E+01	#NAME?	1.7719E+01	#NAME?
1.2039E+01	#NAME?	1.2415E+01	#NAME?	1.3024E+01	#NAME?	1.3685E+01	#NAME?	1.5416E+01	#NAME?	1.7645E+01	#NAME?
1.1995E+01	#NAME?	1.2369E+01	#NAME?	1.2975E+01	#NAME?	1.3633E+01	#NAME?	1.5356E+01	#NAME?	1.7572E+01	#NAME?
1.1951E+01	#NAME?	1.2324E+01	#NAME?	1.2927E+01	#NAME?	1.3582E+01	#NAME?	1.5296E+01	#NAME?	1.7499E+01	#NAME?
1.1907E+01	#NAME?	1.2278E+01	#NAME?	1.2879E+01	#NAME?	1.3531E+01	#NAME?	1.5237E+01	#NAME?	1.7427E+01	#NAME?
1.1863E+01	#NAME?	1.2233E+01	#NAME?	1.2831E+01	#NAME?	1.3480E+01	#NAME?	1.5178E+01	#NAME?	1.7355E+01	#NAME?
1.1820E+01	#NAME?	1.2188E+01	#NAME?	1.2784E+01	#NAME?	1.3430E+01	#NAME?	1.5119E+01	#NAME?	1.7283E+01	#NAME?
1.1777E+01	#NAME?	1.2143E+01	#NAME?	1.2736E+01	#NAME?	1.3380E+01	#NAME?	1.5060E+01	#NAME?	1.7212E+01	#NAME?
1.1733E+01	#NAME?	1.2099E+01	#NAME?	1.2689E+01	#NAME?	1.3330E+01	#NAME?	1.5002E+01	#NAME?	1.7141E+01	#NAME?
1.1690E+01	#NAME?	1.2054E+01	#NAME?	1.2642E+01	#NAME?	1.3280E+01	#NAME?	1.4944E+01	#NAME?	1.7071E+01	#NAME?
1.1648E+01	#NAME?	1.2010E+01	#NAME?	1.2595E+01	#NAME?	1.3230E+01	#NAME?	1.4886E+01	#NAME?	1.7001E+01	#NAME?
1.1605E+01	#NAME?	1.1966E+01	#NAME?	1.2549E+01	#NAME?	1.3181E+01	#NAME?	1.4829E+01	#NAME?	1.6932E+01	#NAME?
1.1562E+01	#NAME?	1.1922E+01	#NAME?	1.2503E+01	#NAME?	1.3132E+01	#NAME?	1.4772E+01	#NAME?	1.6863E+01	#NAME?
1.1520E+01	#NAME?	1.1878E+01	#NAME?	1.2456E+01	#NAME?	1.3083E+01	#NAME?	1.4715E+01	#NAME?	1.6795E+01	#NAME?
1.1478E+01	#NAME?	1.1834E+01	#NAME?	1.2410E+01	#NAME?	1.3034E+01	#NAME?	1.4658E+01	#NAME?	1.6727E+01	#NAME?
1.1436E+01	#NAME?	1.1791E+01	#NAME?	1.2365E+01	#NAME?	1.2986E+01	#NAME?	1.4602E+01	#NAME?	1.6659E+01	#NAME?
1.1394E+01	#NAME?	1.1748E+01	#NAME?	1.2319E+01	#NAME?	1.2938E+01	#NAME?	1.4546E+01	#NAME?	1.6592E+01	#NAME?
1.1352E+01	#NAME?	1.1705E+01	#NAME?	1.2274E+01	#NAME?	1.2890E+01	#NAME?	1.4491E+01	#NAME?	1.6525E+01	#NAME?
1.1311E+01	#NAME?	1.1662E+01	#NAME?	1.2229E+01	#NAME?	1.2842E+01	#NAME?	1.4435E+01	#NAME?	1.6459E+01	#NAME?
1.1270E+01	#NAME?	1.1619E+01	#NAME?	1.2184E+01	#NAME?	1.2794E+01	#NAME?	1.4380E+01	#NAME?	1.6393E+01	#NAME?
1.1228E+01	#NAME?	1.1577E+01	#NAME?	1.2139E+01	#NAME?	1.2747E+01	#NAME?	1.4325E+01	#NAME?	1.6327E+01	#NAME?
1.1187E+01	#NAME?	1.1534E+01	#NAME?	1.2094E+01	#NAME?	1.2700E+01	#NAME?	1.4271E+01	#NAME?	1.6262E+01	#NAME?
1.1146E+01	#NAME?	1.1492E+01	#NAME?	1.2050E+01	#NAME?	1.2653E+01	#NAME?	1.4217E+01	#NAME?	1.6197E+01	#NAME?
1.1106E+01	#NAME?	1.1450E+01	#NAME?	1.2005E+01	#NAME?	1.2606E+01	#NAME?	1.4163E+01	#NAME?	1.6132E+01	#NAME?
1.1065E+01	#NAME?	1.1408E+01	#NAME?	1.1961E+01	#NAME?	1.2559E+01	#NAME?	1.4109E+01	#NAME?	1.6068E+01	#NAME?
1.1025E+01	#NAME?	1.1366E+01	#NAME?	1.1917E+01	#NAME?	1.2513E+01	#NAME?	1.4055E+01	#NAME?	1.6004E+01	#NAME?
1.0984E+01	#NAME?	1.1325E+01	#NAME?	1.1874E+01	#NAME?	1.2467E+01	#NAME?	1.4002E+01	#NAME?	1.5941E+01	#NAME?
1.0944E+01	#NAME?	1.1283E+01	#NAME?	1.1830E+01	#NAME?	1.2421E+01	#NAME?	1.3949E+01	#NAME?	1.5878E+01	#NAME?
1.0904E+01	#NAME?	1.1242E+01	#NAME?	1.1787E+01	#NAME?	1.2375E+01	#NAME?	1.3897E+01	#NAME?	1.5815E+01	#NAME?
1.0865E+01	#NAME?	1.1201E+01	#NAME?	1.1743E+01	#NAME?	1.2329E+01	#NAME?	1.3844E+01	#NAME?	1.5753E+01	#NAME?
1.0825E+01	#NAME?	1.1160E+01	#NAME?	1.1700E+01	#NAME?	1.2284E+01	#NAME?	1.3792E+01	#NAME?	1.5691E+01	#NAME?
1.0785E+01	#NAME?	1.1119E+01	#NAME?	1.1658E+01	#NAME?	1.2238E+01	#NAME?	1.3740E+01	#NAME?	1.5629E+01	#NAME?
1.0746E+01	#NAME?	1.1079E+01	#NAME?	1.1615E+01	#NAME?	1.2193E+01	#NAME?	1.3688E+01	#NAME?	1.5568E+01	#NAME?
1.0707E+01	#NAME?	1.1038E+01	#NAME?	1.1572E+01	#NAME?	1.2149E+01	#NAME?	1.3637E+01	#NAME?	1.5507E+01	#NAME?
1.0668E+01	#NAME?	1.0998E+01	#NAME?	1.1530E+01	#NAME?	1.2104E+01	#NAME?	1.3586E+01	#NAME?	1.5446E+01	#NAME?
1.0629E+01	#NAME?	1.0958E+01	#NAME?	1.1488E+01	#NAME?	1.2059E+01	#NAME?	1.3535E+01	#NAME?	1.5386E+01	#NAME?
1.0590E+01	#NAME?	1.0918E+01	#NAME?	1.1446E+01	#NAME?	1.2015E+01	#NAME?	1.3484E+01	#NAME?	1.5326E+01	#NAME?
1.0551E+01	#NAME?	1.0878E+01	#NAME?	1.1404E+01	#NAME?	1.1971E+01	#NAME?	1.3434E+01	#NAME?	1.5266E+01	#NAME?
1.0513E+01	#NAME?	1.0838E+01	#NAME?	1.1362E+01	#NAME?	1.1927E+01	#NAME?	1.3383E+01	#NAME?	1.5206E+01	#NAME?

Arg 13	Curve 13	Arg 14	Curve 14	Arg 15	Curve 15	Arg 16	Curve 16	Arg 17	Curve 17	Arg 18	Curve 18
1.0474E+01	#NAME?	1.0799E+01	#NAME?	1.1321E+01	#NAME?	1.1883E+01	#NAME?	1.3333E+01	#NAME?	1.5147E+01	#NAME?
1.0436E+01	#NAME?	1.0759E+01	#NAME?	1.1279E+01	#NAME?	1.1840E+01	#NAME?	1.3283E+01	#NAME?	1.5089E+01	#NAME?
1.0398E+01	#NAME?	1.0720E+01	#NAME?	1.1238E+01	#NAME?	1.1796E+01	#NAME?	1.3234E+01	#NAME?	1.5030E+01	#NAME?
1.0360E+01	#NAME?	1.0681E+01	#NAME?	1.1197E+01	#NAME?	1.1753E+01	#NAME?	1.3184E+01	#NAME?	1.4972E+01	#NAME?
1.0322E+01	#NAME?	1.0642E+01	#NAME?	1.1156E+01	#NAME?	1.1710E+01	#NAME?	1.3135E+01	#NAME?	1.4914E+01	#NAME?
1.0284E+01	#NAME?	1.0603E+01	#NAME?	1.1115E+01	#NAME?	1.1667E+01	#NAME?	1.3086E+01	#NAME?	1.4857E+01	#NAME?
1.0247E+01	#NAME?	1.0564E+01	#NAME?	1.1075E+01	#NAME?	1.1624E+01	#NAME?	1.3038E+01	#NAME?	1.4800E+01	#NAME?
1.0209E+01	#NAME?	1.0526E+01	#NAME?	1.1034E+01	#NAME?	1.1582E+01	#NAME?	1.2989E+01	#NAME?	1.4743E+01	#NAME?
1.0172E+01	#NAME?	1.0487E+01	#NAME?	1.0994E+01	#NAME?	1.1539E+01	#NAME?	1.2941E+01	#NAME?	1.4686E+01	#NAME?
1.0135E+01	#NAME?	1.0449E+01	#NAME?	1.0954E+01	#NAME?	1.1497E+01	#NAME?	1.2893E+01	#NAME?	1.4630E+01	#NAME?
1.0098E+01	#NAME?	1.0411E+01	#NAME?	1.0914E+01	#NAME?	1.1455E+01	#NAME?	1.2845E+01	#NAME?	1.4574E+01	#NAME?
1.0061E+01	#NAME?	1.0373E+01	#NAME?	1.0874E+01	#NAME?	1.1413E+01	#NAME?	1.2797E+01	#NAME?	1.4518E+01	#NAME?
1.0024E+01	#NAME?	1.0335E+01	#NAME?	1.0834E+01	#NAME?	1.1371E+01	#NAME?	1.2750E+01	#NAME?	1.4462E+01	#NAME?
9.9871E+00	#NAME?	1.0297E+01	#NAME?	1.0795E+01	#NAME?	1.1330E+01	#NAME?	1.2703E+01	#NAME?	1.4407E+01	#NAME?
9.9506E+00	#NAME?	1.0259E+01	#NAME?	1.0755E+01	#NAME?	1.1288E+01	#NAME?	1.2656E+01	#NAME?	1.4352E+01	#NAME?
9.9141E+00	#NAME?	1.0222E+01	#NAME?	1.0716E+01	#NAME?	1.1247E+01	#NAME?	1.2609E+01	#NAME?	1.4298E+01	#NAME?
9.8778E+00	#NAME?	1.0184E+01	#NAME?	1.0677E+01	#NAME?	1.1206E+01	#NAME?	1.2562E+01	#NAME?	1.4243E+01	#NAME?
9.8416E+00	#NAME?	1.0147E+01	#NAME?	1.0638E+01	#NAME?	1.1165E+01	#NAME?	1.2516E+01	#NAME?	1.4189E+01	#NAME?
9.8055E+00	#NAME?	1.0110E+01	#NAME?	1.0599E+01	#NAME?	1.1124E+01	#NAME?	1.2470E+01	#NAME?	1.4135E+01	#NAME?
9.7695E+00	#NAME?	1.0073E+01	#NAME?	1.0560E+01	#NAME?	1.1084E+01	#NAME?	1.2424E+01	#NAME?	1.4082E+01	#NAME?
9.7337E+00	#NAME?	1.0036E+01	#NAME?	1.0522E+01	#NAME?	1.1043E+01	#NAME?	1.2378E+01	#NAME?	1.4028E+01	#NAME?
9.6980E+00	#NAME?	9.9994E+00	#NAME?	1.0483E+01	#NAME?	1.1003E+01	#NAME?	1.2332E+01	#NAME?	1.3975E+01	#NAME?
9.6624E+00	#NAME?	9.9628E+00	#NAME?	1.0445E+01	#NAME?	1.0963E+01	#NAME?	1.2287E+01	#NAME?	1.3922E+01	#NAME?
9.6269E+00	#NAME?	9.9263E+00	#NAME?	1.0407E+01	#NAME?	1.0923E+01	#NAME?	1.2242E+01	#NAME?	1.3870E+01	#NAME?
9.5915E+00	#NAME?	9.8899E+00	#NAME?	1.0369E+01	#NAME?	1.0883E+01	#NAME?	1.2197E+01	#NAME?	1.3818E+01	#NAME?
9.5563E+00	#NAME?	9.8537E+00	#NAME?	1.0331E+01	#NAME?	1.0843E+01	#NAME?	1.2152E+01	#NAME?	1.3766E+01	#NAME?
9.5211E+00	#NAME?	9.8176E+00	#NAME?	1.0293E+01	#NAME?	1.0803E+01	#NAME?	1.2107E+01	#NAME?	1.3714E+01	#NAME?
9.4861E+00	#NAME?	9.7816E+00	#NAME?	1.0256E+01	#NAME?	1.0764E+01	#NAME?	1.2062E+01	#NAME?	1.3662E+01	#NAME?
9.4512E+00	#NAME?	9.7457E+00	#NAME?	1.0218E+01	#NAME?	1.0725E+01	#NAME?	1.2018E+01	#NAME?	1.3611E+01	#NAME?
9.4164E+00	#NAME?	9.7099E+00	#NAME?	1.0181E+01	#NAME?	1.0685E+01	#NAME?	1.1974E+01	#NAME?	1.3560E+01	#NAME?
9.3817E+00	#NAME?	9.6743E+00	#NAME?	1.0143E+01	#NAME?	1.0646E+01	#NAME?	1.1930E+01	#NAME?	1.3509E+01	#NAME?
9.3471E+00	#NAME?	9.6388E+00	#NAME?	1.0106E+01	#NAME?	1.0608E+01	#NAME?	1.1886E+01	#NAME?	1.3458E+01	#NAME?
9.3127E+00	#NAME?	9.6034E+00	#NAME?	1.0069E+01	#NAME?	1.0569E+01	#NAME?	1.1843E+01	#NAME?	1.3408E+01	#NAME?
9.2783E+00	#NAME?	9.5681E+00	#NAME?	1.0032E+01	#NAME?	1.0530E+01	#NAME?	1.1799E+01	#NAME?	1.3358E+01	#NAME?
9.2441E+00	#NAME?	9.5329E+00	#NAME?	9.9958E+00	#NAME?	1.0492E+01	#NAME?	1.1756E+01	#NAME?	1.3308E+01	#NAME?
9.2100E+00	#NAME?	9.4978E+00	#NAME?	9.9592E+00	#NAME?	1.0453E+01	#NAME?	1.1713E+01	#NAME?	1.3258E+01	#NAME?
9.1759E+00	#NAME?	9.4629E+00	#NAME?	9.9227E+00	#NAME?	1.0415E+01	#NAME?	1.1670E+01	#NAME?	1.3209E+01	#NAME?
9.1420E+00	#NAME?	9.4280E+00	#NAME?	9.8863E+00	#NAME?	1.0377E+01	#NAME?	1.1627E+01	#NAME?	1.3159E+01	#NAME?
9.1082E+00	#NAME?	9.3933E+00	#NAME?	9.8501E+00	#NAME?	1.0339E+01	#NAME?	1.1585E+01	#NAME?	1.3110E+01	#NAME?
9.0745E+00	#NAME?	9.3587E+00	#NAME?	9.8140E+00	#NAME?	1.0301E+01	#NAME?	1.1542E+01	#NAME?	1.3062E+01	#NAME?
9.0409E+00	#NAME?	9.3242E+00	#NAME?	9.7780E+00	#NAME?	1.0264E+01	#NAME?	1.1500E+01	#NAME?	1.3013E+01	#NAME?
9.0074E+00	#NAME?	9.2898E+00	#NAME?	9.7421E+00	#NAME?	1.0226E+01	#NAME?	1.1458E+01	#NAME?	1.2965E+01	#NAME?
8.9740E+00	#NAME?	9.2556E+00	#NAME?	9.7064E+00	#NAME?	1.0189E+01	#NAME?	1.1416E+01	#NAME?	1.2916E+01	#NAME?
8.9407E+00	#NAME?	9.2214E+00	#NAME?	9.6707E+00	#NAME?	1.0152E+01	#NAME?	1.1374E+01	#NAME?	1.2868E+01	#NAME?
8.9075E+00	#NAME?	9.1873E+00	#NAME?	9.6352E+00	#NAME?	1.0114E+01	#NAME?	1.1333E+01	#NAME?	1.2821E+01	#NAME?
8.8745E+00	#NAME?	9.1534E+00	#NAME?	9.5998E+00	#NAME?	1.0077E+01	#NAME?	1.1291E+01	#NAME?	1.2773E+01	#NAME?
8.8415E+00	#NAME?	9.1195E+00	#NAME?	9.5645E+00	#NAME?	1.0041E+01	#NAME?	1.1250E+01	#NAME?	1.2726E+01	#NAME?
8.8086E+00	#NAME?	9.0858E+00	#NAME?	9.5294E+00	#NAME?	1.0004E+01	#NAME?	1.1209E+01	#NAME?	1.2679E+01	#NAME?
8.7758E+00	#NAME?	9.0521E+00	#NAME?	9.4943E+00	#NAME?	9.9672E+00	#NAME?	1.1168E+01	#NAME?	1.2632E+01	#NAME?
8.7431E+00	#NAME?	9.0186E+00	#NAME?	9.4594E+00	#NAME?	9.9307E+00	#NAME?	1.1127E+01	#NAME?	1.2585E+01	#NAME?
8.7105E+00	#NAME?	8.9852E+00	#NAME?	9.4246E+00	#NAME?	9.8943E+00	#NAME?	1.1086E+01	#NAME?	1.2539E+01	#NAME?
8.6781E+00	#NAME?	8.9519E+00	#NAME?	9.3899E+00	#NAME?	9.8580E+00	#NAME?	1.1046E+01	#NAME?	1.2492E+01	#NAME?

Arg 13	Curve 13	Arg 14	Curve 14	Arg 15	Curve 15	Arg 16	Curve 16	Arg 17	Curve 17	Arg 18	Curve 18
8.6457E+00	#NAME?	8.9186E+00	#NAME?	9.3553E+00	#NAME?	9.8219E+00	#NAME?	1.1006E+01	#NAME?	1.2446E+01	#NAME?
8.6134E+00	#NAME?	8.8855E+00	#NAME?	9.3208E+00	#NAME?	9.7859E+00	#NAME?	1.0965E+01	#NAME?	1.2400E+01	#NAME?
8.5812E+00	#NAME?	8.8525E+00	#NAME?	9.2864E+00	#NAME?	9.7500E+00	#NAME?	1.0925E+01	#NAME?	1.2355E+01	#NAME?
8.5491E+00	#NAME?	8.8196E+00	#NAME?	9.2521E+00	#NAME?	9.7142E+00	#NAME?	1.0885E+01	#NAME?	1.2309E+01	#NAME?
8.5171E+00	#NAME?	8.7868E+00	#NAME?	9.2180E+00	#NAME?	9.6786E+00	#NAME?	1.0846E+01	#NAME?	1.2264E+01	#NAME?
8.4852E+00	#NAME?	8.7541E+00	#NAME?	9.1839E+00	#NAME?	9.6430E+00	#NAME?	1.0806E+01	#NAME?	1.2219E+01	#NAME?
8.4534E+00	#NAME?	8.7215E+00	#NAME?	9.1500E+00	#NAME?	9.6076E+00	#NAME?	1.0767E+01	#NAME?	1.2174E+01	#NAME?
8.4217E+00	#NAME?	8.6889E+00	#NAME?	9.1161E+00	#NAME?	9.5723E+00	#NAME?	1.0727E+01	#NAME?	1.2129E+01	#NAME?
8.3900E+00	#NAME?	8.6565E+00	#NAME?	9.0824E+00	#NAME?	9.5371E+00	#NAME?	1.0688E+01	#NAME?	1.2084E+01	#NAME?
8.3585E+00	#NAME?	8.6242E+00	#NAME?	9.0488E+00	#NAME?	9.5020E+00	#NAME?	1.0649E+01	#NAME?	1.2040E+01	#NAME?
8.3271E+00	#NAME?	8.5920E+00	#NAME?	9.0153E+00	#NAME?	9.4671E+00	#NAME?	1.0610E+01	#NAME?	1.1996E+01	#NAME?
8.2957E+00	#NAME?	8.5598E+00	#NAME?	8.9818E+00	#NAME?	9.4322E+00	#NAME?	1.0571E+01	#NAME?	1.1952E+01	#NAME?
8.2645E+00	#NAME?	8.5278E+00	#NAME?	8.9485E+00	#NAME?	9.3975E+00	#NAME?	1.0533E+01	#NAME?	1.1908E+01	#NAME?
8.2333E+00	#NAME?	8.4959E+00	#NAME?	8.9153E+00	#NAME?	9.3629E+00	#NAME?	1.0494E+01	#NAME?	1.1864E+01	#NAME?
8.2022E+00	#NAME?	8.4640E+00	#NAME?	8.8822E+00	#NAME?	9.3284E+00	#NAME?	1.0456E+01	#NAME?	1.1821E+01	#NAME?
8.1712E+00	#NAME?	8.4323E+00	#NAME?	8.8492E+00	#NAME?	9.2939E+00	#NAME?	1.0418E+01	#NAME?	1.1777E+01	#NAME?
8.1404E+00	#NAME?	8.4006E+00	#NAME?	8.8163E+00	#NAME?	9.2597E+00	#NAME?	1.0380E+01	#NAME?	1.1734E+01	#NAME?
8.1095E+00	#NAME?	8.3691E+00	#NAME?	8.7835E+00	#NAME?	9.2255E+00	#NAME?	1.0342E+01	#NAME?	1.1691E+01	#NAME?
8.0788E+00	#NAME?	8.3376E+00	#NAME?	8.7508E+00	#NAME?	9.1914E+00	#NAME?	1.0304E+01	#NAME?	1.1648E+01	#NAME?
8.0482E+00	#NAME?	8.3062E+00	#NAME?	8.7182E+00	#NAME?	9.1574E+00	#NAME?	1.0266E+01	#NAME?	1.1606E+01	#NAME?
8.0176E+00	#NAME?	8.2749E+00	#NAME?	8.6857E+00	#NAME?	9.1236E+00	#NAME?	1.0229E+01	#NAME?	1.1563E+01	#NAME?
7.9872E+00	#NAME?	8.2437E+00	#NAME?	8.6533E+00	#NAME?	9.0898E+00	#NAME?	1.0191E+01	#NAME?	1.1521E+01	#NAME?
7.9568E+00	#NAME?	8.2126E+00	#NAME?	8.6210E+00	#NAME?	9.0562E+00	#NAME?	1.0154E+01	#NAME?	1.1479E+01	#NAME?
7.9265E+00	#NAME?	8.1816E+00	#NAME?	8.5888E+00	#NAME?	9.0226E+00	#NAME?	1.0117E+01	#NAME?	1.1437E+01	#NAME?
7.8963E+00	#NAME?	8.1507E+00	#NAME?	8.5566E+00	#NAME?	8.9892E+00	#NAME?	1.0080E+01	#NAME?	1.1395E+01	#NAME?
7.8662E+00	#NAME?	8.1199E+00	#NAME?	8.5246E+00	#NAME?	8.9559E+00	#NAME?	1.0043E+01	#NAME?	1.1353E+01	#NAME?
7.8362E+00	#NAME?	8.0891E+00	#NAME?	8.4927E+00	#NAME?	8.9226E+00	#NAME?	1.0006E+01	#NAME?	1.1312E+01	#NAME?
7.8062E+00	#NAME?	8.0584E+00	#NAME?	8.4609E+00	#NAME?	8.8895E+00	#NAME?	9.9698E+00	#NAME?	1.1270E+01	#NAME?
7.7763E+00	#NAME?	8.0279E+00	#NAME?	8.4291E+00	#NAME?	8.8565E+00	#NAME?	9.9332E+00	#NAME?	1.1229E+01	#NAME?
7.7466E+00	#NAME?	7.9974E+00	#NAME?	8.3975E+00	#NAME?	8.8235E+00	#NAME?	9.8968E+00	#NAME?	1.1188E+01	#NAME?
7.7169E+00	#NAME?	7.9670E+00	#NAME?	8.3659E+00	#NAME?	8.7907E+00	#NAME?	9.8606E+00	#NAME?	1.1147E+01	#NAME?
7.6872E+00	#NAME?	7.9367E+00	#NAME?	8.3345E+00	#NAME?	8.7580E+00	#NAME?	9.8244E+00	#NAME?	1.1106E+01	#NAME?
7.6577E+00	#NAME?	7.9064E+00	#NAME?	8.3031E+00	#NAME?	8.7254E+00	#NAME?	9.7884E+00	#NAME?	1.1066E+01	#NAME?
7.6282E+00	#NAME?	7.8763E+00	#NAME?	8.2718E+00	#NAME?	8.6928E+00	#NAME?	9.7525E+00	#NAME?	1.1025E+01	#NAME?
7.5988E+00	#NAME?	7.8462E+00	#NAME?	8.2406E+00	#NAME?	8.6604E+00	#NAME?	9.7167E+00	#NAME?	1.0985E+01	#NAME?
7.5695E+00	#NAME?	7.8162E+00	#NAME?	8.2095E+00	#NAME?	8.6281E+00	#NAME?	9.6811E+00	#NAME?	1.0945E+01	#NAME?
7.5403E+00	#NAME?	7.7863E+00	#NAME?	8.1785E+00	#NAME?	8.5958E+00	#NAME?	9.6455E+00	#NAME?	1.0905E+01	#NAME?
7.5112E+00	#NAME?	7.7565E+00	#NAME?	8.1476E+00	#NAME?	8.5637E+00	#NAME?	9.6101E+00	#NAME?	1.0865E+01	#NAME?
7.4821E+00	#NAME?	7.7268E+00	#NAME?	8.1168E+00	#NAME?	8.5317E+00	#NAME?	9.5748E+00	#NAME?	1.0825E+01	#NAME?
7.4531E+00	#NAME?	7.6971E+00	#NAME?	8.0860E+00	#NAME?	8.4997E+00	#NAME?	9.5396E+00	#NAME?	1.0786E+01	#NAME?
7.4242E+00	#NAME?	7.6676E+00	#NAME?	8.0554E+00	#NAME?	8.4679E+00	#NAME?	9.5045E+00	#NAME?	1.0747E+01	#NAME?
7.3954E+00	#NAME?	7.6381E+00	#NAME?	8.0248E+00	#NAME?	8.4361E+00	#NAME?	9.4695E+00	#NAME?	1.0707E+01	#NAME?
7.3666E+00	#NAME?	7.6087E+00	#NAME?	7.9943E+00	#NAME?	8.4044E+00	#NAME?	9.4347E+00	#NAME?	1.0668E+01	#NAME?
7.3380E+00	#NAME?	7.5794E+00	#NAME?	7.9639E+00	#NAME?	8.3729E+00	#NAME?	9.3999E+00	#NAME?	1.0629E+01	#NAME?
7.3094E+00	#NAME?	7.5501E+00	#NAME?	7.9336E+00	#NAME?	8.3414E+00	#NAME?	9.3653E+00	#NAME?	1.0590E+01	#NAME?
7.2808E+00	#NAME?	7.5209E+00	#NAME?	7.9034E+00	#NAME?	8.3100E+00	#NAME?	9.3308E+00	#NAME?	1.0552E+01	#NAME?
7.2524E+00	#NAME?	7.4919E+00	#NAME?	7.8733E+00	#NAME?	8.2787E+00	#NAME?	9.2964E+00	#NAME?	1.0513E+01	#NAME?
7.2240E+00	#NAME?	7.4628E+00	#NAME?	7.8432E+00	#NAME?	8.2475E+00	#NAME?	9.2621E+00	#NAME?	1.0475E+01	#NAME?
7.1957E+00	#NAME?	7.4339E+00	#NAME?	7.8132E+00	#NAME?	8.2164E+00	#NAME?	9.2279E+00	#NAME?	1.0437E+01	#NAME?
7.1675E+00	#NAME?	7.4050E+00	#NAME?	7.7834E+00	#NAME?	8.1853E+00	#NAME?	9.1938E+00	#NAME?	1.0398E+01	#NAME?
7.1393E+00	#NAME?	7.3763E+00	#NAME?	7.7535E+00	#NAME?	8.1544E+00	#NAME?	9.1598E+00	#NAME?	1.0360E+01	#NAME?
7.1113E+00	#NAME?	7.3476E+00	#NAME?	7.7238E+00	#NAME?	8.1235E+00	#NAME?	9.1259E+00	#NAME?	1.0323E+01	#NAME?

Arg 13	Curve 13	Arg 14	Curve 14	Arg 15	Curve 15	Arg 16	Curve 16	Arg 17	Curve 17	Arg 18	Curve 18
7.0833E+00	#NAME?	7.3189E+00	#NAME?	7.6942E+00	#NAME?	8.0928E+00	#NAME?	9.0922E+00	#NAME?	1.0285E+01	#NAME?
7.0553E+00	#NAME?	7.2904E+00	#NAME?	7.6646E+00	#NAME?	8.0621E+00	#NAME?	9.0585E+00	#NAME?	1.0247E+01	#NAME?
7.0275E+00	#NAME?	7.2619E+00	#NAME?	7.6351E+00	#NAME?	8.0315E+00	#NAME?	9.0250E+00	#NAME?	1.0210E+01	#NAME?
6.9997E+00	#NAME?	7.2335E+00	#NAME?	7.6057E+00	#NAME?	8.0010E+00	#NAME?	8.9915E+00	#NAME?	1.0172E+01	#NAME?
6.9719E+00	#NAME?	7.2052E+00	#NAME?	7.5764E+00	#NAME?	7.9706E+00	#NAME?	8.9582E+00	#NAME?	1.0135E+01	#NAME?
6.9443E+00	#NAME?	7.1769E+00	#NAME?	7.5472E+00	#NAME?	7.9403E+00	#NAME?	8.9249E+00	#NAME?	1.0098E+01	#NAME?
6.9167E+00	#NAME?	7.1488E+00	#NAME?	7.5180E+00	#NAME?	7.9100E+00	#NAME?	8.8918E+00	#NAME?	1.0061E+01	#NAME?
6.8892E+00	#NAME?	7.1207E+00	#NAME?	7.4889E+00	#NAME?	7.8799E+00	#NAME?	8.8588E+00	#NAME?	1.0024E+01	#NAME?
6.8618E+00	#NAME?	7.0926E+00	#NAME?	7.4599E+00	#NAME?	7.8498E+00	#NAME?	8.8258E+00	#NAME?	9.9877E+00	#NAME?
6.8344E+00	#NAME?	7.0647E+00	#NAME?	7.4310E+00	#NAME?	7.8198E+00	#NAME?	8.7930E+00	#NAME?	9.9511E+00	#NAME?
6.8071E+00	#NAME?	7.0368E+00	#NAME?	7.4022E+00	#NAME?	7.7899E+00	#NAME?	8.7603E+00	#NAME?	9.9147E+00	#NAME?
6.7799E+00	#NAME?	7.0090E+00	#NAME?	7.3734E+00	#NAME?	7.7601E+00	#NAME?	8.7276E+00	#NAME?	9.8783E+00	#NAME?
6.7527E+00	#NAME?	6.9812E+00	#NAME?	7.3447E+00	#NAME?	7.7304E+00	#NAME?	8.6951E+00	#NAME?	9.8421E+00	#NAME?
6.7256E+00	#NAME?	6.9535E+00	#NAME?	7.3161E+00	#NAME?	7.7007E+00	#NAME?	8.6627E+00	#NAME?	9.8060E+00	#NAME?
6.6986E+00	#NAME?	6.9259E+00	#NAME?	7.2875E+00	#NAME?	7.6711E+00	#NAME?	8.6303E+00	#NAME?	9.7701E+00	#NAME?
6.6716E+00	#NAME?	6.8984E+00	#NAME?	7.2591E+00	#NAME?	7.6416E+00	#NAME?	8.5981E+00	#NAME?	9.7342E+00	#NAME?
6.6447E+00	#NAME?	6.8710E+00	#NAME?	7.2307E+00	#NAME?	7.6122E+00	#NAME?	8.5659E+00	#NAME?	9.6985E+00	#NAME?
6.6179E+00	#NAME?	6.8436E+00	#NAME?	7.2024E+00	#NAME?	7.5829E+00	#NAME?	8.5339E+00	#NAME?	9.6629E+00	#NAME?
6.5911E+00	#NAME?	6.8162E+00	#NAME?	7.1741E+00	#NAME?	7.5536E+00	#NAME?	8.5019E+00	#NAME?	9.6274E+00	#NAME?
6.5645E+00	#NAME?	6.7890E+00	#NAME?	7.1459E+00	#NAME?	7.5244E+00	#NAME?	8.4701E+00	#NAME?	9.5921E+00	#NAME?
6.5378E+00	#NAME?	6.7618E+00	#NAME?	7.1179E+00	#NAME?	7.4953E+00	#NAME?	8.4383E+00	#NAME?	9.5568E+00	#NAME?
6.5113E+00	#NAME?	6.7347E+00	#NAME?	7.0898E+00	#NAME?	7.4663E+00	#NAME?	8.4066E+00	#NAME?	9.5217E+00	#NAME?
6.4848E+00	#NAME?	6.7076E+00	#NAME?	7.0619E+00	#NAME?	7.4374E+00	#NAME?	8.3751E+00	#NAME?	9.4866E+00	#NAME?
6.4583E+00	#NAME?	6.6806E+00	#NAME?	7.0340E+00	#NAME?	7.4085E+00	#NAME?	8.3436E+00	#NAME?	9.4517E+00	#NAME?
6.4320E+00	#NAME?	6.6537E+00	#NAME?	7.0062E+00	#NAME?	7.3797E+00	#NAME?	8.3122E+00	#NAME?	9.4169E+00	#NAME?
6.4057E+00	#NAME?	6.6269E+00	#NAME?	6.9785E+00	#NAME?	7.3510E+00	#NAME?	8.2809E+00	#NAME?	9.3822E+00	#NAME?
6.3794E+00	#NAME?	6.6001E+00	#NAME?	6.9508E+00	#NAME?	7.3224E+00	#NAME?	8.2497E+00	#NAME?	9.3477E+00	#NAME?
6.3532E+00	#NAME?	6.5734E+00	#NAME?	6.9232E+00	#NAME?	7.2938E+00	#NAME?	8.2185E+00	#NAME?	9.3132E+00	#NAME?
6.3271E+00	#NAME?	6.5467E+00	#NAME?	6.8957E+00	#NAME?	7.2653E+00	#NAME?	8.1875E+00	#NAME?	9.2788E+00	#NAME?
6.3011E+00	#NAME?	6.5202E+00	#NAME?	6.8682E+00	#NAME?	7.2369E+00	#NAME?	8.1566E+00	#NAME?	9.2446E+00	#NAME?
6.2751E+00	#NAME?	6.4936E+00	#NAME?	6.8408E+00	#NAME?	7.2086E+00	#NAME?	8.1257E+00	#NAME?	9.2105E+00	#NAME?
6.2492E+00	#NAME?	6.4672E+00	#NAME?	6.8135E+00	#NAME?	7.1803E+00	#NAME?	8.0949E+00	#NAME?	9.1764E+00	#NAME?
6.2233E+00	#NAME?	6.4408E+00	#NAME?	6.7863E+00	#NAME?	7.1521E+00	#NAME?	8.0643E+00	#NAME?	9.1425E+00	#NAME?

Arg 19	Curve 19	Flux Out (gm/yr)	Intake (mg/kg body wt./day)
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?

Arg 19	Curve 19	Flux Out (gm/yr)	Intake (mg/kg body wt./day)
0.0000E+00	0.0000E+00	#NAME?	#NAME?

Arg 19	Curve 19	Flux Out (gm/yr)	Intake (mg/kg body wt./day)
0.0000E+00	0.0000E+00	#NAME?	#NAME?

Arg 19	Curve 19	Flux Out (gm/yr)	Intake (mg/kg body wt./day)
0.0000E+00	0.0000E+00	#NAME?	#NAME?

Arg 19	Curve 19	Flux Out (gm/yr)	Intake (mg/kg body wt./day)
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
4.7678E+02	#NAME?	#NAME?	#NAME?
2.7307E+02	#NAME?	#NAME?	#NAME?
2.1097E+02	#NAME?	#NAME?	#NAME?
1.7798E+02	#NAME?	#NAME?	#NAME?
1.5671E+02	#NAME?	#NAME?	#NAME?
1.4155E+02	#NAME?	#NAME?	#NAME?
1.3002E+02	#NAME?	#NAME?	#NAME?
1.2088E+02	#NAME?	#NAME?	#NAME?

Arg 19	Curve 19	Flux Out (gm/yr)	Intake (mg/kg body wt./day)
1.1339E+02	#NAME?	#NAME?	#NAME?
1.0711E+02	#NAME?	#NAME?	#NAME?
1.0175E+02	#NAME?	#NAME?	#NAME?
9.7099E+01	#NAME?	#NAME?	#NAME?
9.3013E+01	#NAME?	#NAME?	#NAME?
8.9385E+01	#NAME?	#NAME?	#NAME?
8.6135E+01	#NAME?	#NAME?	#NAME?
8.3202E+01	#NAME?	#NAME?	#NAME?
8.0536E+01	#NAME?	#NAME?	#NAME?
7.8100E+01	#NAME?	#NAME?	#NAME?
7.5861E+01	#NAME?	#NAME?	#NAME?
7.3794E+01	#NAME?	#NAME?	#NAME?
7.1878E+01	#NAME?	#NAME?	#NAME?
7.0096E+01	#NAME?	#NAME?	#NAME?
6.8431E+01	#NAME?	#NAME?	#NAME?
6.6872E+01	#NAME?	#NAME?	#NAME?
6.5408E+01	#NAME?	#NAME?	#NAME?
6.4029E+01	#NAME?	#NAME?	#NAME?
6.2727E+01	#NAME?	#NAME?	#NAME?
6.1496E+01	#NAME?	#NAME?	#NAME?
6.0329E+01	#NAME?	#NAME?	#NAME?
5.9220E+01	#NAME?	#NAME?	#NAME?
5.8165E+01	#NAME?	#NAME?	#NAME?
5.7159E+01	#NAME?	#NAME?	#NAME?
5.6199E+01	#NAME?	#NAME?	#NAME?
5.5281E+01	#NAME?	#NAME?	#NAME?
5.4402E+01	#NAME?	#NAME?	#NAME?
5.3560E+01	#NAME?	#NAME?	#NAME?
5.2752E+01	#NAME?	#NAME?	#NAME?
5.1975E+01	#NAME?	#NAME?	#NAME?
5.1228E+01	#NAME?	#NAME?	#NAME?
5.0508E+01	#NAME?	#NAME?	#NAME?
4.9815E+01	#NAME?	#NAME?	#NAME?
4.9146E+01	#NAME?	#NAME?	#NAME?
4.8499E+01	#NAME?	#NAME?	#NAME?
4.7875E+01	#NAME?	#NAME?	#NAME?
4.7271E+01	#NAME?	#NAME?	#NAME?
4.6687E+01	#NAME?	#NAME?	#NAME?
4.6120E+01	#NAME?	#NAME?	#NAME?
4.5571E+01	#NAME?	#NAME?	#NAME?
4.5039E+01	#NAME?	#NAME?	#NAME?
4.4522E+01	#NAME?	#NAME?	#NAME?
4.4020E+01	#NAME?	#NAME?	#NAME?
4.3532E+01	#NAME?	#NAME?	#NAME?
4.3057E+01	#NAME?	#NAME?	#NAME?
4.2595E+01	#NAME?	#NAME?	#NAME?
4.2146E+01	#NAME?	#NAME?	#NAME?
4.1708E+01	#NAME?	#NAME?	#NAME?
4.1282E+01	#NAME?	#NAME?	#NAME?
4.0866E+01	#NAME?	#NAME?	#NAME?
4.0460E+01	#NAME?	#NAME?	#NAME?
4.0064E+01	#NAME?	#NAME?	#NAME?

Arg 19	Curve 19	Flux Out (gm/yr)	Intake (mg/kg body wt./day)
3.9678E+01	#NAME?	#NAME?	#NAME?
3.9300E+01	#NAME?	#NAME?	#NAME?
3.8932E+01	#NAME?	#NAME?	#NAME?
3.8571E+01	#NAME?	#NAME?	#NAME?
3.8219E+01	#NAME?	#NAME?	#NAME?
3.7874E+01	#NAME?	#NAME?	#NAME?
3.7537E+01	#NAME?	#NAME?	#NAME?
3.7207E+01	#NAME?	#NAME?	#NAME?
3.6883E+01	#NAME?	#NAME?	#NAME?
3.6567E+01	#NAME?	#NAME?	#NAME?
3.6256E+01	#NAME?	#NAME?	#NAME?
3.5952E+01	#NAME?	#NAME?	#NAME?
3.5654E+01	#NAME?	#NAME?	#NAME?
3.5362E+01	#NAME?	#NAME?	#NAME?
3.5075E+01	#NAME?	#NAME?	#NAME?
3.4794E+01	#NAME?	#NAME?	#NAME?
3.4518E+01	#NAME?	#NAME?	#NAME?
3.4247E+01	#NAME?	#NAME?	#NAME?
3.3981E+01	#NAME?	#NAME?	#NAME?
3.3719E+01	#NAME?	#NAME?	#NAME?
3.3462E+01	#NAME?	#NAME?	#NAME?
3.3210E+01	#NAME?	#NAME?	#NAME?
3.2962E+01	#NAME?	#NAME?	#NAME?
3.2718E+01	#NAME?	#NAME?	#NAME?
3.2478E+01	#NAME?	#NAME?	#NAME?
3.2242E+01	#NAME?	#NAME?	#NAME?
3.2010E+01	#NAME?	#NAME?	#NAME?
3.1782E+01	#NAME?	#NAME?	#NAME?
3.1557E+01	#NAME?	#NAME?	#NAME?
3.1336E+01	#NAME?	#NAME?	#NAME?
3.1118E+01	#NAME?	#NAME?	#NAME?
3.0904E+01	#NAME?	#NAME?	#NAME?
3.0693E+01	#NAME?	#NAME?	#NAME?
3.0485E+01	#NAME?	#NAME?	#NAME?
3.0280E+01	#NAME?	#NAME?	#NAME?
3.0078E+01	#NAME?	#NAME?	#NAME?
2.9879E+01	#NAME?	#NAME?	#NAME?
2.9683E+01	#NAME?	#NAME?	#NAME?
2.9490E+01	#NAME?	#NAME?	#NAME?
2.9299E+01	#NAME?	#NAME?	#NAME?
2.9111E+01	#NAME?	#NAME?	#NAME?
2.8926E+01	#NAME?	#NAME?	#NAME?
2.8743E+01	#NAME?	#NAME?	#NAME?
2.8563E+01	#NAME?	#NAME?	#NAME?
2.8385E+01	#NAME?	#NAME?	#NAME?
2.8209E+01	#NAME?	#NAME?	#NAME?
2.8036E+01	#NAME?	#NAME?	#NAME?
2.7864E+01	#NAME?	#NAME?	#NAME?
2.7696E+01	#NAME?	#NAME?	#NAME?
2.7529E+01	#NAME?	#NAME?	#NAME?
2.7364E+01	#NAME?	#NAME?	#NAME?
2.7201E+01	#NAME?	#NAME?	#NAME?

Arg 19	Curve 19	Flux Out (gm/yr)	Intake (mg/kg body wt./day)
2.7041E+01	#NAME?	#NAME?	#NAME?
2.6882E+01	#NAME?	#NAME?	#NAME?
2.6725E+01	#NAME?	#NAME?	#NAME?
2.6570E+01	#NAME?	#NAME?	#NAME?
2.6417E+01	#NAME?	#NAME?	#NAME?
2.6266E+01	#NAME?	#NAME?	#NAME?
2.6116E+01	#NAME?	#NAME?	#NAME?
2.5968E+01	#NAME?	#NAME?	#NAME?
2.5822E+01	#NAME?	#NAME?	#NAME?
2.5677E+01	#NAME?	#NAME?	#NAME?
2.5534E+01	#NAME?	#NAME?	#NAME?
2.5393E+01	#NAME?	#NAME?	#NAME?
2.5253E+01	#NAME?	#NAME?	#NAME?
2.5115E+01	#NAME?	#NAME?	#NAME?
2.4978E+01	#NAME?	#NAME?	#NAME?
2.4843E+01	#NAME?	#NAME?	#NAME?
2.4709E+01	#NAME?	#NAME?	#NAME?
2.4577E+01	#NAME?	#NAME?	#NAME?
2.4446E+01	#NAME?	#NAME?	#NAME?
2.4316E+01	#NAME?	#NAME?	#NAME?
2.4188E+01	#NAME?	#NAME?	#NAME?
2.4061E+01	#NAME?	#NAME?	#NAME?
2.3935E+01	#NAME?	#NAME?	#NAME?
2.3810E+01	#NAME?	#NAME?	#NAME?
2.3687E+01	#NAME?	#NAME?	#NAME?
2.3565E+01	#NAME?	#NAME?	#NAME?
2.3444E+01	#NAME?	#NAME?	#NAME?
2.3325E+01	#NAME?	#NAME?	#NAME?
2.3206E+01	#NAME?	#NAME?	#NAME?
2.3089E+01	#NAME?	#NAME?	#NAME?
2.2972E+01	#NAME?	#NAME?	#NAME?
2.2857E+01	#NAME?	#NAME?	#NAME?
2.2743E+01	#NAME?	#NAME?	#NAME?
2.2630E+01	#NAME?	#NAME?	#NAME?
2.2518E+01	#NAME?	#NAME?	#NAME?
2.2407E+01	#NAME?	#NAME?	#NAME?
2.2297E+01	#NAME?	#NAME?	#NAME?
2.2188E+01	#NAME?	#NAME?	#NAME?
2.2080E+01	#NAME?	#NAME?	#NAME?
2.1973E+01	#NAME?	#NAME?	#NAME?
2.1867E+01	#NAME?	#NAME?	#NAME?
2.1762E+01	#NAME?	#NAME?	#NAME?
2.1657E+01	#NAME?	#NAME?	#NAME?
2.1554E+01	#NAME?	#NAME?	#NAME?
2.1452E+01	#NAME?	#NAME?	#NAME?
2.1350E+01	#NAME?	#NAME?	#NAME?
2.1249E+01	#NAME?	#NAME?	#NAME?
2.1149E+01	#NAME?	#NAME?	#NAME?
2.1050E+01	#NAME?	#NAME?	#NAME?
2.0952E+01	#NAME?	#NAME?	#NAME?
2.0854E+01	#NAME?	#NAME?	#NAME?
2.0758E+01	#NAME?	#NAME?	#NAME?

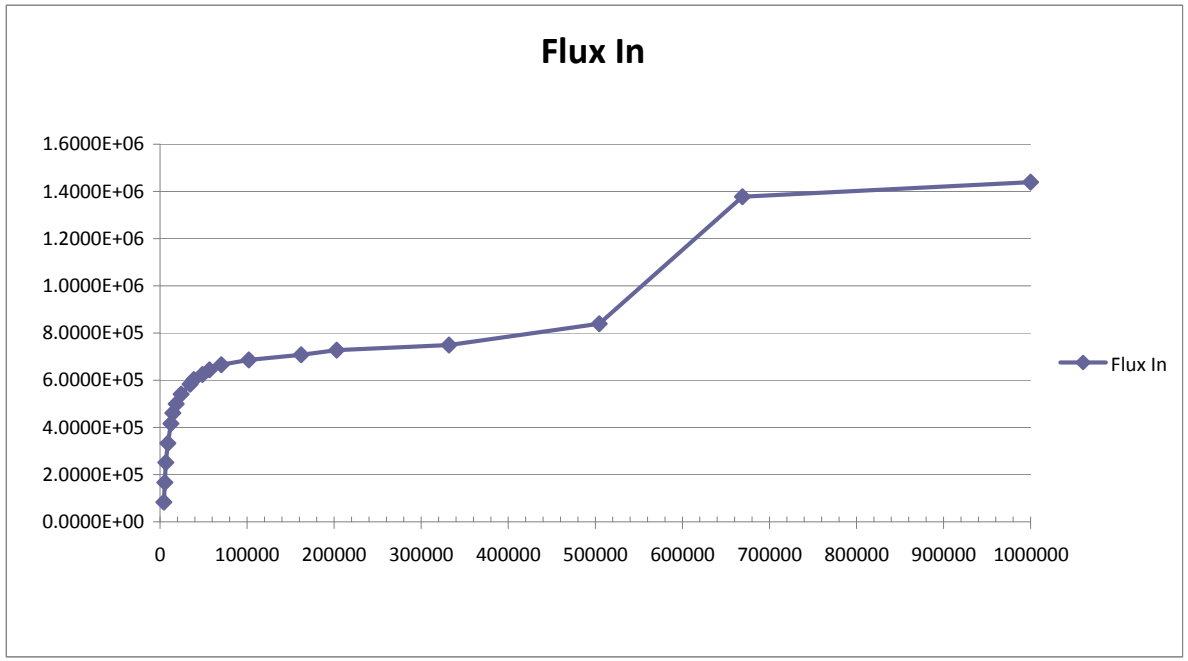
Arg 19	Curve 19	Flux Out (gm/yr)	Intake (mg/kg body wt./day)
2.0662E+01	#NAME?	#NAME?	#NAME?
2.0567E+01	#NAME?	#NAME?	#NAME?
2.0472E+01	#NAME?	#NAME?	#NAME?
2.0379E+01	#NAME?	#NAME?	#NAME?
2.0286E+01	#NAME?	#NAME?	#NAME?
2.0194E+01	#NAME?	#NAME?	#NAME?
2.0102E+01	#NAME?	#NAME?	#NAME?
2.0012E+01	#NAME?	#NAME?	#NAME?
1.9922E+01	#NAME?	#NAME?	#NAME?
1.9832E+01	#NAME?	#NAME?	#NAME?
1.9744E+01	#NAME?	#NAME?	#NAME?
1.9656E+01	#NAME?	#NAME?	#NAME?
1.9568E+01	#NAME?	#NAME?	#NAME?
1.9482E+01	#NAME?	#NAME?	#NAME?
1.9396E+01	#NAME?	#NAME?	#NAME?
1.9310E+01	#NAME?	#NAME?	#NAME?
1.9226E+01	#NAME?	#NAME?	#NAME?
1.9141E+01	#NAME?	#NAME?	#NAME?
1.9058E+01	#NAME?	#NAME?	#NAME?
1.8975E+01	#NAME?	#NAME?	#NAME?
1.8893E+01	#NAME?	#NAME?	#NAME?
1.8811E+01	#NAME?	#NAME?	#NAME?
1.8730E+01	#NAME?	#NAME?	#NAME?
1.8649E+01	#NAME?	#NAME?	#NAME?
1.8569E+01	#NAME?	#NAME?	#NAME?
1.8489E+01	#NAME?	#NAME?	#NAME?
1.8410E+01	#NAME?	#NAME?	#NAME?
1.8332E+01	#NAME?	#NAME?	#NAME?
1.8254E+01	#NAME?	#NAME?	#NAME?
1.8177E+01	#NAME?	#NAME?	#NAME?
1.8100E+01	#NAME?	#NAME?	#NAME?
1.8023E+01	#NAME?	#NAME?	#NAME?
1.7948E+01	#NAME?	#NAME?	#NAME?
1.7872E+01	#NAME?	#NAME?	#NAME?
1.7797E+01	#NAME?	#NAME?	#NAME?
1.7723E+01	#NAME?	#NAME?	#NAME?
1.7649E+01	#NAME?	#NAME?	#NAME?
1.7576E+01	#NAME?	#NAME?	#NAME?
1.7503E+01	#NAME?	#NAME?	#NAME?
1.7431E+01	#NAME?	#NAME?	#NAME?
1.7359E+01	#NAME?	#NAME?	#NAME?
1.7287E+01	#NAME?	#NAME?	#NAME?
1.7216E+01	#NAME?	#NAME?	#NAME?
1.7145E+01	#NAME?	#NAME?	#NAME?
1.7075E+01	#NAME?	#NAME?	#NAME?
1.7005E+01	#NAME?	#NAME?	#NAME?
1.6936E+01	#NAME?	#NAME?	#NAME?
1.6867E+01	#NAME?	#NAME?	#NAME?
1.6799E+01	#NAME?	#NAME?	#NAME?
1.6730E+01	#NAME?	#NAME?	#NAME?
1.6663E+01	#NAME?	#NAME?	#NAME?
1.6596E+01	#NAME?	#NAME?	#NAME?

Arg 19	Curve 19	Flux Out (gm/yr)	Intake (mg/kg body wt./day)
1.6529E+01	#NAME?	#NAME?	#NAME?
1.6462E+01	#NAME?	#NAME?	#NAME?
1.6396E+01	#NAME?	#NAME?	#NAME?
1.6330E+01	#NAME?	#NAME?	#NAME?
1.6265E+01	#NAME?	#NAME?	#NAME?
1.6200E+01	#NAME?	#NAME?	#NAME?
1.6136E+01	#NAME?	#NAME?	#NAME?
1.6071E+01	#NAME?	#NAME?	#NAME?
1.6008E+01	#NAME?	#NAME?	#NAME?
1.5944E+01	#NAME?	#NAME?	#NAME?
1.5881E+01	#NAME?	#NAME?	#NAME?
1.5818E+01	#NAME?	#NAME?	#NAME?
1.5756E+01	#NAME?	#NAME?	#NAME?
1.5694E+01	#NAME?	#NAME?	#NAME?
1.5632E+01	#NAME?	#NAME?	#NAME?
1.5571E+01	#NAME?	#NAME?	#NAME?
1.5510E+01	#NAME?	#NAME?	#NAME?
1.5449E+01	#NAME?	#NAME?	#NAME?
1.5389E+01	#NAME?	#NAME?	#NAME?
1.5329E+01	#NAME?	#NAME?	#NAME?
1.5269E+01	#NAME?	#NAME?	#NAME?
1.5210E+01	#NAME?	#NAME?	#NAME?
1.5151E+01	#NAME?	#NAME?	#NAME?
1.5092E+01	#NAME?	#NAME?	#NAME?
1.5033E+01	#NAME?	#NAME?	#NAME?
1.4975E+01	#NAME?	#NAME?	#NAME?
1.4918E+01	#NAME?	#NAME?	#NAME?
1.4860E+01	#NAME?	#NAME?	#NAME?
1.4803E+01	#NAME?	#NAME?	#NAME?
1.4746E+01	#NAME?	#NAME?	#NAME?
1.4689E+01	#NAME?	#NAME?	#NAME?
1.4633E+01	#NAME?	#NAME?	#NAME?
1.4577E+01	#NAME?	#NAME?	#NAME?

Combined TSPA Case, No Pumping, Wet Climate
Non-Radiologic Metals Transport from 18 km to Furnace Creek Springs
Contaminant: Nickel
Oral Ref dose =2E-02 mg/kg body wt./day
Flow Rate of Discharge for Springs 8946.6 acre-ft/yr 1.1031E+10 liters/yr

Input Curve

Time (yr)	18 km Flux	Flux In	Del R
4500	8.3250E+04	8.3250E+04	
5450	1.6650E+05	1.6650E+05	8.3250E+04
6670	2.5142E+05	2.5142E+05	8.4915E+04
9010	3.3300E+05	3.3300E+05	8.1585E+04
12440	4.1625E+05	4.1625E+05	8.3250E+04
14700	4.6121E+05	4.6121E+05	4.4955E+04
18600	4.9950E+05	4.9950E+05	3.8295E+04
24290	5.4113E+05	5.4113E+05	4.1625E+04
34490	5.8275E+05	5.8275E+05	4.1625E+04
38830	6.0273E+05	6.0273E+05	1.9980E+04
48770	6.2438E+05	6.2438E+05	2.1645E+04
56800	6.4436E+05	6.4436E+05	1.9980E+04
70380	6.6600E+05	6.6600E+05	2.1645E+04
101940	6.8598E+05	6.8598E+05	1.9980E+04
162170	7.0763E+05	7.0763E+05	2.1645E+04
202990	7.2761E+05	7.2761E+05	1.9980E+04
331880	7.4925E+05	7.4925E+05	2.1645E+04
504500	8.3924E+05	8.3924E+05	8.9987E+04
668970	1.3776E+06	1.3776E+06	5.3837E+05
1000000	1.4394E+06	1.4394E+06	6.1795E+04



Output Curve

1.80E-03		specific discharge (m/day)
5.9658E-03	v	groundwater velocity (km/yr)
5.6000E+01	L	path length (km)
1.0000E-01	D	Dispersion Coefficient (km)
5.9658E-04	Disp	Dispersivity (sq km/yr)
3.1736E+02	K	Retardation Factor (no units)
2.9791E+06	td	arrival time of the mid-point =TL (yr)
1.5000E+01	Kd	distribution coefficient =Kd (mL/gm)
1.1000E-01	ε	porosity
2.3200E+00	ρ	bulk density of solid (gm/mL)
0.0000E+00	λ	decay constant (1/yr)
NA	t1/2	halflife (yr)

Note: When λ is set to zero this is either a stable contaminant or a member of a decay chain. Decay and growth of radionuclides in decay chain members is adjusted in a separate work sheet.

Composite Curves

Time (yrs)	Arg 1	Curve 1	Arg 2	Curve 2	Arg 3	Curve 3	Arg 4	Curve 4	Arg 5	Curve 5	Arg 6
250	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
2000	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
4000	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
6000	5.2703E+02	#NAME?	8.7065E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
8000	3.4479E+02	#NAME?	4.0407E+02	#NAME?	5.5974E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
10000	2.7487E+02	#NAME?	3.0230E+02	#NAME?	3.5351E+02	#NAME?	6.4885E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00
12000	2.3522E+02	#NAME?	2.5178E+02	#NAME?	2.7923E+02	#NAME?	3.7311E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00
14000	2.0886E+02	#NAME?	2.2023E+02	#NAME?	2.3795E+02	#NAME?	2.8862E+02	#NAME?	5.1679E+02	#NAME?	0.0000E+00
16000	1.8970E+02	#NAME?	1.9812E+02	#NAME?	2.1077E+02	#NAME?	2.4369E+02	#NAME?	3.4187E+02	#NAME?	5.6616E+02
18000	1.7497E+02	#NAME?	1.8153E+02	#NAME?	1.9113E+02	#NAME?	2.1474E+02	#NAME?	2.7337E+02	#NAME?	3.5511E+02
20000	1.6318E+02	#NAME?	1.6848E+02	#NAME?	1.7609E+02	#NAME?	1.9409E+02	#NAME?	2.3428E+02	#NAME?	2.8002E+02
22000	1.5347E+02	#NAME?	1.5786E+02	#NAME?	1.6409E+02	#NAME?	1.7840E+02	#NAME?	2.0820E+02	#NAME?	2.3844E+02
24000	1.4529E+02	#NAME?	1.4901E+02	#NAME?	1.5423E+02	#NAME?	1.6596E+02	#NAME?	1.8921E+02	#NAME?	2.1111E+02
26000	1.3827E+02	#NAME?	1.4148E+02	#NAME?	1.4594E+02	#NAME?	1.5578E+02	#NAME?	1.7458E+02	#NAME?	1.9139E+02
28000	1.3217E+02	#NAME?	1.3497E+02	#NAME?	1.3883E+02	#NAME?	1.4725E+02	#NAME?	1.6286E+02	#NAME?	1.7629E+02
30000	1.2679E+02	#NAME?	1.2927E+02	#NAME?	1.3266E+02	#NAME?	1.3997E+02	#NAME?	1.5321E+02	#NAME?	1.6426E+02
32000	1.2201E+02	#NAME?	1.2422E+02	#NAME?	1.2723E+02	#NAME?	1.3365E+02	#NAME?	1.4506E+02	#NAME?	1.5437E+02
34000	1.1773E+02	#NAME?	1.1971E+02	#NAME?	1.2240E+02	#NAME?	1.2810E+02	#NAME?	1.3808E+02	#NAME?	1.4605E+02
36000	1.1385E+02	#NAME?	1.1564E+02	#NAME?	1.1807E+02	#NAME?	1.2318E+02	#NAME?	1.3200E+02	#NAME?	1.3893E+02
38000	1.1032E+02	#NAME?	1.1196E+02	#NAME?	1.1416E+02	#NAME?	1.1878E+02	#NAME?	1.2664E+02	#NAME?	1.3274E+02
40000	1.0710E+02	#NAME?	1.0860E+02	#NAME?	1.1061E+02	#NAME?	1.1480E+02	#NAME?	1.2188E+02	#NAME?	1.2730E+02
42000	1.0413E+02	#NAME?	1.0551E+02	#NAME?	1.0736E+02	#NAME?	1.1119E+02	#NAME?	1.1760E+02	#NAME?	1.2247E+02
44000	1.0139E+02	#NAME?	1.0267E+02	#NAME?	1.0438E+02	#NAME?	1.0789E+02	#NAME?	1.1374E+02	#NAME?	1.1813E+02
46000	9.8852E+01	#NAME?	1.0004E+02	#NAME?	1.0162E+02	#NAME?	1.0487E+02	#NAME?	1.1022E+02	#NAME?	1.1422E+02
48000	9.6487E+01	#NAME?	9.7590E+01	#NAME?	9.9061E+01	#NAME?	1.0207E+02	#NAME?	1.0701E+02	#NAME?	1.1066E+02
50000	9.4279E+01	#NAME?	9.5310E+01	#NAME?	9.6682E+01	#NAME?	9.9483E+01	#NAME?	1.0405E+02	#NAME?	1.0741E+02
52000	9.2210E+01	#NAME?	9.3176E+01	#NAME?	9.4461E+01	#NAME?	9.7075E+01	#NAME?	1.0131E+02	#NAME?	1.0442E+02
54000	9.0266E+01	#NAME?	9.1174E+01	#NAME?	9.2380E+01	#NAME?	9.4828E+01	#NAME?	9.8779E+01	#NAME?	1.0166E+02
56000	8.8436E+01	#NAME?	8.9292E+01	#NAME?	9.0427E+01	#NAME?	9.2725E+01	#NAME?	9.6419E+01	#NAME?	9.9098E+01
58000	8.6707E+01	#NAME?	8.7516E+01	#NAME?	8.8587E+01	#NAME?	9.0750E+01	#NAME?	9.4215E+01	#NAME?	9.6717E+01
60000	8.5073E+01	#NAME?	8.5838E+01	#NAME?	8.6851E+01	#NAME?	8.8892E+01	#NAME?	9.2150E+01	#NAME?	9.4493E+01
62000	8.3523E+01	#NAME?	8.4249E+01	#NAME?	8.5208E+01	#NAME?	8.7139E+01	#NAME?	9.0210E+01	#NAME?	9.2411E+01
64000	8.2051E+01	#NAME?	8.2741E+01	#NAME?	8.3651E+01	#NAME?	8.5481E+01	#NAME?	8.8382E+01	#NAME?	9.0455E+01
66000	8.0650E+01	#NAME?	8.1307E+01	#NAME?	8.2173E+01	#NAME?	8.3910E+01	#NAME?	8.6657E+01	#NAME?	8.8614E+01
68000	7.9316E+01	#NAME?	7.9942E+01	#NAME?	8.0767E+01	#NAME?	8.2419E+01	#NAME?	8.5025E+01	#NAME?	8.6876E+01
70000	7.8042E+01	#NAME?	7.8640E+01	#NAME?	7.9427E+01	#NAME?	8.1001E+01	#NAME?	8.3478E+01	#NAME?	8.5232E+01
72000	7.6824E+01	#NAME?	7.7396E+01	#NAME?	7.8148E+01	#NAME?	7.9650E+01	#NAME?	8.2008E+01	#NAME?	8.3674E+01
74000	7.5659E+01	#NAME?	7.6206E+01	#NAME?	7.6926E+01	#NAME?	7.8361E+01	#NAME?	8.0609E+01	#NAME?	8.2195E+01
76000	7.4542E+01	#NAME?	7.5067E+01	#NAME?	7.5756E+01	#NAME?	7.7130E+01	#NAME?	7.9277E+01	#NAME?	8.0787E+01
78000	7.3470E+01	#NAME?	7.3974E+01	#NAME?	7.4635E+01	#NAME?	7.5951E+01	#NAME?	7.8005E+01	#NAME?	7.9446E+01
80000	7.2441E+01	#NAME?	7.2925E+01	#NAME?	7.3560E+01	#NAME?	7.4822E+01	#NAME?	7.6789E+01	#NAME?	7.8167E+01
82000	7.1450E+01	#NAME?	7.1916E+01	#NAME?	7.2527E+01	#NAME?	7.3739E+01	#NAME?	7.5625E+01	#NAME?	7.6944E+01
84000	7.0497E+01	#NAME?	7.0946E+01	#NAME?	7.1533E+01	#NAME?	7.2699E+01	#NAME?	7.4509E+01	#NAME?	7.5773E+01
86000	6.9579E+01	#NAME?	7.0011E+01	#NAME?	7.0577E+01	#NAME?	7.1699E+01	#NAME?	7.3439E+01	#NAME?	7.4651E+01
88000	6.8693E+01	#NAME?	6.9110E+01	#NAME?	6.9656E+01	#NAME?	7.0737E+01	#NAME?	7.2410E+01	#NAME?	7.3575E+01
90000	6.7838E+01	#NAME?	6.8241E+01	#NAME?	6.8767E+01	#NAME?	6.9810E+01	#NAME?	7.1421E+01	#NAME?	7.2542E+01
92000	6.7012E+01	#NAME?	6.7401E+01	#NAME?	6.7910E+01	#NAME?	6.8916E+01	#NAME?	7.0469E+01	#NAME?	7.1548E+01
94000	6.6213E+01	#NAME?	6.6589E+01	#NAME?	6.7081E+01	#NAME?	6.8053E+01	#NAME?	6.9552E+01	#NAME?	7.0591E+01
96000	6.5440E+01	#NAME?	6.5804E+01	#NAME?	6.6280E+01	#NAME?	6.7220E+01	#NAME?	6.8667E+01	#NAME?	6.9669E+01
98000	6.4692E+01	#NAME?	6.5044E+01	#NAME?	6.5505E+01	#NAME?	6.6414E+01	#NAME?	6.7813E+01	#NAME?	6.8780E+01
100000	6.3966E+01	#NAME?	6.4308E+01	#NAME?	6.4754E+01	#NAME?	6.5635E+01	#NAME?	6.6988E+01	#NAME?	6.7922E+01
102000	6.3263E+01	#NAME?	6.3594E+01	#NAME?	6.4027E+01	#NAME?	6.4880E+01	#NAME?	6.6190E+01	#NAME?	6.7093E+01

Time (yrs)	Arg 1	Curve 1	Arg 2	Curve 2	Arg 3	Curve 3	Arg 4	Curve 4	Arg 5	Curve 5	Arg 6
104000	6.2581E+01	#NAME?	6.2902E+01	#NAME?	6.3322E+01	#NAME?	6.4149E+01	#NAME?	6.5417E+01	#NAME?	6.6292E+01
106000	6.1918E+01	#NAME?	6.2230E+01	#NAME?	6.2638E+01	#NAME?	6.3440E+01	#NAME?	6.4670E+01	#NAME?	6.5516E+01
108000	6.1274E+01	#NAME?	6.1578E+01	#NAME?	6.1973E+01	#NAME?	6.2753E+01	#NAME?	6.3945E+01	#NAME?	6.4766E+01
110000	6.0648E+01	#NAME?	6.0943E+01	#NAME?	6.1328E+01	#NAME?	6.2085E+01	#NAME?	6.3242E+01	#NAME?	6.4038E+01
112000	6.0040E+01	#NAME?	6.0327E+01	#NAME?	6.0701E+01	#NAME?	6.1436E+01	#NAME?	6.2560E+01	#NAME?	6.3332E+01
114000	5.9447E+01	#NAME?	5.9727E+01	#NAME?	6.0091E+01	#NAME?	6.0806E+01	#NAME?	6.1898E+01	#NAME?	6.2648E+01
116000	5.8871E+01	#NAME?	5.9143E+01	#NAME?	5.9497E+01	#NAME?	6.0193E+01	#NAME?	6.1255E+01	#NAME?	6.1983E+01
118000	5.8309E+01	#NAME?	5.8574E+01	#NAME?	5.8919E+01	#NAME?	5.9597E+01	#NAME?	6.0630E+01	#NAME?	6.1338E+01
120000	5.7762E+01	#NAME?	5.8020E+01	#NAME?	5.8356E+01	#NAME?	5.9016E+01	#NAME?	6.0022E+01	#NAME?	6.0710E+01
122000	5.7228E+01	#NAME?	5.7480E+01	#NAME?	5.7808E+01	#NAME?	5.8451E+01	#NAME?	5.9430E+01	#NAME?	6.0100E+01
124000	5.6707E+01	#NAME?	5.6953E+01	#NAME?	5.7273E+01	#NAME?	5.7900E+01	#NAME?	5.8854E+01	#NAME?	5.9506E+01
126000	5.6199E+01	#NAME?	5.6439E+01	#NAME?	5.6751E+01	#NAME?	5.7363E+01	#NAME?	5.8292E+01	#NAME?	5.8928E+01
128000	5.5703E+01	#NAME?	5.5938E+01	#NAME?	5.6242E+01	#NAME?	5.6839E+01	#NAME?	5.7745E+01	#NAME?	5.8365E+01
130000	5.5219E+01	#NAME?	5.5448E+01	#NAME?	5.5745E+01	#NAME?	5.6328E+01	#NAME?	5.7212E+01	#NAME?	5.7816E+01
132000	5.4746E+01	#NAME?	5.4969E+01	#NAME?	5.5260E+01	#NAME?	5.5829E+01	#NAME?	5.6692E+01	#NAME?	5.7281E+01
134000	5.4283E+01	#NAME?	5.4502E+01	#NAME?	5.4786E+01	#NAME?	5.5342E+01	#NAME?	5.6184E+01	#NAME?	5.6759E+01
136000	5.3831E+01	#NAME?	5.4045E+01	#NAME?	5.4322E+01	#NAME?	5.4866E+01	#NAME?	5.5689E+01	#NAME?	5.6250E+01
138000	5.3389E+01	#NAME?	5.3598E+01	#NAME?	5.3869E+01	#NAME?	5.4400E+01	#NAME?	5.5205E+01	#NAME?	5.5753E+01
140000	5.2956E+01	#NAME?	5.3161E+01	#NAME?	5.3426E+01	#NAME?	5.3946E+01	#NAME?	5.4732E+01	#NAME?	5.5267E+01
142000	5.2533E+01	#NAME?	5.2733E+01	#NAME?	5.2993E+01	#NAME?	5.3501E+01	#NAME?	5.4270E+01	#NAME?	5.4793E+01
144000	5.2118E+01	#NAME?	5.2314E+01	#NAME?	5.2568E+01	#NAME?	5.3066E+01	#NAME?	5.3818E+01	#NAME?	5.4329E+01
146000	5.1712E+01	#NAME?	5.1904E+01	#NAME?	5.2153E+01	#NAME?	5.2640E+01	#NAME?	5.3376E+01	#NAME?	5.3876E+01
148000	5.1314E+01	#NAME?	5.1502E+01	#NAME?	5.1746E+01	#NAME?	5.2223E+01	#NAME?	5.2943E+01	#NAME?	5.3433E+01
150000	5.0924E+01	#NAME?	5.1109E+01	#NAME?	5.1348E+01	#NAME?	5.1815E+01	#NAME?	5.2520E+01	#NAME?	5.2999E+01
152000	5.0542E+01	#NAME?	5.0723E+01	#NAME?	5.0957E+01	#NAME?	5.1415E+01	#NAME?	5.2106E+01	#NAME?	5.2575E+01
154000	5.0168E+01	#NAME?	5.0345E+01	#NAME?	5.0574E+01	#NAME?	5.1023E+01	#NAME?	5.1700E+01	#NAME?	5.2159E+01
156000	4.9800E+01	#NAME?	4.9974E+01	#NAME?	5.0199E+01	#NAME?	5.0639E+01	#NAME?	5.1302E+01	#NAME?	5.1752E+01
158000	4.9440E+01	#NAME?	4.9610E+01	#NAME?	4.9831E+01	#NAME?	5.0262E+01	#NAME?	5.0913E+01	#NAME?	5.1354E+01
160000	4.9086E+01	#NAME?	4.9253E+01	#NAME?	4.9470E+01	#NAME?	4.9893E+01	#NAME?	5.0531E+01	#NAME?	5.0963E+01
162000	4.8739E+01	#NAME?	4.8903E+01	#NAME?	4.9116E+01	#NAME?	4.9531E+01	#NAME?	5.0156E+01	#NAME?	5.0580E+01
164000	4.8398E+01	#NAME?	4.8559E+01	#NAME?	4.8768E+01	#NAME?	4.9175E+01	#NAME?	4.9789E+01	#NAME?	5.0205E+01
166000	4.8063E+01	#NAME?	4.8221E+01	#NAME?	4.8427E+01	#NAME?	4.8827E+01	#NAME?	4.9429E+01	#NAME?	4.9837E+01
168000	4.7734E+01	#NAME?	4.7890E+01	#NAME?	4.8091E+01	#NAME?	4.8484E+01	#NAME?	4.9075E+01	#NAME?	4.9475E+01
170000	4.7411E+01	#NAME?	4.7564E+01	#NAME?	4.7762E+01	#NAME?	4.8148E+01	#NAME?	4.8728E+01	#NAME?	4.9121E+01
172000	4.7094E+01	#NAME?	4.7244E+01	#NAME?	4.7439E+01	#NAME?	4.7818E+01	#NAME?	4.8388E+01	#NAME?	4.8773E+01
174000	4.6782E+01	#NAME?	4.6929E+01	#NAME?	4.7121E+01	#NAME?	4.7493E+01	#NAME?	4.8053E+01	#NAME?	4.8432E+01
176000	4.6475E+01	#NAME?	4.6620E+01	#NAME?	4.6808E+01	#NAME?	4.7174E+01	#NAME?	4.7725E+01	#NAME?	4.8096E+01
178000	4.6174E+01	#NAME?	4.6316E+01	#NAME?	4.6501E+01	#NAME?	4.6861E+01	#NAME?	4.7402E+01	#NAME?	4.7767E+01
180000	4.5877E+01	#NAME?	4.6017E+01	#NAME?	4.6199E+01	#NAME?	4.6553E+01	#NAME?	4.7084E+01	#NAME?	4.7443E+01
182000	4.5585E+01	#NAME?	4.5723E+01	#NAME?	4.5902E+01	#NAME?	4.6250E+01	#NAME?	4.6773E+01	#NAME?	4.7125E+01
184000	4.5298E+01	#NAME?	4.5434E+01	#NAME?	4.5610E+01	#NAME?	4.5952E+01	#NAME?	4.6466E+01	#NAME?	4.6813E+01
186000	4.5016E+01	#NAME?	4.5149E+01	#NAME?	4.5323E+01	#NAME?	4.5659E+01	#NAME?	4.6165E+01	#NAME?	4.6506E+01
188000	4.4738E+01	#NAME?	4.4869E+01	#NAME?	4.5040E+01	#NAME?	4.5371E+01	#NAME?	4.5868E+01	#NAME?	4.6204E+01
190000	4.4464E+01	#NAME?	4.4594E+01	#NAME?	4.4761E+01	#NAME?	4.5087E+01	#NAME?	4.5577E+01	#NAME?	4.5907E+01
192000	4.4195E+01	#NAME?	4.4322E+01	#NAME?	4.4487E+01	#NAME?	4.4808E+01	#NAME?	4.5290E+01	#NAME?	4.5614E+01
194000	4.3929E+01	#NAME?	4.4055E+01	#NAME?	4.4218E+01	#NAME?	4.4534E+01	#NAME?	4.5007E+01	#NAME?	4.5327E+01
196000	4.3668E+01	#NAME?	4.3792E+01	#NAME?	4.3952E+01	#NAME?	4.4263E+01	#NAME?	4.4730E+01	#NAME?	4.5044E+01
198000	4.3411E+01	#NAME?	4.3532E+01	#NAME?	4.3690E+01	#NAME?	4.3997E+01	#NAME?	4.4456E+01	#NAME?	4.4765E+01
200000	4.3157E+01	#NAME?	4.3277E+01	#NAME?	4.3432E+01	#NAME?	4.3734E+01	#NAME?	4.4187E+01	#NAME?	4.4491E+01
202000	4.2907E+01	#NAME?	4.3025E+01	#NAME?	4.3178E+01	#NAME?	4.3476E+01	#NAME?	4.3922E+01	#NAME?	4.4222E+01
204000	4.2661E+01	#NAME?	4.2777E+01	#NAME?	4.2928E+01	#NAME?	4.3221E+01	#NAME?	4.3660E+01	#NAME?	4.3956E+01
206000	4.2418E+01	#NAME?	4.2533E+01	#NAME?	4.2682E+01	#NAME?	4.2971E+01	#NAME?	4.3403E+01	#NAME?	4.3694E+01

Time (yrs)	Arg 1	Curve 1	Arg 2	Curve 2	Arg 3	Curve 3	Arg 4	Curve 4	Arg 5	Curve 5	Arg 6
208000	4.2179E+01	#NAME?	4.2292E+01	#NAME?	4.2439E+01	#NAME?	4.2723E+01	#NAME?	4.3149E+01	#NAME?	4.3436E+01
210000	4.1943E+01	#NAME?	4.2054E+01	#NAME?	4.2199E+01	#NAME?	4.2480E+01	#NAME?	4.2900E+01	#NAME?	4.3182E+01
212000	4.1710E+01	#NAME?	4.1820E+01	#NAME?	4.1963E+01	#NAME?	4.2239E+01	#NAME?	4.2653E+01	#NAME?	4.2932E+01
214000	4.1480E+01	#NAME?	4.1589E+01	#NAME?	4.1730E+01	#NAME?	4.2003E+01	#NAME?	4.2411E+01	#NAME?	4.2685E+01
216000	4.1254E+01	#NAME?	4.1361E+01	#NAME?	4.1500E+01	#NAME?	4.1769E+01	#NAME?	4.2172E+01	#NAME?	4.2442E+01
218000	4.1031E+01	#NAME?	4.1136E+01	#NAME?	4.1273E+01	#NAME?	4.1539E+01	#NAME?	4.1936E+01	#NAME?	4.2202E+01
220000	4.0810E+01	#NAME?	4.0915E+01	#NAME?	4.1050E+01	#NAME?	4.1311E+01	#NAME?	4.1703E+01	#NAME?	4.1966E+01
222000	4.0593E+01	#NAME?	4.0696E+01	#NAME?	4.0829E+01	#NAME?	4.1087E+01	#NAME?	4.1474E+01	#NAME?	4.1733E+01
224000	4.0378E+01	#NAME?	4.0480E+01	#NAME?	4.0611E+01	#NAME?	4.0866E+01	#NAME?	4.1247E+01	#NAME?	4.1503E+01
226000	4.0166E+01	#NAME?	4.0267E+01	#NAME?	4.0396E+01	#NAME?	4.0648E+01	#NAME?	4.1024E+01	#NAME?	4.1277E+01
228000	3.9957E+01	#NAME?	4.0056E+01	#NAME?	4.0184E+01	#NAME?	4.0433E+01	#NAME?	4.0804E+01	#NAME?	4.1053E+01
230000	3.9751E+01	#NAME?	3.9849E+01	#NAME?	3.9975E+01	#NAME?	4.0220E+01	#NAME?	4.0586E+01	#NAME?	4.0832E+01
232000	3.9547E+01	#NAME?	3.9643E+01	#NAME?	3.9768E+01	#NAME?	4.0010E+01	#NAME?	4.0372E+01	#NAME?	4.0614E+01
234000	3.9346E+01	#NAME?	3.9441E+01	#NAME?	3.9564E+01	#NAME?	3.9803E+01	#NAME?	4.0160E+01	#NAME?	4.0400E+01
236000	3.9147E+01	#NAME?	3.9241E+01	#NAME?	3.9363E+01	#NAME?	3.9599E+01	#NAME?	3.9951E+01	#NAME?	4.0187E+01
238000	3.8950E+01	#NAME?	3.9043E+01	#NAME?	3.9164E+01	#NAME?	3.9397E+01	#NAME?	3.9745E+01	#NAME?	3.9978E+01
240000	3.8756E+01	#NAME?	3.8848E+01	#NAME?	3.8967E+01	#NAME?	3.9197E+01	#NAME?	3.9541E+01	#NAME?	3.9771E+01
242000	3.8565E+01	#NAME?	3.8655E+01	#NAME?	3.8773E+01	#NAME?	3.9000E+01	#NAME?	3.9340E+01	#NAME?	3.9567E+01
244000	3.8375E+01	#NAME?	3.8465E+01	#NAME?	3.8581E+01	#NAME?	3.8806E+01	#NAME?	3.9141E+01	#NAME?	3.9366E+01
246000	3.8188E+01	#NAME?	3.8277E+01	#NAME?	3.8391E+01	#NAME?	3.8613E+01	#NAME?	3.8945E+01	#NAME?	3.9167E+01
248000	3.8003E+01	#NAME?	3.8091E+01	#NAME?	3.8204E+01	#NAME?	3.8423E+01	#NAME?	3.8751E+01	#NAME?	3.8970E+01
250000	3.7821E+01	#NAME?	3.7907E+01	#NAME?	3.8019E+01	#NAME?	3.8236E+01	#NAME?	3.8559E+01	#NAME?	3.8776E+01
252000	3.7640E+01	#NAME?	3.7725E+01	#NAME?	3.7836E+01	#NAME?	3.8050E+01	#NAME?	3.8370E+01	#NAME?	3.8584E+01
254000	3.7461E+01	#NAME?	3.7546E+01	#NAME?	3.7655E+01	#NAME?	3.7867E+01	#NAME?	3.8183E+01	#NAME?	3.8394E+01
256000	3.7285E+01	#NAME?	3.7368E+01	#NAME?	3.7476E+01	#NAME?	3.7686E+01	#NAME?	3.7998E+01	#NAME?	3.8207E+01
258000	3.7110E+01	#NAME?	3.7193E+01	#NAME?	3.7300E+01	#NAME?	3.7507E+01	#NAME?	3.7815E+01	#NAME?	3.8022E+01
260000	3.6937E+01	#NAME?	3.7019E+01	#NAME?	3.7125E+01	#NAME?	3.7329E+01	#NAME?	3.7634E+01	#NAME?	3.7839E+01
262000	3.6767E+01	#NAME?	3.6847E+01	#NAME?	3.6952E+01	#NAME?	3.7154E+01	#NAME?	3.7456E+01	#NAME?	3.7658E+01
264000	3.6598E+01	#NAME?	3.6678E+01	#NAME?	3.6781E+01	#NAME?	3.6981E+01	#NAME?	3.7279E+01	#NAME?	3.7479E+01
266000	3.6431E+01	#NAME?	3.6510E+01	#NAME?	3.6612E+01	#NAME?	3.6810E+01	#NAME?	3.7105E+01	#NAME?	3.7302E+01
268000	3.6265E+01	#NAME?	3.6344E+01	#NAME?	3.6445E+01	#NAME?	3.6641E+01	#NAME?	3.6932E+01	#NAME?	3.7127E+01
270000	3.6102E+01	#NAME?	3.6179E+01	#NAME?	3.6279E+01	#NAME?	3.6473E+01	#NAME?	3.6762E+01	#NAME?	3.6955E+01
272000	3.5940E+01	#NAME?	3.6017E+01	#NAME?	3.6116E+01	#NAME?	3.6307E+01	#NAME?	3.6593E+01	#NAME?	3.6784E+01
274000	3.5780E+01	#NAME?	3.5856E+01	#NAME?	3.5954E+01	#NAME?	3.6144E+01	#NAME?	3.6426E+01	#NAME?	3.6615E+01
276000	3.5622E+01	#NAME?	3.5697E+01	#NAME?	3.5794E+01	#NAME?	3.5981E+01	#NAME?	3.6261E+01	#NAME?	3.6447E+01
278000	3.5465E+01	#NAME?	3.5539E+01	#NAME?	3.5635E+01	#NAME?	3.5821E+01	#NAME?	3.6097E+01	#NAME?	3.6282E+01
280000	3.5310E+01	#NAME?	3.5384E+01	#NAME?	3.5479E+01	#NAME?	3.5662E+01	#NAME?	3.5935E+01	#NAME?	3.6118E+01
282000	3.5157E+01	#NAME?	3.5229E+01	#NAME?	3.5323E+01	#NAME?	3.5505E+01	#NAME?	3.5776E+01	#NAME?	3.5956E+01
284000	3.5005E+01	#NAME?	3.5077E+01	#NAME?	3.5170E+01	#NAME?	3.5350E+01	#NAME?	3.5617E+01	#NAME?	3.5796E+01
286000	3.4854E+01	#NAME?	3.4926E+01	#NAME?	3.5018E+01	#NAME?	3.5196E+01	#NAME?	3.5461E+01	#NAME?	3.5638E+01
288000	3.4705E+01	#NAME?	3.4776E+01	#NAME?	3.4867E+01	#NAME?	3.5043E+01	#NAME?	3.5306E+01	#NAME?	3.5481E+01
290000	3.4558E+01	#NAME?	3.4628E+01	#NAME?	3.4718E+01	#NAME?	3.4893E+01	#NAME?	3.5152E+01	#NAME?	3.5326E+01
292000	3.4412E+01	#NAME?	3.4481E+01	#NAME?	3.4570E+01	#NAME?	3.4743E+01	#NAME?	3.5000E+01	#NAME?	3.5172E+01
294000	3.4267E+01	#NAME?	3.4336E+01	#NAME?	3.4424E+01	#NAME?	3.4595E+01	#NAME?	3.4850E+01	#NAME?	3.5020E+01
296000	3.4124E+01	#NAME?	3.4192E+01	#NAME?	3.4280E+01	#NAME?	3.4449E+01	#NAME?	3.4701E+01	#NAME?	3.4869E+01
298000	3.3983E+01	#NAME?	3.4050E+01	#NAME?	3.4136E+01	#NAME?	3.4304E+01	#NAME?	3.4554E+01	#NAME?	3.4720E+01
300000	3.3842E+01	#NAME?	3.3909E+01	#NAME?	3.3994E+01	#NAME?	3.4161E+01	#NAME?	3.4408E+01	#NAME?	3.4573E+01
302000	3.3703E+01	#NAME?	3.3769E+01	#NAME?	3.3854E+01	#NAME?	3.4019E+01	#NAME?	3.4263E+01	#NAME?	3.4427E+01
304000	3.3565E+01	#NAME?	3.3631E+01	#NAME?	3.3715E+01	#NAME?	3.3878E+01	#NAME?	3.4120E+01	#NAME?	3.4282E+01
306000	3.3429E+01	#NAME?	3.3493E+01	#NAME?	3.3577E+01	#NAME?	3.3738E+01	#NAME?	3.3978E+01	#NAME?	3.4139E+01
308000	3.3294E+01	#NAME?	3.3358E+01	#NAME?	3.3440E+01	#NAME?	3.3600E+01	#NAME?	3.3838E+01	#NAME?	3.3997E+01
310000	3.3160E+01	#NAME?	3.3223E+01	#NAME?	3.3305E+01	#NAME?	3.3463E+01	#NAME?	3.3699E+01	#NAME?	3.3856E+01

Time (yrs)	Arg 1	Curve 1	Arg 2	Curve 2	Arg 3	Curve 3	Arg 4	Curve 4	Arg 5	Curve 5	Arg 6
312000	3.3027E+01	#NAME?	3.3090E+01	#NAME?	3.3171E+01	#NAME?	3.3328E+01	#NAME?	3.3561E+01	#NAME?	3.3717E+01
314000	3.2895E+01	#NAME?	3.2958E+01	#NAME?	3.3038E+01	#NAME?	3.3194E+01	#NAME?	3.3425E+01	#NAME?	3.3579E+01
316000	3.2765E+01	#NAME?	3.2827E+01	#NAME?	3.2906E+01	#NAME?	3.3061E+01	#NAME?	3.3289E+01	#NAME?	3.3442E+01
318000	3.2636E+01	#NAME?	3.2697E+01	#NAME?	3.2776E+01	#NAME?	3.2929E+01	#NAME?	3.3156E+01	#NAME?	3.3307E+01
320000	3.2508E+01	#NAME?	3.2568E+01	#NAME?	3.2647E+01	#NAME?	3.2798E+01	#NAME?	3.3023E+01	#NAME?	3.3173E+01
322000	3.2381E+01	#NAME?	3.2441E+01	#NAME?	3.2519E+01	#NAME?	3.2669E+01	#NAME?	3.2891E+01	#NAME?	3.3040E+01
324000	3.2255E+01	#NAME?	3.2315E+01	#NAME?	3.2392E+01	#NAME?	3.2540E+01	#NAME?	3.2761E+01	#NAME?	3.2908E+01
326000	3.2130E+01	#NAME?	3.2190E+01	#NAME?	3.2266E+01	#NAME?	3.2413E+01	#NAME?	3.2632E+01	#NAME?	3.2778E+01
328000	3.2007E+01	#NAME?	3.2065E+01	#NAME?	3.2141E+01	#NAME?	3.2287E+01	#NAME?	3.2504E+01	#NAME?	3.2649E+01
330000	3.1884E+01	#NAME?	3.1942E+01	#NAME?	3.2017E+01	#NAME?	3.2162E+01	#NAME?	3.2377E+01	#NAME?	3.2521E+01
332000	3.1763E+01	#NAME?	3.1820E+01	#NAME?	3.1895E+01	#NAME?	3.2038E+01	#NAME?	3.2251E+01	#NAME?	3.2394E+01
334000	3.1642E+01	#NAME?	3.1700E+01	#NAME?	3.1773E+01	#NAME?	3.1916E+01	#NAME?	3.2127E+01	#NAME?	3.2268E+01
336000	3.1523E+01	#NAME?	3.1580E+01	#NAME?	3.1653E+01	#NAME?	3.1794E+01	#NAME?	3.2003E+01	#NAME?	3.2143E+01
338000	3.1405E+01	#NAME?	3.1461E+01	#NAME?	3.1533E+01	#NAME?	3.1673E+01	#NAME?	3.1881E+01	#NAME?	3.2019E+01
340000	3.1287E+01	#NAME?	3.1343E+01	#NAME?	3.1415E+01	#NAME?	3.1553E+01	#NAME?	3.1759E+01	#NAME?	3.1897E+01
342000	3.1171E+01	#NAME?	3.1226E+01	#NAME?	3.1297E+01	#NAME?	3.1435E+01	#NAME?	3.1639E+01	#NAME?	3.1775E+01
344000	3.1055E+01	#NAME?	3.1110E+01	#NAME?	3.1181E+01	#NAME?	3.1317E+01	#NAME?	3.1520E+01	#NAME?	3.1654E+01
346000	3.0941E+01	#NAME?	3.0995E+01	#NAME?	3.1065E+01	#NAME?	3.1200E+01	#NAME?	3.1401E+01	#NAME?	3.1535E+01
348000	3.0827E+01	#NAME?	3.0881E+01	#NAME?	3.0950E+01	#NAME?	3.1085E+01	#NAME?	3.1284E+01	#NAME?	3.1416E+01
350000	3.0715E+01	#NAME?	3.0768E+01	#NAME?	3.0837E+01	#NAME?	3.0970E+01	#NAME?	3.1167E+01	#NAME?	3.1299E+01
352000	3.0603E+01	#NAME?	3.0656E+01	#NAME?	3.0724E+01	#NAME?	3.0856E+01	#NAME?	3.1052E+01	#NAME?	3.1182E+01
354000	3.0492E+01	#NAME?	3.0544E+01	#NAME?	3.0612E+01	#NAME?	3.0743E+01	#NAME?	3.0937E+01	#NAME?	3.1067E+01
356000	3.0382E+01	#NAME?	3.0434E+01	#NAME?	3.0501E+01	#NAME?	3.0631E+01	#NAME?	3.0824E+01	#NAME?	3.0952E+01
358000	3.0273E+01	#NAME?	3.0324E+01	#NAME?	3.0391E+01	#NAME?	3.0520E+01	#NAME?	3.0711E+01	#NAME?	3.0839E+01
360000	3.0164E+01	#NAME?	3.0216E+01	#NAME?	3.0282E+01	#NAME?	3.0410E+01	#NAME?	3.0599E+01	#NAME?	3.0726E+01
362000	3.0057E+01	#NAME?	3.0108E+01	#NAME?	3.0174E+01	#NAME?	3.0300E+01	#NAME?	3.0489E+01	#NAME?	3.0614E+01
364000	2.9950E+01	#NAME?	3.0001E+01	#NAME?	3.0066E+01	#NAME?	3.0192E+01	#NAME?	3.0379E+01	#NAME?	3.0503E+01
366000	2.9845E+01	#NAME?	2.9895E+01	#NAME?	2.9959E+01	#NAME?	3.0084E+01	#NAME?	3.0269E+01	#NAME?	3.0393E+01
368000	2.9740E+01	#NAME?	2.9789E+01	#NAME?	2.9854E+01	#NAME?	2.9978E+01	#NAME?	3.0161E+01	#NAME?	3.0284E+01
370000	2.9636E+01	#NAME?	2.9685E+01	#NAME?	2.9749E+01	#NAME?	2.9872E+01	#NAME?	3.0054E+01	#NAME?	3.0175E+01
372000	2.9532E+01	#NAME?	2.9581E+01	#NAME?	2.9644E+01	#NAME?	2.9766E+01	#NAME?	2.9947E+01	#NAME?	3.0068E+01
374000	2.9430E+01	#NAME?	2.9478E+01	#NAME?	2.9541E+01	#NAME?	2.9662E+01	#NAME?	2.9842E+01	#NAME?	2.9961E+01
376000	2.9328E+01	#NAME?	2.9376E+01	#NAME?	2.9438E+01	#NAME?	2.9558E+01	#NAME?	2.9737E+01	#NAME?	2.9855E+01
378000	2.9227E+01	#NAME?	2.9275E+01	#NAME?	2.9336E+01	#NAME?	2.9456E+01	#NAME?	2.9632E+01	#NAME?	2.9750E+01
380000	2.9126E+01	#NAME?	2.9174E+01	#NAME?	2.9235E+01	#NAME?	2.9354E+01	#NAME?	2.9529E+01	#NAME?	2.9646E+01
382000	2.9027E+01	#NAME?	2.9074E+01	#NAME?	2.9135E+01	#NAME?	2.9252E+01	#NAME?	2.9427E+01	#NAME?	2.9543E+01
384000	2.8928E+01	#NAME?	2.8975E+01	#NAME?	2.9035E+01	#NAME?	2.9152E+01	#NAME?	2.9325E+01	#NAME?	2.9440E+01
386000	2.8830E+01	#NAME?	2.8876E+01	#NAME?	2.8936E+01	#NAME?	2.9052E+01	#NAME?	2.9224E+01	#NAME?	2.9338E+01
388000	2.8732E+01	#NAME?	2.8779E+01	#NAME?	2.8838E+01	#NAME?	2.8953E+01	#NAME?	2.9123E+01	#NAME?	2.9237E+01
390000	2.8636E+01	#NAME?	2.8682E+01	#NAME?	2.8741E+01	#NAME?	2.8855E+01	#NAME?	2.9024E+01	#NAME?	2.9136E+01
392000	2.8540E+01	#NAME?	2.8585E+01	#NAME?	2.8644E+01	#NAME?	2.8757E+01	#NAME?	2.8925E+01	#NAME?	2.9037E+01
394000	2.8444E+01	#NAME?	2.8490E+01	#NAME?	2.8548E+01	#NAME?	2.8660E+01	#NAME?	2.8827E+01	#NAME?	2.8938E+01
396000	2.8350E+01	#NAME?	2.8395E+01	#NAME?	2.8452E+01	#NAME?	2.8564E+01	#NAME?	2.8730E+01	#NAME?	2.8840E+01
398000	2.8256E+01	#NAME?	2.8300E+01	#NAME?	2.8358E+01	#NAME?	2.8469E+01	#NAME?	2.8633E+01	#NAME?	2.8742E+01
400000	2.8162E+01	#NAME?	2.8207E+01	#NAME?	2.8264E+01	#NAME?	2.8374E+01	#NAME?	2.8537E+01	#NAME?	2.8645E+01
402000	2.8070E+01	#NAME?	2.8114E+01	#NAME?	2.8170E+01	#NAME?	2.8280E+01	#NAME?	2.8442E+01	#NAME?	2.8549E+01
404000	2.7978E+01	#NAME?	2.8021E+01	#NAME?	2.8078E+01	#NAME?	2.8186E+01	#NAME?	2.8347E+01	#NAME?	2.8454E+01
406000	2.7886E+01	#NAME?	2.7930E+01	#NAME?	2.7985E+01	#NAME?	2.8093E+01	#NAME?	2.8253E+01	#NAME?	2.8359E+01
408000	2.7795E+01	#NAME?	2.7839E+01	#NAME?	2.7894E+01	#NAME?	2.8001E+01	#NAME?	2.8160E+01	#NAME?	2.8265E+01
410000	2.7705E+01	#NAME?	2.7748E+01	#NAME?	2.7803E+01	#NAME?	2.7910E+01	#NAME?	2.8067E+01	#NAME?	2.8172E+01
412000	2.7616E+01	#NAME?	2.7658E+01	#NAME?	2.7713E+01	#NAME?	2.7819E+01	#NAME?	2.7975E+01	#NAME?	2.8079E+01
414000	2.7527E+01	#NAME?	2.7569E+01	#NAME?	2.7623E+01	#NAME?	2.7728E+01	#NAME?	2.7884E+01	#NAME?	2.7987E+01

Time (yrs)	Arg 1	Curve 1	Arg 2	Curve 2	Arg 3	Curve 3	Arg 4	Curve 4	Arg 5	Curve 5	Arg 6
416000	2.7438E+01	#NAME?	2.7480E+01	#NAME?	2.7534E+01	#NAME?	2.7639E+01	#NAME?	2.7793E+01	#NAME?	2.7895E+01
418000	2.7351E+01	#NAME?	2.7392E+01	#NAME?	2.7446E+01	#NAME?	2.7549E+01	#NAME?	2.7703E+01	#NAME?	2.7805E+01
420000	2.7264E+01	#NAME?	2.7305E+01	#NAME?	2.7358E+01	#NAME?	2.7461E+01	#NAME?	2.7613E+01	#NAME?	2.7714E+01
422000	2.7177E+01	#NAME?	2.7218E+01	#NAME?	2.7271E+01	#NAME?	2.7373E+01	#NAME?	2.7524E+01	#NAME?	2.7625E+01
424000	2.7091E+01	#NAME?	2.7132E+01	#NAME?	2.7184E+01	#NAME?	2.7286E+01	#NAME?	2.7436E+01	#NAME?	2.7536E+01
426000	2.7005E+01	#NAME?	2.7046E+01	#NAME?	2.7098E+01	#NAME?	2.7199E+01	#NAME?	2.7348E+01	#NAME?	2.7447E+01
428000	2.6921E+01	#NAME?	2.6961E+01	#NAME?	2.7013E+01	#NAME?	2.7113E+01	#NAME?	2.7261E+01	#NAME?	2.7359E+01
430000	2.6836E+01	#NAME?	2.6876E+01	#NAME?	2.6928E+01	#NAME?	2.7027E+01	#NAME?	2.7174E+01	#NAME?	2.7272E+01
432000	2.6752E+01	#NAME?	2.6792E+01	#NAME?	2.6843E+01	#NAME?	2.6942E+01	#NAME?	2.7088E+01	#NAME?	2.7186E+01
434000	2.6669E+01	#NAME?	2.6709E+01	#NAME?	2.6759E+01	#NAME?	2.6858E+01	#NAME?	2.7003E+01	#NAME?	2.7100E+01
436000	2.6586E+01	#NAME?	2.6626E+01	#NAME?	2.6676E+01	#NAME?	2.6774E+01	#NAME?	2.6918E+01	#NAME?	2.7014E+01
438000	2.6504E+01	#NAME?	2.6543E+01	#NAME?	2.6593E+01	#NAME?	2.6690E+01	#NAME?	2.6834E+01	#NAME?	2.6929E+01
440000	2.6422E+01	#NAME?	2.6461E+01	#NAME?	2.6511E+01	#NAME?	2.6607E+01	#NAME?	2.6750E+01	#NAME?	2.6845E+01
442000	2.6341E+01	#NAME?	2.6380E+01	#NAME?	2.6429E+01	#NAME?	2.6525E+01	#NAME?	2.6667E+01	#NAME?	2.6761E+01
444000	2.6261E+01	#NAME?	2.6299E+01	#NAME?	2.6348E+01	#NAME?	2.6443E+01	#NAME?	2.6584E+01	#NAME?	2.6677E+01
446000	2.6180E+01	#NAME?	2.6218E+01	#NAME?	2.6267E+01	#NAME?	2.6362E+01	#NAME?	2.6502E+01	#NAME?	2.6595E+01
448000	2.6101E+01	#NAME?	2.6138E+01	#NAME?	2.6187E+01	#NAME?	2.6281E+01	#NAME?	2.6420E+01	#NAME?	2.6512E+01
450000	2.6021E+01	#NAME?	2.6059E+01	#NAME?	2.6107E+01	#NAME?	2.6201E+01	#NAME?	2.6339E+01	#NAME?	2.6431E+01
452000	2.5943E+01	#NAME?	2.5980E+01	#NAME?	2.6028E+01	#NAME?	2.6121E+01	#NAME?	2.6258E+01	#NAME?	2.6349E+01
454000	2.5865E+01	#NAME?	2.5902E+01	#NAME?	2.5949E+01	#NAME?	2.6042E+01	#NAME?	2.6178E+01	#NAME?	2.6269E+01
456000	2.5787E+01	#NAME?	2.5824E+01	#NAME?	2.5871E+01	#NAME?	2.5963E+01	#NAME?	2.6098E+01	#NAME?	2.6188E+01
458000	2.5709E+01	#NAME?	2.5746E+01	#NAME?	2.5793E+01	#NAME?	2.5884E+01	#NAME?	2.6019E+01	#NAME?	2.6109E+01
460000	2.5633E+01	#NAME?	2.5669E+01	#NAME?	2.5716E+01	#NAME?	2.5807E+01	#NAME?	2.5940E+01	#NAME?	2.6029E+01
462000	2.5556E+01	#NAME?	2.5593E+01	#NAME?	2.5639E+01	#NAME?	2.5729E+01	#NAME?	2.5862E+01	#NAME?	2.5951E+01
464000	2.5480E+01	#NAME?	2.5516E+01	#NAME?	2.5563E+01	#NAME?	2.5652E+01	#NAME?	2.5784E+01	#NAME?	2.5872E+01
466000	2.5405E+01	#NAME?	2.5441E+01	#NAME?	2.5487E+01	#NAME?	2.5576E+01	#NAME?	2.5707E+01	#NAME?	2.5795E+01
468000	2.5330E+01	#NAME?	2.5366E+01	#NAME?	2.5411E+01	#NAME?	2.5500E+01	#NAME?	2.5630E+01	#NAME?	2.5717E+01
470000	2.5255E+01	#NAME?	2.5291E+01	#NAME?	2.5336E+01	#NAME?	2.5424E+01	#NAME?	2.5554E+01	#NAME?	2.5640E+01
472000	2.5181E+01	#NAME?	2.5216E+01	#NAME?	2.5262E+01	#NAME?	2.5349E+01	#NAME?	2.5478E+01	#NAME?	2.5564E+01
474000	2.5108E+01	#NAME?	2.5143E+01	#NAME?	2.5188E+01	#NAME?	2.5274E+01	#NAME?	2.5403E+01	#NAME?	2.5488E+01
476000	2.5034E+01	#NAME?	2.5069E+01	#NAME?	2.5114E+01	#NAME?	2.5200E+01	#NAME?	2.5328E+01	#NAME?	2.5412E+01
478000	2.4961E+01	#NAME?	2.4996E+01	#NAME?	2.5040E+01	#NAME?	2.5126E+01	#NAME?	2.5253E+01	#NAME?	2.5337E+01
480000	2.4889E+01	#NAME?	2.4923E+01	#NAME?	2.4968E+01	#NAME?	2.5053E+01	#NAME?	2.5179E+01	#NAME?	2.5263E+01
482000	2.4817E+01	#NAME?	2.4851E+01	#NAME?	2.4895E+01	#NAME?	2.4980E+01	#NAME?	2.5105E+01	#NAME?	2.5189E+01
484000	2.4745E+01	#NAME?	2.4779E+01	#NAME?	2.4823E+01	#NAME?	2.4907E+01	#NAME?	2.5032E+01	#NAME?	2.5115E+01
486000	2.4674E+01	#NAME?	2.4708E+01	#NAME?	2.4751E+01	#NAME?	2.4835E+01	#NAME?	2.4959E+01	#NAME?	2.5042E+01
488000	2.4603E+01	#NAME?	2.4637E+01	#NAME?	2.4680E+01	#NAME?	2.4764E+01	#NAME?	2.4887E+01	#NAME?	2.4969E+01
490000	2.4533E+01	#NAME?	2.4566E+01	#NAME?	2.4609E+01	#NAME?	2.4692E+01	#NAME?	2.4815E+01	#NAME?	2.4896E+01
492000	2.4463E+01	#NAME?	2.4496E+01	#NAME?	2.4539E+01	#NAME?	2.4621E+01	#NAME?	2.4743E+01	#NAME?	2.4824E+01
494000	2.4393E+01	#NAME?	2.4426E+01	#NAME?	2.4469E+01	#NAME?	2.4551E+01	#NAME?	2.4672E+01	#NAME?	2.4753E+01
496000	2.4324E+01	#NAME?	2.4357E+01	#NAME?	2.4399E+01	#NAME?	2.4481E+01	#NAME?	2.4601E+01	#NAME?	2.4681E+01
498000	2.4255E+01	#NAME?	2.4288E+01	#NAME?	2.4330E+01	#NAME?	2.4411E+01	#NAME?	2.4531E+01	#NAME?	2.4610E+01
500000	2.4187E+01	#NAME?	2.4219E+01	#NAME?	2.4261E+01	#NAME?	2.4342E+01	#NAME?	2.4461E+01	#NAME?	2.4540E+01
502000	2.4119E+01	#NAME?	2.4151E+01	#NAME?	2.4193E+01	#NAME?	2.4273E+01	#NAME?	2.4391E+01	#NAME?	2.4470E+01
504000	2.4051E+01	#NAME?	2.4083E+01	#NAME?	2.4124E+01	#NAME?	2.4204E+01	#NAME?	2.4322E+01	#NAME?	2.4400E+01
506000	2.3984E+01	#NAME?	2.4015E+01	#NAME?	2.4057E+01	#NAME?	2.4136E+01	#NAME?	2.4253E+01	#NAME?	2.4331E+01
508000	2.3917E+01	#NAME?	2.3948E+01	#NAME?	2.3989E+01	#NAME?	2.4068E+01	#NAME?	2.4185E+01	#NAME?	2.4262E+01
510000	2.3850E+01	#NAME?	2.3882E+01	#NAME?	2.3922E+01	#NAME?	2.4001E+01	#NAME?	2.4117E+01	#NAME?	2.4194E+01
512000	2.3784E+01	#NAME?	2.3815E+01	#NAME?	2.3856E+01	#NAME?	2.3934E+01	#NAME?	2.4049E+01	#NAME?	2.4125E+01
514000	2.3718E+01	#NAME?	2.3749E+01	#NAME?	2.3789E+01	#NAME?	2.3867E+01	#NAME?	2.3982E+01	#NAME?	2.4058E+01
516000	2.3652E+01	#NAME?	2.3683E+01	#NAME?	2.3723E+01	#NAME?	2.3800E+01	#NAME?	2.3915E+01	#NAME?	2.3990E+01
518000	2.3587E+01	#NAME?	2.3618E+01	#NAME?	2.3658E+01	#NAME?	2.3734E+01	#NAME?	2.3848E+01	#NAME?	2.3923E+01

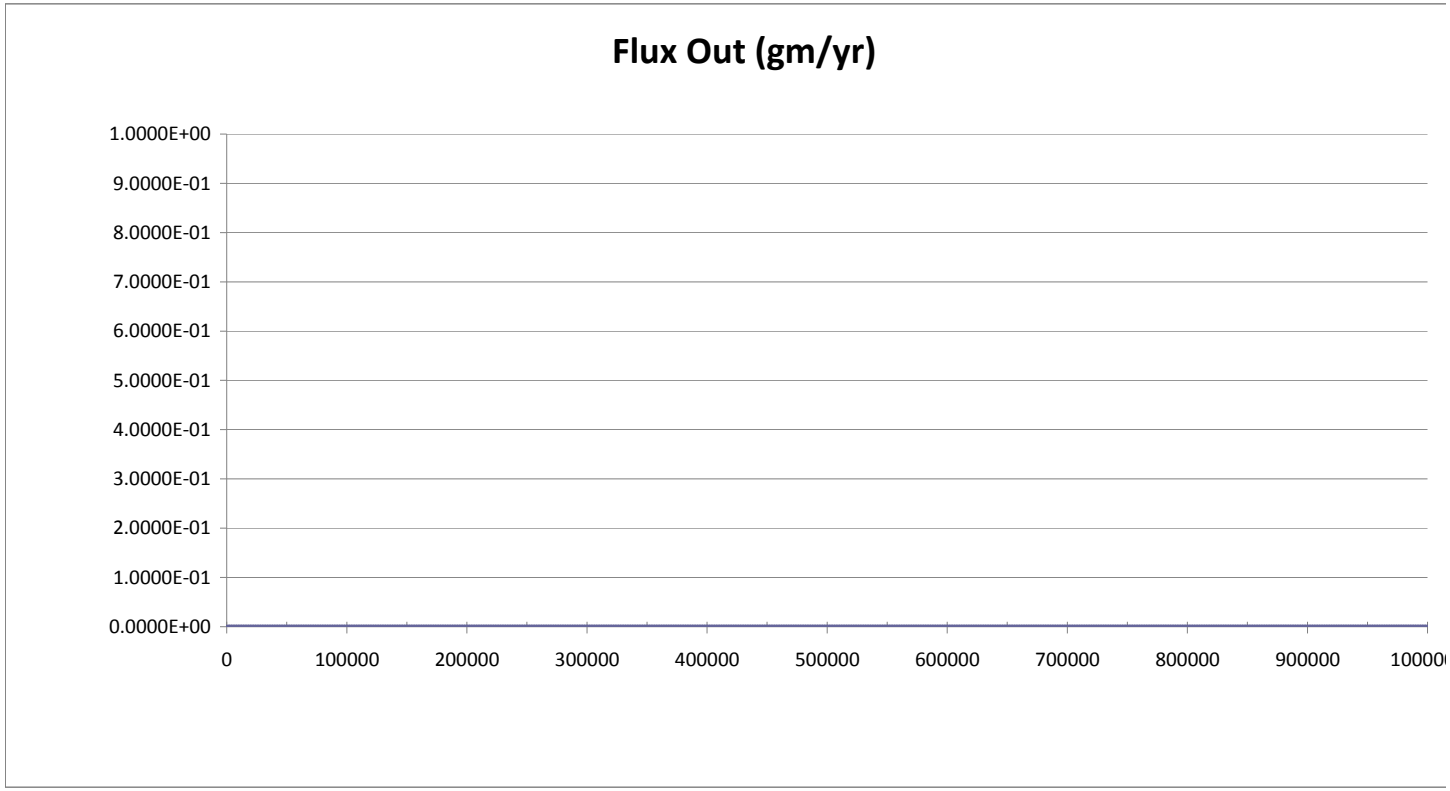
Time (yrs)	Arg 1	Curve 1	Arg 2	Curve 2	Arg 3	Curve 3	Arg 4	Curve 4	Arg 5	Curve 5	Arg 6
520000	2.3522E+01	#NAME?	2.3553E+01	#NAME?	2.3592E+01	#NAME?	2.3669E+01	#NAME?	2.3782E+01	#NAME?	2.3857E+01
522000	2.3457E+01	#NAME?	2.3488E+01	#NAME?	2.3527E+01	#NAME?	2.3603E+01	#NAME?	2.3716E+01	#NAME?	2.3790E+01
524000	2.3393E+01	#NAME?	2.3424E+01	#NAME?	2.3463E+01	#NAME?	2.3538E+01	#NAME?	2.3650E+01	#NAME?	2.3724E+01
526000	2.3329E+01	#NAME?	2.3360E+01	#NAME?	2.3399E+01	#NAME?	2.3474E+01	#NAME?	2.3585E+01	#NAME?	2.3659E+01
528000	2.3266E+01	#NAME?	2.3296E+01	#NAME?	2.3335E+01	#NAME?	2.3410E+01	#NAME?	2.3520E+01	#NAME?	2.3593E+01
530000	2.3203E+01	#NAME?	2.3232E+01	#NAME?	2.3271E+01	#NAME?	2.3346E+01	#NAME?	2.3455E+01	#NAME?	2.3528E+01
532000	2.3140E+01	#NAME?	2.3169E+01	#NAME?	2.3208E+01	#NAME?	2.3282E+01	#NAME?	2.3391E+01	#NAME?	2.3464E+01
534000	2.3077E+01	#NAME?	2.3107E+01	#NAME?	2.3145E+01	#NAME?	2.3219E+01	#NAME?	2.3327E+01	#NAME?	2.3400E+01
536000	2.3015E+01	#NAME?	2.3044E+01	#NAME?	2.3082E+01	#NAME?	2.3156E+01	#NAME?	2.3264E+01	#NAME?	2.3336E+01
538000	2.2953E+01	#NAME?	2.2982E+01	#NAME?	2.3020E+01	#NAME?	2.3093E+01	#NAME?	2.3201E+01	#NAME?	2.3272E+01
540000	2.2891E+01	#NAME?	2.2920E+01	#NAME?	2.2958E+01	#NAME?	2.3031E+01	#NAME?	2.3138E+01	#NAME?	2.3209E+01
542000	2.2830E+01	#NAME?	2.2859E+01	#NAME?	2.2896E+01	#NAME?	2.2969E+01	#NAME?	2.3075E+01	#NAME?	2.3146E+01
544000	2.2769E+01	#NAME?	2.2798E+01	#NAME?	2.2835E+01	#NAME?	2.2907E+01	#NAME?	2.3013E+01	#NAME?	2.3083E+01
546000	2.2708E+01	#NAME?	2.2737E+01	#NAME?	2.2774E+01	#NAME?	2.2845E+01	#NAME?	2.2951E+01	#NAME?	2.3021E+01
548000	2.2648E+01	#NAME?	2.2676E+01	#NAME?	2.2713E+01	#NAME?	2.2784E+01	#NAME?	2.2889E+01	#NAME?	2.2959E+01
550000	2.2588E+01	#NAME?	2.2616E+01	#NAME?	2.2653E+01	#NAME?	2.2724E+01	#NAME?	2.2828E+01	#NAME?	2.2897E+01
552000	2.2528E+01	#NAME?	2.2556E+01	#NAME?	2.2593E+01	#NAME?	2.2663E+01	#NAME?	2.2767E+01	#NAME?	2.2836E+01
554000	2.2468E+01	#NAME?	2.2496E+01	#NAME?	2.2533E+01	#NAME?	2.2603E+01	#NAME?	2.2706E+01	#NAME?	2.2775E+01
556000	2.2409E+01	#NAME?	2.2437E+01	#NAME?	2.2473E+01	#NAME?	2.2543E+01	#NAME?	2.2646E+01	#NAME?	2.2714E+01
558000	2.2350E+01	#NAME?	2.2378E+01	#NAME?	2.2414E+01	#NAME?	2.2483E+01	#NAME?	2.2586E+01	#NAME?	2.2654E+01
560000	2.2291E+01	#NAME?	2.2319E+01	#NAME?	2.2355E+01	#NAME?	2.2424E+01	#NAME?	2.2526E+01	#NAME?	2.2594E+01
562000	2.2233E+01	#NAME?	2.2261E+01	#NAME?	2.2296E+01	#NAME?	2.2365E+01	#NAME?	2.2466E+01	#NAME?	2.2534E+01
564000	2.2175E+01	#NAME?	2.2202E+01	#NAME?	2.2238E+01	#NAME?	2.2306E+01	#NAME?	2.2407E+01	#NAME?	2.2474E+01
566000	2.2117E+01	#NAME?	2.2144E+01	#NAME?	2.2180E+01	#NAME?	2.2248E+01	#NAME?	2.2348E+01	#NAME?	2.2415E+01
568000	2.2059E+01	#NAME?	2.2087E+01	#NAME?	2.2122E+01	#NAME?	2.2190E+01	#NAME?	2.2290E+01	#NAME?	2.2356E+01
570000	2.2002E+01	#NAME?	2.2029E+01	#NAME?	2.2064E+01	#NAME?	2.2132E+01	#NAME?	2.2231E+01	#NAME?	2.2297E+01
572000	2.1945E+01	#NAME?	2.1972E+01	#NAME?	2.2007E+01	#NAME?	2.2074E+01	#NAME?	2.2173E+01	#NAME?	2.2239E+01
574000	2.1888E+01	#NAME?	2.1915E+01	#NAME?	2.1950E+01	#NAME?	2.2017E+01	#NAME?	2.2115E+01	#NAME?	2.2181E+01
576000	2.1832E+01	#NAME?	2.1859E+01	#NAME?	2.1893E+01	#NAME?	2.1960E+01	#NAME?	2.2058E+01	#NAME?	2.2123E+01
578000	2.1776E+01	#NAME?	2.1802E+01	#NAME?	2.1837E+01	#NAME?	2.1903E+01	#NAME?	2.2000E+01	#NAME?	2.2065E+01
580000	2.1720E+01	#NAME?	2.1746E+01	#NAME?	2.1781E+01	#NAME?	2.1846E+01	#NAME?	2.1944E+01	#NAME?	2.2008E+01
582000	2.1664E+01	#NAME?	2.1691E+01	#NAME?	2.1725E+01	#NAME?	2.1790E+01	#NAME?	2.1887E+01	#NAME?	2.1951E+01
584000	2.1609E+01	#NAME?	2.1635E+01	#NAME?	2.1669E+01	#NAME?	2.1734E+01	#NAME?	2.1830E+01	#NAME?	2.1894E+01
586000	2.1554E+01	#NAME?	2.1580E+01	#NAME?	2.1613E+01	#NAME?	2.1678E+01	#NAME?	2.1774E+01	#NAME?	2.1838E+01
588000	2.1499E+01	#NAME?	2.1525E+01	#NAME?	2.1558E+01	#NAME?	2.1623E+01	#NAME?	2.1718E+01	#NAME?	2.1781E+01
590000	2.1444E+01	#NAME?	2.1470E+01	#NAME?	2.1503E+01	#NAME?	2.1568E+01	#NAME?	2.1663E+01	#NAME?	2.1725E+01
592000	2.1390E+01	#NAME?	2.1415E+01	#NAME?	2.1449E+01	#NAME?	2.1513E+01	#NAME?	2.1607E+01	#NAME?	2.1670E+01
594000	2.1335E+01	#NAME?	2.1361E+01	#NAME?	2.1394E+01	#NAME?	2.1458E+01	#NAME?	2.1552E+01	#NAME?	2.1614E+01
596000	2.1281E+01	#NAME?	2.1307E+01	#NAME?	2.1340E+01	#NAME?	2.1403E+01	#NAME?	2.1497E+01	#NAME?	2.1559E+01
598000	2.1228E+01	#NAME?	2.1253E+01	#NAME?	2.1286E+01	#NAME?	2.1349E+01	#NAME?	2.1442E+01	#NAME?	2.1504E+01
600000	2.1174E+01	#NAME?	2.1200E+01	#NAME?	2.1232E+01	#NAME?	2.1295E+01	#NAME?	2.1388E+01	#NAME?	2.1449E+01
602000	2.1121E+01	#NAME?	2.1146E+01	#NAME?	2.1179E+01	#NAME?	2.1241E+01	#NAME?	2.1334E+01	#NAME?	2.1395E+01
604000	2.1068E+01	#NAME?	2.1093E+01	#NAME?	2.1126E+01	#NAME?	2.1188E+01	#NAME?	2.1280E+01	#NAME?	2.1341E+01
606000	2.1015E+01	#NAME?	2.1040E+01	#NAME?	2.1073E+01	#NAME?	2.1135E+01	#NAME?	2.1226E+01	#NAME?	2.1287E+01
608000	2.0963E+01	#NAME?	2.0988E+01	#NAME?	2.1020E+01	#NAME?	2.1082E+01	#NAME?	2.1173E+01	#NAME?	2.1233E+01
610000	2.0911E+01	#NAME?	2.0935E+01	#NAME?	2.0967E+01	#NAME?	2.1029E+01	#NAME?	2.1120E+01	#NAME?	2.1180E+01
612000	2.0859E+01	#NAME?	2.0883E+01	#NAME?	2.0915E+01	#NAME?	2.0976E+01	#NAME?	2.1067E+01	#NAME?	2.1126E+01
614000	2.0807E+01	#NAME?	2.0831E+01	#NAME?	2.0863E+01	#NAME?	2.0924E+01	#NAME?	2.1014E+01	#NAME?	2.1073E+01
616000	2.0755E+01	#NAME?	2.0780E+01	#NAME?	2.0811E+01	#NAME?	2.0872E+01	#NAME?	2.0961E+01	#NAME?	2.1021E+01
618000	2.0704E+01	#NAME?	2.0728E+01	#NAME?	2.0760E+01	#NAME?	2.0820E+01	#NAME?	2.0909E+01	#NAME?	2.0968E+01
620000	2.0653E+01	#NAME?	2.0677E+01	#NAME?	2.0708E+01	#NAME?	2.0768E+01	#NAME?	2.0857E+01	#NAME?	2.0916E+01
622000	2.0602E+01	#NAME?	2.0626E+01	#NAME?	2.0657E+01	#NAME?	2.0717E+01	#NAME?	2.0805E+01	#NAME?	2.0864E+01

Time (yrs)	Arg 1	Curve 1	Arg 2	Curve 2	Arg 3	Curve 3	Arg 4	Curve 4	Arg 5	Curve 5	Arg 6
624000	2.0551E+01	#NAME?	2.0575E+01	#NAME?	2.0606E+01	#NAME?	2.0666E+01	#NAME?	2.0754E+01	#NAME?	2.0812E+01
626000	2.0501E+01	#NAME?	2.0525E+01	#NAME?	2.0555E+01	#NAME?	2.0615E+01	#NAME?	2.0702E+01	#NAME?	2.0760E+01
628000	2.0450E+01	#NAME?	2.0474E+01	#NAME?	2.0505E+01	#NAME?	2.0564E+01	#NAME?	2.0651E+01	#NAME?	2.0709E+01
630000	2.0400E+01	#NAME?	2.0424E+01	#NAME?	2.0455E+01	#NAME?	2.0513E+01	#NAME?	2.0600E+01	#NAME?	2.0658E+01
632000	2.0350E+01	#NAME?	2.0374E+01	#NAME?	2.0405E+01	#NAME?	2.0463E+01	#NAME?	2.0550E+01	#NAME?	2.0607E+01
634000	2.0301E+01	#NAME?	2.0324E+01	#NAME?	2.0355E+01	#NAME?	2.0413E+01	#NAME?	2.0499E+01	#NAME?	2.0556E+01
636000	2.0251E+01	#NAME?	2.0275E+01	#NAME?	2.0305E+01	#NAME?	2.0363E+01	#NAME?	2.0449E+01	#NAME?	2.0506E+01
638000	2.0202E+01	#NAME?	2.0226E+01	#NAME?	2.0256E+01	#NAME?	2.0313E+01	#NAME?	2.0399E+01	#NAME?	2.0455E+01
640000	2.0153E+01	#NAME?	2.0176E+01	#NAME?	2.0206E+01	#NAME?	2.0264E+01	#NAME?	2.0349E+01	#NAME?	2.0405E+01
642000	2.0104E+01	#NAME?	2.0127E+01	#NAME?	2.0157E+01	#NAME?	2.0215E+01	#NAME?	2.0299E+01	#NAME?	2.0355E+01
644000	2.0056E+01	#NAME?	2.0079E+01	#NAME?	2.0108E+01	#NAME?	2.0166E+01	#NAME?	2.0250E+01	#NAME?	2.0306E+01
646000	2.0007E+01	#NAME?	2.0030E+01	#NAME?	2.0060E+01	#NAME?	2.0117E+01	#NAME?	2.0201E+01	#NAME?	2.0256E+01
648000	1.9959E+01	#NAME?	1.9982E+01	#NAME?	2.0011E+01	#NAME?	2.0068E+01	#NAME?	2.0152E+01	#NAME?	2.0207E+01
650000	1.9911E+01	#NAME?	1.9934E+01	#NAME?	1.9963E+01	#NAME?	2.0020E+01	#NAME?	2.0103E+01	#NAME?	2.0158E+01
652000	1.9863E+01	#NAME?	1.9886E+01	#NAME?	1.9915E+01	#NAME?	1.9971E+01	#NAME?	2.0054E+01	#NAME?	2.0109E+01
654000	1.9816E+01	#NAME?	1.9838E+01	#NAME?	1.9867E+01	#NAME?	1.9923E+01	#NAME?	2.0006E+01	#NAME?	2.0061E+01
656000	1.9768E+01	#NAME?	1.9791E+01	#NAME?	1.9820E+01	#NAME?	1.9875E+01	#NAME?	1.9958E+01	#NAME?	2.0012E+01
658000	1.9721E+01	#NAME?	1.9743E+01	#NAME?	1.9772E+01	#NAME?	1.9828E+01	#NAME?	1.9910E+01	#NAME?	1.9964E+01
660000	1.9674E+01	#NAME?	1.9696E+01	#NAME?	1.9725E+01	#NAME?	1.9780E+01	#NAME?	1.9862E+01	#NAME?	1.9916E+01
662000	1.9627E+01	#NAME?	1.9649E+01	#NAME?	1.9678E+01	#NAME?	1.9733E+01	#NAME?	1.9814E+01	#NAME?	1.9868E+01
664000	1.9580E+01	#NAME?	1.9603E+01	#NAME?	1.9631E+01	#NAME?	1.9686E+01	#NAME?	1.9767E+01	#NAME?	1.9820E+01
666000	1.9534E+01	#NAME?	1.9556E+01	#NAME?	1.9584E+01	#NAME?	1.9639E+01	#NAME?	1.9720E+01	#NAME?	1.9773E+01
668000	1.9488E+01	#NAME?	1.9510E+01	#NAME?	1.9538E+01	#NAME?	1.9592E+01	#NAME?	1.9673E+01	#NAME?	1.9726E+01
670000	1.9442E+01	#NAME?	1.9463E+01	#NAME?	1.9492E+01	#NAME?	1.9546E+01	#NAME?	1.9626E+01	#NAME?	1.9679E+01
672000	1.9396E+01	#NAME?	1.9417E+01	#NAME?	1.9445E+01	#NAME?	1.9499E+01	#NAME?	1.9579E+01	#NAME?	1.9632E+01
674000	1.9350E+01	#NAME?	1.9372E+01	#NAME?	1.9400E+01	#NAME?	1.9453E+01	#NAME?	1.9533E+01	#NAME?	1.9585E+01
676000	1.9304E+01	#NAME?	1.9326E+01	#NAME?	1.9354E+01	#NAME?	1.9407E+01	#NAME?	1.9486E+01	#NAME?	1.9539E+01
678000	1.9259E+01	#NAME?	1.9280E+01	#NAME?	1.9308E+01	#NAME?	1.9362E+01	#NAME?	1.9440E+01	#NAME?	1.9492E+01
680000	1.9214E+01	#NAME?	1.9235E+01	#NAME?	1.9263E+01	#NAME?	1.9316E+01	#NAME?	1.9394E+01	#NAME?	1.9446E+01
682000	1.9169E+01	#NAME?	1.9190E+01	#NAME?	1.9218E+01	#NAME?	1.9270E+01	#NAME?	1.9349E+01	#NAME?	1.9400E+01
684000	1.9124E+01	#NAME?	1.9145E+01	#NAME?	1.9173E+01	#NAME?	1.9225E+01	#NAME?	1.9303E+01	#NAME?	1.9354E+01
686000	1.9079E+01	#NAME?	1.9100E+01	#NAME?	1.9128E+01	#NAME?	1.9180E+01	#NAME?	1.9258E+01	#NAME?	1.9309E+01
688000	1.9035E+01	#NAME?	1.9056E+01	#NAME?	1.9083E+01	#NAME?	1.9135E+01	#NAME?	1.9212E+01	#NAME?	1.9263E+01
690000	1.8990E+01	#NAME?	1.9011E+01	#NAME?	1.9038E+01	#NAME?	1.9091E+01	#NAME?	1.9167E+01	#NAME?	1.9218E+01
692000	1.8946E+01	#NAME?	1.8967E+01	#NAME?	1.8994E+01	#NAME?	1.9046E+01	#NAME?	1.9122E+01	#NAME?	1.9173E+01
694000	1.8902E+01	#NAME?	1.8923E+01	#NAME?	1.8950E+01	#NAME?	1.9002E+01	#NAME?	1.9078E+01	#NAME?	1.9128E+01
696000	1.8858E+01	#NAME?	1.8879E+01	#NAME?	1.8906E+01	#NAME?	1.8957E+01	#NAME?	1.9033E+01	#NAME?	1.9084E+01
698000	1.8815E+01	#NAME?	1.8835E+01	#NAME?	1.8862E+01	#NAME?	1.8913E+01	#NAME?	1.8989E+01	#NAME?	1.9039E+01
700000	1.8771E+01	#NAME?	1.8792E+01	#NAME?	1.8818E+01	#NAME?	1.8869E+01	#NAME?	1.8945E+01	#NAME?	1.8995E+01
702000	1.8728E+01	#NAME?	1.8748E+01	#NAME?	1.8775E+01	#NAME?	1.8826E+01	#NAME?	1.8901E+01	#NAME?	1.8950E+01
704000	1.8685E+01	#NAME?	1.8705E+01	#NAME?	1.8731E+01	#NAME?	1.8782E+01	#NAME?	1.8857E+01	#NAME?	1.8906E+01
706000	1.8641E+01	#NAME?	1.8662E+01	#NAME?	1.8688E+01	#NAME?	1.8739E+01	#NAME?	1.8813E+01	#NAME?	1.8863E+01
708000	1.8599E+01	#NAME?	1.8619E+01	#NAME?	1.8645E+01	#NAME?	1.8696E+01	#NAME?	1.8770E+01	#NAME?	1.8819E+01
710000	1.8556E+01	#NAME?	1.8576E+01	#NAME?	1.8602E+01	#NAME?	1.8652E+01	#NAME?	1.8726E+01	#NAME?	1.8775E+01
712000	1.8513E+01	#NAME?	1.8534E+01	#NAME?	1.8560E+01	#NAME?	1.8610E+01	#NAME?	1.8683E+01	#NAME?	1.8732E+01
714000	1.8471E+01	#NAME?	1.8491E+01	#NAME?	1.8517E+01	#NAME?	1.8567E+01	#NAME?	1.8640E+01	#NAME?	1.8689E+01
716000	1.8429E+01	#NAME?	1.8449E+01	#NAME?	1.8475E+01	#NAME?	1.8524E+01	#NAME?	1.8597E+01	#NAME?	1.8646E+01
718000	1.8387E+01	#NAME?	1.8407E+01	#NAME?	1.8432E+01	#NAME?	1.8482E+01	#NAME?	1.8555E+01	#NAME?	1.8603E+01
720000	1.8345E+01	#NAME?	1.8365E+01	#NAME?	1.8390E+01	#NAME?	1.8440E+01	#NAME?	1.8512E+01	#NAME?	1.8560E+01
722000	1.8303E+01	#NAME?	1.8323E+01	#NAME?	1.8348E+01	#NAME?	1.8397E+01	#NAME?	1.8470E+01	#NAME?	1.8518E+01
724000	1.8261E+01	#NAME?	1.8281E+01	#NAME?	1.8307E+01	#NAME?	1.8355E+01	#NAME?	1.8427E+01	#NAME?	1.8475E+01
726000	1.8220E+01	#NAME?	1.8240E+01	#NAME?	1.8265E+01	#NAME?	1.8314E+01	#NAME?	1.8385E+01	#NAME?	1.8433E+01

Time (yrs)	Arg 1	Curve 1	Arg 2	Curve 2	Arg 3	Curve 3	Arg 4	Curve 4	Arg 5	Curve 5	Arg 6
728000	1.8179E+01	#NAME?	1.8198E+01	#NAME?	1.8223E+01	#NAME?	1.8272E+01	#NAME?	1.8343E+01	#NAME?	1.8391E+01
730000	1.8137E+01	#NAME?	1.8157E+01	#NAME?	1.8182E+01	#NAME?	1.8230E+01	#NAME?	1.8302E+01	#NAME?	1.8349E+01
732000	1.8096E+01	#NAME?	1.8116E+01	#NAME?	1.8141E+01	#NAME?	1.8189E+01	#NAME?	1.8260E+01	#NAME?	1.8307E+01
734000	1.8055E+01	#NAME?	1.8075E+01	#NAME?	1.8100E+01	#NAME?	1.8148E+01	#NAME?	1.8219E+01	#NAME?	1.8266E+01
736000	1.8015E+01	#NAME?	1.8034E+01	#NAME?	1.8059E+01	#NAME?	1.8107E+01	#NAME?	1.8177E+01	#NAME?	1.8224E+01
738000	1.7974E+01	#NAME?	1.7993E+01	#NAME?	1.8018E+01	#NAME?	1.8066E+01	#NAME?	1.8136E+01	#NAME?	1.8183E+01
740000	1.7934E+01	#NAME?	1.7953E+01	#NAME?	1.7978E+01	#NAME?	1.8025E+01	#NAME?	1.8095E+01	#NAME?	1.8142E+01
742000	1.7893E+01	#NAME?	1.7913E+01	#NAME?	1.7937E+01	#NAME?	1.7985E+01	#NAME?	1.8054E+01	#NAME?	1.8100E+01
744000	1.7853E+01	#NAME?	1.7872E+01	#NAME?	1.7897E+01	#NAME?	1.7944E+01	#NAME?	1.8014E+01	#NAME?	1.8060E+01
746000	1.7813E+01	#NAME?	1.7832E+01	#NAME?	1.7857E+01	#NAME?	1.7904E+01	#NAME?	1.7973E+01	#NAME?	1.8019E+01
748000	1.7773E+01	#NAME?	1.7792E+01	#NAME?	1.7817E+01	#NAME?	1.7864E+01	#NAME?	1.7933E+01	#NAME?	1.7978E+01
750000	1.7734E+01	#NAME?	1.7753E+01	#NAME?	1.7777E+01	#NAME?	1.7823E+01	#NAME?	1.7892E+01	#NAME?	1.7938E+01
752000	1.7694E+01	#NAME?	1.7713E+01	#NAME?	1.7737E+01	#NAME?	1.7784E+01	#NAME?	1.7852E+01	#NAME?	1.7897E+01
754000	1.7655E+01	#NAME?	1.7673E+01	#NAME?	1.7697E+01	#NAME?	1.7744E+01	#NAME?	1.7812E+01	#NAME?	1.7857E+01
756000	1.7615E+01	#NAME?	1.7634E+01	#NAME?	1.7658E+01	#NAME?	1.7704E+01	#NAME?	1.7772E+01	#NAME?	1.7817E+01
758000	1.7576E+01	#NAME?	1.7595E+01	#NAME?	1.7619E+01	#NAME?	1.7665E+01	#NAME?	1.7732E+01	#NAME?	1.7777E+01
760000	1.7537E+01	#NAME?	1.7556E+01	#NAME?	1.7579E+01	#NAME?	1.7625E+01	#NAME?	1.7693E+01	#NAME?	1.7738E+01
762000	1.7498E+01	#NAME?	1.7517E+01	#NAME?	1.7540E+01	#NAME?	1.7586E+01	#NAME?	1.7653E+01	#NAME?	1.7698E+01
764000	1.7459E+01	#NAME?	1.7478E+01	#NAME?	1.7501E+01	#NAME?	1.7547E+01	#NAME?	1.7614E+01	#NAME?	1.7659E+01
766000	1.7421E+01	#NAME?	1.7439E+01	#NAME?	1.7463E+01	#NAME?	1.7508E+01	#NAME?	1.7575E+01	#NAME?	1.7619E+01
768000	1.7382E+01	#NAME?	1.7400E+01	#NAME?	1.7424E+01	#NAME?	1.7469E+01	#NAME?	1.7536E+01	#NAME?	1.7580E+01
770000	1.7344E+01	#NAME?	1.7362E+01	#NAME?	1.7385E+01	#NAME?	1.7431E+01	#NAME?	1.7497E+01	#NAME?	1.7541E+01
772000	1.7305E+01	#NAME?	1.7324E+01	#NAME?	1.7347E+01	#NAME?	1.7392E+01	#NAME?	1.7458E+01	#NAME?	1.7502E+01
774000	1.7267E+01	#NAME?	1.7285E+01	#NAME?	1.7309E+01	#NAME?	1.7354E+01	#NAME?	1.7420E+01	#NAME?	1.7463E+01
776000	1.7229E+01	#NAME?	1.7247E+01	#NAME?	1.7271E+01	#NAME?	1.7315E+01	#NAME?	1.7381E+01	#NAME?	1.7425E+01
778000	1.7191E+01	#NAME?	1.7209E+01	#NAME?	1.7233E+01	#NAME?	1.7277E+01	#NAME?	1.7343E+01	#NAME?	1.7386E+01
780000	1.7154E+01	#NAME?	1.7172E+01	#NAME?	1.7195E+01	#NAME?	1.7239E+01	#NAME?	1.7304E+01	#NAME?	1.7348E+01
782000	1.7116E+01	#NAME?	1.7134E+01	#NAME?	1.7157E+01	#NAME?	1.7201E+01	#NAME?	1.7266E+01	#NAME?	1.7309E+01
784000	1.7079E+01	#NAME?	1.7096E+01	#NAME?	1.7119E+01	#NAME?	1.7163E+01	#NAME?	1.7228E+01	#NAME?	1.7271E+01
786000	1.7041E+01	#NAME?	1.7059E+01	#NAME?	1.7082E+01	#NAME?	1.7126E+01	#NAME?	1.7190E+01	#NAME?	1.7233E+01
788000	1.7004E+01	#NAME?	1.7022E+01	#NAME?	1.7044E+01	#NAME?	1.7088E+01	#NAME?	1.7153E+01	#NAME?	1.7195E+01
790000	1.6967E+01	#NAME?	1.6984E+01	#NAME?	1.7007E+01	#NAME?	1.7051E+01	#NAME?	1.7115E+01	#NAME?	1.7157E+01
792000	1.6930E+01	#NAME?	1.6947E+01	#NAME?	1.6970E+01	#NAME?	1.7013E+01	#NAME?	1.7077E+01	#NAME?	1.7120E+01
794000	1.6893E+01	#NAME?	1.6910E+01	#NAME?	1.6933E+01	#NAME?	1.6976E+01	#NAME?	1.7040E+01	#NAME?	1.7082E+01
796000	1.6856E+01	#NAME?	1.6874E+01	#NAME?	1.6896E+01	#NAME?	1.6939E+01	#NAME?	1.7003E+01	#NAME?	1.7045E+01
798000	1.6820E+01	#NAME?	1.6837E+01	#NAME?	1.6859E+01	#NAME?	1.6902E+01	#NAME?	1.6966E+01	#NAME?	1.7008E+01
800000	1.6783E+01	#NAME?	1.6800E+01	#NAME?	1.6823E+01	#NAME?	1.6866E+01	#NAME?	1.6929E+01	#NAME?	1.6971E+01
802000	1.6747E+01	#NAME?	1.6764E+01	#NAME?	1.6786E+01	#NAME?	1.6829E+01	#NAME?	1.6892E+01	#NAME?	1.6934E+01
804000	1.6710E+01	#NAME?	1.6728E+01	#NAME?	1.6750E+01	#NAME?	1.6792E+01	#NAME?	1.6855E+01	#NAME?	1.6897E+01
806000	1.6674E+01	#NAME?	1.6691E+01	#NAME?	1.6713E+01	#NAME?	1.6756E+01	#NAME?	1.6818E+01	#NAME?	1.6860E+01
808000	1.6638E+01	#NAME?	1.6655E+01	#NAME?	1.6677E+01	#NAME?	1.6720E+01	#NAME?	1.6782E+01	#NAME?	1.6823E+01
810000	1.6602E+01	#NAME?	1.6619E+01	#NAME?	1.6641E+01	#NAME?	1.6683E+01	#NAME?	1.6746E+01	#NAME?	1.6787E+01
812000	1.6566E+01	#NAME?	1.6583E+01	#NAME?	1.6605E+01	#NAME?	1.6647E+01	#NAME?	1.6709E+01	#NAME?	1.6750E+01
814000	1.6531E+01	#NAME?	1.6548E+01	#NAME?	1.6569E+01	#NAME?	1.6611E+01	#NAME?	1.6673E+01	#NAME?	1.6714E+01
816000	1.6495E+01	#NAME?	1.6512E+01	#NAME?	1.6534E+01	#NAME?	1.6575E+01	#NAME?	1.6637E+01	#NAME?	1.6678E+01
818000	1.6459E+01	#NAME?	1.6476E+01	#NAME?	1.6498E+01	#NAME?	1.6540E+01	#NAME?	1.6601E+01	#NAME?	1.6642E+01
820000	1.6424E+01	#NAME?	1.6441E+01	#NAME?	1.6462E+01	#NAME?	1.6504E+01	#NAME?	1.6565E+01	#NAME?	1.6606E+01
822000	1.6389E+01	#NAME?	1.6406E+01	#NAME?	1.6427E+01	#NAME?	1.6469E+01	#NAME?	1.6530E+01	#NAME?	1.6570E+01
824000	1.6354E+01	#NAME?	1.6370E+01	#NAME?	1.6392E+01	#NAME?	1.6433E+01	#NAME?	1.6494E+01	#NAME?	1.6534E+01
826000	1.6319E+01	#NAME?	1.6335E+01	#NAME?	1.6357E+01	#NAME?	1.6398E+01	#NAME?	1.6458E+01	#NAME?	1.6499E+01
828000	1.6284E+01	#NAME?	1.6300E+01	#NAME?	1.6322E+01	#NAME?	1.6363E+01	#NAME?	1.6423E+01	#NAME?	1.6463E+01
830000	1.6249E+01	#NAME?	1.6265E+01	#NAME?	1.6287E+01	#NAME?	1.6328E+01	#NAME?	1.6388E+01	#NAME?	1.6428E+01

Time (yrs)	Arg 1	Curve 1	Arg 2	Curve 2	Arg 3	Curve 3	Arg 4	Curve 4	Arg 5	Curve 5	Arg 6
832000	1.6214E+01	#NAME?	1.6231E+01	#NAME?	1.6252E+01	#NAME?	1.6293E+01	#NAME?	1.6353E+01	#NAME?	1.6392E+01
834000	1.6180E+01	#NAME?	1.6196E+01	#NAME?	1.6217E+01	#NAME?	1.6258E+01	#NAME?	1.6318E+01	#NAME?	1.6357E+01
836000	1.6145E+01	#NAME?	1.6161E+01	#NAME?	1.6182E+01	#NAME?	1.6223E+01	#NAME?	1.6283E+01	#NAME?	1.6322E+01
838000	1.6111E+01	#NAME?	1.6127E+01	#NAME?	1.6148E+01	#NAME?	1.6188E+01	#NAME?	1.6248E+01	#NAME?	1.6287E+01
840000	1.6076E+01	#NAME?	1.6093E+01	#NAME?	1.6114E+01	#NAME?	1.6154E+01	#NAME?	1.6213E+01	#NAME?	1.6252E+01
842000	1.6042E+01	#NAME?	1.6058E+01	#NAME?	1.6079E+01	#NAME?	1.6119E+01	#NAME?	1.6178E+01	#NAME?	1.6218E+01
844000	1.6008E+01	#NAME?	1.6024E+01	#NAME?	1.6045E+01	#NAME?	1.6085E+01	#NAME?	1.6144E+01	#NAME?	1.6183E+01
846000	1.5974E+01	#NAME?	1.5990E+01	#NAME?	1.6011E+01	#NAME?	1.6051E+01	#NAME?	1.6110E+01	#NAME?	1.6148E+01
848000	1.5940E+01	#NAME?	1.5956E+01	#NAME?	1.5977E+01	#NAME?	1.6017E+01	#NAME?	1.6075E+01	#NAME?	1.6114E+01
850000	1.5906E+01	#NAME?	1.5922E+01	#NAME?	1.5943E+01	#NAME?	1.5983E+01	#NAME?	1.6041E+01	#NAME?	1.6080E+01
852000	1.5873E+01	#NAME?	1.5889E+01	#NAME?	1.5909E+01	#NAME?	1.5949E+01	#NAME?	1.6007E+01	#NAME?	1.6046E+01
854000	1.5839E+01	#NAME?	1.5855E+01	#NAME?	1.5876E+01	#NAME?	1.5915E+01	#NAME?	1.5973E+01	#NAME?	1.6011E+01
856000	1.5806E+01	#NAME?	1.5822E+01	#NAME?	1.5842E+01	#NAME?	1.5881E+01	#NAME?	1.5939E+01	#NAME?	1.5977E+01
858000	1.5772E+01	#NAME?	1.5788E+01	#NAME?	1.5809E+01	#NAME?	1.5848E+01	#NAME?	1.5905E+01	#NAME?	1.5944E+01
860000	1.5739E+01	#NAME?	1.5755E+01	#NAME?	1.5775E+01	#NAME?	1.5814E+01	#NAME?	1.5872E+01	#NAME?	1.5910E+01
862000	1.5706E+01	#NAME?	1.5722E+01	#NAME?	1.5742E+01	#NAME?	1.5781E+01	#NAME?	1.5838E+01	#NAME?	1.5876E+01
864000	1.5673E+01	#NAME?	1.5689E+01	#NAME?	1.5709E+01	#NAME?	1.5748E+01	#NAME?	1.5805E+01	#NAME?	1.5843E+01
866000	1.5640E+01	#NAME?	1.5656E+01	#NAME?	1.5676E+01	#NAME?	1.5714E+01	#NAME?	1.5771E+01	#NAME?	1.5809E+01
868000	1.5607E+01	#NAME?	1.5623E+01	#NAME?	1.5643E+01	#NAME?	1.5681E+01	#NAME?	1.5738E+01	#NAME?	1.5776E+01
870000	1.5574E+01	#NAME?	1.5590E+01	#NAME?	1.5610E+01	#NAME?	1.5648E+01	#NAME?	1.5705E+01	#NAME?	1.5742E+01
872000	1.5542E+01	#NAME?	1.5557E+01	#NAME?	1.5577E+01	#NAME?	1.5615E+01	#NAME?	1.5672E+01	#NAME?	1.5709E+01
874000	1.5509E+01	#NAME?	1.5524E+01	#NAME?	1.5544E+01	#NAME?	1.5583E+01	#NAME?	1.5639E+01	#NAME?	1.5676E+01
876000	1.5476E+01	#NAME?	1.5492E+01	#NAME?	1.5512E+01	#NAME?	1.5550E+01	#NAME?	1.5606E+01	#NAME?	1.5643E+01
878000	1.5444E+01	#NAME?	1.5459E+01	#NAME?	1.5479E+01	#NAME?	1.5517E+01	#NAME?	1.5573E+01	#NAME?	1.5610E+01
880000	1.5412E+01	#NAME?	1.5427E+01	#NAME?	1.5447E+01	#NAME?	1.5485E+01	#NAME?	1.5541E+01	#NAME?	1.5577E+01
882000	1.5380E+01	#NAME?	1.5395E+01	#NAME?	1.5414E+01	#NAME?	1.5452E+01	#NAME?	1.5508E+01	#NAME?	1.5545E+01
884000	1.5347E+01	#NAME?	1.5363E+01	#NAME?	1.5382E+01	#NAME?	1.5420E+01	#NAME?	1.5475E+01	#NAME?	1.5512E+01
886000	1.5315E+01	#NAME?	1.5331E+01	#NAME?	1.5350E+01	#NAME?	1.5388E+01	#NAME?	1.5443E+01	#NAME?	1.5480E+01
888000	1.5283E+01	#NAME?	1.5299E+01	#NAME?	1.5318E+01	#NAME?	1.5356E+01	#NAME?	1.5411E+01	#NAME?	1.5447E+01
890000	1.5252E+01	#NAME?	1.5267E+01	#NAME?	1.5286E+01	#NAME?	1.5324E+01	#NAME?	1.5379E+01	#NAME?	1.5415E+01
892000	1.5220E+01	#NAME?	1.5235E+01	#NAME?	1.5254E+01	#NAME?	1.5292E+01	#NAME?	1.5346E+01	#NAME?	1.5383E+01
894000	1.5188E+01	#NAME?	1.5203E+01	#NAME?	1.5223E+01	#NAME?	1.5260E+01	#NAME?	1.5314E+01	#NAME?	1.5351E+01
896000	1.5157E+01	#NAME?	1.5172E+01	#NAME?	1.5191E+01	#NAME?	1.5228E+01	#NAME?	1.5282E+01	#NAME?	1.5319E+01
898000	1.5125E+01	#NAME?	1.5140E+01	#NAME?	1.5159E+01	#NAME?	1.5196E+01	#NAME?	1.5251E+01	#NAME?	1.5287E+01
900000	1.5094E+01	#NAME?	1.5109E+01	#NAME?	1.5128E+01	#NAME?	1.5165E+01	#NAME?	1.5219E+01	#NAME?	1.5255E+01
902000	1.5062E+01	#NAME?	1.5077E+01	#NAME?	1.5096E+01	#NAME?	1.5133E+01	#NAME?	1.5187E+01	#NAME?	1.5223E+01
904000	1.5031E+01	#NAME?	1.5046E+01	#NAME?	1.5065E+01	#NAME?	1.5102E+01	#NAME?	1.5156E+01	#NAME?	1.5191E+01
906000	1.5000E+01	#NAME?	1.5015E+01	#NAME?	1.5034E+01	#NAME?	1.5070E+01	#NAME?	1.5124E+01	#NAME?	1.5160E+01
908000	1.4969E+01	#NAME?	1.4984E+01	#NAME?	1.5003E+01	#NAME?	1.5039E+01	#NAME?	1.5093E+01	#NAME?	1.5128E+01
910000	1.4938E+01	#NAME?	1.4953E+01	#NAME?	1.4972E+01	#NAME?	1.5008E+01	#NAME?	1.5062E+01	#NAME?	1.5097E+01
912000	1.4907E+01	#NAME?	1.4922E+01	#NAME?	1.4941E+01	#NAME?	1.4977E+01	#NAME?	1.5030E+01	#NAME?	1.5066E+01
914000	1.4877E+01	#NAME?	1.4891E+01	#NAME?	1.4910E+01	#NAME?	1.4946E+01	#NAME?	1.4999E+01	#NAME?	1.5034E+01
916000	1.4846E+01	#NAME?	1.4860E+01	#NAME?	1.4879E+01	#NAME?	1.4915E+01	#NAME?	1.4968E+01	#NAME?	1.5003E+01
918000	1.4815E+01	#NAME?	1.4830E+01	#NAME?	1.4848E+01	#NAME?	1.4884E+01	#NAME?	1.4937E+01	#NAME?	1.4972E+01
920000	1.4785E+01	#NAME?	1.4799E+01	#NAME?	1.4818E+01	#NAME?	1.4854E+01	#NAME?	1.4906E+01	#NAME?	1.4941E+01
922000	1.4754E+01	#NAME?	1.4769E+01	#NAME?	1.4787E+01	#NAME?	1.4823E+01	#NAME?	1.4876E+01	#NAME?	1.4910E+01
924000	1.4724E+01	#NAME?	1.4738E+01	#NAME?	1.4757E+01	#NAME?	1.4792E+01	#NAME?	1.4845E+01	#NAME?	1.4880E+01
926000	1.4694E+01	#NAME?	1.4708E+01	#NAME?	1.4726E+01	#NAME?	1.4762E+01	#NAME?	1.4814E+01	#NAME?	1.4849E+01
928000	1.4663E+01	#NAME?	1.4678E+01	#NAME?	1.4696E+01	#NAME?	1.4732E+01	#NAME?	1.4784E+01	#NAME?	1.4818E+01
930000	1.4633E+01	#NAME?	1.4648E+01	#NAME?	1.4666E+01	#NAME?	1.4701E+01	#NAME?	1.4753E+01	#NAME?	1.4788E+01
932000	1.4603E+01	#NAME?	1.4618E+01	#NAME?	1.4636E+01	#NAME?	1.4671E+01	#NAME?	1.4723E+01	#NAME?	1.4757E+01
934000	1.4573E+01	#NAME?	1.4588E+01	#NAME?	1.4606E+01	#NAME?	1.4641E+01	#NAME?	1.4693E+01	#NAME?	1.4727E+01

Time (yrs)	Arg 1	Curve 1	Arg 2	Curve 2	Arg 3	Curve 3	Arg 4	Curve 4	Arg 5	Curve 5	Arg 6
936000	1.4544E+01	#NAME?	1.4558E+01	#NAME?	1.4576E+01	#NAME?	1.4611E+01	#NAME?	1.4663E+01	#NAME?	1.4697E+01
938000	1.4514E+01	#NAME?	1.4528E+01	#NAME?	1.4546E+01	#NAME?	1.4581E+01	#NAME?	1.4632E+01	#NAME?	1.4666E+01
940000	1.4484E+01	#NAME?	1.4498E+01	#NAME?	1.4516E+01	#NAME?	1.4551E+01	#NAME?	1.4602E+01	#NAME?	1.4636E+01
942000	1.4454E+01	#NAME?	1.4468E+01	#NAME?	1.4487E+01	#NAME?	1.4521E+01	#NAME?	1.4572E+01	#NAME?	1.4606E+01
944000	1.4425E+01	#NAME?	1.4439E+01	#NAME?	1.4457E+01	#NAME?	1.4492E+01	#NAME?	1.4543E+01	#NAME?	1.4576E+01
946000	1.4395E+01	#NAME?	1.4409E+01	#NAME?	1.4427E+01	#NAME?	1.4462E+01	#NAME?	1.4513E+01	#NAME?	1.4547E+01
948000	1.4366E+01	#NAME?	1.4380E+01	#NAME?	1.4398E+01	#NAME?	1.4432E+01	#NAME?	1.4483E+01	#NAME?	1.4517E+01
950000	1.4337E+01	#NAME?	1.4351E+01	#NAME?	1.4369E+01	#NAME?	1.4403E+01	#NAME?	1.4454E+01	#NAME?	1.4487E+01
952000	1.4308E+01	#NAME?	1.4321E+01	#NAME?	1.4339E+01	#NAME?	1.4374E+01	#NAME?	1.4424E+01	#NAME?	1.4457E+01
954000	1.4278E+01	#NAME?	1.4292E+01	#NAME?	1.4310E+01	#NAME?	1.4344E+01	#NAME?	1.4395E+01	#NAME?	1.4428E+01
956000	1.4249E+01	#NAME?	1.4263E+01	#NAME?	1.4281E+01	#NAME?	1.4315E+01	#NAME?	1.4365E+01	#NAME?	1.4398E+01
958000	1.4220E+01	#NAME?	1.4234E+01	#NAME?	1.4252E+01	#NAME?	1.4286E+01	#NAME?	1.4336E+01	#NAME?	1.4369E+01
960000	1.4191E+01	#NAME?	1.4205E+01	#NAME?	1.4223E+01	#NAME?	1.4257E+01	#NAME?	1.4307E+01	#NAME?	1.4340E+01
962000	1.4163E+01	#NAME?	1.4176E+01	#NAME?	1.4194E+01	#NAME?	1.4228E+01	#NAME?	1.4278E+01	#NAME?	1.4310E+01
964000	1.4134E+01	#NAME?	1.4147E+01	#NAME?	1.4165E+01	#NAME?	1.4199E+01	#NAME?	1.4248E+01	#NAME?	1.4281E+01
966000	1.4105E+01	#NAME?	1.4119E+01	#NAME?	1.4136E+01	#NAME?	1.4170E+01	#NAME?	1.4219E+01	#NAME?	1.4252E+01
968000	1.4076E+01	#NAME?	1.4090E+01	#NAME?	1.4108E+01	#NAME?	1.4141E+01	#NAME?	1.4191E+01	#NAME?	1.4223E+01
970000	1.4048E+01	#NAME?	1.4062E+01	#NAME?	1.4079E+01	#NAME?	1.4112E+01	#NAME?	1.4162E+01	#NAME?	1.4194E+01
972000	1.4019E+01	#NAME?	1.4033E+01	#NAME?	1.4050E+01	#NAME?	1.4084E+01	#NAME?	1.4133E+01	#NAME?	1.4165E+01
974000	1.3991E+01	#NAME?	1.4005E+01	#NAME?	1.4022E+01	#NAME?	1.4055E+01	#NAME?	1.4104E+01	#NAME?	1.4137E+01
976000	1.3963E+01	#NAME?	1.3976E+01	#NAME?	1.3994E+01	#NAME?	1.4027E+01	#NAME?	1.4076E+01	#NAME?	1.4108E+01
978000	1.3935E+01	#NAME?	1.3948E+01	#NAME?	1.3965E+01	#NAME?	1.3998E+01	#NAME?	1.4047E+01	#NAME?	1.4079E+01
980000	1.3906E+01	#NAME?	1.3920E+01	#NAME?	1.3937E+01	#NAME?	1.3970E+01	#NAME?	1.4019E+01	#NAME?	1.4051E+01
982000	1.3878E+01	#NAME?	1.3892E+01	#NAME?	1.3909E+01	#NAME?	1.3942E+01	#NAME?	1.3990E+01	#NAME?	1.4022E+01
984000	1.3850E+01	#NAME?	1.3864E+01	#NAME?	1.3881E+01	#NAME?	1.3914E+01	#NAME?	1.3962E+01	#NAME?	1.3994E+01
986000	1.3822E+01	#NAME?	1.3836E+01	#NAME?	1.3853E+01	#NAME?	1.3885E+01	#NAME?	1.3934E+01	#NAME?	1.3966E+01
988000	1.3794E+01	#NAME?	1.3808E+01	#NAME?	1.3825E+01	#NAME?	1.3857E+01	#NAME?	1.3906E+01	#NAME?	1.3937E+01
990000	1.3767E+01	#NAME?	1.3780E+01	#NAME?	1.3797E+01	#NAME?	1.3829E+01	#NAME?	1.3877E+01	#NAME?	1.3909E+01
992000	1.3739E+01	#NAME?	1.3752E+01	#NAME?	1.3769E+01	#NAME?	1.3801E+01	#NAME?	1.3849E+01	#NAME?	1.3881E+01
994000	1.3711E+01	#NAME?	1.3724E+01	#NAME?	1.3741E+01	#NAME?	1.3774E+01	#NAME?	1.3821E+01	#NAME?	1.3853E+01
996000	1.3684E+01	#NAME?	1.3697E+01	#NAME?	1.3713E+01	#NAME?	1.3746E+01	#NAME?	1.3794E+01	#NAME?	1.3825E+01
998000	1.3656E+01	#NAME?	1.3669E+01	#NAME?	1.3686E+01	#NAME?	1.3718E+01	#NAME?	1.3766E+01	#NAME?	1.3797E+01
1000000	1.3629E+01	#NAME?	1.3642E+01	#NAME?	1.3658E+01	#NAME?	1.3691E+01	#NAME?	1.3738E+01	#NAME?	1.3769E+01


Flux Out (gm/yr)
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9.0000E-01
8.0000E-01
7.0000E-01
6.0000E-01
5.0000E-01
4.0000E-01
3.0000E-01
2.0000E-01
1.0000E-01
0.0000E+00
0
100000
200000
300000
400000
500000
600000
700000
800000
900000

Curve 6	Arg 7	Curve 7	Arg 8	Curve 8	Arg 9	Curve 9	Arg 10	Curve 10	Arg 11	Curve 11	Arg 12	Curve 12
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
#NAME?	5.4555E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
#NAME?	3.4984E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
#NAME?	2.7741E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
#NAME?	2.3681E+02	#NAME?	4.9358E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
#NAME?	2.0997E+02	#NAME?	3.3487E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
#NAME?	1.9054E+02	#NAME?	2.6974E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
#NAME?	1.7563E+02	#NAME?	2.3198E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
#NAME?	1.6372E+02	#NAME?	2.0657E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
#NAME?	1.5392E+02	#NAME?	1.8798E+02	#NAME?	5.2529E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
#NAME?	1.4567E+02	#NAME?	1.7361E+02	#NAME?	3.4430E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
#NAME?	1.3860E+02	#NAME?	1.6208E+02	#NAME?	2.7461E+02	#NAME?	5.9682E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
#NAME?	1.3246E+02	#NAME?	1.5255E+02	#NAME?	2.3506E+02	#NAME?	3.6234E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
#NAME?	1.2705E+02	#NAME?	1.4450E+02	#NAME?	2.0875E+02	#NAME?	2.8353E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
#NAME?	1.2224E+02	#NAME?	1.3759E+02	#NAME?	1.8962E+02	#NAME?	2.4060E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
#NAME?	1.1793E+02	#NAME?	1.3157E+02	#NAME?	1.7490E+02	#NAME?	2.1261E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
#NAME?	1.1403E+02	#NAME?	1.2627E+02	#NAME?	1.6313E+02	#NAME?	1.9251E+02	#NAME?	5.8207E+02	#NAME?	0.0000E+00	0.0000E+00
#NAME?	1.1049E+02	#NAME?	1.2154E+02	#NAME?	1.5343E+02	#NAME?	1.7717E+02	#NAME?	3.5895E+02	#NAME?	0.0000E+00	0.0000E+00
#NAME?	1.0725E+02	#NAME?	1.1730E+02	#NAME?	1.4525E+02	#NAME?	1.6497E+02	#NAME?	2.8190E+02	#NAME?	0.0000E+00	0.0000E+00
#NAME?	1.0428E+02	#NAME?	1.1346E+02	#NAME?	1.3824E+02	#NAME?	1.5496E+02	#NAME?	2.3960E+02	#NAME?	0.0000E+00	0.0000E+00
#NAME?	1.0153E+02	#NAME?	1.0997E+02	#NAME?	1.3214E+02	#NAME?	1.4655E+02	#NAME?	2.1191E+02	#NAME?	5.8930E+02	#NAME?
#NAME?	9.8975E+01	#NAME?	1.0678E+02	#NAME?	1.2677E+02	#NAME?	1.3936E+02	#NAME?	1.9199E+02	#NAME?	3.6063E+02	#NAME?
#NAME?	9.6602E+01	#NAME?	1.0383E+02	#NAME?	1.2199E+02	#NAME?	1.3312E+02	#NAME?	1.7676E+02	#NAME?	2.8271E+02	#NAME?
#NAME?	9.4386E+01	#NAME?	1.0112E+02	#NAME?	1.1771E+02	#NAME?	1.2764E+02	#NAME?	1.6464E+02	#NAME?	2.4010E+02	#NAME?
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#NAME?	8.8525E+01	#NAME?	9.4055E+01	#NAME?	1.0708E+02	#NAME?	1.1446E+02	#NAME?	1.3916E+02	#NAME?	1.7697E+02	#NAME?
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#NAME?	8.3598E+01	#NAME?	8.8249E+01	#NAME?	9.8840E+01	#NAME?	1.0461E+02	#NAME?	1.2263E+02	#NAME?	1.4644E+02	#NAME?
#NAME?	8.2123E+01	#NAME?	8.6532E+01	#NAME?	9.6476E+01	#NAME?	1.0183E+02	#NAME?	1.1828E+02	#NAME?	1.3926E+02	#NAME?
#NAME?	8.0719E+01	#NAME?	8.4906E+01	#NAME?	9.4268E+01	#NAME?	9.9259E+01	#NAME?	1.1435E+02	#NAME?	1.3303E+02	#NAME?
#NAME?	7.9381E+01	#NAME?	8.3365E+01	#NAME?	9.2200E+01	#NAME?	9.6866E+01	#NAME?	1.1078E+02	#NAME?	1.2756E+02	#NAME?
#NAME?	7.8104E+01	#NAME?	8.1901E+01	#NAME?	9.0257E+01	#NAME?	9.4633E+01	#NAME?	1.0752E+02	#NAME?	1.2270E+02	#NAME?
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#NAME?	7.5716E+01	#NAME?	7.9179E+01	#NAME?	8.6699E+01	#NAME?	9.0579E+01	#NAME?	1.0175E+02	#NAME?	1.1441E+02	#NAME?
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#NAME?	7.1499E+01	#NAME?	7.4427E+01	#NAME?	8.0644E+01	#NAME?	8.3773E+01	#NAME?	9.2481E+01	#NAME?	1.0179E+02	#NAME?
#NAME?	7.0544E+01	#NAME?	7.3360E+01	#NAME?	7.9309E+01	#NAME?	8.2289E+01	#NAME?	9.0522E+01	#NAME?	9.9222E+01	#NAME?
#NAME?	6.9624E+01	#NAME?	7.2335E+01	#NAME?	7.8036E+01	#NAME?	8.0877E+01	#NAME?	8.8676E+01	#NAME?	9.6832E+01	#NAME?
#NAME?	6.8737E+01	#NAME?	7.1349E+01	#NAME?	7.6818E+01	#NAME?	7.9532E+01	#NAME?	8.6935E+01	#NAME?	9.4601E+01	#NAME?

Curve 6	Arg 7	Curve 7	Arg 8	Curve 8	Arg 9	Curve 9	Arg 10	Curve 10	Arg 11	Curve 11	Arg 12	Curve 12
#NAME?	6.7880E+01	#NAME?	7.0399E+01	#NAME?	7.5653E+01	#NAME?	7.8248E+01	#NAME?	8.5288E+01	#NAME?	9.2512E+01	#NAME?
#NAME?	6.7053E+01	#NAME?	6.9484E+01	#NAME?	7.4536E+01	#NAME?	7.7021E+01	#NAME?	8.3727E+01	#NAME?	9.0550E+01	#NAME?
#NAME?	6.6253E+01	#NAME?	6.8602E+01	#NAME?	7.3465E+01	#NAME?	7.5848E+01	#NAME?	8.2245E+01	#NAME?	8.8703E+01	#NAME?
#NAME?	6.5478E+01	#NAME?	6.7750E+01	#NAME?	7.2436E+01	#NAME?	7.4723E+01	#NAME?	8.0836E+01	#NAME?	8.6961E+01	#NAME?
#NAME?	6.4729E+01	#NAME?	6.6927E+01	#NAME?	7.1446E+01	#NAME?	7.3644E+01	#NAME?	7.9492E+01	#NAME?	8.5312E+01	#NAME?
#NAME?	6.4002E+01	#NAME?	6.6131E+01	#NAME?	7.0493E+01	#NAME?	7.2608E+01	#NAME?	7.8210E+01	#NAME?	8.3750E+01	#NAME?
#NAME?	6.3298E+01	#NAME?	6.5361E+01	#NAME?	6.9574E+01	#NAME?	7.1611E+01	#NAME?	7.6986E+01	#NAME?	8.2267E+01	#NAME?
#NAME?	6.2614E+01	#NAME?	6.4615E+01	#NAME?	6.8689E+01	#NAME?	7.0652E+01	#NAME?	7.5813E+01	#NAME?	8.0856E+01	#NAME?
#NAME?	6.1951E+01	#NAME?	6.3892E+01	#NAME?	6.7834E+01	#NAME?	6.9728E+01	#NAME?	7.4690E+01	#NAME?	7.9512E+01	#NAME?
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#NAME?	6.0679E+01	#NAME?	6.2510E+01	#NAME?	6.6209E+01	#NAME?	6.7977E+01	#NAME?	7.2577E+01	#NAME?	7.7003E+01	#NAME?
#NAME?	6.0070E+01	#NAME?	6.1849E+01	#NAME?	6.5436E+01	#NAME?	6.7146E+01	#NAME?	7.1582E+01	#NAME?	7.5830E+01	#NAME?
#NAME?	5.9477E+01	#NAME?	6.1208E+01	#NAME?	6.4688E+01	#NAME?	6.6343E+01	#NAME?	7.0624E+01	#NAME?	7.4706E+01	#NAME?
#NAME?	5.8899E+01	#NAME?	6.0584E+01	#NAME?	6.3963E+01	#NAME?	6.5566E+01	#NAME?	6.9701E+01	#NAME?	7.3628E+01	#NAME?
#NAME?	5.8337E+01	#NAME?	5.9977E+01	#NAME?	6.3260E+01	#NAME?	6.4814E+01	#NAME?	6.8811E+01	#NAME?	7.2592E+01	#NAME?
#NAME?	5.7789E+01	#NAME?	5.9386E+01	#NAME?	6.2577E+01	#NAME?	6.4085E+01	#NAME?	6.7952E+01	#NAME?	7.1597E+01	#NAME?
#NAME?	5.7254E+01	#NAME?	5.8811E+01	#NAME?	6.1915E+01	#NAME?	6.3378E+01	#NAME?	6.7122E+01	#NAME?	7.0638E+01	#NAME?
#NAME?	5.6733E+01	#NAME?	5.8251E+01	#NAME?	6.1271E+01	#NAME?	6.2692E+01	#NAME?	6.6320E+01	#NAME?	6.9715E+01	#NAME?
#NAME?	5.6225E+01	#NAME?	5.7705E+01	#NAME?	6.0645E+01	#NAME?	6.2026E+01	#NAME?	6.5543E+01	#NAME?	6.8824E+01	#NAME?
#NAME?	5.5728E+01	#NAME?	5.7173E+01	#NAME?	6.0037E+01	#NAME?	6.1379E+01	#NAME?	6.4791E+01	#NAME?	6.7965E+01	#NAME?
#NAME?	5.5243E+01	#NAME?	5.6653E+01	#NAME?	5.9444E+01	#NAME?	6.0750E+01	#NAME?	6.4063E+01	#NAME?	6.7134E+01	#NAME?
#NAME?	5.4769E+01	#NAME?	5.6147E+01	#NAME?	5.8868E+01	#NAME?	6.0139E+01	#NAME?	6.3357E+01	#NAME?	6.6331E+01	#NAME?
#NAME?	5.4306E+01	#NAME?	5.5652E+01	#NAME?	5.8306E+01	#NAME?	5.9544E+01	#NAME?	6.2671E+01	#NAME?	6.5555E+01	#NAME?
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#NAME?	5.3411E+01	#NAME?	5.4697E+01	#NAME?	5.7225E+01	#NAME?	5.8401E+01	#NAME?	6.1360E+01	#NAME?	6.4074E+01	#NAME?
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#NAME?	5.2554E+01	#NAME?	5.3784E+01	#NAME?	5.6197E+01	#NAME?	5.7315E+01	#NAME?	6.0121E+01	#NAME?	6.2682E+01	#NAME?
#NAME?	5.2139E+01	#NAME?	5.3343E+01	#NAME?	5.5701E+01	#NAME?	5.6792E+01	#NAME?	5.9526E+01	#NAME?	6.2016E+01	#NAME?
#NAME?	5.1732E+01	#NAME?	5.2911E+01	#NAME?	5.5217E+01	#NAME?	5.6282E+01	#NAME?	5.8948E+01	#NAME?	6.1369E+01	#NAME?
#NAME?	5.1334E+01	#NAME?	5.2489E+01	#NAME?	5.4744E+01	#NAME?	5.5784E+01	#NAME?	5.8384E+01	#NAME?	6.0741E+01	#NAME?
#NAME?	5.0944E+01	#NAME?	5.2075E+01	#NAME?	5.4281E+01	#NAME?	5.5298E+01	#NAME?	5.7835E+01	#NAME?	6.0130E+01	#NAME?
#NAME?	5.0561E+01	#NAME?	5.1670E+01	#NAME?	5.3829E+01	#NAME?	5.4823E+01	#NAME?	5.7299E+01	#NAME?	5.9535E+01	#NAME?
#NAME?	5.0186E+01	#NAME?	5.1273E+01	#NAME?	5.3387E+01	#NAME?	5.4359E+01	#NAME?	5.6777E+01	#NAME?	5.8956E+01	#NAME?
#NAME?	4.9818E+01	#NAME?	5.0884E+01	#NAME?	5.2954E+01	#NAME?	5.3905E+01	#NAME?	5.6267E+01	#NAME?	5.8392E+01	#NAME?
#NAME?	4.9457E+01	#NAME?	5.0503E+01	#NAME?	5.2531E+01	#NAME?	5.3461E+01	#NAME?	5.5770E+01	#NAME?	5.7843E+01	#NAME?
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#NAME?	4.8756E+01	#NAME?	4.9762E+01	#NAME?	5.1710E+01	#NAME?	5.2602E+01	#NAME?	5.4809E+01	#NAME?	5.6785E+01	#NAME?
#NAME?	4.8415E+01	#NAME?	4.9402E+01	#NAME?	5.1312E+01	#NAME?	5.2186E+01	#NAME?	5.4345E+01	#NAME?	5.6275E+01	#NAME?
#NAME?	4.8080E+01	#NAME?	4.9049E+01	#NAME?	5.0922E+01	#NAME?	5.1778E+01	#NAME?	5.3892E+01	#NAME?	5.5777E+01	#NAME?
#NAME?	4.7751E+01	#NAME?	4.8703E+01	#NAME?	5.0540E+01	#NAME?	5.1379E+01	#NAME?	5.3448E+01	#NAME?	5.5291E+01	#NAME?
#NAME?	4.7427E+01	#NAME?	4.8362E+01	#NAME?	5.0166E+01	#NAME?	5.0988E+01	#NAME?	5.3014E+01	#NAME?	5.4816E+01	#NAME?
#NAME?	4.7110E+01	#NAME?	4.8028E+01	#NAME?	4.9798E+01	#NAME?	5.0605E+01	#NAME?	5.2589E+01	#NAME?	5.4352E+01	#NAME?
#NAME?	4.6797E+01	#NAME?	4.7700E+01	#NAME?	4.9438E+01	#NAME?	5.0229E+01	#NAME?	5.2174E+01	#NAME?	5.3898E+01	#NAME?
#NAME?	4.6490E+01	#NAME?	4.7378E+01	#NAME?	4.9084E+01	#NAME?	4.9860E+01	#NAME?	5.1766E+01	#NAME?	5.3455E+01	#NAME?
#NAME?	4.6189E+01	#NAME?	4.7061E+01	#NAME?	4.8737E+01	#NAME?	4.9499E+01	#NAME?	5.1367E+01	#NAME?	5.3021E+01	#NAME?
#NAME?	4.5892E+01	#NAME?	4.6749E+01	#NAME?	4.8396E+01	#NAME?	4.9144E+01	#NAME?	5.0977E+01	#NAME?	5.2596E+01	#NAME?
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#NAME?	4.5313E+01	#NAME?	4.6142E+01	#NAME?	4.7733E+01	#NAME?	4.8454E+01	#NAME?	5.0218E+01	#NAME?	5.1772E+01	#NAME?
#NAME?	4.5030E+01	#NAME?	4.5846E+01	#NAME?	4.7410E+01	#NAME?	4.8118E+01	#NAME?	4.9849E+01	#NAME?	5.1373E+01	#NAME?
#NAME?	4.4752E+01	#NAME?	4.5555E+01	#NAME?	4.7092E+01	#NAME?	4.7788E+01	#NAME?	4.9488E+01	#NAME?	5.0982E+01	#NAME?
#NAME?	4.4478E+01	#NAME?	4.5268E+01	#NAME?	4.6780E+01	#NAME?	4.7464E+01	#NAME?	4.9133E+01	#NAME?	5.0599E+01	#NAME?
#NAME?	4.4208E+01	#NAME?	4.4986E+01	#NAME?	4.6474E+01	#NAME?	4.7146E+01	#NAME?	4.8785E+01	#NAME?	5.0223E+01	#NAME?

Curve 6	Arg 7	Curve 7	Arg 8	Curve 8	Arg 9	Curve 9	Arg 10	Curve 10	Arg 11	Curve 11	Arg 12	Curve 12
#NAME?	4.3943E+01	#NAME?	4.4709E+01	#NAME?	4.6172E+01	#NAME?	4.6833E+01	#NAME?	4.8443E+01	#NAME?	4.9855E+01	#NAME?
#NAME?	4.3681E+01	#NAME?	4.4436E+01	#NAME?	4.5876E+01	#NAME?	4.6525E+01	#NAME?	4.8108E+01	#NAME?	4.9493E+01	#NAME?
#NAME?	4.3423E+01	#NAME?	4.4167E+01	#NAME?	4.5584E+01	#NAME?	4.6223E+01	#NAME?	4.7778E+01	#NAME?	4.9138E+01	#NAME?
#NAME?	4.3170E+01	#NAME?	4.3902E+01	#NAME?	4.5297E+01	#NAME?	4.5926E+01	#NAME?	4.7455E+01	#NAME?	4.8790E+01	#NAME?
#NAME?	4.2920E+01	#NAME?	4.3641E+01	#NAME?	4.5014E+01	#NAME?	4.5633E+01	#NAME?	4.7136E+01	#NAME?	4.8449E+01	#NAME?
#NAME?	4.2673E+01	#NAME?	4.3384E+01	#NAME?	4.4736E+01	#NAME?	4.5345E+01	#NAME?	4.6824E+01	#NAME?	4.8113E+01	#NAME?
#NAME?	4.2430E+01	#NAME?	4.3131E+01	#NAME?	4.4463E+01	#NAME?	4.5062E+01	#NAME?	4.6516E+01	#NAME?	4.7783E+01	#NAME?
#NAME?	4.2191E+01	#NAME?	4.2881E+01	#NAME?	4.4193E+01	#NAME?	4.4783E+01	#NAME?	4.6214E+01	#NAME?	4.7459E+01	#NAME?
#NAME?	4.1954E+01	#NAME?	4.2635E+01	#NAME?	4.3928E+01	#NAME?	4.4509E+01	#NAME?	4.5917E+01	#NAME?	4.7141E+01	#NAME?
#NAME?	4.1722E+01	#NAME?	4.2393E+01	#NAME?	4.3667E+01	#NAME?	4.4239E+01	#NAME?	4.5624E+01	#NAME?	4.6828E+01	#NAME?
#NAME?	4.1492E+01	#NAME?	4.2154E+01	#NAME?	4.3409E+01	#NAME?	4.3973E+01	#NAME?	4.5337E+01	#NAME?	4.6521E+01	#NAME?
#NAME?	4.1265E+01	#NAME?	4.1918E+01	#NAME?	4.3156E+01	#NAME?	4.3711E+01	#NAME?	4.5054E+01	#NAME?	4.6219E+01	#NAME?
#NAME?	4.1042E+01	#NAME?	4.1686E+01	#NAME?	4.2906E+01	#NAME?	4.3453E+01	#NAME?	4.4775E+01	#NAME?	4.5921E+01	#NAME?
#NAME?	4.0821E+01	#NAME?	4.1457E+01	#NAME?	4.2660E+01	#NAME?	4.3199E+01	#NAME?	4.4501E+01	#NAME?	4.5629E+01	#NAME?
#NAME?	4.0604E+01	#NAME?	4.1230E+01	#NAME?	4.2417E+01	#NAME?	4.2948E+01	#NAME?	4.4231E+01	#NAME?	4.5341E+01	#NAME?
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#NAME?	4.0177E+01	#NAME?	4.0787E+01	#NAME?	4.1942E+01	#NAME?	4.2458E+01	#NAME?	4.3703E+01	#NAME?	4.4779E+01	#NAME?
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#NAME?	3.9557E+01	#NAME?	4.0144E+01	#NAME?	4.1253E+01	#NAME?	4.1748E+01	#NAME?	4.2941E+01	#NAME?	4.3969E+01	#NAME?
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#NAME?	3.9157E+01	#NAME?	3.9729E+01	#NAME?	4.0809E+01	#NAME?	4.1291E+01	#NAME?	4.2451E+01	#NAME?	4.3449E+01	#NAME?
#NAME?	3.8960E+01	#NAME?	3.9526E+01	#NAME?	4.0592E+01	#NAME?	4.1067E+01	#NAME?	4.2211E+01	#NAME?	4.3195E+01	#NAME?
#NAME?	3.8766E+01	#NAME?	3.9325E+01	#NAME?	4.0377E+01	#NAME?	4.0846E+01	#NAME?	4.1974E+01	#NAME?	4.2944E+01	#NAME?
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#NAME?	3.7649E+01	#NAME?	3.8169E+01	#NAME?	3.9146E+01	#NAME?	3.9580E+01	#NAME?	4.0622E+01	#NAME?	4.1515E+01	#NAME?
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#NAME?	3.6110E+01	#NAME?	3.6580E+01	#NAME?	3.7460E+01	#NAME?	3.7851E+01	#NAME?	3.8782E+01	#NAME?	3.9577E+01	#NAME?
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#NAME?	3.5630E+01	#NAME?	3.6085E+01	#NAME?	3.6937E+01	#NAME?	3.7314E+01	#NAME?	3.8213E+01	#NAME?	3.8980E+01	#NAME?
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#NAME?	3.4419E+01	#NAME?	3.4839E+01	#NAME?	3.5621E+01	#NAME?	3.5967E+01	#NAME?	3.6790E+01	#NAME?	3.7488E+01	#NAME?
#NAME?	3.4275E+01	#NAME?	3.4690E+01	#NAME?	3.5464E+01	#NAME?	3.5807E+01	#NAME?	3.6620E+01	#NAME?	3.7311E+01	#NAME?
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Curve 6	Arg 7	Curve 7	Arg 8	Curve 8	Arg 9	Curve 9	Arg 10	Curve 10	Arg 11	Curve 11	Arg 12	Curve 12
#NAME?	3.3990E+01	#NAME?	3.4397E+01	#NAME?	3.5156E+01	#NAME?	3.5491E+01	#NAME?	3.6288E+01	#NAME?	3.6963E+01	#NAME?
#NAME?	3.3849E+01	#NAME?	3.4252E+01	#NAME?	3.5004E+01	#NAME?	3.5336E+01	#NAME?	3.6124E+01	#NAME?	3.6792E+01	#NAME?
#NAME?	3.3710E+01	#NAME?	3.4109E+01	#NAME?	3.4854E+01	#NAME?	3.5182E+01	#NAME?	3.5962E+01	#NAME?	3.6623E+01	#NAME?
#NAME?	3.3572E+01	#NAME?	3.3968E+01	#NAME?	3.4705E+01	#NAME?	3.5030E+01	#NAME?	3.5802E+01	#NAME?	3.6456E+01	#NAME?
#NAME?	3.3436E+01	#NAME?	3.3827E+01	#NAME?	3.4557E+01	#NAME?	3.4879E+01	#NAME?	3.5643E+01	#NAME?	3.6290E+01	#NAME?
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#NAME?	3.3166E+01	#NAME?	3.3551E+01	#NAME?	3.4267E+01	#NAME?	3.4582E+01	#NAME?	3.5331E+01	#NAME?	3.5964E+01	#NAME?
#NAME?	3.3033E+01	#NAME?	3.3414E+01	#NAME?	3.4124E+01	#NAME?	3.4436E+01	#NAME?	3.5177E+01	#NAME?	3.5804E+01	#NAME?
#NAME?	3.2902E+01	#NAME?	3.3279E+01	#NAME?	3.3982E+01	#NAME?	3.4291E+01	#NAME?	3.5025E+01	#NAME?	3.5646E+01	#NAME?
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#NAME?	3.2642E+01	#NAME?	3.3013E+01	#NAME?	3.3702E+01	#NAME?	3.4006E+01	#NAME?	3.4725E+01	#NAME?	3.5333E+01	#NAME?
#NAME?	3.2514E+01	#NAME?	3.2882E+01	#NAME?	3.3565E+01	#NAME?	3.3865E+01	#NAME?	3.4578E+01	#NAME?	3.5180E+01	#NAME?
#NAME?	3.2387E+01	#NAME?	3.2751E+01	#NAME?	3.3428E+01	#NAME?	3.3726E+01	#NAME?	3.4432E+01	#NAME?	3.5027E+01	#NAME?
#NAME?	3.2261E+01	#NAME?	3.2622E+01	#NAME?	3.3293E+01	#NAME?	3.3588E+01	#NAME?	3.4287E+01	#NAME?	3.4877E+01	#NAME?
#NAME?	3.2137E+01	#NAME?	3.2494E+01	#NAME?	3.3159E+01	#NAME?	3.3451E+01	#NAME?	3.4144E+01	#NAME?	3.4728E+01	#NAME?
#NAME?	3.2013E+01	#NAME?	3.2368E+01	#NAME?	3.3026E+01	#NAME?	3.3316E+01	#NAME?	3.4002E+01	#NAME?	3.4580E+01	#NAME?
#NAME?	3.1890E+01	#NAME?	3.2242E+01	#NAME?	3.2895E+01	#NAME?	3.3182E+01	#NAME?	3.3861E+01	#NAME?	3.4434E+01	#NAME?
#NAME?	3.1769E+01	#NAME?	3.2117E+01	#NAME?	3.2764E+01	#NAME?	3.3049E+01	#NAME?	3.3722E+01	#NAME?	3.4289E+01	#NAME?
#NAME?	3.1648E+01	#NAME?	3.1994E+01	#NAME?	3.2635E+01	#NAME?	3.2917E+01	#NAME?	3.3584E+01	#NAME?	3.4146E+01	#NAME?
#NAME?	3.1529E+01	#NAME?	3.1872E+01	#NAME?	3.2507E+01	#NAME?	3.2786E+01	#NAME?	3.3447E+01	#NAME?	3.4004E+01	#NAME?
#NAME?	3.1411E+01	#NAME?	3.1750E+01	#NAME?	3.2380E+01	#NAME?	3.2657E+01	#NAME?	3.3312E+01	#NAME?	3.3863E+01	#NAME?
#NAME?	3.1293E+01	#NAME?	3.1630E+01	#NAME?	3.2255E+01	#NAME?	3.2529E+01	#NAME?	3.3178E+01	#NAME?	3.3724E+01	#NAME?
#NAME?	3.1177E+01	#NAME?	3.1511E+01	#NAME?	3.2130E+01	#NAME?	3.2402E+01	#NAME?	3.3045E+01	#NAME?	3.3586E+01	#NAME?
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#NAME?	3.0947E+01	#NAME?	3.1275E+01	#NAME?	3.1884E+01	#NAME?	3.2151E+01	#NAME?	3.2782E+01	#NAME?	3.3314E+01	#NAME?
#NAME?	3.0833E+01	#NAME?	3.1159E+01	#NAME?	3.1762E+01	#NAME?	3.2027E+01	#NAME?	3.2653E+01	#NAME?	3.3180E+01	#NAME?
#NAME?	3.0720E+01	#NAME?	3.1043E+01	#NAME?	3.1642E+01	#NAME?	3.1905E+01	#NAME?	3.2525E+01	#NAME?	3.3047E+01	#NAME?
#NAME?	3.0608E+01	#NAME?	3.0929E+01	#NAME?	3.1522E+01	#NAME?	3.1783E+01	#NAME?	3.2398E+01	#NAME?	3.2915E+01	#NAME?
#NAME?	3.0497E+01	#NAME?	3.0815E+01	#NAME?	3.1404E+01	#NAME?	3.1662E+01	#NAME?	3.2272E+01	#NAME?	3.2784E+01	#NAME?
#NAME?	3.0387E+01	#NAME?	3.0703E+01	#NAME?	3.1287E+01	#NAME?	3.1543E+01	#NAME?	3.2147E+01	#NAME?	3.2655E+01	#NAME?
#NAME?	3.0278E+01	#NAME?	3.0591E+01	#NAME?	3.1170E+01	#NAME?	3.1424E+01	#NAME?	3.2024E+01	#NAME?	3.2527E+01	#NAME?
#NAME?	3.0170E+01	#NAME?	3.0480E+01	#NAME?	3.1055E+01	#NAME?	3.1307E+01	#NAME?	3.1901E+01	#NAME?	3.2400E+01	#NAME?
#NAME?	3.0062E+01	#NAME?	3.0370E+01	#NAME?	3.0940E+01	#NAME?	3.1190E+01	#NAME?	3.1779E+01	#NAME?	3.2274E+01	#NAME?
#NAME?	2.9956E+01	#NAME?	3.0261E+01	#NAME?	3.0827E+01	#NAME?	3.1074E+01	#NAME?	3.1659E+01	#NAME?	3.2149E+01	#NAME?
#NAME?	2.9850E+01	#NAME?	3.0153E+01	#NAME?	3.0714E+01	#NAME?	3.0960E+01	#NAME?	3.1539E+01	#NAME?	3.2025E+01	#NAME?
#NAME?	2.9745E+01	#NAME?	3.0046E+01	#NAME?	3.0602E+01	#NAME?	3.0846E+01	#NAME?	3.1421E+01	#NAME?	3.1903E+01	#NAME?
#NAME?	2.9641E+01	#NAME?	2.9939E+01	#NAME?	3.0491E+01	#NAME?	3.0733E+01	#NAME?	3.1303E+01	#NAME?	3.1781E+01	#NAME?
#NAME?	2.9537E+01	#NAME?	2.9834E+01	#NAME?	3.0381E+01	#NAME?	3.0621E+01	#NAME?	3.1186E+01	#NAME?	3.1660E+01	#NAME?
#NAME?	2.9435E+01	#NAME?	2.9729E+01	#NAME?	3.0272E+01	#NAME?	3.0510E+01	#NAME?	3.1071E+01	#NAME?	3.1541E+01	#NAME?
#NAME?	2.9333E+01	#NAME?	2.9625E+01	#NAME?	3.0164E+01	#NAME?	3.0400E+01	#NAME?	3.0956E+01	#NAME?	3.1422E+01	#NAME?
#NAME?	2.9232E+01	#NAME?	2.9521E+01	#NAME?	3.0057E+01	#NAME?	3.0291E+01	#NAME?	3.0842E+01	#NAME?	3.1305E+01	#NAME?
#NAME?	2.9131E+01	#NAME?	2.9419E+01	#NAME?	2.9950E+01	#NAME?	3.0182E+01	#NAME?	3.0730E+01	#NAME?	3.1188E+01	#NAME?
#NAME?	2.9032E+01	#NAME?	2.9317E+01	#NAME?	2.9844E+01	#NAME?	3.0075E+01	#NAME?	3.0618E+01	#NAME?	3.1073E+01	#NAME?
#NAME?	2.8933E+01	#NAME?	2.9216E+01	#NAME?	2.9739E+01	#NAME?	2.9968E+01	#NAME?	3.0507E+01	#NAME?	3.0958E+01	#NAME?
#NAME?	2.8835E+01	#NAME?	2.9116E+01	#NAME?	2.9635E+01	#NAME?	2.9862E+01	#NAME?	3.0397E+01	#NAME?	3.0844E+01	#NAME?
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#NAME?	2.8641E+01	#NAME?	2.8918E+01	#NAME?	2.9429E+01	#NAME?	2.9653E+01	#NAME?	3.0179E+01	#NAME?	3.0619E+01	#NAME?
#NAME?	2.8545E+01	#NAME?	2.8820E+01	#NAME?	2.9327E+01	#NAME?	2.9549E+01	#NAME?	3.0072E+01	#NAME?	3.0508E+01	#NAME?
#NAME?	2.8449E+01	#NAME?	2.8722E+01	#NAME?	2.9226E+01	#NAME?	2.9446E+01	#NAME?	2.9965E+01	#NAME?	3.0398E+01	#NAME?
#NAME?	2.8354E+01	#NAME?	2.8626E+01	#NAME?	2.9126E+01	#NAME?	2.9345E+01	#NAME?	2.9859E+01	#NAME?	3.0289E+01	#NAME?
#NAME?	2.8260E+01	#NAME?	2.8530E+01	#NAME?	2.9026E+01	#NAME?	2.9243E+01	#NAME?	2.9754E+01	#NAME?	3.0181E+01	#NAME?
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Curve 6	Arg 7	Curve 7	Arg 8	Curve 8	Arg 9	Curve 9	Arg 10	Curve 10	Arg 11	Curve 11	Arg 12	Curve 12
#NAME?	2.8074E+01	#NAME?	2.8340E+01	#NAME?	2.8829E+01	#NAME?	2.9043E+01	#NAME?	2.9546E+01	#NAME?	2.9966E+01	#NAME?
#NAME?	2.7982E+01	#NAME?	2.8246E+01	#NAME?	2.8732E+01	#NAME?	2.8944E+01	#NAME?	2.9443E+01	#NAME?	2.9861E+01	#NAME?
#NAME?	2.7891E+01	#NAME?	2.8153E+01	#NAME?	2.8635E+01	#NAME?	2.8846E+01	#NAME?	2.9341E+01	#NAME?	2.9755E+01	#NAME?
#NAME?	2.7800E+01	#NAME?	2.8060E+01	#NAME?	2.8539E+01	#NAME?	2.8748E+01	#NAME?	2.9240E+01	#NAME?	2.9651E+01	#NAME?
#NAME?	2.7710E+01	#NAME?	2.7968E+01	#NAME?	2.8444E+01	#NAME?	2.8652E+01	#NAME?	2.9140E+01	#NAME?	2.9548E+01	#NAME?
#NAME?	2.7620E+01	#NAME?	2.7877E+01	#NAME?	2.8349E+01	#NAME?	2.8556E+01	#NAME?	2.9040E+01	#NAME?	2.9445E+01	#NAME?
#NAME?	2.7531E+01	#NAME?	2.7786E+01	#NAME?	2.8255E+01	#NAME?	2.8460E+01	#NAME?	2.8941E+01	#NAME?	2.9343E+01	#NAME?
#NAME?	2.7443E+01	#NAME?	2.7696E+01	#NAME?	2.8162E+01	#NAME?	2.8365E+01	#NAME?	2.8843E+01	#NAME?	2.9242E+01	#NAME?
#NAME?	2.7355E+01	#NAME?	2.7606E+01	#NAME?	2.8069E+01	#NAME?	2.8271E+01	#NAME?	2.8746E+01	#NAME?	2.9141E+01	#NAME?
#NAME?	2.7268E+01	#NAME?	2.7518E+01	#NAME?	2.7977E+01	#NAME?	2.8178E+01	#NAME?	2.8649E+01	#NAME?	2.9042E+01	#NAME?
#NAME?	2.7181E+01	#NAME?	2.7429E+01	#NAME?	2.7886E+01	#NAME?	2.8085E+01	#NAME?	2.8553E+01	#NAME?	2.8943E+01	#NAME?
#NAME?	2.7095E+01	#NAME?	2.7342E+01	#NAME?	2.7795E+01	#NAME?	2.7993E+01	#NAME?	2.8457E+01	#NAME?	2.8845E+01	#NAME?
#NAME?	2.7010E+01	#NAME?	2.7254E+01	#NAME?	2.7705E+01	#NAME?	2.7901E+01	#NAME?	2.8362E+01	#NAME?	2.8747E+01	#NAME?
#NAME?	2.6925E+01	#NAME?	2.7168E+01	#NAME?	2.7615E+01	#NAME?	2.7810E+01	#NAME?	2.8268E+01	#NAME?	2.8650E+01	#NAME?
#NAME?	2.6840E+01	#NAME?	2.7082E+01	#NAME?	2.7526E+01	#NAME?	2.7720E+01	#NAME?	2.8175E+01	#NAME?	2.8554E+01	#NAME?
#NAME?	2.6757E+01	#NAME?	2.6997E+01	#NAME?	2.7438E+01	#NAME?	2.7631E+01	#NAME?	2.8082E+01	#NAME?	2.8459E+01	#NAME?
#NAME?	2.6673E+01	#NAME?	2.6912E+01	#NAME?	2.7350E+01	#NAME?	2.7541E+01	#NAME?	2.7990E+01	#NAME?	2.8364E+01	#NAME?
#NAME?	2.6590E+01	#NAME?	2.6827E+01	#NAME?	2.7263E+01	#NAME?	2.7453E+01	#NAME?	2.7899E+01	#NAME?	2.8270E+01	#NAME?
#NAME?	2.6508E+01	#NAME?	2.6744E+01	#NAME?	2.7177E+01	#NAME?	2.7365E+01	#NAME?	2.7808E+01	#NAME?	2.8176E+01	#NAME?
#NAME?	2.6426E+01	#NAME?	2.6660E+01	#NAME?	2.7090E+01	#NAME?	2.7278E+01	#NAME?	2.7717E+01	#NAME?	2.8084E+01	#NAME?
#NAME?	2.6345E+01	#NAME?	2.6578E+01	#NAME?	2.7005E+01	#NAME?	2.7191E+01	#NAME?	2.7628E+01	#NAME?	2.7991E+01	#NAME?
#NAME?	2.6265E+01	#NAME?	2.6496E+01	#NAME?	2.6920E+01	#NAME?	2.7105E+01	#NAME?	2.7539E+01	#NAME?	2.7900E+01	#NAME?
#NAME?	2.6184E+01	#NAME?	2.6414E+01	#NAME?	2.6836E+01	#NAME?	2.7020E+01	#NAME?	2.7450E+01	#NAME?	2.7809E+01	#NAME?
#NAME?	2.6105E+01	#NAME?	2.6333E+01	#NAME?	2.6752E+01	#NAME?	2.6935E+01	#NAME?	2.7363E+01	#NAME?	2.7719E+01	#NAME?
#NAME?	2.6025E+01	#NAME?	2.6252E+01	#NAME?	2.6669E+01	#NAME?	2.6850E+01	#NAME?	2.7275E+01	#NAME?	2.7629E+01	#NAME?
#NAME?	2.5947E+01	#NAME?	2.6172E+01	#NAME?	2.6586E+01	#NAME?	2.6766E+01	#NAME?	2.7189E+01	#NAME?	2.7540E+01	#NAME?
#NAME?	2.5868E+01	#NAME?	2.6092E+01	#NAME?	2.6504E+01	#NAME?	2.6683E+01	#NAME?	2.7103E+01	#NAME?	2.7452E+01	#NAME?
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#NAME?	2.5713E+01	#NAME?	2.5935E+01	#NAME?	2.6341E+01	#NAME?	2.6518E+01	#NAME?	2.6932E+01	#NAME?	2.7277E+01	#NAME?
#NAME?	2.5637E+01	#NAME?	2.5856E+01	#NAME?	2.6260E+01	#NAME?	2.6436E+01	#NAME?	2.6848E+01	#NAME?	2.7190E+01	#NAME?
#NAME?	2.5560E+01	#NAME?	2.5779E+01	#NAME?	2.6180E+01	#NAME?	2.6355E+01	#NAME?	2.6764E+01	#NAME?	2.7104E+01	#NAME?
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#NAME?	2.5259E+01	#NAME?	2.5472E+01	#NAME?	2.5864E+01	#NAME?	2.6035E+01	#NAME?	2.6433E+01	#NAME?	2.6765E+01	#NAME?
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#NAME?	2.5111E+01	#NAME?	2.5322E+01	#NAME?	2.5709E+01	#NAME?	2.5877E+01	#NAME?	2.6271E+01	#NAME?	2.6599E+01	#NAME?
#NAME?	2.5038E+01	#NAME?	2.5248E+01	#NAME?	2.5632E+01	#NAME?	2.5800E+01	#NAME?	2.6191E+01	#NAME?	2.6516E+01	#NAME?
#NAME?	2.4965E+01	#NAME?	2.5173E+01	#NAME?	2.5556E+01	#NAME?	2.5722E+01	#NAME?	2.6111E+01	#NAME?	2.6435E+01	#NAME?
#NAME?	2.4893E+01	#NAME?	2.5100E+01	#NAME?	2.5480E+01	#NAME?	2.5645E+01	#NAME?	2.6032E+01	#NAME?	2.6353E+01	#NAME?
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#NAME?	2.4749E+01	#NAME?	2.4954E+01	#NAME?	2.5330E+01	#NAME?	2.5493E+01	#NAME?	2.5875E+01	#NAME?	2.6192E+01	#NAME?
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#NAME?	2.4466E+01	#NAME?	2.4667E+01	#NAME?	2.5034E+01	#NAME?	2.5193E+01	#NAME?	2.5567E+01	#NAME?	2.5876E+01	#NAME?
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#NAME?	2.4259E+01	#NAME?	2.4456E+01	#NAME?	2.4817E+01	#NAME?	2.4973E+01	#NAME?	2.5340E+01	#NAME?	2.5644E+01	#NAME?
#NAME?	2.4190E+01	#NAME?	2.4386E+01	#NAME?	2.4745E+01	#NAME?	2.4901E+01	#NAME?	2.5265E+01	#NAME?	2.5568E+01	#NAME?
#NAME?	2.4122E+01	#NAME?	2.4317E+01	#NAME?	2.4674E+01	#NAME?	2.4829E+01	#NAME?	2.5191E+01	#NAME?	2.5492E+01	#NAME?
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Curve 6	Arg 7	Curve 7	Arg 8	Curve 8	Arg 9	Curve 9	Arg 10	Curve 10	Arg 11	Curve 11	Arg 12	Curve 12
#NAME?	2.3987E+01	#NAME?	2.4180E+01	#NAME?	2.4533E+01	#NAME?	2.4686E+01	#NAME?	2.5044E+01	#NAME?	2.5341E+01	#NAME?
#NAME?	2.3920E+01	#NAME?	2.4112E+01	#NAME?	2.4463E+01	#NAME?	2.4615E+01	#NAME?	2.4971E+01	#NAME?	2.5267E+01	#NAME?
#NAME?	2.3853E+01	#NAME?	2.4044E+01	#NAME?	2.4393E+01	#NAME?	2.4545E+01	#NAME?	2.4899E+01	#NAME?	2.5192E+01	#NAME?
#NAME?	2.3787E+01	#NAME?	2.3976E+01	#NAME?	2.4324E+01	#NAME?	2.4474E+01	#NAME?	2.4827E+01	#NAME?	2.5119E+01	#NAME?
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#NAME?	2.3525E+01	#NAME?	2.3711E+01	#NAME?	2.4051E+01	#NAME?	2.4198E+01	#NAME?	2.4542E+01	#NAME?	2.4828E+01	#NAME?
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#NAME?	2.3332E+01	#NAME?	2.3515E+01	#NAME?	2.3850E+01	#NAME?	2.3995E+01	#NAME?	2.4333E+01	#NAME?	2.4614E+01	#NAME?
#NAME?	2.3269E+01	#NAME?	2.3451E+01	#NAME?	2.3783E+01	#NAME?	2.3928E+01	#NAME?	2.4264E+01	#NAME?	2.4543E+01	#NAME?
#NAME?	2.3206E+01	#NAME?	2.3386E+01	#NAME?	2.3717E+01	#NAME?	2.3861E+01	#NAME?	2.4196E+01	#NAME?	2.4473E+01	#NAME?
#NAME?	2.3143E+01	#NAME?	2.3323E+01	#NAME?	2.3652E+01	#NAME?	2.3795E+01	#NAME?	2.4128E+01	#NAME?	2.4404E+01	#NAME?
#NAME?	2.3080E+01	#NAME?	2.3259E+01	#NAME?	2.3587E+01	#NAME?	2.3729E+01	#NAME?	2.4060E+01	#NAME?	2.4334E+01	#NAME?
#NAME?	2.3018E+01	#NAME?	2.3196E+01	#NAME?	2.3522E+01	#NAME?	2.3663E+01	#NAME?	2.3993E+01	#NAME?	2.4266E+01	#NAME?
#NAME?	2.2956E+01	#NAME?	2.3133E+01	#NAME?	2.3457E+01	#NAME?	2.3598E+01	#NAME?	2.3926E+01	#NAME?	2.4197E+01	#NAME?
#NAME?	2.2894E+01	#NAME?	2.3070E+01	#NAME?	2.3393E+01	#NAME?	2.3533E+01	#NAME?	2.3859E+01	#NAME?	2.4129E+01	#NAME?
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#NAME?	2.2772E+01	#NAME?	2.2946E+01	#NAME?	2.3265E+01	#NAME?	2.3404E+01	#NAME?	2.3727E+01	#NAME?	2.3994E+01	#NAME?
#NAME?	2.2711E+01	#NAME?	2.2885E+01	#NAME?	2.3202E+01	#NAME?	2.3340E+01	#NAME?	2.3661E+01	#NAME?	2.3927E+01	#NAME?
#NAME?	2.2651E+01	#NAME?	2.2823E+01	#NAME?	2.3139E+01	#NAME?	2.3276E+01	#NAME?	2.3596E+01	#NAME?	2.3860E+01	#NAME?
#NAME?	2.2591E+01	#NAME?	2.2762E+01	#NAME?	2.3077E+01	#NAME?	2.3213E+01	#NAME?	2.3531E+01	#NAME?	2.3794E+01	#NAME?
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#NAME?	2.2471E+01	#NAME?	2.2641E+01	#NAME?	2.2952E+01	#NAME?	2.3087E+01	#NAME?	2.3402E+01	#NAME?	2.3662E+01	#NAME?
#NAME?	2.2412E+01	#NAME?	2.2581E+01	#NAME?	2.2891E+01	#NAME?	2.3025E+01	#NAME?	2.3338E+01	#NAME?	2.3597E+01	#NAME?
#NAME?	2.2353E+01	#NAME?	2.2521E+01	#NAME?	2.2830E+01	#NAME?	2.2963E+01	#NAME?	2.3274E+01	#NAME?	2.3532E+01	#NAME?
#NAME?	2.2294E+01	#NAME?	2.2462E+01	#NAME?	2.2769E+01	#NAME?	2.2901E+01	#NAME?	2.3211E+01	#NAME?	2.3467E+01	#NAME?
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#NAME?	2.2120E+01	#NAME?	2.2285E+01	#NAME?	2.2587E+01	#NAME?	2.2718E+01	#NAME?	2.3023E+01	#NAME?	2.3275E+01	#NAME?
#NAME?	2.2062E+01	#NAME?	2.2227E+01	#NAME?	2.2527E+01	#NAME?	2.2658E+01	#NAME?	2.2961E+01	#NAME?	2.3212E+01	#NAME?
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#NAME?	2.1891E+01	#NAME?	2.2053E+01	#NAME?	2.2350E+01	#NAME?	2.2478E+01	#NAME?	2.2777E+01	#NAME?	2.3024E+01	#NAME?
#NAME?	2.1835E+01	#NAME?	2.1996E+01	#NAME?	2.2291E+01	#NAME?	2.2419E+01	#NAME?	2.2716E+01	#NAME?	2.2962E+01	#NAME?
#NAME?	2.1779E+01	#NAME?	2.1939E+01	#NAME?	2.2233E+01	#NAME?	2.2360E+01	#NAME?	2.2656E+01	#NAME?	2.2900E+01	#NAME?
#NAME?	2.1723E+01	#NAME?	2.1883E+01	#NAME?	2.2175E+01	#NAME?	2.2301E+01	#NAME?	2.2596E+01	#NAME?	2.2839E+01	#NAME?
#NAME?	2.1667E+01	#NAME?	2.1826E+01	#NAME?	2.2117E+01	#NAME?	2.2243E+01	#NAME?	2.2536E+01	#NAME?	2.2778E+01	#NAME?
#NAME?	2.1612E+01	#NAME?	2.1770E+01	#NAME?	2.2059E+01	#NAME?	2.2184E+01	#NAME?	2.2476E+01	#NAME?	2.2717E+01	#NAME?
#NAME?	2.1556E+01	#NAME?	2.1714E+01	#NAME?	2.2002E+01	#NAME?	2.2127E+01	#NAME?	2.2417E+01	#NAME?	2.2657E+01	#NAME?
#NAME?	2.1501E+01	#NAME?	2.1658E+01	#NAME?	2.1945E+01	#NAME?	2.2069E+01	#NAME?	2.2358E+01	#NAME?	2.2597E+01	#NAME?
#NAME?	2.1447E+01	#NAME?	2.1603E+01	#NAME?	2.1888E+01	#NAME?	2.2012E+01	#NAME?	2.2299E+01	#NAME?	2.2537E+01	#NAME?
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#NAME?	2.1338E+01	#NAME?	2.1493E+01	#NAME?	2.1776E+01	#NAME?	2.1898E+01	#NAME?	2.2183E+01	#NAME?	2.2418E+01	#NAME?
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#NAME?	2.1177E+01	#NAME?	2.1330E+01	#NAME?	2.1608E+01	#NAME?	2.1729E+01	#NAME?	2.2010E+01	#NAME?	2.2242E+01	#NAME?
#NAME?	2.1124E+01	#NAME?	2.1276E+01	#NAME?	2.1553E+01	#NAME?	2.1673E+01	#NAME?	2.1953E+01	#NAME?	2.2184E+01	#NAME?
#NAME?	2.1071E+01	#NAME?	2.1222E+01	#NAME?	2.1498E+01	#NAME?	2.1618E+01	#NAME?	2.1896E+01	#NAME?	2.2126E+01	#NAME?
#NAME?	2.1018E+01	#NAME?	2.1169E+01	#NAME?	2.1444E+01	#NAME?	2.1563E+01	#NAME?	2.1840E+01	#NAME?	2.2068E+01	#NAME?
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Curve 6	Arg 7	Curve 7	Arg 8	Curve 8	Arg 9	Curve 9	Arg 10	Curve 10	Arg 11	Curve 11	Arg 12	Curve 12
#NAME?	2.0913E+01	#NAME?	2.1063E+01	#NAME?	2.1335E+01	#NAME?	2.1453E+01	#NAME?	2.1727E+01	#NAME?	2.1954E+01	#NAME?
#NAME?	2.0861E+01	#NAME?	2.1010E+01	#NAME?	2.1281E+01	#NAME?	2.1399E+01	#NAME?	2.1672E+01	#NAME?	2.1897E+01	#NAME?
#NAME?	2.0809E+01	#NAME?	2.0957E+01	#NAME?	2.1228E+01	#NAME?	2.1344E+01	#NAME?	2.1616E+01	#NAME?	2.1840E+01	#NAME?
#NAME?	2.0758E+01	#NAME?	2.0905E+01	#NAME?	2.1174E+01	#NAME?	2.1290E+01	#NAME?	2.1561E+01	#NAME?	2.1784E+01	#NAME?
#NAME?	2.0706E+01	#NAME?	2.0853E+01	#NAME?	2.1121E+01	#NAME?	2.1237E+01	#NAME?	2.1506E+01	#NAME?	2.1728E+01	#NAME?
#NAME?	2.0655E+01	#NAME?	2.0801E+01	#NAME?	2.1068E+01	#NAME?	2.1183E+01	#NAME?	2.1451E+01	#NAME?	2.1673E+01	#NAME?
#NAME?	2.0604E+01	#NAME?	2.0750E+01	#NAME?	2.1015E+01	#NAME?	2.1130E+01	#NAME?	2.1397E+01	#NAME?	2.1617E+01	#NAME?
#NAME?	2.0554E+01	#NAME?	2.0698E+01	#NAME?	2.0963E+01	#NAME?	2.1077E+01	#NAME?	2.1343E+01	#NAME?	2.1562E+01	#NAME?
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#NAME?	2.0453E+01	#NAME?	2.0596E+01	#NAME?	2.0858E+01	#NAME?	2.0972E+01	#NAME?	2.1235E+01	#NAME?	2.1452E+01	#NAME?
#NAME?	2.0403E+01	#NAME?	2.0546E+01	#NAME?	2.0807E+01	#NAME?	2.0919E+01	#NAME?	2.1182E+01	#NAME?	2.1398E+01	#NAME?
#NAME?	2.0353E+01	#NAME?	2.0495E+01	#NAME?	2.0755E+01	#NAME?	2.0867E+01	#NAME?	2.1128E+01	#NAME?	2.1344E+01	#NAME?
#NAME?	2.0303E+01	#NAME?	2.0445E+01	#NAME?	2.0704E+01	#NAME?	2.0815E+01	#NAME?	2.1075E+01	#NAME?	2.1290E+01	#NAME?
#NAME?	2.0254E+01	#NAME?	2.0395E+01	#NAME?	2.0652E+01	#NAME?	2.0764E+01	#NAME?	2.1023E+01	#NAME?	2.1236E+01	#NAME?
#NAME?	2.0205E+01	#NAME?	2.0345E+01	#NAME?	2.0602E+01	#NAME?	2.0712E+01	#NAME?	2.0970E+01	#NAME?	2.1182E+01	#NAME?
#NAME?	2.0156E+01	#NAME?	2.0296E+01	#NAME?	2.0551E+01	#NAME?	2.0661E+01	#NAME?	2.0918E+01	#NAME?	2.1129E+01	#NAME?
#NAME?	2.0107E+01	#NAME?	2.0246E+01	#NAME?	2.0500E+01	#NAME?	2.0610E+01	#NAME?	2.0866E+01	#NAME?	2.1076E+01	#NAME?
#NAME?	2.0058E+01	#NAME?	2.0197E+01	#NAME?	2.0450E+01	#NAME?	2.0559E+01	#NAME?	2.0814E+01	#NAME?	2.1023E+01	#NAME?
#NAME?	2.0010E+01	#NAME?	2.0148E+01	#NAME?	2.0400E+01	#NAME?	2.0509E+01	#NAME?	2.0762E+01	#NAME?	2.0971E+01	#NAME?
#NAME?	1.9962E+01	#NAME?	2.0099E+01	#NAME?	2.0350E+01	#NAME?	2.0459E+01	#NAME?	2.0711E+01	#NAME?	2.0918E+01	#NAME?
#NAME?	1.9914E+01	#NAME?	2.0051E+01	#NAME?	2.0301E+01	#NAME?	2.0409E+01	#NAME?	2.0660E+01	#NAME?	2.0866E+01	#NAME?
#NAME?	1.9866E+01	#NAME?	2.0002E+01	#NAME?	2.0251E+01	#NAME?	2.0359E+01	#NAME?	2.0609E+01	#NAME?	2.0815E+01	#NAME?
#NAME?	1.9818E+01	#NAME?	1.9954E+01	#NAME?	2.0202E+01	#NAME?	2.0309E+01	#NAME?	2.0558E+01	#NAME?	2.0763E+01	#NAME?
#NAME?	1.9771E+01	#NAME?	1.9906E+01	#NAME?	2.0153E+01	#NAME?	2.0260E+01	#NAME?	2.0507E+01	#NAME?	2.0712E+01	#NAME?
#NAME?	1.9723E+01	#NAME?	1.9858E+01	#NAME?	2.0104E+01	#NAME?	2.0210E+01	#NAME?	2.0457E+01	#NAME?	2.0660E+01	#NAME?
#NAME?	1.9676E+01	#NAME?	1.9811E+01	#NAME?	2.0055E+01	#NAME?	2.0161E+01	#NAME?	2.0407E+01	#NAME?	2.0609E+01	#NAME?
#NAME?	1.9629E+01	#NAME?	1.9763E+01	#NAME?	2.0007E+01	#NAME?	2.0112E+01	#NAME?	2.0357E+01	#NAME?	2.0559E+01	#NAME?
#NAME?	1.9583E+01	#NAME?	1.9716E+01	#NAME?	1.9959E+01	#NAME?	2.0064E+01	#NAME?	2.0307E+01	#NAME?	2.0508E+01	#NAME?
#NAME?	1.9536E+01	#NAME?	1.9669E+01	#NAME?	1.9911E+01	#NAME?	2.0015E+01	#NAME?	2.0258E+01	#NAME?	2.0458E+01	#NAME?
#NAME?	1.9490E+01	#NAME?	1.9622E+01	#NAME?	1.9863E+01	#NAME?	1.9967E+01	#NAME?	2.0209E+01	#NAME?	2.0408E+01	#NAME?
#NAME?	1.9444E+01	#NAME?	1.9576E+01	#NAME?	1.9815E+01	#NAME?	1.9919E+01	#NAME?	2.0160E+01	#NAME?	2.0358E+01	#NAME?
#NAME?	1.9398E+01	#NAME?	1.9529E+01	#NAME?	1.9768E+01	#NAME?	1.9871E+01	#NAME?	2.0111E+01	#NAME?	2.0308E+01	#NAME?
#NAME?	1.9352E+01	#NAME?	1.9483E+01	#NAME?	1.9721E+01	#NAME?	1.9824E+01	#NAME?	2.0062E+01	#NAME?	2.0259E+01	#NAME?
#NAME?	1.9307E+01	#NAME?	1.9437E+01	#NAME?	1.9674E+01	#NAME?	1.9776E+01	#NAME?	2.0014E+01	#NAME?	2.0210E+01	#NAME?
#NAME?	1.9261E+01	#NAME?	1.9391E+01	#NAME?	1.9627E+01	#NAME?	1.9729E+01	#NAME?	1.9966E+01	#NAME?	2.0160E+01	#NAME?
#NAME?	1.9216E+01	#NAME?	1.9345E+01	#NAME?	1.9580E+01	#NAME?	1.9682E+01	#NAME?	1.9918E+01	#NAME?	2.0112E+01	#NAME?
#NAME?	1.9171E+01	#NAME?	1.9300E+01	#NAME?	1.9534E+01	#NAME?	1.9635E+01	#NAME?	1.9870E+01	#NAME?	2.0063E+01	#NAME?
#NAME?	1.9126E+01	#NAME?	1.9254E+01	#NAME?	1.9487E+01	#NAME?	1.9588E+01	#NAME?	1.9822E+01	#NAME?	2.0015E+01	#NAME?
#NAME?	1.9081E+01	#NAME?	1.9209E+01	#NAME?	1.9441E+01	#NAME?	1.9542E+01	#NAME?	1.9775E+01	#NAME?	1.9966E+01	#NAME?
#NAME?	1.9037E+01	#NAME?	1.9164E+01	#NAME?	1.9395E+01	#NAME?	1.9495E+01	#NAME?	1.9727E+01	#NAME?	1.9918E+01	#NAME?
#NAME?	1.8992E+01	#NAME?	1.9119E+01	#NAME?	1.9350E+01	#NAME?	1.9449E+01	#NAME?	1.9680E+01	#NAME?	1.9870E+01	#NAME?
#NAME?	1.8948E+01	#NAME?	1.9074E+01	#NAME?	1.9304E+01	#NAME?	1.9403E+01	#NAME?	1.9633E+01	#NAME?	1.9823E+01	#NAME?
#NAME?	1.8904E+01	#NAME?	1.9030E+01	#NAME?	1.9259E+01	#NAME?	1.9357E+01	#NAME?	1.9587E+01	#NAME?	1.9775E+01	#NAME?
#NAME?	1.8860E+01	#NAME?	1.8986E+01	#NAME?	1.9213E+01	#NAME?	1.9312E+01	#NAME?	1.9540E+01	#NAME?	1.9728E+01	#NAME?
#NAME?	1.8817E+01	#NAME?	1.8941E+01	#NAME?	1.9168E+01	#NAME?	1.9266E+01	#NAME?	1.9494E+01	#NAME?	1.9681E+01	#NAME?
#NAME?	1.8773E+01	#NAME?	1.8897E+01	#NAME?	1.9124E+01	#NAME?	1.9221E+01	#NAME?	1.9448E+01	#NAME?	1.9634E+01	#NAME?
#NAME?	1.8730E+01	#NAME?	1.8854E+01	#NAME?	1.9079E+01	#NAME?	1.9176E+01	#NAME?	1.9402E+01	#NAME?	1.9587E+01	#NAME?
#NAME?	1.8687E+01	#NAME?	1.8810E+01	#NAME?	1.9034E+01	#NAME?	1.9131E+01	#NAME?	1.9356E+01	#NAME?	1.9541E+01	#NAME?
#NAME?	1.8644E+01	#NAME?	1.8766E+01	#NAME?	1.8990E+01	#NAME?	1.9086E+01	#NAME?	1.9310E+01	#NAME?	1.9495E+01	#NAME?
#NAME?	1.8601E+01	#NAME?	1.8723E+01	#NAME?	1.8946E+01	#NAME?	1.9042E+01	#NAME?	1.9265E+01	#NAME?	1.9448E+01	#NAME?
#NAME?	1.8558E+01	#NAME?	1.8680E+01	#NAME?	1.8902E+01	#NAME?	1.8998E+01	#NAME?	1.9220E+01	#NAME?	1.9403E+01	#NAME?
#NAME?	1.8515E+01	#NAME?	1.8637E+01	#NAME?	1.8858E+01	#NAME?	1.8953E+01	#NAME?	1.9175E+01	#NAME?	1.9357E+01	#NAME?

Curve 6	Arg 7	Curve 7	Arg 8	Curve 8	Arg 9	Curve 9	Arg 10	Curve 10	Arg 11	Curve 11	Arg 12	Curve 12
#NAME?	1.8473E+01	#NAME?	1.8594E+01	#NAME?	1.8814E+01	#NAME?	1.8909E+01	#NAME?	1.9130E+01	#NAME?	1.9311E+01	#NAME?
#NAME?	1.8431E+01	#NAME?	1.8551E+01	#NAME?	1.8771E+01	#NAME?	1.8865E+01	#NAME?	1.9085E+01	#NAME?	1.9266E+01	#NAME?
#NAME?	1.8389E+01	#NAME?	1.8509E+01	#NAME?	1.8727E+01	#NAME?	1.8822E+01	#NAME?	1.9041E+01	#NAME?	1.9220E+01	#NAME?
#NAME?	1.8347E+01	#NAME?	1.8467E+01	#NAME?	1.8684E+01	#NAME?	1.8778E+01	#NAME?	1.8996E+01	#NAME?	1.9175E+01	#NAME?
#NAME?	1.8305E+01	#NAME?	1.8424E+01	#NAME?	1.8641E+01	#NAME?	1.8735E+01	#NAME?	1.8952E+01	#NAME?	1.9131E+01	#NAME?
#NAME?	1.8263E+01	#NAME?	1.8382E+01	#NAME?	1.8598E+01	#NAME?	1.8692E+01	#NAME?	1.8908E+01	#NAME?	1.9086E+01	#NAME?
#NAME?	1.8222E+01	#NAME?	1.8340E+01	#NAME?	1.8556E+01	#NAME?	1.8649E+01	#NAME?	1.8864E+01	#NAME?	1.9041E+01	#NAME?
#NAME?	1.8181E+01	#NAME?	1.8299E+01	#NAME?	1.8513E+01	#NAME?	1.8606E+01	#NAME?	1.8820E+01	#NAME?	1.8997E+01	#NAME?
#NAME?	1.8139E+01	#NAME?	1.8257E+01	#NAME?	1.8471E+01	#NAME?	1.8563E+01	#NAME?	1.8777E+01	#NAME?	1.8953E+01	#NAME?
#NAME?	1.8098E+01	#NAME?	1.8216E+01	#NAME?	1.8429E+01	#NAME?	1.8520E+01	#NAME?	1.8734E+01	#NAME?	1.8909E+01	#NAME?
#NAME?	1.8058E+01	#NAME?	1.8174E+01	#NAME?	1.8386E+01	#NAME?	1.8478E+01	#NAME?	1.8690E+01	#NAME?	1.8865E+01	#NAME?
#NAME?	1.8017E+01	#NAME?	1.8133E+01	#NAME?	1.8345E+01	#NAME?	1.8436E+01	#NAME?	1.8647E+01	#NAME?	1.8821E+01	#NAME?
#NAME?	1.7976E+01	#NAME?	1.8092E+01	#NAME?	1.8303E+01	#NAME?	1.8394E+01	#NAME?	1.8604E+01	#NAME?	1.8778E+01	#NAME?
#NAME?	1.7936E+01	#NAME?	1.8051E+01	#NAME?	1.8261E+01	#NAME?	1.8352E+01	#NAME?	1.8562E+01	#NAME?	1.8734E+01	#NAME?
#NAME?	1.7895E+01	#NAME?	1.8011E+01	#NAME?	1.8220E+01	#NAME?	1.8310E+01	#NAME?	1.8519E+01	#NAME?	1.8691E+01	#NAME?
#NAME?	1.7855E+01	#NAME?	1.7970E+01	#NAME?	1.8178E+01	#NAME?	1.8268E+01	#NAME?	1.8477E+01	#NAME?	1.8648E+01	#NAME?
#NAME?	1.7815E+01	#NAME?	1.7930E+01	#NAME?	1.8137E+01	#NAME?	1.8227E+01	#NAME?	1.8434E+01	#NAME?	1.8605E+01	#NAME?
#NAME?	1.7775E+01	#NAME?	1.7889E+01	#NAME?	1.8096E+01	#NAME?	1.8185E+01	#NAME?	1.8392E+01	#NAME?	1.8562E+01	#NAME?
#NAME?	1.7736E+01	#NAME?	1.7849E+01	#NAME?	1.8055E+01	#NAME?	1.8144E+01	#NAME?	1.8350E+01	#NAME?	1.8520E+01	#NAME?
#NAME?	1.7696E+01	#NAME?	1.7809E+01	#NAME?	1.8015E+01	#NAME?	1.8103E+01	#NAME?	1.8309E+01	#NAME?	1.8477E+01	#NAME?
#NAME?	1.7657E+01	#NAME?	1.7769E+01	#NAME?	1.7974E+01	#NAME?	1.8062E+01	#NAME?	1.8267E+01	#NAME?	1.8435E+01	#NAME?
#NAME?	1.7617E+01	#NAME?	1.7729E+01	#NAME?	1.7934E+01	#NAME?	1.8021E+01	#NAME?	1.8225E+01	#NAME?	1.8393E+01	#NAME?
#NAME?	1.7578E+01	#NAME?	1.7690E+01	#NAME?	1.7893E+01	#NAME?	1.7981E+01	#NAME?	1.8184E+01	#NAME?	1.8351E+01	#NAME?
#NAME?	1.7539E+01	#NAME?	1.7650E+01	#NAME?	1.7853E+01	#NAME?	1.7940E+01	#NAME?	1.8143E+01	#NAME?	1.8309E+01	#NAME?
#NAME?	1.7500E+01	#NAME?	1.7611E+01	#NAME?	1.7813E+01	#NAME?	1.7900E+01	#NAME?	1.8102E+01	#NAME?	1.8268E+01	#NAME?
#NAME?	1.7461E+01	#NAME?	1.7572E+01	#NAME?	1.7773E+01	#NAME?	1.7860E+01	#NAME?	1.8061E+01	#NAME?	1.8226E+01	#NAME?
#NAME?	1.7423E+01	#NAME?	1.7533E+01	#NAME?	1.7733E+01	#NAME?	1.7820E+01	#NAME?	1.8020E+01	#NAME?	1.8185E+01	#NAME?
#NAME?	1.7384E+01	#NAME?	1.7494E+01	#NAME?	1.7694E+01	#NAME?	1.7780E+01	#NAME?	1.7980E+01	#NAME?	1.8144E+01	#NAME?
#NAME?	1.7346E+01	#NAME?	1.7455E+01	#NAME?	1.7654E+01	#NAME?	1.7740E+01	#NAME?	1.7939E+01	#NAME?	1.8103E+01	#NAME?
#NAME?	1.7307E+01	#NAME?	1.7417E+01	#NAME?	1.7615E+01	#NAME?	1.7701E+01	#NAME?	1.7899E+01	#NAME?	1.8062E+01	#NAME?
#NAME?	1.7269E+01	#NAME?	1.7378E+01	#NAME?	1.7576E+01	#NAME?	1.7661E+01	#NAME?	1.7859E+01	#NAME?	1.8021E+01	#NAME?
#NAME?	1.7231E+01	#NAME?	1.7340E+01	#NAME?	1.7537E+01	#NAME?	1.7622E+01	#NAME?	1.7819E+01	#NAME?	1.7980E+01	#NAME?
#NAME?	1.7193E+01	#NAME?	1.7301E+01	#NAME?	1.7498E+01	#NAME?	1.7583E+01	#NAME?	1.7779E+01	#NAME?	1.7940E+01	#NAME?
#NAME?	1.7156E+01	#NAME?	1.7263E+01	#NAME?	1.7459E+01	#NAME?	1.7543E+01	#NAME?	1.7739E+01	#NAME?	1.7899E+01	#NAME?
#NAME?	1.7118E+01	#NAME?	1.7225E+01	#NAME?	1.7420E+01	#NAME?	1.7505E+01	#NAME?	1.7699E+01	#NAME?	1.7859E+01	#NAME?
#NAME?	1.7080E+01	#NAME?	1.7188E+01	#NAME?	1.7382E+01	#NAME?	1.7466E+01	#NAME?	1.7660E+01	#NAME?	1.7819E+01	#NAME?
#NAME?	1.7043E+01	#NAME?	1.7150E+01	#NAME?	1.7344E+01	#NAME?	1.7427E+01	#NAME?	1.7621E+01	#NAME?	1.7779E+01	#NAME?
#NAME?	1.7006E+01	#NAME?	1.7112E+01	#NAME?	1.7305E+01	#NAME?	1.7389E+01	#NAME?	1.7581E+01	#NAME?	1.7740E+01	#NAME?
#NAME?	1.6969E+01	#NAME?	1.7075E+01	#NAME?	1.7267E+01	#NAME?	1.7350E+01	#NAME?	1.7542E+01	#NAME?	1.7700E+01	#NAME?
#NAME?	1.6932E+01	#NAME?	1.7037E+01	#NAME?	1.7229E+01	#NAME?	1.7312E+01	#NAME?	1.7503E+01	#NAME?	1.7661E+01	#NAME?
#NAME?	1.6895E+01	#NAME?	1.7000E+01	#NAME?	1.7191E+01	#NAME?	1.7274E+01	#NAME?	1.7465E+01	#NAME?	1.7621E+01	#NAME?
#NAME?	1.6858E+01	#NAME?	1.6963E+01	#NAME?	1.7154E+01	#NAME?	1.7236E+01	#NAME?	1.7426E+01	#NAME?	1.7582E+01	#NAME?
#NAME?	1.6821E+01	#NAME?	1.6926E+01	#NAME?	1.7116E+01	#NAME?	1.7198E+01	#NAME?	1.7387E+01	#NAME?	1.7543E+01	#NAME?
#NAME?	1.6785E+01	#NAME?	1.6889E+01	#NAME?	1.7078E+01	#NAME?	1.7160E+01	#NAME?	1.7349E+01	#NAME?	1.7504E+01	#NAME?
#NAME?	1.6748E+01	#NAME?	1.6852E+01	#NAME?	1.7041E+01	#NAME?	1.7122E+01	#NAME?	1.7311E+01	#NAME?	1.7465E+01	#NAME?
#NAME?	1.6712E+01	#NAME?	1.6816E+01	#NAME?	1.7004E+01	#NAME?	1.7085E+01	#NAME?	1.7273E+01	#NAME?	1.7426E+01	#NAME?
#NAME?	1.6676E+01	#NAME?	1.6779E+01	#NAME?	1.6967E+01	#NAME?	1.7047E+01	#NAME?	1.7234E+01	#NAME?	1.7388E+01	#NAME?
#NAME?	1.6640E+01	#NAME?	1.6743E+01	#NAME?	1.6930E+01	#NAME?	1.7010E+01	#NAME?	1.7197E+01	#NAME?	1.7350E+01	#NAME?
#NAME?	1.6604E+01	#NAME?	1.6706E+01	#NAME?	1.6893E+01	#NAME?	1.6973E+01	#NAME?	1.7159E+01	#NAME?	1.7311E+01	#NAME?
#NAME?	1.6568E+01	#NAME?	1.6670E+01	#NAME?	1.6856E+01	#NAME?	1.6936E+01	#NAME?	1.7121E+01	#NAME?	1.7273E+01	#NAME?
#NAME?	1.6532E+01	#NAME?	1.6634E+01	#NAME?	1.6819E+01	#NAME?	1.6899E+01	#NAME?	1.7084E+01	#NAME?	1.7235E+01	#NAME?
#NAME?	1.6497E+01	#NAME?	1.6598E+01	#NAME?	1.6783E+01	#NAME?	1.6862E+01	#NAME?	1.7046E+01	#NAME?	1.7197E+01	#NAME?

Curve 6	Arg 7	Curve 7	Arg 8	Curve 8	Arg 9	Curve 9	Arg 10	Curve 10	Arg 11	Curve 11	Arg 12	Curve 12
#NAME?	1.6461E+01	#NAME?	1.6563E+01	#NAME?	1.6746E+01	#NAME?	1.6826E+01	#NAME?	1.7009E+01	#NAME?	1.7159E+01	#NAME?
#NAME?	1.6426E+01	#NAME?	1.6527E+01	#NAME?	1.6710E+01	#NAME?	1.6789E+01	#NAME?	1.6972E+01	#NAME?	1.7122E+01	#NAME?
#NAME?	1.6391E+01	#NAME?	1.6491E+01	#NAME?	1.6674E+01	#NAME?	1.6753E+01	#NAME?	1.6935E+01	#NAME?	1.7084E+01	#NAME?
#NAME?	1.6355E+01	#NAME?	1.6456E+01	#NAME?	1.6638E+01	#NAME?	1.6716E+01	#NAME?	1.6898E+01	#NAME?	1.7047E+01	#NAME?
#NAME?	1.6320E+01	#NAME?	1.6420E+01	#NAME?	1.6602E+01	#NAME?	1.6680E+01	#NAME?	1.6861E+01	#NAME?	1.7010E+01	#NAME?
#NAME?	1.6285E+01	#NAME?	1.6385E+01	#NAME?	1.6566E+01	#NAME?	1.6644E+01	#NAME?	1.6824E+01	#NAME?	1.6972E+01	#NAME?
#NAME?	1.6251E+01	#NAME?	1.6350E+01	#NAME?	1.6530E+01	#NAME?	1.6608E+01	#NAME?	1.6788E+01	#NAME?	1.6935E+01	#NAME?
#NAME?	1.6216E+01	#NAME?	1.6315E+01	#NAME?	1.6495E+01	#NAME?	1.6572E+01	#NAME?	1.6751E+01	#NAME?	1.6898E+01	#NAME?
#NAME?	1.6181E+01	#NAME?	1.6280E+01	#NAME?	1.6459E+01	#NAME?	1.6536E+01	#NAME?	1.6715E+01	#NAME?	1.6862E+01	#NAME?
#NAME?	1.6147E+01	#NAME?	1.6245E+01	#NAME?	1.6424E+01	#NAME?	1.6501E+01	#NAME?	1.6679E+01	#NAME?	1.6825E+01	#NAME?
#NAME?	1.6112E+01	#NAME?	1.6211E+01	#NAME?	1.6389E+01	#NAME?	1.6465E+01	#NAME?	1.6643E+01	#NAME?	1.6788E+01	#NAME?
#NAME?	1.6078E+01	#NAME?	1.6176E+01	#NAME?	1.6354E+01	#NAME?	1.6430E+01	#NAME?	1.6607E+01	#NAME?	1.6752E+01	#NAME?
#NAME?	1.6044E+01	#NAME?	1.6141E+01	#NAME?	1.6318E+01	#NAME?	1.6395E+01	#NAME?	1.6571E+01	#NAME?	1.6716E+01	#NAME?
#NAME?	1.6010E+01	#NAME?	1.6107E+01	#NAME?	1.6284E+01	#NAME?	1.6359E+01	#NAME?	1.6535E+01	#NAME?	1.6680E+01	#NAME?
#NAME?	1.5976E+01	#NAME?	1.6073E+01	#NAME?	1.6249E+01	#NAME?	1.6324E+01	#NAME?	1.6500E+01	#NAME?	1.6643E+01	#NAME?
#NAME?	1.5942E+01	#NAME?	1.6039E+01	#NAME?	1.6214E+01	#NAME?	1.6289E+01	#NAME?	1.6464E+01	#NAME?	1.6608E+01	#NAME?
#NAME?	1.5908E+01	#NAME?	1.6004E+01	#NAME?	1.6179E+01	#NAME?	1.6255E+01	#NAME?	1.6429E+01	#NAME?	1.6572E+01	#NAME?
#NAME?	1.5874E+01	#NAME?	1.5971E+01	#NAME?	1.6145E+01	#NAME?	1.6220E+01	#NAME?	1.6394E+01	#NAME?	1.6536E+01	#NAME?
#NAME?	1.5841E+01	#NAME?	1.5937E+01	#NAME?	1.6110E+01	#NAME?	1.6185E+01	#NAME?	1.6358E+01	#NAME?	1.6500E+01	#NAME?
#NAME?	1.5807E+01	#NAME?	1.5903E+01	#NAME?	1.6076E+01	#NAME?	1.6151E+01	#NAME?	1.6323E+01	#NAME?	1.6465E+01	#NAME?
#NAME?	1.5774E+01	#NAME?	1.5869E+01	#NAME?	1.6042E+01	#NAME?	1.6116E+01	#NAME?	1.6288E+01	#NAME?	1.6429E+01	#NAME?
#NAME?	1.5741E+01	#NAME?	1.5836E+01	#NAME?	1.6008E+01	#NAME?	1.6082E+01	#NAME?	1.6254E+01	#NAME?	1.6394E+01	#NAME?
#NAME?	1.5708E+01	#NAME?	1.5802E+01	#NAME?	1.5974E+01	#NAME?	1.6048E+01	#NAME?	1.6219E+01	#NAME?	1.6359E+01	#NAME?
#NAME?	1.5674E+01	#NAME?	1.5769E+01	#NAME?	1.5940E+01	#NAME?	1.6014E+01	#NAME?	1.6184E+01	#NAME?	1.6324E+01	#NAME?
#NAME?	1.5642E+01	#NAME?	1.5736E+01	#NAME?	1.5906E+01	#NAME?	1.5980E+01	#NAME?	1.6150E+01	#NAME?	1.6289E+01	#NAME?
#NAME?	1.5609E+01	#NAME?	1.5702E+01	#NAME?	1.5873E+01	#NAME?	1.5946E+01	#NAME?	1.6115E+01	#NAME?	1.6254E+01	#NAME?
#NAME?	1.5576E+01	#NAME?	1.5669E+01	#NAME?	1.5839E+01	#NAME?	1.5912E+01	#NAME?	1.6081E+01	#NAME?	1.6219E+01	#NAME?
#NAME?	1.5543E+01	#NAME?	1.5636E+01	#NAME?	1.5806E+01	#NAME?	1.5878E+01	#NAME?	1.6047E+01	#NAME?	1.6185E+01	#NAME?
#NAME?	1.5511E+01	#NAME?	1.5604E+01	#NAME?	1.5772E+01	#NAME?	1.5845E+01	#NAME?	1.6013E+01	#NAME?	1.6150E+01	#NAME?
#NAME?	1.5478E+01	#NAME?	1.5571E+01	#NAME?	1.5739E+01	#NAME?	1.5811E+01	#NAME?	1.5979E+01	#NAME?	1.6116E+01	#NAME?
#NAME?	1.5446E+01	#NAME?	1.5538E+01	#NAME?	1.5706E+01	#NAME?	1.5778E+01	#NAME?	1.5945E+01	#NAME?	1.6081E+01	#NAME?
#NAME?	1.5413E+01	#NAME?	1.5506E+01	#NAME?	1.5673E+01	#NAME?	1.5745E+01	#NAME?	1.5911E+01	#NAME?	1.6047E+01	#NAME?
#NAME?	1.5381E+01	#NAME?	1.5473E+01	#NAME?	1.5640E+01	#NAME?	1.5711E+01	#NAME?	1.5877E+01	#NAME?	1.6013E+01	#NAME?
#NAME?	1.5349E+01	#NAME?	1.5441E+01	#NAME?	1.5607E+01	#NAME?	1.5678E+01	#NAME?	1.5844E+01	#NAME?	1.5979E+01	#NAME?
#NAME?	1.5317E+01	#NAME?	1.5408E+01	#NAME?	1.5574E+01	#NAME?	1.5645E+01	#NAME?	1.5810E+01	#NAME?	1.5945E+01	#NAME?
#NAME?	1.5285E+01	#NAME?	1.5376E+01	#NAME?	1.5541E+01	#NAME?	1.5612E+01	#NAME?	1.5777E+01	#NAME?	1.5911E+01	#NAME?
#NAME?	1.5253E+01	#NAME?	1.5344E+01	#NAME?	1.5509E+01	#NAME?	1.5580E+01	#NAME?	1.5744E+01	#NAME?	1.5878E+01	#NAME?
#NAME?	1.5221E+01	#NAME?	1.5312E+01	#NAME?	1.5476E+01	#NAME?	1.5547E+01	#NAME?	1.5710E+01	#NAME?	1.5844E+01	#NAME?
#NAME?	1.5190E+01	#NAME?	1.5280E+01	#NAME?	1.5444E+01	#NAME?	1.5514E+01	#NAME?	1.5677E+01	#NAME?	1.5811E+01	#NAME?
#NAME?	1.5158E+01	#NAME?	1.5248E+01	#NAME?	1.5412E+01	#NAME?	1.5482E+01	#NAME?	1.5644E+01	#NAME?	1.5777E+01	#NAME?
#NAME?	1.5127E+01	#NAME?	1.5217E+01	#NAME?	1.5379E+01	#NAME?	1.5449E+01	#NAME?	1.5611E+01	#NAME?	1.5744E+01	#NAME?
#NAME?	1.5095E+01	#NAME?	1.5185E+01	#NAME?	1.5347E+01	#NAME?	1.5417E+01	#NAME?	1.5579E+01	#NAME?	1.5711E+01	#NAME?
#NAME?	1.5064E+01	#NAME?	1.5153E+01	#NAME?	1.5315E+01	#NAME?	1.5385E+01	#NAME?	1.5546E+01	#NAME?	1.5678E+01	#NAME?
#NAME?	1.5033E+01	#NAME?	1.5122E+01	#NAME?	1.5283E+01	#NAME?	1.5353E+01	#NAME?	1.5513E+01	#NAME?	1.5645E+01	#NAME?
#NAME?	1.5002E+01	#NAME?	1.5090E+01	#NAME?	1.5251E+01	#NAME?	1.5321E+01	#NAME?	1.5481E+01	#NAME?	1.5612E+01	#NAME?
#NAME?	1.4971E+01	#NAME?	1.5059E+01	#NAME?	1.5220E+01	#NAME?	1.5289E+01	#NAME?	1.5448E+01	#NAME?	1.5579E+01	#NAME?
#NAME?	1.4940E+01	#NAME?	1.5028E+01	#NAME?	1.5188E+01	#NAME?	1.5257E+01	#NAME?	1.5416E+01	#NAME?	1.5546E+01	#NAME?
#NAME?	1.4909E+01	#NAME?	1.4997E+01	#NAME?	1.5156E+01	#NAME?	1.5225E+01	#NAME?	1.5384E+01	#NAME?	1.5514E+01	#NAME?
#NAME?	1.4878E+01	#NAME?	1.4966E+01	#NAME?	1.5125E+01	#NAME?	1.5193E+01	#NAME?	1.5352E+01	#NAME?	1.5481E+01	#NAME?
#NAME?	1.4847E+01	#NAME?	1.4935E+01	#NAME?	1.5094E+01	#NAME?	1.5162E+01	#NAME?	1.5320E+01	#NAME?	1.5449E+01	#NAME?
#NAME?	1.4817E+01	#NAME?	1.4904E+01	#NAME?	1.5062E+01	#NAME?	1.5130E+01	#NAME?	1.5288E+01	#NAME?	1.5417E+01	#NAME?
#NAME?	1.4786E+01	#NAME?	1.4873E+01	#NAME?	1.5031E+01	#NAME?	1.5099E+01	#NAME?	1.5256E+01	#NAME?	1.5384E+01	#NAME?

Curve 6	Arg 7	Curve 7	Arg 8	Curve 8	Arg 9	Curve 9	Arg 10	Curve 10	Arg 11	Curve 11	Arg 12	Curve 12
#NAME?	1.4756E+01	#NAME?	1.4843E+01	#NAME?	1.5000E+01	#NAME?	1.5068E+01	#NAME?	1.5224E+01	#NAME?	1.5352E+01	#NAME?
#NAME?	1.4725E+01	#NAME?	1.4812E+01	#NAME?	1.4969E+01	#NAME?	1.5036E+01	#NAME?	1.5192E+01	#NAME?	1.5320E+01	#NAME?
#NAME?	1.4695E+01	#NAME?	1.4782E+01	#NAME?	1.4938E+01	#NAME?	1.5005E+01	#NAME?	1.5161E+01	#NAME?	1.5288E+01	#NAME?
#NAME?	1.4665E+01	#NAME?	1.4751E+01	#NAME?	1.4907E+01	#NAME?	1.4974E+01	#NAME?	1.5129E+01	#NAME?	1.5256E+01	#NAME?
#NAME?	1.4635E+01	#NAME?	1.4721E+01	#NAME?	1.4876E+01	#NAME?	1.4943E+01	#NAME?	1.5098E+01	#NAME?	1.5225E+01	#NAME?
#NAME?	1.4605E+01	#NAME?	1.4690E+01	#NAME?	1.4846E+01	#NAME?	1.4912E+01	#NAME?	1.5067E+01	#NAME?	1.5193E+01	#NAME?
#NAME?	1.4575E+01	#NAME?	1.4660E+01	#NAME?	1.4815E+01	#NAME?	1.4882E+01	#NAME?	1.5035E+01	#NAME?	1.5161E+01	#NAME?
#NAME?	1.4545E+01	#NAME?	1.4630E+01	#NAME?	1.4785E+01	#NAME?	1.4851E+01	#NAME?	1.5004E+01	#NAME?	1.5130E+01	#NAME?
#NAME?	1.4515E+01	#NAME?	1.4600E+01	#NAME?	1.4754E+01	#NAME?	1.4820E+01	#NAME?	1.4973E+01	#NAME?	1.5098E+01	#NAME?
#NAME?	1.4486E+01	#NAME?	1.4570E+01	#NAME?	1.4724E+01	#NAME?	1.4790E+01	#NAME?	1.4942E+01	#NAME?	1.5067E+01	#NAME?
#NAME?	1.4456E+01	#NAME?	1.4540E+01	#NAME?	1.4693E+01	#NAME?	1.4759E+01	#NAME?	1.4911E+01	#NAME?	1.5036E+01	#NAME?
#NAME?	1.4426E+01	#NAME?	1.4511E+01	#NAME?	1.4663E+01	#NAME?	1.4729E+01	#NAME?	1.4881E+01	#NAME?	1.5005E+01	#NAME?
#NAME?	1.4397E+01	#NAME?	1.4481E+01	#NAME?	1.4633E+01	#NAME?	1.4699E+01	#NAME?	1.4850E+01	#NAME?	1.4974E+01	#NAME?
#NAME?	1.4368E+01	#NAME?	1.4451E+01	#NAME?	1.4603E+01	#NAME?	1.4668E+01	#NAME?	1.4819E+01	#NAME?	1.4943E+01	#NAME?
#NAME?	1.4338E+01	#NAME?	1.4422E+01	#NAME?	1.4573E+01	#NAME?	1.4638E+01	#NAME?	1.4789E+01	#NAME?	1.4912E+01	#NAME?
#NAME?	1.4309E+01	#NAME?	1.4392E+01	#NAME?	1.4543E+01	#NAME?	1.4608E+01	#NAME?	1.4758E+01	#NAME?	1.4881E+01	#NAME?
#NAME?	1.4280E+01	#NAME?	1.4363E+01	#NAME?	1.4514E+01	#NAME?	1.4578E+01	#NAME?	1.4728E+01	#NAME?	1.4850E+01	#NAME?
#NAME?	1.4251E+01	#NAME?	1.4334E+01	#NAME?	1.4484E+01	#NAME?	1.4548E+01	#NAME?	1.4698E+01	#NAME?	1.4820E+01	#NAME?
#NAME?	1.4222E+01	#NAME?	1.4304E+01	#NAME?	1.4454E+01	#NAME?	1.4519E+01	#NAME?	1.4668E+01	#NAME?	1.4789E+01	#NAME?
#NAME?	1.4193E+01	#NAME?	1.4275E+01	#NAME?	1.4425E+01	#NAME?	1.4489E+01	#NAME?	1.4637E+01	#NAME?	1.4759E+01	#NAME?
#NAME?	1.4164E+01	#NAME?	1.4246E+01	#NAME?	1.4395E+01	#NAME?	1.4459E+01	#NAME?	1.4607E+01	#NAME?	1.4728E+01	#NAME?
#NAME?	1.4135E+01	#NAME?	1.4217E+01	#NAME?	1.4366E+01	#NAME?	1.4430E+01	#NAME?	1.4577E+01	#NAME?	1.4698E+01	#NAME?
#NAME?	1.4107E+01	#NAME?	1.4188E+01	#NAME?	1.4337E+01	#NAME?	1.4400E+01	#NAME?	1.4548E+01	#NAME?	1.4668E+01	#NAME?
#NAME?	1.4078E+01	#NAME?	1.4160E+01	#NAME?	1.4307E+01	#NAME?	1.4371E+01	#NAME?	1.4518E+01	#NAME?	1.4638E+01	#NAME?
#NAME?	1.4049E+01	#NAME?	1.4131E+01	#NAME?	1.4278E+01	#NAME?	1.4342E+01	#NAME?	1.4488E+01	#NAME?	1.4608E+01	#NAME?
#NAME?	1.4021E+01	#NAME?	1.4102E+01	#NAME?	1.4249E+01	#NAME?	1.4312E+01	#NAME?	1.4458E+01	#NAME?	1.4578E+01	#NAME?
#NAME?	1.3993E+01	#NAME?	1.4073E+01	#NAME?	1.4220E+01	#NAME?	1.4283E+01	#NAME?	1.4429E+01	#NAME?	1.4548E+01	#NAME?
#NAME?	1.3964E+01	#NAME?	1.4045E+01	#NAME?	1.4191E+01	#NAME?	1.4254E+01	#NAME?	1.4399E+01	#NAME?	1.4518E+01	#NAME?
#NAME?	1.3936E+01	#NAME?	1.4017E+01	#NAME?	1.4162E+01	#NAME?	1.4225E+01	#NAME?	1.4370E+01	#NAME?	1.4489E+01	#NAME?
#NAME?	1.3908E+01	#NAME?	1.3988E+01	#NAME?	1.4134E+01	#NAME?	1.4196E+01	#NAME?	1.4341E+01	#NAME?	1.4459E+01	#NAME?
#NAME?	1.3880E+01	#NAME?	1.3960E+01	#NAME?	1.4105E+01	#NAME?	1.4167E+01	#NAME?	1.4311E+01	#NAME?	1.4429E+01	#NAME?
#NAME?	1.3852E+01	#NAME?	1.3932E+01	#NAME?	1.4076E+01	#NAME?	1.4139E+01	#NAME?	1.4282E+01	#NAME?	1.4400E+01	#NAME?
#NAME?	1.3824E+01	#NAME?	1.3903E+01	#NAME?	1.4048E+01	#NAME?	1.4110E+01	#NAME?	1.4253E+01	#NAME?	1.4370E+01	#NAME?

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Arg 13	Curve 13	Arg 14	Curve 14	Arg 15	Curve 15	Arg 16	Curve 16	Arg 17	Curve 17	Arg 18	Curve 18
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00

Arg 13	Curve 13	Arg 14	Curve 14	Arg 15	Curve 15	Arg 16	Curve 16	Arg 17	Curve 17	Arg 18	Curve 18
1.1012E+02	#NAME?	4.4964E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.0691E+02	#NAME?	3.2007E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.0396E+02	#NAME?	2.6181E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.0124E+02	#NAME?	2.2686E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
9.8706E+01	#NAME?	2.0293E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
9.6351E+01	#NAME?	1.8521E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
9.4151E+01	#NAME?	1.7142E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
9.2090E+01	#NAME?	1.6028E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
9.0153E+01	#NAME?	1.5104E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
8.8329E+01	#NAME?	1.4322E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
8.6607E+01	#NAME?	1.3648E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
8.4977E+01	#NAME?	1.3060E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
8.3432E+01	#NAME?	1.2540E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
8.1965E+01	#NAME?	1.2077E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
8.0569E+01	#NAME?	1.1660E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
7.9238E+01	#NAME?	1.1283E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
7.7967E+01	#NAME?	1.0939E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
7.6753E+01	#NAME?	1.0624E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
7.5590E+01	#NAME?	1.0334E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
7.4476E+01	#NAME?	1.0066E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
7.3407E+01	#NAME?	9.8173E+01	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
7.2380E+01	#NAME?	9.5854E+01	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
7.1392E+01	#NAME?	9.3686E+01	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
7.0441E+01	#NAME?	9.1653E+01	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
6.9525E+01	#NAME?	8.9743E+01	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
6.8641E+01	#NAME?	8.7942E+01	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
6.7788E+01	#NAME?	8.6241E+01	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
6.6963E+01	#NAME?	8.4630E+01	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
6.6166E+01	#NAME?	8.3103E+01	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
6.5395E+01	#NAME?	8.1652E+01	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
6.4648E+01	#NAME?	8.0270E+01	#NAME?	4.7710E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
6.3924E+01	#NAME?	7.8953E+01	#NAME?	3.2957E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
6.3221E+01	#NAME?	7.7695E+01	#NAME?	2.6694E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
6.2540E+01	#NAME?	7.6493E+01	#NAME?	2.3019E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
6.1879E+01	#NAME?	7.5341E+01	#NAME?	2.0530E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
6.1236E+01	#NAME?	7.4237E+01	#NAME?	1.8702E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
6.0611E+01	#NAME?	7.3178E+01	#NAME?	1.7285E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
6.0004E+01	#NAME?	7.2159E+01	#NAME?	1.6145E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
5.9412E+01	#NAME?	7.1180E+01	#NAME?	1.5203E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
5.8837E+01	#NAME?	7.0237E+01	#NAME?	1.4406E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
5.8276E+01	#NAME?	6.9328E+01	#NAME?	1.3721E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
5.7729E+01	#NAME?	6.8451E+01	#NAME?	1.3124E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
5.7196E+01	#NAME?	6.7604E+01	#NAME?	1.2597E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
5.6677E+01	#NAME?	6.6786E+01	#NAME?	1.2127E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
5.6169E+01	#NAME?	6.5994E+01	#NAME?	1.1706E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
5.5674E+01	#NAME?	6.5228E+01	#NAME?	1.1325E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
5.5190E+01	#NAME?	6.4486E+01	#NAME?	1.0977E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
5.4718E+01	#NAME?	6.3767E+01	#NAME?	1.0659E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
5.4256E+01	#NAME?	6.3070E+01	#NAME?	1.0367E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
5.3804E+01	#NAME?	6.2393E+01	#NAME?	1.0096E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
5.3363E+01	#NAME?	6.1736E+01	#NAME?	9.8451E+01	#NAME?	6.4239E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
5.2931E+01	#NAME?	6.1097E+01	#NAME?	9.6113E+01	#NAME?	3.7186E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00

Arg 13	Curve 13	Arg 14	Curve 14	Arg 15	Curve 15	Arg 16	Curve 16	Arg 17	Curve 17	Arg 18	Curve 18
5.2508E+01	#NAME?	6.0476E+01	#NAME?	9.3928E+01	#NAME?	2.8804E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
5.2093E+01	#NAME?	5.9872E+01	#NAME?	9.1881E+01	#NAME?	2.4334E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
5.1688E+01	#NAME?	5.9284E+01	#NAME?	8.9956E+01	#NAME?	2.1450E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
5.1291E+01	#NAME?	5.8712E+01	#NAME?	8.8144E+01	#NAME?	1.9391E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
5.0901E+01	#NAME?	5.8154E+01	#NAME?	8.6432E+01	#NAME?	1.7826E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
5.0520E+01	#NAME?	5.7611E+01	#NAME?	8.4811E+01	#NAME?	1.6585E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
5.0145E+01	#NAME?	5.7081E+01	#NAME?	8.3275E+01	#NAME?	1.5569E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
4.9778E+01	#NAME?	5.6564E+01	#NAME?	8.1815E+01	#NAME?	1.4717E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
4.9418E+01	#NAME?	5.6059E+01	#NAME?	8.0426E+01	#NAME?	1.3990E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
4.9065E+01	#NAME?	5.5567E+01	#NAME?	7.9102E+01	#NAME?	1.3359E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
4.8718E+01	#NAME?	5.5086E+01	#NAME?	7.7837E+01	#NAME?	1.2805E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
4.8378E+01	#NAME?	5.4615E+01	#NAME?	7.6628E+01	#NAME?	1.2314E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
4.8043E+01	#NAME?	5.4156E+01	#NAME?	7.5471E+01	#NAME?	1.1874E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
4.7715E+01	#NAME?	5.3706E+01	#NAME?	7.4362E+01	#NAME?	1.1476E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
4.7392E+01	#NAME?	5.3267E+01	#NAME?	7.3297E+01	#NAME?	1.1116E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
4.7075E+01	#NAME?	5.2837E+01	#NAME?	7.2275E+01	#NAME?	1.0786E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
4.6763E+01	#NAME?	5.2416E+01	#NAME?	7.1291E+01	#NAME?	1.0484E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
4.6457E+01	#NAME?	5.2004E+01	#NAME?	7.0344E+01	#NAME?	1.0204E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
4.6156E+01	#NAME?	5.1600E+01	#NAME?	6.9431E+01	#NAME?	9.9458E+01	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
4.5859E+01	#NAME?	5.1204E+01	#NAME?	6.8550E+01	#NAME?	9.7052E+01	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
4.5568E+01	#NAME?	5.0817E+01	#NAME?	6.7700E+01	#NAME?	9.4806E+01	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
4.5281E+01	#NAME?	5.0437E+01	#NAME?	6.6878E+01	#NAME?	9.2704E+01	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
4.4999E+01	#NAME?	5.0064E+01	#NAME?	6.6084E+01	#NAME?	9.0731E+01	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
4.4721E+01	#NAME?	4.9698E+01	#NAME?	6.5315E+01	#NAME?	8.8874E+01	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
4.4448E+01	#NAME?	4.9340E+01	#NAME?	6.4570E+01	#NAME?	8.7122E+01	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
4.4179E+01	#NAME?	4.8988E+01	#NAME?	6.3849E+01	#NAME?	8.5465E+01	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
4.3914E+01	#NAME?	4.8643E+01	#NAME?	6.3149E+01	#NAME?	8.3895E+01	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
4.3653E+01	#NAME?	4.8303E+01	#NAME?	6.2470E+01	#NAME?	8.2405E+01	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
4.3395E+01	#NAME?	4.7970E+01	#NAME?	6.1810E+01	#NAME?	8.0987E+01	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
4.3142E+01	#NAME?	4.7643E+01	#NAME?	6.1170E+01	#NAME?	7.9637E+01	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
4.2892E+01	#NAME?	4.7322E+01	#NAME?	6.0547E+01	#NAME?	7.8349E+01	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
4.2646E+01	#NAME?	4.7006E+01	#NAME?	5.9941E+01	#NAME?	7.7118E+01	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
4.2404E+01	#NAME?	4.6696E+01	#NAME?	5.9351E+01	#NAME?	7.5940E+01	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
4.2164E+01	#NAME?	4.6390E+01	#NAME?	5.8777E+01	#NAME?	7.4811E+01	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
4.1929E+01	#NAME?	4.6090E+01	#NAME?	5.8218E+01	#NAME?	7.3729E+01	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
4.1696E+01	#NAME?	4.5795E+01	#NAME?	5.7673E+01	#NAME?	7.2689E+01	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
4.1467E+01	#NAME?	4.5505E+01	#NAME?	5.7141E+01	#NAME?	7.1690E+01	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
4.1241E+01	#NAME?	4.5219E+01	#NAME?	5.6623E+01	#NAME?	7.0728E+01	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
4.1017E+01	#NAME?	4.4938E+01	#NAME?	5.6117E+01	#NAME?	6.9801E+01	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
4.0797E+01	#NAME?	4.4661E+01	#NAME?	5.5623E+01	#NAME?	6.8907E+01	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
4.0580E+01	#NAME?	4.4388E+01	#NAME?	5.5140E+01	#NAME?	6.8045E+01	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
4.0365E+01	#NAME?	4.4120E+01	#NAME?	5.4669E+01	#NAME?	6.7212E+01	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
4.0154E+01	#NAME?	4.3856E+01	#NAME?	5.4208E+01	#NAME?	6.6406E+01	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
3.9945E+01	#NAME?	4.3596E+01	#NAME?	5.3758E+01	#NAME?	6.5627E+01	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
3.9738E+01	#NAME?	4.3339E+01	#NAME?	5.3317E+01	#NAME?	6.4873E+01	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
3.9535E+01	#NAME?	4.3087E+01	#NAME?	5.2886E+01	#NAME?	6.4142E+01	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
3.9334E+01	#NAME?	4.2838E+01	#NAME?	5.2464E+01	#NAME?	6.3433E+01	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
3.9135E+01	#NAME?	4.2592E+01	#NAME?	5.2051E+01	#NAME?	6.2746E+01	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
3.8939E+01	#NAME?	4.2351E+01	#NAME?	5.1646E+01	#NAME?	6.2078E+01	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
3.8745E+01	#NAME?	4.2112E+01	#NAME?	5.1249E+01	#NAME?	6.1430E+01	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
3.8553E+01	#NAME?	4.1877E+01	#NAME?	5.0861E+01	#NAME?	6.0800E+01	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
3.8364E+01	#NAME?	4.1645E+01	#NAME?	5.0480E+01	#NAME?	6.0187E+01	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00

Arg 13	Curve 13	Arg 14	Curve 14	Arg 15	Curve 15	Arg 16	Curve 16	Arg 17	Curve 17	Arg 18	Curve 18
3.8177E+01	#NAME?	4.1417E+01	#NAME?	5.0106E+01	#NAME?	5.9591E+01	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
3.7992E+01	#NAME?	4.1191E+01	#NAME?	4.9740E+01	#NAME?	5.9011E+01	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
3.7810E+01	#NAME?	4.0969E+01	#NAME?	4.9381E+01	#NAME?	5.8445E+01	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
3.7629E+01	#NAME?	4.0749E+01	#NAME?	4.9028E+01	#NAME?	5.7895E+01	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
3.7451E+01	#NAME?	4.0532E+01	#NAME?	4.8682E+01	#NAME?	5.7358E+01	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
3.7274E+01	#NAME?	4.0319E+01	#NAME?	4.8342E+01	#NAME?	5.6834E+01	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
3.7100E+01	#NAME?	4.0108E+01	#NAME?	4.8008E+01	#NAME?	5.6323E+01	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
3.6927E+01	#NAME?	3.9899E+01	#NAME?	4.7681E+01	#NAME?	5.5824E+01	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
3.6756E+01	#NAME?	3.9693E+01	#NAME?	4.7359E+01	#NAME?	5.5337E+01	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
3.6588E+01	#NAME?	3.9490E+01	#NAME?	4.7042E+01	#NAME?	5.4861E+01	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
3.6421E+01	#NAME?	3.9290E+01	#NAME?	4.6731E+01	#NAME?	5.4396E+01	#NAME?	1.8642E+03	#NAME?	0.0000E+00	0.0000E+00
3.6256E+01	#NAME?	3.9092E+01	#NAME?	4.6425E+01	#NAME?	5.3941E+01	#NAME?	4.4323E+02	#NAME?	0.0000E+00	0.0000E+00
3.6092E+01	#NAME?	3.8896E+01	#NAME?	4.6124E+01	#NAME?	5.3496E+01	#NAME?	3.1773E+02	#NAME?	0.0000E+00	0.0000E+00
3.5931E+01	#NAME?	3.8703E+01	#NAME?	4.5829E+01	#NAME?	5.3061E+01	#NAME?	2.6052E+02	#NAME?	0.0000E+00	0.0000E+00
3.5771E+01	#NAME?	3.8511E+01	#NAME?	4.5538E+01	#NAME?	5.2636E+01	#NAME?	2.2602E+02	#NAME?	0.0000E+00	0.0000E+00
3.5613E+01	#NAME?	3.8323E+01	#NAME?	4.5251E+01	#NAME?	5.2219E+01	#NAME?	2.0232E+02	#NAME?	0.0000E+00	0.0000E+00
3.5456E+01	#NAME?	3.8136E+01	#NAME?	4.4970E+01	#NAME?	5.1811E+01	#NAME?	1.8475E+02	#NAME?	0.0000E+00	0.0000E+00
3.5301E+01	#NAME?	3.7952E+01	#NAME?	4.4692E+01	#NAME?	5.1411E+01	#NAME?	1.7105E+02	#NAME?	0.0000E+00	0.0000E+00
3.5148E+01	#NAME?	3.7770E+01	#NAME?	4.4419E+01	#NAME?	5.1019E+01	#NAME?	1.5998E+02	#NAME?	0.0000E+00	0.0000E+00
3.4996E+01	#NAME?	3.7590E+01	#NAME?	4.4151E+01	#NAME?	5.0635E+01	#NAME?	1.5079E+02	#NAME?	0.0000E+00	0.0000E+00
3.4845E+01	#NAME?	3.7412E+01	#NAME?	4.3886E+01	#NAME?	5.0259E+01	#NAME?	1.4300E+02	#NAME?	0.0000E+00	0.0000E+00
3.4697E+01	#NAME?	3.7236E+01	#NAME?	4.3625E+01	#NAME?	4.9889E+01	#NAME?	1.3629E+02	#NAME?	0.0000E+00	0.0000E+00
3.4549E+01	#NAME?	3.7061E+01	#NAME?	4.3369E+01	#NAME?	4.9527E+01	#NAME?	1.3043E+02	#NAME?	0.0000E+00	0.0000E+00
3.4403E+01	#NAME?	3.6889E+01	#NAME?	4.3116E+01	#NAME?	4.9172E+01	#NAME?	1.2525E+02	#NAME?	0.0000E+00	0.0000E+00
3.4259E+01	#NAME?	3.6719E+01	#NAME?	4.2866E+01	#NAME?	4.8823E+01	#NAME?	1.2064E+02	#NAME?	0.0000E+00	0.0000E+00
3.4116E+01	#NAME?	3.6551E+01	#NAME?	4.2621E+01	#NAME?	4.8481E+01	#NAME?	1.1648E+02	#NAME?	0.0000E+00	0.0000E+00
3.3974E+01	#NAME?	3.6384E+01	#NAME?	4.2378E+01	#NAME?	4.8145E+01	#NAME?	1.1272E+02	#NAME?	0.0000E+00	0.0000E+00
3.3834E+01	#NAME?	3.6220E+01	#NAME?	4.2140E+01	#NAME?	4.7814E+01	#NAME?	1.0929E+02	#NAME?	0.0000E+00	0.0000E+00
3.3695E+01	#NAME?	3.6057E+01	#NAME?	4.1904E+01	#NAME?	4.7490E+01	#NAME?	1.0615E+02	#NAME?	0.0000E+00	0.0000E+00
3.3557E+01	#NAME?	3.5895E+01	#NAME?	4.1672E+01	#NAME?	4.7171E+01	#NAME?	1.0326E+02	#NAME?	0.0000E+00	0.0000E+00
3.3421E+01	#NAME?	3.5736E+01	#NAME?	4.1443E+01	#NAME?	4.6858E+01	#NAME?	1.0059E+02	#NAME?	0.0000E+00	0.0000E+00
3.3285E+01	#NAME?	3.5578E+01	#NAME?	4.1217E+01	#NAME?	4.6550E+01	#NAME?	9.8101E+01	#NAME?	0.0000E+00	0.0000E+00
3.3152E+01	#NAME?	3.5422E+01	#NAME?	4.0994E+01	#NAME?	4.6247E+01	#NAME?	9.5787E+01	#NAME?	0.0000E+00	0.0000E+00
3.3019E+01	#NAME?	3.5267E+01	#NAME?	4.0774E+01	#NAME?	4.5949E+01	#NAME?	9.3623E+01	#NAME?	0.0000E+00	0.0000E+00
3.2887E+01	#NAME?	3.5114E+01	#NAME?	4.0557E+01	#NAME?	4.5656E+01	#NAME?	9.1594E+01	#NAME?	0.0000E+00	0.0000E+00
3.2757E+01	#NAME?	3.4962E+01	#NAME?	4.0343E+01	#NAME?	4.5368E+01	#NAME?	8.9687E+01	#NAME?	0.0000E+00	0.0000E+00
3.2628E+01	#NAME?	3.4812E+01	#NAME?	4.0132E+01	#NAME?	4.5085E+01	#NAME?	8.7889E+01	#NAME?	0.0000E+00	0.0000E+00
3.2500E+01	#NAME?	3.4664E+01	#NAME?	3.9923E+01	#NAME?	4.4806E+01	#NAME?	8.6191E+01	#NAME?	0.0000E+00	0.0000E+00
3.2373E+01	#NAME?	3.4517E+01	#NAME?	3.9717E+01	#NAME?	4.4531E+01	#NAME?	8.4583E+01	#NAME?	0.0000E+00	0.0000E+00
3.2248E+01	#NAME?	3.4371E+01	#NAME?	3.9514E+01	#NAME?	4.4260E+01	#NAME?	8.3059E+01	#NAME?	0.0000E+00	0.0000E+00
3.2123E+01	#NAME?	3.4227E+01	#NAME?	3.9313E+01	#NAME?	4.3994E+01	#NAME?	8.1609E+01	#NAME?	0.0000E+00	0.0000E+00
3.2000E+01	#NAME?	3.4084E+01	#NAME?	3.9114E+01	#NAME?	4.3732E+01	#NAME?	8.0230E+01	#NAME?	0.0000E+00	0.0000E+00
3.1877E+01	#NAME?	3.3943E+01	#NAME?	3.8918E+01	#NAME?	4.3473E+01	#NAME?	7.8915E+01	#NAME?	0.0000E+00	0.0000E+00
3.1756E+01	#NAME?	3.3803E+01	#NAME?	3.8725E+01	#NAME?	4.3219E+01	#NAME?	7.7659E+01	#NAME?	0.0000E+00	0.0000E+00
3.1635E+01	#NAME?	3.3664E+01	#NAME?	3.8533E+01	#NAME?	4.2968E+01	#NAME?	7.6458E+01	#NAME?	0.0000E+00	0.0000E+00
3.1516E+01	#NAME?	3.3527E+01	#NAME?	3.8344E+01	#NAME?	4.2721E+01	#NAME?	7.5308E+01	#NAME?	0.0000E+00	0.0000E+00
3.1398E+01	#NAME?	3.3391E+01	#NAME?	3.8158E+01	#NAME?	4.2477E+01	#NAME?	7.4205E+01	#NAME?	0.0000E+00	0.0000E+00
3.1280E+01	#NAME?	3.3256E+01	#NAME?	3.7973E+01	#NAME?	4.2237E+01	#NAME?	7.3147E+01	#NAME?	0.0000E+00	0.0000E+00
3.1164E+01	#NAME?	3.3122E+01	#NAME?	3.7791E+01	#NAME?	4.2000E+01	#NAME?	7.2130E+01	#NAME?	0.0000E+00	0.0000E+00
3.1048E+01	#NAME?	3.2990E+01	#NAME?	3.7610E+01	#NAME?	4.1767E+01	#NAME?	7.1151E+01	#NAME?	0.0000E+00	0.0000E+00
3.0934E+01	#NAME?	3.2859E+01	#NAME?	3.7432E+01	#NAME?	4.1536E+01	#NAME?	7.0209E+01	#NAME?	0.0000E+00	0.0000E+00
3.0820E+01	#NAME?	3.2729E+01	#NAME?	3.7256E+01	#NAME?	4.1309E+01	#NAME?	6.9301E+01	#NAME?	0.0000E+00	0.0000E+00

Arg 13	Curve 13	Arg 14	Curve 14	Arg 15	Curve 15	Arg 16	Curve 16	Arg 17	Curve 17	Arg 18	Curve 18
3.0708E+01	#NAME?	3.2600E+01	#NAME?	3.7081E+01	#NAME?	4.1085E+01	#NAME?	6.8425E+01	#NAME?	0.0000E+00	0.0000E+00
3.0596E+01	#NAME?	3.2472E+01	#NAME?	3.6909E+01	#NAME?	4.0864E+01	#NAME?	6.7579E+01	#NAME?	0.0000E+00	0.0000E+00
3.0485E+01	#NAME?	3.2346E+01	#NAME?	3.6739E+01	#NAME?	4.0646E+01	#NAME?	6.6762E+01	#NAME?	0.0000E+00	0.0000E+00
3.0375E+01	#NAME?	3.2220E+01	#NAME?	3.6570E+01	#NAME?	4.0431E+01	#NAME?	6.5971E+01	#NAME?	0.0000E+00	0.0000E+00
3.0266E+01	#NAME?	3.2096E+01	#NAME?	3.6403E+01	#NAME?	4.0218E+01	#NAME?	6.5206E+01	#NAME?	0.0000E+00	0.0000E+00
3.0158E+01	#NAME?	3.1972E+01	#NAME?	3.6238E+01	#NAME?	4.0008E+01	#NAME?	6.4464E+01	#NAME?	0.0000E+00	0.0000E+00
3.0051E+01	#NAME?	3.1850E+01	#NAME?	3.6075E+01	#NAME?	3.9801E+01	#NAME?	6.3746E+01	#NAME?	0.0000E+00	0.0000E+00
2.9944E+01	#NAME?	3.1729E+01	#NAME?	3.5914E+01	#NAME?	3.9597E+01	#NAME?	6.3049E+01	#NAME?	0.0000E+00	0.0000E+00
2.9838E+01	#NAME?	3.1609E+01	#NAME?	3.5754E+01	#NAME?	3.9395E+01	#NAME?	6.2373E+01	#NAME?	0.0000E+00	0.0000E+00
2.9733E+01	#NAME?	3.1490E+01	#NAME?	3.5596E+01	#NAME?	3.9195E+01	#NAME?	6.1716E+01	#NAME?	0.0000E+00	0.0000E+00
2.9629E+01	#NAME?	3.1372E+01	#NAME?	3.5440E+01	#NAME?	3.8998E+01	#NAME?	6.1078E+01	#NAME?	0.0000E+00	0.0000E+00
2.9526E+01	#NAME?	3.1255E+01	#NAME?	3.5285E+01	#NAME?	3.8804E+01	#NAME?	6.0458E+01	#NAME?	0.0000E+00	0.0000E+00
2.9423E+01	#NAME?	3.1138E+01	#NAME?	3.5131E+01	#NAME?	3.8611E+01	#NAME?	5.9854E+01	#NAME?	0.0000E+00	0.0000E+00
2.9322E+01	#NAME?	3.1023E+01	#NAME?	3.4980E+01	#NAME?	3.8422E+01	#NAME?	5.9267E+01	#NAME?	0.0000E+00	0.0000E+00
2.9221E+01	#NAME?	3.0909E+01	#NAME?	3.4830E+01	#NAME?	3.8234E+01	#NAME?	5.8695E+01	#NAME?	0.0000E+00	0.0000E+00
2.9120E+01	#NAME?	3.0796E+01	#NAME?	3.4681E+01	#NAME?	3.8048E+01	#NAME?	5.8138E+01	#NAME?	0.0000E+00	0.0000E+00
2.9021E+01	#NAME?	3.0683E+01	#NAME?	3.4534E+01	#NAME?	3.7865E+01	#NAME?	5.7595E+01	#NAME?	0.0000E+00	0.0000E+00
2.8922E+01	#NAME?	3.0572E+01	#NAME?	3.4388E+01	#NAME?	3.7684E+01	#NAME?	5.7065E+01	#NAME?	0.0000E+00	0.0000E+00
2.8824E+01	#NAME?	3.0461E+01	#NAME?	3.4244E+01	#NAME?	3.7505E+01	#NAME?	5.6549E+01	#NAME?	0.0000E+00	0.0000E+00
2.8727E+01	#NAME?	3.0351E+01	#NAME?	3.4101E+01	#NAME?	3.7328E+01	#NAME?	5.6044E+01	#NAME?	0.0000E+00	0.0000E+00
2.8630E+01	#NAME?	3.0242E+01	#NAME?	3.3959E+01	#NAME?	3.7153E+01	#NAME?	5.5552E+01	#NAME?	0.0000E+00	0.0000E+00
2.8534E+01	#NAME?	3.0134E+01	#NAME?	3.3819E+01	#NAME?	3.6979E+01	#NAME?	5.5071E+01	#NAME?	0.0000E+00	0.0000E+00
2.8439E+01	#NAME?	3.0027E+01	#NAME?	3.3680E+01	#NAME?	3.6808E+01	#NAME?	5.4601E+01	#NAME?	0.0000E+00	0.0000E+00
2.8344E+01	#NAME?	2.9921E+01	#NAME?	3.3543E+01	#NAME?	3.6639E+01	#NAME?	5.4142E+01	#NAME?	0.0000E+00	0.0000E+00
2.8250E+01	#NAME?	2.9815E+01	#NAME?	3.3406E+01	#NAME?	3.6471E+01	#NAME?	5.3693E+01	#NAME?	0.0000E+00	0.0000E+00
2.8157E+01	#NAME?	2.9710E+01	#NAME?	3.3271E+01	#NAME?	3.6306E+01	#NAME?	5.3254E+01	#NAME?	0.0000E+00	0.0000E+00
2.8064E+01	#NAME?	2.9607E+01	#NAME?	3.3138E+01	#NAME?	3.6142E+01	#NAME?	5.2824E+01	#NAME?	0.0000E+00	0.0000E+00
2.7972E+01	#NAME?	2.9503E+01	#NAME?	3.3005E+01	#NAME?	3.5980E+01	#NAME?	5.2403E+01	#NAME?	0.0000E+00	0.0000E+00
2.7881E+01	#NAME?	2.9401E+01	#NAME?	3.2874E+01	#NAME?	3.5819E+01	#NAME?	5.1991E+01	#NAME?	0.0000E+00	0.0000E+00
2.7790E+01	#NAME?	2.9299E+01	#NAME?	3.2744E+01	#NAME?	3.5661E+01	#NAME?	5.1588E+01	#NAME?	0.0000E+00	0.0000E+00
2.7700E+01	#NAME?	2.9199E+01	#NAME?	3.2615E+01	#NAME?	3.5503E+01	#NAME?	5.1192E+01	#NAME?	0.0000E+00	0.0000E+00
2.7610E+01	#NAME?	2.9098E+01	#NAME?	3.2487E+01	#NAME?	3.5348E+01	#NAME?	5.0805E+01	#NAME?	0.0000E+00	0.0000E+00
2.7522E+01	#NAME?	2.8999E+01	#NAME?	3.2360E+01	#NAME?	3.5194E+01	#NAME?	5.0425E+01	#NAME?	0.0000E+00	0.0000E+00
2.7433E+01	#NAME?	2.8900E+01	#NAME?	3.2234E+01	#NAME?	3.5042E+01	#NAME?	5.0053E+01	#NAME?	0.0000E+00	0.0000E+00
2.7345E+01	#NAME?	2.8803E+01	#NAME?	3.2110E+01	#NAME?	3.4891E+01	#NAME?	4.9688E+01	#NAME?	0.0000E+00	0.0000E+00
2.7258E+01	#NAME?	2.8705E+01	#NAME?	3.1987E+01	#NAME?	3.4742E+01	#NAME?	4.9329E+01	#NAME?	0.0000E+00	0.0000E+00
2.7172E+01	#NAME?	2.8609E+01	#NAME?	3.1864E+01	#NAME?	3.4594E+01	#NAME?	4.8978E+01	#NAME?	0.0000E+00	0.0000E+00
2.7086E+01	#NAME?	2.8513E+01	#NAME?	3.1743E+01	#NAME?	3.4448E+01	#NAME?	4.8632E+01	#NAME?	0.0000E+00	0.0000E+00
2.7000E+01	#NAME?	2.8418E+01	#NAME?	3.1623E+01	#NAME?	3.4303E+01	#NAME?	4.8293E+01	#NAME?	0.0000E+00	0.0000E+00
2.6915E+01	#NAME?	2.8323E+01	#NAME?	3.1503E+01	#NAME?	3.4159E+01	#NAME?	4.7961E+01	#NAME?	0.0000E+00	0.0000E+00
2.6831E+01	#NAME?	2.8230E+01	#NAME?	3.1385E+01	#NAME?	3.4017E+01	#NAME?	4.7634E+01	#NAME?	0.0000E+00	0.0000E+00
2.6747E+01	#NAME?	2.8136E+01	#NAME?	3.1268E+01	#NAME?	3.3876E+01	#NAME?	4.7312E+01	#NAME?	0.0000E+00	0.0000E+00
2.6664E+01	#NAME?	2.8044E+01	#NAME?	3.1152E+01	#NAME?	3.3737E+01	#NAME?	4.6997E+01	#NAME?	0.0000E+00	0.0000E+00
2.6581E+01	#NAME?	2.7952E+01	#NAME?	3.1036E+01	#NAME?	3.3599E+01	#NAME?	4.6686E+01	#NAME?	0.0000E+00	0.0000E+00
2.6499E+01	#NAME?	2.7861E+01	#NAME?	3.0922E+01	#NAME?	3.3462E+01	#NAME?	4.6381E+01	#NAME?	0.0000E+00	0.0000E+00
2.6418E+01	#NAME?	2.7770E+01	#NAME?	3.0809E+01	#NAME?	3.3327E+01	#NAME?	4.6081E+01	#NAME?	5.2703E+02	#NAME?
2.6336E+01	#NAME?	2.7680E+01	#NAME?	3.0696E+01	#NAME?	3.3192E+01	#NAME?	4.5786E+01	#NAME?	3.4479E+02	#NAME?
2.6256E+01	#NAME?	2.7591E+01	#NAME?	3.0584E+01	#NAME?	3.3059E+01	#NAME?	4.5496E+01	#NAME?	2.7487E+02	#NAME?
2.6176E+01	#NAME?	2.7502E+01	#NAME?	3.0474E+01	#NAME?	3.2927E+01	#NAME?	4.5210E+01	#NAME?	2.3522E+02	#NAME?
2.6096E+01	#NAME?	2.7414E+01	#NAME?	3.0364E+01	#NAME?	3.2797E+01	#NAME?	4.4929E+01	#NAME?	2.0886E+02	#NAME?
2.6017E+01	#NAME?	2.7326E+01	#NAME?	3.0255E+01	#NAME?	3.2667E+01	#NAME?	4.4653E+01	#NAME?	1.8970E+02	#NAME?
2.5938E+01	#NAME?	2.7239E+01	#NAME?	3.0147E+01	#NAME?	3.2539E+01	#NAME?	4.4380E+01	#NAME?	1.7497E+02	#NAME?

Arg 13	Curve 13	Arg 14	Curve 14	Arg 15	Curve 15	Arg 16	Curve 16	Arg 17	Curve 17	Arg 18	Curve 18
2.5860E+01	#NAME?	2.7153E+01	#NAME?	3.0039E+01	#NAME?	3.2412E+01	#NAME?	4.4112E+01	#NAME?	1.6318E+02	#NAME?
2.5782E+01	#NAME?	2.7067E+01	#NAME?	2.9933E+01	#NAME?	3.2286E+01	#NAME?	4.3848E+01	#NAME?	1.5347E+02	#NAME?
2.5705E+01	#NAME?	2.6982E+01	#NAME?	2.9827E+01	#NAME?	3.2161E+01	#NAME?	4.3588E+01	#NAME?	1.4529E+02	#NAME?
2.5628E+01	#NAME?	2.6897E+01	#NAME?	2.9722E+01	#NAME?	3.2037E+01	#NAME?	4.3332E+01	#NAME?	1.3827E+02	#NAME?
2.5552E+01	#NAME?	2.6813E+01	#NAME?	2.9618E+01	#NAME?	3.1914E+01	#NAME?	4.3079E+01	#NAME?	1.3217E+02	#NAME?
2.5476E+01	#NAME?	2.6729E+01	#NAME?	2.9515E+01	#NAME?	3.1793E+01	#NAME?	4.2830E+01	#NAME?	1.2679E+02	#NAME?
2.5400E+01	#NAME?	2.6646E+01	#NAME?	2.9413E+01	#NAME?	3.1672E+01	#NAME?	4.2585E+01	#NAME?	1.2201E+02	#NAME?
2.5325E+01	#NAME?	2.6563E+01	#NAME?	2.9311E+01	#NAME?	3.1552E+01	#NAME?	4.2343E+01	#NAME?	1.1773E+02	#NAME?
2.5251E+01	#NAME?	2.6481E+01	#NAME?	2.9210E+01	#NAME?	3.1434E+01	#NAME?	4.2105E+01	#NAME?	1.1385E+02	#NAME?
2.5177E+01	#NAME?	2.6400E+01	#NAME?	2.9110E+01	#NAME?	3.1316E+01	#NAME?	4.1870E+01	#NAME?	1.1032E+02	#NAME?
2.5103E+01	#NAME?	2.6319E+01	#NAME?	2.9010E+01	#NAME?	3.1199E+01	#NAME?	4.1638E+01	#NAME?	1.0710E+02	#NAME?
2.5030E+01	#NAME?	2.6238E+01	#NAME?	2.8912E+01	#NAME?	3.1084E+01	#NAME?	4.1410E+01	#NAME?	1.0413E+02	#NAME?
2.4957E+01	#NAME?	2.6158E+01	#NAME?	2.8814E+01	#NAME?	3.0969E+01	#NAME?	4.1184E+01	#NAME?	1.0139E+02	#NAME?
2.4885E+01	#NAME?	2.6078E+01	#NAME?	2.8716E+01	#NAME?	3.0855E+01	#NAME?	4.0962E+01	#NAME?	9.8852E+01	#NAME?
2.4813E+01	#NAME?	2.5999E+01	#NAME?	2.8620E+01	#NAME?	3.0742E+01	#NAME?	4.0743E+01	#NAME?	9.6487E+01	#NAME?
2.4741E+01	#NAME?	2.5921E+01	#NAME?	2.8524E+01	#NAME?	3.0630E+01	#NAME?	4.0526E+01	#NAME?	9.4279E+01	#NAME?
2.4670E+01	#NAME?	2.5843E+01	#NAME?	2.8429E+01	#NAME?	3.0519E+01	#NAME?	4.0312E+01	#NAME?	9.2210E+01	#NAME?
2.4599E+01	#NAME?	2.5765E+01	#NAME?	2.8334E+01	#NAME?	3.0409E+01	#NAME?	4.0101E+01	#NAME?	9.0266E+01	#NAME?
2.4529E+01	#NAME?	2.5688E+01	#NAME?	2.8240E+01	#NAME?	3.0299E+01	#NAME?	3.9893E+01	#NAME?	8.8436E+01	#NAME?
2.4459E+01	#NAME?	2.5611E+01	#NAME?	2.8147E+01	#NAME?	3.0191E+01	#NAME?	3.9687E+01	#NAME?	8.6707E+01	#NAME?
2.4389E+01	#NAME?	2.5535E+01	#NAME?	2.8054E+01	#NAME?	3.0083E+01	#NAME?	3.9484E+01	#NAME?	8.5073E+01	#NAME?
2.4320E+01	#NAME?	2.5459E+01	#NAME?	2.7963E+01	#NAME?	2.9976E+01	#NAME?	3.9284E+01	#NAME?	8.3523E+01	#NAME?
2.4251E+01	#NAME?	2.5384E+01	#NAME?	2.7871E+01	#NAME?	2.9871E+01	#NAME?	3.9086E+01	#NAME?	8.2051E+01	#NAME?
2.4183E+01	#NAME?	2.5309E+01	#NAME?	2.7781E+01	#NAME?	2.9765E+01	#NAME?	3.8890E+01	#NAME?	8.0650E+01	#NAME?
2.4115E+01	#NAME?	2.5235E+01	#NAME?	2.7691E+01	#NAME?	2.9661E+01	#NAME?	3.8697E+01	#NAME?	7.9316E+01	#NAME?
2.4047E+01	#NAME?	2.5161E+01	#NAME?	2.7601E+01	#NAME?	2.9557E+01	#NAME?	3.8506E+01	#NAME?	7.8042E+01	#NAME?
2.3980E+01	#NAME?	2.5087E+01	#NAME?	2.7512E+01	#NAME?	2.9455E+01	#NAME?	3.8317E+01	#NAME?	7.6824E+01	#NAME?
2.3913E+01	#NAME?	2.5014E+01	#NAME?	2.7424E+01	#NAME?	2.9353E+01	#NAME?	3.8131E+01	#NAME?	7.5659E+01	#NAME?
2.3846E+01	#NAME?	2.4941E+01	#NAME?	2.7336E+01	#NAME?	2.9251E+01	#NAME?	3.7946E+01	#NAME?	7.4542E+01	#NAME?
2.3780E+01	#NAME?	2.4869E+01	#NAME?	2.7249E+01	#NAME?	2.9151E+01	#NAME?	3.7764E+01	#NAME?	7.3470E+01	#NAME?
2.3714E+01	#NAME?	2.4797E+01	#NAME?	2.7163E+01	#NAME?	2.9051E+01	#NAME?	3.7584E+01	#NAME?	7.2441E+01	#NAME?
2.3648E+01	#NAME?	2.4725E+01	#NAME?	2.7077E+01	#NAME?	2.8952E+01	#NAME?	3.7406E+01	#NAME?	7.1450E+01	#NAME?
2.3583E+01	#NAME?	2.4654E+01	#NAME?	2.6991E+01	#NAME?	2.8854E+01	#NAME?	3.7230E+01	#NAME?	7.0497E+01	#NAME?
2.3518E+01	#NAME?	2.4584E+01	#NAME?	2.6907E+01	#NAME?	2.8756E+01	#NAME?	3.7056E+01	#NAME?	6.9579E+01	#NAME?
2.3454E+01	#NAME?	2.4513E+01	#NAME?	2.6822E+01	#NAME?	2.8659E+01	#NAME?	3.6884E+01	#NAME?	6.8693E+01	#NAME?
2.3389E+01	#NAME?	2.4443E+01	#NAME?	2.6739E+01	#NAME?	2.8563E+01	#NAME?	3.6714E+01	#NAME?	6.7838E+01	#NAME?
2.3325E+01	#NAME?	2.4374E+01	#NAME?	2.6655E+01	#NAME?	2.8468E+01	#NAME?	3.6546E+01	#NAME?	6.7012E+01	#NAME?
2.3262E+01	#NAME?	2.4305E+01	#NAME?	2.6573E+01	#NAME?	2.8373E+01	#NAME?	3.6379E+01	#NAME?	6.6213E+01	#NAME?
2.3199E+01	#NAME?	2.4236E+01	#NAME?	2.6491E+01	#NAME?	2.8279E+01	#NAME?	3.6215E+01	#NAME?	6.5440E+01	#NAME?
2.3136E+01	#NAME?	2.4168E+01	#NAME?	2.6409E+01	#NAME?	2.8185E+01	#NAME?	3.6052E+01	#NAME?	6.4692E+01	#NAME?
2.3073E+01	#NAME?	2.4100E+01	#NAME?	2.6328E+01	#NAME?	2.8092E+01	#NAME?	3.5891E+01	#NAME?	6.3966E+01	#NAME?
2.3011E+01	#NAME?	2.4032E+01	#NAME?	2.6247E+01	#NAME?	2.8000E+01	#NAME?	3.5731E+01	#NAME?	6.3263E+01	#NAME?
2.2949E+01	#NAME?	2.3965E+01	#NAME?	2.6167E+01	#NAME?	2.7909E+01	#NAME?	3.5573E+01	#NAME?	6.2581E+01	#NAME?
2.2887E+01	#NAME?	2.3898E+01	#NAME?	2.6088E+01	#NAME?	2.7818E+01	#NAME?	3.5417E+01	#NAME?	6.1918E+01	#NAME?
2.2826E+01	#NAME?	2.3831E+01	#NAME?	2.6008E+01	#NAME?	2.7727E+01	#NAME?	3.5262E+01	#NAME?	6.1274E+01	#NAME?
2.2765E+01	#NAME?	2.3765E+01	#NAME?	2.5930E+01	#NAME?	2.7638E+01	#NAME?	3.5109E+01	#NAME?	6.0648E+01	#NAME?
2.2704E+01	#NAME?	2.3699E+01	#NAME?	2.5852E+01	#NAME?	2.7549E+01	#NAME?	3.4958E+01	#NAME?	6.0040E+01	#NAME?
2.2644E+01	#NAME?	2.3634E+01	#NAME?	2.5774E+01	#NAME?	2.7460E+01	#NAME?	3.4808E+01	#NAME?	5.9447E+01	#NAME?
2.2584E+01	#NAME?	2.3569E+01	#NAME?	2.5697E+01	#NAME?	2.7372E+01	#NAME?	3.4660E+01	#NAME?	5.8871E+01	#NAME?
2.2524E+01	#NAME?	2.3504E+01	#NAME?	2.5620E+01	#NAME?	2.7285E+01	#NAME?	3.4513E+01	#NAME?	5.8309E+01	#NAME?
2.2465E+01	#NAME?	2.3439E+01	#NAME?	2.5544E+01	#NAME?	2.7198E+01	#NAME?	3.4367E+01	#NAME?	5.7762E+01	#NAME?
2.2405E+01	#NAME?	2.3375E+01	#NAME?	2.5468E+01	#NAME?	2.7112E+01	#NAME?	3.4223E+01	#NAME?	5.7228E+01	#NAME?

Arg 13	Curve 13	Arg 14	Curve 14	Arg 15	Curve 15	Arg 16	Curve 16	Arg 17	Curve 17	Arg 18	Curve 18
2.2346E+01	#NAME?	2.3311E+01	#NAME?	2.5393E+01	#NAME?	2.7026E+01	#NAME?	3.4080E+01	#NAME?	5.6707E+01	#NAME?
2.2288E+01	#NAME?	2.3248E+01	#NAME?	2.5318E+01	#NAME?	2.6941E+01	#NAME?	3.3939E+01	#NAME?	5.6199E+01	#NAME?
2.2229E+01	#NAME?	2.3185E+01	#NAME?	2.5243E+01	#NAME?	2.6857E+01	#NAME?	3.3799E+01	#NAME?	5.5703E+01	#NAME?
2.2171E+01	#NAME?	2.3122E+01	#NAME?	2.5169E+01	#NAME?	2.6773E+01	#NAME?	3.3660E+01	#NAME?	5.5219E+01	#NAME?
2.2114E+01	#NAME?	2.3060E+01	#NAME?	2.5095E+01	#NAME?	2.6689E+01	#NAME?	3.3523E+01	#NAME?	5.4746E+01	#NAME?
2.2056E+01	#NAME?	2.2997E+01	#NAME?	2.5022E+01	#NAME?	2.6607E+01	#NAME?	3.3387E+01	#NAME?	5.4283E+01	#NAME?
2.1999E+01	#NAME?	2.2936E+01	#NAME?	2.4949E+01	#NAME?	2.6524E+01	#NAME?	3.3252E+01	#NAME?	5.3831E+01	#NAME?
2.1942E+01	#NAME?	2.2874E+01	#NAME?	2.4877E+01	#NAME?	2.6442E+01	#NAME?	3.3118E+01	#NAME?	5.3389E+01	#NAME?
2.1885E+01	#NAME?	2.2813E+01	#NAME?	2.4805E+01	#NAME?	2.6361E+01	#NAME?	3.2986E+01	#NAME?	5.2956E+01	#NAME?
2.1829E+01	#NAME?	2.2752E+01	#NAME?	2.4734E+01	#NAME?	2.6280E+01	#NAME?	3.2855E+01	#NAME?	5.2533E+01	#NAME?
2.1772E+01	#NAME?	2.2691E+01	#NAME?	2.4662E+01	#NAME?	2.6200E+01	#NAME?	3.2725E+01	#NAME?	5.2118E+01	#NAME?
2.1717E+01	#NAME?	2.2631E+01	#NAME?	2.4592E+01	#NAME?	2.6120E+01	#NAME?	3.2596E+01	#NAME?	5.1712E+01	#NAME?
2.1661E+01	#NAME?	2.2571E+01	#NAME?	2.4521E+01	#NAME?	2.6041E+01	#NAME?	3.2468E+01	#NAME?	5.1314E+01	#NAME?
2.1605E+01	#NAME?	2.2511E+01	#NAME?	2.4451E+01	#NAME?	2.5962E+01	#NAME?	3.2342E+01	#NAME?	5.0924E+01	#NAME?
2.1550E+01	#NAME?	2.2452E+01	#NAME?	2.4382E+01	#NAME?	2.5884E+01	#NAME?	3.2216E+01	#NAME?	5.0542E+01	#NAME?
2.1495E+01	#NAME?	2.2392E+01	#NAME?	2.4313E+01	#NAME?	2.5806E+01	#NAME?	3.2092E+01	#NAME?	5.0168E+01	#NAME?
2.1441E+01	#NAME?	2.2334E+01	#NAME?	2.4244E+01	#NAME?	2.5728E+01	#NAME?	3.1969E+01	#NAME?	4.9800E+01	#NAME?
2.1386E+01	#NAME?	2.2275E+01	#NAME?	2.4175E+01	#NAME?	2.5651E+01	#NAME?	3.1847E+01	#NAME?	4.9440E+01	#NAME?
2.1332E+01	#NAME?	2.2217E+01	#NAME?	2.4107E+01	#NAME?	2.5575E+01	#NAME?	3.1725E+01	#NAME?	4.9086E+01	#NAME?
2.1278E+01	#NAME?	2.2159E+01	#NAME?	2.4040E+01	#NAME?	2.5499E+01	#NAME?	3.1605E+01	#NAME?	4.8739E+01	#NAME?
2.1225E+01	#NAME?	2.2101E+01	#NAME?	2.3972E+01	#NAME?	2.5423E+01	#NAME?	3.1486E+01	#NAME?	4.8398E+01	#NAME?
2.1171E+01	#NAME?	2.2043E+01	#NAME?	2.3906E+01	#NAME?	2.5348E+01	#NAME?	3.1368E+01	#NAME?	4.8063E+01	#NAME?
2.1118E+01	#NAME?	2.1986E+01	#NAME?	2.3839E+01	#NAME?	2.5274E+01	#NAME?	3.1251E+01	#NAME?	4.7734E+01	#NAME?
2.1065E+01	#NAME?	2.1929E+01	#NAME?	2.3773E+01	#NAME?	2.5199E+01	#NAME?	3.1135E+01	#NAME?	4.7411E+01	#NAME?
2.1012E+01	#NAME?	2.1873E+01	#NAME?	2.3707E+01	#NAME?	2.5126E+01	#NAME?	3.1020E+01	#NAME?	4.7094E+01	#NAME?
2.0960E+01	#NAME?	2.1816E+01	#NAME?	2.3641E+01	#NAME?	2.5052E+01	#NAME?	3.0905E+01	#NAME?	4.6782E+01	#NAME?
2.0908E+01	#NAME?	2.1760E+01	#NAME?	2.3576E+01	#NAME?	2.4979E+01	#NAME?	3.0792E+01	#NAME?	4.6475E+01	#NAME?
2.0856E+01	#NAME?	2.1704E+01	#NAME?	2.3511E+01	#NAME?	2.4907E+01	#NAME?	3.0680E+01	#NAME?	4.6174E+01	#NAME?
2.0804E+01	#NAME?	2.1649E+01	#NAME?	2.3447E+01	#NAME?	2.4835E+01	#NAME?	3.0568E+01	#NAME?	4.5877E+01	#NAME?
2.0752E+01	#NAME?	2.1593E+01	#NAME?	2.3383E+01	#NAME?	2.4763E+01	#NAME?	3.0458E+01	#NAME?	4.5585E+01	#NAME?
2.0701E+01	#NAME?	2.1538E+01	#NAME?	2.3319E+01	#NAME?	2.4692E+01	#NAME?	3.0348E+01	#NAME?	4.5298E+01	#NAME?
2.0650E+01	#NAME?	2.1483E+01	#NAME?	2.3255E+01	#NAME?	2.4621E+01	#NAME?	3.0239E+01	#NAME?	4.5016E+01	#NAME?
2.0599E+01	#NAME?	2.1429E+01	#NAME?	2.3192E+01	#NAME?	2.4550E+01	#NAME?	3.0131E+01	#NAME?	4.4738E+01	#NAME?
2.0548E+01	#NAME?	2.1374E+01	#NAME?	2.3129E+01	#NAME?	2.4480E+01	#NAME?	3.0024E+01	#NAME?	4.4464E+01	#NAME?
2.0498E+01	#NAME?	2.1320E+01	#NAME?	2.3067E+01	#NAME?	2.4410E+01	#NAME?	2.9918E+01	#NAME?	4.4195E+01	#NAME?
2.0447E+01	#NAME?	2.1266E+01	#NAME?	2.3005E+01	#NAME?	2.4341E+01	#NAME?	2.9812E+01	#NAME?	4.3929E+01	#NAME?
2.0397E+01	#NAME?	2.1213E+01	#NAME?	2.2943E+01	#NAME?	2.4272E+01	#NAME?	2.9707E+01	#NAME?	4.3668E+01	#NAME?
2.0347E+01	#NAME?	2.1159E+01	#NAME?	2.2881E+01	#NAME?	2.4203E+01	#NAME?	2.9603E+01	#NAME?	4.3411E+01	#NAME?
2.0298E+01	#NAME?	2.1106E+01	#NAME?	2.2820E+01	#NAME?	2.4135E+01	#NAME?	2.9500E+01	#NAME?	4.3157E+01	#NAME?
2.0248E+01	#NAME?	2.1053E+01	#NAME?	2.2759E+01	#NAME?	2.4067E+01	#NAME?	2.9398E+01	#NAME?	4.2907E+01	#NAME?
2.0199E+01	#NAME?	2.1001E+01	#NAME?	2.2698E+01	#NAME?	2.4000E+01	#NAME?	2.9296E+01	#NAME?	4.2661E+01	#NAME?
2.0150E+01	#NAME?	2.0948E+01	#NAME?	2.2638E+01	#NAME?	2.3933E+01	#NAME?	2.9196E+01	#NAME?	4.2418E+01	#NAME?
2.0101E+01	#NAME?	2.0896E+01	#NAME?	2.2578E+01	#NAME?	2.3866E+01	#NAME?	2.9095E+01	#NAME?	4.2179E+01	#NAME?
2.0053E+01	#NAME?	2.0844E+01	#NAME?	2.2518E+01	#NAME?	2.3800E+01	#NAME?	2.8996E+01	#NAME?	4.1943E+01	#NAME?
2.0004E+01	#NAME?	2.0792E+01	#NAME?	2.2458E+01	#NAME?	2.3734E+01	#NAME?	2.8898E+01	#NAME?	4.1710E+01	#NAME?
1.9956E+01	#NAME?	2.0741E+01	#NAME?	2.2399E+01	#NAME?	2.3668E+01	#NAME?	2.8800E+01	#NAME?	4.1480E+01	#NAME?
1.9908E+01	#NAME?	2.0690E+01	#NAME?	2.2340E+01	#NAME?	2.3603E+01	#NAME?	2.8702E+01	#NAME?	4.1254E+01	#NAME?
1.9860E+01	#NAME?	2.0638E+01	#NAME?	2.2282E+01	#NAME?	2.3538E+01	#NAME?	2.8606E+01	#NAME?	4.1031E+01	#NAME?
1.9813E+01	#NAME?	2.0588E+01	#NAME?	2.2223E+01	#NAME?	2.3473E+01	#NAME?	2.8510E+01	#NAME?	4.0810E+01	#NAME?
1.9765E+01	#NAME?	2.0537E+01	#NAME?	2.2165E+01	#NAME?	2.3409E+01	#NAME?	2.8415E+01	#NAME?	4.0593E+01	#NAME?
1.9718E+01	#NAME?	2.0487E+01	#NAME?	2.2108E+01	#NAME?	2.3345E+01	#NAME?	2.8321E+01	#NAME?	4.0378E+01	#NAME?
1.9671E+01	#NAME?	2.0436E+01	#NAME?	2.2050E+01	#NAME?	2.3281E+01	#NAME?	2.8227E+01	#NAME?	4.0166E+01	#NAME?

Arg 13	Curve 13	Arg 14	Curve 14	Arg 15	Curve 15	Arg 16	Curve 16	Arg 17	Curve 17	Arg 18	Curve 18
1.9624E+01	#NAME?	2.0386E+01	#NAME?	2.1993E+01	#NAME?	2.3218E+01	#NAME?	2.8134E+01	#NAME?	3.9957E+01	#NAME?
1.9578E+01	#NAME?	2.0337E+01	#NAME?	2.1936E+01	#NAME?	2.3155E+01	#NAME?	2.8041E+01	#NAME?	3.9751E+01	#NAME?
1.9531E+01	#NAME?	2.0287E+01	#NAME?	2.1879E+01	#NAME?	2.3092E+01	#NAME?	2.7949E+01	#NAME?	3.9547E+01	#NAME?
1.9485E+01	#NAME?	2.0238E+01	#NAME?	2.1823E+01	#NAME?	2.3030E+01	#NAME?	2.7858E+01	#NAME?	3.9346E+01	#NAME?
1.9439E+01	#NAME?	2.0188E+01	#NAME?	2.1767E+01	#NAME?	2.2968E+01	#NAME?	2.7767E+01	#NAME?	3.9147E+01	#NAME?
1.9393E+01	#NAME?	2.0139E+01	#NAME?	2.1711E+01	#NAME?	2.2906E+01	#NAME?	2.7678E+01	#NAME?	3.8950E+01	#NAME?
1.9347E+01	#NAME?	2.0091E+01	#NAME?	2.1655E+01	#NAME?	2.2845E+01	#NAME?	2.7588E+01	#NAME?	3.8756E+01	#NAME?
1.9302E+01	#NAME?	2.0042E+01	#NAME?	2.1600E+01	#NAME?	2.2784E+01	#NAME?	2.7499E+01	#NAME?	3.8565E+01	#NAME?
1.9256E+01	#NAME?	1.9994E+01	#NAME?	2.1544E+01	#NAME?	2.2723E+01	#NAME?	2.7411E+01	#NAME?	3.8375E+01	#NAME?
1.9211E+01	#NAME?	1.9946E+01	#NAME?	2.1490E+01	#NAME?	2.2662E+01	#NAME?	2.7324E+01	#NAME?	3.8188E+01	#NAME?
1.9166E+01	#NAME?	1.9898E+01	#NAME?	2.1435E+01	#NAME?	2.2602E+01	#NAME?	2.7237E+01	#NAME?	3.8003E+01	#NAME?
1.9121E+01	#NAME?	1.9850E+01	#NAME?	2.1381E+01	#NAME?	2.2542E+01	#NAME?	2.7150E+01	#NAME?	3.7821E+01	#NAME?
1.9076E+01	#NAME?	1.9802E+01	#NAME?	2.1326E+01	#NAME?	2.2483E+01	#NAME?	2.7064E+01	#NAME?	3.7640E+01	#NAME?
1.9032E+01	#NAME?	1.9755E+01	#NAME?	2.1273E+01	#NAME?	2.2423E+01	#NAME?	2.6979E+01	#NAME?	3.7461E+01	#NAME?
1.8988E+01	#NAME?	1.9708E+01	#NAME?	2.1219E+01	#NAME?	2.2364E+01	#NAME?	2.6894E+01	#NAME?	3.7285E+01	#NAME?
1.8943E+01	#NAME?	1.9661E+01	#NAME?	2.1166E+01	#NAME?	2.2306E+01	#NAME?	2.6810E+01	#NAME?	3.7110E+01	#NAME?
1.8899E+01	#NAME?	1.9614E+01	#NAME?	2.1112E+01	#NAME?	2.2247E+01	#NAME?	2.6726E+01	#NAME?	3.6937E+01	#NAME?
1.8856E+01	#NAME?	1.9567E+01	#NAME?	2.1059E+01	#NAME?	2.2189E+01	#NAME?	2.6643E+01	#NAME?	3.6767E+01	#NAME?
1.8812E+01	#NAME?	1.9521E+01	#NAME?	2.1007E+01	#NAME?	2.2131E+01	#NAME?	2.6561E+01	#NAME?	3.6598E+01	#NAME?
1.8768E+01	#NAME?	1.9475E+01	#NAME?	2.0954E+01	#NAME?	2.2074E+01	#NAME?	2.6479E+01	#NAME?	3.6431E+01	#NAME?
1.8725E+01	#NAME?	1.9429E+01	#NAME?	2.0902E+01	#NAME?	2.2016E+01	#NAME?	2.6397E+01	#NAME?	3.6265E+01	#NAME?
1.8682E+01	#NAME?	1.9383E+01	#NAME?	2.0850E+01	#NAME?	2.1959E+01	#NAME?	2.6316E+01	#NAME?	3.6102E+01	#NAME?
1.8639E+01	#NAME?	1.9337E+01	#NAME?	2.0798E+01	#NAME?	2.1902E+01	#NAME?	2.6236E+01	#NAME?	3.5940E+01	#NAME?
1.8596E+01	#NAME?	1.9292E+01	#NAME?	2.0747E+01	#NAME?	2.1846E+01	#NAME?	2.6156E+01	#NAME?	3.5780E+01	#NAME?
1.8553E+01	#NAME?	1.9246E+01	#NAME?	2.0695E+01	#NAME?	2.1790E+01	#NAME?	2.6076E+01	#NAME?	3.5622E+01	#NAME?
1.8511E+01	#NAME?	1.9201E+01	#NAME?	2.0644E+01	#NAME?	2.1734E+01	#NAME?	2.5997E+01	#NAME?	3.5465E+01	#NAME?
1.8468E+01	#NAME?	1.9156E+01	#NAME?	2.0593E+01	#NAME?	2.1678E+01	#NAME?	2.5918E+01	#NAME?	3.5310E+01	#NAME?
1.8426E+01	#NAME?	1.9111E+01	#NAME?	2.0543E+01	#NAME?	2.1622E+01	#NAME?	2.5840E+01	#NAME?	3.5157E+01	#NAME?
1.8384E+01	#NAME?	1.9067E+01	#NAME?	2.0492E+01	#NAME?	2.1567E+01	#NAME?	2.5763E+01	#NAME?	3.5005E+01	#NAME?
1.8342E+01	#NAME?	1.9022E+01	#NAME?	2.0442E+01	#NAME?	2.1512E+01	#NAME?	2.5686E+01	#NAME?	3.4854E+01	#NAME?
1.8300E+01	#NAME?	1.8978E+01	#NAME?	2.0392E+01	#NAME?	2.1457E+01	#NAME?	2.5609E+01	#NAME?	3.4705E+01	#NAME?
1.8259E+01	#NAME?	1.8934E+01	#NAME?	2.0342E+01	#NAME?	2.1403E+01	#NAME?	2.5533E+01	#NAME?	3.4558E+01	#NAME?
1.8217E+01	#NAME?	1.8890E+01	#NAME?	2.0293E+01	#NAME?	2.1349E+01	#NAME?	2.5457E+01	#NAME?	3.4412E+01	#NAME?
1.8176E+01	#NAME?	1.8846E+01	#NAME?	2.0243E+01	#NAME?	2.1295E+01	#NAME?	2.5382E+01	#NAME?	3.4267E+01	#NAME?
1.8135E+01	#NAME?	1.8802E+01	#NAME?	2.0194E+01	#NAME?	2.1241E+01	#NAME?	2.5307E+01	#NAME?	3.4124E+01	#NAME?
1.8094E+01	#NAME?	1.8759E+01	#NAME?	2.0145E+01	#NAME?	2.1187E+01	#NAME?	2.5232E+01	#NAME?	3.3983E+01	#NAME?
1.8053E+01	#NAME?	1.8716E+01	#NAME?	2.0096E+01	#NAME?	2.1134E+01	#NAME?	2.5158E+01	#NAME?	3.3842E+01	#NAME?
1.8012E+01	#NAME?	1.8672E+01	#NAME?	2.0048E+01	#NAME?	2.1081E+01	#NAME?	2.5085E+01	#NAME?	3.3703E+01	#NAME?
1.7972E+01	#NAME?	1.8629E+01	#NAME?	1.9999E+01	#NAME?	2.1028E+01	#NAME?	2.5012E+01	#NAME?	3.3565E+01	#NAME?
1.7931E+01	#NAME?	1.8587E+01	#NAME?	1.9951E+01	#NAME?	2.0976E+01	#NAME?	2.4939E+01	#NAME?	3.3429E+01	#NAME?
1.7891E+01	#NAME?	1.8544E+01	#NAME?	1.9903E+01	#NAME?	2.0923E+01	#NAME?	2.4867E+01	#NAME?	3.3294E+01	#NAME?
1.7851E+01	#NAME?	1.8501E+01	#NAME?	1.9855E+01	#NAME?	2.0871E+01	#NAME?	2.4795E+01	#NAME?	3.3160E+01	#NAME?
1.7811E+01	#NAME?	1.8459E+01	#NAME?	1.9808E+01	#NAME?	2.0819E+01	#NAME?	2.4723E+01	#NAME?	3.3027E+01	#NAME?
1.7771E+01	#NAME?	1.8417E+01	#NAME?	1.9760E+01	#NAME?	2.0768E+01	#NAME?	2.4652E+01	#NAME?	3.2895E+01	#NAME?
1.7731E+01	#NAME?	1.8375E+01	#NAME?	1.9713E+01	#NAME?	2.0716E+01	#NAME?	2.4581E+01	#NAME?	3.2765E+01	#NAME?
1.7692E+01	#NAME?	1.8333E+01	#NAME?	1.9666E+01	#NAME?	2.0665E+01	#NAME?	2.4511E+01	#NAME?	3.2636E+01	#NAME?
1.7652E+01	#NAME?	1.8291E+01	#NAME?	1.9619E+01	#NAME?	2.0614E+01	#NAME?	2.4441E+01	#NAME?	3.2508E+01	#NAME?
1.7613E+01	#NAME?	1.8250E+01	#NAME?	1.9573E+01	#NAME?	2.0563E+01	#NAME?	2.4372E+01	#NAME?	3.2381E+01	#NAME?
1.7574E+01	#NAME?	1.8208E+01	#NAME?	1.9526E+01	#NAME?	2.0513E+01	#NAME?	2.4303E+01	#NAME?	3.2255E+01	#NAME?
1.7535E+01	#NAME?	1.8167E+01	#NAME?	1.9480E+01	#NAME?	2.0463E+01	#NAME?	2.4234E+01	#NAME?	3.2130E+01	#NAME?
1.7496E+01	#NAME?	1.8126E+01	#NAME?	1.9434E+01	#NAME?	2.0413E+01	#NAME?	2.4166E+01	#NAME?	3.2007E+01	#NAME?
1.7457E+01	#NAME?	1.8085E+01	#NAME?	1.9388E+01	#NAME?	2.0363E+01	#NAME?	2.4098E+01	#NAME?	3.1884E+01	#NAME?

Arg 13	Curve 13	Arg 14	Curve 14	Arg 15	Curve 15	Arg 16	Curve 16	Arg 17	Curve 17	Arg 18	Curve 18
1.7418E+01	#NAME?	1.8044E+01	#NAME?	1.9342E+01	#NAME?	2.0313E+01	#NAME?	2.4030E+01	#NAME?	3.1763E+01	#NAME?
1.7380E+01	#NAME?	1.8003E+01	#NAME?	1.9297E+01	#NAME?	2.0263E+01	#NAME?	2.3963E+01	#NAME?	3.1642E+01	#NAME?
1.7341E+01	#NAME?	1.7963E+01	#NAME?	1.9251E+01	#NAME?	2.0214E+01	#NAME?	2.3896E+01	#NAME?	3.1523E+01	#NAME?
1.7303E+01	#NAME?	1.7922E+01	#NAME?	1.9206E+01	#NAME?	2.0165E+01	#NAME?	2.3829E+01	#NAME?	3.1405E+01	#NAME?
1.7265E+01	#NAME?	1.7882E+01	#NAME?	1.9161E+01	#NAME?	2.0116E+01	#NAME?	2.3763E+01	#NAME?	3.1287E+01	#NAME?
1.7227E+01	#NAME?	1.7842E+01	#NAME?	1.9116E+01	#NAME?	2.0068E+01	#NAME?	2.3697E+01	#NAME?	3.1171E+01	#NAME?
1.7189E+01	#NAME?	1.7802E+01	#NAME?	1.9072E+01	#NAME?	2.0019E+01	#NAME?	2.3632E+01	#NAME?	3.1055E+01	#NAME?
1.7151E+01	#NAME?	1.7762E+01	#NAME?	1.9027E+01	#NAME?	1.9971E+01	#NAME?	2.3567E+01	#NAME?	3.0941E+01	#NAME?
1.7114E+01	#NAME?	1.7723E+01	#NAME?	1.8983E+01	#NAME?	1.9923E+01	#NAME?	2.3502E+01	#NAME?	3.0827E+01	#NAME?
1.7076E+01	#NAME?	1.7683E+01	#NAME?	1.8939E+01	#NAME?	1.9875E+01	#NAME?	2.3437E+01	#NAME?	3.0715E+01	#NAME?
1.7039E+01	#NAME?	1.7644E+01	#NAME?	1.8895E+01	#NAME?	1.9827E+01	#NAME?	2.3373E+01	#NAME?	3.0603E+01	#NAME?
1.7002E+01	#NAME?	1.7604E+01	#NAME?	1.8851E+01	#NAME?	1.9780E+01	#NAME?	2.3310E+01	#NAME?	3.0492E+01	#NAME?
1.6965E+01	#NAME?	1.7565E+01	#NAME?	1.8807E+01	#NAME?	1.9733E+01	#NAME?	2.3246E+01	#NAME?	3.0382E+01	#NAME?
1.6928E+01	#NAME?	1.7526E+01	#NAME?	1.8764E+01	#NAME?	1.9685E+01	#NAME?	2.3183E+01	#NAME?	3.0273E+01	#NAME?
1.6891E+01	#NAME?	1.7487E+01	#NAME?	1.8721E+01	#NAME?	1.9639E+01	#NAME?	2.3120E+01	#NAME?	3.0164E+01	#NAME?
1.6854E+01	#NAME?	1.7448E+01	#NAME?	1.8677E+01	#NAME?	1.9592E+01	#NAME?	2.3058E+01	#NAME?	3.0057E+01	#NAME?
1.6817E+01	#NAME?	1.7410E+01	#NAME?	1.8634E+01	#NAME?	1.9545E+01	#NAME?	2.2996E+01	#NAME?	2.9950E+01	#NAME?
1.6781E+01	#NAME?	1.7371E+01	#NAME?	1.8592E+01	#NAME?	1.9499E+01	#NAME?	2.2934E+01	#NAME?	2.9845E+01	#NAME?
1.6744E+01	#NAME?	1.7333E+01	#NAME?	1.8549E+01	#NAME?	1.9453E+01	#NAME?	2.2872E+01	#NAME?	2.9740E+01	#NAME?
1.6708E+01	#NAME?	1.7295E+01	#NAME?	1.8506E+01	#NAME?	1.9407E+01	#NAME?	2.2811E+01	#NAME?	2.9636E+01	#NAME?
1.6672E+01	#NAME?	1.7257E+01	#NAME?	1.8464E+01	#NAME?	1.9361E+01	#NAME?	2.2750E+01	#NAME?	2.9532E+01	#NAME?
1.6636E+01	#NAME?	1.7219E+01	#NAME?	1.8422E+01	#NAME?	1.9315E+01	#NAME?	2.2689E+01	#NAME?	2.9430E+01	#NAME?
1.6600E+01	#NAME?	1.7181E+01	#NAME?	1.8380E+01	#NAME?	1.9270E+01	#NAME?	2.2629E+01	#NAME?	2.9328E+01	#NAME?
1.6564E+01	#NAME?	1.7143E+01	#NAME?	1.8338E+01	#NAME?	1.9225E+01	#NAME?	2.2569E+01	#NAME?	2.9227E+01	#NAME?
1.6528E+01	#NAME?	1.7106E+01	#NAME?	1.8296E+01	#NAME?	1.9180E+01	#NAME?	2.2509E+01	#NAME?	2.9126E+01	#NAME?
1.6493E+01	#NAME?	1.7068E+01	#NAME?	1.8255E+01	#NAME?	1.9135E+01	#NAME?	2.2450E+01	#NAME?	2.9027E+01	#NAME?
1.6457E+01	#NAME?	1.7031E+01	#NAME?	1.8213E+01	#NAME?	1.9090E+01	#NAME?	2.2391E+01	#NAME?	2.8928E+01	#NAME?
1.6422E+01	#NAME?	1.6994E+01	#NAME?	1.8172E+01	#NAME?	1.9046E+01	#NAME?	2.2332E+01	#NAME?	2.8830E+01	#NAME?
1.6387E+01	#NAME?	1.6956E+01	#NAME?	1.8131E+01	#NAME?	1.9001E+01	#NAME?	2.2273E+01	#NAME?	2.8732E+01	#NAME?
1.6352E+01	#NAME?	1.6919E+01	#NAME?	1.8090E+01	#NAME?	1.8957E+01	#NAME?	2.2215E+01	#NAME?	2.8636E+01	#NAME?
1.6317E+01	#NAME?	1.6883E+01	#NAME?	1.8049E+01	#NAME?	1.8913E+01	#NAME?	2.2157E+01	#NAME?	2.8540E+01	#NAME?
1.6282E+01	#NAME?	1.6846E+01	#NAME?	1.8008E+01	#NAME?	1.8869E+01	#NAME?	2.2099E+01	#NAME?	2.8444E+01	#NAME?
1.6247E+01	#NAME?	1.6809E+01	#NAME?	1.7968E+01	#NAME?	1.8825E+01	#NAME?	2.2042E+01	#NAME?	2.8350E+01	#NAME?
1.6212E+01	#NAME?	1.6773E+01	#NAME?	1.7927E+01	#NAME?	1.8782E+01	#NAME?	2.1985E+01	#NAME?	2.8256E+01	#NAME?
1.6177E+01	#NAME?	1.6736E+01	#NAME?	1.7887E+01	#NAME?	1.8738E+01	#NAME?	2.1928E+01	#NAME?	2.8162E+01	#NAME?
1.6143E+01	#NAME?	1.6700E+01	#NAME?	1.7847E+01	#NAME?	1.8695E+01	#NAME?	2.1871E+01	#NAME?	2.8070E+01	#NAME?
1.6109E+01	#NAME?	1.6664E+01	#NAME?	1.7807E+01	#NAME?	1.8652E+01	#NAME?	2.1815E+01	#NAME?	2.7978E+01	#NAME?
1.6074E+01	#NAME?	1.6628E+01	#NAME?	1.7767E+01	#NAME?	1.8609E+01	#NAME?	2.1758E+01	#NAME?	2.7886E+01	#NAME?
1.6040E+01	#NAME?	1.6592E+01	#NAME?	1.7727E+01	#NAME?	1.8566E+01	#NAME?	2.1703E+01	#NAME?	2.7795E+01	#NAME?
1.6006E+01	#NAME?	1.6556E+01	#NAME?	1.7688E+01	#NAME?	1.8524E+01	#NAME?	2.1647E+01	#NAME?	2.7705E+01	#NAME?
1.5972E+01	#NAME?	1.6521E+01	#NAME?	1.7648E+01	#NAME?	1.8481E+01	#NAME?	2.1592E+01	#NAME?	2.7616E+01	#NAME?
1.5938E+01	#NAME?	1.6485E+01	#NAME?	1.7609E+01	#NAME?	1.8439E+01	#NAME?	2.1537E+01	#NAME?	2.7527E+01	#NAME?
1.5904E+01	#NAME?	1.6450E+01	#NAME?	1.7570E+01	#NAME?	1.8397E+01	#NAME?	2.1482E+01	#NAME?	2.7438E+01	#NAME?
1.5871E+01	#NAME?	1.6414E+01	#NAME?	1.7531E+01	#NAME?	1.8355E+01	#NAME?	2.1427E+01	#NAME?	2.7351E+01	#NAME?
1.5837E+01	#NAME?	1.6379E+01	#NAME?	1.7492E+01	#NAME?	1.8313E+01	#NAME?	2.1373E+01	#NAME?	2.7264E+01	#NAME?
1.5804E+01	#NAME?	1.6344E+01	#NAME?	1.7453E+01	#NAME?	1.8272E+01	#NAME?	2.1319E+01	#NAME?	2.7177E+01	#NAME?
1.5770E+01	#NAME?	1.6309E+01	#NAME?	1.7414E+01	#NAME?	1.8230E+01	#NAME?	2.1265E+01	#NAME?	2.7091E+01	#NAME?
1.5737E+01	#NAME?	1.6274E+01	#NAME?	1.7376E+01	#NAME?	1.8189E+01	#NAME?	2.1211E+01	#NAME?	2.7005E+01	#NAME?
1.5704E+01	#NAME?	1.6239E+01	#NAME?	1.7337E+01	#NAME?	1.8147E+01	#NAME?	2.1158E+01	#NAME?	2.6921E+01	#NAME?
1.5671E+01	#NAME?	1.6204E+01	#NAME?	1.7299E+01	#NAME?	1.8106E+01	#NAME?	2.1105E+01	#NAME?	2.6836E+01	#NAME?
1.5638E+01	#NAME?	1.6170E+01	#NAME?	1.7261E+01	#NAME?	1.8066E+01	#NAME?	2.1052E+01	#NAME?	2.6752E+01	#NAME?
1.5605E+01	#NAME?	1.6135E+01	#NAME?	1.7223E+01	#NAME?	1.8025E+01	#NAME?	2.0999E+01	#NAME?	2.6669E+01	#NAME?

Arg 13	Curve 13	Arg 14	Curve 14	Arg 15	Curve 15	Arg 16	Curve 16	Arg 17	Curve 17	Arg 18	Curve 18
1.5572E+01	#NAME?	1.6101E+01	#NAME?	1.7185E+01	#NAME?	1.7984E+01	#NAME?	2.0947E+01	#NAME?	2.6586E+01	#NAME?
1.5540E+01	#NAME?	1.6067E+01	#NAME?	1.7148E+01	#NAME?	1.7944E+01	#NAME?	2.0895E+01	#NAME?	2.6504E+01	#NAME?
1.5507E+01	#NAME?	1.6033E+01	#NAME?	1.7110E+01	#NAME?	1.7903E+01	#NAME?	2.0843E+01	#NAME?	2.6422E+01	#NAME?
1.5474E+01	#NAME?	1.5999E+01	#NAME?	1.7072E+01	#NAME?	1.7863E+01	#NAME?	2.0791E+01	#NAME?	2.6341E+01	#NAME?
1.5442E+01	#NAME?	1.5965E+01	#NAME?	1.7035E+01	#NAME?	1.7823E+01	#NAME?	2.0739E+01	#NAME?	2.6261E+01	#NAME?
1.5410E+01	#NAME?	1.5931E+01	#NAME?	1.6998E+01	#NAME?	1.7783E+01	#NAME?	2.0688E+01	#NAME?	2.6180E+01	#NAME?
1.5378E+01	#NAME?	1.5897E+01	#NAME?	1.6961E+01	#NAME?	1.7743E+01	#NAME?	2.0637E+01	#NAME?	2.6101E+01	#NAME?
1.5345E+01	#NAME?	1.5863E+01	#NAME?	1.6924E+01	#NAME?	1.7704E+01	#NAME?	2.0586E+01	#NAME?	2.6021E+01	#NAME?
1.5313E+01	#NAME?	1.5830E+01	#NAME?	1.6887E+01	#NAME?	1.7664E+01	#NAME?	2.0535E+01	#NAME?	2.5943E+01	#NAME?
1.5282E+01	#NAME?	1.5796E+01	#NAME?	1.6850E+01	#NAME?	1.7625E+01	#NAME?	2.0485E+01	#NAME?	2.5865E+01	#NAME?
1.5250E+01	#NAME?	1.5763E+01	#NAME?	1.6813E+01	#NAME?	1.7586E+01	#NAME?	2.0435E+01	#NAME?	2.5787E+01	#NAME?
1.5218E+01	#NAME?	1.5730E+01	#NAME?	1.6777E+01	#NAME?	1.7547E+01	#NAME?	2.0385E+01	#NAME?	2.5709E+01	#NAME?
1.5186E+01	#NAME?	1.5697E+01	#NAME?	1.6741E+01	#NAME?	1.7508E+01	#NAME?	2.0335E+01	#NAME?	2.5633E+01	#NAME?
1.5155E+01	#NAME?	1.5664E+01	#NAME?	1.6704E+01	#NAME?	1.7469E+01	#NAME?	2.0285E+01	#NAME?	2.5556E+01	#NAME?
1.5123E+01	#NAME?	1.5631E+01	#NAME?	1.6668E+01	#NAME?	1.7430E+01	#NAME?	2.0236E+01	#NAME?	2.5480E+01	#NAME?
1.5092E+01	#NAME?	1.5598E+01	#NAME?	1.6632E+01	#NAME?	1.7392E+01	#NAME?	2.0187E+01	#NAME?	2.5405E+01	#NAME?
1.5061E+01	#NAME?	1.5565E+01	#NAME?	1.6596E+01	#NAME?	1.7353E+01	#NAME?	2.0138E+01	#NAME?	2.5330E+01	#NAME?
1.5029E+01	#NAME?	1.5532E+01	#NAME?	1.6560E+01	#NAME?	1.7315E+01	#NAME?	2.0089E+01	#NAME?	2.5255E+01	#NAME?
1.4998E+01	#NAME?	1.5500E+01	#NAME?	1.6525E+01	#NAME?	1.7277E+01	#NAME?	2.0041E+01	#NAME?	2.5181E+01	#NAME?
1.4967E+01	#NAME?	1.5467E+01	#NAME?	1.6489E+01	#NAME?	1.7239E+01	#NAME?	1.9992E+01	#NAME?	2.5108E+01	#NAME?
1.4936E+01	#NAME?	1.5435E+01	#NAME?	1.6454E+01	#NAME?	1.7201E+01	#NAME?	1.9944E+01	#NAME?	2.5034E+01	#NAME?
1.4905E+01	#NAME?	1.5403E+01	#NAME?	1.6418E+01	#NAME?	1.7163E+01	#NAME?	1.9896E+01	#NAME?	2.4961E+01	#NAME?
1.4875E+01	#NAME?	1.5371E+01	#NAME?	1.6383E+01	#NAME?	1.7125E+01	#NAME?	1.9849E+01	#NAME?	2.4889E+01	#NAME?
1.4844E+01	#NAME?	1.5338E+01	#NAME?	1.6348E+01	#NAME?	1.7088E+01	#NAME?	1.9801E+01	#NAME?	2.4817E+01	#NAME?
1.4813E+01	#NAME?	1.5306E+01	#NAME?	1.6313E+01	#NAME?	1.7050E+01	#NAME?	1.9754E+01	#NAME?	2.4745E+01	#NAME?
1.4783E+01	#NAME?	1.5275E+01	#NAME?	1.6278E+01	#NAME?	1.7013E+01	#NAME?	1.9706E+01	#NAME?	2.4674E+01	#NAME?
1.4752E+01	#NAME?	1.5243E+01	#NAME?	1.6243E+01	#NAME?	1.6976E+01	#NAME?	1.9659E+01	#NAME?	2.4603E+01	#NAME?
1.4722E+01	#NAME?	1.5211E+01	#NAME?	1.6208E+01	#NAME?	1.6939E+01	#NAME?	1.9613E+01	#NAME?	2.4533E+01	#NAME?
1.4692E+01	#NAME?	1.5179E+01	#NAME?	1.6174E+01	#NAME?	1.6902E+01	#NAME?	1.9566E+01	#NAME?	2.4463E+01	#NAME?
1.4662E+01	#NAME?	1.5148E+01	#NAME?	1.6139E+01	#NAME?	1.6865E+01	#NAME?	1.9520E+01	#NAME?	2.4393E+01	#NAME?
1.4632E+01	#NAME?	1.5116E+01	#NAME?	1.6105E+01	#NAME?	1.6828E+01	#NAME?	1.9473E+01	#NAME?	2.4324E+01	#NAME?
1.4602E+01	#NAME?	1.5085E+01	#NAME?	1.6071E+01	#NAME?	1.6792E+01	#NAME?	1.9427E+01	#NAME?	2.4255E+01	#NAME?
1.4572E+01	#NAME?	1.5054E+01	#NAME?	1.6037E+01	#NAME?	1.6756E+01	#NAME?	1.9381E+01	#NAME?	2.4187E+01	#NAME?

Arg 19	Curve 19	Flux Out (gm/yr)	Intake (mg/kg body wt./day)
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	#NAME?	#NAME?

Arg 19	Curve 19	Flux Out (gm/yr)	Intake (mg/kg body wt./day)
0.0000E+00	0.0000E+00	#NAME?	#NAME?

Arg 19	Curve 19	Flux Out (gm/yr)	Intake (mg/kg body wt./day)
0.0000E+00	0.0000E+00	#NAME?	#NAME?

Arg 19	Curve 19	Flux Out (gm/yr)	Intake (mg/kg body wt./day)
0.0000E+00	0.0000E+00	#NAME?	#NAME?

Arg 19	Curve 19	Flux Out (gm/yr)	Intake (mg/kg body wt./day)
0.0000E+00	0.0000E+00	#NAME?	#NAME?

Arg 19	Curve 19	Flux Out (gm/yr)	Intake (mg/kg body wt./day)
0.0000E+00	0.0000E+00	#NAME?	#NAME?

Arg 19	Curve 19	Flux Out (gm/yr)	Intake (mg/kg body wt./day)
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
6.3611E+02	#NAME?	#NAME?	#NAME?
3.7063E+02	#NAME?	#NAME?	#NAME?
2.8747E+02	#NAME?	#NAME?	#NAME?
2.4300E+02	#NAME?	#NAME?	#NAME?
2.1426E+02	#NAME?	#NAME?	#NAME?
1.9373E+02	#NAME?	#NAME?	#NAME?
1.7813E+02	#NAME?	#NAME?	#NAME?
1.6574E+02	#NAME?	#NAME?	#NAME?
1.5560E+02	#NAME?	#NAME?	#NAME?
1.4710E+02	#NAME?	#NAME?	#NAME?
1.3983E+02	#NAME?	#NAME?	#NAME?
1.3353E+02	#NAME?	#NAME?	#NAME?
1.2800E+02	#NAME?	#NAME?	#NAME?
1.2309E+02	#NAME?	#NAME?	#NAME?
1.1869E+02	#NAME?	#NAME?	#NAME?
1.1473E+02	#NAME?	#NAME?	#NAME?
1.1112E+02	#NAME?	#NAME?	#NAME?
1.0783E+02	#NAME?	#NAME?	#NAME?
1.0481E+02	#NAME?	#NAME?	#NAME?
1.0202E+02	#NAME?	#NAME?	#NAME?
9.9433E+01	#NAME?	#NAME?	#NAME?
9.7029E+01	#NAME?	#NAME?	#NAME?
9.4785E+01	#NAME?	#NAME?	#NAME?
9.2684E+01	#NAME?	#NAME?	#NAME?
9.0712E+01	#NAME?	#NAME?	#NAME?
8.8856E+01	#NAME?	#NAME?	#NAME?
8.7105E+01	#NAME?	#NAME?	#NAME?
8.5449E+01	#NAME?	#NAME?	#NAME?
8.3880E+01	#NAME?	#NAME?	#NAME?

Arg 19	Curve 19	Flux Out (gm/yr)	Intake (mg/kg body wt./day)
8.2390E+01	#NAME?	#NAME?	#NAME?
8.0973E+01	#NAME?	#NAME?	#NAME?
7.9624E+01	#NAME?	#NAME?	#NAME?
7.8336E+01	#NAME?	#NAME?	#NAME?
7.7106E+01	#NAME?	#NAME?	#NAME?
7.5928E+01	#NAME?	#NAME?	#NAME?
7.4800E+01	#NAME?	#NAME?	#NAME?
7.3718E+01	#NAME?	#NAME?	#NAME?
7.2679E+01	#NAME?	#NAME?	#NAME?
7.1680E+01	#NAME?	#NAME?	#NAME?
7.0718E+01	#NAME?	#NAME?	#NAME?
6.9792E+01	#NAME?	#NAME?	#NAME?
6.8899E+01	#NAME?	#NAME?	#NAME?
6.8036E+01	#NAME?	#NAME?	#NAME?
6.7204E+01	#NAME?	#NAME?	#NAME?
6.6399E+01	#NAME?	#NAME?	#NAME?
6.5620E+01	#NAME?	#NAME?	#NAME?
6.4866E+01	#NAME?	#NAME?	#NAME?
6.4135E+01	#NAME?	#NAME?	#NAME?
6.3426E+01	#NAME?	#NAME?	#NAME?
6.2739E+01	#NAME?	#NAME?	#NAME?
6.2072E+01	#NAME?	#NAME?	#NAME?
6.1424E+01	#NAME?	#NAME?	#NAME?
6.0794E+01	#NAME?	#NAME?	#NAME?
6.0181E+01	#NAME?	#NAME?	#NAME?
5.9585E+01	#NAME?	#NAME?	#NAME?
5.9005E+01	#NAME?	#NAME?	#NAME?
5.8440E+01	#NAME?	#NAME?	#NAME?
5.7889E+01	#NAME?	#NAME?	#NAME?
5.7352E+01	#NAME?	#NAME?	#NAME?
5.6829E+01	#NAME?	#NAME?	#NAME?
5.6318E+01	#NAME?	#NAME?	#NAME?
5.5819E+01	#NAME?	#NAME?	#NAME?
5.5332E+01	#NAME?	#NAME?	#NAME?
5.4856E+01	#NAME?	#NAME?	#NAME?
5.4391E+01	#NAME?	#NAME?	#NAME?
5.3937E+01	#NAME?	#NAME?	#NAME?
5.3492E+01	#NAME?	#NAME?	#NAME?
5.3057E+01	#NAME?	#NAME?	#NAME?
5.2631E+01	#NAME?	#NAME?	#NAME?
5.2215E+01	#NAME?	#NAME?	#NAME?
5.1807E+01	#NAME?	#NAME?	#NAME?
5.1407E+01	#NAME?	#NAME?	#NAME?
5.1015E+01	#NAME?	#NAME?	#NAME?
5.0631E+01	#NAME?	#NAME?	#NAME?
5.0255E+01	#NAME?	#NAME?	#NAME?
4.9886E+01	#NAME?	#NAME?	#NAME?
4.9524E+01	#NAME?	#NAME?	#NAME?
4.9168E+01	#NAME?	#NAME?	#NAME?
4.8820E+01	#NAME?	#NAME?	#NAME?
4.8477E+01	#NAME?	#NAME?	#NAME?
4.8141E+01	#NAME?	#NAME?	#NAME?

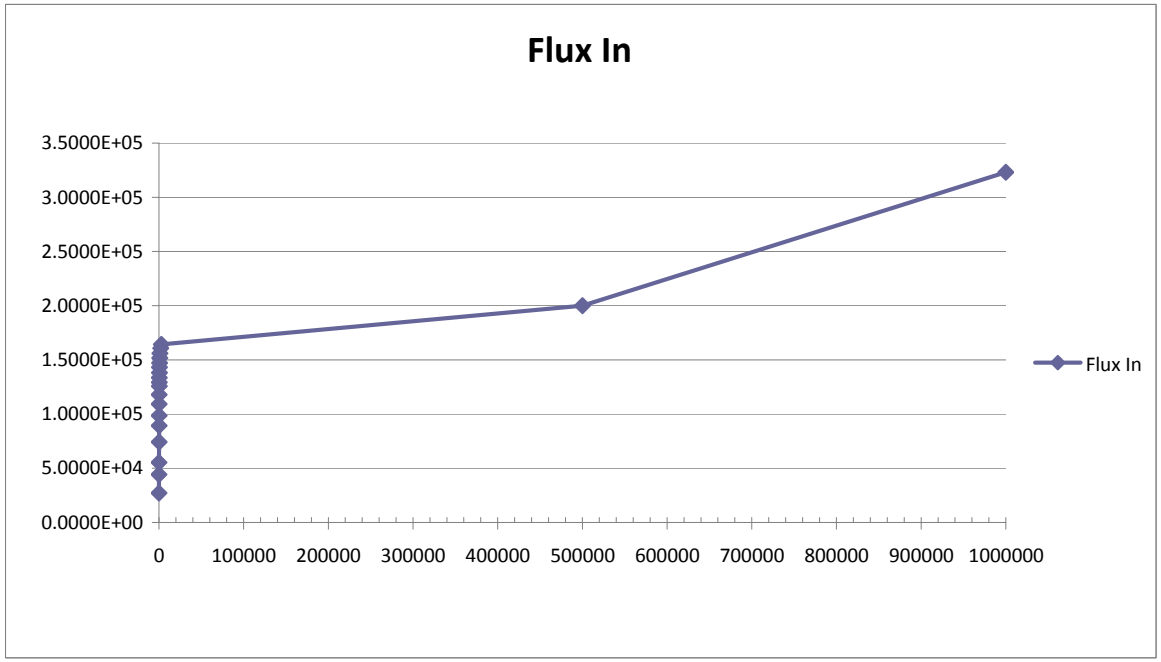
Arg 19	Curve 19	Flux Out (gm/yr)	Intake (mg/kg body wt./day)
4.7811E+01	#NAME?	#NAME?	#NAME?
4.7487E+01	#NAME?	#NAME?	#NAME?
4.7168E+01	#NAME?	#NAME?	#NAME?
4.6855E+01	#NAME?	#NAME?	#NAME?
4.6547E+01	#NAME?	#NAME?	#NAME?
4.6244E+01	#NAME?	#NAME?	#NAME?
4.5946E+01	#NAME?	#NAME?	#NAME?
4.5653E+01	#NAME?	#NAME?	#NAME?
4.5365E+01	#NAME?	#NAME?	#NAME?
4.5082E+01	#NAME?	#NAME?	#NAME?
4.4803E+01	#NAME?	#NAME?	#NAME?
4.4528E+01	#NAME?	#NAME?	#NAME?
4.4258E+01	#NAME?	#NAME?	#NAME?
4.3991E+01	#NAME?	#NAME?	#NAME?
4.3729E+01	#NAME?	#NAME?	#NAME?
4.3471E+01	#NAME?	#NAME?	#NAME?
4.3216E+01	#NAME?	#NAME?	#NAME?
4.2966E+01	#NAME?	#NAME?	#NAME?
4.2718E+01	#NAME?	#NAME?	#NAME?
4.2475E+01	#NAME?	#NAME?	#NAME?
4.2235E+01	#NAME?	#NAME?	#NAME?
4.1998E+01	#NAME?	#NAME?	#NAME?
4.1764E+01	#NAME?	#NAME?	#NAME?
4.1534E+01	#NAME?	#NAME?	#NAME?
4.1307E+01	#NAME?	#NAME?	#NAME?
4.1083E+01	#NAME?	#NAME?	#NAME?
4.0862E+01	#NAME?	#NAME?	#NAME?
4.0644E+01	#NAME?	#NAME?	#NAME?
4.0428E+01	#NAME?	#NAME?	#NAME?
4.0216E+01	#NAME?	#NAME?	#NAME?
4.0006E+01	#NAME?	#NAME?	#NAME?
3.9799E+01	#NAME?	#NAME?	#NAME?
3.9595E+01	#NAME?	#NAME?	#NAME?
3.9393E+01	#NAME?	#NAME?	#NAME?
3.9193E+01	#NAME?	#NAME?	#NAME?
3.8996E+01	#NAME?	#NAME?	#NAME?
3.8802E+01	#NAME?	#NAME?	#NAME?
3.8610E+01	#NAME?	#NAME?	#NAME?
3.8420E+01	#NAME?	#NAME?	#NAME?
3.8232E+01	#NAME?	#NAME?	#NAME?
3.8047E+01	#NAME?	#NAME?	#NAME?
3.7863E+01	#NAME?	#NAME?	#NAME?
3.7682E+01	#NAME?	#NAME?	#NAME?
3.7503E+01	#NAME?	#NAME?	#NAME?
3.7326E+01	#NAME?	#NAME?	#NAME?
3.7151E+01	#NAME?	#NAME?	#NAME?
3.6978E+01	#NAME?	#NAME?	#NAME?
3.6807E+01	#NAME?	#NAME?	#NAME?
3.6637E+01	#NAME?	#NAME?	#NAME?
3.6470E+01	#NAME?	#NAME?	#NAME?
3.6304E+01	#NAME?	#NAME?	#NAME?
3.6140E+01	#NAME?	#NAME?	#NAME?

Arg 19	Curve 19	Flux Out (gm/yr)	Intake (mg/kg body wt./day)
3.5978E+01	#NAME?	#NAME?	#NAME?
3.5818E+01	#NAME?	#NAME?	#NAME?
3.5659E+01	#NAME?	#NAME?	#NAME?
3.5502E+01	#NAME?	#NAME?	#NAME?
3.5346E+01	#NAME?	#NAME?	#NAME?
3.5193E+01	#NAME?	#NAME?	#NAME?
3.5040E+01	#NAME?	#NAME?	#NAME?
3.4890E+01	#NAME?	#NAME?	#NAME?
3.4740E+01	#NAME?	#NAME?	#NAME?
3.4592E+01	#NAME?	#NAME?	#NAME?
3.4446E+01	#NAME?	#NAME?	#NAME?
3.4301E+01	#NAME?	#NAME?	#NAME?
3.4158E+01	#NAME?	#NAME?	#NAME?
3.4016E+01	#NAME?	#NAME?	#NAME?
3.3875E+01	#NAME?	#NAME?	#NAME?
3.3736E+01	#NAME?	#NAME?	#NAME?
3.3597E+01	#NAME?	#NAME?	#NAME?
3.3461E+01	#NAME?	#NAME?	#NAME?
3.3325E+01	#NAME?	#NAME?	#NAME?
3.3191E+01	#NAME?	#NAME?	#NAME?
3.3058E+01	#NAME?	#NAME?	#NAME?
3.2926E+01	#NAME?	#NAME?	#NAME?
3.2795E+01	#NAME?	#NAME?	#NAME?
3.2666E+01	#NAME?	#NAME?	#NAME?
3.2538E+01	#NAME?	#NAME?	#NAME?
3.2411E+01	#NAME?	#NAME?	#NAME?
3.2285E+01	#NAME?	#NAME?	#NAME?
3.2160E+01	#NAME?	#NAME?	#NAME?
3.2036E+01	#NAME?	#NAME?	#NAME?
3.1913E+01	#NAME?	#NAME?	#NAME?
3.1791E+01	#NAME?	#NAME?	#NAME?
3.1671E+01	#NAME?	#NAME?	#NAME?
3.1551E+01	#NAME?	#NAME?	#NAME?

Combined TSPA Case, No Pumping, Wet Climate
Non-Radiologic Metals Transport from 18 km to Furnace Creek Springs
Contaminant: Molybdenum
Oral Ref dose =5E-03 mg/kg body wt./day
Flow Rate of Discharge for Springs 8946.6 acre-ft/yr 1.1031E+10 liters/yr

Input Curve

Time (yr)	18 km Flux	Flux In	Del R
60	2.7147E+04	2.7147E+04	
70	4.4293E+04	4.4293E+04	1.7146E+04
80	5.5366E+04	5.5366E+04	1.1073E+04
100	7.4298E+04	7.4298E+04	1.8932E+04
120	8.9301E+04	8.9301E+04	1.5002E+04
140	9.8588E+04	9.8588E+04	9.2873E+03
190	1.0930E+05	1.0930E+05	1.0716E+04
240	1.1788E+05	1.1788E+05	8.5728E+03
290	1.2574E+05	1.2574E+05	7.8584E+03
360	1.2931E+05	1.2931E+05	3.5720E+03
400	1.3359E+05	1.3359E+05	4.2864E+03
480	1.3824E+05	1.3824E+05	4.6436E+03
630	1.4324E+05	1.4324E+05	5.0008E+03
700	1.4717E+05	1.4717E+05	3.9292E+03
910	1.5181E+05	1.5181E+05	4.6436E+03
1190	1.5610E+05	1.5610E+05	4.2864E+03
2010	1.6074E+05	1.6074E+05	4.6436E+03
2760	1.6431E+05	1.6431E+05	3.5720E+03
500000	2.0006E+05	2.0006E+05	3.5743E+04
1000000	3.2315E+05	3.2315E+05	1.2310E+05



Output Curve

1.80E-03		specific discharge (m/day)
5.9658E-03	v	groundwater velocity (km/yr)
5.6000E+01	L	path length (km)
1.0000E-01	D	Dispersion Coefficient (km)
5.9658E-04	Disp	Dispersivity (sq km/yr)
1.0000E+00	K	Retardation Factor (no units)
9.3869E+03	td	arrival time of the mid-point =TL (yr)
0.0000E+00	Kd	distribution coefficient =Kd (mL/gm)
1.1000E-01	ε	porosity
2.3200E+00	ρ	bulk density of solid (gm/mL)
0.0000E+00	λ	decay constant (1/yr)
NA	t1/2	halflife (yr)

Note: When λ is set to zero this is either a stable contaminant or a member of a decay chain. Decay and growth of radionuclides in decay chain members is adjusted in a separate work sheet.

Composite Curves

Time (yrs)	Arg 1	Curve 1	Arg 2	Curve 2	Arg 3	Curve 3	Arg 4	Curve 4	Arg 5	Curve 5	Arg 6
250	8.1483E+01	#NAME?	8.3807E+01	#NAME?	8.6330E+01	#NAME?	9.2105E+01	#NAME?	9.9151E+01	#NAME?	1.0802E+02
2000	2.0648E+01	#NAME?	2.0729E+01	#NAME?	2.0811E+01	#NAME?	2.0976E+01	#NAME?	2.1144E+01	#NAME?	2.1314E+01
4000	1.0598E+01	#NAME?	1.0630E+01	#NAME?	1.0664E+01	#NAME?	1.0730E+01	#NAME?	1.0797E+01	#NAME?	1.0864E+01
6000	5.4618E+00	#NAME?	5.4823E+00	#NAME?	5.5028E+00	#NAME?	5.5439E+00	#NAME?	5.5852E+00	#NAME?	5.6266E+00
8000	1.9830E+00	#NAME?	1.9980E+00	#NAME?	2.0130E+00	#NAME?	2.0430E+00	#NAME?	2.0731E+00	#NAME?	2.1033E+00
10000	-6.7750E-01	#NAME?	-6.6559E-01	#NAME?	-6.5366E-01	#NAME?	-6.2977E-01	#NAME?	-6.0584E-01	#NAME?	-5.8186E-01
12000	-2.8534E+00	#NAME?	-2.8435E+00	#NAME?	-2.8335E+00	#NAME?	-2.8134E+00	#NAME?	-2.7934E+00	#NAME?	-2.7733E+00
14000	-4.7095E+00	#NAME?	-4.7009E+00	#NAME?	-4.6922E+00	#NAME?	-4.6749E+00	#NAME?	-4.6575E+00	#NAME?	-4.6401E+00
16000	-6.3388E+00	#NAME?	-6.3311E+00	#NAME?	-6.3234E+00	#NAME?	-6.3080E+00	#NAME?	-6.2926E+00	#NAME?	-6.2772E+00
18000	-7.7986E+00	#NAME?	-7.7916E+00	#NAME?	-7.7847E+00	#NAME?	-7.7708E+00	#NAME?	-7.7568E+00	#NAME?	-7.7429E+00
20000	-9.1268E+00	#NAME?	-9.1205E+00	#NAME?	-9.1141E+00	#NAME?	-9.1014E+00	#NAME?	-9.0886E+00	#NAME?	-9.0759E+00
22000	-1.0350E+01	#NAME?	-1.0344E+01	#NAME?	-1.0338E+01	#NAME?	-1.0326E+01	#NAME?	-1.0315E+01	#NAME?	-1.0303E+01
24000	-1.1487E+01	#NAME?	-1.1481E+01	#NAME?	-1.1476E+01	#NAME?	-1.1465E+01	#NAME?	-1.1454E+01	#NAME?	-1.1443E+01
26000	-1.2552E+01	#NAME?	-1.2546E+01	#NAME?	-1.2541E+01	#NAME?	-1.2531E+01	#NAME?	-1.2521E+01	#NAME?	-1.2510E+01
28000	-1.3555E+01	#NAME?	-1.3550E+01	#NAME?	-1.3545E+01	#NAME?	-1.3536E+01	#NAME?	-1.3526E+01	#NAME?	-1.3516E+01
30000	-1.4506E+01	#NAME?	-1.4502E+01	#NAME?	-1.4497E+01	#NAME?	-1.4488E+01	#NAME?	-1.4478E+01	#NAME?	-1.4469E+01
32000	-1.5411E+01	#NAME?	-1.5407E+01	#NAME?	-1.5403E+01	#NAME?	-1.5394E+01	#NAME?	-1.5385E+01	#NAME?	-1.5376E+01
34000	-1.6276E+01	#NAME?	-1.6272E+01	#NAME?	-1.6268E+01	#NAME?	-1.6259E+01	#NAME?	-1.6251E+01	#NAME?	-1.6242E+01
36000	-1.7105E+01	#NAME?	-1.7101E+01	#NAME?	-1.7097E+01	#NAME?	-1.7089E+01	#NAME?	-1.7081E+01	#NAME?	-1.7073E+01
38000	-1.7902E+01	#NAME?	-1.7898E+01	#NAME?	-1.7894E+01	#NAME?	-1.7887E+01	#NAME?	-1.7879E+01	#NAME?	-1.7871E+01
40000	-1.8670E+01	#NAME?	-1.8667E+01	#NAME?	-1.8663E+01	#NAME?	-1.8655E+01	#NAME?	-1.8648E+01	#NAME?	-1.8640E+01
42000	-1.9412E+01	#NAME?	-1.9409E+01	#NAME?	-1.9405E+01	#NAME?	-1.9398E+01	#NAME?	-1.9391E+01	#NAME?	-1.9383E+01
44000	-2.0131E+01	#NAME?	-2.0127E+01	#NAME?	-2.0124E+01	#NAME?	-2.0117E+01	#NAME?	-2.0110E+01	#NAME?	-2.0102E+01
46000	-2.0827E+01	#NAME?	-2.0824E+01	#NAME?	-2.0820E+01	#NAME?	-2.0814E+01	#NAME?	-2.0807E+01	#NAME?	-2.0800E+01
48000	-2.1504E+01	#NAME?	-2.1500E+01	#NAME?	-2.1497E+01	#NAME?	-2.1490E+01	#NAME?	-2.1484E+01	#NAME?	-2.1477E+01
50000	-2.2162E+01	#NAME?	-2.2158E+01	#NAME?	-2.2155E+01	#NAME?	-2.2149E+01	#NAME?	-2.2142E+01	#NAME?	-2.2136E+01
52000	-2.2803E+01	#NAME?	-2.2799E+01	#NAME?	-2.2796E+01	#NAME?	-2.2790E+01	#NAME?	-2.2784E+01	#NAME?	-2.2777E+01
54000	-2.3427E+01	#NAME?	-2.3424E+01	#NAME?	-2.3421E+01	#NAME?	-2.3415E+01	#NAME?	-2.3409E+01	#NAME?	-2.3403E+01
56000	-2.4038E+01	#NAME?	-2.4035E+01	#NAME?	-2.4032E+01	#NAME?	-2.4025E+01	#NAME?	-2.4019E+01	#NAME?	-2.4013E+01
58000	-2.4634E+01	#NAME?	-2.4631E+01	#NAME?	-2.4628E+01	#NAME?	-2.4622E+01	#NAME?	-2.4616E+01	#NAME?	-2.4610E+01
60000	-2.5217E+01	#NAME?	-2.5214E+01	#NAME?	-2.5211E+01	#NAME?	-2.5205E+01	#NAME?	-2.5200E+01	#NAME?	-2.5194E+01
62000	-2.5788E+01	#NAME?	-2.5785E+01	#NAME?	-2.5782E+01	#NAME?	-2.5777E+01	#NAME?	-2.5771E+01	#NAME?	-2.5765E+01
64000	-2.6347E+01	#NAME?	-2.6345E+01	#NAME?	-2.6342E+01	#NAME?	-2.6336E+01	#NAME?	-2.6331E+01	#NAME?	-2.6325E+01
66000	-2.6896E+01	#NAME?	-2.6893E+01	#NAME?	-2.6890E+01	#NAME?	-2.6885E+01	#NAME?	-2.6880E+01	#NAME?	-2.6874E+01
68000	-2.7434E+01	#NAME?	-2.7431E+01	#NAME?	-2.7429E+01	#NAME?	-2.7423E+01	#NAME?	-2.7418E+01	#NAME?	-2.7413E+01
70000	-2.7963E+01	#NAME?	-2.7960E+01	#NAME?	-2.7957E+01	#NAME?	-2.7952E+01	#NAME?	-2.7947E+01	#NAME?	-2.7942E+01
72000	-2.8482E+01	#NAME?	-2.8479E+01	#NAME?	-2.8477E+01	#NAME?	-2.8471E+01	#NAME?	-2.8466E+01	#NAME?	-2.8461E+01
74000	-2.8992E+01	#NAME?	-2.8990E+01	#NAME?	-2.8987E+01	#NAME?	-2.8982E+01	#NAME?	-2.8977E+01	#NAME?	-2.8972E+01
76000	-2.9494E+01	#NAME?	-2.9492E+01	#NAME?	-2.9489E+01	#NAME?	-2.9484E+01	#NAME?	-2.9479E+01	#NAME?	-2.9474E+01
78000	-2.9988E+01	#NAME?	-2.9986E+01	#NAME?	-2.9983E+01	#NAME?	-2.9978E+01	#NAME?	-2.9973E+01	#NAME?	-2.9969E+01
80000	-3.0475E+01	#NAME?	-3.0472E+01	#NAME?	-3.0470E+01	#NAME?	-3.0465E+01	#NAME?	-3.0460E+01	#NAME?	-3.0455E+01
82000	-3.0954E+01	#NAME?	-3.0951E+01	#NAME?	-3.0949E+01	#NAME?	-3.0944E+01	#NAME?	-3.0939E+01	#NAME?	-3.0935E+01
84000	-3.1426E+01	#NAME?	-3.1423E+01	#NAME?	-3.1421E+01	#NAME?	-3.1416E+01	#NAME?	-3.1412E+01	#NAME?	-3.1407E+01
86000	-3.1891E+01	#NAME?	-3.1889E+01	#NAME?	-3.1886E+01	#NAME?	-3.1882E+01	#NAME?	-3.1877E+01	#NAME?	-3.1872E+01
88000	-3.2350E+01	#NAME?	-3.2348E+01	#NAME?	-3.2345E+01	#NAME?	-3.2341E+01	#NAME?	-3.2336E+01	#NAME?	-3.2332E+01
90000	-3.2803E+01	#NAME?	-3.2800E+01	#NAME?	-3.2798E+01	#NAME?	-3.2794E+01	#NAME?	-3.2789E+01	#NAME?	-3.2785E+01
92000	-3.3249E+01	#NAME?	-3.3247E+01	#NAME?	-3.3245E+01	#NAME?	-3.3241E+01	#NAME?	-3.3236E+01	#NAME?	-3.3232E+01
94000	-3.3690E+01	#NAME?	-3.3688E+01	#NAME?	-3.3686E+01	#NAME?	-3.3682E+01	#NAME?	-3.3677E+01	#NAME?	-3.3673E+01
96000	-3.4126E+01	#NAME?	-3.4124E+01	#NAME?	-3.4122E+01	#NAME?	-3.4117E+01	#NAME?	-3.4113E+01	#NAME?	-3.4109E+01
98000	-3.4556E+01	#NAME?	-3.4554E+01	#NAME?	-3.4552E+01	#NAME?	-3.4548E+01	#NAME?	-3.4543E+01	#NAME?	-3.4539E+01
100000	-3.4981E+01	#NAME?	-3.4979E+01	#NAME?	-3.4977E+01	#NAME?	-3.4973E+01	#NAME?	-3.4969E+01	#NAME?	-3.4964E+01
102000	-3.5401E+01	#NAME?	-3.5399E+01	#NAME?	-3.5397E+01	#NAME?	-3.5393E+01	#NAME?	-3.5389E+01	#NAME?	-3.5385E+01

Time (yrs)	Arg 1	Curve 1	Arg 2	Curve 2	Arg 3	Curve 3	Arg 4	Curve 4	Arg 5	Curve 5	Arg 6
104000	-3.5817E+01	#NAME?	-3.5815E+01	#NAME?	-3.5813E+01	#NAME?	-3.5809E+01	#NAME?	-3.5804E+01	#NAME?	-3.5800E+01
106000	-3.6228E+01	#NAME?	-3.6226E+01	#NAME?	-3.6223E+01	#NAME?	-3.6219E+01	#NAME?	-3.6215E+01	#NAME?	-3.6211E+01
108000	-3.6634E+01	#NAME?	-3.6632E+01	#NAME?	-3.6630E+01	#NAME?	-3.6626E+01	#NAME?	-3.6622E+01	#NAME?	-3.6618E+01
110000	-3.7036E+01	#NAME?	-3.7034E+01	#NAME?	-3.7032E+01	#NAME?	-3.7028E+01	#NAME?	-3.7024E+01	#NAME?	-3.7020E+01
112000	-3.7433E+01	#NAME?	-3.7431E+01	#NAME?	-3.7429E+01	#NAME?	-3.7425E+01	#NAME?	-3.7422E+01	#NAME?	-3.7418E+01
114000	-3.7827E+01	#NAME?	-3.7825E+01	#NAME?	-3.7823E+01	#NAME?	-3.7819E+01	#NAME?	-3.7815E+01	#NAME?	-3.7811E+01
116000	-3.8217E+01	#NAME?	-3.8215E+01	#NAME?	-3.8213E+01	#NAME?	-3.8209E+01	#NAME?	-3.8205E+01	#NAME?	-3.8201E+01
118000	-3.8602E+01	#NAME?	-3.8600E+01	#NAME?	-3.8599E+01	#NAME?	-3.8595E+01	#NAME?	-3.8591E+01	#NAME?	-3.8587E+01
120000	-3.8984E+01	#NAME?	-3.8983E+01	#NAME?	-3.8981E+01	#NAME?	-3.8977E+01	#NAME?	-3.8973E+01	#NAME?	-3.8969E+01
122000	-3.9363E+01	#NAME?	-3.9361E+01	#NAME?	-3.9359E+01	#NAME?	-3.9355E+01	#NAME?	-3.9352E+01	#NAME?	-3.9348E+01
124000	-3.9738E+01	#NAME?	-3.9736E+01	#NAME?	-3.9734E+01	#NAME?	-3.9730E+01	#NAME?	-3.9727E+01	#NAME?	-3.9723E+01
126000	-4.0109E+01	#NAME?	-4.0107E+01	#NAME?	-4.0106E+01	#NAME?	-4.0102E+01	#NAME?	-4.0098E+01	#NAME?	-4.0094E+01
128000	-4.0477E+01	#NAME?	-4.0476E+01	#NAME?	-4.0474E+01	#NAME?	-4.0470E+01	#NAME?	-4.0466E+01	#NAME?	-4.0463E+01
130000	-4.0842E+01	#NAME?	-4.0840E+01	#NAME?	-4.0839E+01	#NAME?	-4.0835E+01	#NAME?	-4.0831E+01	#NAME?	-4.0828E+01
132000	-4.1204E+01	#NAME?	-4.1202E+01	#NAME?	-4.1200E+01	#NAME?	-4.1197E+01	#NAME?	-4.1193E+01	#NAME?	-4.1190E+01
134000	-4.1563E+01	#NAME?	-4.1561E+01	#NAME?	-4.1559E+01	#NAME?	-4.1555E+01	#NAME?	-4.1552E+01	#NAME?	-4.1548E+01
136000	-4.1918E+01	#NAME?	-4.1916E+01	#NAME?	-4.1915E+01	#NAME?	-4.1911E+01	#NAME?	-4.1908E+01	#NAME?	-4.1904E+01
138000	-4.2271E+01	#NAME?	-4.2269E+01	#NAME?	-4.2267E+01	#NAME?	-4.2264E+01	#NAME?	-4.2260E+01	#NAME?	-4.2257E+01
140000	-4.2621E+01	#NAME?	-4.2619E+01	#NAME?	-4.2617E+01	#NAME?	-4.2614E+01	#NAME?	-4.2610E+01	#NAME?	-4.2607E+01
142000	-4.2968E+01	#NAME?	-4.2966E+01	#NAME?	-4.2964E+01	#NAME?	-4.2961E+01	#NAME?	-4.2957E+01	#NAME?	-4.2954E+01
144000	-4.3312E+01	#NAME?	-4.3310E+01	#NAME?	-4.3308E+01	#NAME?	-4.3305E+01	#NAME?	-4.3301E+01	#NAME?	-4.3298E+01
146000	-4.3653E+01	#NAME?	-4.3652E+01	#NAME?	-4.3650E+01	#NAME?	-4.3647E+01	#NAME?	-4.3643E+01	#NAME?	-4.3640E+01
148000	-4.3992E+01	#NAME?	-4.3991E+01	#NAME?	-4.3989E+01	#NAME?	-4.3986E+01	#NAME?	-4.3982E+01	#NAME?	-4.3979E+01
150000	-4.4329E+01	#NAME?	-4.4327E+01	#NAME?	-4.4325E+01	#NAME?	-4.4322E+01	#NAME?	-4.4319E+01	#NAME?	-4.4315E+01
152000	-4.4663E+01	#NAME?	-4.4661E+01	#NAME?	-4.4659E+01	#NAME?	-4.4656E+01	#NAME?	-4.4653E+01	#NAME?	-4.4649E+01
154000	-4.4994E+01	#NAME?	-4.4992E+01	#NAME?	-4.4991E+01	#NAME?	-4.4987E+01	#NAME?	-4.4984E+01	#NAME?	-4.4981E+01
156000	-4.5323E+01	#NAME?	-4.5321E+01	#NAME?	-4.5320E+01	#NAME?	-4.5316E+01	#NAME?	-4.5313E+01	#NAME?	-4.5310E+01
158000	-4.5650E+01	#NAME?	-4.5648E+01	#NAME?	-4.5647E+01	#NAME?	-4.5643E+01	#NAME?	-4.5640E+01	#NAME?	-4.5637E+01
160000	-4.5974E+01	#NAME?	-4.5973E+01	#NAME?	-4.5971E+01	#NAME?	-4.5968E+01	#NAME?	-4.5964E+01	#NAME?	-4.5961E+01
162000	-4.6296E+01	#NAME?	-4.6295E+01	#NAME?	-4.6293E+01	#NAME?	-4.6290E+01	#NAME?	-4.6287E+01	#NAME?	-4.6284E+01
164000	-4.6616E+01	#NAME?	-4.6615E+01	#NAME?	-4.6613E+01	#NAME?	-4.6610E+01	#NAME?	-4.6607E+01	#NAME?	-4.6604E+01
166000	-4.6934E+01	#NAME?	-4.6933E+01	#NAME?	-4.6931E+01	#NAME?	-4.6928E+01	#NAME?	-4.6925E+01	#NAME?	-4.6921E+01
168000	-4.7250E+01	#NAME?	-4.7248E+01	#NAME?	-4.7247E+01	#NAME?	-4.7244E+01	#NAME?	-4.7240E+01	#NAME?	-4.7237E+01
170000	-4.7563E+01	#NAME?	-4.7562E+01	#NAME?	-4.7560E+01	#NAME?	-4.7557E+01	#NAME?	-4.7554E+01	#NAME?	-4.7551E+01
172000	-4.7875E+01	#NAME?	-4.7874E+01	#NAME?	-4.7872E+01	#NAME?	-4.7869E+01	#NAME?	-4.7866E+01	#NAME?	-4.7863E+01
174000	-4.8185E+01	#NAME?	-4.8183E+01	#NAME?	-4.8182E+01	#NAME?	-4.8179E+01	#NAME?	-4.8175E+01	#NAME?	-4.8172E+01
176000	-4.8492E+01	#NAME?	-4.8491E+01	#NAME?	-4.8489E+01	#NAME?	-4.8486E+01	#NAME?	-4.8483E+01	#NAME?	-4.8480E+01
178000	-4.8798E+01	#NAME?	-4.8797E+01	#NAME?	-4.8795E+01	#NAME?	-4.8792E+01	#NAME?	-4.8789E+01	#NAME?	-4.8786E+01
180000	-4.9102E+01	#NAME?	-4.9100E+01	#NAME?	-4.9099E+01	#NAME?	-4.9096E+01	#NAME?	-4.9093E+01	#NAME?	-4.9090E+01
182000	-4.9404E+01	#NAME?	-4.9402E+01	#NAME?	-4.9401E+01	#NAME?	-4.9398E+01	#NAME?	-4.9395E+01	#NAME?	-4.9392E+01
184000	-4.9704E+01	#NAME?	-4.9703E+01	#NAME?	-4.9701E+01	#NAME?	-4.9698E+01	#NAME?	-4.9695E+01	#NAME?	-4.9692E+01
186000	-5.0003E+01	#NAME?	-5.0001E+01	#NAME?	-5.0000E+01	#NAME?	-4.9997E+01	#NAME?	-4.9994E+01	#NAME?	-4.9991E+01
188000	-5.0299E+01	#NAME?	-5.0298E+01	#NAME?	-5.0296E+01	#NAME?	-5.0293E+01	#NAME?	-5.0290E+01	#NAME?	-5.0287E+01
190000	-5.0594E+01	#NAME?	-5.0593E+01	#NAME?	-5.0591E+01	#NAME?	-5.0588E+01	#NAME?	-5.0585E+01	#NAME?	-5.0582E+01
192000	-5.0887E+01	#NAME?	-5.0886E+01	#NAME?	-5.0884E+01	#NAME?	-5.0881E+01	#NAME?	-5.0879E+01	#NAME?	-5.0876E+01
194000	-5.1179E+01	#NAME?	-5.1177E+01	#NAME?	-5.1176E+01	#NAME?	-5.1173E+01	#NAME?	-5.1170E+01	#NAME?	-5.1167E+01
196000	-5.1469E+01	#NAME?	-5.1467E+01	#NAME?	-5.1466E+01	#NAME?	-5.1463E+01	#NAME?	-5.1460E+01	#NAME?	-5.1457E+01
198000	-5.1757E+01	#NAME?	-5.1756E+01	#NAME?	-5.1754E+01	#NAME?	-5.1751E+01	#NAME?	-5.1748E+01	#NAME?	-5.1746E+01
200000	-5.2044E+01	#NAME?	-5.2042E+01	#NAME?	-5.2041E+01	#NAME?	-5.2038E+01	#NAME?	-5.2035E+01	#NAME?	-5.2032E+01
202000	-5.2329E+01	#NAME?	-5.2328E+01	#NAME?	-5.2326E+01	#NAME?	-5.2323E+01	#NAME?	-5.2320E+01	#NAME?	-5.2318E+01
204000	-5.2613E+01	#NAME?	-5.2611E+01	#NAME?	-5.2610E+01	#NAME?	-5.2607E+01	#NAME?	-5.2604E+01	#NAME?	-5.2601E+01
206000	-5.2895E+01	#NAME?	-5.2893E+01	#NAME?	-5.2892E+01	#NAME?	-5.2889E+01	#NAME?	-5.2886E+01	#NAME?	-5.2883E+01

Time (yrs)	Arg 1	Curve 1	Arg 2	Curve 2	Arg 3	Curve 3	Arg 4	Curve 4	Arg 5	Curve 5	Arg 6
208000	-5.3175E+01	#NAME?	-5.3174E+01	#NAME?	-5.3173E+01	#NAME?	-5.3170E+01	#NAME?	-5.3167E+01	#NAME?	-5.3164E+01
210000	-5.3455E+01	#NAME?	-5.3453E+01	#NAME?	-5.3452E+01	#NAME?	-5.3449E+01	#NAME?	-5.3446E+01	#NAME?	-5.3443E+01
212000	-5.3732E+01	#NAME?	-5.3731E+01	#NAME?	-5.3730E+01	#NAME?	-5.3727E+01	#NAME?	-5.3724E+01	#NAME?	-5.3721E+01
214000	-5.4009E+01	#NAME?	-5.4007E+01	#NAME?	-5.4006E+01	#NAME?	-5.4003E+01	#NAME?	-5.4000E+01	#NAME?	-5.3998E+01
216000	-5.4284E+01	#NAME?	-5.4282E+01	#NAME?	-5.4281E+01	#NAME?	-5.4278E+01	#NAME?	-5.4275E+01	#NAME?	-5.4273E+01
218000	-5.4557E+01	#NAME?	-5.4556E+01	#NAME?	-5.4554E+01	#NAME?	-5.4552E+01	#NAME?	-5.4549E+01	#NAME?	-5.4546E+01
220000	-5.4829E+01	#NAME?	-5.4828E+01	#NAME?	-5.4827E+01	#NAME?	-5.4824E+01	#NAME?	-5.4821E+01	#NAME?	-5.4818E+01
222000	-5.5100E+01	#NAME?	-5.5099E+01	#NAME?	-5.5097E+01	#NAME?	-5.5095E+01	#NAME?	-5.5092E+01	#NAME?	-5.5089E+01
224000	-5.5370E+01	#NAME?	-5.5368E+01	#NAME?	-5.5367E+01	#NAME?	-5.5364E+01	#NAME?	-5.5362E+01	#NAME?	-5.5359E+01
226000	-5.5638E+01	#NAME?	-5.5637E+01	#NAME?	-5.5635E+01	#NAME?	-5.5633E+01	#NAME?	-5.5630E+01	#NAME?	-5.5627E+01
228000	-5.5905E+01	#NAME?	-5.5904E+01	#NAME?	-5.5902E+01	#NAME?	-5.5900E+01	#NAME?	-5.5897E+01	#NAME?	-5.5894E+01
230000	-5.6171E+01	#NAME?	-5.6169E+01	#NAME?	-5.6168E+01	#NAME?	-5.6165E+01	#NAME?	-5.6163E+01	#NAME?	-5.6160E+01
232000	-5.6435E+01	#NAME?	-5.6434E+01	#NAME?	-5.6432E+01	#NAME?	-5.6430E+01	#NAME?	-5.6427E+01	#NAME?	-5.6424E+01
234000	-5.6698E+01	#NAME?	-5.6697E+01	#NAME?	-5.6696E+01	#NAME?	-5.6693E+01	#NAME?	-5.6690E+01	#NAME?	-5.6688E+01
236000	-5.6960E+01	#NAME?	-5.6959E+01	#NAME?	-5.6958E+01	#NAME?	-5.6955E+01	#NAME?	-5.6952E+01	#NAME?	-5.6950E+01
238000	-5.7221E+01	#NAME?	-5.7220E+01	#NAME?	-5.7219E+01	#NAME?	-5.7216E+01	#NAME?	-5.7213E+01	#NAME?	-5.7211E+01
240000	-5.7481E+01	#NAME?	-5.7479E+01	#NAME?	-5.7478E+01	#NAME?	-5.7476E+01	#NAME?	-5.7473E+01	#NAME?	-5.7470E+01
242000	-5.7739E+01	#NAME?	-5.7738E+01	#NAME?	-5.7737E+01	#NAME?	-5.7734E+01	#NAME?	-5.7732E+01	#NAME?	-5.7729E+01
244000	-5.7997E+01	#NAME?	-5.7995E+01	#NAME?	-5.7994E+01	#NAME?	-5.7991E+01	#NAME?	-5.7989E+01	#NAME?	-5.7986E+01
246000	-5.8253E+01	#NAME?	-5.8252E+01	#NAME?	-5.8250E+01	#NAME?	-5.8248E+01	#NAME?	-5.8245E+01	#NAME?	-5.8243E+01
248000	-5.8508E+01	#NAME?	-5.8507E+01	#NAME?	-5.8505E+01	#NAME?	-5.8503E+01	#NAME?	-5.8500E+01	#NAME?	-5.8498E+01
250000	-5.8762E+01	#NAME?	-5.8761E+01	#NAME?	-5.8759E+01	#NAME?	-5.8757E+01	#NAME?	-5.8754E+01	#NAME?	-5.8752E+01
252000	-5.9015E+01	#NAME?	-5.9014E+01	#NAME?	-5.9012E+01	#NAME?	-5.9010E+01	#NAME?	-5.9007E+01	#NAME?	-5.9005E+01
254000	-5.9267E+01	#NAME?	-5.9265E+01	#NAME?	-5.9264E+01	#NAME?	-5.9262E+01	#NAME?	-5.9259E+01	#NAME?	-5.9257E+01
256000	-5.9517E+01	#NAME?	-5.9516E+01	#NAME?	-5.9515E+01	#NAME?	-5.9512E+01	#NAME?	-5.9510E+01	#NAME?	-5.9507E+01
258000	-5.9767E+01	#NAME?	-5.9766E+01	#NAME?	-5.9765E+01	#NAME?	-5.9762E+01	#NAME?	-5.9760E+01	#NAME?	-5.9757E+01
260000	-6.0016E+01	#NAME?	-6.0015E+01	#NAME?	-6.0013E+01	#NAME?	-6.0011E+01	#NAME?	-6.0008E+01	#NAME?	-6.0006E+01
262000	-6.0264E+01	#NAME?	-6.0262E+01	#NAME?	-6.0261E+01	#NAME?	-6.0259E+01	#NAME?	-6.0256E+01	#NAME?	-6.0254E+01
264000	-6.0510E+01	#NAME?	-6.0509E+01	#NAME?	-6.0508E+01	#NAME?	-6.0505E+01	#NAME?	-6.0503E+01	#NAME?	-6.0500E+01
266000	-6.0756E+01	#NAME?	-6.0755E+01	#NAME?	-6.0753E+01	#NAME?	-6.0751E+01	#NAME?	-6.0749E+01	#NAME?	-6.0746E+01
268000	-6.1001E+01	#NAME?	-6.0999E+01	#NAME?	-6.0998E+01	#NAME?	-6.0996E+01	#NAME?	-6.0993E+01	#NAME?	-6.0991E+01
270000	-6.1244E+01	#NAME?	-6.1243E+01	#NAME?	-6.1242E+01	#NAME?	-6.1239E+01	#NAME?	-6.1237E+01	#NAME?	-6.1235E+01
272000	-6.1487E+01	#NAME?	-6.1486E+01	#NAME?	-6.1485E+01	#NAME?	-6.1482E+01	#NAME?	-6.1480E+01	#NAME?	-6.1477E+01
274000	-6.1729E+01	#NAME?	-6.1728E+01	#NAME?	-6.1726E+01	#NAME?	-6.1724E+01	#NAME?	-6.1722E+01	#NAME?	-6.1719E+01
276000	-6.1970E+01	#NAME?	-6.1968E+01	#NAME?	-6.1967E+01	#NAME?	-6.1965E+01	#NAME?	-6.1962E+01	#NAME?	-6.1960E+01
278000	-6.2210E+01	#NAME?	-6.2208E+01	#NAME?	-6.2207E+01	#NAME?	-6.2205E+01	#NAME?	-6.2202E+01	#NAME?	-6.2200E+01
280000	-6.2449E+01	#NAME?	-6.2447E+01	#NAME?	-6.2446E+01	#NAME?	-6.2444E+01	#NAME?	-6.2441E+01	#NAME?	-6.2439E+01
282000	-6.2687E+01	#NAME?	-6.2686E+01	#NAME?	-6.2684E+01	#NAME?	-6.2682E+01	#NAME?	-6.2680E+01	#NAME?	-6.2677E+01
284000	-6.2924E+01	#NAME?	-6.2923E+01	#NAME?	-6.2922E+01	#NAME?	-6.2919E+01	#NAME?	-6.2917E+01	#NAME?	-6.2914E+01
286000	-6.3160E+01	#NAME?	-6.3159E+01	#NAME?	-6.3158E+01	#NAME?	-6.3156E+01	#NAME?	-6.3153E+01	#NAME?	-6.3151E+01
288000	-6.3396E+01	#NAME?	-6.3395E+01	#NAME?	-6.3393E+01	#NAME?	-6.3391E+01	#NAME?	-6.3389E+01	#NAME?	-6.3386E+01
290000	-6.3630E+01	#NAME?	-6.3629E+01	#NAME?	-6.3628E+01	#NAME?	-6.3626E+01	#NAME?	-6.3623E+01	#NAME?	-6.3621E+01
292000	-6.3864E+01	#NAME?	-6.3863E+01	#NAME?	-6.3862E+01	#NAME?	-6.3859E+01	#NAME?	-6.3857E+01	#NAME?	-6.3855E+01
294000	-6.4097E+01	#NAME?	-6.4096E+01	#NAME?	-6.4095E+01	#NAME?	-6.4092E+01	#NAME?	-6.4090E+01	#NAME?	-6.4088E+01
296000	-6.4329E+01	#NAME?	-6.4328E+01	#NAME?	-6.4327E+01	#NAME?	-6.4324E+01	#NAME?	-6.4322E+01	#NAME?	-6.4320E+01
298000	-6.4560E+01	#NAME?	-6.4559E+01	#NAME?	-6.4558E+01	#NAME?	-6.4555E+01	#NAME?	-6.4553E+01	#NAME?	-6.4551E+01
300000	-6.4790E+01	#NAME?	-6.4789E+01	#NAME?	-6.4788E+01	#NAME?	-6.4786E+01	#NAME?	-6.4784E+01	#NAME?	-6.4781E+01
302000	-6.5020E+01	#NAME?	-6.5019E+01	#NAME?	-6.5018E+01	#NAME?	-6.5015E+01	#NAME?	-6.5013E+01	#NAME?	-6.5011E+01
304000	-6.5249E+01	#NAME?	-6.5248E+01	#NAME?	-6.5247E+01	#NAME?	-6.5244E+01	#NAME?	-6.5242E+01	#NAME?	-6.5240E+01
306000	-6.5477E+01	#NAME?	-6.5476E+01	#NAME?	-6.5474E+01	#NAME?	-6.5472E+01	#NAME?	-6.5470E+01	#NAME?	-6.5468E+01
308000	-6.5704E+01	#NAME?	-6.5703E+01	#NAME?	-6.5702E+01	#NAME?	-6.5699E+01	#NAME?	-6.5697E+01	#NAME?	-6.5695E+01
310000	-6.5930E+01	#NAME?	-6.5929E+01	#NAME?	-6.5928E+01	#NAME?	-6.5926E+01	#NAME?	-6.5924E+01	#NAME?	-6.5921E+01

Time (yrs)	Arg 1	Curve 1	Arg 2	Curve 2	Arg 3	Curve 3	Arg 4	Curve 4	Arg 5	Curve 5	Arg 6
312000	-6.6156E+01	#NAME?	-6.6155E+01	#NAME?	-6.6154E+01	#NAME?	-6.6151E+01	#NAME?	-6.6149E+01	#NAME?	-6.6147E+01
314000	-6.6381E+01	#NAME?	-6.6380E+01	#NAME?	-6.6379E+01	#NAME?	-6.6376E+01	#NAME?	-6.6374E+01	#NAME?	-6.6372E+01
316000	-6.6605E+01	#NAME?	-6.6604E+01	#NAME?	-6.6603E+01	#NAME?	-6.6600E+01	#NAME?	-6.6598E+01	#NAME?	-6.6596E+01
318000	-6.6828E+01	#NAME?	-6.6827E+01	#NAME?	-6.6826E+01	#NAME?	-6.6824E+01	#NAME?	-6.6822E+01	#NAME?	-6.6819E+01
320000	-6.7051E+01	#NAME?	-6.7050E+01	#NAME?	-6.7049E+01	#NAME?	-6.7046E+01	#NAME?	-6.7044E+01	#NAME?	-6.7042E+01
322000	-6.7273E+01	#NAME?	-6.7272E+01	#NAME?	-6.7271E+01	#NAME?	-6.7268E+01	#NAME?	-6.7266E+01	#NAME?	-6.7264E+01
324000	-6.7494E+01	#NAME?	-6.7493E+01	#NAME?	-6.7492E+01	#NAME?	-6.7489E+01	#NAME?	-6.7487E+01	#NAME?	-6.7485E+01
326000	-6.7714E+01	#NAME?	-6.7713E+01	#NAME?	-6.7712E+01	#NAME?	-6.7710E+01	#NAME?	-6.7708E+01	#NAME?	-6.7706E+01
328000	-6.7934E+01	#NAME?	-6.7933E+01	#NAME?	-6.7932E+01	#NAME?	-6.7930E+01	#NAME?	-6.7927E+01	#NAME?	-6.7925E+01
330000	-6.8153E+01	#NAME?	-6.8152E+01	#NAME?	-6.8151E+01	#NAME?	-6.8149E+01	#NAME?	-6.8146E+01	#NAME?	-6.8144E+01
332000	-6.8371E+01	#NAME?	-6.8370E+01	#NAME?	-6.8369E+01	#NAME?	-6.8367E+01	#NAME?	-6.8365E+01	#NAME?	-6.8363E+01
334000	-6.8589E+01	#NAME?	-6.8588E+01	#NAME?	-6.8587E+01	#NAME?	-6.8585E+01	#NAME?	-6.8582E+01	#NAME?	-6.8580E+01
336000	-6.8806E+01	#NAME?	-6.8805E+01	#NAME?	-6.8804E+01	#NAME?	-6.8802E+01	#NAME?	-6.8799E+01	#NAME?	-6.8797E+01
338000	-6.9022E+01	#NAME?	-6.9021E+01	#NAME?	-6.9020E+01	#NAME?	-6.9018E+01	#NAME?	-6.9016E+01	#NAME?	-6.9014E+01
340000	-6.9238E+01	#NAME?	-6.9237E+01	#NAME?	-6.9236E+01	#NAME?	-6.9233E+01	#NAME?	-6.9231E+01	#NAME?	-6.9229E+01
342000	-6.9453E+01	#NAME?	-6.9452E+01	#NAME?	-6.9451E+01	#NAME?	-6.9448E+01	#NAME?	-6.9446E+01	#NAME?	-6.9444E+01
344000	-6.9667E+01	#NAME?	-6.9666E+01	#NAME?	-6.9665E+01	#NAME?	-6.9663E+01	#NAME?	-6.9660E+01	#NAME?	-6.9658E+01
346000	-6.9881E+01	#NAME?	-6.9879E+01	#NAME?	-6.9878E+01	#NAME?	-6.9876E+01	#NAME?	-6.9874E+01	#NAME?	-6.9872E+01
348000	-7.0093E+01	#NAME?	-7.0092E+01	#NAME?	-7.0091E+01	#NAME?	-7.0089E+01	#NAME?	-7.0087E+01	#NAME?	-7.0085E+01
350000	-7.0306E+01	#NAME?	-7.0305E+01	#NAME?	-7.0304E+01	#NAME?	-7.0302E+01	#NAME?	-7.0299E+01	#NAME?	-7.0297E+01
352000	-7.0517E+01	#NAME?	-7.0516E+01	#NAME?	-7.0515E+01	#NAME?	-7.0513E+01	#NAME?	-7.0511E+01	#NAME?	-7.0509E+01
354000	-7.0728E+01	#NAME?	-7.0727E+01	#NAME?	-7.0726E+01	#NAME?	-7.0724E+01	#NAME?	-7.0722E+01	#NAME?	-7.0720E+01
356000	-7.0939E+01	#NAME?	-7.0938E+01	#NAME?	-7.0937E+01	#NAME?	-7.0935E+01	#NAME?	-7.0933E+01	#NAME?	-7.0930E+01
358000	-7.1149E+01	#NAME?	-7.1148E+01	#NAME?	-7.1147E+01	#NAME?	-7.1144E+01	#NAME?	-7.1142E+01	#NAME?	-7.1140E+01
360000	-7.1358E+01	#NAME?	-7.1357E+01	#NAME?	-7.1356E+01	#NAME?	-7.1354E+01	#NAME?	-7.1352E+01	#NAME?	-7.1349E+01
362000	-7.1566E+01	#NAME?	-7.1565E+01	#NAME?	-7.1564E+01	#NAME?	-7.1562E+01	#NAME?	-7.1560E+01	#NAME?	-7.1558E+01
364000	-7.1774E+01	#NAME?	-7.1773E+01	#NAME?	-7.1772E+01	#NAME?	-7.1770E+01	#NAME?	-7.1768E+01	#NAME?	-7.1766E+01
366000	-7.1982E+01	#NAME?	-7.1981E+01	#NAME?	-7.1980E+01	#NAME?	-7.1978E+01	#NAME?	-7.1975E+01	#NAME?	-7.1973E+01
368000	-7.2188E+01	#NAME?	-7.2187E+01	#NAME?	-7.2186E+01	#NAME?	-7.2184E+01	#NAME?	-7.2182E+01	#NAME?	-7.2180E+01
370000	-7.2395E+01	#NAME?	-7.2394E+01	#NAME?	-7.2393E+01	#NAME?	-7.2391E+01	#NAME?	-7.2388E+01	#NAME?	-7.2386E+01
372000	-7.2600E+01	#NAME?	-7.2599E+01	#NAME?	-7.2598E+01	#NAME?	-7.2596E+01	#NAME?	-7.2594E+01	#NAME?	-7.2592E+01
374000	-7.2805E+01	#NAME?	-7.2804E+01	#NAME?	-7.2803E+01	#NAME?	-7.2801E+01	#NAME?	-7.2799E+01	#NAME?	-7.2797E+01
376000	-7.3010E+01	#NAME?	-7.3009E+01	#NAME?	-7.3008E+01	#NAME?	-7.3006E+01	#NAME?	-7.3004E+01	#NAME?	-7.3002E+01
378000	-7.3214E+01	#NAME?	-7.3213E+01	#NAME?	-7.3212E+01	#NAME?	-7.3209E+01	#NAME?	-7.3207E+01	#NAME?	-7.3205E+01
380000	-7.3417E+01	#NAME?	-7.3416E+01	#NAME?	-7.3415E+01	#NAME?	-7.3413E+01	#NAME?	-7.3411E+01	#NAME?	-7.3409E+01
382000	-7.3620E+01	#NAME?	-7.3619E+01	#NAME?	-7.3618E+01	#NAME?	-7.3616E+01	#NAME?	-7.3614E+01	#NAME?	-7.3612E+01
384000	-7.3822E+01	#NAME?	-7.3821E+01	#NAME?	-7.3820E+01	#NAME?	-7.3818E+01	#NAME?	-7.3816E+01	#NAME?	-7.3814E+01
386000	-7.4023E+01	#NAME?	-7.4022E+01	#NAME?	-7.4021E+01	#NAME?	-7.4019E+01	#NAME?	-7.4017E+01	#NAME?	-7.4015E+01
388000	-7.4225E+01	#NAME?	-7.4224E+01	#NAME?	-7.4223E+01	#NAME?	-7.4221E+01	#NAME?	-7.4218E+01	#NAME?	-7.4216E+01
390000	-7.4425E+01	#NAME?	-7.4424E+01	#NAME?	-7.4423E+01	#NAME?	-7.4421E+01	#NAME?	-7.4419E+01	#NAME?	-7.4417E+01
392000	-7.4625E+01	#NAME?	-7.4624E+01	#NAME?	-7.4623E+01	#NAME?	-7.4621E+01	#NAME?	-7.4619E+01	#NAME?	-7.4617E+01
394000	-7.4825E+01	#NAME?	-7.4824E+01	#NAME?	-7.4823E+01	#NAME?	-7.4821E+01	#NAME?	-7.4819E+01	#NAME?	-7.4817E+01
396000	-7.5024E+01	#NAME?	-7.5023E+01	#NAME?	-7.5022E+01	#NAME?	-7.5020E+01	#NAME?	-7.5018E+01	#NAME?	-7.5016E+01
398000	-7.5222E+01	#NAME?	-7.5221E+01	#NAME?	-7.5220E+01	#NAME?	-7.5218E+01	#NAME?	-7.5216E+01	#NAME?	-7.5214E+01
400000	-7.5420E+01	#NAME?	-7.5419E+01	#NAME?	-7.5418E+01	#NAME?	-7.5416E+01	#NAME?	-7.5414E+01	#NAME?	-7.5412E+01
402000	-7.5617E+01	#NAME?	-7.5616E+01	#NAME?	-7.5615E+01	#NAME?	-7.5613E+01	#NAME?	-7.5611E+01	#NAME?	-7.5609E+01
404000	-7.5814E+01	#NAME?	-7.5813E+01	#NAME?	-7.5812E+01	#NAME?	-7.5810E+01	#NAME?	-7.5808E+01	#NAME?	-7.5806E+01
406000	-7.6010E+01	#NAME?	-7.6009E+01	#NAME?	-7.6008E+01	#NAME?	-7.6007E+01	#NAME?	-7.6005E+01	#NAME?	-7.6003E+01
408000	-7.6206E+01	#NAME?	-7.6205E+01	#NAME?	-7.6204E+01	#NAME?	-7.6202E+01	#NAME?	-7.6200E+01	#NAME?	-7.6198E+01
410000	-7.6402E+01	#NAME?	-7.6401E+01	#NAME?	-7.6400E+01	#NAME?	-7.6398E+01	#NAME?	-7.6396E+01	#NAME?	-7.6394E+01
412000	-7.6597E+01	#NAME?	-7.6596E+01	#NAME?	-7.6595E+01	#NAME?	-7.6593E+01	#NAME?	-7.6591E+01	#NAME?	-7.6589E+01
414000	-7.6791E+01	#NAME?	-7.6790E+01	#NAME?	-7.6789E+01	#NAME?	-7.6787E+01	#NAME?	-7.6785E+01	#NAME?	-7.6783E+01

Time (yrs)	Arg 1	Curve 1	Arg 2	Curve 2	Arg 3	Curve 3	Arg 4	Curve 4	Arg 5	Curve 5	Arg 6
416000	-7.6985E+01	#NAME?	-7.6984E+01	#NAME?	-7.6983E+01	#NAME?	-7.6981E+01	#NAME?	-7.6979E+01	#NAME?	-7.6977E+01
418000	-7.7178E+01	#NAME?	-7.7177E+01	#NAME?	-7.7176E+01	#NAME?	-7.7174E+01	#NAME?	-7.7172E+01	#NAME?	-7.7170E+01
420000	-7.7371E+01	#NAME?	-7.7370E+01	#NAME?	-7.7369E+01	#NAME?	-7.7367E+01	#NAME?	-7.7365E+01	#NAME?	-7.7363E+01
422000	-7.7563E+01	#NAME?	-7.7563E+01	#NAME?	-7.7562E+01	#NAME?	-7.7560E+01	#NAME?	-7.7558E+01	#NAME?	-7.7556E+01
424000	-7.7755E+01	#NAME?	-7.7754E+01	#NAME?	-7.7754E+01	#NAME?	-7.7752E+01	#NAME?	-7.7750E+01	#NAME?	-7.7748E+01
426000	-7.7947E+01	#NAME?	-7.7946E+01	#NAME?	-7.7945E+01	#NAME?	-7.7943E+01	#NAME?	-7.7941E+01	#NAME?	-7.7939E+01
428000	-7.8138E+01	#NAME?	-7.8137E+01	#NAME?	-7.8136E+01	#NAME?	-7.8134E+01	#NAME?	-7.8132E+01	#NAME?	-7.8130E+01
430000	-7.8328E+01	#NAME?	-7.8328E+01	#NAME?	-7.8327E+01	#NAME?	-7.8325E+01	#NAME?	-7.8323E+01	#NAME?	-7.8321E+01
432000	-7.8519E+01	#NAME?	-7.8518E+01	#NAME?	-7.8517E+01	#NAME?	-7.8515E+01	#NAME?	-7.8513E+01	#NAME?	-7.8511E+01
434000	-7.8708E+01	#NAME?	-7.8707E+01	#NAME?	-7.8706E+01	#NAME?	-7.8704E+01	#NAME?	-7.8703E+01	#NAME?	-7.8701E+01
436000	-7.8897E+01	#NAME?	-7.8896E+01	#NAME?	-7.8895E+01	#NAME?	-7.8894E+01	#NAME?	-7.8892E+01	#NAME?	-7.8890E+01
438000	-7.9086E+01	#NAME?	-7.9085E+01	#NAME?	-7.9084E+01	#NAME?	-7.9082E+01	#NAME?	-7.9080E+01	#NAME?	-7.9079E+01
440000	-7.9274E+01	#NAME?	-7.9273E+01	#NAME?	-7.9272E+01	#NAME?	-7.9271E+01	#NAME?	-7.9269E+01	#NAME?	-7.9267E+01
442000	-7.9462E+01	#NAME?	-7.9461E+01	#NAME?	-7.9460E+01	#NAME?	-7.9458E+01	#NAME?	-7.9457E+01	#NAME?	-7.9455E+01
444000	-7.9650E+01	#NAME?	-7.9649E+01	#NAME?	-7.9648E+01	#NAME?	-7.9646E+01	#NAME?	-7.9644E+01	#NAME?	-7.9642E+01
446000	-7.9837E+01	#NAME?	-7.9836E+01	#NAME?	-7.9835E+01	#NAME?	-7.9833E+01	#NAME?	-7.9831E+01	#NAME?	-7.9829E+01
448000	-8.0023E+01	#NAME?	-8.0022E+01	#NAME?	-8.0021E+01	#NAME?	-8.0019E+01	#NAME?	-8.0017E+01	#NAME?	-8.0016E+01
450000	-8.0209E+01	#NAME?	-8.0208E+01	#NAME?	-8.0207E+01	#NAME?	-8.0205E+01	#NAME?	-8.0204E+01	#NAME?	-8.0202E+01
452000	-8.0395E+01	#NAME?	-8.0394E+01	#NAME?	-8.0393E+01	#NAME?	-8.0391E+01	#NAME?	-8.0389E+01	#NAME?	-8.0387E+01
454000	-8.0580E+01	#NAME?	-8.0579E+01	#NAME?	-8.0578E+01	#NAME?	-8.0576E+01	#NAME?	-8.0574E+01	#NAME?	-8.0573E+01
456000	-8.0765E+01	#NAME?	-8.0764E+01	#NAME?	-8.0763E+01	#NAME?	-8.0761E+01	#NAME?	-8.0759E+01	#NAME?	-8.0757E+01
458000	-8.0949E+01	#NAME?	-8.0948E+01	#NAME?	-8.0947E+01	#NAME?	-8.0945E+01	#NAME?	-8.0944E+01	#NAME?	-8.0942E+01
460000	-8.1133E+01	#NAME?	-8.1132E+01	#NAME?	-8.1131E+01	#NAME?	-8.1129E+01	#NAME?	-8.1128E+01	#NAME?	-8.1126E+01
462000	-8.1317E+01	#NAME?	-8.1316E+01	#NAME?	-8.1315E+01	#NAME?	-8.1313E+01	#NAME?	-8.1311E+01	#NAME?	-8.1309E+01
464000	-8.1500E+01	#NAME?	-8.1499E+01	#NAME?	-8.1498E+01	#NAME?	-8.1496E+01	#NAME?	-8.1494E+01	#NAME?	-8.1492E+01
466000	-8.1683E+01	#NAME?	-8.1682E+01	#NAME?	-8.1681E+01	#NAME?	-8.1679E+01	#NAME?	-8.1677E+01	#NAME?	-8.1675E+01
468000	-8.1865E+01	#NAME?	-8.1864E+01	#NAME?	-8.1863E+01	#NAME?	-8.1861E+01	#NAME?	-8.1859E+01	#NAME?	-8.1858E+01
470000	-8.2047E+01	#NAME?	-8.2046E+01	#NAME?	-8.2045E+01	#NAME?	-8.2043E+01	#NAME?	-8.2041E+01	#NAME?	-8.2039E+01
472000	-8.2228E+01	#NAME?	-8.2227E+01	#NAME?	-8.2226E+01	#NAME?	-8.2225E+01	#NAME?	-8.2223E+01	#NAME?	-8.2221E+01
474000	-8.2409E+01	#NAME?	-8.2408E+01	#NAME?	-8.2408E+01	#NAME?	-8.2406E+01	#NAME?	-8.2404E+01	#NAME?	-8.2402E+01
476000	-8.2590E+01	#NAME?	-8.2589E+01	#NAME?	-8.2588E+01	#NAME?	-8.2586E+01	#NAME?	-8.2585E+01	#NAME?	-8.2583E+01
478000	-8.2770E+01	#NAME?	-8.2769E+01	#NAME?	-8.2769E+01	#NAME?	-8.2767E+01	#NAME?	-8.2765E+01	#NAME?	-8.2763E+01
480000	-8.2950E+01	#NAME?	-8.2949E+01	#NAME?	-8.2949E+01	#NAME?	-8.2947E+01	#NAME?	-8.2945E+01	#NAME?	-8.2943E+01
482000	-8.3130E+01	#NAME?	-8.3129E+01	#NAME?	-8.3128E+01	#NAME?	-8.3126E+01	#NAME?	-8.3124E+01	#NAME?	-8.3123E+01
484000	-8.3309E+01	#NAME?	-8.3308E+01	#NAME?	-8.3307E+01	#NAME?	-8.3305E+01	#NAME?	-8.3304E+01	#NAME?	-8.3302E+01
486000	-8.3488E+01	#NAME?	-8.3487E+01	#NAME?	-8.3486E+01	#NAME?	-8.3484E+01	#NAME?	-8.3482E+01	#NAME?	-8.3481E+01
488000	-8.3666E+01	#NAME?	-8.3665E+01	#NAME?	-8.3664E+01	#NAME?	-8.3663E+01	#NAME?	-8.3661E+01	#NAME?	-8.3659E+01
490000	-8.3844E+01	#NAME?	-8.3843E+01	#NAME?	-8.3842E+01	#NAME?	-8.3841E+01	#NAME?	-8.3839E+01	#NAME?	-8.3837E+01
492000	-8.4022E+01	#NAME?	-8.4021E+01	#NAME?	-8.4020E+01	#NAME?	-8.4018E+01	#NAME?	-8.4016E+01	#NAME?	-8.4015E+01
494000	-8.4199E+01	#NAME?	-8.4198E+01	#NAME?	-8.4197E+01	#NAME?	-8.4195E+01	#NAME?	-8.4194E+01	#NAME?	-8.4192E+01
496000	-8.4376E+01	#NAME?	-8.4375E+01	#NAME?	-8.4374E+01	#NAME?	-8.4372E+01	#NAME?	-8.4371E+01	#NAME?	-8.4369E+01
498000	-8.4552E+01	#NAME?	-8.4552E+01	#NAME?	-8.4551E+01	#NAME?	-8.4549E+01	#NAME?	-8.4547E+01	#NAME?	-8.4545E+01
500000	-8.4729E+01	#NAME?	-8.4728E+01	#NAME?	-8.4727E+01	#NAME?	-8.4725E+01	#NAME?	-8.4723E+01	#NAME?	-8.4722E+01
502000	-8.4904E+01	#NAME?	-8.4903E+01	#NAME?	-8.4903E+01	#NAME?	-8.4901E+01	#NAME?	-8.4899E+01	#NAME?	-8.4897E+01
504000	-8.5080E+01	#NAME?	-8.5079E+01	#NAME?	-8.5078E+01	#NAME?	-8.5076E+01	#NAME?	-8.5075E+01	#NAME?	-8.5073E+01
506000	-8.5255E+01	#NAME?	-8.5254E+01	#NAME?	-8.5253E+01	#NAME?	-8.5251E+01	#NAME?	-8.5250E+01	#NAME?	-8.5248E+01
508000	-8.5430E+01	#NAME?	-8.5429E+01	#NAME?	-8.5428E+01	#NAME?	-8.5426E+01	#NAME?	-8.5424E+01	#NAME?	-8.5423E+01
510000	-8.5604E+01	#NAME?	-8.5603E+01	#NAME?	-8.5602E+01	#NAME?	-8.5600E+01	#NAME?	-8.5599E+01	#NAME?	-8.5597E+01
512000	-8.5778E+01	#NAME?	-8.5777E+01	#NAME?	-8.5776E+01	#NAME?	-8.5774E+01	#NAME?	-8.5773E+01	#NAME?	-8.5771E+01
514000	-8.5952E+01	#NAME?	-8.5951E+01	#NAME?	-8.5950E+01	#NAME?	-8.5948E+01	#NAME?	-8.5946E+01	#NAME?	-8.5945E+01
516000	-8.6125E+01	#NAME?	-8.6124E+01	#NAME?	-8.6123E+01	#NAME?	-8.6121E+01	#NAME?	-8.6120E+01	#NAME?	-8.6118E+01
518000	-8.6298E+01	#NAME?	-8.6297E+01	#NAME?	-8.6296E+01	#NAME?	-8.6294E+01	#NAME?	-8.6293E+01	#NAME?	-8.6291E+01

Time (yrs)	Arg 1	Curve 1	Arg 2	Curve 2	Arg 3	Curve 3	Arg 4	Curve 4	Arg 5	Curve 5	Arg 6
520000	-8.6470E+01	#NAME?	-8.6469E+01	#NAME?	-8.6469E+01	#NAME?	-8.6467E+01	#NAME?	-8.6465E+01	#NAME?	-8.6463E+01
522000	-8.6643E+01	#NAME?	-8.6642E+01	#NAME?	-8.6641E+01	#NAME?	-8.6639E+01	#NAME?	-8.6637E+01	#NAME?	-8.6636E+01
524000	-8.6815E+01	#NAME?	-8.6814E+01	#NAME?	-8.6813E+01	#NAME?	-8.6811E+01	#NAME?	-8.6809E+01	#NAME?	-8.6808E+01
526000	-8.6986E+01	#NAME?	-8.6985E+01	#NAME?	-8.6984E+01	#NAME?	-8.6983E+01	#NAME?	-8.6981E+01	#NAME?	-8.6979E+01
528000	-8.7157E+01	#NAME?	-8.7156E+01	#NAME?	-8.7156E+01	#NAME?	-8.7154E+01	#NAME?	-8.7152E+01	#NAME?	-8.7150E+01
530000	-8.7328E+01	#NAME?	-8.7327E+01	#NAME?	-8.7326E+01	#NAME?	-8.7325E+01	#NAME?	-8.7323E+01	#NAME?	-8.7321E+01
532000	-8.7499E+01	#NAME?	-8.7498E+01	#NAME?	-8.7497E+01	#NAME?	-8.7495E+01	#NAME?	-8.7494E+01	#NAME?	-8.7492E+01
534000	-8.7669E+01	#NAME?	-8.7668E+01	#NAME?	-8.7667E+01	#NAME?	-8.7666E+01	#NAME?	-8.7664E+01	#NAME?	-8.7662E+01
536000	-8.7839E+01	#NAME?	-8.7838E+01	#NAME?	-8.7837E+01	#NAME?	-8.7836E+01	#NAME?	-8.7834E+01	#NAME?	-8.7832E+01
538000	-8.8008E+01	#NAME?	-8.8008E+01	#NAME?	-8.8007E+01	#NAME?	-8.8005E+01	#NAME?	-8.8003E+01	#NAME?	-8.8002E+01
540000	-8.8178E+01	#NAME?	-8.8177E+01	#NAME?	-8.8176E+01	#NAME?	-8.8174E+01	#NAME?	-8.8173E+01	#NAME?	-8.8171E+01
542000	-8.8347E+01	#NAME?	-8.8346E+01	#NAME?	-8.8345E+01	#NAME?	-8.8343E+01	#NAME?	-8.8342E+01	#NAME?	-8.8340E+01
544000	-8.8515E+01	#NAME?	-8.8514E+01	#NAME?	-8.8514E+01	#NAME?	-8.8512E+01	#NAME?	-8.8510E+01	#NAME?	-8.8509E+01
546000	-8.8684E+01	#NAME?	-8.8683E+01	#NAME?	-8.8682E+01	#NAME?	-8.8680E+01	#NAME?	-8.8679E+01	#NAME?	-8.8677E+01
548000	-8.8852E+01	#NAME?	-8.8851E+01	#NAME?	-8.8850E+01	#NAME?	-8.8848E+01	#NAME?	-8.8846E+01	#NAME?	-8.8845E+01
550000	-8.9019E+01	#NAME?	-8.9018E+01	#NAME?	-8.9018E+01	#NAME?	-8.9016E+01	#NAME?	-8.9014E+01	#NAME?	-8.9012E+01
552000	-8.9187E+01	#NAME?	-8.9186E+01	#NAME?	-8.9185E+01	#NAME?	-8.9183E+01	#NAME?	-8.9181E+01	#NAME?	-8.9180E+01
554000	-8.9354E+01	#NAME?	-8.9353E+01	#NAME?	-8.9352E+01	#NAME?	-8.9350E+01	#NAME?	-8.9349E+01	#NAME?	-8.9347E+01
556000	-8.9520E+01	#NAME?	-8.9519E+01	#NAME?	-8.9519E+01	#NAME?	-8.9517E+01	#NAME?	-8.9515E+01	#NAME?	-8.9514E+01
558000	-8.9687E+01	#NAME?	-8.9686E+01	#NAME?	-8.9685E+01	#NAME?	-8.9683E+01	#NAME?	-8.9682E+01	#NAME?	-8.9680E+01
560000	-8.9853E+01	#NAME?	-8.9852E+01	#NAME?	-8.9851E+01	#NAME?	-8.9849E+01	#NAME?	-8.9848E+01	#NAME?	-8.9846E+01
562000	-9.0019E+01	#NAME?	-9.0018E+01	#NAME?	-9.0017E+01	#NAME?	-9.0015E+01	#NAME?	-9.0014E+01	#NAME?	-9.0012E+01
564000	-9.0184E+01	#NAME?	-9.0183E+01	#NAME?	-9.0182E+01	#NAME?	-9.0181E+01	#NAME?	-9.0179E+01	#NAME?	-9.0177E+01
566000	-9.0349E+01	#NAME?	-9.0348E+01	#NAME?	-9.0348E+01	#NAME?	-9.0346E+01	#NAME?	-9.0344E+01	#NAME?	-9.0343E+01
568000	-9.0514E+01	#NAME?	-9.0513E+01	#NAME?	-9.0512E+01	#NAME?	-9.0511E+01	#NAME?	-9.0509E+01	#NAME?	-9.0507E+01
570000	-9.0679E+01	#NAME?	-9.0678E+01	#NAME?	-9.0677E+01	#NAME?	-9.0675E+01	#NAME?	-9.0674E+01	#NAME?	-9.0672E+01
572000	-9.0843E+01	#NAME?	-9.0842E+01	#NAME?	-9.0841E+01	#NAME?	-9.0840E+01	#NAME?	-9.0838E+01	#NAME?	-9.0836E+01
574000	-9.1007E+01	#NAME?	-9.1006E+01	#NAME?	-9.1005E+01	#NAME?	-9.1004E+01	#NAME?	-9.1002E+01	#NAME?	-9.1000E+01
576000	-9.1171E+01	#NAME?	-9.1170E+01	#NAME?	-9.1169E+01	#NAME?	-9.1167E+01	#NAME?	-9.1166E+01	#NAME?	-9.1164E+01
578000	-9.1334E+01	#NAME?	-9.1333E+01	#NAME?	-9.1332E+01	#NAME?	-9.1331E+01	#NAME?	-9.1329E+01	#NAME?	-9.1327E+01
580000	-9.1497E+01	#NAME?	-9.1496E+01	#NAME?	-9.1495E+01	#NAME?	-9.1494E+01	#NAME?	-9.1492E+01	#NAME?	-9.1491E+01
582000	-9.1660E+01	#NAME?	-9.1659E+01	#NAME?	-9.1658E+01	#NAME?	-9.1657E+01	#NAME?	-9.1655E+01	#NAME?	-9.1653E+01
584000	-9.1822E+01	#NAME?	-9.1822E+01	#NAME?	-9.1821E+01	#NAME?	-9.1819E+01	#NAME?	-9.1818E+01	#NAME?	-9.1816E+01
586000	-9.1985E+01	#NAME?	-9.1984E+01	#NAME?	-9.1983E+01	#NAME?	-9.1981E+01	#NAME?	-9.1980E+01	#NAME?	-9.1978E+01
588000	-9.2147E+01	#NAME?	-9.2146E+01	#NAME?	-9.2145E+01	#NAME?	-9.2143E+01	#NAME?	-9.2142E+01	#NAME?	-9.2140E+01
590000	-9.2308E+01	#NAME?	-9.2308E+01	#NAME?	-9.2307E+01	#NAME?	-9.2305E+01	#NAME?	-9.2303E+01	#NAME?	-9.2302E+01
592000	-9.2470E+01	#NAME?	-9.2469E+01	#NAME?	-9.2468E+01	#NAME?	-9.2466E+01	#NAME?	-9.2465E+01	#NAME?	-9.2463E+01
594000	-9.2631E+01	#NAME?	-9.2630E+01	#NAME?	-9.2629E+01	#NAME?	-9.2628E+01	#NAME?	-9.2626E+01	#NAME?	-9.2624E+01
596000	-9.2792E+01	#NAME?	-9.2791E+01	#NAME?	-9.2790E+01	#NAME?	-9.2788E+01	#NAME?	-9.2787E+01	#NAME?	-9.2785E+01
598000	-9.2952E+01	#NAME?	-9.2951E+01	#NAME?	-9.2951E+01	#NAME?	-9.2949E+01	#NAME?	-9.2947E+01	#NAME?	-9.2946E+01
600000	-9.3112E+01	#NAME?	-9.3112E+01	#NAME?	-9.3111E+01	#NAME?	-9.3109E+01	#NAME?	-9.3108E+01	#NAME?	-9.3106E+01
602000	-9.3272E+01	#NAME?	-9.3272E+01	#NAME?	-9.3271E+01	#NAME?	-9.3269E+01	#NAME?	-9.3268E+01	#NAME?	-9.3266E+01
604000	-9.3432E+01	#NAME?	-9.3431E+01	#NAME?	-9.3431E+01	#NAME?	-9.3429E+01	#NAME?	-9.3427E+01	#NAME?	-9.3426E+01
606000	-9.3592E+01	#NAME?	-9.3591E+01	#NAME?	-9.3590E+01	#NAME?	-9.3588E+01	#NAME?	-9.3587E+01	#NAME?	-9.3585E+01
608000	-9.3751E+01	#NAME?	-9.3750E+01	#NAME?	-9.3749E+01	#NAME?	-9.3748E+01	#NAME?	-9.3746E+01	#NAME?	-9.3744E+01
610000	-9.3910E+01	#NAME?	-9.3909E+01	#NAME?	-9.3908E+01	#NAME?	-9.3907E+01	#NAME?	-9.3905E+01	#NAME?	-9.3903E+01
612000	-9.4068E+01	#NAME?	-9.4068E+01	#NAME?	-9.4067E+01	#NAME?	-9.4065E+01	#NAME?	-9.4064E+01	#NAME?	-9.4062E+01
614000	-9.4227E+01	#NAME?	-9.4226E+01	#NAME?	-9.4225E+01	#NAME?	-9.4224E+01	#NAME?	-9.4222E+01	#NAME?	-9.4220E+01
616000	-9.4385E+01	#NAME?	-9.4384E+01	#NAME?	-9.4383E+01	#NAME?	-9.4382E+01	#NAME?	-9.4380E+01	#NAME?	-9.4379E+01
618000	-9.4543E+01	#NAME?	-9.4542E+01	#NAME?	-9.4541E+01	#NAME?	-9.4540E+01	#NAME?	-9.4538E+01	#NAME?	-9.4536E+01
620000	-9.4700E+01	#NAME?	-9.4700E+01	#NAME?	-9.4699E+01	#NAME?	-9.4697E+01	#NAME?	-9.4696E+01	#NAME?	-9.4694E+01
622000	-9.4858E+01	#NAME?	-9.4857E+01	#NAME?	-9.4856E+01	#NAME?	-9.4855E+01	#NAME?	-9.4853E+01	#NAME?	-9.4851E+01

Time (yrs)	Arg 1	Curve 1	Arg 2	Curve 2	Arg 3	Curve 3	Arg 4	Curve 4	Arg 5	Curve 5	Arg 6
624000	-9.5015E+01	#NAME?	-9.5014E+01	#NAME?	-9.5013E+01	#NAME?	-9.5012E+01	#NAME?	-9.5010E+01	#NAME?	-9.5008E+01
626000	-9.5172E+01	#NAME?	-9.5171E+01	#NAME?	-9.5170E+01	#NAME?	-9.5168E+01	#NAME?	-9.5167E+01	#NAME?	-9.5165E+01
628000	-9.5328E+01	#NAME?	-9.5327E+01	#NAME?	-9.5326E+01	#NAME?	-9.5325E+01	#NAME?	-9.5323E+01	#NAME?	-9.5322E+01
630000	-9.5484E+01	#NAME?	-9.5484E+01	#NAME?	-9.5483E+01	#NAME?	-9.5481E+01	#NAME?	-9.5480E+01	#NAME?	-9.5478E+01
632000	-9.5640E+01	#NAME?	-9.5640E+01	#NAME?	-9.5639E+01	#NAME?	-9.5637E+01	#NAME?	-9.5636E+01	#NAME?	-9.5634E+01
634000	-9.5796E+01	#NAME?	-9.5795E+01	#NAME?	-9.5795E+01	#NAME?	-9.5793E+01	#NAME?	-9.5792E+01	#NAME?	-9.5790E+01
636000	-9.5952E+01	#NAME?	-9.5951E+01	#NAME?	-9.5950E+01	#NAME?	-9.5949E+01	#NAME?	-9.5947E+01	#NAME?	-9.5945E+01
638000	-9.6107E+01	#NAME?	-9.6106E+01	#NAME?	-9.6105E+01	#NAME?	-9.6104E+01	#NAME?	-9.6102E+01	#NAME?	-9.6101E+01
640000	-9.6262E+01	#NAME?	-9.6261E+01	#NAME?	-9.6260E+01	#NAME?	-9.6259E+01	#NAME?	-9.6257E+01	#NAME?	-9.6256E+01
642000	-9.6417E+01	#NAME?	-9.6416E+01	#NAME?	-9.6415E+01	#NAME?	-9.6414E+01	#NAME?	-9.6412E+01	#NAME?	-9.6411E+01
644000	-9.6571E+01	#NAME?	-9.6571E+01	#NAME?	-9.6570E+01	#NAME?	-9.6568E+01	#NAME?	-9.6567E+01	#NAME?	-9.6565E+01
646000	-9.6726E+01	#NAME?	-9.6725E+01	#NAME?	-9.6724E+01	#NAME?	-9.6723E+01	#NAME?	-9.6721E+01	#NAME?	-9.6719E+01
648000	-9.6880E+01	#NAME?	-9.6879E+01	#NAME?	-9.6878E+01	#NAME?	-9.6877E+01	#NAME?	-9.6875E+01	#NAME?	-9.6873E+01
650000	-9.7033E+01	#NAME?	-9.7033E+01	#NAME?	-9.7032E+01	#NAME?	-9.7030E+01	#NAME?	-9.7029E+01	#NAME?	-9.7027E+01
652000	-9.7187E+01	#NAME?	-9.7186E+01	#NAME?	-9.7185E+01	#NAME?	-9.7184E+01	#NAME?	-9.7182E+01	#NAME?	-9.7181E+01
654000	-9.7340E+01	#NAME?	-9.7340E+01	#NAME?	-9.7339E+01	#NAME?	-9.7337E+01	#NAME?	-9.7336E+01	#NAME?	-9.7334E+01
656000	-9.7493E+01	#NAME?	-9.7493E+01	#NAME?	-9.7492E+01	#NAME?	-9.7490E+01	#NAME?	-9.7489E+01	#NAME?	-9.7487E+01
658000	-9.7646E+01	#NAME?	-9.7645E+01	#NAME?	-9.7645E+01	#NAME?	-9.7643E+01	#NAME?	-9.7642E+01	#NAME?	-9.7640E+01
660000	-9.7799E+01	#NAME?	-9.7798E+01	#NAME?	-9.7797E+01	#NAME?	-9.7796E+01	#NAME?	-9.7794E+01	#NAME?	-9.7793E+01
662000	-9.7951E+01	#NAME?	-9.7950E+01	#NAME?	-9.7950E+01	#NAME?	-9.7948E+01	#NAME?	-9.7947E+01	#NAME?	-9.7945E+01
664000	-9.8103E+01	#NAME?	-9.8102E+01	#NAME?	-9.8102E+01	#NAME?	-9.8100E+01	#NAME?	-9.8099E+01	#NAME?	-9.8097E+01
666000	-9.8255E+01	#NAME?	-9.8254E+01	#NAME?	-9.8254E+01	#NAME?	-9.8252E+01	#NAME?	-9.8251E+01	#NAME?	-9.8249E+01
668000	-9.8407E+01	#NAME?	-9.8406E+01	#NAME?	-9.8405E+01	#NAME?	-9.8404E+01	#NAME?	-9.8402E+01	#NAME?	-9.8401E+01
670000	-9.8558E+01	#NAME?	-9.8557E+01	#NAME?	-9.8557E+01	#NAME?	-9.8555E+01	#NAME?	-9.8554E+01	#NAME?	-9.8552E+01
672000	-9.8709E+01	#NAME?	-9.8709E+01	#NAME?	-9.8708E+01	#NAME?	-9.8706E+01	#NAME?	-9.8705E+01	#NAME?	-9.8703E+01
674000	-9.8860E+01	#NAME?	-9.8860E+01	#NAME?	-9.8859E+01	#NAME?	-9.8857E+01	#NAME?	-9.8856E+01	#NAME?	-9.8854E+01
676000	-9.9011E+01	#NAME?	-9.9010E+01	#NAME?	-9.9010E+01	#NAME?	-9.9008E+01	#NAME?	-9.9007E+01	#NAME?	-9.9005E+01
678000	-9.9162E+01	#NAME?	-9.9161E+01	#NAME?	-9.9160E+01	#NAME?	-9.9159E+01	#NAME?	-9.9157E+01	#NAME?	-9.9155E+01
680000	-9.9312E+01	#NAME?	-9.9311E+01	#NAME?	-9.9310E+01	#NAME?	-9.9309E+01	#NAME?	-9.9307E+01	#NAME?	-9.9306E+01
682000	-9.9462E+01	#NAME?	-9.9461E+01	#NAME?	-9.9460E+01	#NAME?	-9.9459E+01	#NAME?	-9.9457E+01	#NAME?	-9.9456E+01
684000	-9.9612E+01	#NAME?	-9.9611E+01	#NAME?	-9.9610E+01	#NAME?	-9.9609E+01	#NAME?	-9.9607E+01	#NAME?	-9.9606E+01
686000	-9.9761E+01	#NAME?	-9.9760E+01	#NAME?	-9.9760E+01	#NAME?	-9.9758E+01	#NAME?	-9.9757E+01	#NAME?	-9.9755E+01
688000	-9.9911E+01	#NAME?	-9.9910E+01	#NAME?	-9.9909E+01	#NAME?	-9.9908E+01	#NAME?	-9.9906E+01	#NAME?	-9.9905E+01
690000	-1.0006E+02	#NAME?	-1.0006E+02	#NAME?	-1.0006E+02	#NAME?	-1.0006E+02	#NAME?	-1.0006E+02	#NAME?	-1.0005E+02
692000	-1.0021E+02	#NAME?	-1.0021E+02	#NAME?	-1.0021E+02	#NAME?	-1.0021E+02	#NAME?	-1.0020E+02	#NAME?	-1.0020E+02
694000	-1.0036E+02	#NAME?	-1.0036E+02	#NAME?	-1.0036E+02	#NAME?	-1.0035E+02	#NAME?	-1.0035E+02	#NAME?	-1.0035E+02
696000	-1.0051E+02	#NAME?	-1.0051E+02	#NAME?	-1.0050E+02	#NAME?	-1.0050E+02	#NAME?	-1.0050E+02	#NAME?	-1.0050E+02
698000	-1.0065E+02	#NAME?	-1.0065E+02	#NAME?	-1.0065E+02	#NAME?	-1.0065E+02	#NAME?	-1.0065E+02	#NAME?	-1.0065E+02
700000	-1.0080E+02	#NAME?	-1.0080E+02	#NAME?	-1.0080E+02	#NAME?	-1.0080E+02	#NAME?	-1.0080E+02	#NAME?	-1.0080E+02
702000	-1.0095E+02	#NAME?	-1.0095E+02	#NAME?	-1.0095E+02	#NAME?	-1.0095E+02	#NAME?	-1.0095E+02	#NAME?	-1.0094E+02
704000	-1.0110E+02	#NAME?	-1.0110E+02	#NAME?	-1.0110E+02	#NAME?	-1.0109E+02	#NAME?	-1.0109E+02	#NAME?	-1.0109E+02
706000	-1.0124E+02	#NAME?	-1.0124E+02	#NAME?	-1.0124E+02	#NAME?	-1.0124E+02	#NAME?	-1.0124E+02	#NAME?	-1.0124E+02
708000	-1.0139E+02	#NAME?	-1.0139E+02	#NAME?	-1.0139E+02	#NAME?	-1.0139E+02	#NAME?	-1.0139E+02	#NAME?	-1.0139E+02
710000	-1.0154E+02	#NAME?	-1.0154E+02	#NAME?	-1.0154E+02	#NAME?	-1.0154E+02	#NAME?	-1.0153E+02	#NAME?	-1.0153E+02
712000	-1.0169E+02	#NAME?	-1.0169E+02	#NAME?	-1.0168E+02	#NAME?	-1.0168E+02	#NAME?	-1.0168E+02	#NAME?	-1.0168E+02
714000	-1.0183E+02	#NAME?	-1.0183E+02	#NAME?	-1.0183E+02	#NAME?	-1.0183E+02	#NAME?	-1.0183E+02	#NAME?	-1.0183E+02
716000	-1.0198E+02	#NAME?	-1.0198E+02	#NAME?	-1.0198E+02	#NAME?	-1.0198E+02	#NAME?	-1.0197E+02	#NAME?	-1.0197E+02
718000	-1.0212E+02	#NAME?	-1.0212E+02	#NAME?	-1.0212E+02	#NAME?	-1.0212E+02	#NAME?	-1.0212E+02	#NAME?	-1.0212E+02
720000	-1.0227E+02	#NAME?	-1.0227E+02	#NAME?	-1.0227E+02	#NAME?	-1.0227E+02	#NAME?	-1.0227E+02	#NAME?	-1.0226E+02
722000	-1.0242E+02	#NAME?	-1.0242E+02	#NAME?	-1.0241E+02	#NAME?	-1.0241E+02	#NAME?	-1.0241E+02	#NAME?	-1.0241E+02
724000	-1.0256E+02	#NAME?	-1.0256E+02	#NAME?	-1.0256E+02	#NAME?	-1.0256E+02	#NAME?	-1.0256E+02	#NAME?	-1.0256E+02
726000	-1.0271E+02	#NAME?	-1.0271E+02	#NAME?	-1.0271E+02	#NAME?	-1.0270E+02	#NAME?	-1.0270E+02	#NAME?	-1.0270E+02

Time (yrs)	Arg 1	Curve 1	Arg 2	Curve 2	Arg 3	Curve 3	Arg 4	Curve 4	Arg 5	Curve 5	Arg 6
728000	-1.0285E+02	#NAME?	-1.0285E+02	#NAME?	-1.0285E+02	#NAME?	-1.0285E+02	#NAME?	-1.0285E+02	#NAME?	-1.0285E+02
730000	-1.0300E+02	#NAME?	-1.0300E+02	#NAME?	-1.0300E+02	#NAME?	-1.0299E+02	#NAME?	-1.0299E+02	#NAME?	-1.0299E+02
732000	-1.0314E+02	#NAME?	-1.0314E+02	#NAME?	-1.0314E+02	#NAME?	-1.0314E+02	#NAME?	-1.0314E+02	#NAME?	-1.0314E+02
734000	-1.0329E+02	#NAME?	-1.0329E+02	#NAME?	-1.0328E+02	#NAME?	-1.0328E+02	#NAME?	-1.0328E+02	#NAME?	-1.0328E+02
736000	-1.0343E+02	#NAME?	-1.0343E+02	#NAME?	-1.0343E+02	#NAME?	-1.0343E+02	#NAME?	-1.0343E+02	#NAME?	-1.0342E+02
738000	-1.0357E+02	#NAME?	-1.0357E+02	#NAME?	-1.0357E+02	#NAME?	-1.0357E+02	#NAME?	-1.0357E+02	#NAME?	-1.0357E+02
740000	-1.0372E+02	#NAME?	-1.0372E+02	#NAME?	-1.0372E+02	#NAME?	-1.0372E+02	#NAME?	-1.0371E+02	#NAME?	-1.0371E+02
742000	-1.0386E+02	#NAME?	-1.0386E+02	#NAME?	-1.0386E+02	#NAME?	-1.0386E+02	#NAME?	-1.0386E+02	#NAME?	-1.0386E+02
744000	-1.0401E+02	#NAME?	-1.0400E+02	#NAME?	-1.0400E+02	#NAME?	-1.0400E+02	#NAME?	-1.0400E+02	#NAME?	-1.0400E+02
746000	-1.0415E+02	#NAME?	-1.0415E+02	#NAME?	-1.0415E+02	#NAME?	-1.0415E+02	#NAME?	-1.0414E+02	#NAME?	-1.0414E+02
748000	-1.0429E+02	#NAME?	-1.0429E+02	#NAME?	-1.0429E+02	#NAME?	-1.0429E+02	#NAME?	-1.0429E+02	#NAME?	-1.0429E+02
750000	-1.0443E+02	#NAME?	-1.0443E+02	#NAME?	-1.0443E+02	#NAME?	-1.0443E+02	#NAME?	-1.0443E+02	#NAME?	-1.0443E+02
752000	-1.0458E+02	#NAME?	-1.0458E+02	#NAME?	-1.0458E+02	#NAME?	-1.0457E+02	#NAME?	-1.0457E+02	#NAME?	-1.0457E+02
754000	-1.0472E+02	#NAME?	-1.0472E+02	#NAME?	-1.0472E+02	#NAME?	-1.0472E+02	#NAME?	-1.0472E+02	#NAME?	-1.0471E+02
756000	-1.0486E+02	#NAME?	-1.0486E+02	#NAME?	-1.0486E+02	#NAME?	-1.0486E+02	#NAME?	-1.0486E+02	#NAME?	-1.0486E+02
758000	-1.0500E+02	#NAME?	-1.0500E+02	#NAME?	-1.0500E+02	#NAME?	-1.0500E+02	#NAME?	-1.0500E+02	#NAME?	-1.0500E+02
760000	-1.0515E+02	#NAME?	-1.0515E+02	#NAME?	-1.0515E+02	#NAME?	-1.0514E+02	#NAME?	-1.0514E+02	#NAME?	-1.0514E+02
762000	-1.0529E+02	#NAME?	-1.0529E+02	#NAME?	-1.0529E+02	#NAME?	-1.0529E+02	#NAME?	-1.0528E+02	#NAME?	-1.0528E+02
764000	-1.0543E+02	#NAME?	-1.0543E+02	#NAME?	-1.0543E+02	#NAME?	-1.0543E+02	#NAME?	-1.0543E+02	#NAME?	-1.0542E+02
766000	-1.0557E+02	#NAME?	-1.0557E+02	#NAME?	-1.0557E+02	#NAME?	-1.0557E+02	#NAME?	-1.0557E+02	#NAME?	-1.0557E+02
768000	-1.0571E+02	#NAME?	-1.0571E+02	#NAME?	-1.0571E+02	#NAME?	-1.0571E+02	#NAME?	-1.0571E+02	#NAME?	-1.0571E+02
770000	-1.0585E+02	#NAME?	-1.0585E+02	#NAME?	-1.0585E+02	#NAME?	-1.0585E+02	#NAME?	-1.0585E+02	#NAME?	-1.0585E+02
772000	-1.0599E+02	#NAME?	-1.0599E+02	#NAME?	-1.0599E+02	#NAME?	-1.0599E+02	#NAME?	-1.0599E+02	#NAME?	-1.0599E+02
774000	-1.0613E+02	#NAME?	-1.0613E+02	#NAME?	-1.0613E+02	#NAME?	-1.0613E+02	#NAME?	-1.0613E+02	#NAME?	-1.0613E+02
776000	-1.0627E+02	#NAME?	-1.0627E+02	#NAME?	-1.0627E+02	#NAME?	-1.0627E+02	#NAME?	-1.0627E+02	#NAME?	-1.0627E+02
778000	-1.0642E+02	#NAME?	-1.0641E+02	#NAME?	-1.0641E+02	#NAME?	-1.0641E+02	#NAME?	-1.0641E+02	#NAME?	-1.0641E+02
780000	-1.0656E+02	#NAME?	-1.0655E+02	#NAME?	-1.0655E+02	#NAME?	-1.0655E+02	#NAME?	-1.0655E+02	#NAME?	-1.0655E+02
782000	-1.0670E+02	#NAME?	-1.0669E+02	#NAME?	-1.0669E+02	#NAME?	-1.0669E+02	#NAME?	-1.0669E+02	#NAME?	-1.0669E+02
784000	-1.0683E+02	#NAME?	-1.0683E+02	#NAME?	-1.0683E+02	#NAME?	-1.0683E+02	#NAME?	-1.0683E+02	#NAME?	-1.0683E+02
786000	-1.0697E+02	#NAME?	-1.0697E+02	#NAME?	-1.0697E+02	#NAME?	-1.0697E+02	#NAME?	-1.0697E+02	#NAME?	-1.0697E+02
788000	-1.0711E+02	#NAME?	-1.0711E+02	#NAME?	-1.0711E+02	#NAME?	-1.0711E+02	#NAME?	-1.0711E+02	#NAME?	-1.0711E+02
790000	-1.0725E+02	#NAME?	-1.0725E+02	#NAME?	-1.0725E+02	#NAME?	-1.0725E+02	#NAME?	-1.0725E+02	#NAME?	-1.0725E+02
792000	-1.0739E+02	#NAME?	-1.0739E+02	#NAME?	-1.0739E+02	#NAME?	-1.0739E+02	#NAME?	-1.0739E+02	#NAME?	-1.0739E+02
794000	-1.0753E+02	#NAME?	-1.0753E+02	#NAME?	-1.0753E+02	#NAME?	-1.0753E+02	#NAME?	-1.0753E+02	#NAME?	-1.0752E+02
796000	-1.0767E+02	#NAME?	-1.0767E+02	#NAME?	-1.0767E+02	#NAME?	-1.0767E+02	#NAME?	-1.0766E+02	#NAME?	-1.0766E+02
798000	-1.0781E+02	#NAME?	-1.0781E+02	#NAME?	-1.0781E+02	#NAME?	-1.0780E+02	#NAME?	-1.0780E+02	#NAME?	-1.0780E+02
800000	-1.0795E+02	#NAME?	-1.0794E+02	#NAME?	-1.0794E+02	#NAME?	-1.0794E+02	#NAME?	-1.0794E+02	#NAME?	-1.0794E+02
802000	-1.0808E+02	#NAME?	-1.0808E+02	#NAME?	-1.0808E+02	#NAME?	-1.0808E+02	#NAME?	-1.0808E+02	#NAME?	-1.0808E+02
804000	-1.0822E+02	#NAME?	-1.0822E+02	#NAME?	-1.0822E+02	#NAME?	-1.0822E+02	#NAME?	-1.0822E+02	#NAME?	-1.0822E+02
806000	-1.0836E+02	#NAME?	-1.0836E+02	#NAME?	-1.0836E+02	#NAME?	-1.0836E+02	#NAME?	-1.0836E+02	#NAME?	-1.0835E+02
808000	-1.0850E+02	#NAME?	-1.0850E+02	#NAME?	-1.0850E+02	#NAME?	-1.0849E+02	#NAME?	-1.0849E+02	#NAME?	-1.0849E+02
810000	-1.0863E+02	#NAME?	-1.0863E+02	#NAME?	-1.0863E+02	#NAME?	-1.0863E+02	#NAME?	-1.0863E+02	#NAME?	-1.0863E+02
812000	-1.0877E+02	#NAME?	-1.0877E+02	#NAME?	-1.0877E+02	#NAME?	-1.0877E+02	#NAME?	-1.0877E+02	#NAME?	-1.0877E+02
814000	-1.0891E+02	#NAME?	-1.0891E+02	#NAME?	-1.0891E+02	#NAME?	-1.0891E+02	#NAME?	-1.0890E+02	#NAME?	-1.0890E+02
816000	-1.0905E+02	#NAME?	-1.0904E+02	#NAME?	-1.0904E+02	#NAME?	-1.0904E+02	#NAME?	-1.0904E+02	#NAME?	-1.0904E+02
818000	-1.0918E+02	#NAME?	-1.0918E+02	#NAME?	-1.0918E+02	#NAME?	-1.0918E+02	#NAME?	-1.0918E+02	#NAME?	-1.0918E+02
820000	-1.0932E+02	#NAME?	-1.0932E+02	#NAME?	-1.0932E+02	#NAME?	-1.0932E+02	#NAME?	-1.0931E+02	#NAME?	-1.0931E+02
822000	-1.0945E+02	#NAME?	-1.0945E+02	#NAME?	-1.0945E+02	#NAME?	-1.0945E+02	#NAME?	-1.0945E+02	#NAME?	-1.0945E+02
824000	-1.0959E+02	#NAME?	-1.0959E+02	#NAME?	-1.0959E+02	#NAME?	-1.0959E+02	#NAME?	-1.0959E+02	#NAME?	-1.0959E+02
826000	-1.0973E+02	#NAME?	-1.0973E+02	#NAME?	-1.0973E+02	#NAME?	-1.0972E+02	#NAME?	-1.0972E+02	#NAME?	-1.0972E+02
828000	-1.0986E+02	#NAME?	-1.0986E+02	#NAME?	-1.0986E+02	#NAME?	-1.0986E+02	#NAME?	-1.0986E+02	#NAME?	-1.0986E+02
830000	-1.1000E+02	#NAME?	-1.1000E+02	#NAME?	-1.1000E+02	#NAME?	-1.1000E+02	#NAME?	-1.0999E+02	#NAME?	-1.0999E+02

Time (yrs)	Arg 1	Curve 1	Arg 2	Curve 2	Arg 3	Curve 3	Arg 4	Curve 4	Arg 5	Curve 5	Arg 6
832000	-1.1013E+02	#NAME?	-1.1013E+02	#NAME?	-1.1013E+02	#NAME?	-1.1013E+02	#NAME?	-1.1013E+02	#NAME?	-1.1013E+02
834000	-1.1027E+02	#NAME?	-1.1027E+02	#NAME?	-1.1027E+02	#NAME?	-1.1027E+02	#NAME?	-1.1027E+02	#NAME?	-1.1026E+02
836000	-1.1040E+02	#NAME?	-1.1040E+02	#NAME?	-1.1040E+02	#NAME?	-1.1040E+02	#NAME?	-1.1040E+02	#NAME?	-1.1040E+02
838000	-1.1054E+02	#NAME?	-1.1054E+02	#NAME?	-1.1054E+02	#NAME?	-1.1054E+02	#NAME?	-1.1054E+02	#NAME?	-1.1053E+02
840000	-1.1067E+02	#NAME?	-1.1067E+02	#NAME?	-1.1067E+02	#NAME?	-1.1067E+02	#NAME?	-1.1067E+02	#NAME?	-1.1067E+02
842000	-1.1081E+02	#NAME?	-1.1081E+02	#NAME?	-1.1081E+02	#NAME?	-1.1081E+02	#NAME?	-1.1080E+02	#NAME?	-1.1080E+02
844000	-1.1094E+02	#NAME?	-1.1094E+02	#NAME?	-1.1094E+02	#NAME?	-1.1094E+02	#NAME?	-1.1094E+02	#NAME?	-1.1094E+02
846000	-1.1108E+02	#NAME?	-1.1108E+02	#NAME?	-1.1108E+02	#NAME?	-1.1107E+02	#NAME?	-1.1107E+02	#NAME?	-1.1107E+02
848000	-1.1121E+02	#NAME?	-1.1121E+02	#NAME?	-1.1121E+02	#NAME?	-1.1121E+02	#NAME?	-1.1121E+02	#NAME?	-1.1121E+02
850000	-1.1135E+02	#NAME?	-1.1135E+02	#NAME?	-1.1134E+02	#NAME?	-1.1134E+02	#NAME?	-1.1134E+02	#NAME?	-1.1134E+02
852000	-1.1148E+02	#NAME?	-1.1148E+02	#NAME?	-1.1148E+02	#NAME?	-1.1148E+02	#NAME?	-1.1148E+02	#NAME?	-1.1147E+02
854000	-1.1161E+02	#NAME?	-1.1161E+02	#NAME?	-1.1161E+02	#NAME?	-1.1161E+02	#NAME?	-1.1161E+02	#NAME?	-1.1161E+02
856000	-1.1175E+02	#NAME?	-1.1175E+02	#NAME?	-1.1175E+02	#NAME?	-1.1174E+02	#NAME?	-1.1174E+02	#NAME?	-1.1174E+02
858000	-1.1188E+02	#NAME?	-1.1188E+02	#NAME?	-1.1188E+02	#NAME?	-1.1188E+02	#NAME?	-1.1188E+02	#NAME?	-1.1187E+02
860000	-1.1201E+02	#NAME?	-1.1201E+02	#NAME?	-1.1201E+02	#NAME?	-1.1201E+02	#NAME?	-1.1201E+02	#NAME?	-1.1201E+02
862000	-1.1215E+02	#NAME?	-1.1215E+02	#NAME?	-1.1215E+02	#NAME?	-1.1214E+02	#NAME?	-1.1214E+02	#NAME?	-1.1214E+02
864000	-1.1228E+02	#NAME?	-1.1228E+02	#NAME?	-1.1228E+02	#NAME?	-1.1228E+02	#NAME?	-1.1228E+02	#NAME?	-1.1227E+02
866000	-1.1241E+02	#NAME?	-1.1241E+02	#NAME?	-1.1241E+02	#NAME?	-1.1241E+02	#NAME?	-1.1241E+02	#NAME?	-1.1241E+02
868000	-1.1254E+02	#NAME?	-1.1254E+02	#NAME?	-1.1254E+02	#NAME?	-1.1254E+02	#NAME?	-1.1254E+02	#NAME?	-1.1254E+02
870000	-1.1268E+02	#NAME?	-1.1268E+02	#NAME?	-1.1268E+02	#NAME?	-1.1267E+02	#NAME?	-1.1267E+02	#NAME?	-1.1267E+02
872000	-1.1281E+02	#NAME?	-1.1281E+02	#NAME?	-1.1281E+02	#NAME?	-1.1281E+02	#NAME?	-1.1281E+02	#NAME?	-1.1280E+02
874000	-1.1294E+02	#NAME?	-1.1294E+02	#NAME?	-1.1294E+02	#NAME?	-1.1294E+02	#NAME?	-1.1294E+02	#NAME?	-1.1294E+02
876000	-1.1307E+02	#NAME?	-1.1307E+02	#NAME?	-1.1307E+02	#NAME?	-1.1307E+02	#NAME?	-1.1307E+02	#NAME?	-1.1307E+02
878000	-1.1321E+02	#NAME?	-1.1320E+02	#NAME?	-1.1320E+02	#NAME?	-1.1320E+02	#NAME?	-1.1320E+02	#NAME?	-1.1320E+02
880000	-1.1334E+02	#NAME?	-1.1334E+02	#NAME?	-1.1334E+02	#NAME?	-1.1333E+02	#NAME?	-1.1333E+02	#NAME?	-1.1333E+02
882000	-1.1347E+02	#NAME?	-1.1347E+02	#NAME?	-1.1347E+02	#NAME?	-1.1347E+02	#NAME?	-1.1346E+02	#NAME?	-1.1346E+02
884000	-1.1360E+02	#NAME?	-1.1360E+02	#NAME?	-1.1360E+02	#NAME?	-1.1360E+02	#NAME?	-1.1360E+02	#NAME?	-1.1359E+02
886000	-1.1373E+02	#NAME?	-1.1373E+02	#NAME?	-1.1373E+02	#NAME?	-1.1373E+02	#NAME?	-1.1373E+02	#NAME?	-1.1373E+02
888000	-1.1386E+02	#NAME?	-1.1386E+02	#NAME?	-1.1386E+02	#NAME?	-1.1386E+02	#NAME?	-1.1386E+02	#NAME?	-1.1386E+02
890000	-1.1399E+02	#NAME?	-1.1399E+02	#NAME?	-1.1399E+02	#NAME?	-1.1399E+02	#NAME?	-1.1399E+02	#NAME?	-1.1399E+02
892000	-1.1412E+02	#NAME?	-1.1412E+02	#NAME?	-1.1412E+02	#NAME?	-1.1412E+02	#NAME?	-1.1412E+02	#NAME?	-1.1412E+02
894000	-1.1425E+02	#NAME?	-1.1425E+02	#NAME?	-1.1425E+02	#NAME?	-1.1425E+02	#NAME?	-1.1425E+02	#NAME?	-1.1425E+02
896000	-1.1438E+02	#NAME?	-1.1438E+02	#NAME?	-1.1438E+02	#NAME?	-1.1438E+02	#NAME?	-1.1438E+02	#NAME?	-1.1438E+02
898000	-1.1452E+02	#NAME?	-1.1451E+02	#NAME?	-1.1451E+02	#NAME?	-1.1451E+02	#NAME?	-1.1451E+02	#NAME?	-1.1451E+02
900000	-1.1465E+02	#NAME?	-1.1464E+02	#NAME?	-1.1464E+02	#NAME?	-1.1464E+02	#NAME?	-1.1464E+02	#NAME?	-1.1464E+02
902000	-1.1478E+02	#NAME?	-1.1477E+02	#NAME?	-1.1477E+02	#NAME?	-1.1477E+02	#NAME?	-1.1477E+02	#NAME?	-1.1477E+02
904000	-1.1491E+02	#NAME?	-1.1490E+02	#NAME?	-1.1490E+02	#NAME?	-1.1490E+02	#NAME?	-1.1490E+02	#NAME?	-1.1490E+02
906000	-1.1503E+02	#NAME?	-1.1503E+02	#NAME?	-1.1503E+02	#NAME?	-1.1503E+02	#NAME?	-1.1503E+02	#NAME?	-1.1503E+02
908000	-1.1516E+02	#NAME?	-1.1516E+02	#NAME?	-1.1516E+02	#NAME?	-1.1516E+02	#NAME?	-1.1516E+02	#NAME?	-1.1516E+02
910000	-1.1529E+02	#NAME?	-1.1529E+02	#NAME?	-1.1529E+02	#NAME?	-1.1529E+02	#NAME?	-1.1529E+02	#NAME?	-1.1529E+02
912000	-1.1542E+02	#NAME?	-1.1542E+02	#NAME?	-1.1542E+02	#NAME?	-1.1542E+02	#NAME?	-1.1542E+02	#NAME?	-1.1542E+02
914000	-1.1555E+02	#NAME?	-1.1555E+02	#NAME?	-1.1555E+02	#NAME?	-1.1555E+02	#NAME?	-1.1555E+02	#NAME?	-1.1555E+02
916000	-1.1568E+02	#NAME?	-1.1568E+02	#NAME?	-1.1568E+02	#NAME?	-1.1568E+02	#NAME?	-1.1568E+02	#NAME?	-1.1568E+02
918000	-1.1581E+02	#NAME?	-1.1581E+02	#NAME?	-1.1581E+02	#NAME?	-1.1581E+02	#NAME?	-1.1581E+02	#NAME?	-1.1580E+02
920000	-1.1594E+02	#NAME?	-1.1594E+02	#NAME?	-1.1594E+02	#NAME?	-1.1594E+02	#NAME?	-1.1593E+02	#NAME?	-1.1593E+02
922000	-1.1607E+02	#NAME?	-1.1607E+02	#NAME?	-1.1607E+02	#NAME?	-1.1606E+02	#NAME?	-1.1606E+02	#NAME?	-1.1606E+02
924000	-1.1620E+02	#NAME?	-1.1620E+02	#NAME?	-1.1619E+02	#NAME?	-1.1619E+02	#NAME?	-1.1619E+02	#NAME?	-1.1619E+02
926000	-1.1632E+02	#NAME?	-1.1632E+02	#NAME?	-1.1632E+02	#NAME?	-1.1632E+02	#NAME?	-1.1632E+02	#NAME?	-1.1632E+02
928000	-1.1645E+02	#NAME?	-1.1645E+02	#NAME?	-1.1645E+02	#NAME?	-1.1645E+02	#NAME?	-1.1645E+02	#NAME?	-1.1645E+02
930000	-1.1658E+02	#NAME?	-1.1658E+02	#NAME?	-1.1658E+02	#NAME?	-1.1658E+02	#NAME?	-1.1658E+02	#NAME?	-1.1657E+02
932000	-1.1671E+02	#NAME?	-1.1671E+02	#NAME?	-1.1671E+02	#NAME?	-1.1671E+02	#NAME?	-1.1670E+02	#NAME?	-1.1670E+02
934000	-1.1684E+02	#NAME?	-1.1683E+02	#NAME?	-1.1683E+02	#NAME?	-1.1683E+02	#NAME?	-1.1683E+02	#NAME?	-1.1683E+02

Time (yrs)

	Arg 1	Curve 1	Arg 2	Curve 2	Arg 3	Curve 3	Arg 4	Curve 4	Arg 5	Curve 5	Arg 6
936000	-1.1696E+02	#NAME?	-1.1696E+02	#NAME?	-1.1696E+02	#NAME?	-1.1696E+02	#NAME?	-1.1696E+02	#NAME?	-1.1696E+02
938000	-1.1709E+02	#NAME?	-1.1709E+02	#NAME?	-1.1709E+02	#NAME?	-1.1709E+02	#NAME?	-1.1709E+02	#NAME?	-1.1709E+02
940000	-1.1722E+02	#NAME?	-1.1722E+02	#NAME?	-1.1722E+02	#NAME?	-1.1722E+02	#NAME?	-1.1721E+02	#NAME?	-1.1721E+02
942000	-1.1735E+02	#NAME?	-1.1734E+02	#NAME?	-1.1734E+02	#NAME?	-1.1734E+02	#NAME?	-1.1734E+02	#NAME?	-1.1734E+02
944000	-1.1747E+02	#NAME?	-1.1747E+02	#NAME?	-1.1747E+02	#NAME?	-1.1747E+02	#NAME?	-1.1747E+02	#NAME?	-1.1747E+02
946000	-1.1760E+02	#NAME?	-1.1760E+02	#NAME?	-1.1760E+02	#NAME?	-1.1760E+02	#NAME?	-1.1760E+02	#NAME?	-1.1759E+02
948000	-1.1773E+02	#NAME?	-1.1773E+02	#NAME?	-1.1772E+02	#NAME?	-1.1772E+02	#NAME?	-1.1772E+02	#NAME?	-1.1772E+02
950000	-1.1785E+02	#NAME?	-1.1785E+02	#NAME?	-1.1785E+02	#NAME?	-1.1785E+02	#NAME?	-1.1785E+02	#NAME?	-1.1785E+02
952000	-1.1798E+02	#NAME?	-1.1798E+02	#NAME?	-1.1798E+02	#NAME?	-1.1798E+02	#NAME?	-1.1797E+02	#NAME?	-1.1797E+02
954000	-1.1811E+02	#NAME?	-1.1810E+02	#NAME?	-1.1810E+02	#NAME?	-1.1810E+02	#NAME?	-1.1810E+02	#NAME?	-1.1810E+02
956000	-1.1823E+02	#NAME?	-1.1823E+02	#NAME?	-1.1823E+02	#NAME?	-1.1823E+02	#NAME?	-1.1823E+02	#NAME?	-1.1823E+02
958000	-1.1836E+02	#NAME?	-1.1836E+02	#NAME?	-1.1836E+02	#NAME?	-1.1835E+02	#NAME?	-1.1835E+02	#NAME?	-1.1835E+02
960000	-1.1848E+02	#NAME?	-1.1848E+02	#NAME?	-1.1848E+02	#NAME?	-1.1848E+02	#NAME?	-1.1848E+02	#NAME?	-1.1848E+02
962000	-1.1861E+02	#NAME?	-1.1861E+02	#NAME?	-1.1861E+02	#NAME?	-1.1861E+02	#NAME?	-1.1861E+02	#NAME?	-1.1860E+02
964000	-1.1873E+02	#NAME?	-1.1873E+02	#NAME?	-1.1873E+02	#NAME?	-1.1873E+02	#NAME?	-1.1873E+02	#NAME?	-1.1873E+02
966000	-1.1886E+02	#NAME?	-1.1886E+02	#NAME?	-1.1886E+02	#NAME?	-1.1886E+02	#NAME?	-1.1886E+02	#NAME?	-1.1886E+02
968000	-1.1899E+02	#NAME?	-1.1899E+02	#NAME?	-1.1898E+02	#NAME?	-1.1898E+02	#NAME?	-1.1898E+02	#NAME?	-1.1898E+02
970000	-1.1911E+02	#NAME?	-1.1911E+02	#NAME?	-1.1911E+02	#NAME?	-1.1911E+02	#NAME?	-1.1911E+02	#NAME?	-1.1911E+02
972000	-1.1924E+02	#NAME?	-1.1924E+02	#NAME?	-1.1923E+02	#NAME?	-1.1923E+02	#NAME?	-1.1923E+02	#NAME?	-1.1923E+02
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976000	-1.1949E+02	#NAME?	-1.1949E+02	#NAME?	-1.1948E+02	#NAME?	-1.1948E+02	#NAME?	-1.1948E+02	#NAME?	-1.1948E+02
978000	-1.1961E+02	#NAME?	-1.1961E+02	#NAME?	-1.1961E+02	#NAME?	-1.1961E+02	#NAME?	-1.1961E+02	#NAME?	-1.1961E+02
980000	-1.1974E+02	#NAME?	-1.1973E+02	#NAME?	-1.1973E+02	#NAME?	-1.1973E+02	#NAME?	-1.1973E+02	#NAME?	-1.1973E+02
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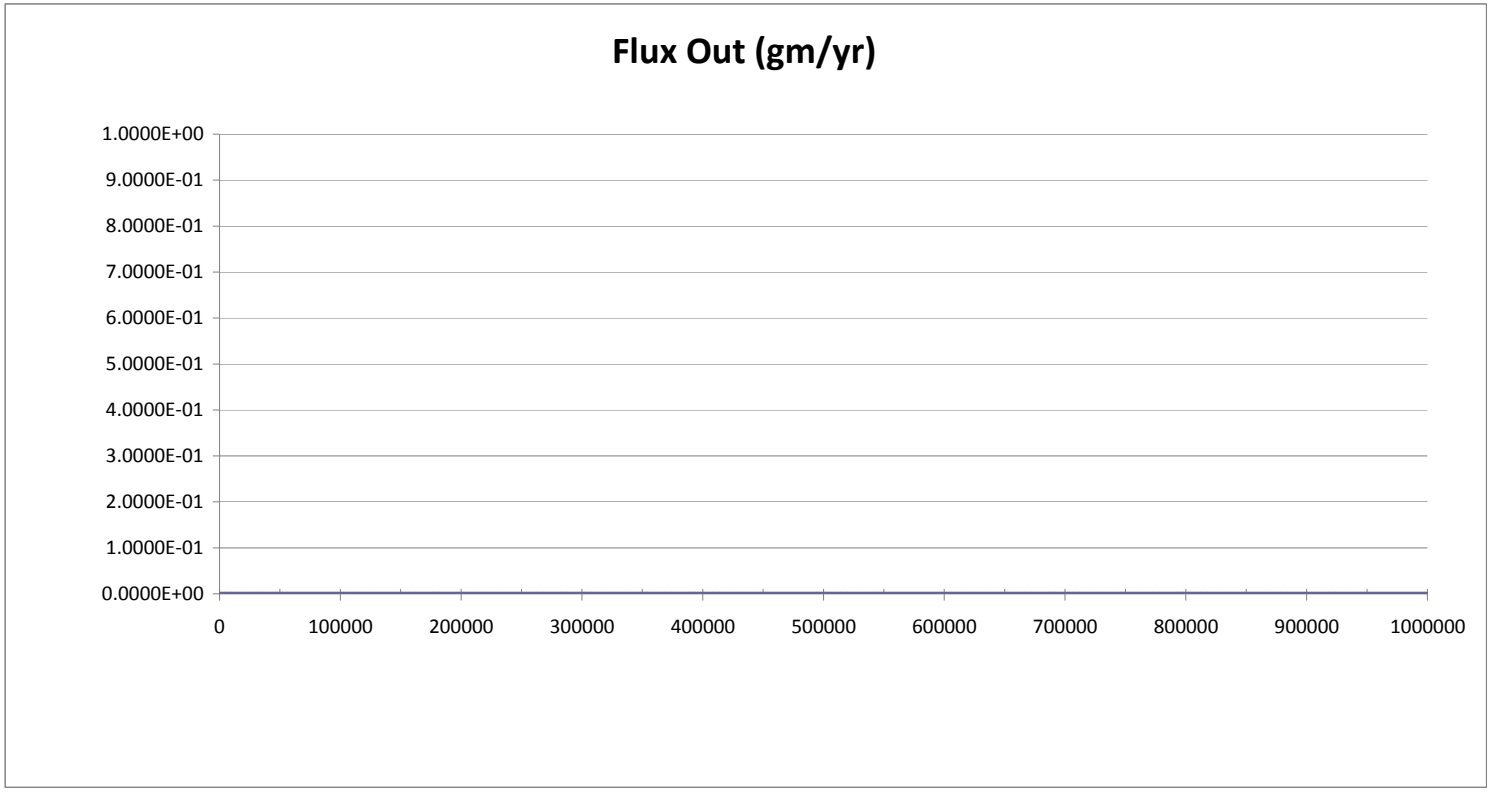
986000	-1.2011E+02	#NAME?	-1.2011E+02	#NAME?	-1.2011E+02	#NAME?	-1.2011E+02	#NAME?	-1.2010E+02	#NAME?	-1.2010E+02
988000	-1.2023E+02	#NAME?	-1.2023E+02	#NAME?	-1.2023E+02	#NAME?	-1.2023E+02	#NAME?	-1.2023E+02	#NAME?	-1.2023E+02
990000	-1.2036E+02	#NAME?	-1.2036E+02	#NAME?	-1.2036E+02	#NAME?	-1.2035E+02	#NAME?	-1.2035E+02	#NAME?	-1.2035E+02
992000	-1.2048E+02	#NAME?	-1.2048E+02	#NAME?	-1.2048E+02	#NAME?	-1.2048E+02	#NAME?	-1.2048E+02	#NAME?	-1.2048E+02
994000	-1.2060E+02	#NAME?	-1.2060E+02	#NAME?	-1.2060E+02	#NAME?	-1.2060E+02	#NAME?	-1.2060E+02	#NAME?	-1.2060E+02
996000	-1.2073E+02	#NAME?	-1.2073E+02	#NAME?	-1.2073E+02	#NAME?	-1.2073E+02	#NAME?	-1.2072E+02	#NAME?	-1.2072E+02
998000	-1.2085E+02	#NAME?	-1.2085E+02	#NAME?	-1.2085E+02	#NAME?	-1.2085E+02	#NAME?	-1.2085E+02	#NAME?	-1.2085E+02
1000000	-1.2097E+02	#NAME?	-1.2097E+02	#NAME?	-1.2097E+02	#NAME?	-1.2097E+02	#NAME?	-1.2097E+02	#NAME?	-1.2097E+02


Flux Out (gm/yr)
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9.0000E-01
8.0000E-01
7.0000E-01
6.0000E-01
5.0000E-01
4.0000E-01
3.0000E-01
2.0000E-01
1.0000E-01
0.0000E+00
0
100000
200000
300000
400000
500000
600000
700000
800000
900000
1000000

Curve 6	Arg 7	Curve 7	Arg 8	Curve 8	Arg 9	Curve 9	Arg 10	Curve 10	Arg 11	Curve 11	Arg 12	Curve 12
#NAME?	1.4705E+02	#NAME?	3.6213E+02	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
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#NAME?	5.7309E+00	#NAME?	5.8362E+00	#NAME?	5.9425E+00	#NAME?	6.0931E+00	#NAME?	6.1801E+00	#NAME?	6.3562E+00	#NAME?
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#NAME?	-3.1861E+01	#NAME?	-3.1849E+01	#NAME?	-3.1838E+01	#NAME?	-3.1822E+01	#NAME?	-3.1812E+01	#NAME?	-3.1794E+01	#NAME?
#NAME?	-3.2320E+01	#NAME?	-3.2309E+01	#NAME?	-3.2297E+01	#NAME?	-3.2281E+01	#NAME?	-3.2272E+01	#NAME?	-3.2254E+01	#NAME?
#NAME?	-3.2773E+01	#NAME?	-3.2762E+01	#NAME?	-3.2751E+01	#NAME?	-3.2735E+01	#NAME?	-3.2726E+01	#NAME?	-3.2708E+01	#NAME?
#NAME?	-3.3221E+01	#NAME?	-3.3209E+01	#NAME?	-3.3198E+01	#NAME?	-3.3183E+01	#NAME?	-3.3174E+01	#NAME?	-3.3156E+01	#NAME?
#NAME?	-3.3662E+01	#NAME?	-3.3651E+01	#NAME?	-3.3640E+01	#NAME?	-3.3625E+01	#NAME?	-3.3616E+01	#NAME?	-3.3598E+01	#NAME?
#NAME?	-3.4098E+01	#NAME?	-3.4087E+01	#NAME?	-3.4076E+01	#NAME?	-3.4061E+01	#NAME?	-3.4052E+01	#NAME?	-3.4035E+01	#NAME?
#NAME?	-3.4528E+01	#NAME?	-3.4518E+01	#NAME?	-3.4507E+01	#NAME?	-3.4492E+01	#NAME?	-3.4483E+01	#NAME?	-3.4466E+01	#NAME?
#NAME?	-3.4954E+01	#NAME?	-3.4943E+01	#NAME?	-3.4933E+01	#NAME?	-3.4918E+01	#NAME?	-3.4909E+01	#NAME?	-3.4892E+01	#NAME?
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Curve 6	Arg 7	Curve 7	Arg 8	Curve 8	Arg 9	Curve 9	Arg 10	Curve 10	Arg 11	Curve 11	Arg 12	Curve 12
#NAME?	-3.5790E+01	#NAME?	-3.5780E+01	#NAME?	-3.5769E+01	#NAME?	-3.5755E+01	#NAME?	-3.5747E+01	#NAME?	-3.5730E+01	#NAME?
#NAME?	-3.6201E+01	#NAME?	-3.6191E+01	#NAME?	-3.6181E+01	#NAME?	-3.6166E+01	#NAME?	-3.6158E+01	#NAME?	-3.6142E+01	#NAME?
#NAME?	-3.6608E+01	#NAME?	-3.6597E+01	#NAME?	-3.6587E+01	#NAME?	-3.6573E+01	#NAME?	-3.6565E+01	#NAME?	-3.6549E+01	#NAME?
#NAME?	-3.7010E+01	#NAME?	-3.7000E+01	#NAME?	-3.6990E+01	#NAME?	-3.6976E+01	#NAME?	-3.6968E+01	#NAME?	-3.6952E+01	#NAME?
#NAME?	-3.7408E+01	#NAME?	-3.7398E+01	#NAME?	-3.7388E+01	#NAME?	-3.7374E+01	#NAME?	-3.7366E+01	#NAME?	-3.7350E+01	#NAME?
#NAME?	-3.7802E+01	#NAME?	-3.7792E+01	#NAME?	-3.7782E+01	#NAME?	-3.7768E+01	#NAME?	-3.7760E+01	#NAME?	-3.7745E+01	#NAME?
#NAME?	-3.8191E+01	#NAME?	-3.8182E+01	#NAME?	-3.8172E+01	#NAME?	-3.8158E+01	#NAME?	-3.8151E+01	#NAME?	-3.8135E+01	#NAME?
#NAME?	-3.8577E+01	#NAME?	-3.8568E+01	#NAME?	-3.8558E+01	#NAME?	-3.8545E+01	#NAME?	-3.8537E+01	#NAME?	-3.8522E+01	#NAME?
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#NAME?	-4.0454E+01	#NAME?	-4.0444E+01	#NAME?	-4.0435E+01	#NAME?	-4.0422E+01	#NAME?	-4.0415E+01	#NAME?	-4.0400E+01	#NAME?
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#NAME?	-4.6596E+01	#NAME?	-4.6588E+01	#NAME?	-4.6580E+01	#NAME?	-4.6568E+01	#NAME?	-4.6562E+01	#NAME?	-4.6549E+01	#NAME?
#NAME?	-4.6914E+01	#NAME?	-4.6906E+01	#NAME?	-4.6898E+01	#NAME?	-4.6887E+01	#NAME?	-4.6880E+01	#NAME?	-4.6868E+01	#NAME?
#NAME?	-4.7229E+01	#NAME?	-4.7222E+01	#NAME?	-4.7214E+01	#NAME?	-4.7203E+01	#NAME?	-4.7196E+01	#NAME?	-4.7184E+01	#NAME?
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#NAME?	-4.7855E+01	#NAME?	-4.7847E+01	#NAME?	-4.7839E+01	#NAME?	-4.7828E+01	#NAME?	-4.7822E+01	#NAME?	-4.7810E+01	#NAME?
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#NAME?	-4.8472E+01	#NAME?	-4.8465E+01	#NAME?	-4.8457E+01	#NAME?	-4.8446E+01	#NAME?	-4.8440E+01	#NAME?	-4.8428E+01	#NAME?
#NAME?	-4.8778E+01	#NAME?	-4.8771E+01	#NAME?	-4.8763E+01	#NAME?	-4.8752E+01	#NAME?	-4.8746E+01	#NAME?	-4.8734E+01	#NAME?
#NAME?	-4.9082E+01	#NAME?	-4.9075E+01	#NAME?	-4.9067E+01	#NAME?	-4.9056E+01	#NAME?	-4.9050E+01	#NAME?	-4.9038E+01	#NAME?
#NAME?	-4.9384E+01	#NAME?	-4.9377E+01	#NAME?	-4.9369E+01	#NAME?	-4.9359E+01	#NAME?	-4.9353E+01	#NAME?	-4.9341E+01	#NAME?
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#NAME?	-4.9983E+01	#NAME?	-4.9976E+01	#NAME?	-4.9968E+01	#NAME?	-4.9958E+01	#NAME?	-4.9952E+01	#NAME?	-4.9940E+01	#NAME?
#NAME?	-5.0280E+01	#NAME?	-5.0273E+01	#NAME?	-5.0265E+01	#NAME?	-5.0255E+01	#NAME?	-5.0249E+01	#NAME?	-5.0237E+01	#NAME?
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#NAME?	-5.1160E+01	#NAME?	-5.1153E+01	#NAME?	-5.1145E+01	#NAME?	-5.1135E+01	#NAME?	-5.1129E+01	#NAME?	-5.1118E+01	#NAME?
#NAME?	-5.1450E+01	#NAME?	-5.1443E+01	#NAME?	-5.1436E+01	#NAME?	-5.1425E+01	#NAME?	-5.1420E+01	#NAME?	-5.1408E+01	#NAME?
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#NAME?	-5.2876E+01	#NAME?	-5.2869E+01	#NAME?	-5.2862E+01	#NAME?	-5.2853E+01	#NAME?	-5.2847E+01	#NAME?	-5.2836E+01	#NAME?

Curve 6	Arg 7	Curve 7	Arg 8	Curve 8	Arg 9	Curve 9	Arg 10	Curve 10	Arg 11	Curve 11	Arg 12	Curve 12
#NAME?	-5.3157E+01	#NAME?	-5.3150E+01	#NAME?	-5.3143E+01	#NAME?	-5.3133E+01	#NAME?	-5.3128E+01	#NAME?	-5.3117E+01	#NAME?
#NAME?	-5.3436E+01	#NAME?	-5.3429E+01	#NAME?	-5.3423E+01	#NAME?	-5.3413E+01	#NAME?	-5.3407E+01	#NAME?	-5.3396E+01	#NAME?
#NAME?	-5.3714E+01	#NAME?	-5.3707E+01	#NAME?	-5.3700E+01	#NAME?	-5.3691E+01	#NAME?	-5.3685E+01	#NAME?	-5.3674E+01	#NAME?
#NAME?	-5.3991E+01	#NAME?	-5.3984E+01	#NAME?	-5.3977E+01	#NAME?	-5.3967E+01	#NAME?	-5.3962E+01	#NAME?	-5.3951E+01	#NAME?
#NAME?	-5.4266E+01	#NAME?	-5.4259E+01	#NAME?	-5.4252E+01	#NAME?	-5.4242E+01	#NAME?	-5.4237E+01	#NAME?	-5.4226E+01	#NAME?
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#NAME?	-5.4812E+01	#NAME?	-5.4805E+01	#NAME?	-5.4798E+01	#NAME?	-5.4789E+01	#NAME?	-5.4783E+01	#NAME?	-5.4772E+01	#NAME?
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#NAME?	-5.7204E+01	#NAME?	-5.7198E+01	#NAME?	-5.7191E+01	#NAME?	-5.7182E+01	#NAME?	-5.7177E+01	#NAME?	-5.7166E+01	#NAME?
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#NAME?	-6.1713E+01	#NAME?	-6.1707E+01	#NAME?	-6.1701E+01	#NAME?	-6.1693E+01	#NAME?	-6.1688E+01	#NAME?	-6.1678E+01	#NAME?
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#NAME?	-6.2909E+01	#NAME?	-6.2903E+01	#NAME?	-6.2897E+01	#NAME?	-6.2888E+01	#NAME?	-6.2884E+01	#NAME?	-6.2874E+01	#NAME?
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Curve 6	Arg 7	Curve 7	Arg 8	Curve 8	Arg 9	Curve 9	Arg 10	Curve 10	Arg 11	Curve 11	Arg 12	Curve 12
#NAME?	-6.6141E+01	#NAME?	-6.6136E+01	#NAME?	-6.6130E+01	#NAME?	-6.6122E+01	#NAME?	-6.6118E+01	#NAME?	-6.6109E+01	#NAME?
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Curve 6	Arg 7	Curve 7	Arg 8	Curve 8	Arg 9	Curve 9	Arg 10	Curve 10	Arg 11	Curve 11	Arg 12	Curve 12
#NAME?	-7.6972E+01	#NAME?	-7.6967E+01	#NAME?	-7.6962E+01	#NAME?	-7.6956E+01	#NAME?	-7.6952E+01	#NAME?	-7.6944E+01	#NAME?
#NAME?	-7.7166E+01	#NAME?	-7.7161E+01	#NAME?	-7.7156E+01	#NAME?	-7.7149E+01	#NAME?	-7.7145E+01	#NAME?	-7.7138E+01	#NAME?
#NAME?	-7.7359E+01	#NAME?	-7.7354E+01	#NAME?	-7.7349E+01	#NAME?	-7.7342E+01	#NAME?	-7.7338E+01	#NAME?	-7.7331E+01	#NAME?
#NAME?	-7.7551E+01	#NAME?	-7.7546E+01	#NAME?	-7.7541E+01	#NAME?	-7.7535E+01	#NAME?	-7.7531E+01	#NAME?	-7.7523E+01	#NAME?
#NAME?	-7.7743E+01	#NAME?	-7.7738E+01	#NAME?	-7.7733E+01	#NAME?	-7.7727E+01	#NAME?	-7.7723E+01	#NAME?	-7.7715E+01	#NAME?
#NAME?	-7.7934E+01	#NAME?	-7.7930E+01	#NAME?	-7.7925E+01	#NAME?	-7.7918E+01	#NAME?	-7.7914E+01	#NAME?	-7.7907E+01	#NAME?
#NAME?	-7.8126E+01	#NAME?	-7.8121E+01	#NAME?	-7.8116E+01	#NAME?	-7.8109E+01	#NAME?	-7.8106E+01	#NAME?	-7.8098E+01	#NAME?
#NAME?	-7.8316E+01	#NAME?	-7.8311E+01	#NAME?	-7.8307E+01	#NAME?	-7.8300E+01	#NAME?	-7.8296E+01	#NAME?	-7.8289E+01	#NAME?
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#NAME?	-7.9262E+01	#NAME?	-7.9257E+01	#NAME?	-7.9253E+01	#NAME?	-7.9246E+01	#NAME?	-7.9242E+01	#NAME?	-7.9235E+01	#NAME?
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#NAME?	-7.9637E+01	#NAME?	-7.9633E+01	#NAME?	-7.9628E+01	#NAME?	-7.9622E+01	#NAME?	-7.9618E+01	#NAME?	-7.9610E+01	#NAME?
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Curve 6	Arg 7	Curve 7	Arg 8	Curve 8	Arg 9	Curve 9	Arg 10	Curve 10	Arg 11	Curve 11	Arg 12	Curve 12
#NAME?	-8.6459E+01	#NAME?	-8.6455E+01	#NAME?	-8.6451E+01	#NAME?	-8.6444E+01	#NAME?	-8.6441E+01	#NAME?	-8.6434E+01	#NAME?
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#NAME?	-8.6803E+01	#NAME?	-8.6799E+01	#NAME?	-8.6795E+01	#NAME?	-8.6789E+01	#NAME?	-8.6785E+01	#NAME?	-8.6778E+01	#NAME?
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Curve 6	Arg 7	Curve 7	Arg 8	Curve 8	Arg 9	Curve 9	Arg 10	Curve 10	Arg 11	Curve 11	Arg 12	Curve 12
#NAME?	-9.5005E+01	#NAME?	-9.5001E+01	#NAME?	-9.4997E+01	#NAME?	-9.4991E+01	#NAME?	-9.4988E+01	#NAME?	-9.4982E+01	#NAME?
#NAME?	-9.5161E+01	#NAME?	-9.5157E+01	#NAME?	-9.5153E+01	#NAME?	-9.5148E+01	#NAME?	-9.5145E+01	#NAME?	-9.5139E+01	#NAME?
#NAME?	-9.5318E+01	#NAME?	-9.5314E+01	#NAME?	-9.5310E+01	#NAME?	-9.5305E+01	#NAME?	-9.5301E+01	#NAME?	-9.5295E+01	#NAME?
#NAME?	-9.5474E+01	#NAME?	-9.5470E+01	#NAME?	-9.5466E+01	#NAME?	-9.5461E+01	#NAME?	-9.5458E+01	#NAME?	-9.5452E+01	#NAME?
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#NAME?	-9.5786E+01	#NAME?	-9.5782E+01	#NAME?	-9.5778E+01	#NAME?	-9.5773E+01	#NAME?	-9.5770E+01	#NAME?	-9.5763E+01	#NAME?
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#NAME?	-9.7177E+01	#NAME?	-9.7173E+01	#NAME?	-9.7169E+01	#NAME?	-9.7164E+01	#NAME?	-9.7161E+01	#NAME?	-9.7155E+01	#NAME?
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#NAME?	-9.7483E+01	#NAME?	-9.7480E+01	#NAME?	-9.7476E+01	#NAME?	-9.7470E+01	#NAME?	-9.7467E+01	#NAME?	-9.7461E+01	#NAME?
#NAME?	-9.7636E+01	#NAME?	-9.7632E+01	#NAME?	-9.7629E+01	#NAME?	-9.7623E+01	#NAME?	-9.7620E+01	#NAME?	-9.7614E+01	#NAME?
#NAME?	-9.7789E+01	#NAME?	-9.7785E+01	#NAME?	-9.7781E+01	#NAME?	-9.7776E+01	#NAME?	-9.7773E+01	#NAME?	-9.7767E+01	#NAME?
#NAME?	-9.7941E+01	#NAME?	-9.7937E+01	#NAME?	-9.7934E+01	#NAME?	-9.7928E+01	#NAME?	-9.7925E+01	#NAME?	-9.7919E+01	#NAME?
#NAME?	-9.8093E+01	#NAME?	-9.8090E+01	#NAME?	-9.8086E+01	#NAME?	-9.8080E+01	#NAME?	-9.8077E+01	#NAME?	-9.8071E+01	#NAME?
#NAME?	-9.8245E+01	#NAME?	-9.8241E+01	#NAME?	-9.8238E+01	#NAME?	-9.8232E+01	#NAME?	-9.8229E+01	#NAME?	-9.8223E+01	#NAME?
#NAME?	-9.8397E+01	#NAME?	-9.8393E+01	#NAME?	-9.8389E+01	#NAME?	-9.8384E+01	#NAME?	-9.8381E+01	#NAME?	-9.8375E+01	#NAME?
#NAME?	-9.8548E+01	#NAME?	-9.8545E+01	#NAME?	-9.8541E+01	#NAME?	-9.8535E+01	#NAME?	-9.8532E+01	#NAME?	-9.8526E+01	#NAME?
#NAME?	-9.8700E+01	#NAME?	-9.8696E+01	#NAME?	-9.8692E+01	#NAME?	-9.8687E+01	#NAME?	-9.8684E+01	#NAME?	-9.8678E+01	#NAME?
#NAME?	-9.8850E+01	#NAME?	-9.8847E+01	#NAME?	-9.8843E+01	#NAME?	-9.8838E+01	#NAME?	-9.8835E+01	#NAME?	-9.8829E+01	#NAME?
#NAME?	-9.9001E+01	#NAME?	-9.8997E+01	#NAME?	-9.8994E+01	#NAME?	-9.8988E+01	#NAME?	-9.8985E+01	#NAME?	-9.8979E+01	#NAME?
#NAME?	-9.9152E+01	#NAME?	-9.9148E+01	#NAME?	-9.9144E+01	#NAME?	-9.9139E+01	#NAME?	-9.9136E+01	#NAME?	-9.9130E+01	#NAME?
#NAME?	-9.9302E+01	#NAME?	-9.9298E+01	#NAME?	-9.9295E+01	#NAME?	-9.9289E+01	#NAME?	-9.9286E+01	#NAME?	-9.9280E+01	#NAME?
#NAME?	-9.9452E+01	#NAME?	-9.9448E+01	#NAME?	-9.9445E+01	#NAME?	-9.9439E+01	#NAME?	-9.9436E+01	#NAME?	-9.9430E+01	#NAME?
#NAME?	-9.9602E+01	#NAME?	-9.9598E+01	#NAME?	-9.9594E+01	#NAME?	-9.9589E+01	#NAME?	-9.9586E+01	#NAME?	-9.9580E+01	#NAME?
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#NAME?	-9.9901E+01	#NAME?	-9.9897E+01	#NAME?	-9.9893E+01	#NAME?	-9.9888E+01	#NAME?	-9.9885E+01	#NAME?	-9.9879E+01	#NAME?
#NAME?	-1.0005E+02	#NAME?	-1.0005E+02	#NAME?	-1.0004E+02	#NAME?	-1.0004E+02	#NAME?	-1.0003E+02	#NAME?	-1.0003E+02	#NAME?
#NAME?	-1.0020E+02	#NAME?	-1.0020E+02	#NAME?	-1.0019E+02	#NAME?	-1.0019E+02	#NAME?	-1.0018E+02	#NAME?	-1.0018E+02	#NAME?
#NAME?	-1.0035E+02	#NAME?	-1.0034E+02	#NAME?	-1.0034E+02	#NAME?	-1.0034E+02	#NAME?	-1.0033E+02	#NAME?	-1.0033E+02	#NAME?
#NAME?	-1.0050E+02	#NAME?	-1.0049E+02	#NAME?	-1.0049E+02	#NAME?	-1.0048E+02	#NAME?	-1.0048E+02	#NAME?	-1.0047E+02	#NAME?
#NAME?	-1.0064E+02	#NAME?	-1.0064E+02	#NAME?	-1.0064E+02	#NAME?	-1.0063E+02	#NAME?	-1.0063E+02	#NAME?	-1.0062E+02	#NAME?
#NAME?	-1.0079E+02	#NAME?	-1.0079E+02	#NAME?	-1.0079E+02	#NAME?	-1.0078E+02	#NAME?	-1.0078E+02	#NAME?	-1.0077E+02	#NAME?
#NAME?	-1.0094E+02	#NAME?	-1.0094E+02	#NAME?	-1.0093E+02	#NAME?	-1.0093E+02	#NAME?	-1.0092E+02	#NAME?	-1.0092E+02	#NAME?
#NAME?	-1.0109E+02	#NAME?	-1.0108E+02	#NAME?	-1.0108E+02	#NAME?	-1.0108E+02	#NAME?	-1.0107E+02	#NAME?	-1.0107E+02	#NAME?
#NAME?	-1.0124E+02	#NAME?	-1.0123E+02	#NAME?	-1.0123E+02	#NAME?	-1.0122E+02	#NAME?	-1.0122E+02	#NAME?	-1.0121E+02	#NAME?
#NAME?	-1.0138E+02	#NAME?	-1.0138E+02	#NAME?	-1.0138E+02	#NAME?	-1.0137E+02	#NAME?	-1.0137E+02	#NAME?	-1.0136E+02	#NAME?
#NAME?	-1.0153E+02	#NAME?	-1.0153E+02	#NAME?	-1.0152E+02	#NAME?	-1.0152E+02	#NAME?	-1.0151E+02	#NAME?	-1.0151E+02	#NAME?
#NAME?	-1.0168E+02	#NAME?	-1.0167E+02	#NAME?	-1.0167E+02	#NAME?	-1.0166E+02	#NAME?	-1.0166E+02	#NAME?	-1.0166E+02	#NAME?
#NAME?	-1.0182E+02	#NAME?	-1.0182E+02	#NAME?	-1.0182E+02	#NAME?	-1.0181E+02	#NAME?	-1.0181E+02	#NAME?	-1.0180E+02	#NAME?
#NAME?	-1.0197E+02	#NAME?	-1.0197E+02	#NAME?	-1.0196E+02	#NAME?	-1.0196E+02	#NAME?	-1.0195E+02	#NAME?	-1.0195E+02	#NAME?
#NAME?	-1.0212E+02	#NAME?	-1.0211E+02	#NAME?	-1.0211E+02	#NAME?	-1.0210E+02	#NAME?	-1.0210E+02	#NAME?	-1.0209E+02	#NAME?
#NAME?	-1.0226E+02	#NAME?	-1.0226E+02	#NAME?	-1.0225E+02	#NAME?	-1.0225E+02	#NAME?	-1.0225E+02	#NAME?	-1.0224E+02	#NAME?
#NAME?	-1.0241E+02	#NAME?	-1.0240E+02	#NAME?	-1.0240E+02	#NAME?	-1.0239E+02	#NAME?	-1.0239E+02	#NAME?	-1.0239E+02	#NAME?
#NAME?	-1.0255E+02	#NAME?	-1.0255E+02	#NAME?	-1.0255E+02	#NAME?	-1.0254E+02	#NAME?	-1.0254E+02	#NAME?	-1.0253E+02	#NAME?
#NAME?	-1.0270E+02	#NAME?	-1.0269E+02	#NAME?	-1.0269E+02	#NAME?	-1.0269E+02	#NAME?	-1.0268E+02	#NAME?	-1.0268E+02	#NAME?

Curve 6	Arg 7	Curve 7	Arg 8	Curve 8	Arg 9	Curve 9	Arg 10	Curve 10	Arg 11	Curve 11	Arg 12	Curve 12
#NAME?	-1.0284E+02	#NAME?	-1.0284E+02	#NAME?	-1.0284E+02	#NAME?	-1.0283E+02	#NAME?	-1.0283E+02	#NAME?	-1.0282E+02	#NAME?
#NAME?	-1.0299E+02	#NAME?	-1.0298E+02	#NAME?	-1.0298E+02	#NAME?	-1.0298E+02	#NAME?	-1.0297E+02	#NAME?	-1.0297E+02	#NAME?
#NAME?	-1.0313E+02	#NAME?	-1.0313E+02	#NAME?	-1.0313E+02	#NAME?	-1.0312E+02	#NAME?	-1.0312E+02	#NAME?	-1.0311E+02	#NAME?
#NAME?	-1.0328E+02	#NAME?	-1.0327E+02	#NAME?	-1.0327E+02	#NAME?	-1.0326E+02	#NAME?	-1.0326E+02	#NAME?	-1.0326E+02	#NAME?
#NAME?	-1.0342E+02	#NAME?	-1.0342E+02	#NAME?	-1.0341E+02	#NAME?	-1.0341E+02	#NAME?	-1.0341E+02	#NAME?	-1.0340E+02	#NAME?
#NAME?	-1.0357E+02	#NAME?	-1.0356E+02	#NAME?	-1.0356E+02	#NAME?	-1.0355E+02	#NAME?	-1.0355E+02	#NAME?	-1.0354E+02	#NAME?
#NAME?	-1.0371E+02	#NAME?	-1.0371E+02	#NAME?	-1.0370E+02	#NAME?	-1.0370E+02	#NAME?	-1.0369E+02	#NAME?	-1.0369E+02	#NAME?
#NAME?	-1.0385E+02	#NAME?	-1.0385E+02	#NAME?	-1.0385E+02	#NAME?	-1.0384E+02	#NAME?	-1.0384E+02	#NAME?	-1.0383E+02	#NAME?
#NAME?	-1.0400E+02	#NAME?	-1.0399E+02	#NAME?	-1.0399E+02	#NAME?	-1.0398E+02	#NAME?	-1.0398E+02	#NAME?	-1.0398E+02	#NAME?
#NAME?	-1.0414E+02	#NAME?	-1.0414E+02	#NAME?	-1.0413E+02	#NAME?	-1.0413E+02	#NAME?	-1.0412E+02	#NAME?	-1.0412E+02	#NAME?
#NAME?	-1.0428E+02	#NAME?	-1.0428E+02	#NAME?	-1.0428E+02	#NAME?	-1.0427E+02	#NAME?	-1.0427E+02	#NAME?	-1.0426E+02	#NAME?
#NAME?	-1.0443E+02	#NAME?	-1.0442E+02	#NAME?	-1.0442E+02	#NAME?	-1.0441E+02	#NAME?	-1.0441E+02	#NAME?	-1.0440E+02	#NAME?
#NAME?	-1.0457E+02	#NAME?	-1.0456E+02	#NAME?	-1.0456E+02	#NAME?	-1.0456E+02	#NAME?	-1.0455E+02	#NAME?	-1.0455E+02	#NAME?
#NAME?	-1.0471E+02	#NAME?	-1.0471E+02	#NAME?	-1.0470E+02	#NAME?	-1.0470E+02	#NAME?	-1.0470E+02	#NAME?	-1.0469E+02	#NAME?
#NAME?	-1.0485E+02	#NAME?	-1.0485E+02	#NAME?	-1.0485E+02	#NAME?	-1.0484E+02	#NAME?	-1.0484E+02	#NAME?	-1.0483E+02	#NAME?
#NAME?	-1.0500E+02	#NAME?	-1.0499E+02	#NAME?	-1.0499E+02	#NAME?	-1.0498E+02	#NAME?	-1.0498E+02	#NAME?	-1.0497E+02	#NAME?
#NAME?	-1.0514E+02	#NAME?	-1.0513E+02	#NAME?	-1.0513E+02	#NAME?	-1.0513E+02	#NAME?	-1.0512E+02	#NAME?	-1.0512E+02	#NAME?
#NAME?	-1.0528E+02	#NAME?	-1.0528E+02	#NAME?	-1.0527E+02	#NAME?	-1.0527E+02	#NAME?	-1.0526E+02	#NAME?	-1.0526E+02	#NAME?
#NAME?	-1.0542E+02	#NAME?	-1.0542E+02	#NAME?	-1.0541E+02	#NAME?	-1.0541E+02	#NAME?	-1.0541E+02	#NAME?	-1.0540E+02	#NAME?
#NAME?	-1.0556E+02	#NAME?	-1.0556E+02	#NAME?	-1.0555E+02	#NAME?	-1.0555E+02	#NAME?	-1.0555E+02	#NAME?	-1.0554E+02	#NAME?
#NAME?	-1.0570E+02	#NAME?	-1.0570E+02	#NAME?	-1.0570E+02	#NAME?	-1.0569E+02	#NAME?	-1.0569E+02	#NAME?	-1.0568E+02	#NAME?
#NAME?	-1.0584E+02	#NAME?	-1.0584E+02	#NAME?	-1.0584E+02	#NAME?	-1.0583E+02	#NAME?	-1.0583E+02	#NAME?	-1.0582E+02	#NAME?
#NAME?	-1.0598E+02	#NAME?	-1.0598E+02	#NAME?	-1.0598E+02	#NAME?	-1.0597E+02	#NAME?	-1.0597E+02	#NAME?	-1.0596E+02	#NAME?
#NAME?	-1.0613E+02	#NAME?	-1.0612E+02	#NAME?	-1.0612E+02	#NAME?	-1.0611E+02	#NAME?	-1.0611E+02	#NAME?	-1.0611E+02	#NAME?
#NAME?	-1.0627E+02	#NAME?	-1.0626E+02	#NAME?	-1.0626E+02	#NAME?	-1.0625E+02	#NAME?	-1.0625E+02	#NAME?	-1.0625E+02	#NAME?
#NAME?	-1.0641E+02	#NAME?	-1.0640E+02	#NAME?	-1.0640E+02	#NAME?	-1.0639E+02	#NAME?	-1.0639E+02	#NAME?	-1.0639E+02	#NAME?
#NAME?	-1.0655E+02	#NAME?	-1.0654E+02	#NAME?	-1.0654E+02	#NAME?	-1.0653E+02	#NAME?	-1.0653E+02	#NAME?	-1.0653E+02	#NAME?
#NAME?	-1.0669E+02	#NAME?	-1.0668E+02	#NAME?	-1.0668E+02	#NAME?	-1.0667E+02	#NAME?	-1.0667E+02	#NAME?	-1.0667E+02	#NAME?
#NAME?	-1.0683E+02	#NAME?	-1.0682E+02	#NAME?	-1.0682E+02	#NAME?	-1.0681E+02	#NAME?	-1.0681E+02	#NAME?	-1.0681E+02	#NAME?
#NAME?	-1.0697E+02	#NAME?	-1.0696E+02	#NAME?	-1.0696E+02	#NAME?	-1.0695E+02	#NAME?	-1.0695E+02	#NAME?	-1.0694E+02	#NAME?
#NAME?	-1.0710E+02	#NAME?	-1.0710E+02	#NAME?	-1.0710E+02	#NAME?	-1.0709E+02	#NAME?	-1.0709E+02	#NAME?	-1.0708E+02	#NAME?
#NAME?	-1.0724E+02	#NAME?	-1.0724E+02	#NAME?	-1.0724E+02	#NAME?	-1.0723E+02	#NAME?	-1.0723E+02	#NAME?	-1.0722E+02	#NAME?
#NAME?	-1.0738E+02	#NAME?	-1.0738E+02	#NAME?	-1.0738E+02	#NAME?	-1.0737E+02	#NAME?	-1.0737E+02	#NAME?	-1.0736E+02	#NAME?
#NAME?	-1.0752E+02	#NAME?	-1.0752E+02	#NAME?	-1.0751E+02	#NAME?	-1.0751E+02	#NAME?	-1.0751E+02	#NAME?	-1.0750E+02	#NAME?
#NAME?	-1.0766E+02	#NAME?	-1.0766E+02	#NAME?	-1.0765E+02	#NAME?	-1.0765E+02	#NAME?	-1.0765E+02	#NAME?	-1.0764E+02	#NAME?
#NAME?	-1.0780E+02	#NAME?	-1.0779E+02	#NAME?	-1.0779E+02	#NAME?	-1.0779E+02	#NAME?	-1.0778E+02	#NAME?	-1.0778E+02	#NAME?
#NAME?	-1.0794E+02	#NAME?	-1.0793E+02	#NAME?	-1.0793E+02	#NAME?	-1.0792E+02	#NAME?	-1.0792E+02	#NAME?	-1.0792E+02	#NAME?
#NAME?	-1.0807E+02	#NAME?	-1.0807E+02	#NAME?	-1.0807E+02	#NAME?	-1.0806E+02	#NAME?	-1.0806E+02	#NAME?	-1.0805E+02	#NAME?
#NAME?	-1.0821E+02	#NAME?	-1.0821E+02	#NAME?	-1.0821E+02	#NAME?	-1.0820E+02	#NAME?	-1.0820E+02	#NAME?	-1.0819E+02	#NAME?
#NAME?	-1.0835E+02	#NAME?	-1.0835E+02	#NAME?	-1.0834E+02	#NAME?	-1.0834E+02	#NAME?	-1.0834E+02	#NAME?	-1.0833E+02	#NAME?
#NAME?	-1.0849E+02	#NAME?	-1.0848E+02	#NAME?	-1.0848E+02	#NAME?	-1.0848E+02	#NAME?	-1.0847E+02	#NAME?	-1.0847E+02	#NAME?
#NAME?	-1.0863E+02	#NAME?	-1.0862E+02	#NAME?	-1.0862E+02	#NAME?	-1.0861E+02	#NAME?	-1.0861E+02	#NAME?	-1.0861E+02	#NAME?
#NAME?	-1.0876E+02	#NAME?	-1.0876E+02	#NAME?	-1.0876E+02	#NAME?	-1.0875E+02	#NAME?	-1.0875E+02	#NAME?	-1.0874E+02	#NAME?
#NAME?	-1.0890E+02	#NAME?	-1.0890E+02	#NAME?	-1.0889E+02	#NAME?	-1.0889E+02	#NAME?	-1.0889E+02	#NAME?	-1.0888E+02	#NAME?
#NAME?	-1.0904E+02	#NAME?	-1.0903E+02	#NAME?	-1.0903E+02	#NAME?	-1.0902E+02	#NAME?	-1.0902E+02	#NAME?	-1.0902E+02	#NAME?
#NAME?	-1.0917E+02	#NAME?	-1.0917E+02	#NAME?	-1.0917E+02	#NAME?	-1.0916E+02	#NAME?	-1.0916E+02	#NAME?	-1.0915E+02	#NAME?
#NAME?	-1.0931E+02	#NAME?	-1.0931E+02	#NAME?	-1.0930E+02	#NAME?	-1.0930E+02	#NAME?	-1.0930E+02	#NAME?	-1.0929E+02	#NAME?
#NAME?	-1.0945E+02	#NAME?	-1.0944E+02	#NAME?	-1.0944E+02	#NAME?	-1.0943E+02	#NAME?	-1.0943E+02	#NAME?	-1.0943E+02	#NAME?
#NAME?	-1.0958E+02	#NAME?	-1.0958E+02	#NAME?	-1.0958E+02	#NAME?	-1.0957E+02	#NAME?	-1.0957E+02	#NAME?	-1.0956E+02	#NAME?
#NAME?	-1.0972E+02	#NAME?	-1.0971E+02	#NAME?	-1.0971E+02	#NAME?	-1.0971E+02	#NAME?	-1.0970E+02	#NAME?	-1.0970E+02	#NAME?
#NAME?	-1.0985E+02	#NAME?	-1.0985E+02	#NAME?	-1.0985E+02	#NAME?	-1.0984E+02	#NAME?	-1.0984E+02	#NAME?	-1.0983E+02	#NAME?
#NAME?	-1.0999E+02	#NAME?	-1.0999E+02	#NAME?	-1.0998E+02	#NAME?	-1.0998E+02	#NAME?	-1.0998E+02	#NAME?	-1.0997E+02	#NAME?

Curve 6	Arg 7	Curve 7	Arg 8	Curve 8	Arg 9	Curve 9	Arg 10	Curve 10	Arg 11	Curve 11	Arg 12	Curve 12
#NAME?	-1.1013E+02	#NAME?	-1.1012E+02	#NAME?	-1.1012E+02	#NAME?	-1.1011E+02	#NAME?	-1.1011E+02	#NAME?	-1.1011E+02	#NAME?
#NAME?	-1.1026E+02	#NAME?	-1.1026E+02	#NAME?	-1.1025E+02	#NAME?	-1.1025E+02	#NAME?	-1.1025E+02	#NAME?	-1.1024E+02	#NAME?
#NAME?	-1.1040E+02	#NAME?	-1.1039E+02	#NAME?	-1.1039E+02	#NAME?	-1.1038E+02	#NAME?	-1.1038E+02	#NAME?	-1.1038E+02	#NAME?
#NAME?	-1.1053E+02	#NAME?	-1.1053E+02	#NAME?	-1.1052E+02	#NAME?	-1.1052E+02	#NAME?	-1.1052E+02	#NAME?	-1.1051E+02	#NAME?
#NAME?	-1.1067E+02	#NAME?	-1.1066E+02	#NAME?	-1.1066E+02	#NAME?	-1.1065E+02	#NAME?	-1.1065E+02	#NAME?	-1.1065E+02	#NAME?
#NAME?	-1.1080E+02	#NAME?	-1.1080E+02	#NAME?	-1.1079E+02	#NAME?	-1.1079E+02	#NAME?	-1.1079E+02	#NAME?	-1.1078E+02	#NAME?
#NAME?	-1.1093E+02	#NAME?	-1.1093E+02	#NAME?	-1.1093E+02	#NAME?	-1.1092E+02	#NAME?	-1.1092E+02	#NAME?	-1.1092E+02	#NAME?
#NAME?	-1.1107E+02	#NAME?	-1.1107E+02	#NAME?	-1.1106E+02	#NAME?	-1.1106E+02	#NAME?	-1.1105E+02	#NAME?	-1.1105E+02	#NAME?
#NAME?	-1.1120E+02	#NAME?	-1.1120E+02	#NAME?	-1.1120E+02	#NAME?	-1.1119E+02	#NAME?	-1.1119E+02	#NAME?	-1.1118E+02	#NAME?
#NAME?	-1.1134E+02	#NAME?	-1.1133E+02	#NAME?	-1.1133E+02	#NAME?	-1.1133E+02	#NAME?	-1.1132E+02	#NAME?	-1.1132E+02	#NAME?
#NAME?	-1.1147E+02	#NAME?	-1.1147E+02	#NAME?	-1.1146E+02	#NAME?	-1.1146E+02	#NAME?	-1.1146E+02	#NAME?	-1.1145E+02	#NAME?
#NAME?	-1.1160E+02	#NAME?	-1.1160E+02	#NAME?	-1.1160E+02	#NAME?	-1.1159E+02	#NAME?	-1.1159E+02	#NAME?	-1.1159E+02	#NAME?
#NAME?	-1.1174E+02	#NAME?	-1.1173E+02	#NAME?	-1.1173E+02	#NAME?	-1.1173E+02	#NAME?	-1.1172E+02	#NAME?	-1.1172E+02	#NAME?
#NAME?	-1.1187E+02	#NAME?	-1.1187E+02	#NAME?	-1.1186E+02	#NAME?	-1.1186E+02	#NAME?	-1.1186E+02	#NAME?	-1.1185E+02	#NAME?
#NAME?	-1.1200E+02	#NAME?	-1.1200E+02	#NAME?	-1.1200E+02	#NAME?	-1.1199E+02	#NAME?	-1.1199E+02	#NAME?	-1.1199E+02	#NAME?
#NAME?	-1.1214E+02	#NAME?	-1.1213E+02	#NAME?	-1.1213E+02	#NAME?	-1.1213E+02	#NAME?	-1.1212E+02	#NAME?	-1.1212E+02	#NAME?
#NAME?	-1.1227E+02	#NAME?	-1.1227E+02	#NAME?	-1.1226E+02	#NAME?	-1.1226E+02	#NAME?	-1.1226E+02	#NAME?	-1.1225E+02	#NAME?
#NAME?	-1.1240E+02	#NAME?	-1.1240E+02	#NAME?	-1.1240E+02	#NAME?	-1.1239E+02	#NAME?	-1.1239E+02	#NAME?	-1.1238E+02	#NAME?
#NAME?	-1.1254E+02	#NAME?	-1.1253E+02	#NAME?	-1.1253E+02	#NAME?	-1.1252E+02	#NAME?	-1.1252E+02	#NAME?	-1.1252E+02	#NAME?
#NAME?	-1.1267E+02	#NAME?	-1.1267E+02	#NAME?	-1.1266E+02	#NAME?	-1.1266E+02	#NAME?	-1.1265E+02	#NAME?	-1.1265E+02	#NAME?
#NAME?	-1.1280E+02	#NAME?	-1.1280E+02	#NAME?	-1.1279E+02	#NAME?	-1.1279E+02	#NAME?	-1.1279E+02	#NAME?	-1.1278E+02	#NAME?
#NAME?	-1.1293E+02	#NAME?	-1.1293E+02	#NAME?	-1.1293E+02	#NAME?	-1.1292E+02	#NAME?	-1.1292E+02	#NAME?	-1.1291E+02	#NAME?
#NAME?	-1.1306E+02	#NAME?	-1.1306E+02	#NAME?	-1.1306E+02	#NAME?	-1.1305E+02	#NAME?	-1.1305E+02	#NAME?	-1.1305E+02	#NAME?
#NAME?	-1.1320E+02	#NAME?	-1.1319E+02	#NAME?	-1.1319E+02	#NAME?	-1.1319E+02	#NAME?	-1.1318E+02	#NAME?	-1.1318E+02	#NAME?
#NAME?	-1.1333E+02	#NAME?	-1.1333E+02	#NAME?	-1.1332E+02	#NAME?	-1.1332E+02	#NAME?	-1.1331E+02	#NAME?	-1.1331E+02	#NAME?
#NAME?	-1.1346E+02	#NAME?	-1.1346E+02	#NAME?	-1.1345E+02	#NAME?	-1.1345E+02	#NAME?	-1.1345E+02	#NAME?	-1.1344E+02	#NAME?
#NAME?	-1.1359E+02	#NAME?	-1.1359E+02	#NAME?	-1.1358E+02	#NAME?	-1.1358E+02	#NAME?	-1.1358E+02	#NAME?	-1.1357E+02	#NAME?
#NAME?	-1.1372E+02	#NAME?	-1.1372E+02	#NAME?	-1.1372E+02	#NAME?	-1.1371E+02	#NAME?	-1.1371E+02	#NAME?	-1.1370E+02	#NAME?
#NAME?	-1.1385E+02	#NAME?	-1.1385E+02	#NAME?	-1.1385E+02	#NAME?	-1.1384E+02	#NAME?	-1.1384E+02	#NAME?	-1.1383E+02	#NAME?
#NAME?	-1.1398E+02	#NAME?	-1.1398E+02	#NAME?	-1.1398E+02	#NAME?	-1.1397E+02	#NAME?	-1.1397E+02	#NAME?	-1.1397E+02	#NAME?
#NAME?	-1.1412E+02	#NAME?	-1.1411E+02	#NAME?	-1.1411E+02	#NAME?	-1.1410E+02	#NAME?	-1.1410E+02	#NAME?	-1.1410E+02	#NAME?
#NAME?	-1.1425E+02	#NAME?	-1.1424E+02	#NAME?	-1.1424E+02	#NAME?	-1.1423E+02	#NAME?	-1.1423E+02	#NAME?	-1.1423E+02	#NAME?
#NAME?	-1.1438E+02	#NAME?	-1.1437E+02	#NAME?	-1.1437E+02	#NAME?	-1.1437E+02	#NAME?	-1.1436E+02	#NAME?	-1.1436E+02	#NAME?
#NAME?	-1.1451E+02	#NAME?	-1.1450E+02	#NAME?	-1.1450E+02	#NAME?	-1.1450E+02	#NAME?	-1.1449E+02	#NAME?	-1.1449E+02	#NAME?
#NAME?	-1.1464E+02	#NAME?	-1.1463E+02	#NAME?	-1.1463E+02	#NAME?	-1.1463E+02	#NAME?	-1.1462E+02	#NAME?	-1.1462E+02	#NAME?
#NAME?	-1.1477E+02	#NAME?	-1.1476E+02	#NAME?	-1.1476E+02	#NAME?	-1.1476E+02	#NAME?	-1.1475E+02	#NAME?	-1.1475E+02	#NAME?
#NAME?	-1.1490E+02	#NAME?	-1.1489E+02	#NAME?	-1.1489E+02	#NAME?	-1.1489E+02	#NAME?	-1.1488E+02	#NAME?	-1.1488E+02	#NAME?
#NAME?	-1.1503E+02	#NAME?	-1.1502E+02	#NAME?	-1.1502E+02	#NAME?	-1.1502E+02	#NAME?	-1.1501E+02	#NAME?	-1.1501E+02	#NAME?
#NAME?	-1.1516E+02	#NAME?	-1.1515E+02	#NAME?	-1.1515E+02	#NAME?	-1.1514E+02	#NAME?	-1.1514E+02	#NAME?	-1.1514E+02	#NAME?
#NAME?	-1.1529E+02	#NAME?	-1.1528E+02	#NAME?	-1.1528E+02	#NAME?	-1.1527E+02	#NAME?	-1.1527E+02	#NAME?	-1.1527E+02	#NAME?
#NAME?	-1.1541E+02	#NAME?	-1.1541E+02	#NAME?	-1.1541E+02	#NAME?	-1.1540E+02	#NAME?	-1.1540E+02	#NAME?	-1.1540E+02	#NAME?
#NAME?	-1.1554E+02	#NAME?	-1.1554E+02	#NAME?	-1.1554E+02	#NAME?	-1.1553E+02	#NAME?	-1.1553E+02	#NAME?	-1.1553E+02	#NAME?
#NAME?	-1.1567E+02	#NAME?	-1.1567E+02	#NAME?	-1.1567E+02	#NAME?	-1.1566E+02	#NAME?	-1.1566E+02	#NAME?	-1.1565E+02	#NAME?
#NAME?	-1.1580E+02	#NAME?	-1.1580E+02	#NAME?	-1.1580E+02	#NAME?	-1.1579E+02	#NAME?	-1.1579E+02	#NAME?	-1.1578E+02	#NAME?
#NAME?	-1.1593E+02	#NAME?	-1.1593E+02	#NAME?	-1.1592E+02	#NAME?	-1.1592E+02	#NAME?	-1.1592E+02	#NAME?	-1.1591E+02	#NAME?
#NAME?	-1.1606E+02	#NAME?	-1.1606E+02	#NAME?	-1.1605E+02	#NAME?	-1.1605E+02	#NAME?	-1.1605E+02	#NAME?	-1.1604E+02	#NAME?
#NAME?	-1.1619E+02	#NAME?	-1.1618E+02	#NAME?	-1.1618E+02	#NAME?	-1.1618E+02	#NAME?	-1.1617E+02	#NAME?	-1.1617E+02	#NAME?
#NAME?	-1.1632E+02	#NAME?	-1.1631E+02	#NAME?	-1.1631E+02	#NAME?	-1.1630E+02	#NAME?	-1.1630E+02	#NAME?	-1.1630E+02	#NAME?
#NAME?	-1.1644E+02	#NAME?	-1.1644E+02	#NAME?	-1.1644E+02	#NAME?	-1.1643E+02	#NAME?	-1.1643E+02	#NAME?	-1.1643E+02	#NAME?
#NAME?	-1.1657E+02	#NAME?	-1.1657E+02	#NAME?	-1.1657E+02	#NAME?	-1.1656E+02	#NAME?	-1.1656E+02	#NAME?	-1.1655E+02	#NAME?
#NAME?	-1.1670E+02	#NAME?	-1.1670E+02	#NAME?	-1.1669E+02	#NAME?	-1.1669E+02	#NAME?	-1.1669E+02	#NAME?	-1.1668E+02	#NAME?
#NAME?	-1.1683E+02	#NAME?	-1.1682E+02	#NAME?	-1.1682E+02	#NAME?	-1.1682E+02	#NAME?	-1.1681E+02	#NAME?	-1.1681E+02	#NAME?

Curve 6	Arg 7	Curve 7	Arg 8	Curve 8	Arg 9	Curve 9	Arg 10	Curve 10	Arg 11	Curve 11	Arg 12	Curve 12
#NAME?	-1.1695E+02	#NAME?	-1.1695E+02	#NAME?	-1.1695E+02	#NAME?	-1.1694E+02	#NAME?	-1.1694E+02	#NAME?	-1.1694E+02	#NAME?
#NAME?	-1.1708E+02	#NAME?	-1.1708E+02	#NAME?	-1.1708E+02	#NAME?	-1.1707E+02	#NAME?	-1.1707E+02	#NAME?	-1.1706E+02	#NAME?
#NAME?	-1.1721E+02	#NAME?	-1.1721E+02	#NAME?	-1.1720E+02	#NAME?	-1.1720E+02	#NAME?	-1.1720E+02	#NAME?	-1.1719E+02	#NAME?
#NAME?	-1.1734E+02	#NAME?	-1.1733E+02	#NAME?	-1.1733E+02	#NAME?	-1.1733E+02	#NAME?	-1.1732E+02	#NAME?	-1.1732E+02	#NAME?
#NAME?	-1.1746E+02	#NAME?	-1.1746E+02	#NAME?	-1.1746E+02	#NAME?	-1.1745E+02	#NAME?	-1.1745E+02	#NAME?	-1.1745E+02	#NAME?
#NAME?	-1.1759E+02	#NAME?	-1.1759E+02	#NAME?	-1.1758E+02	#NAME?	-1.1758E+02	#NAME?	-1.1758E+02	#NAME?	-1.1757E+02	#NAME?
#NAME?	-1.1772E+02	#NAME?	-1.1771E+02	#NAME?	-1.1771E+02	#NAME?	-1.1771E+02	#NAME?	-1.1770E+02	#NAME?	-1.1770E+02	#NAME?
#NAME?	-1.1784E+02	#NAME?	-1.1784E+02	#NAME?	-1.1784E+02	#NAME?	-1.1783E+02	#NAME?	-1.1783E+02	#NAME?	-1.1783E+02	#NAME?
#NAME?	-1.1797E+02	#NAME?	-1.1797E+02	#NAME?	-1.1796E+02	#NAME?	-1.1796E+02	#NAME?	-1.1796E+02	#NAME?	-1.1795E+02	#NAME?
#NAME?	-1.1810E+02	#NAME?	-1.1809E+02	#NAME?	-1.1809E+02	#NAME?	-1.1809E+02	#NAME?	-1.1808E+02	#NAME?	-1.1808E+02	#NAME?
#NAME?	-1.1822E+02	#NAME?	-1.1822E+02	#NAME?	-1.1822E+02	#NAME?	-1.1821E+02	#NAME?	-1.1821E+02	#NAME?	-1.1820E+02	#NAME?
#NAME?	-1.1835E+02	#NAME?	-1.1835E+02	#NAME?	-1.1834E+02	#NAME?	-1.1834E+02	#NAME?	-1.1834E+02	#NAME?	-1.1833E+02	#NAME?
#NAME?	-1.1848E+02	#NAME?	-1.1847E+02	#NAME?	-1.1847E+02	#NAME?	-1.1846E+02	#NAME?	-1.1846E+02	#NAME?	-1.1846E+02	#NAME?
#NAME?	-1.1860E+02	#NAME?	-1.1860E+02	#NAME?	-1.1859E+02	#NAME?	-1.1859E+02	#NAME?	-1.1859E+02	#NAME?	-1.1858E+02	#NAME?
#NAME?	-1.1873E+02	#NAME?	-1.1872E+02	#NAME?	-1.1872E+02	#NAME?	-1.1872E+02	#NAME?	-1.1871E+02	#NAME?	-1.1871E+02	#NAME?
#NAME?	-1.1885E+02	#NAME?	-1.1885E+02	#NAME?	-1.1885E+02	#NAME?	-1.1884E+02	#NAME?	-1.1884E+02	#NAME?	-1.1883E+02	#NAME?
#NAME?	-1.1898E+02	#NAME?	-1.1897E+02	#NAME?	-1.1897E+02	#NAME?	-1.1897E+02	#NAME?	-1.1896E+02	#NAME?	-1.1896E+02	#NAME?
#NAME?	-1.1910E+02	#NAME?	-1.1910E+02	#NAME?	-1.1910E+02	#NAME?	-1.1909E+02	#NAME?	-1.1909E+02	#NAME?	-1.1908E+02	#NAME?
#NAME?	-1.1923E+02	#NAME?	-1.1922E+02	#NAME?	-1.1922E+02	#NAME?	-1.1922E+02	#NAME?	-1.1921E+02	#NAME?	-1.1921E+02	#NAME?
#NAME?	-1.1935E+02	#NAME?	-1.1935E+02	#NAME?	-1.1935E+02	#NAME?	-1.1934E+02	#NAME?	-1.1934E+02	#NAME?	-1.1933E+02	#NAME?
#NAME?	-1.1948E+02	#NAME?	-1.1947E+02	#NAME?	-1.1947E+02	#NAME?	-1.1947E+02	#NAME?	-1.1946E+02	#NAME?	-1.1946E+02	#NAME?
#NAME?	-1.1960E+02	#NAME?	-1.1960E+02	#NAME?	-1.1960E+02	#NAME?	-1.1959E+02	#NAME?	-1.1959E+02	#NAME?	-1.1958E+02	#NAME?
#NAME?	-1.1973E+02	#NAME?	-1.1972E+02	#NAME?	-1.1972E+02	#NAME?	-1.1972E+02	#NAME?	-1.1971E+02	#NAME?	-1.1971E+02	#NAME?
#NAME?	-1.1985E+02	#NAME?	-1.1985E+02	#NAME?	-1.1985E+02	#NAME?	-1.1984E+02	#NAME?	-1.1984E+02	#NAME?	-1.1983E+02	#NAME?
#NAME?	-1.1998E+02	#NAME?	-1.1997E+02	#NAME?	-1.1997E+02	#NAME?	-1.1997E+02	#NAME?	-1.1996E+02	#NAME?	-1.1996E+02	#NAME?
#NAME?	-1.2010E+02	#NAME?	-1.2010E+02	#NAME?	-1.2009E+02	#NAME?	-1.2009E+02	#NAME?	-1.2009E+02	#NAME?	-1.2008E+02	#NAME?
#NAME?	-1.2022E+02	#NAME?	-1.2022E+02	#NAME?	-1.2022E+02	#NAME?	-1.2021E+02	#NAME?	-1.2021E+02	#NAME?	-1.2021E+02	#NAME?
#NAME?	-1.2035E+02	#NAME?	-1.2035E+02	#NAME?	-1.2034E+02	#NAME?	-1.2034E+02	#NAME?	-1.2034E+02	#NAME?	-1.2033E+02	#NAME?
#NAME?	-1.2047E+02	#NAME?	-1.2047E+02	#NAME?	-1.2047E+02	#NAME?	-1.2046E+02	#NAME?	-1.2046E+02	#NAME?	-1.2045E+02	#NAME?
#NAME?	-1.2060E+02	#NAME?	-1.2059E+02	#NAME?	-1.2059E+02	#NAME?	-1.2059E+02	#NAME?	-1.2058E+02	#NAME?	-1.2058E+02	#NAME?
#NAME?	-1.2072E+02	#NAME?	-1.2072E+02	#NAME?	-1.2071E+02	#NAME?	-1.2071E+02	#NAME?	-1.2071E+02	#NAME?	-1.2070E+02	#NAME?
#NAME?	-1.2084E+02	#NAME?	-1.2084E+02	#NAME?	-1.2084E+02	#NAME?	-1.2083E+02	#NAME?	-1.2083E+02	#NAME?	-1.2083E+02	#NAME?
#NAME?	-1.2097E+02	#NAME?	-1.2096E+02	#NAME?	-1.2096E+02	#NAME?	-1.2096E+02	#NAME?	-1.2095E+02	#NAME?	-1.2095E+02	#NAME?

Arg 13	Curve 13	Arg 14	Curve 14	Arg 15	Curve 15	Arg 16	Curve 16	Arg 17	Curve 17	Arg 18	Curve 18
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
2.6451E+01	#NAME?	2.7391E+01	#NAME?	3.0691E+01	#NAME?	3.6804E+01	#NAME?	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.2658E+01	#NAME?	1.2940E+01	#NAME?	1.3834E+01	#NAME?	1.5152E+01	#NAME?	2.0250E+01	#NAME?	2.8254E+01	#NAME?
6.6943E+00	#NAME?	6.8558E+00	#NAME?	7.3553E+00	#NAME?	8.0594E+00	#NAME?	1.0434E+01	#NAME?	1.3188E+01	#NAME?
2.8692E+00	#NAME?	2.9829E+00	#NAME?	3.3314E+00	#NAME?	3.8135E+00	#NAME?	5.3601E+00	#NAME?	6.9962E+00	#NAME?
2.1325E-02	#NAME?	1.1005E-01	#NAME?	3.8031E-01	#NAME?	7.5062E-01	#NAME?	1.9085E+00	#NAME?	3.0814E+00	#NAME?
-2.2713E+00	#NAME?	-2.1979E+00	#NAME?	-1.9750E+00	#NAME?	-1.6716E+00	#NAME?	-7.3690E-01	#NAME?	1.8664E-01	#NAME?
-4.2069E+00	#NAME?	-4.1438E+00	#NAME?	-3.9527E+00	#NAME?	-3.6936E+00	#NAME?	-2.9032E+00	#NAME?	-2.1346E+00	#NAME?
-5.8938E+00	#NAME?	-5.8381E+00	#NAME?	-5.6698E+00	#NAME?	-5.4422E+00	#NAME?	-4.7527E+00	#NAME?	-4.0895E+00	#NAME?
-7.3973E+00	#NAME?	-7.3473E+00	#NAME?	-7.1961E+00	#NAME?	-6.9920E+00	#NAME?	-6.3771E+00	#NAME?	-5.7902E+00	#NAME?
-8.7600E+00	#NAME?	-8.7143E+00	#NAME?	-8.5765E+00	#NAME?	-8.3908E+00	#NAME?	-7.8333E+00	#NAME?	-7.3042E+00	#NAME?
-1.0011E+01	#NAME?	-9.9687E+00	#NAME?	-9.8416E+00	#NAME?	-9.6705E+00	#NAME?	-9.1586E+00	#NAME?	-8.6751E+00	#NAME?
-1.1171E+01	#NAME?	-1.1131E+01	#NAME?	-1.1013E+01	#NAME?	-1.0854E+01	#NAME?	-1.0379E+01	#NAME?	-9.9325E+00	#NAME?
-1.2255E+01	#NAME?	-1.2218E+01	#NAME?	-1.2107E+01	#NAME?	-1.1958E+01	#NAME?	-1.1514E+01	#NAME?	-1.1098E+01	#NAME?
-1.3275E+01	#NAME?	-1.3240E+01	#NAME?	-1.3136E+01	#NAME?	-1.2995E+01	#NAME?	-1.2577E+01	#NAME?	-1.2186E+01	#NAME?
-1.4240E+01	#NAME?	-1.4207E+01	#NAME?	-1.4108E+01	#NAME?	-1.3975E+01	#NAME?	-1.3580E+01	#NAME?	-1.3210E+01	#NAME?
-1.5158E+01	#NAME?	-1.5126E+01	#NAME?	-1.5032E+01	#NAME?	-1.4905E+01	#NAME?	-1.4529E+01	#NAME?	-1.4179E+01	#NAME?
-1.6034E+01	#NAME?	-1.6004E+01	#NAME?	-1.5913E+01	#NAME?	-1.5792E+01	#NAME?	-1.5433E+01	#NAME?	-1.5099E+01	#NAME?
-1.6872E+01	#NAME?	-1.6844E+01	#NAME?	-1.6757E+01	#NAME?	-1.6641E+01	#NAME?	-1.6297E+01	#NAME?	-1.5978E+01	#NAME?
-1.7678E+01	#NAME?	-1.7650E+01	#NAME?	-1.7567E+01	#NAME?	-1.7456E+01	#NAME?	-1.7126E+01	#NAME?	-1.6819E+01	#NAME?
-1.8454E+01	#NAME?	-1.8428E+01	#NAME?	-1.8347E+01	#NAME?	-1.8240E+01	#NAME?	-1.7922E+01	#NAME?	-1.7627E+01	#NAME?
-1.9204E+01	#NAME?	-1.9178E+01	#NAME?	-1.9100E+01	#NAME?	-1.8996E+01	#NAME?	-1.8689E+01	#NAME?	-1.8405E+01	#NAME?
-1.9928E+01	#NAME?	-1.9903E+01	#NAME?	-1.9828E+01	#NAME?	-1.9728E+01	#NAME?	-1.9431E+01	#NAME?	-1.9156E+01	#NAME?
-2.0631E+01	#NAME?	-2.0607E+01	#NAME?	-2.0534E+01	#NAME?	-2.0436E+01	#NAME?	-2.0148E+01	#NAME?	-1.9882E+01	#NAME?
-2.1313E+01	#NAME?	-2.1289E+01	#NAME?	-2.1219E+01	#NAME?	-2.1124E+01	#NAME?	-2.0844E+01	#NAME?	-2.0586E+01	#NAME?
-2.1976E+01	#NAME?	-2.1953E+01	#NAME?	-2.1884E+01	#NAME?	-2.1792E+01	#NAME?	-2.1520E+01	#NAME?	-2.1269E+01	#NAME?
-2.2622E+01	#NAME?	-2.2599E+01	#NAME?	-2.2532E+01	#NAME?	-2.2442E+01	#NAME?	-2.2178E+01	#NAME?	-2.1933E+01	#NAME?
-2.3251E+01	#NAME?	-2.3229E+01	#NAME?	-2.3164E+01	#NAME?	-2.3076E+01	#NAME?	-2.2818E+01	#NAME?	-2.2580E+01	#NAME?
-2.3865E+01	#NAME?	-2.3844E+01	#NAME?	-2.3780E+01	#NAME?	-2.3695E+01	#NAME?	-2.3443E+01	#NAME?	-2.3210E+01	#NAME?
-2.4465E+01	#NAME?	-2.4444E+01	#NAME?	-2.4382E+01	#NAME?	-2.4299E+01	#NAME?	-2.4053E+01	#NAME?	-2.3826E+01	#NAME?
-2.5052E+01	#NAME?	-2.5032E+01	#NAME?	-2.4971E+01	#NAME?	-2.4889E+01	#NAME?	-2.4648E+01	#NAME?	-2.4427E+01	#NAME?
-2.5626E+01	#NAME?	-2.5606E+01	#NAME?	-2.5547E+01	#NAME?	-2.5467E+01	#NAME?	-2.5231E+01	#NAME?	-2.5014E+01	#NAME?
-2.6189E+01	#NAME?	-2.6169E+01	#NAME?	-2.6111E+01	#NAME?	-2.6033E+01	#NAME?	-2.5802E+01	#NAME?	-2.5589E+01	#NAME?
-2.6741E+01	#NAME?	-2.6721E+01	#NAME?	-2.6664E+01	#NAME?	-2.6587E+01	#NAME?	-2.6361E+01	#NAME?	-2.6153E+01	#NAME?
-2.7282E+01	#NAME?	-2.7263E+01	#NAME?	-2.7207E+01	#NAME?	-2.7131E+01	#NAME?	-2.6909E+01	#NAME?	-2.6705E+01	#NAME?
-2.7813E+01	#NAME?	-2.7794E+01	#NAME?	-2.7739E+01	#NAME?	-2.7665E+01	#NAME?	-2.7447E+01	#NAME?	-2.7247E+01	#NAME?
-2.8335E+01	#NAME?	-2.8317E+01	#NAME?	-2.8262E+01	#NAME?	-2.8189E+01	#NAME?	-2.7976E+01	#NAME?	-2.7779E+01	#NAME?
-2.8848E+01	#NAME?	-2.8830E+01	#NAME?	-2.8776E+01	#NAME?	-2.8705E+01	#NAME?	-2.8495E+01	#NAME?	-2.8301E+01	#NAME?
-2.9352E+01	#NAME?	-2.9334E+01	#NAME?	-2.9282E+01	#NAME?	-2.9212E+01	#NAME?	-2.9005E+01	#NAME?	-2.8814E+01	#NAME?
-2.9848E+01	#NAME?	-2.9831E+01	#NAME?	-2.9779E+01	#NAME?	-2.9710E+01	#NAME?	-2.9507E+01	#NAME?	-2.9319E+01	#NAME?
-3.0337E+01	#NAME?	-3.0320E+01	#NAME?	-3.0269E+01	#NAME?	-3.0201E+01	#NAME?	-3.0000E+01	#NAME?	-2.9816E+01	#NAME?
-3.0818E+01	#NAME?	-3.0801E+01	#NAME?	-3.0751E+01	#NAME?	-3.0684E+01	#NAME?	-3.0487E+01	#NAME?	-3.0305E+01	#NAME?
-3.1292E+01	#NAME?	-3.1275E+01	#NAME?	-3.1226E+01	#NAME?	-3.1160E+01	#NAME?	-3.0965E+01	#NAME?	-3.0787E+01	#NAME?
-3.1759E+01	#NAME?	-3.1743E+01	#NAME?	-3.1694E+01	#NAME?	-3.1629E+01	#NAME?	-3.1437E+01	#NAME?	-3.1261E+01	#NAME?
-3.2220E+01	#NAME?	-3.2204E+01	#NAME?	-3.2156E+01	#NAME?	-3.2091E+01	#NAME?	-3.1903E+01	#NAME?	-3.1729E+01	#NAME?
-3.2674E+01	#NAME?	-3.2658E+01	#NAME?	-3.2611E+01	#NAME?	-3.2548E+01	#NAME?	-3.2361E+01	#NAME?	-3.2190E+01	#NAME?
-3.3123E+01	#NAME?	-3.3107E+01	#NAME?	-3.3060E+01	#NAME?	-3.2998E+01	#NAME?	-3.2814E+01	#NAME?	-3.2645E+01	#NAME?
-3.3565E+01	#NAME?	-3.3550E+01	#NAME?	-3.3504E+01	#NAME?	-3.3442E+01	#NAME?	-3.3261E+01	#NAME?	-3.3094E+01	#NAME?
-3.4002E+01	#NAME?	-3.3987E+01	#NAME?	-3.3942E+01	#NAME?	-3.3881E+01	#NAME?	-3.3701E+01	#NAME?	-3.3537E+01	#NAME?
-3.4434E+01	#NAME?	-3.4419E+01	#NAME?	-3.4374E+01	#NAME?	-3.4314E+01	#NAME?	-3.4137E+01	#NAME?	-3.3974E+01	#NAME?
-3.4861E+01	#NAME?	-3.4846E+01	#NAME?	-3.4801E+01	#NAME?	-3.4742E+01	#NAME?	-3.4567E+01	#NAME?	-3.4406E+01	#NAME?
-3.5282E+01	#NAME?	-3.5268E+01	#NAME?	-3.5224E+01	#NAME?	-3.5165E+01	#NAME?	-3.4992E+01	#NAME?	-3.4833E+01	#NAME?

Arg 13	Curve 13	Arg 14	Curve 14	Arg 15	Curve 15	Arg 16	Curve 16	Arg 17	Curve 17	Arg 18	Curve 18
-3.5699E+01	#NAME?	-3.5684E+01	#NAME?	-3.5641E+01	#NAME?	-3.5583E+01	#NAME?	-3.5412E+01	#NAME?	-3.5255E+01	#NAME?
-3.6111E+01	#NAME?	-3.6097E+01	#NAME?	-3.6054E+01	#NAME?	-3.5996E+01	#NAME?	-3.5827E+01	#NAME?	-3.5672E+01	#NAME?
-3.6518E+01	#NAME?	-3.6504E+01	#NAME?	-3.6462E+01	#NAME?	-3.6405E+01	#NAME?	-3.6238E+01	#NAME?	-3.6084E+01	#NAME?
-3.6922E+01	#NAME?	-3.6908E+01	#NAME?	-3.6865E+01	#NAME?	-3.6809E+01	#NAME?	-3.6644E+01	#NAME?	-3.6492E+01	#NAME?
-3.7320E+01	#NAME?	-3.7307E+01	#NAME?	-3.7265E+01	#NAME?	-3.7209E+01	#NAME?	-3.7046E+01	#NAME?	-3.6896E+01	#NAME?
-3.7715E+01	#NAME?	-3.7701E+01	#NAME?	-3.7660E+01	#NAME?	-3.7605E+01	#NAME?	-3.7443E+01	#NAME?	-3.7295E+01	#NAME?
-3.8106E+01	#NAME?	-3.8092E+01	#NAME?	-3.8051E+01	#NAME?	-3.7997E+01	#NAME?	-3.7837E+01	#NAME?	-3.7690E+01	#NAME?
-3.8493E+01	#NAME?	-3.8479E+01	#NAME?	-3.8439E+01	#NAME?	-3.8385E+01	#NAME?	-3.8226E+01	#NAME?	-3.8081E+01	#NAME?
-3.8876E+01	#NAME?	-3.8863E+01	#NAME?	-3.8823E+01	#NAME?	-3.8769E+01	#NAME?	-3.8612E+01	#NAME?	-3.8468E+01	#NAME?
-3.9255E+01	#NAME?	-3.9242E+01	#NAME?	-3.9203E+01	#NAME?	-3.9150E+01	#NAME?	-3.8994E+01	#NAME?	-3.8851E+01	#NAME?
-3.9631E+01	#NAME?	-3.9618E+01	#NAME?	-3.9579E+01	#NAME?	-3.9526E+01	#NAME?	-3.9372E+01	#NAME?	-3.9231E+01	#NAME?
-4.0004E+01	#NAME?	-3.9991E+01	#NAME?	-3.9952E+01	#NAME?	-3.9900E+01	#NAME?	-3.9747E+01	#NAME?	-3.9607E+01	#NAME?
-4.0373E+01	#NAME?	-4.0360E+01	#NAME?	-4.0321E+01	#NAME?	-4.0270E+01	#NAME?	-4.0119E+01	#NAME?	-3.9980E+01	#NAME?
-4.0739E+01	#NAME?	-4.0726E+01	#NAME?	-4.0688E+01	#NAME?	-4.0637E+01	#NAME?	-4.0487E+01	#NAME?	-4.0349E+01	#NAME?
-4.1101E+01	#NAME?	-4.1089E+01	#NAME?	-4.1051E+01	#NAME?	-4.1000E+01	#NAME?	-4.0851E+01	#NAME?	-4.0715E+01	#NAME?
-4.1461E+01	#NAME?	-4.1448E+01	#NAME?	-4.1411E+01	#NAME?	-4.1360E+01	#NAME?	-4.1213E+01	#NAME?	-4.1078E+01	#NAME?
-4.1817E+01	#NAME?	-4.1805E+01	#NAME?	-4.1767E+01	#NAME?	-4.1718E+01	#NAME?	-4.1571E+01	#NAME?	-4.1437E+01	#NAME?
-4.2171E+01	#NAME?	-4.2158E+01	#NAME?	-4.2121E+01	#NAME?	-4.2072E+01	#NAME?	-4.1927E+01	#NAME?	-4.1794E+01	#NAME?
-4.2521E+01	#NAME?	-4.2509E+01	#NAME?	-4.2472E+01	#NAME?	-4.2423E+01	#NAME?	-4.2280E+01	#NAME?	-4.2148E+01	#NAME?
-4.2869E+01	#NAME?	-4.2857E+01	#NAME?	-4.2820E+01	#NAME?	-4.2772E+01	#NAME?	-4.2629E+01	#NAME?	-4.2498E+01	#NAME?
-4.3214E+01	#NAME?	-4.3202E+01	#NAME?	-4.3166E+01	#NAME?	-4.3118E+01	#NAME?	-4.2976E+01	#NAME?	-4.2846E+01	#NAME?
-4.3556E+01	#NAME?	-4.3544E+01	#NAME?	-4.3508E+01	#NAME?	-4.3461E+01	#NAME?	-4.3320E+01	#NAME?	-4.3192E+01	#NAME?
-4.3896E+01	#NAME?	-4.3884E+01	#NAME?	-4.3849E+01	#NAME?	-4.3801E+01	#NAME?	-4.3662E+01	#NAME?	-4.3534E+01	#NAME?
-4.4233E+01	#NAME?	-4.4221E+01	#NAME?	-4.4186E+01	#NAME?	-4.4139E+01	#NAME?	-4.4001E+01	#NAME?	-4.3874E+01	#NAME?
-4.4568E+01	#NAME?	-4.4556E+01	#NAME?	-4.4521E+01	#NAME?	-4.4474E+01	#NAME?	-4.4337E+01	#NAME?	-4.4211E+01	#NAME?
-4.4900E+01	#NAME?	-4.4888E+01	#NAME?	-4.4853E+01	#NAME?	-4.4807E+01	#NAME?	-4.4671E+01	#NAME?	-4.4546E+01	#NAME?
-4.5230E+01	#NAME?	-4.5218E+01	#NAME?	-4.5183E+01	#NAME?	-4.5137E+01	#NAME?	-4.5002E+01	#NAME?	-4.4878E+01	#NAME?
-4.5557E+01	#NAME?	-4.5545E+01	#NAME?	-4.5511E+01	#NAME?	-4.5465E+01	#NAME?	-4.5331E+01	#NAME?	-4.5208E+01	#NAME?
-4.5882E+01	#NAME?	-4.5871E+01	#NAME?	-4.5837E+01	#NAME?	-4.5791E+01	#NAME?	-4.5658E+01	#NAME?	-4.5536E+01	#NAME?
-4.6205E+01	#NAME?	-4.6194E+01	#NAME?	-4.6160E+01	#NAME?	-4.6115E+01	#NAME?	-4.5982E+01	#NAME?	-4.5861E+01	#NAME?
-4.6525E+01	#NAME?	-4.6514E+01	#NAME?	-4.6481E+01	#NAME?	-4.6436E+01	#NAME?	-4.6304E+01	#NAME?	-4.6184E+01	#NAME?
-4.6844E+01	#NAME?	-4.6833E+01	#NAME?	-4.6799E+01	#NAME?	-4.6755E+01	#NAME?	-4.6624E+01	#NAME?	-4.6505E+01	#NAME?
-4.7160E+01	#NAME?	-4.7149E+01	#NAME?	-4.7116E+01	#NAME?	-4.7072E+01	#NAME?	-4.6942E+01	#NAME?	-4.6823E+01	#NAME?
-4.7474E+01	#NAME?	-4.7463E+01	#NAME?	-4.7430E+01	#NAME?	-4.7387E+01	#NAME?	-4.7258E+01	#NAME?	-4.7140E+01	#NAME?
-4.7786E+01	#NAME?	-4.7776E+01	#NAME?	-4.7743E+01	#NAME?	-4.7699E+01	#NAME?	-4.7571E+01	#NAME?	-4.7454E+01	#NAME?
-4.8097E+01	#NAME?	-4.8086E+01	#NAME?	-4.8053E+01	#NAME?	-4.8010E+01	#NAME?	-4.7883E+01	#NAME?	-4.7766E+01	#NAME?
-4.8405E+01	#NAME?	-4.8394E+01	#NAME?	-4.8362E+01	#NAME?	-4.8319E+01	#NAME?	-4.8192E+01	#NAME?	-4.8077E+01	#NAME?
-4.8711E+01	#NAME?	-4.8700E+01	#NAME?	-4.8668E+01	#NAME?	-4.8626E+01	#NAME?	-4.8500E+01	#NAME?	-4.8385E+01	#NAME?
-4.9016E+01	#NAME?	-4.9005E+01	#NAME?	-4.8973E+01	#NAME?	-4.8930E+01	#NAME?	-4.8806E+01	#NAME?	-4.8691E+01	#NAME?
-4.9318E+01	#NAME?	-4.9307E+01	#NAME?	-4.9276E+01	#NAME?	-4.9234E+01	#NAME?	-4.9110E+01	#NAME?	-4.8996E+01	#NAME?
-4.9619E+01	#NAME?	-4.9608E+01	#NAME?	-4.9577E+01	#NAME?	-4.9535E+01	#NAME?	-4.9411E+01	#NAME?	-4.9298E+01	#NAME?
-4.9918E+01	#NAME?	-4.9907E+01	#NAME?	-4.9876E+01	#NAME?	-4.9834E+01	#NAME?	-4.9712E+01	#NAME?	-4.9599E+01	#NAME?
-5.0215E+01	#NAME?	-5.0204E+01	#NAME?	-5.0173E+01	#NAME?	-5.0132E+01	#NAME?	-5.0010E+01	#NAME?	-4.9898E+01	#NAME?
-5.0510E+01	#NAME?	-5.0500E+01	#NAME?	-5.0469E+01	#NAME?	-5.0428E+01	#NAME?	-5.0307E+01	#NAME?	-5.0196E+01	#NAME?
-5.0804E+01	#NAME?	-5.0794E+01	#NAME?	-5.0763E+01	#NAME?	-5.0722E+01	#NAME?	-5.0601E+01	#NAME?	-5.0491E+01	#NAME?
-5.1096E+01	#NAME?	-5.1086E+01	#NAME?	-5.1055E+01	#NAME?	-5.1014E+01	#NAME?	-5.0895E+01	#NAME?	-5.0785E+01	#NAME?
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-5.1675E+01	#NAME?	-5.1665E+01	#NAME?	-5.1635E+01	#NAME?	-5.1594E+01	#NAME?	-5.1476E+01	#NAME?	-5.1367E+01	#NAME?
-5.1962E+01	#NAME?	-5.1952E+01	#NAME?	-5.1922E+01	#NAME?	-5.1882E+01	#NAME?	-5.1764E+01	#NAME?	-5.1656E+01	#NAME?
-5.2248E+01	#NAME?	-5.2238E+01	#NAME?	-5.2208E+01	#NAME?	-5.2168E+01	#NAME?	-5.2051E+01	#NAME?	-5.1944E+01	#NAME?
-5.2532E+01	#NAME?	-5.2522E+01	#NAME?	-5.2492E+01	#NAME?	-5.2453E+01	#NAME?	-5.2336E+01	#NAME?	-5.2229E+01	#NAME?
-5.2814E+01	#NAME?	-5.2805E+01	#NAME?	-5.2775E+01	#NAME?	-5.2736E+01	#NAME?	-5.2620E+01	#NAME?	-5.2514E+01	#NAME?

Arg 13	Curve 13	Arg 14	Curve 14	Arg 15	Curve 15	Arg 16	Curve 16	Arg 17	Curve 17	Arg 18	Curve 18
-5.3096E+01	#NAME?	-5.3086E+01	#NAME?	-5.3056E+01	#NAME?	-5.3017E+01	#NAME?	-5.2902E+01	#NAME?	-5.2796E+01	#NAME?
-5.3375E+01	#NAME?	-5.3365E+01	#NAME?	-5.3336E+01	#NAME?	-5.3297E+01	#NAME?	-5.3182E+01	#NAME?	-5.3077E+01	#NAME?
-5.3653E+01	#NAME?	-5.3644E+01	#NAME?	-5.3614E+01	#NAME?	-5.3576E+01	#NAME?	-5.3462E+01	#NAME?	-5.3357E+01	#NAME?
-5.3930E+01	#NAME?	-5.3920E+01	#NAME?	-5.3891E+01	#NAME?	-5.3853E+01	#NAME?	-5.3739E+01	#NAME?	-5.3635E+01	#NAME?
-5.4205E+01	#NAME?	-5.4196E+01	#NAME?	-5.4167E+01	#NAME?	-5.4128E+01	#NAME?	-5.4015E+01	#NAME?	-5.3912E+01	#NAME?
-5.4479E+01	#NAME?	-5.4470E+01	#NAME?	-5.4441E+01	#NAME?	-5.4403E+01	#NAME?	-5.4290E+01	#NAME?	-5.4187E+01	#NAME?
-5.4752E+01	#NAME?	-5.4742E+01	#NAME?	-5.4714E+01	#NAME?	-5.4676E+01	#NAME?	-5.4564E+01	#NAME?	-5.4461E+01	#NAME?
-5.5023E+01	#NAME?	-5.5014E+01	#NAME?	-5.4985E+01	#NAME?	-5.4947E+01	#NAME?	-5.4836E+01	#NAME?	-5.4734E+01	#NAME?
-5.5293E+01	#NAME?	-5.5284E+01	#NAME?	-5.5255E+01	#NAME?	-5.5218E+01	#NAME?	-5.5107E+01	#NAME?	-5.5005E+01	#NAME?
-5.5562E+01	#NAME?	-5.5552E+01	#NAME?	-5.5524E+01	#NAME?	-5.5486E+01	#NAME?	-5.5376E+01	#NAME?	-5.5275E+01	#NAME?
-5.5829E+01	#NAME?	-5.5820E+01	#NAME?	-5.5792E+01	#NAME?	-5.5754E+01	#NAME?	-5.5645E+01	#NAME?	-5.5544E+01	#NAME?
-5.6095E+01	#NAME?	-5.6086E+01	#NAME?	-5.6058E+01	#NAME?	-5.6021E+01	#NAME?	-5.5912E+01	#NAME?	-5.5812E+01	#NAME?
-5.6360E+01	#NAME?	-5.6351E+01	#NAME?	-5.6323E+01	#NAME?	-5.6286E+01	#NAME?	-5.6177E+01	#NAME?	-5.6078E+01	#NAME?
-5.6623E+01	#NAME?	-5.6614E+01	#NAME?	-5.6587E+01	#NAME?	-5.6550E+01	#NAME?	-5.6442E+01	#NAME?	-5.6343E+01	#NAME?
-5.6886E+01	#NAME?	-5.6877E+01	#NAME?	-5.6849E+01	#NAME?	-5.6812E+01	#NAME?	-5.6705E+01	#NAME?	-5.6606E+01	#NAME?
-5.7147E+01	#NAME?	-5.7138E+01	#NAME?	-5.7110E+01	#NAME?	-5.7074E+01	#NAME?	-5.6967E+01	#NAME?	-5.6869E+01	#NAME?
-5.7407E+01	#NAME?	-5.7398E+01	#NAME?	-5.7371E+01	#NAME?	-5.7334E+01	#NAME?	-5.7228E+01	#NAME?	-5.7130E+01	#NAME?
-5.7666E+01	#NAME?	-5.7657E+01	#NAME?	-5.7630E+01	#NAME?	-5.7593E+01	#NAME?	-5.7487E+01	#NAME?	-5.7390E+01	#NAME?
-5.7923E+01	#NAME?	-5.7914E+01	#NAME?	-5.7887E+01	#NAME?	-5.7851E+01	#NAME?	-5.7746E+01	#NAME?	-5.7649E+01	#NAME?
-5.8180E+01	#NAME?	-5.8171E+01	#NAME?	-5.8144E+01	#NAME?	-5.8108E+01	#NAME?	-5.8003E+01	#NAME?	-5.7907E+01	#NAME?
-5.8435E+01	#NAME?	-5.8426E+01	#NAME?	-5.8400E+01	#NAME?	-5.8364E+01	#NAME?	-5.8259E+01	#NAME?	-5.8163E+01	#NAME?
-5.8690E+01	#NAME?	-5.8681E+01	#NAME?	-5.8654E+01	#NAME?	-5.8619E+01	#NAME?	-5.8514E+01	#NAME?	-5.8419E+01	#NAME?
-5.8943E+01	#NAME?	-5.8934E+01	#NAME?	-5.8907E+01	#NAME?	-5.8872E+01	#NAME?	-5.8768E+01	#NAME?	-5.8673E+01	#NAME?
-5.9195E+01	#NAME?	-5.9186E+01	#NAME?	-5.9160E+01	#NAME?	-5.9125E+01	#NAME?	-5.9021E+01	#NAME?	-5.8926E+01	#NAME?
-5.9446E+01	#NAME?	-5.9437E+01	#NAME?	-5.9411E+01	#NAME?	-5.9376E+01	#NAME?	-5.9273E+01	#NAME?	-5.9179E+01	#NAME?
-5.9696E+01	#NAME?	-5.9687E+01	#NAME?	-5.9661E+01	#NAME?	-5.9626E+01	#NAME?	-5.9524E+01	#NAME?	-5.9430E+01	#NAME?
-5.9945E+01	#NAME?	-5.9936E+01	#NAME?	-5.9910E+01	#NAME?	-5.9875E+01	#NAME?	-5.9773E+01	#NAME?	-5.9680E+01	#NAME?
-6.0193E+01	#NAME?	-6.0184E+01	#NAME?	-6.0158E+01	#NAME?	-6.0124E+01	#NAME?	-6.0022E+01	#NAME?	-5.9929E+01	#NAME?
-6.0440E+01	#NAME?	-6.0431E+01	#NAME?	-6.0405E+01	#NAME?	-6.0371E+01	#NAME?	-6.0270E+01	#NAME?	-6.0177E+01	#NAME?
-6.0686E+01	#NAME?	-6.0677E+01	#NAME?	-6.0652E+01	#NAME?	-6.0617E+01	#NAME?	-6.0516E+01	#NAME?	-6.0424E+01	#NAME?
-6.0931E+01	#NAME?	-6.0922E+01	#NAME?	-6.0897E+01	#NAME?	-6.0862E+01	#NAME?	-6.0762E+01	#NAME?	-6.0670E+01	#NAME?
-6.1175E+01	#NAME?	-6.1166E+01	#NAME?	-6.1141E+01	#NAME?	-6.1107E+01	#NAME?	-6.1007E+01	#NAME?	-6.0915E+01	#NAME?
-6.1418E+01	#NAME?	-6.1409E+01	#NAME?	-6.1384E+01	#NAME?	-6.1350E+01	#NAME?	-6.1250E+01	#NAME?	-6.1159E+01	#NAME?
-6.1660E+01	#NAME?	-6.1652E+01	#NAME?	-6.1626E+01	#NAME?	-6.1592E+01	#NAME?	-6.1493E+01	#NAME?	-6.1402E+01	#NAME?
-6.1901E+01	#NAME?	-6.1893E+01	#NAME?	-6.1867E+01	#NAME?	-6.1834E+01	#NAME?	-6.1735E+01	#NAME?	-6.1644E+01	#NAME?
-6.2141E+01	#NAME?	-6.2133E+01	#NAME?	-6.2108E+01	#NAME?	-6.2074E+01	#NAME?	-6.1976E+01	#NAME?	-6.1885E+01	#NAME?
-6.2381E+01	#NAME?	-6.2372E+01	#NAME?	-6.2347E+01	#NAME?	-6.2314E+01	#NAME?	-6.2216E+01	#NAME?	-6.2126E+01	#NAME?
-6.2619E+01	#NAME?	-6.2611E+01	#NAME?	-6.2586E+01	#NAME?	-6.2552E+01	#NAME?	-6.2455E+01	#NAME?	-6.2365E+01	#NAME?
-6.2856E+01	#NAME?	-6.2848E+01	#NAME?	-6.2823E+01	#NAME?	-6.2790E+01	#NAME?	-6.2693E+01	#NAME?	-6.2603E+01	#NAME?
-6.3093E+01	#NAME?	-6.3085E+01	#NAME?	-6.3060E+01	#NAME?	-6.3027E+01	#NAME?	-6.2930E+01	#NAME?	-6.2841E+01	#NAME?
-6.3329E+01	#NAME?	-6.3320E+01	#NAME?	-6.3296E+01	#NAME?	-6.3263E+01	#NAME?	-6.3166E+01	#NAME?	-6.3078E+01	#NAME?
-6.3564E+01	#NAME?	-6.3555E+01	#NAME?	-6.3531E+01	#NAME?	-6.3498E+01	#NAME?	-6.3402E+01	#NAME?	-6.3313E+01	#NAME?
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-6.4031E+01	#NAME?	-6.4022E+01	#NAME?	-6.3998E+01	#NAME?	-6.3965E+01	#NAME?	-6.3870E+01	#NAME?	-6.3782E+01	#NAME?
-6.4263E+01	#NAME?	-6.4255E+01	#NAME?	-6.4230E+01	#NAME?	-6.4198E+01	#NAME?	-6.4103E+01	#NAME?	-6.4015E+01	#NAME?
-6.4494E+01	#NAME?	-6.4486E+01	#NAME?	-6.4462E+01	#NAME?	-6.4430E+01	#NAME?	-6.4335E+01	#NAME?	-6.4248E+01	#NAME?
-6.4725E+01	#NAME?	-6.4717E+01	#NAME?	-6.4693E+01	#NAME?	-6.4660E+01	#NAME?	-6.4566E+01	#NAME?	-6.4479E+01	#NAME?
-6.4955E+01	#NAME?	-6.4947E+01	#NAME?	-6.4923E+01	#NAME?	-6.4890E+01	#NAME?	-6.4796E+01	#NAME?	-6.4710E+01	#NAME?
-6.5184E+01	#NAME?	-6.5176E+01	#NAME?	-6.5152E+01	#NAME?	-6.5120E+01	#NAME?	-6.5026E+01	#NAME?	-6.4940E+01	#NAME?
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-6.5639E+01	#NAME?	-6.5631E+01	#NAME?	-6.5607E+01	#NAME?	-6.5576E+01	#NAME?	-6.5482E+01	#NAME?	-6.5397E+01	#NAME?
-6.5866E+01	#NAME?	-6.5858E+01	#NAME?	-6.5834E+01	#NAME?	-6.5803E+01	#NAME?	-6.5710E+01	#NAME?	-6.5625E+01	#NAME?

Arg 13	Curve 13	Arg 14	Curve 14	Arg 15	Curve 15	Arg 16	Curve 16	Arg 17	Curve 17	Arg 18	Curve 18
-6.6092E+01	#NAME?	-6.6084E+01	#NAME?	-6.6060E+01	#NAME?	-6.6029E+01	#NAME?	-6.5936E+01	#NAME?	-6.5851E+01	#NAME?
-6.6317E+01	#NAME?	-6.6309E+01	#NAME?	-6.6285E+01	#NAME?	-6.6254E+01	#NAME?	-6.6162E+01	#NAME?	-6.6077E+01	#NAME?
-6.6541E+01	#NAME?	-6.6533E+01	#NAME?	-6.6510E+01	#NAME?	-6.6478E+01	#NAME?	-6.6386E+01	#NAME?	-6.6302E+01	#NAME?
-6.6765E+01	#NAME?	-6.6757E+01	#NAME?	-6.6733E+01	#NAME?	-6.6702E+01	#NAME?	-6.6611E+01	#NAME?	-6.6527E+01	#NAME?
-6.6988E+01	#NAME?	-6.6980E+01	#NAME?	-6.6956E+01	#NAME?	-6.6925E+01	#NAME?	-6.6834E+01	#NAME?	-6.6750E+01	#NAME?
-6.7210E+01	#NAME?	-6.7202E+01	#NAME?	-6.7179E+01	#NAME?	-6.7147E+01	#NAME?	-6.7056E+01	#NAME?	-6.6973E+01	#NAME?
-6.7431E+01	#NAME?	-6.7423E+01	#NAME?	-6.7400E+01	#NAME?	-6.7369E+01	#NAME?	-6.7278E+01	#NAME?	-6.7195E+01	#NAME?
-6.7652E+01	#NAME?	-6.7644E+01	#NAME?	-6.7621E+01	#NAME?	-6.7590E+01	#NAME?	-6.7499E+01	#NAME?	-6.7417E+01	#NAME?
-6.7872E+01	#NAME?	-6.7864E+01	#NAME?	-6.7841E+01	#NAME?	-6.7810E+01	#NAME?	-6.7720E+01	#NAME?	-6.7637E+01	#NAME?
-6.8091E+01	#NAME?	-6.8083E+01	#NAME?	-6.8060E+01	#NAME?	-6.8029E+01	#NAME?	-6.7940E+01	#NAME?	-6.7857E+01	#NAME?
-6.8309E+01	#NAME?	-6.8302E+01	#NAME?	-6.8279E+01	#NAME?	-6.8248E+01	#NAME?	-6.8159E+01	#NAME?	-6.8076E+01	#NAME?
-6.8527E+01	#NAME?	-6.8519E+01	#NAME?	-6.8497E+01	#NAME?	-6.8466E+01	#NAME?	-6.8377E+01	#NAME?	-6.8295E+01	#NAME?
-6.8744E+01	#NAME?	-6.8737E+01	#NAME?	-6.8714E+01	#NAME?	-6.8683E+01	#NAME?	-6.8594E+01	#NAME?	-6.8513E+01	#NAME?
-6.8961E+01	#NAME?	-6.8953E+01	#NAME?	-6.8930E+01	#NAME?	-6.8900E+01	#NAME?	-6.8811E+01	#NAME?	-6.8730E+01	#NAME?
-6.9176E+01	#NAME?	-6.9169E+01	#NAME?	-6.9146E+01	#NAME?	-6.9116E+01	#NAME?	-6.9028E+01	#NAME?	-6.8947E+01	#NAME?
-6.9391E+01	#NAME?	-6.9384E+01	#NAME?	-6.9361E+01	#NAME?	-6.9331E+01	#NAME?	-6.9243E+01	#NAME?	-6.9162E+01	#NAME?
-6.9606E+01	#NAME?	-6.9598E+01	#NAME?	-6.9576E+01	#NAME?	-6.9546E+01	#NAME?	-6.9458E+01	#NAME?	-6.9378E+01	#NAME?
-6.9820E+01	#NAME?	-6.9812E+01	#NAME?	-6.9790E+01	#NAME?	-6.9760E+01	#NAME?	-6.9672E+01	#NAME?	-6.9592E+01	#NAME?
-7.0033E+01	#NAME?	-7.0025E+01	#NAME?	-7.0003E+01	#NAME?	-6.9973E+01	#NAME?	-6.9886E+01	#NAME?	-6.9806E+01	#NAME?
-7.0245E+01	#NAME?	-7.0238E+01	#NAME?	-7.0216E+01	#NAME?	-7.0186E+01	#NAME?	-7.0099E+01	#NAME?	-7.0019E+01	#NAME?
-7.0457E+01	#NAME?	-7.0450E+01	#NAME?	-7.0428E+01	#NAME?	-7.0398E+01	#NAME?	-7.0311E+01	#NAME?	-7.0232E+01	#NAME?
-7.0668E+01	#NAME?	-7.0661E+01	#NAME?	-7.0639E+01	#NAME?	-7.0609E+01	#NAME?	-7.0523E+01	#NAME?	-7.0443E+01	#NAME?
-7.0879E+01	#NAME?	-7.0872E+01	#NAME?	-7.0850E+01	#NAME?	-7.0820E+01	#NAME?	-7.0734E+01	#NAME?	-7.0655E+01	#NAME?
-7.1089E+01	#NAME?	-7.1082E+01	#NAME?	-7.1060E+01	#NAME?	-7.1030E+01	#NAME?	-7.0944E+01	#NAME?	-7.0865E+01	#NAME?
-7.1298E+01	#NAME?	-7.1291E+01	#NAME?	-7.1269E+01	#NAME?	-7.1240E+01	#NAME?	-7.1154E+01	#NAME?	-7.1075E+01	#NAME?
-7.1507E+01	#NAME?	-7.1500E+01	#NAME?	-7.1478E+01	#NAME?	-7.1449E+01	#NAME?	-7.1363E+01	#NAME?	-7.1285E+01	#NAME?
-7.1715E+01	#NAME?	-7.1708E+01	#NAME?	-7.1686E+01	#NAME?	-7.1657E+01	#NAME?	-7.1572E+01	#NAME?	-7.1493E+01	#NAME?
-7.1923E+01	#NAME?	-7.1915E+01	#NAME?	-7.1894E+01	#NAME?	-7.1865E+01	#NAME?	-7.1780E+01	#NAME?	-7.1702E+01	#NAME?
-7.2130E+01	#NAME?	-7.2122E+01	#NAME?	-7.2101E+01	#NAME?	-7.2072E+01	#NAME?	-7.1987E+01	#NAME?	-7.1909E+01	#NAME?
-7.2336E+01	#NAME?	-7.2329E+01	#NAME?	-7.2307E+01	#NAME?	-7.2278E+01	#NAME?	-7.2194E+01	#NAME?	-7.2116E+01	#NAME?
-7.2542E+01	#NAME?	-7.2535E+01	#NAME?	-7.2513E+01	#NAME?	-7.2484E+01	#NAME?	-7.2400E+01	#NAME?	-7.2323E+01	#NAME?
-7.2747E+01	#NAME?	-7.2740E+01	#NAME?	-7.2718E+01	#NAME?	-7.2689E+01	#NAME?	-7.2605E+01	#NAME?	-7.2528E+01	#NAME?
-7.2951E+01	#NAME?	-7.2944E+01	#NAME?	-7.2923E+01	#NAME?	-7.2894E+01	#NAME?	-7.2810E+01	#NAME?	-7.2734E+01	#NAME?
-7.3156E+01	#NAME?	-7.3148E+01	#NAME?	-7.3127E+01	#NAME?	-7.3098E+01	#NAME?	-7.3015E+01	#NAME?	-7.2938E+01	#NAME?
-7.3359E+01	#NAME?	-7.3352E+01	#NAME?	-7.3331E+01	#NAME?	-7.3302E+01	#NAME?	-7.3219E+01	#NAME?	-7.3142E+01	#NAME?
-7.3562E+01	#NAME?	-7.3555E+01	#NAME?	-7.3534E+01	#NAME?	-7.3505E+01	#NAME?	-7.3422E+01	#NAME?	-7.3346E+01	#NAME?
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-7.3966E+01	#NAME?	-7.3959E+01	#NAME?	-7.3938E+01	#NAME?	-7.3910E+01	#NAME?	-7.3827E+01	#NAME?	-7.3751E+01	#NAME?
-7.4167E+01	#NAME?	-7.4160E+01	#NAME?	-7.4139E+01	#NAME?	-7.4111E+01	#NAME?	-7.4028E+01	#NAME?	-7.3953E+01	#NAME?
-7.4368E+01	#NAME?	-7.4361E+01	#NAME?	-7.4340E+01	#NAME?	-7.4312E+01	#NAME?	-7.4230E+01	#NAME?	-7.4154E+01	#NAME?
-7.4568E+01	#NAME?	-7.4561E+01	#NAME?	-7.4540E+01	#NAME?	-7.4512E+01	#NAME?	-7.4430E+01	#NAME?	-7.4355E+01	#NAME?
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-7.4967E+01	#NAME?	-7.4960E+01	#NAME?	-7.4939E+01	#NAME?	-7.4911E+01	#NAME?	-7.4830E+01	#NAME?	-7.4755E+01	#NAME?
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-7.5363E+01	#NAME?	-7.5357E+01	#NAME?	-7.5336E+01	#NAME?	-7.5308E+01	#NAME?	-7.5227E+01	#NAME?	-7.5153E+01	#NAME?
-7.5561E+01	#NAME?	-7.5554E+01	#NAME?	-7.5533E+01	#NAME?	-7.5506E+01	#NAME?	-7.5425E+01	#NAME?	-7.5351E+01	#NAME?
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-7.5955E+01	#NAME?	-7.5948E+01	#NAME?	-7.5927E+01	#NAME?	-7.5900E+01	#NAME?	-7.5819E+01	#NAME?	-7.5745E+01	#NAME?
-7.6151E+01	#NAME?	-7.6144E+01	#NAME?	-7.6123E+01	#NAME?	-7.6096E+01	#NAME?	-7.6015E+01	#NAME?	-7.5942E+01	#NAME?
-7.6346E+01	#NAME?	-7.6339E+01	#NAME?	-7.6319E+01	#NAME?	-7.6291E+01	#NAME?	-7.6211E+01	#NAME?	-7.6138E+01	#NAME?
-7.6541E+01	#NAME?	-7.6534E+01	#NAME?	-7.6514E+01	#NAME?	-7.6486E+01	#NAME?	-7.6407E+01	#NAME?	-7.6333E+01	#NAME?
-7.6736E+01	#NAME?	-7.6729E+01	#NAME?	-7.6708E+01	#NAME?	-7.6681E+01	#NAME?	-7.6601E+01	#NAME?	-7.6528E+01	#NAME?

Arg 13	Curve 13	Arg 14	Curve 14	Arg 15	Curve 15	Arg 16	Curve 16	Arg 17	Curve 17	Arg 18	Curve 18
-7.6930E+01	#NAME?	-7.6923E+01	#NAME?	-7.6902E+01	#NAME?	-7.6875E+01	#NAME?	-7.6796E+01	#NAME?	-7.6723E+01	#NAME?
-7.7123E+01	#NAME?	-7.7116E+01	#NAME?	-7.7096E+01	#NAME?	-7.7069E+01	#NAME?	-7.6990E+01	#NAME?	-7.6917E+01	#NAME?
-7.7316E+01	#NAME?	-7.7309E+01	#NAME?	-7.7289E+01	#NAME?	-7.7262E+01	#NAME?	-7.7183E+01	#NAME?	-7.7111E+01	#NAME?
-7.7509E+01	#NAME?	-7.7502E+01	#NAME?	-7.7482E+01	#NAME?	-7.7455E+01	#NAME?	-7.7376E+01	#NAME?	-7.7304E+01	#NAME?
-7.7701E+01	#NAME?	-7.7694E+01	#NAME?	-7.7674E+01	#NAME?	-7.7647E+01	#NAME?	-7.7568E+01	#NAME?	-7.7496E+01	#NAME?
-7.7892E+01	#NAME?	-7.7886E+01	#NAME?	-7.7866E+01	#NAME?	-7.7839E+01	#NAME?	-7.7760E+01	#NAME?	-7.7688E+01	#NAME?
-7.8084E+01	#NAME?	-7.8077E+01	#NAME?	-7.8057E+01	#NAME?	-7.8030E+01	#NAME?	-7.7952E+01	#NAME?	-7.7880E+01	#NAME?
-7.8274E+01	#NAME?	-7.8268E+01	#NAME?	-7.8248E+01	#NAME?	-7.8221E+01	#NAME?	-7.8143E+01	#NAME?	-7.8071E+01	#NAME?
-7.8464E+01	#NAME?	-7.8458E+01	#NAME?	-7.8438E+01	#NAME?	-7.8411E+01	#NAME?	-7.8333E+01	#NAME?	-7.8262E+01	#NAME?
-7.8654E+01	#NAME?	-7.8648E+01	#NAME?	-7.8628E+01	#NAME?	-7.8601E+01	#NAME?	-7.8523E+01	#NAME?	-7.8452E+01	#NAME?
-7.8844E+01	#NAME?	-7.8837E+01	#NAME?	-7.8817E+01	#NAME?	-7.8791E+01	#NAME?	-7.8713E+01	#NAME?	-7.8642E+01	#NAME?
-7.9032E+01	#NAME?	-7.9026E+01	#NAME?	-7.9006E+01	#NAME?	-7.8980E+01	#NAME?	-7.8902E+01	#NAME?	-7.8831E+01	#NAME?
-7.9221E+01	#NAME?	-7.9214E+01	#NAME?	-7.9194E+01	#NAME?	-7.9168E+01	#NAME?	-7.9091E+01	#NAME?	-7.9020E+01	#NAME?
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-7.9596E+01	#NAME?	-7.9590E+01	#NAME?	-7.9570E+01	#NAME?	-7.9544E+01	#NAME?	-7.9467E+01	#NAME?	-7.9397E+01	#NAME?
-7.9783E+01	#NAME?	-7.9777E+01	#NAME?	-7.9757E+01	#NAME?	-7.9731E+01	#NAME?	-7.9654E+01	#NAME?	-7.9584E+01	#NAME?
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-8.0712E+01	#NAME?	-8.0706E+01	#NAME?	-8.0686E+01	#NAME?	-8.0660E+01	#NAME?	-8.0585E+01	#NAME?	-8.0515E+01	#NAME?
-8.0897E+01	#NAME?	-8.0890E+01	#NAME?	-8.0871E+01	#NAME?	-8.0845E+01	#NAME?	-8.0769E+01	#NAME?	-8.0700E+01	#NAME?
-8.1081E+01	#NAME?	-8.1074E+01	#NAME?	-8.1055E+01	#NAME?	-8.1029E+01	#NAME?	-8.0954E+01	#NAME?	-8.0885E+01	#NAME?
-8.1264E+01	#NAME?	-8.1258E+01	#NAME?	-8.1239E+01	#NAME?	-8.1213E+01	#NAME?	-8.1138E+01	#NAME?	-8.1069E+01	#NAME?
-8.1448E+01	#NAME?	-8.1441E+01	#NAME?	-8.1422E+01	#NAME?	-8.1396E+01	#NAME?	-8.1321E+01	#NAME?	-8.1252E+01	#NAME?
-8.1630E+01	#NAME?	-8.1624E+01	#NAME?	-8.1605E+01	#NAME?	-8.1579E+01	#NAME?	-8.1504E+01	#NAME?	-8.1436E+01	#NAME?
-8.1813E+01	#NAME?	-8.1807E+01	#NAME?	-8.1787E+01	#NAME?	-8.1762E+01	#NAME?	-8.1687E+01	#NAME?	-8.1619E+01	#NAME?
-8.1995E+01	#NAME?	-8.1989E+01	#NAME?	-8.1969E+01	#NAME?	-8.1944E+01	#NAME?	-8.1869E+01	#NAME?	-8.1801E+01	#NAME?
-8.2177E+01	#NAME?	-8.2170E+01	#NAME?	-8.2151E+01	#NAME?	-8.2126E+01	#NAME?	-8.2051E+01	#NAME?	-8.1983E+01	#NAME?
-8.2358E+01	#NAME?	-8.2351E+01	#NAME?	-8.2332E+01	#NAME?	-8.2307E+01	#NAME?	-8.2233E+01	#NAME?	-8.2165E+01	#NAME?
-8.2539E+01	#NAME?	-8.2532E+01	#NAME?	-8.2513E+01	#NAME?	-8.2488E+01	#NAME?	-8.2414E+01	#NAME?	-8.2346E+01	#NAME?
-8.2719E+01	#NAME?	-8.2713E+01	#NAME?	-8.2694E+01	#NAME?	-8.2669E+01	#NAME?	-8.2595E+01	#NAME?	-8.2527E+01	#NAME?
-8.2899E+01	#NAME?	-8.2893E+01	#NAME?	-8.2874E+01	#NAME?	-8.2849E+01	#NAME?	-8.2775E+01	#NAME?	-8.2707E+01	#NAME?
-8.3079E+01	#NAME?	-8.3072E+01	#NAME?	-8.3054E+01	#NAME?	-8.3028E+01	#NAME?	-8.2955E+01	#NAME?	-8.2887E+01	#NAME?
-8.3258E+01	#NAME?	-8.3252E+01	#NAME?	-8.3233E+01	#NAME?	-8.3208E+01	#NAME?	-8.3134E+01	#NAME?	-8.3067E+01	#NAME?
-8.3437E+01	#NAME?	-8.3431E+01	#NAME?	-8.3412E+01	#NAME?	-8.3387E+01	#NAME?	-8.3313E+01	#NAME?	-8.3246E+01	#NAME?
-8.3615E+01	#NAME?	-8.3609E+01	#NAME?	-8.3590E+01	#NAME?	-8.3565E+01	#NAME?	-8.3492E+01	#NAME?	-8.3425E+01	#NAME?
-8.3793E+01	#NAME?	-8.3787E+01	#NAME?	-8.3769E+01	#NAME?	-8.3744E+01	#NAME?	-8.3671E+01	#NAME?	-8.3604E+01	#NAME?
-8.3971E+01	#NAME?	-8.3965E+01	#NAME?	-8.3946E+01	#NAME?	-8.3921E+01	#NAME?	-8.3849E+01	#NAME?	-8.3782E+01	#NAME?
-8.4149E+01	#NAME?	-8.4142E+01	#NAME?	-8.4124E+01	#NAME?	-8.4099E+01	#NAME?	-8.4026E+01	#NAME?	-8.3960E+01	#NAME?
-8.4326E+01	#NAME?	-8.4319E+01	#NAME?	-8.4301E+01	#NAME?	-8.4276E+01	#NAME?	-8.4203E+01	#NAME?	-8.4137E+01	#NAME?
-8.4502E+01	#NAME?	-8.4496E+01	#NAME?	-8.4477E+01	#NAME?	-8.4453E+01	#NAME?	-8.4380E+01	#NAME?	-8.4314E+01	#NAME?
-8.4678E+01	#NAME?	-8.4672E+01	#NAME?	-8.4654E+01	#NAME?	-8.4629E+01	#NAME?	-8.4557E+01	#NAME?	-8.4491E+01	#NAME?
-8.4854E+01	#NAME?	-8.4848E+01	#NAME?	-8.4830E+01	#NAME?	-8.4805E+01	#NAME?	-8.4733E+01	#NAME?	-8.4667E+01	#NAME?
-8.5030E+01	#NAME?	-8.5024E+01	#NAME?	-8.5005E+01	#NAME?	-8.4981E+01	#NAME?	-8.4909E+01	#NAME?	-8.4843E+01	#NAME?
-8.5205E+01	#NAME?	-8.5199E+01	#NAME?	-8.5180E+01	#NAME?	-8.5156E+01	#NAME?	-8.5084E+01	#NAME?	-8.5018E+01	#NAME?
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-8.5554E+01	#NAME?	-8.5548E+01	#NAME?	-8.5530E+01	#NAME?	-8.5505E+01	#NAME?	-8.5434E+01	#NAME?	-8.5368E+01	#NAME?
-8.5728E+01	#NAME?	-8.5722E+01	#NAME?	-8.5704E+01	#NAME?	-8.5680E+01	#NAME?	-8.5608E+01	#NAME?	-8.5543E+01	#NAME?
-8.5902E+01	#NAME?	-8.5896E+01	#NAME?	-8.5878E+01	#NAME?	-8.5853E+01	#NAME?	-8.5782E+01	#NAME?	-8.5717E+01	#NAME?
-8.6075E+01	#NAME?	-8.6069E+01	#NAME?	-8.6051E+01	#NAME?	-8.6027E+01	#NAME?	-8.5956E+01	#NAME?	-8.5891E+01	#NAME?
-8.6248E+01	#NAME?	-8.6242E+01	#NAME?	-8.6224E+01	#NAME?	-8.6200E+01	#NAME?	-8.6129E+01	#NAME?	-8.6064E+01	#NAME?

Arg 13	Curve 13	Arg 14	Curve 14	Arg 15	Curve 15	Arg 16	Curve 16	Arg 17	Curve 17	Arg 18	Curve 18
-8.6421E+01	#NAME?	-8.6415E+01	#NAME?	-8.6397E+01	#NAME?	-8.6373E+01	#NAME?	-8.6302E+01	#NAME?	-8.6237E+01	#NAME?
-8.6594E+01	#NAME?	-8.6588E+01	#NAME?	-8.6569E+01	#NAME?	-8.6545E+01	#NAME?	-8.6475E+01	#NAME?	-8.6410E+01	#NAME?
-8.6766E+01	#NAME?	-8.6760E+01	#NAME?	-8.6741E+01	#NAME?	-8.6717E+01	#NAME?	-8.6647E+01	#NAME?	-8.6582E+01	#NAME?
-8.6937E+01	#NAME?	-8.6931E+01	#NAME?	-8.6913E+01	#NAME?	-8.6889E+01	#NAME?	-8.6819E+01	#NAME?	-8.6754E+01	#NAME?
-8.7109E+01	#NAME?	-8.7103E+01	#NAME?	-8.7085E+01	#NAME?	-8.7061E+01	#NAME?	-8.6990E+01	#NAME?	-8.6926E+01	#NAME?
-8.7280E+01	#NAME?	-8.7274E+01	#NAME?	-8.7256E+01	#NAME?	-8.7232E+01	#NAME?	-8.7162E+01	#NAME?	-8.7097E+01	#NAME?
-8.7450E+01	#NAME?	-8.7444E+01	#NAME?	-8.7426E+01	#NAME?	-8.7402E+01	#NAME?	-8.7332E+01	#NAME?	-8.7268E+01	#NAME?
-8.7621E+01	#NAME?	-8.7615E+01	#NAME?	-8.7597E+01	#NAME?	-8.7573E+01	#NAME?	-8.7503E+01	#NAME?	-8.7439E+01	#NAME?
-8.7791E+01	#NAME?	-8.7785E+01	#NAME?	-8.7767E+01	#NAME?	-8.7743E+01	#NAME?	-8.7673E+01	#NAME?	-8.7609E+01	#NAME?
-8.7960E+01	#NAME?	-8.7954E+01	#NAME?	-8.7936E+01	#NAME?	-8.7913E+01	#NAME?	-8.7843E+01	#NAME?	-8.7779E+01	#NAME?
-8.8130E+01	#NAME?	-8.8124E+01	#NAME?	-8.8106E+01	#NAME?	-8.8082E+01	#NAME?	-8.8013E+01	#NAME?	-8.7949E+01	#NAME?
-8.8299E+01	#NAME?	-8.8293E+01	#NAME?	-8.8275E+01	#NAME?	-8.8251E+01	#NAME?	-8.8182E+01	#NAME?	-8.8119E+01	#NAME?
-8.8467E+01	#NAME?	-8.8461E+01	#NAME?	-8.8444E+01	#NAME?	-8.8420E+01	#NAME?	-8.8351E+01	#NAME?	-8.8288E+01	#NAME?
-8.8636E+01	#NAME?	-8.8630E+01	#NAME?	-8.8612E+01	#NAME?	-8.8589E+01	#NAME?	-8.8519E+01	#NAME?	-8.8456E+01	#NAME?
-8.8804E+01	#NAME?	-8.8798E+01	#NAME?	-8.8780E+01	#NAME?	-8.8757E+01	#NAME?	-8.8688E+01	#NAME?	-8.8625E+01	#NAME?
-8.8971E+01	#NAME?	-8.8966E+01	#NAME?	-8.8948E+01	#NAME?	-8.8924E+01	#NAME?	-8.8856E+01	#NAME?	-8.8793E+01	#NAME?
-8.9139E+01	#NAME?	-8.9133E+01	#NAME?	-8.9115E+01	#NAME?	-8.9092E+01	#NAME?	-8.9023E+01	#NAME?	-8.8961E+01	#NAME?
-8.9306E+01	#NAME?	-8.9300E+01	#NAME?	-8.9283E+01	#NAME?	-8.9259E+01	#NAME?	-8.9191E+01	#NAME?	-8.9128E+01	#NAME?
-8.9473E+01	#NAME?	-8.9467E+01	#NAME?	-8.9449E+01	#NAME?	-8.9426E+01	#NAME?	-8.9358E+01	#NAME?	-8.9295E+01	#NAME?
-8.9639E+01	#NAME?	-8.9633E+01	#NAME?	-8.9616E+01	#NAME?	-8.9593E+01	#NAME?	-8.9524E+01	#NAME?	-8.9462E+01	#NAME?
-8.9805E+01	#NAME?	-8.9800E+01	#NAME?	-8.9782E+01	#NAME?	-8.9759E+01	#NAME?	-8.9691E+01	#NAME?	-8.9628E+01	#NAME?
-8.9971E+01	#NAME?	-8.9966E+01	#NAME?	-8.9948E+01	#NAME?	-8.9925E+01	#NAME?	-8.9857E+01	#NAME?	-8.9795E+01	#NAME?
-9.0137E+01	#NAME?	-9.0131E+01	#NAME?	-9.0114E+01	#NAME?	-9.0091E+01	#NAME?	-9.0023E+01	#NAME?	-8.9961E+01	#NAME?
-9.0302E+01	#NAME?	-9.0296E+01	#NAME?	-9.0279E+01	#NAME?	-9.0256E+01	#NAME?	-9.0188E+01	#NAME?	-9.0126E+01	#NAME?
-9.0467E+01	#NAME?	-9.0461E+01	#NAME?	-9.0444E+01	#NAME?	-9.0421E+01	#NAME?	-9.0353E+01	#NAME?	-9.0291E+01	#NAME?
-9.0632E+01	#NAME?	-9.0626E+01	#NAME?	-9.0609E+01	#NAME?	-9.0586E+01	#NAME?	-9.0518E+01	#NAME?	-9.0456E+01	#NAME?
-9.0796E+01	#NAME?	-9.0790E+01	#NAME?	-9.0773E+01	#NAME?	-9.0750E+01	#NAME?	-9.0683E+01	#NAME?	-9.0621E+01	#NAME?
-9.0960E+01	#NAME?	-9.0954E+01	#NAME?	-9.0937E+01	#NAME?	-9.0914E+01	#NAME?	-9.0847E+01	#NAME?	-9.0785E+01	#NAME?
-9.1124E+01	#NAME?	-9.1118E+01	#NAME?	-9.1101E+01	#NAME?	-9.1078E+01	#NAME?	-9.1011E+01	#NAME?	-9.0950E+01	#NAME?
-9.1287E+01	#NAME?	-9.1282E+01	#NAME?	-9.1265E+01	#NAME?	-9.1242E+01	#NAME?	-9.1175E+01	#NAME?	-9.1113E+01	#NAME?
-9.1451E+01	#NAME?	-9.1445E+01	#NAME?	-9.1428E+01	#NAME?	-9.1405E+01	#NAME?	-9.1338E+01	#NAME?	-9.1277E+01	#NAME?
-9.1614E+01	#NAME?	-9.1608E+01	#NAME?	-9.1591E+01	#NAME?	-9.1568E+01	#NAME?	-9.1501E+01	#NAME?	-9.1440E+01	#NAME?
-9.1776E+01	#NAME?	-9.1770E+01	#NAME?	-9.1753E+01	#NAME?	-9.1731E+01	#NAME?	-9.1664E+01	#NAME?	-9.1603E+01	#NAME?
-9.1938E+01	#NAME?	-9.1933E+01	#NAME?	-9.1916E+01	#NAME?	-9.1893E+01	#NAME?	-9.1827E+01	#NAME?	-9.1766E+01	#NAME?
-9.2101E+01	#NAME?	-9.2095E+01	#NAME?	-9.2078E+01	#NAME?	-9.2055E+01	#NAME?	-9.1989E+01	#NAME?	-9.1928E+01	#NAME?
-9.2262E+01	#NAME?	-9.2257E+01	#NAME?	-9.2240E+01	#NAME?	-9.2217E+01	#NAME?	-9.2151E+01	#NAME?	-9.2090E+01	#NAME?
-9.2424E+01	#NAME?	-9.2418E+01	#NAME?	-9.2401E+01	#NAME?	-9.2379E+01	#NAME?	-9.2312E+01	#NAME?	-9.2252E+01	#NAME?
-9.2585E+01	#NAME?	-9.2579E+01	#NAME?	-9.2562E+01	#NAME?	-9.2540E+01	#NAME?	-9.2474E+01	#NAME?	-9.2413E+01	#NAME?
-9.2746E+01	#NAME?	-9.2740E+01	#NAME?	-9.2723E+01	#NAME?	-9.2701E+01	#NAME?	-9.2635E+01	#NAME?	-9.2574E+01	#NAME?
-9.2906E+01	#NAME?	-9.2901E+01	#NAME?	-9.2884E+01	#NAME?	-9.2862E+01	#NAME?	-9.2796E+01	#NAME?	-9.2735E+01	#NAME?
-9.3067E+01	#NAME?	-9.3061E+01	#NAME?	-9.3044E+01	#NAME?	-9.3022E+01	#NAME?	-9.2956E+01	#NAME?	-9.2896E+01	#NAME?
-9.3227E+01	#NAME?	-9.3221E+01	#NAME?	-9.3205E+01	#NAME?	-9.3182E+01	#NAME?	-9.3116E+01	#NAME?	-9.3056E+01	#NAME?
-9.3387E+01	#NAME?	-9.3381E+01	#NAME?	-9.3364E+01	#NAME?	-9.3342E+01	#NAME?	-9.3276E+01	#NAME?	-9.3217E+01	#NAME?
-9.3546E+01	#NAME?	-9.3541E+01	#NAME?	-9.3524E+01	#NAME?	-9.3502E+01	#NAME?	-9.3436E+01	#NAME?	-9.3376E+01	#NAME?
-9.3706E+01	#NAME?	-9.3700E+01	#NAME?	-9.3683E+01	#NAME?	-9.3661E+01	#NAME?	-9.3596E+01	#NAME?	-9.3536E+01	#NAME?
-9.3864E+01	#NAME?	-9.3859E+01	#NAME?	-9.3842E+01	#NAME?	-9.3820E+01	#NAME?	-9.3755E+01	#NAME?	-9.3695E+01	#NAME?
-9.4023E+01	#NAME?	-9.4018E+01	#NAME?	-9.4001E+01	#NAME?	-9.3979E+01	#NAME?	-9.3914E+01	#NAME?	-9.3854E+01	#NAME?
-9.4182E+01	#NAME?	-9.4176E+01	#NAME?	-9.4160E+01	#NAME?	-9.4137E+01	#NAME?	-9.4072E+01	#NAME?	-9.4013E+01	#NAME?
-9.4340E+01	#NAME?	-9.4334E+01	#NAME?	-9.4318E+01	#NAME?	-9.4296E+01	#NAME?	-9.4231E+01	#NAME?	-9.4171E+01	#NAME?
-9.4498E+01	#NAME?	-9.4492E+01	#NAME?	-9.4476E+01	#NAME?	-9.4454E+01	#NAME?	-9.4389E+01	#NAME?	-9.4330E+01	#NAME?
-9.4655E+01	#NAME?	-9.4650E+01	#NAME?	-9.4633E+01	#NAME?	-9.4611E+01	#NAME?	-9.4547E+01	#NAME?	-9.4488E+01	#NAME?
-9.4813E+01	#NAME?	-9.4807E+01	#NAME?	-9.4791E+01	#NAME?	-9.4769E+01	#NAME?	-9.4704E+01	#NAME?	-9.4645E+01	#NAME?

Arg 13	Curve 13	Arg 14	Curve 14	Arg 15	Curve 15	Arg 16	Curve 16	Arg 17	Curve 17	Arg 18	Curve 18
-9.4970E+01	#NAME?	-9.4964E+01	#NAME?	-9.4948E+01	#NAME?	-9.4926E+01	#NAME?	-9.4862E+01	#NAME?	-9.4803E+01	#NAME?
-9.5127E+01	#NAME?	-9.5121E+01	#NAME?	-9.5105E+01	#NAME?	-9.5083E+01	#NAME?	-9.5019E+01	#NAME?	-9.4960E+01	#NAME?
-9.5283E+01	#NAME?	-9.5278E+01	#NAME?	-9.5262E+01	#NAME?	-9.5240E+01	#NAME?	-9.5175E+01	#NAME?	-9.5117E+01	#NAME?
-9.5440E+01	#NAME?	-9.5434E+01	#NAME?	-9.5418E+01	#NAME?	-9.5396E+01	#NAME?	-9.5332E+01	#NAME?	-9.5273E+01	#NAME?
-9.5596E+01	#NAME?	-9.5590E+01	#NAME?	-9.5574E+01	#NAME?	-9.5552E+01	#NAME?	-9.5488E+01	#NAME?	-9.5430E+01	#NAME?
-9.5752E+01	#NAME?	-9.5746E+01	#NAME?	-9.5730E+01	#NAME?	-9.5708E+01	#NAME?	-9.5644E+01	#NAME?	-9.5586E+01	#NAME?
-9.5907E+01	#NAME?	-9.5902E+01	#NAME?	-9.5886E+01	#NAME?	-9.5864E+01	#NAME?	-9.5800E+01	#NAME?	-9.5742E+01	#NAME?
-9.6063E+01	#NAME?	-9.6057E+01	#NAME?	-9.6041E+01	#NAME?	-9.6019E+01	#NAME?	-9.5956E+01	#NAME?	-9.5897E+01	#NAME?
-9.6218E+01	#NAME?	-9.6212E+01	#NAME?	-9.6196E+01	#NAME?	-9.6174E+01	#NAME?	-9.6111E+01	#NAME?	-9.6053E+01	#NAME?
-9.6373E+01	#NAME?	-9.6367E+01	#NAME?	-9.6351E+01	#NAME?	-9.6329E+01	#NAME?	-9.6266E+01	#NAME?	-9.6208E+01	#NAME?
-9.6527E+01	#NAME?	-9.6522E+01	#NAME?	-9.6506E+01	#NAME?	-9.6484E+01	#NAME?	-9.6421E+01	#NAME?	-9.6363E+01	#NAME?
-9.6682E+01	#NAME?	-9.6676E+01	#NAME?	-9.6660E+01	#NAME?	-9.6638E+01	#NAME?	-9.6575E+01	#NAME?	-9.6517E+01	#NAME?
-9.6836E+01	#NAME?	-9.6830E+01	#NAME?	-9.6814E+01	#NAME?	-9.6793E+01	#NAME?	-9.6729E+01	#NAME?	-9.6672E+01	#NAME?
-9.6990E+01	#NAME?	-9.6984E+01	#NAME?	-9.6968E+01	#NAME?	-9.6947E+01	#NAME?	-9.6883E+01	#NAME?	-9.6826E+01	#NAME?
-9.7143E+01	#NAME?	-9.7138E+01	#NAME?	-9.7122E+01	#NAME?	-9.7100E+01	#NAME?	-9.7037E+01	#NAME?	-9.6980E+01	#NAME?
-9.7297E+01	#NAME?	-9.7291E+01	#NAME?	-9.7275E+01	#NAME?	-9.7254E+01	#NAME?	-9.7191E+01	#NAME?	-9.7133E+01	#NAME?
-9.7450E+01	#NAME?	-9.7444E+01	#NAME?	-9.7428E+01	#NAME?	-9.7407E+01	#NAME?	-9.7344E+01	#NAME?	-9.7287E+01	#NAME?
-9.7603E+01	#NAME?	-9.7597E+01	#NAME?	-9.7581E+01	#NAME?	-9.7560E+01	#NAME?	-9.7497E+01	#NAME?	-9.7440E+01	#NAME?
-9.7755E+01	#NAME?	-9.7750E+01	#NAME?	-9.7734E+01	#NAME?	-9.7713E+01	#NAME?	-9.7650E+01	#NAME?	-9.7593E+01	#NAME?
-9.7908E+01	#NAME?	-9.7902E+01	#NAME?	-9.7886E+01	#NAME?	-9.7865E+01	#NAME?	-9.7803E+01	#NAME?	-9.7745E+01	#NAME?
-9.8060E+01	#NAME?	-9.8055E+01	#NAME?	-9.8039E+01	#NAME?	-9.8017E+01	#NAME?	-9.7955E+01	#NAME?	-9.7898E+01	#NAME?
-9.8212E+01	#NAME?	-9.8207E+01	#NAME?	-9.8191E+01	#NAME?	-9.8169E+01	#NAME?	-9.8107E+01	#NAME?	-9.8050E+01	#NAME?
-9.8364E+01	#NAME?	-9.8358E+01	#NAME?	-9.8342E+01	#NAME?	-9.8321E+01	#NAME?	-9.8259E+01	#NAME?	-9.8202E+01	#NAME?
-9.8515E+01	#NAME?	-9.8510E+01	#NAME?	-9.8494E+01	#NAME?	-9.8473E+01	#NAME?	-9.8411E+01	#NAME?	-9.8354E+01	#NAME?
-9.8666E+01	#NAME?	-9.8661E+01	#NAME?	-9.8645E+01	#NAME?	-9.8624E+01	#NAME?	-9.8562E+01	#NAME?	-9.8505E+01	#NAME?
-9.8817E+01	#NAME?	-9.8812E+01	#NAME?	-9.8796E+01	#NAME?	-9.8775E+01	#NAME?	-9.8713E+01	#NAME?	-9.8656E+01	#NAME?
-9.8968E+01	#NAME?	-9.8963E+01	#NAME?	-9.8947E+01	#NAME?	-9.8926E+01	#NAME?	-9.8864E+01	#NAME?	-9.8807E+01	#NAME?
-9.9119E+01	#NAME?	-9.9113E+01	#NAME?	-9.9098E+01	#NAME?	-9.9077E+01	#NAME?	-9.9015E+01	#NAME?	-9.8958E+01	#NAME?
-9.9269E+01	#NAME?	-9.9264E+01	#NAME?	-9.9248E+01	#NAME?	-9.9227E+01	#NAME?	-9.9165E+01	#NAME?	-9.9109E+01	#NAME?
-9.9419E+01	#NAME?	-9.9414E+01	#NAME?	-9.9398E+01	#NAME?	-9.9377E+01	#NAME?	-9.9316E+01	#NAME?	-9.9259E+01	#NAME?
-9.9569E+01	#NAME?	-9.9564E+01	#NAME?	-9.9548E+01	#NAME?	-9.9527E+01	#NAME?	-9.9466E+01	#NAME?	-9.9409E+01	#NAME?
-9.9719E+01	#NAME?	-9.9713E+01	#NAME?	-9.9698E+01	#NAME?	-9.9677E+01	#NAME?	-9.9615E+01	#NAME?	-9.9559E+01	#NAME?
-9.9868E+01	#NAME?	-9.9863E+01	#NAME?	-9.9847E+01	#NAME?	-9.9826E+01	#NAME?	-9.9765E+01	#NAME?	-9.9709E+01	#NAME?
-1.0002E+02	#NAME?	-1.0001E+02	#NAME?	-9.9996E+01	#NAME?	-9.9975E+01	#NAME?	-9.9914E+01	#NAME?	-9.9858E+01	#NAME?
-1.0017E+02	#NAME?	-1.0016E+02	#NAME?	-1.0015E+02	#NAME?	-1.0012E+02	#NAME?	-1.0006E+02	#NAME?	-1.0001E+02	#NAME?
-1.0031E+02	#NAME?	-1.0031E+02	#NAME?	-1.0029E+02	#NAME?	-1.0027E+02	#NAME?	-1.0021E+02	#NAME?	-1.0016E+02	#NAME?
-1.0046E+02	#NAME?	-1.0046E+02	#NAME?	-1.0044E+02	#NAME?	-1.0042E+02	#NAME?	-1.0036E+02	#NAME?	-1.0031E+02	#NAME?
-1.0061E+02	#NAME?	-1.0061E+02	#NAME?	-1.0059E+02	#NAME?	-1.0057E+02	#NAME?	-1.0051E+02	#NAME?	-1.0045E+02	#NAME?
-1.0076E+02	#NAME?	-1.0075E+02	#NAME?	-1.0074E+02	#NAME?	-1.0072E+02	#NAME?	-1.0066E+02	#NAME?	-1.0060E+02	#NAME?
-1.0091E+02	#NAME?	-1.0090E+02	#NAME?	-1.0089E+02	#NAME?	-1.0087E+02	#NAME?	-1.0081E+02	#NAME?	-1.0075E+02	#NAME?
-1.0106E+02	#NAME?	-1.0105E+02	#NAME?	-1.0103E+02	#NAME?	-1.0101E+02	#NAME?	-1.0095E+02	#NAME?	-1.0090E+02	#NAME?
-1.0120E+02	#NAME?	-1.0120E+02	#NAME?	-1.0118E+02	#NAME?	-1.0116E+02	#NAME?	-1.0110E+02	#NAME?	-1.0105E+02	#NAME?
-1.0135E+02	#NAME?	-1.0135E+02	#NAME?	-1.0133E+02	#NAME?	-1.0131E+02	#NAME?	-1.0125E+02	#NAME?	-1.0119E+02	#NAME?
-1.0150E+02	#NAME?	-1.0149E+02	#NAME?	-1.0148E+02	#NAME?	-1.0146E+02	#NAME?	-1.0140E+02	#NAME?	-1.0134E+02	#NAME?
-1.0164E+02	#NAME?	-1.0164E+02	#NAME?	-1.0162E+02	#NAME?	-1.0160E+02	#NAME?	-1.0154E+02	#NAME?	-1.0149E+02	#NAME?
-1.0179E+02	#NAME?	-1.0179E+02	#NAME?	-1.0177E+02	#NAME?	-1.0175E+02	#NAME?	-1.0169E+02	#NAME?	-1.0163E+02	#NAME?
-1.0194E+02	#NAME?	-1.0193E+02	#NAME?	-1.0192E+02	#NAME?	-1.0190E+02	#NAME?	-1.0184E+02	#NAME?	-1.0178E+02	#NAME?
-1.0208E+02	#NAME?	-1.0208E+02	#NAME?	-1.0206E+02	#NAME?	-1.0204E+02	#NAME?	-1.0198E+02	#NAME?	-1.0193E+02	#NAME?
-1.0223E+02	#NAME?	-1.0222E+02	#NAME?	-1.0221E+02	#NAME?	-1.0219E+02	#NAME?	-1.0213E+02	#NAME?	-1.0207E+02	#NAME?
-1.0237E+02	#NAME?	-1.0237E+02	#NAME?	-1.0235E+02	#NAME?	-1.0233E+02	#NAME?	-1.0227E+02	#NAME?	-1.0222E+02	#NAME?
-1.0252E+02	#NAME?	-1.0252E+02	#NAME?	-1.0250E+02	#NAME?	-1.0248E+02	#NAME?	-1.0242E+02	#NAME?	-1.0237E+02	#NAME?
-1.0267E+02	#NAME?	-1.0266E+02	#NAME?	-1.0265E+02	#NAME?	-1.0263E+02	#NAME?	-1.0257E+02	#NAME?	-1.0251E+02	#NAME?

Arg 13	Curve 13	Arg 14	Curve 14	Arg 15	Curve 15	Arg 16	Curve 16	Arg 17	Curve 17	Arg 18	Curve 18
-1.0281E+02	#NAME?	-1.0281E+02	#NAME?	-1.0279E+02	#NAME?	-1.0277E+02	#NAME?	-1.0271E+02	#NAME?	-1.0266E+02	#NAME?
-1.0296E+02	#NAME?	-1.0295E+02	#NAME?	-1.0294E+02	#NAME?	-1.0292E+02	#NAME?	-1.0286E+02	#NAME?	-1.0280E+02	#NAME?
-1.0310E+02	#NAME?	-1.0310E+02	#NAME?	-1.0308E+02	#NAME?	-1.0306E+02	#NAME?	-1.0300E+02	#NAME?	-1.0295E+02	#NAME?
-1.0325E+02	#NAME?	-1.0324E+02	#NAME?	-1.0322E+02	#NAME?	-1.0320E+02	#NAME?	-1.0315E+02	#NAME?	-1.0309E+02	#NAME?
-1.0339E+02	#NAME?	-1.0338E+02	#NAME?	-1.0337E+02	#NAME?	-1.0335E+02	#NAME?	-1.0329E+02	#NAME?	-1.0324E+02	#NAME?
-1.0353E+02	#NAME?	-1.0353E+02	#NAME?	-1.0351E+02	#NAME?	-1.0349E+02	#NAME?	-1.0343E+02	#NAME?	-1.0338E+02	#NAME?
-1.0368E+02	#NAME?	-1.0367E+02	#NAME?	-1.0366E+02	#NAME?	-1.0364E+02	#NAME?	-1.0358E+02	#NAME?	-1.0352E+02	#NAME?
-1.0382E+02	#NAME?	-1.0382E+02	#NAME?	-1.0380E+02	#NAME?	-1.0378E+02	#NAME?	-1.0372E+02	#NAME?	-1.0367E+02	#NAME?
-1.0396E+02	#NAME?	-1.0396E+02	#NAME?	-1.0394E+02	#NAME?	-1.0392E+02	#NAME?	-1.0387E+02	#NAME?	-1.0381E+02	#NAME?
-1.0411E+02	#NAME?	-1.0410E+02	#NAME?	-1.0409E+02	#NAME?	-1.0407E+02	#NAME?	-1.0401E+02	#NAME?	-1.0396E+02	#NAME?
-1.0425E+02	#NAME?	-1.0425E+02	#NAME?	-1.0423E+02	#NAME?	-1.0421E+02	#NAME?	-1.0415E+02	#NAME?	-1.0410E+02	#NAME?
-1.0439E+02	#NAME?	-1.0439E+02	#NAME?	-1.0437E+02	#NAME?	-1.0435E+02	#NAME?	-1.0430E+02	#NAME?	-1.0424E+02	#NAME?
-1.0454E+02	#NAME?	-1.0453E+02	#NAME?	-1.0452E+02	#NAME?	-1.0450E+02	#NAME?	-1.0444E+02	#NAME?	-1.0438E+02	#NAME?
-1.0468E+02	#NAME?	-1.0467E+02	#NAME?	-1.0466E+02	#NAME?	-1.0464E+02	#NAME?	-1.0458E+02	#NAME?	-1.0453E+02	#NAME?
-1.0482E+02	#NAME?	-1.0482E+02	#NAME?	-1.0480E+02	#NAME?	-1.0478E+02	#NAME?	-1.0472E+02	#NAME?	-1.0467E+02	#NAME?
-1.0496E+02	#NAME?	-1.0496E+02	#NAME?	-1.0494E+02	#NAME?	-1.0492E+02	#NAME?	-1.0487E+02	#NAME?	-1.0481E+02	#NAME?
-1.0511E+02	#NAME?	-1.0510E+02	#NAME?	-1.0509E+02	#NAME?	-1.0507E+02	#NAME?	-1.0501E+02	#NAME?	-1.0495E+02	#NAME?
-1.0525E+02	#NAME?	-1.0524E+02	#NAME?	-1.0523E+02	#NAME?	-1.0521E+02	#NAME?	-1.0515E+02	#NAME?	-1.0510E+02	#NAME?
-1.0539E+02	#NAME?	-1.0538E+02	#NAME?	-1.0537E+02	#NAME?	-1.0535E+02	#NAME?	-1.0529E+02	#NAME?	-1.0524E+02	#NAME?
-1.0553E+02	#NAME?	-1.0553E+02	#NAME?	-1.0551E+02	#NAME?	-1.0549E+02	#NAME?	-1.0543E+02	#NAME?	-1.0538E+02	#NAME?
-1.0567E+02	#NAME?	-1.0567E+02	#NAME?	-1.0565E+02	#NAME?	-1.0563E+02	#NAME?	-1.0557E+02	#NAME?	-1.0552E+02	#NAME?
-1.0581E+02	#NAME?	-1.0581E+02	#NAME?	-1.0579E+02	#NAME?	-1.0577E+02	#NAME?	-1.0572E+02	#NAME?	-1.0566E+02	#NAME?
-1.0595E+02	#NAME?	-1.0595E+02	#NAME?	-1.0593E+02	#NAME?	-1.0591E+02	#NAME?	-1.0586E+02	#NAME?	-1.0580E+02	#NAME?
-1.0609E+02	#NAME?	-1.0609E+02	#NAME?	-1.0607E+02	#NAME?	-1.0606E+02	#NAME?	-1.0600E+02	#NAME?	-1.0594E+02	#NAME?
-1.0623E+02	#NAME?	-1.0623E+02	#NAME?	-1.0622E+02	#NAME?	-1.0620E+02	#NAME?	-1.0614E+02	#NAME?	-1.0609E+02	#NAME?
-1.0638E+02	#NAME?	-1.0637E+02	#NAME?	-1.0636E+02	#NAME?	-1.0634E+02	#NAME?	-1.0628E+02	#NAME?	-1.0623E+02	#NAME?
-1.0652E+02	#NAME?	-1.0651E+02	#NAME?	-1.0650E+02	#NAME?	-1.0648E+02	#NAME?	-1.0642E+02	#NAME?	-1.0637E+02	#NAME?
-1.0666E+02	#NAME?	-1.0665E+02	#NAME?	-1.0664E+02	#NAME?	-1.0662E+02	#NAME?	-1.0656E+02	#NAME?	-1.0651E+02	#NAME?
-1.0679E+02	#NAME?	-1.0679E+02	#NAME?	-1.0678E+02	#NAME?	-1.0676E+02	#NAME?	-1.0670E+02	#NAME?	-1.0665E+02	#NAME?
-1.0693E+02	#NAME?	-1.0693E+02	#NAME?	-1.0692E+02	#NAME?	-1.0690E+02	#NAME?	-1.0684E+02	#NAME?	-1.0679E+02	#NAME?
-1.0707E+02	#NAME?	-1.0707E+02	#NAME?	-1.0705E+02	#NAME?	-1.0703E+02	#NAME?	-1.0698E+02	#NAME?	-1.0693E+02	#NAME?
-1.0721E+02	#NAME?	-1.0721E+02	#NAME?	-1.0719E+02	#NAME?	-1.0717E+02	#NAME?	-1.0712E+02	#NAME?	-1.0706E+02	#NAME?
-1.0735E+02	#NAME?	-1.0735E+02	#NAME?	-1.0733E+02	#NAME?	-1.0731E+02	#NAME?	-1.0726E+02	#NAME?	-1.0720E+02	#NAME?
-1.0749E+02	#NAME?	-1.0749E+02	#NAME?	-1.0747E+02	#NAME?	-1.0745E+02	#NAME?	-1.0740E+02	#NAME?	-1.0734E+02	#NAME?
-1.0763E+02	#NAME?	-1.0762E+02	#NAME?	-1.0761E+02	#NAME?	-1.0759E+02	#NAME?	-1.0753E+02	#NAME?	-1.0748E+02	#NAME?
-1.0777E+02	#NAME?	-1.0776E+02	#NAME?	-1.0775E+02	#NAME?	-1.0773E+02	#NAME?	-1.0767E+02	#NAME?	-1.0762E+02	#NAME?
-1.0791E+02	#NAME?	-1.0790E+02	#NAME?	-1.0789E+02	#NAME?	-1.0787E+02	#NAME?	-1.0781E+02	#NAME?	-1.0776E+02	#NAME?
-1.0804E+02	#NAME?	-1.0804E+02	#NAME?	-1.0803E+02	#NAME?	-1.0801E+02	#NAME?	-1.0795E+02	#NAME?	-1.0790E+02	#NAME?
-1.0818E+02	#NAME?	-1.0818E+02	#NAME?	-1.0816E+02	#NAME?	-1.0814E+02	#NAME?	-1.0809E+02	#NAME?	-1.0804E+02	#NAME?
-1.0832E+02	#NAME?	-1.0832E+02	#NAME?	-1.0830E+02	#NAME?	-1.0828E+02	#NAME?	-1.0823E+02	#NAME?	-1.0817E+02	#NAME?
-1.0846E+02	#NAME?	-1.0845E+02	#NAME?	-1.0844E+02	#NAME?	-1.0842E+02	#NAME?	-1.0836E+02	#NAME?	-1.0831E+02	#NAME?
-1.0860E+02	#NAME?	-1.0859E+02	#NAME?	-1.0858E+02	#NAME?	-1.0856E+02	#NAME?	-1.0850E+02	#NAME?	-1.0845E+02	#NAME?
-1.0873E+02	#NAME?	-1.0873E+02	#NAME?	-1.0871E+02	#NAME?	-1.0869E+02	#NAME?	-1.0864E+02	#NAME?	-1.0859E+02	#NAME?
-1.0887E+02	#NAME?	-1.0886E+02	#NAME?	-1.0885E+02	#NAME?	-1.0883E+02	#NAME?	-1.0877E+02	#NAME?	-1.0872E+02	#NAME?
-1.0901E+02	#NAME?	-1.0900E+02	#NAME?	-1.0899E+02	#NAME?	-1.0897E+02	#NAME?	-1.0891E+02	#NAME?	-1.0886E+02	#NAME?
-1.0914E+02	#NAME?	-1.0914E+02	#NAME?	-1.0912E+02	#NAME?	-1.0910E+02	#NAME?	-1.0905E+02	#NAME?	-1.0900E+02	#NAME?
-1.0928E+02	#NAME?	-1.0927E+02	#NAME?	-1.0926E+02	#NAME?	-1.0924E+02	#NAME?	-1.0919E+02	#NAME?	-1.0913E+02	#NAME?
-1.0942E+02	#NAME?	-1.0941E+02	#NAME?	-1.0940E+02	#NAME?	-1.0938E+02	#NAME?	-1.0932E+02	#NAME?	-1.0927E+02	#NAME?
-1.0955E+02	#NAME?	-1.0955E+02	#NAME?	-1.0953E+02	#NAME?	-1.0951E+02	#NAME?	-1.0946E+02	#NAME?	-1.0941E+02	#NAME?
-1.0969E+02	#NAME?	-1.0968E+02	#NAME?	-1.0967E+02	#NAME?	-1.0965E+02	#NAME?	-1.0959E+02	#NAME?	-1.0954E+02	#NAME?
-1.0982E+02	#NAME?	-1.0982E+02	#NAME?	-1.0981E+02	#NAME?	-1.0979E+02	#NAME?	-1.0973E+02	#NAME?	-1.0968E+02	#NAME?
-1.0996E+02	#NAME?	-1.0995E+02	#NAME?	-1.0994E+02	#NAME?	-1.0992E+02	#NAME?	-1.0987E+02	#NAME?	-1.0982E+02	#NAME?

Arg 13	Curve 13	Arg 14	Curve 14	Arg 15	Curve 15	Arg 16	Curve 16	Arg 17	Curve 17	Arg 18	Curve 18
-1.1010E+02	#NAME?	-1.1009E+02	#NAME?	-1.1008E+02	#NAME?	-1.1006E+02	#NAME?	-1.1000E+02	#NAME?	-1.0995E+02	#NAME?
-1.1023E+02	#NAME?	-1.1023E+02	#NAME?	-1.1021E+02	#NAME?	-1.1019E+02	#NAME?	-1.1014E+02	#NAME?	-1.1009E+02	#NAME?
-1.1037E+02	#NAME?	-1.1036E+02	#NAME?	-1.1035E+02	#NAME?	-1.1033E+02	#NAME?	-1.1027E+02	#NAME?	-1.1022E+02	#NAME?
-1.1050E+02	#NAME?	-1.1050E+02	#NAME?	-1.1048E+02	#NAME?	-1.1046E+02	#NAME?	-1.1041E+02	#NAME?	-1.1036E+02	#NAME?
-1.1064E+02	#NAME?	-1.1063E+02	#NAME?	-1.1062E+02	#NAME?	-1.1060E+02	#NAME?	-1.1054E+02	#NAME?	-1.1049E+02	#NAME?
-1.1077E+02	#NAME?	-1.1077E+02	#NAME?	-1.1075E+02	#NAME?	-1.1073E+02	#NAME?	-1.1068E+02	#NAME?	-1.1063E+02	#NAME?
-1.1090E+02	#NAME?	-1.1090E+02	#NAME?	-1.1089E+02	#NAME?	-1.1087E+02	#NAME?	-1.1081E+02	#NAME?	-1.1076E+02	#NAME?
-1.1104E+02	#NAME?	-1.1103E+02	#NAME?	-1.1102E+02	#NAME?	-1.1100E+02	#NAME?	-1.1095E+02	#NAME?	-1.1090E+02	#NAME?
-1.1117E+02	#NAME?	-1.1117E+02	#NAME?	-1.1115E+02	#NAME?	-1.1114E+02	#NAME?	-1.1108E+02	#NAME?	-1.1103E+02	#NAME?
-1.1131E+02	#NAME?	-1.1130E+02	#NAME?	-1.1129E+02	#NAME?	-1.1127E+02	#NAME?	-1.1122E+02	#NAME?	-1.1116E+02	#NAME?
-1.1144E+02	#NAME?	-1.1144E+02	#NAME?	-1.1142E+02	#NAME?	-1.1140E+02	#NAME?	-1.1135E+02	#NAME?	-1.1130E+02	#NAME?
-1.1158E+02	#NAME?	-1.1157E+02	#NAME?	-1.1156E+02	#NAME?	-1.1154E+02	#NAME?	-1.1148E+02	#NAME?	-1.1143E+02	#NAME?
-1.1171E+02	#NAME?	-1.1170E+02	#NAME?	-1.1169E+02	#NAME?	-1.1167E+02	#NAME?	-1.1162E+02	#NAME?	-1.1157E+02	#NAME?
-1.1184E+02	#NAME?	-1.1184E+02	#NAME?	-1.1182E+02	#NAME?	-1.1180E+02	#NAME?	-1.1175E+02	#NAME?	-1.1170E+02	#NAME?
-1.1198E+02	#NAME?	-1.1197E+02	#NAME?	-1.1196E+02	#NAME?	-1.1194E+02	#NAME?	-1.1188E+02	#NAME?	-1.1183E+02	#NAME?
-1.1211E+02	#NAME?	-1.1210E+02	#NAME?	-1.1209E+02	#NAME?	-1.1207E+02	#NAME?	-1.1202E+02	#NAME?	-1.1197E+02	#NAME?
-1.1224E+02	#NAME?	-1.1224E+02	#NAME?	-1.1222E+02	#NAME?	-1.1220E+02	#NAME?	-1.1215E+02	#NAME?	-1.1210E+02	#NAME?
-1.1237E+02	#NAME?	-1.1237E+02	#NAME?	-1.1236E+02	#NAME?	-1.1234E+02	#NAME?	-1.1228E+02	#NAME?	-1.1223E+02	#NAME?
-1.1251E+02	#NAME?	-1.1250E+02	#NAME?	-1.1249E+02	#NAME?	-1.1247E+02	#NAME?	-1.1242E+02	#NAME?	-1.1237E+02	#NAME?
-1.1264E+02	#NAME?	-1.1263E+02	#NAME?	-1.1262E+02	#NAME?	-1.1260E+02	#NAME?	-1.1255E+02	#NAME?	-1.1250E+02	#NAME?
-1.1277E+02	#NAME?	-1.1277E+02	#NAME?	-1.1275E+02	#NAME?	-1.1273E+02	#NAME?	-1.1268E+02	#NAME?	-1.1263E+02	#NAME?
-1.1290E+02	#NAME?	-1.1290E+02	#NAME?	-1.1289E+02	#NAME?	-1.1287E+02	#NAME?	-1.1281E+02	#NAME?	-1.1276E+02	#NAME?
-1.1304E+02	#NAME?	-1.1303E+02	#NAME?	-1.1302E+02	#NAME?	-1.1300E+02	#NAME?	-1.1294E+02	#NAME?	-1.1290E+02	#NAME?
-1.1317E+02	#NAME?	-1.1316E+02	#NAME?	-1.1315E+02	#NAME?	-1.1313E+02	#NAME?	-1.1308E+02	#NAME?	-1.1303E+02	#NAME?
-1.1330E+02	#NAME?	-1.1329E+02	#NAME?	-1.1328E+02	#NAME?	-1.1326E+02	#NAME?	-1.1321E+02	#NAME?	-1.1316E+02	#NAME?
-1.1343E+02	#NAME?	-1.1343E+02	#NAME?	-1.1341E+02	#NAME?	-1.1339E+02	#NAME?	-1.1334E+02	#NAME?	-1.1329E+02	#NAME?
-1.1356E+02	#NAME?	-1.1356E+02	#NAME?	-1.1354E+02	#NAME?	-1.1353E+02	#NAME?	-1.1347E+02	#NAME?	-1.1342E+02	#NAME?
-1.1369E+02	#NAME?	-1.1369E+02	#NAME?	-1.1368E+02	#NAME?	-1.1366E+02	#NAME?	-1.1360E+02	#NAME?	-1.1355E+02	#NAME?
-1.1382E+02	#NAME?	-1.1382E+02	#NAME?	-1.1381E+02	#NAME?	-1.1379E+02	#NAME?	-1.1373E+02	#NAME?	-1.1369E+02	#NAME?
-1.1396E+02	#NAME?	-1.1395E+02	#NAME?	-1.1394E+02	#NAME?	-1.1392E+02	#NAME?	-1.1387E+02	#NAME?	-1.1382E+02	#NAME?
-1.1409E+02	#NAME?	-1.1408E+02	#NAME?	-1.1407E+02	#NAME?	-1.1405E+02	#NAME?	-1.1400E+02	#NAME?	-1.1395E+02	#NAME?
-1.1422E+02	#NAME?	-1.1421E+02	#NAME?	-1.1420E+02	#NAME?	-1.1418E+02	#NAME?	-1.1413E+02	#NAME?	-1.1408E+02	#NAME?
-1.1435E+02	#NAME?	-1.1434E+02	#NAME?	-1.1433E+02	#NAME?	-1.1431E+02	#NAME?	-1.1426E+02	#NAME?	-1.1421E+02	#NAME?
-1.1448E+02	#NAME?	-1.1447E+02	#NAME?	-1.1446E+02	#NAME?	-1.1444E+02	#NAME?	-1.1439E+02	#NAME?	-1.1434E+02	#NAME?
-1.1461E+02	#NAME?	-1.1460E+02	#NAME?	-1.1459E+02	#NAME?	-1.1457E+02	#NAME?	-1.1452E+02	#NAME?	-1.1447E+02	#NAME?
-1.1474E+02	#NAME?	-1.1473E+02	#NAME?	-1.1472E+02	#NAME?	-1.1470E+02	#NAME?	-1.1465E+02	#NAME?	-1.1460E+02	#NAME?
-1.1487E+02	#NAME?	-1.1486E+02	#NAME?	-1.1485E+02	#NAME?	-1.1483E+02	#NAME?	-1.1478E+02	#NAME?	-1.1473E+02	#NAME?
-1.1500E+02	#NAME?	-1.1499E+02	#NAME?	-1.1498E+02	#NAME?	-1.1496E+02	#NAME?	-1.1491E+02	#NAME?	-1.1486E+02	#NAME?
-1.1513E+02	#NAME?	-1.1512E+02	#NAME?	-1.1511E+02	#NAME?	-1.1509E+02	#NAME?	-1.1504E+02	#NAME?	-1.1499E+02	#NAME?
-1.1526E+02	#NAME?	-1.1525E+02	#NAME?	-1.1524E+02	#NAME?	-1.1522E+02	#NAME?	-1.1517E+02	#NAME?	-1.1512E+02	#NAME?
-1.1539E+02	#NAME?	-1.1538E+02	#NAME?	-1.1537E+02	#NAME?	-1.1535E+02	#NAME?	-1.1530E+02	#NAME?	-1.1525E+02	#NAME?
-1.1552E+02	#NAME?	-1.1551E+02	#NAME?	-1.1550E+02	#NAME?	-1.1548E+02	#NAME?	-1.1543E+02	#NAME?	-1.1538E+02	#NAME?
-1.1564E+02	#NAME?	-1.1564E+02	#NAME?	-1.1563E+02	#NAME?	-1.1561E+02	#NAME?	-1.1556E+02	#NAME?	-1.1551E+02	#NAME?
-1.1577E+02	#NAME?	-1.1577E+02	#NAME?	-1.1576E+02	#NAME?	-1.1574E+02	#NAME?	-1.1568E+02	#NAME?	-1.1564E+02	#NAME?
-1.1590E+02	#NAME?	-1.1590E+02	#NAME?	-1.1588E+02	#NAME?	-1.1587E+02	#NAME?	-1.1581E+02	#NAME?	-1.1576E+02	#NAME?
-1.1603E+02	#NAME?	-1.1603E+02	#NAME?	-1.1601E+02	#NAME?	-1.1599E+02	#NAME?	-1.1594E+02	#NAME?	-1.1589E+02	#NAME?
-1.1616E+02	#NAME?	-1.1615E+02	#NAME?	-1.1614E+02	#NAME?	-1.1612E+02	#NAME?	-1.1607E+02	#NAME?	-1.1602E+02	#NAME?
-1.1629E+02	#NAME?	-1.1628E+02	#NAME?	-1.1627E+02	#NAME?	-1.1625E+02	#NAME?	-1.1620E+02	#NAME?	-1.1615E+02	#NAME?
-1.1642E+02	#NAME?	-1.1641E+02	#NAME?	-1.1640E+02	#NAME?	-1.1638E+02	#NAME?	-1.1633E+02	#NAME?	-1.1628E+02	#NAME?
-1.1654E+02	#NAME?	-1.1654E+02	#NAME?	-1.1653E+02	#NAME?	-1.1651E+02	#NAME?	-1.1646E+02	#NAME?	-1.1641E+02	#NAME?
-1.1667E+02	#NAME?	-1.1667E+02	#NAME?	-1.1665E+02	#NAME?	-1.1664E+02	#NAME?	-1.1658E+02	#NAME?	-1.1654E+02	#NAME?
-1.1680E+02	#NAME?	-1.1679E+02	#NAME?	-1.1678E+02	#NAME?	-1.1676E+02	#NAME?	-1.1671E+02	#NAME?	-1.1666E+02	#NAME?

Arg 13	Curve 13	Arg 14	Curve 14	Arg 15	Curve 15	Arg 16	Curve 16	Arg 17	Curve 17	Arg 18	Curve 18
-1.1693E+02	#NAME?	-1.1692E+02	#NAME?	-1.1691E+02	#NAME?	-1.1689E+02	#NAME?	-1.1684E+02	#NAME?	-1.1679E+02	#NAME?
-1.1705E+02	#NAME?	-1.1705E+02	#NAME?	-1.1704E+02	#NAME?	-1.1702E+02	#NAME?	-1.1697E+02	#NAME?	-1.1692E+02	#NAME?
-1.1718E+02	#NAME?	-1.1718E+02	#NAME?	-1.1716E+02	#NAME?	-1.1715E+02	#NAME?	-1.1709E+02	#NAME?	-1.1705E+02	#NAME?
-1.1731E+02	#NAME?	-1.1730E+02	#NAME?	-1.1729E+02	#NAME?	-1.1727E+02	#NAME?	-1.1722E+02	#NAME?	-1.1717E+02	#NAME?
-1.1744E+02	#NAME?	-1.1743E+02	#NAME?	-1.1742E+02	#NAME?	-1.1740E+02	#NAME?	-1.1735E+02	#NAME?	-1.1730E+02	#NAME?
-1.1756E+02	#NAME?	-1.1756E+02	#NAME?	-1.1755E+02	#NAME?	-1.1753E+02	#NAME?	-1.1748E+02	#NAME?	-1.1743E+02	#NAME?
-1.1769E+02	#NAME?	-1.1769E+02	#NAME?	-1.1767E+02	#NAME?	-1.1765E+02	#NAME?	-1.1760E+02	#NAME?	-1.1755E+02	#NAME?
-1.1782E+02	#NAME?	-1.1781E+02	#NAME?	-1.1780E+02	#NAME?	-1.1778E+02	#NAME?	-1.1773E+02	#NAME?	-1.1768E+02	#NAME?
-1.1794E+02	#NAME?	-1.1794E+02	#NAME?	-1.1793E+02	#NAME?	-1.1791E+02	#NAME?	-1.1786E+02	#NAME?	-1.1781E+02	#NAME?
-1.1807E+02	#NAME?	-1.1806E+02	#NAME?	-1.1805E+02	#NAME?	-1.1803E+02	#NAME?	-1.1798E+02	#NAME?	-1.1793E+02	#NAME?
-1.1820E+02	#NAME?	-1.1819E+02	#NAME?	-1.1818E+02	#NAME?	-1.1816E+02	#NAME?	-1.1811E+02	#NAME?	-1.1806E+02	#NAME?
-1.1832E+02	#NAME?	-1.1832E+02	#NAME?	-1.1830E+02	#NAME?	-1.1829E+02	#NAME?	-1.1823E+02	#NAME?	-1.1819E+02	#NAME?
-1.1845E+02	#NAME?	-1.1844E+02	#NAME?	-1.1843E+02	#NAME?	-1.1841E+02	#NAME?	-1.1836E+02	#NAME?	-1.1831E+02	#NAME?
-1.1857E+02	#NAME?	-1.1857E+02	#NAME?	-1.1856E+02	#NAME?	-1.1854E+02	#NAME?	-1.1849E+02	#NAME?	-1.1844E+02	#NAME?
-1.1870E+02	#NAME?	-1.1869E+02	#NAME?	-1.1868E+02	#NAME?	-1.1866E+02	#NAME?	-1.1861E+02	#NAME?	-1.1857E+02	#NAME?
-1.1882E+02	#NAME?	-1.1882E+02	#NAME?	-1.1881E+02	#NAME?	-1.1879E+02	#NAME?	-1.1874E+02	#NAME?	-1.1869E+02	#NAME?
-1.1895E+02	#NAME?	-1.1895E+02	#NAME?	-1.1893E+02	#NAME?	-1.1891E+02	#NAME?	-1.1886E+02	#NAME?	-1.1882E+02	#NAME?
-1.1908E+02	#NAME?	-1.1907E+02	#NAME?	-1.1906E+02	#NAME?	-1.1904E+02	#NAME?	-1.1899E+02	#NAME?	-1.1894E+02	#NAME?
-1.1920E+02	#NAME?	-1.1920E+02	#NAME?	-1.1918E+02	#NAME?	-1.1917E+02	#NAME?	-1.1911E+02	#NAME?	-1.1907E+02	#NAME?
-1.1933E+02	#NAME?	-1.1932E+02	#NAME?	-1.1931E+02	#NAME?	-1.1929E+02	#NAME?	-1.1924E+02	#NAME?	-1.1919E+02	#NAME?
-1.1945E+02	#NAME?	-1.1945E+02	#NAME?	-1.1943E+02	#NAME?	-1.1942E+02	#NAME?	-1.1936E+02	#NAME?	-1.1932E+02	#NAME?
-1.1958E+02	#NAME?	-1.1957E+02	#NAME?	-1.1956E+02	#NAME?	-1.1954E+02	#NAME?	-1.1949E+02	#NAME?	-1.1944E+02	#NAME?
-1.1970E+02	#NAME?	-1.1970E+02	#NAME?	-1.1968E+02	#NAME?	-1.1966E+02	#NAME?	-1.1961E+02	#NAME?	-1.1957E+02	#NAME?
-1.1982E+02	#NAME?	-1.1982E+02	#NAME?	-1.1981E+02	#NAME?	-1.1979E+02	#NAME?	-1.1974E+02	#NAME?	-1.1969E+02	#NAME?
-1.1995E+02	#NAME?	-1.1994E+02	#NAME?	-1.1993E+02	#NAME?	-1.1991E+02	#NAME?	-1.1986E+02	#NAME?	-1.1982E+02	#NAME?
-1.2007E+02	#NAME?	-1.2007E+02	#NAME?	-1.2006E+02	#NAME?	-1.2004E+02	#NAME?	-1.1999E+02	#NAME?	-1.1994E+02	#NAME?
-1.2020E+02	#NAME?	-1.2019E+02	#NAME?	-1.2018E+02	#NAME?	-1.2016E+02	#NAME?	-1.2011E+02	#NAME?	-1.2006E+02	#NAME?
-1.2032E+02	#NAME?	-1.2032E+02	#NAME?	-1.2030E+02	#NAME?	-1.2029E+02	#NAME?	-1.2024E+02	#NAME?	-1.2019E+02	#NAME?
-1.2045E+02	#NAME?	-1.2044E+02	#NAME?	-1.2043E+02	#NAME?	-1.2041E+02	#NAME?	-1.2036E+02	#NAME?	-1.2031E+02	#NAME?
-1.2057E+02	#NAME?	-1.2056E+02	#NAME?	-1.2055E+02	#NAME?	-1.2053E+02	#NAME?	-1.2048E+02	#NAME?	-1.2044E+02	#NAME?
-1.2069E+02	#NAME?	-1.2069E+02	#NAME?	-1.2068E+02	#NAME?	-1.2066E+02	#NAME?	-1.2061E+02	#NAME?	-1.2056E+02	#NAME?
-1.2082E+02	#NAME?	-1.2081E+02	#NAME?	-1.2080E+02	#NAME?	-1.2078E+02	#NAME?	-1.2073E+02	#NAME?	-1.2068E+02	#NAME?
-1.2094E+02	#NAME?	-1.2093E+02	#NAME?	-1.2092E+02	#NAME?	-1.2090E+02	#NAME?	-1.2085E+02	#NAME?	-1.2081E+02	#NAME?

Arg 19	Curve 19	Flux Out (gm/yr)	Intake (mg/kg body wt./day)
0.0000E+00	0.0000E+00	#NAME?	#NAME?

Arg 19	Curve 19	Flux Out (gm/yr)	Intake (mg/kg body wt./day)
0.0000E+00	0.0000E+00	#NAME?	#NAME?

Arg 19	Curve 19	Flux Out (gm/yr)	Intake (mg/kg body wt./day)
0.0000E+00	0.0000E+00	#NAME?	#NAME?

Arg 19	Curve 19	Flux Out (gm/yr)	Intake (mg/kg body wt./day)
0.0000E+00	0.0000E+00	#NAME?	#NAME?

Arg 19	Curve 19	Flux Out (gm/yr)	Intake (mg/kg body wt./day)
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
0.0000E+00	0.0000E+00	#NAME?	#NAME?
2.0172E+01	#NAME?	#NAME?	#NAME?
1.0402E+01	#NAME?	#NAME?	#NAME?
5.3399E+00	#NAME?	#NAME?	#NAME?
1.8937E+00	#NAME?	#NAME?	#NAME?
-7.4874E-01	#NAME?	#NAME?	#NAME?
-2.9132E+00	#NAME?	#NAME?	#NAME?
-4.7614E+00	#NAME?	#NAME?	#NAME?
-6.3848E+00	#NAME?	#NAME?	#NAME?
-7.8402E+00	#NAME?	#NAME?	#NAME?

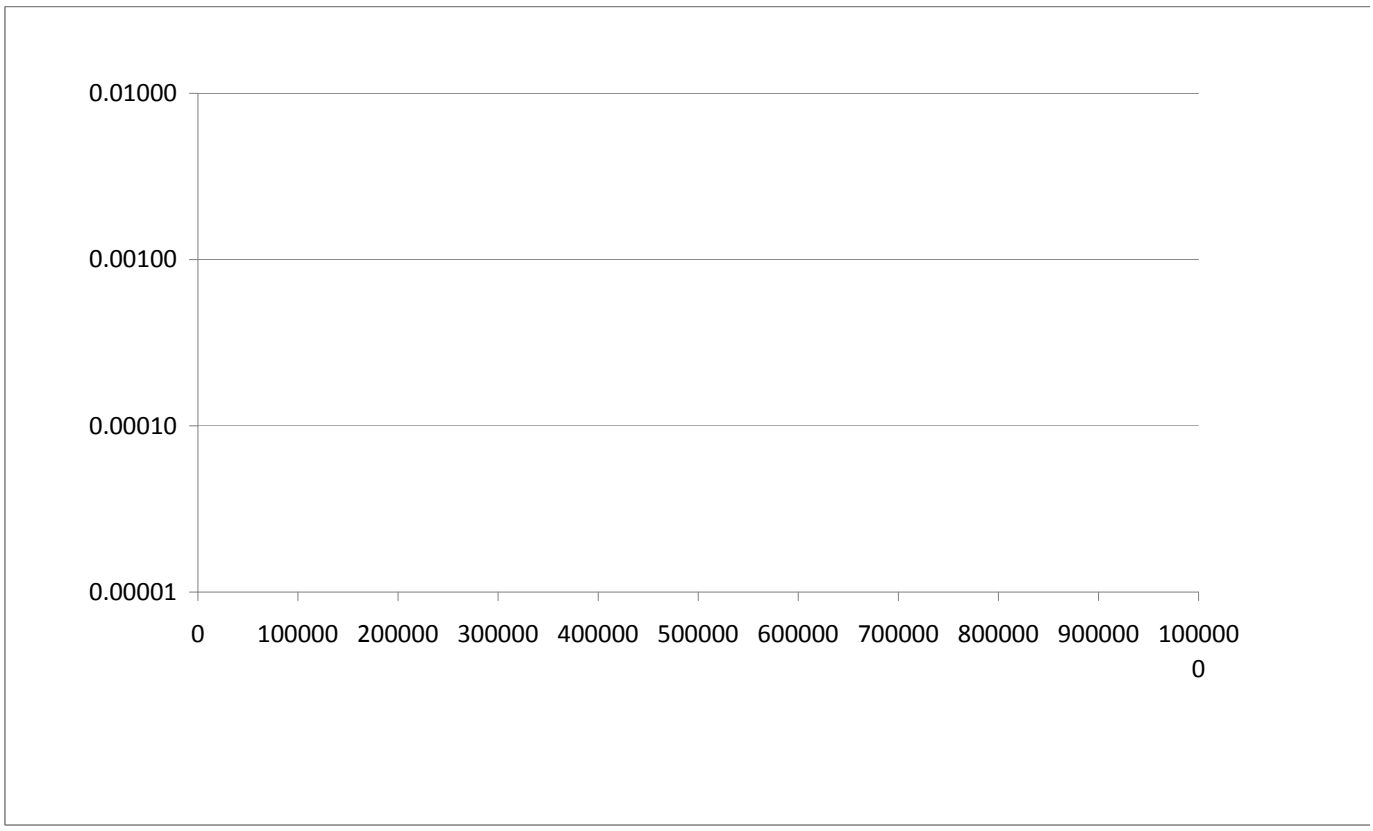
Arg 19	Curve 19	Flux Out (gm/yr)	Intake (mg/kg body wt./day)
-9.1649E+00	#NAME?	#NAME?	#NAME?
-1.0385E+01	#NAME?	#NAME?	#NAME?
-1.1520E+01	#NAME?	#NAME?	#NAME?
-1.2582E+01	#NAME?	#NAME?	#NAME?
-1.3584E+01	#NAME?	#NAME?	#NAME?
-1.4534E+01	#NAME?	#NAME?	#NAME?
-1.5438E+01	#NAME?	#NAME?	#NAME?
-1.6302E+01	#NAME?	#NAME?	#NAME?
-1.7130E+01	#NAME?	#NAME?	#NAME?
-1.7926E+01	#NAME?	#NAME?	#NAME?
-1.8693E+01	#NAME?	#NAME?	#NAME?
-1.9434E+01	#NAME?	#NAME?	#NAME?
-2.0152E+01	#NAME?	#NAME?	#NAME?
-2.0848E+01	#NAME?	#NAME?	#NAME?
-2.1524E+01	#NAME?	#NAME?	#NAME?
-2.2181E+01	#NAME?	#NAME?	#NAME?
-2.2822E+01	#NAME?	#NAME?	#NAME?
-2.3446E+01	#NAME?	#NAME?	#NAME?
-2.4056E+01	#NAME?	#NAME?	#NAME?
-2.4651E+01	#NAME?	#NAME?	#NAME?
-2.5234E+01	#NAME?	#NAME?	#NAME?
-2.5805E+01	#NAME?	#NAME?	#NAME?
-2.6364E+01	#NAME?	#NAME?	#NAME?
-2.6912E+01	#NAME?	#NAME?	#NAME?
-2.7450E+01	#NAME?	#NAME?	#NAME?
-2.7978E+01	#NAME?	#NAME?	#NAME?
-2.8497E+01	#NAME?	#NAME?	#NAME?
-2.9007E+01	#NAME?	#NAME?	#NAME?
-2.9509E+01	#NAME?	#NAME?	#NAME?
-3.0003E+01	#NAME?	#NAME?	#NAME?
-3.0489E+01	#NAME?	#NAME?	#NAME?
-3.0968E+01	#NAME?	#NAME?	#NAME?
-3.1440E+01	#NAME?	#NAME?	#NAME?
-3.1905E+01	#NAME?	#NAME?	#NAME?
-3.2364E+01	#NAME?	#NAME?	#NAME?
-3.2816E+01	#NAME?	#NAME?	#NAME?
-3.3263E+01	#NAME?	#NAME?	#NAME?
-3.3704E+01	#NAME?	#NAME?	#NAME?
-3.4139E+01	#NAME?	#NAME?	#NAME?
-3.4569E+01	#NAME?	#NAME?	#NAME?
-3.4994E+01	#NAME?	#NAME?	#NAME?
-3.5414E+01	#NAME?	#NAME?	#NAME?
-3.5829E+01	#NAME?	#NAME?	#NAME?
-3.6240E+01	#NAME?	#NAME?	#NAME?
-3.6646E+01	#NAME?	#NAME?	#NAME?
-3.7048E+01	#NAME?	#NAME?	#NAME?
-3.7445E+01	#NAME?	#NAME?	#NAME?
-3.7839E+01	#NAME?	#NAME?	#NAME?
-3.8228E+01	#NAME?	#NAME?	#NAME?
-3.8614E+01	#NAME?	#NAME?	#NAME?
-3.8996E+01	#NAME?	#NAME?	#NAME?
-3.9374E+01	#NAME?	#NAME?	#NAME?

Arg 19	Curve 19	Flux Out (gm/yr)	Intake (mg/kg body wt./day)
-3.9749E+01	#NAME?	#NAME?	#NAME?
-4.0120E+01	#NAME?	#NAME?	#NAME?
-4.0488E+01	#NAME?	#NAME?	#NAME?
-4.0853E+01	#NAME?	#NAME?	#NAME?
-4.1215E+01	#NAME?	#NAME?	#NAME?
-4.1573E+01	#NAME?	#NAME?	#NAME?
-4.1929E+01	#NAME?	#NAME?	#NAME?
-4.2281E+01	#NAME?	#NAME?	#NAME?
-4.2631E+01	#NAME?	#NAME?	#NAME?
-4.2978E+01	#NAME?	#NAME?	#NAME?
-4.3322E+01	#NAME?	#NAME?	#NAME?
-4.3664E+01	#NAME?	#NAME?	#NAME?
-4.4002E+01	#NAME?	#NAME?	#NAME?
-4.4339E+01	#NAME?	#NAME?	#NAME?
-4.4673E+01	#NAME?	#NAME?	#NAME?
-4.5004E+01	#NAME?	#NAME?	#NAME?
-4.5333E+01	#NAME?	#NAME?	#NAME?
-4.5660E+01	#NAME?	#NAME?	#NAME?
-4.5984E+01	#NAME?	#NAME?	#NAME?
-4.6306E+01	#NAME?	#NAME?	#NAME?
-4.6626E+01	#NAME?	#NAME?	#NAME?
-4.6944E+01	#NAME?	#NAME?	#NAME?
-4.7259E+01	#NAME?	#NAME?	#NAME?
-4.7573E+01	#NAME?	#NAME?	#NAME?
-4.7884E+01	#NAME?	#NAME?	#NAME?
-4.8194E+01	#NAME?	#NAME?	#NAME?
-4.8502E+01	#NAME?	#NAME?	#NAME?
-4.8807E+01	#NAME?	#NAME?	#NAME?
-4.9111E+01	#NAME?	#NAME?	#NAME?
-4.9413E+01	#NAME?	#NAME?	#NAME?
-4.9713E+01	#NAME?	#NAME?	#NAME?
-5.0011E+01	#NAME?	#NAME?	#NAME?
-5.0308E+01	#NAME?	#NAME?	#NAME?
-5.0603E+01	#NAME?	#NAME?	#NAME?
-5.0896E+01	#NAME?	#NAME?	#NAME?
-5.1188E+01	#NAME?	#NAME?	#NAME?
-5.1477E+01	#NAME?	#NAME?	#NAME?
-5.1766E+01	#NAME?	#NAME?	#NAME?
-5.2052E+01	#NAME?	#NAME?	#NAME?
-5.2338E+01	#NAME?	#NAME?	#NAME?
-5.2621E+01	#NAME?	#NAME?	#NAME?
-5.2903E+01	#NAME?	#NAME?	#NAME?
-5.3184E+01	#NAME?	#NAME?	#NAME?
-5.3463E+01	#NAME?	#NAME?	#NAME?
-5.3741E+01	#NAME?	#NAME?	#NAME?
-5.4017E+01	#NAME?	#NAME?	#NAME?
-5.4292E+01	#NAME?	#NAME?	#NAME?
-5.4565E+01	#NAME?	#NAME?	#NAME?
-5.4837E+01	#NAME?	#NAME?	#NAME?
-5.5108E+01	#NAME?	#NAME?	#NAME?
-5.5378E+01	#NAME?	#NAME?	#NAME?
-5.5646E+01	#NAME?	#NAME?	#NAME?

Arg 19	Curve 19	Flux Out (gm/yr)	Intake (mg/kg body wt./day)
-5.5913E+01	#NAME?	#NAME?	#NAME?
-5.6179E+01	#NAME?	#NAME?	#NAME?
-5.6443E+01	#NAME?	#NAME?	#NAME?
-5.6706E+01	#NAME?	#NAME?	#NAME?
-5.6968E+01	#NAME?	#NAME?	#NAME?
-5.7229E+01	#NAME?	#NAME?	#NAME?
-5.7489E+01	#NAME?	#NAME?	#NAME?
-5.7747E+01	#NAME?	#NAME?	#NAME?
-5.8004E+01	#NAME?	#NAME?	#NAME?
-5.8260E+01	#NAME?	#NAME?	#NAME?
-5.8516E+01	#NAME?	#NAME?	#NAME?
-5.8770E+01	#NAME?	#NAME?	#NAME?
-5.9022E+01	#NAME?	#NAME?	#NAME?
-5.9274E+01	#NAME?	#NAME?	#NAME?
-5.9525E+01	#NAME?	#NAME?	#NAME?
-5.9775E+01	#NAME?	#NAME?	#NAME?
-6.0023E+01	#NAME?	#NAME?	#NAME?
-6.0271E+01	#NAME?	#NAME?	#NAME?
-6.0518E+01	#NAME?	#NAME?	#NAME?
-6.0763E+01	#NAME?	#NAME?	#NAME?
-6.1008E+01	#NAME?	#NAME?	#NAME?
-6.1252E+01	#NAME?	#NAME?	#NAME?
-6.1494E+01	#NAME?	#NAME?	#NAME?
-6.1736E+01	#NAME?	#NAME?	#NAME?
-6.1977E+01	#NAME?	#NAME?	#NAME?
-6.2217E+01	#NAME?	#NAME?	#NAME?
-6.2456E+01	#NAME?	#NAME?	#NAME?
-6.2694E+01	#NAME?	#NAME?	#NAME?
-6.2931E+01	#NAME?	#NAME?	#NAME?
-6.3167E+01	#NAME?	#NAME?	#NAME?
-6.3403E+01	#NAME?	#NAME?	#NAME?
-6.3637E+01	#NAME?	#NAME?	#NAME?
-6.3871E+01	#NAME?	#NAME?	#NAME?
-6.4104E+01	#NAME?	#NAME?	#NAME?
-6.4336E+01	#NAME?	#NAME?	#NAME?
-6.4567E+01	#NAME?	#NAME?	#NAME?
-6.4797E+01	#NAME?	#NAME?	#NAME?
-6.5027E+01	#NAME?	#NAME?	#NAME?
-6.5256E+01	#NAME?	#NAME?	#NAME?
-6.5484E+01	#NAME?	#NAME?	#NAME?
-6.5711E+01	#NAME?	#NAME?	#NAME?
-6.5937E+01	#NAME?	#NAME?	#NAME?
-6.6163E+01	#NAME?	#NAME?	#NAME?
-6.6388E+01	#NAME?	#NAME?	#NAME?
-6.6612E+01	#NAME?	#NAME?	#NAME?
-6.6835E+01	#NAME?	#NAME?	#NAME?
-6.7058E+01	#NAME?	#NAME?	#NAME?
-6.7279E+01	#NAME?	#NAME?	#NAME?
-6.7501E+01	#NAME?	#NAME?	#NAME?
-6.7721E+01	#NAME?	#NAME?	#NAME?
-6.7941E+01	#NAME?	#NAME?	#NAME?
-6.8160E+01	#NAME?	#NAME?	#NAME?

Arg 19	Curve 19	Flux Out (gm/yr)	Intake (mg/kg body wt./day)
-6.8378E+01	#NAME?	#NAME?	#NAME?
-6.8596E+01	#NAME?	#NAME?	#NAME?
-6.8812E+01	#NAME?	#NAME?	#NAME?
-6.9029E+01	#NAME?	#NAME?	#NAME?
-6.9244E+01	#NAME?	#NAME?	#NAME?
-6.9459E+01	#NAME?	#NAME?	#NAME?
-6.9673E+01	#NAME?	#NAME?	#NAME?
-6.9887E+01	#NAME?	#NAME?	#NAME?
-7.0100E+01	#NAME?	#NAME?	#NAME?
-7.0312E+01	#NAME?	#NAME?	#NAME?
-7.0524E+01	#NAME?	#NAME?	#NAME?
-7.0735E+01	#NAME?	#NAME?	#NAME?
-7.0945E+01	#NAME?	#NAME?	#NAME?
-7.1155E+01	#NAME?	#NAME?	#NAME?
-7.1364E+01	#NAME?	#NAME?	#NAME?
-7.1573E+01	#NAME?	#NAME?	#NAME?
-7.1781E+01	#NAME?	#NAME?	#NAME?
-7.1988E+01	#NAME?	#NAME?	#NAME?
-7.2195E+01	#NAME?	#NAME?	#NAME?
-7.2401E+01	#NAME?	#NAME?	#NAME?
-7.2606E+01	#NAME?	#NAME?	#NAME?
-7.2811E+01	#NAME?	#NAME?	#NAME?
-7.3016E+01	#NAME?	#NAME?	#NAME?
-7.3220E+01	#NAME?	#NAME?	#NAME?
-7.3423E+01	#NAME?	#NAME?	#NAME?
-7.3626E+01	#NAME?	#NAME?	#NAME?
-7.3828E+01	#NAME?	#NAME?	#NAME?
-7.4029E+01	#NAME?	#NAME?	#NAME?
-7.4231E+01	#NAME?	#NAME?	#NAME?
-7.4431E+01	#NAME?	#NAME?	#NAME?
-7.4631E+01	#NAME?	#NAME?	#NAME?
-7.4831E+01	#NAME?	#NAME?	#NAME?
-7.5029E+01	#NAME?	#NAME?	#NAME?
-7.5228E+01	#NAME?	#NAME?	#NAME?
-7.5426E+01	#NAME?	#NAME?	#NAME?
-7.5623E+01	#NAME?	#NAME?	#NAME?
-7.5820E+01	#NAME?	#NAME?	#NAME?
-7.6016E+01	#NAME?	#NAME?	#NAME?
-7.6212E+01	#NAME?	#NAME?	#NAME?
-7.6408E+01	#NAME?	#NAME?	#NAME?
-7.6602E+01	#NAME?	#NAME?	#NAME?
-7.6797E+01	#NAME?	#NAME?	#NAME?
-7.6991E+01	#NAME?	#NAME?	#NAME?
-7.7184E+01	#NAME?	#NAME?	#NAME?
-7.7377E+01	#NAME?	#NAME?	#NAME?
-7.7569E+01	#NAME?	#NAME?	#NAME?
-7.7761E+01	#NAME?	#NAME?	#NAME?
-7.7953E+01	#NAME?	#NAME?	#NAME?
-7.8144E+01	#NAME?	#NAME?	#NAME?
-7.8334E+01	#NAME?	#NAME?	#NAME?
-7.8524E+01	#NAME?	#NAME?	#NAME?
-7.8714E+01	#NAME?	#NAME?	#NAME?

Arg 19	Curve 19	Flux Out (gm/yr)	Intake (mg/kg body wt./day)
-7.8903E+01	#NAME?	#NAME?	#NAME?
-7.9092E+01	#NAME?	#NAME?	#NAME?
-7.9280E+01	#NAME?	#NAME?	#NAME?
-7.9468E+01	#NAME?	#NAME?	#NAME?
-7.9655E+01	#NAME?	#NAME?	#NAME?
-7.9842E+01	#NAME?	#NAME?	#NAME?
-8.0029E+01	#NAME?	#NAME?	#NAME?
-8.0215E+01	#NAME?	#NAME?	#NAME?
-8.0400E+01	#NAME?	#NAME?	#NAME?
-8.0586E+01	#NAME?	#NAME?	#NAME?
-8.0770E+01	#NAME?	#NAME?	#NAME?
-8.0955E+01	#NAME?	#NAME?	#NAME?
-8.1139E+01	#NAME?	#NAME?	#NAME?
-8.1322E+01	#NAME?	#NAME?	#NAME?
-8.1505E+01	#NAME?	#NAME?	#NAME?
-8.1688E+01	#NAME?	#NAME?	#NAME?
-8.1870E+01	#NAME?	#NAME?	#NAME?
-8.2052E+01	#NAME?	#NAME?	#NAME?
-8.2234E+01	#NAME?	#NAME?	#NAME?
-8.2415E+01	#NAME?	#NAME?	#NAME?
-8.2595E+01	#NAME?	#NAME?	#NAME?
-8.2776E+01	#NAME?	#NAME?	#NAME?
-8.2956E+01	#NAME?	#NAME?	#NAME?
-8.3135E+01	#NAME?	#NAME?	#NAME?
-8.3314E+01	#NAME?	#NAME?	#NAME?
-8.3493E+01	#NAME?	#NAME?	#NAME?
-8.3671E+01	#NAME?	#NAME?	#NAME?
-8.3849E+01	#NAME?	#NAME?	#NAME?
-8.4027E+01	#NAME?	#NAME?	#NAME?
-8.4204E+01	#NAME?	#NAME?	#NAME?
-8.4381E+01	#NAME?	#NAME?	#NAME?
-8.4558E+01	#NAME?	#NAME?	#NAME?
-8.4734E+01	#NAME?	#NAME?	#NAME?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0.00001
0
100000
200000
300000
400000
500000
600000
700000
800000
900000
1000000

Uranium Intake Combined Case, Present Climate
Amargosa Farms, 2003 Pumping

Time (yr)	Concentration in Water (milligrams/L)						
	U-235	U-233	U-236	U-234	U-238	U-232	Total
250	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
2000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
4000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
6000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
8000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
10000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
12000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
14000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
16000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
18000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
20000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
22000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
24000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
26000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
28000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
30000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
32000	9.36E-22	6.53E-24	3.03E-22	9.64E-24	3.87E-20	0.00E+00	4E-20
34000	9.51E-20	6.64E-22	3.08E-20	9.80E-22	3.94E-18	0.00E+00	4.07E-18
36000	5.09E-18	3.55E-20	1.65E-18	5.24E-20	2.11E-16	0.00E+00	2.17E-16
38000	1.59E-16	1.11E-18	5.14E-17	1.64E-18	6.58E-15	0.00E+00	6.79E-15
40000	3.15E-15	2.20E-17	1.02E-15	3.24E-17	1.30E-13	0.00E+00	1.35E-13
42000	4.22E-14	2.95E-16	1.37E-14	4.35E-16	1.75E-12	0.00E+00	1.81E-12
44000	4.05E-13	2.83E-15	1.31E-13	4.18E-15	1.68E-11	0.00E+00	1.73E-11
46000	2.91E-12	2.03E-14	9.41E-13	2.99E-14	1.20E-10	0.00E+00	1.24E-10
48000	1.62E-11	1.13E-13	5.24E-12	1.67E-13	6.70E-10	0.00E+00	6.92E-10
50000	7.22E-11	5.04E-13	2.33E-11	7.43E-13	2.99E-09	0.00E+00	3.08E-09
52000	2.65E-10	1.85E-12	8.56E-11	2.73E-12	1.10E-08	0.00E+00	1.13E-08
54000	8.17E-10	5.70E-12	2.64E-10	8.41E-12	3.38E-08	0.00E+00	3.49E-08
56000	2.16E-09	1.51E-11	7.00E-10	2.23E-11	8.96E-08	0.00E+00	9.25E-08
58000	5.01E-09	3.50E-11	1.62E-09	5.16E-11	2.07E-07	0.00E+00	2.14E-07
60000	1.03E-08	7.17E-11	3.32E-09	1.06E-10	4.25E-07	0.00E+00	4.39E-07
62000	1.90E-08	1.32E-10	6.13E-09	1.95E-10	7.85E-07	0.00E+00	8.1E-07
64000	3.18E-08	2.22E-10	1.03E-08	3.27E-10	1.32E-06	0.00E+00	1.36E-06
66000	4.90E-08	3.42E-10	1.59E-08	5.05E-10	2.03E-06	0.00E+00	2.1E-06
68000	7.02E-08	4.90E-10	2.27E-08	7.23E-10	2.91E-06	0.00E+00	3E-06
70000	9.43E-08	6.58E-10	3.05E-08	9.71E-10	3.90E-06	0.00E+00	4.03E-06
72000	1.20E-07	8.36E-10	3.87E-08	1.23E-09	4.95E-06	0.00E+00	5.11E-06
74000	1.45E-07	1.01E-09	4.68E-08	1.49E-09	5.98E-06	0.00E+00	6.18E-06
76000	1.68E-07	1.17E-09	5.42E-08	1.73E-09	6.94E-06	0.00E+00	7.16E-06
78000	1.88E-07	1.32E-09	6.07E-08	1.93E-09	7.77E-06	0.00E+00	8.02E-06
80000	2.04E-07	1.44E-09	6.61E-08	2.10E-09	8.46E-06	0.00E+00	8.73E-06

82000	2.17E-07	1.55E-09	7.03E-08	2.24E-09	9.00E-06	0.00E+00	9.29E-06
84000	2.27E-07	1.64E-09	7.35E-08	2.34E-09	9.41E-06	0.00E+00	9.71E-06
86000	2.34E-07	1.72E-09	7.58E-08	2.41E-09	9.70E-06	0.00E+00	1E-05
88000	2.39E-07	1.80E-09	7.74E-08	2.47E-09	9.91E-06	0.00E+00	1.02E-05
90000	2.43E-07	1.88E-09	7.85E-08	2.50E-09	1.00E-05	0.00E+00	1.04E-05
92000	2.45E-07	1.96E-09	7.92E-08	2.52E-09	1.01E-05	0.00E+00	1.05E-05
94000	2.46E-07	2.06E-09	7.96E-08	2.53E-09	1.02E-05	0.00E+00	1.05E-05
96000	2.47E-07	2.16E-09	7.99E-08	2.54E-09	1.02E-05	0.00E+00	1.06E-05
98000	2.47E-07	2.28E-09	8.00E-08	2.55E-09	1.02E-05	0.00E+00	1.06E-05
100000	2.48E-07	2.40E-09	8.01E-08	2.55E-09	1.03E-05	0.00E+00	1.06E-05
102000	2.48E-07	2.52E-09	8.02E-08	2.55E-09	1.03E-05	0.00E+00	1.06E-05
104000	2.48E-07	2.63E-09	8.02E-08	2.55E-09	1.03E-05	0.00E+00	1.06E-05
106000	2.48E-07	2.75E-09	8.02E-08	2.55E-09	1.03E-05	0.00E+00	1.06E-05
108000	2.48E-07	2.85E-09	8.02E-08	2.55E-09	1.03E-05	0.00E+00	1.06E-05
110000	2.48E-07	2.95E-09	8.02E-08	2.55E-09	1.03E-05	0.00E+00	1.06E-05
112000	2.48E-07	3.03E-09	8.02E-08	2.55E-09	1.03E-05	0.00E+00	1.06E-05
114000	2.48E-07	3.11E-09	8.02E-08	2.55E-09	1.03E-05	0.00E+00	1.06E-05
116000	2.48E-07	3.17E-09	8.02E-08	2.55E-09	1.03E-05	0.00E+00	1.06E-05
118000	2.48E-07	3.22E-09	8.02E-08	2.55E-09	1.03E-05	0.00E+00	1.06E-05
120000	2.48E-07	3.26E-09	8.02E-08	2.55E-09	1.03E-05	0.00E+00	1.06E-05
122000	2.48E-07	3.29E-09	8.02E-08	2.55E-09	1.03E-05	0.00E+00	1.06E-05
124000	2.48E-07	3.31E-09	8.02E-08	2.55E-09	1.03E-05	0.00E+00	1.06E-05
126000	2.48E-07	3.33E-09	8.02E-08	2.55E-09	1.03E-05	0.00E+00	1.06E-05
128000	2.48E-07	3.35E-09	8.02E-08	2.55E-09	1.03E-05	0.00E+00	1.06E-05
130000	2.48E-07	3.36E-09	8.02E-08	2.55E-09	1.03E-05	0.00E+00	1.06E-05
132000	2.48E-07	3.36E-09	8.02E-08	2.55E-09	1.03E-05	0.00E+00	1.06E-05
134000	2.48E-07	3.37E-09	8.02E-08	2.55E-09	1.03E-05	0.00E+00	1.06E-05
136000	2.48E-07	3.37E-09	8.02E-08	2.55E-09	1.03E-05	0.00E+00	1.06E-05
138000	2.48E-07	3.38E-09	8.02E-08	2.55E-09	1.03E-05	0.00E+00	1.06E-05
140000	2.48E-07	3.38E-09	8.02E-08	2.55E-09	1.03E-05	0.00E+00	1.06E-05
142000	2.48E-07	3.38E-09	8.02E-08	2.55E-09	1.03E-05	0.00E+00	1.06E-05
144000	2.48E-07	3.38E-09	8.02E-08	2.55E-09	1.03E-05	0.00E+00	1.06E-05
146000	2.48E-07	3.38E-09	8.02E-08	2.55E-09	1.03E-05	0.00E+00	1.06E-05
148000	2.48E-07	3.38E-09	8.02E-08	2.55E-09	1.03E-05	0.00E+00	1.06E-05
150000	2.48E-07	3.38E-09	8.02E-08	2.55E-09	1.03E-05	0.00E+00	1.06E-05
152000	2.48E-07	3.38E-09	8.02E-08	2.55E-09	1.03E-05	0.00E+00	1.06E-05
154000	2.48E-07	3.38E-09	8.02E-08	2.55E-09	1.03E-05	0.00E+00	1.06E-05
156000	2.48E-07	3.38E-09	8.02E-08	2.55E-09	1.03E-05	0.00E+00	1.06E-05
158000	2.48E-07	3.38E-09	8.02E-08	2.55E-09	1.03E-05	0.00E+00	1.06E-05
160000	2.48E-07	3.38E-09	8.02E-08	2.55E-09	1.03E-05	0.00E+00	1.06E-05
162000	2.48E-07	3.38E-09	8.02E-08	2.55E-09	1.03E-05	0.00E+00	1.06E-05
164000	2.48E-07	3.38E-09	8.02E-08	2.55E-09	1.03E-05	0.00E+00	1.06E-05
166000	2.48E-07	3.38E-09	8.02E-08	2.55E-09	1.03E-05	0.00E+00	1.06E-05
168000	2.48E-07	3.38E-09	8.02E-08	2.55E-09	1.03E-05	0.00E+00	1.06E-05
170000	2.48E-07	3.38E-09	8.02E-08	2.55E-09	1.03E-05	0.00E+00	1.06E-05
172000	2.48E-07	3.38E-09	8.02E-08	2.55E-09	1.03E-05	0.00E+00	1.06E-05
174000	2.48E-07	3.38E-09	8.02E-08	2.55E-09	1.03E-05	0.00E+00	1.06E-05

176000	2.48E-07	3.38E-09	8.02E-08	2.55E-09	1.03E-05	0.00E+00	1.06E-05
178000	2.48E-07	3.38E-09	8.02E-08	2.55E-09	1.03E-05	0.00E+00	1.06E-05
180000	2.48E-07	3.38E-09	8.02E-08	2.55E-09	1.03E-05	0.00E+00	1.06E-05
182000	2.48E-07	3.38E-09	8.02E-08	2.55E-09	1.03E-05	0.00E+00	1.06E-05
184000	2.48E-07	3.38E-09	8.02E-08	2.55E-09	1.03E-05	0.00E+00	1.06E-05
186000	2.48E-07	3.38E-09	8.02E-08	2.55E-09	1.03E-05	0.00E+00	1.06E-05
188000	2.48E-07	3.38E-09	8.02E-08	2.55E-09	1.03E-05	0.00E+00	1.06E-05
190000	2.48E-07	3.38E-09	8.02E-08	2.55E-09	1.03E-05	0.00E+00	1.06E-05
192000	2.48E-07	3.38E-09	8.02E-08	2.55E-09	1.03E-05	0.00E+00	1.06E-05
194000	2.48E-07	3.38E-09	8.02E-08	2.55E-09	1.03E-05	0.00E+00	1.06E-05
196000	2.48E-07	3.38E-09	8.02E-08	2.55E-09	1.03E-05	0.00E+00	1.06E-05
198000	2.48E-07	3.38E-09	8.02E-08	2.55E-09	1.03E-05	0.00E+00	1.06E-05
200000	2.48E-07	3.38E-09	8.02E-08	2.55E-09	1.03E-05	0.00E+00	1.06E-05
202000	2.48E-07	3.38E-09	8.02E-08	2.55E-09	1.03E-05	0.00E+00	1.06E-05
204000	2.48E-07	3.38E-09	8.02E-08	2.55E-09	1.03E-05	0.00E+00	1.06E-05
206000	2.48E-07	3.38E-09	8.02E-08	2.55E-09	1.03E-05	0.00E+00	1.06E-05
208000	2.48E-07	3.38E-09	8.02E-08	2.55E-09	1.03E-05	0.00E+00	1.06E-05
210000	2.48E-07	3.38E-09	8.02E-08	2.55E-09	1.03E-05	0.00E+00	1.06E-05
212000	2.48E-07	3.38E-09	8.02E-08	2.55E-09	1.03E-05	0.00E+00	1.06E-05
214000	2.48E-07	3.38E-09	8.02E-08	2.55E-09	1.03E-05	0.00E+00	1.06E-05
216000	2.48E-07	3.38E-09	8.02E-08	2.56E-09	1.03E-05	0.00E+00	1.06E-05
218000	2.48E-07	3.38E-09	8.02E-08	2.56E-09	1.03E-05	0.00E+00	1.06E-05
220000	2.48E-07	3.38E-09	8.02E-08	2.57E-09	1.03E-05	0.00E+00	1.06E-05
222000	2.48E-07	3.38E-09	8.02E-08	2.60E-09	1.03E-05	0.00E+00	1.06E-05
224000	2.48E-07	3.38E-09	8.02E-08	2.65E-09	1.03E-05	0.00E+00	1.06E-05
226000	2.48E-07	3.38E-09	8.02E-08	2.73E-09	1.03E-05	0.00E+00	1.06E-05
228000	2.48E-07	3.38E-09	8.02E-08	2.87E-09	1.03E-05	0.00E+00	1.06E-05
230000	2.48E-07	3.38E-09	8.02E-08	3.07E-09	1.03E-05	0.00E+00	1.06E-05
232000	2.48E-07	3.38E-09	8.02E-08	3.33E-09	1.03E-05	0.00E+00	1.06E-05
234000	2.48E-07	3.38E-09	8.02E-08	3.64E-09	1.03E-05	0.00E+00	1.06E-05
236000	2.48E-07	3.38E-09	8.02E-08	3.98E-09	1.03E-05	0.00E+00	1.06E-05
238000	2.48E-07	3.38E-09	8.02E-08	4.33E-09	1.03E-05	0.00E+00	1.06E-05
240000	2.48E-07	3.38E-09	8.02E-08	4.66E-09	1.03E-05	0.00E+00	1.06E-05
242000	2.48E-07	3.38E-09	8.02E-08	4.96E-09	1.03E-05	0.00E+00	1.06E-05
244000	2.48E-07	3.38E-09	8.02E-08	5.22E-09	1.03E-05	0.00E+00	1.06E-05
246000	2.48E-07	3.38E-09	8.02E-08	5.43E-09	1.03E-05	0.00E+00	1.06E-05
248000	2.48E-07	3.38E-09	8.02E-08	5.59E-09	1.03E-05	0.00E+00	1.06E-05
250000	2.48E-07	3.38E-09	8.02E-08	5.71E-09	1.03E-05	0.00E+00	1.06E-05
252000	2.48E-07	3.38E-09	8.02E-08	5.80E-09	1.03E-05	0.00E+00	1.06E-05
254000	2.48E-07	3.38E-09	8.02E-08	5.86E-09	1.03E-05	0.00E+00	1.06E-05
256000	2.48E-07	3.38E-09	8.02E-08	5.90E-09	1.03E-05	0.00E+00	1.06E-05
258000	2.48E-07	3.38E-09	8.02E-08	5.92E-09	1.03E-05	0.00E+00	1.06E-05
260000	2.48E-07	3.38E-09	8.02E-08	5.94E-09	1.03E-05	0.00E+00	1.06E-05
262000	2.48E-07	3.38E-09	8.02E-08	5.95E-09	1.03E-05	0.00E+00	1.06E-05
264000	2.48E-07	3.38E-09	8.02E-08	5.95E-09	1.03E-05	0.00E+00	1.06E-05
266000	2.48E-07	3.38E-09	8.02E-08	5.95E-09	1.03E-05	0.00E+00	1.06E-05
268000	2.48E-07	3.38E-09	8.02E-08	5.96E-09	1.03E-05	0.00E+00	1.06E-05

270000	2.48E-07	3.38E-09	8.02E-08	5.96E-09	1.03E-05	0.00E+00	1.06E-05
272000	2.48E-07	3.38E-09	8.02E-08	5.96E-09	1.03E-05	0.00E+00	1.06E-05
274000	2.48E-07	3.38E-09	8.02E-08	5.96E-09	1.03E-05	0.00E+00	1.06E-05
276000	2.48E-07	3.39E-09	8.02E-08	5.96E-09	1.03E-05	0.00E+00	1.06E-05
278000	2.48E-07	3.40E-09	8.02E-08	5.96E-09	1.03E-05	0.00E+00	1.06E-05
280000	2.48E-07	3.41E-09	8.02E-08	5.96E-09	1.03E-05	0.00E+00	1.06E-05
282000	2.48E-07	3.44E-09	8.02E-08	5.96E-09	1.03E-05	0.00E+00	1.06E-05
284000	2.48E-07	3.47E-09	8.02E-08	5.96E-09	1.03E-05	0.00E+00	1.06E-05
286000	2.48E-07	3.52E-09	8.02E-08	5.96E-09	1.03E-05	0.00E+00	1.06E-05
288000	2.48E-07	3.59E-09	8.02E-08	5.96E-09	1.03E-05	0.00E+00	1.06E-05
290000	2.48E-07	3.67E-09	8.02E-08	5.96E-09	1.03E-05	0.00E+00	1.06E-05
292000	2.48E-07	3.78E-09	8.02E-08	5.97E-09	1.03E-05	0.00E+00	1.06E-05
294000	2.48E-07	3.90E-09	8.02E-08	5.99E-09	1.03E-05	0.00E+00	1.06E-05
296000	2.48E-07	4.04E-09	8.02E-08	6.02E-09	1.03E-05	0.00E+00	1.06E-05
298000	2.48E-07	4.20E-09	8.02E-08	6.07E-09	1.03E-05	0.00E+00	1.06E-05
300000	2.48E-07	4.38E-09	8.02E-08	6.14E-09	1.03E-05	0.00E+00	1.06E-05
302000	2.49E-07	4.58E-09	8.02E-08	6.25E-09	1.03E-05	0.00E+00	1.06E-05
304000	2.52E-07	4.81E-09	8.02E-08	6.38E-09	1.03E-05	0.00E+00	1.06E-05
306000	2.57E-07	5.08E-09	8.02E-08	6.52E-09	1.03E-05	0.00E+00	1.06E-05
308000	2.66E-07	5.39E-09	8.02E-08	6.68E-09	1.03E-05	0.00E+00	1.06E-05
310000	2.80E-07	5.73E-09	8.02E-08	6.84E-09	1.03E-05	0.00E+00	1.06E-05
312000	3.02E-07	6.10E-09	8.02E-08	6.98E-09	1.03E-05	0.00E+00	1.07E-05
314000	3.30E-07	6.47E-09	8.02E-08	7.11E-09	1.03E-05	0.00E+00	1.07E-05
316000	3.65E-07	6.83E-09	8.02E-08	7.21E-09	1.03E-05	0.00E+00	1.07E-05
318000	4.04E-07	7.16E-09	8.03E-08	7.30E-09	1.03E-05	0.00E+00	1.08E-05
320000	4.44E-07	7.44E-09	8.06E-08	7.36E-09	1.03E-05	0.00E+00	1.09E-05
322000	4.84E-07	7.69E-09	8.14E-08	7.41E-09	1.05E-05	0.00E+00	1.1E-05
324000	5.20E-07	7.88E-09	8.30E-08	7.44E-09	1.07E-05	0.00E+00	1.13E-05
326000	5.52E-07	8.02E-09	8.60E-08	7.46E-09	1.11E-05	0.00E+00	1.18E-05
328000	5.78E-07	8.13E-09	9.10E-08	7.47E-09	1.18E-05	0.00E+00	1.25E-05
330000	5.98E-07	8.21E-09	9.85E-08	7.48E-09	1.29E-05	0.00E+00	1.36E-05
332000	6.13E-07	8.26E-09	1.09E-07	7.49E-09	1.42E-05	0.00E+00	1.5E-05
334000	6.24E-07	8.29E-09	1.21E-07	7.49E-09	1.59E-05	0.00E+00	1.67E-05
336000	6.32E-07	8.31E-09	1.36E-07	7.49E-09	1.78E-05	0.00E+00	1.86E-05
338000	6.37E-07	8.33E-09	1.51E-07	7.49E-09	1.97E-05	0.00E+00	2.05E-05
340000	6.40E-07	8.34E-09	1.67E-07	7.50E-09	2.16E-05	0.00E+00	2.24E-05
342000	6.42E-07	8.34E-09	1.81E-07	7.50E-09	2.34E-05	0.00E+00	2.42E-05
344000	6.43E-07	8.34E-09	1.94E-07	7.50E-09	2.49E-05	0.00E+00	2.57E-05
346000	6.44E-07	8.35E-09	2.04E-07	7.50E-09	2.61E-05	0.00E+00	2.7E-05
348000	6.44E-07	8.35E-09	2.12E-07	7.50E-09	2.71E-05	0.00E+00	2.8E-05
350000	6.45E-07	8.35E-09	2.19E-07	7.51E-09	2.78E-05	0.00E+00	2.87E-05
352000	6.45E-07	8.35E-09	2.23E-07	7.53E-09	2.84E-05	0.00E+00	2.93E-05
354000	6.45E-07	8.35E-09	2.26E-07	7.56E-09	2.87E-05	0.00E+00	2.96E-05
356000	6.45E-07	8.35E-09	2.29E-07	7.61E-09	2.90E-05	0.00E+00	2.99E-05
358000	6.45E-07	8.35E-09	2.30E-07	7.68E-09	2.91E-05	0.00E+00	3E-05
360000	6.45E-07	8.35E-09	2.31E-07	7.76E-09	2.92E-05	0.00E+00	3.01E-05
362000	6.45E-07	8.35E-09	2.31E-07	7.86E-09	2.93E-05	0.00E+00	3.02E-05

364000	6.45E-07	8.35E-09	2.32E-07	7.97E-09	2.93E-05	0.00E+00	3.02E-05
366000	6.45E-07	8.36E-09	2.32E-07	8.08E-09	2.93E-05	0.00E+00	3.02E-05
368000	6.45E-07	8.37E-09	2.32E-07	8.18E-09	2.93E-05	0.00E+00	3.02E-05
370000	6.45E-07	8.39E-09	2.32E-07	8.28E-09	2.94E-05	0.00E+00	3.02E-05
372000	6.45E-07	8.41E-09	2.32E-07	8.35E-09	2.94E-05	0.00E+00	3.03E-05
374000	6.45E-07	8.44E-09	2.32E-07	8.42E-09	2.94E-05	0.00E+00	3.03E-05
376000	6.45E-07	8.48E-09	2.32E-07	8.46E-09	2.94E-05	0.00E+00	3.03E-05
378000	6.45E-07	8.53E-09	2.32E-07	8.50E-09	2.94E-05	0.00E+00	3.03E-05
380000	6.45E-07	8.59E-09	2.32E-07	8.52E-09	2.94E-05	0.00E+00	3.03E-05
382000	6.45E-07	8.66E-09	2.32E-07	8.54E-09	2.94E-05	0.00E+00	3.03E-05
384000	6.45E-07	8.73E-09	2.32E-07	8.55E-09	2.94E-05	0.00E+00	3.03E-05
386000	6.45E-07	8.81E-09	2.32E-07	8.56E-09	2.94E-05	0.00E+00	3.03E-05
388000	6.45E-07	8.89E-09	2.32E-07	8.56E-09	2.94E-05	0.00E+00	3.03E-05
390000	6.45E-07	8.98E-09	2.32E-07	8.57E-09	2.94E-05	0.00E+00	3.03E-05
392000	6.45E-07	9.07E-09	2.32E-07	8.57E-09	2.94E-05	0.00E+00	3.03E-05
394000	6.45E-07	9.16E-09	2.32E-07	8.57E-09	2.94E-05	0.00E+00	3.03E-05
396000	6.45E-07	9.27E-09	2.32E-07	8.57E-09	2.94E-05	0.00E+00	3.03E-05
398000	6.46E-07	9.39E-09	2.32E-07	8.58E-09	2.94E-05	0.00E+00	3.03E-05
400000	6.48E-07	9.53E-09	2.32E-07	8.58E-09	2.94E-05	0.00E+00	3.03E-05
402000	6.52E-07	9.68E-09	2.32E-07	8.60E-09	2.94E-05	0.00E+00	3.03E-05
404000	6.58E-07	9.85E-09	2.32E-07	8.63E-09	2.94E-05	0.00E+00	3.03E-05
406000	6.67E-07	1.00E-08	2.32E-07	8.67E-09	2.94E-05	0.00E+00	3.03E-05
408000	6.80E-07	1.02E-08	2.32E-07	8.72E-09	2.94E-05	0.00E+00	3.03E-05
410000	6.97E-07	1.03E-08	2.32E-07	8.78E-09	2.94E-05	0.00E+00	3.03E-05
412000	7.16E-07	1.05E-08	2.32E-07	8.85E-09	2.94E-05	0.00E+00	3.03E-05
414000	7.37E-07	1.06E-08	2.32E-07	8.92E-09	2.94E-05	0.00E+00	3.04E-05
416000	7.59E-07	1.07E-08	2.33E-07	9.00E-09	2.95E-05	0.00E+00	3.05E-05
418000	7.79E-07	1.07E-08	2.35E-07	9.06E-09	2.96E-05	0.00E+00	3.07E-05
420000	7.97E-07	1.08E-08	2.37E-07	9.12E-09	2.99E-05	0.00E+00	3.09E-05
422000	8.12E-07	1.08E-08	2.41E-07	9.17E-09	3.03E-05	0.00E+00	3.14E-05
424000	8.24E-07	1.09E-08	2.46E-07	9.20E-09	3.09E-05	0.00E+00	3.2E-05
426000	8.33E-07	1.09E-08	2.52E-07	9.23E-09	3.17E-05	0.00E+00	3.28E-05
428000	8.40E-07	1.09E-08	2.60E-07	9.25E-09	3.26E-05	0.00E+00	3.37E-05
430000	8.45E-07	1.09E-08	2.68E-07	9.26E-09	3.36E-05	0.00E+00	3.47E-05
432000	8.48E-07	1.09E-08	2.76E-07	9.27E-09	3.46E-05	0.00E+00	3.58E-05
434000	8.50E-07	1.09E-08	2.84E-07	9.28E-09	3.56E-05	0.00E+00	3.68E-05
436000	8.51E-07	1.09E-08	2.91E-07	9.28E-09	3.65E-05	0.00E+00	3.77E-05
438000	8.52E-07	1.09E-08	2.97E-07	9.29E-09	3.73E-05	0.00E+00	3.85E-05
440000	8.53E-07	1.09E-08	3.02E-07	9.29E-09	3.79E-05	0.00E+00	3.91E-05
442000	8.53E-07	1.10E-08	3.06E-07	9.29E-09	3.84E-05	0.00E+00	3.96E-05
444000	8.53E-07	1.10E-08	3.08E-07	9.29E-09	3.88E-05	0.00E+00	3.99E-05
446000	8.53E-07	1.10E-08	3.10E-07	9.30E-09	3.90E-05	0.00E+00	4.02E-05
448000	8.53E-07	1.11E-08	3.11E-07	9.31E-09	3.92E-05	0.00E+00	4.04E-05
450000	8.53E-07	1.11E-08	3.12E-07	9.33E-09	3.93E-05	0.00E+00	4.05E-05
452000	8.53E-07	1.12E-08	3.13E-07	9.36E-09	3.94E-05	0.00E+00	4.06E-05
454000	8.53E-07	1.12E-08	3.13E-07	9.40E-09	3.94E-05	0.00E+00	4.06E-05
456000	8.53E-07	1.13E-08	3.13E-07	9.44E-09	3.94E-05	0.00E+00	4.06E-05

458000	8.53E-07	1.13E-08	3.13E-07	9.49E-09	3.95E-05	0.00E+00	4.06E-05
460000	8.53E-07	1.14E-08	3.13E-07	9.53E-09	3.95E-05	0.00E+00	4.07E-05
462000	8.53E-07	1.14E-08	3.13E-07	9.58E-09	3.95E-05	0.00E+00	4.07E-05
464000	8.53E-07	1.15E-08	3.14E-07	9.62E-09	3.95E-05	0.00E+00	4.07E-05
466000	8.53E-07	1.16E-08	3.14E-07	9.66E-09	3.95E-05	0.00E+00	4.07E-05
468000	8.54E-07	1.16E-08	3.14E-07	9.69E-09	3.95E-05	0.00E+00	4.07E-05
470000	8.54E-07	1.17E-08	3.14E-07	9.71E-09	3.95E-05	0.00E+00	4.07E-05
472000	8.56E-07	1.18E-08	3.14E-07	9.73E-09	3.95E-05	0.00E+00	4.07E-05
474000	8.58E-07	1.19E-08	3.14E-07	9.74E-09	3.95E-05	0.00E+00	4.07E-05
476000	8.63E-07	1.21E-08	3.14E-07	9.75E-09	3.95E-05	0.00E+00	4.07E-05
478000	8.70E-07	1.22E-08	3.14E-07	9.75E-09	3.95E-05	0.00E+00	4.07E-05
480000	8.81E-07	1.23E-08	3.14E-07	9.76E-09	3.95E-05	0.00E+00	4.07E-05
482000	8.93E-07	1.24E-08	3.14E-07	9.76E-09	3.95E-05	0.00E+00	4.07E-05
484000	9.09E-07	1.25E-08	3.14E-07	9.76E-09	3.95E-05	0.00E+00	4.08E-05
486000	9.25E-07	1.25E-08	3.15E-07	9.76E-09	3.96E-05	0.00E+00	4.09E-05
488000	9.41E-07	1.26E-08	3.17E-07	9.77E-09	3.97E-05	0.00E+00	4.1E-05
490000	9.57E-07	1.26E-08	3.19E-07	9.77E-09	4.00E-05	0.00E+00	4.13E-05
492000	9.71E-07	1.27E-08	3.23E-07	9.78E-09	4.03E-05	0.00E+00	4.16E-05
494000	9.82E-07	1.27E-08	3.28E-07	9.79E-09	4.08E-05	0.00E+00	4.21E-05
496000	9.92E-07	1.27E-08	3.33E-07	9.81E-09	4.14E-05	0.00E+00	4.28E-05
498000	9.99E-07	1.27E-08	3.40E-07	9.84E-09	4.21E-05	0.00E+00	4.35E-05
500000	1.00E-06	1.27E-08	3.46E-07	9.87E-09	4.29E-05	0.00E+00	4.43E-05
502000	1.01E-06	1.28E-08	3.52E-07	9.90E-09	4.37E-05	0.00E+00	4.51E-05
504000	1.01E-06	1.28E-08	3.58E-07	9.93E-09	4.45E-05	0.00E+00	4.59E-05
506000	1.01E-06	1.28E-08	3.62E-07	9.96E-09	4.51E-05	0.00E+00	4.65E-05
508000	1.01E-06	1.28E-08	3.66E-07	9.98E-09	4.57E-05	0.00E+00	4.71E-05
510000	1.01E-06	1.29E-08	3.69E-07	1.00E-08	4.61E-05	0.00E+00	4.75E-05
512000	1.01E-06	1.29E-08	3.71E-07	1.00E-08	4.65E-05	0.00E+00	4.79E-05
514000	1.01E-06	1.30E-08	3.73E-07	1.00E-08	4.67E-05	0.00E+00	4.82E-05
516000	1.01E-06	1.30E-08	3.74E-07	1.00E-08	4.69E-05	0.00E+00	4.83E-05
518000	1.01E-06	1.30E-08	3.75E-07	1.01E-08	4.70E-05	0.00E+00	4.85E-05
520000	1.01E-06	1.31E-08	3.75E-07	1.01E-08	4.71E-05	0.00E+00	4.85E-05
522000	1.01E-06	1.31E-08	3.75E-07	1.01E-08	4.72E-05	0.00E+00	4.86E-05
524000	1.01E-06	1.32E-08	3.75E-07	1.01E-08	4.72E-05	0.00E+00	4.86E-05
526000	1.01E-06	1.32E-08	3.76E-07	1.01E-08	4.72E-05	0.00E+00	4.86E-05
528000	1.01E-06	1.33E-08	3.76E-07	1.01E-08	4.72E-05	0.00E+00	4.86E-05
530000	1.01E-06	1.33E-08	3.76E-07	1.01E-08	4.72E-05	0.00E+00	4.86E-05
532000	1.02E-06	1.34E-08	3.76E-07	1.01E-08	4.72E-05	0.00E+00	4.87E-05
534000	1.02E-06	1.35E-08	3.76E-07	1.01E-08	4.72E-05	0.00E+00	4.87E-05
536000	1.02E-06	1.36E-08	3.76E-07	1.01E-08	4.72E-05	0.00E+00	4.87E-05
538000	1.03E-06	1.37E-08	3.76E-07	1.01E-08	4.72E-05	0.00E+00	4.87E-05
540000	1.03E-06	1.38E-08	3.76E-07	1.01E-08	4.73E-05	0.00E+00	4.87E-05
542000	1.04E-06	1.38E-08	3.77E-07	1.01E-08	4.73E-05	0.00E+00	4.87E-05
544000	1.05E-06	1.39E-08	3.78E-07	1.01E-08	4.73E-05	0.00E+00	4.88E-05
546000	1.07E-06	1.40E-08	3.79E-07	1.02E-08	4.74E-05	0.00E+00	4.89E-05
548000	1.08E-06	1.40E-08	3.82E-07	1.02E-08	4.76E-05	0.00E+00	4.91E-05
550000	1.09E-06	1.40E-08	3.85E-07	1.02E-08	4.79E-05	0.00E+00	4.94E-05

552000	1.11E-06	1.41E-08	3.90E-07	1.02E-08	4.83E-05	0.00E+00	4.99E-05
554000	1.12E-06	1.41E-08	3.95E-07	1.02E-08	4.89E-05	0.00E+00	5.04E-05
556000	1.13E-06	1.41E-08	4.00E-07	1.02E-08	4.95E-05	0.00E+00	5.1E-05
558000	1.13E-06	1.42E-08	4.05E-07	1.02E-08	5.01E-05	0.00E+00	5.17E-05
560000	1.14E-06	1.42E-08	4.10E-07	1.02E-08	5.08E-05	0.00E+00	5.23E-05
562000	1.14E-06	1.42E-08	4.14E-07	1.02E-08	5.14E-05	0.00E+00	5.3E-05
564000	1.14E-06	1.42E-08	4.17E-07	1.02E-08	5.20E-05	0.00E+00	5.35E-05
566000	1.15E-06	1.43E-08	4.20E-07	1.02E-08	5.24E-05	0.00E+00	5.4E-05
568000	1.15E-06	1.43E-08	4.22E-07	1.03E-08	5.28E-05	0.00E+00	5.44E-05
570000	1.15E-06	1.43E-08	4.24E-07	1.03E-08	5.31E-05	0.00E+00	5.47E-05
572000	1.15E-06	1.44E-08	4.25E-07	1.03E-08	5.33E-05	0.00E+00	5.49E-05
574000	1.15E-06	1.44E-08	4.26E-07	1.03E-08	5.34E-05	0.00E+00	5.5E-05
576000	1.15E-06	1.44E-08	4.26E-07	1.03E-08	5.36E-05	0.00E+00	5.51E-05
578000	1.15E-06	1.45E-08	4.26E-07	1.03E-08	5.36E-05	0.00E+00	5.52E-05
580000	1.15E-06	1.45E-08	4.27E-07	1.03E-08	5.37E-05	0.00E+00	5.53E-05
582000	1.15E-06	1.45E-08	4.27E-07	1.03E-08	5.37E-05	0.00E+00	5.53E-05
584000	1.15E-06	1.46E-08	4.27E-07	1.03E-08	5.37E-05	0.00E+00	5.53E-05
586000	1.15E-06	1.47E-08	4.27E-07	1.03E-08	5.37E-05	0.00E+00	5.53E-05
588000	1.15E-06	1.47E-08	4.27E-07	1.03E-08	5.37E-05	0.00E+00	5.53E-05
590000	1.16E-06	1.48E-08	4.27E-07	1.03E-08	5.37E-05	0.00E+00	5.53E-05
592000	1.16E-06	1.49E-08	4.28E-07	1.03E-08	5.37E-05	0.00E+00	5.54E-05
594000	1.17E-06	1.50E-08	4.29E-07	1.03E-08	5.38E-05	0.00E+00	5.54E-05
596000	1.18E-06	1.50E-08	4.30E-07	1.03E-08	5.38E-05	0.00E+00	5.55E-05
598000	1.19E-06	1.51E-08	4.32E-07	1.03E-08	5.40E-05	0.00E+00	5.56E-05
600000	1.20E-06	1.51E-08	4.35E-07	1.03E-08	5.42E-05	0.00E+00	5.58E-05
602000	1.21E-06	1.52E-08	4.39E-07	1.03E-08	5.45E-05	0.00E+00	5.62E-05
604000	1.22E-06	1.52E-08	4.43E-07	1.04E-08	5.49E-05	0.00E+00	5.66E-05
606000	1.23E-06	1.52E-08	4.48E-07	1.04E-08	5.54E-05	0.00E+00	5.71E-05
608000	1.24E-06	1.53E-08	4.52E-07	1.04E-08	5.60E-05	0.00E+00	5.77E-05
610000	1.25E-06	1.53E-08	4.57E-07	1.04E-08	5.66E-05	0.00E+00	5.83E-05
612000	1.26E-06	1.53E-08	4.60E-07	1.04E-08	5.71E-05	0.00E+00	5.89E-05
614000	1.26E-06	1.53E-08	4.63E-07	1.04E-08	5.77E-05	0.00E+00	5.94E-05
616000	1.26E-06	1.54E-08	4.66E-07	1.04E-08	5.81E-05	0.00E+00	5.99E-05
618000	1.27E-06	1.54E-08	4.68E-07	1.04E-08	5.85E-05	0.00E+00	6.03E-05
620000	1.27E-06	1.54E-08	4.69E-07	1.04E-08	5.88E-05	0.00E+00	6.06E-05
622000	1.27E-06	1.54E-08	4.70E-07	1.04E-08	5.90E-05	0.00E+00	6.08E-05
624000	1.27E-06	1.55E-08	4.71E-07	1.04E-08	5.92E-05	0.00E+00	6.09E-05
626000	1.27E-06	1.55E-08	4.71E-07	1.04E-08	5.93E-05	0.00E+00	6.11E-05
628000	1.27E-06	1.55E-08	4.71E-07	1.04E-08	5.94E-05	0.00E+00	6.11E-05
630000	1.27E-06	1.56E-08	4.71E-07	1.04E-08	5.94E-05	0.00E+00	6.12E-05
632000	1.27E-06	1.56E-08	4.72E-07	1.04E-08	5.94E-05	0.00E+00	6.12E-05
634000	1.27E-06	1.57E-08	4.72E-07	1.04E-08	5.95E-05	0.00E+00	6.12E-05
636000	1.27E-06	1.57E-08	4.72E-07	1.04E-08	5.95E-05	0.00E+00	6.12E-05
638000	1.28E-06	1.58E-08	4.73E-07	1.04E-08	5.95E-05	0.00E+00	6.13E-05
640000	1.28E-06	1.59E-08	4.73E-07	1.04E-08	5.95E-05	0.00E+00	6.13E-05
642000	1.29E-06	1.60E-08	4.75E-07	1.04E-08	5.96E-05	0.00E+00	6.14E-05
644000	1.30E-06	1.60E-08	4.77E-07	1.04E-08	5.97E-05	0.00E+00	6.15E-05

646000	1.31E-06	1.61E-08	4.80E-07	1.04E-08	5.99E-05	0.00E+00	6.17E-05
648000	1.32E-06	1.61E-08	4.84E-07	1.04E-08	6.02E-05	0.00E+00	6.2E-05
650000	1.33E-06	1.62E-08	4.87E-07	1.04E-08	6.06E-05	0.00E+00	6.24E-05
652000	1.34E-06	1.62E-08	4.92E-07	1.04E-08	6.10E-05	0.00E+00	6.29E-05
654000	1.35E-06	1.62E-08	4.96E-07	1.04E-08	6.15E-05	0.00E+00	6.34E-05
656000	1.36E-06	1.63E-08	4.99E-07	1.04E-08	6.20E-05	0.00E+00	6.39E-05
658000	1.36E-06	1.63E-08	5.02E-07	1.04E-08	6.26E-05	0.00E+00	6.45E-05
660000	1.37E-06	1.63E-08	5.05E-07	1.04E-08	6.30E-05	0.00E+00	6.49E-05
662000	1.37E-06	1.63E-08	5.07E-07	1.04E-08	6.35E-05	0.00E+00	6.54E-05
664000	1.38E-06	1.64E-08	5.09E-07	1.04E-08	6.38E-05	0.00E+00	6.57E-05
666000	1.38E-06	1.64E-08	5.10E-07	1.04E-08	6.41E-05	0.00E+00	6.6E-05
668000	1.38E-06	1.64E-08	5.11E-07	1.04E-08	6.43E-05	0.00E+00	6.62E-05
670000	1.38E-06	1.64E-08	5.11E-07	1.04E-08	6.44E-05	0.00E+00	6.63E-05
672000	1.38E-06	1.65E-08	5.11E-07	1.04E-08	6.45E-05	0.00E+00	6.64E-05
674000	1.38E-06	1.65E-08	5.12E-07	1.04E-08	6.46E-05	0.00E+00	6.65E-05
676000	1.38E-06	1.65E-08	5.12E-07	1.03E-08	6.46E-05	0.00E+00	6.65E-05
678000	1.38E-06	1.66E-08	5.12E-07	1.03E-08	6.46E-05	0.00E+00	6.66E-05
680000	1.38E-06	1.66E-08	5.13E-07	1.03E-08	6.47E-05	0.00E+00	6.66E-05
682000	1.39E-06	1.67E-08	5.14E-07	1.03E-08	6.47E-05	0.00E+00	6.66E-05
684000	1.39E-06	1.68E-08	5.15E-07	1.03E-08	6.48E-05	0.00E+00	6.67E-05
686000	1.40E-06	1.69E-08	5.17E-07	1.03E-08	6.49E-05	0.00E+00	6.68E-05
688000	1.40E-06	1.69E-08	5.20E-07	1.03E-08	6.51E-05	0.00E+00	6.7E-05
690000	1.41E-06	1.70E-08	5.23E-07	1.03E-08	6.53E-05	0.00E+00	6.73E-05
692000	1.42E-06	1.70E-08	5.26E-07	1.03E-08	6.57E-05	0.00E+00	6.77E-05
694000	1.44E-06	1.71E-08	5.30E-07	1.03E-08	6.61E-05	0.00E+00	6.81E-05
696000	1.45E-06	1.71E-08	5.34E-07	1.03E-08	6.66E-05	0.00E+00	6.86E-05
698000	1.46E-06	1.71E-08	5.37E-07	1.03E-08	6.71E-05	0.00E+00	6.91E-05
700000	1.46E-06	1.72E-08	5.40E-07	1.03E-08	6.76E-05	0.00E+00	6.96E-05
702000	1.47E-06	1.72E-08	5.43E-07	1.03E-08	6.80E-05	0.00E+00	7.01E-05
704000	1.48E-06	1.72E-08	5.45E-07	1.03E-08	6.84E-05	0.00E+00	7.05E-05
706000	1.48E-06	1.73E-08	5.46E-07	1.03E-08	6.87E-05	0.00E+00	7.08E-05
708000	1.48E-06	1.73E-08	5.47E-07	1.03E-08	6.90E-05	0.00E+00	7.1E-05
710000	1.49E-06	1.73E-08	5.48E-07	1.03E-08	6.92E-05	0.00E+00	7.12E-05
712000	1.49E-06	1.73E-08	5.48E-07	1.03E-08	6.93E-05	0.00E+00	7.14E-05
714000	1.49E-06	1.74E-08	5.49E-07	1.03E-08	6.94E-05	0.00E+00	7.14E-05
716000	1.49E-06	1.74E-08	5.49E-07	1.03E-08	6.94E-05	0.00E+00	7.15E-05
718000	1.49E-06	1.74E-08	5.49E-07	1.03E-08	6.95E-05	0.00E+00	7.16E-05
720000	1.49E-06	1.75E-08	5.50E-07	1.03E-08	6.95E-05	0.00E+00	7.16E-05
722000	1.49E-06	1.76E-08	5.51E-07	1.03E-08	6.96E-05	0.00E+00	7.17E-05
724000	1.50E-06	1.76E-08	5.53E-07	1.03E-08	6.97E-05	0.00E+00	7.17E-05
726000	1.50E-06	1.77E-08	5.55E-07	1.03E-08	6.98E-05	0.00E+00	7.19E-05
728000	1.51E-06	1.78E-08	5.58E-07	1.03E-08	7.00E-05	0.00E+00	7.21E-05
730000	1.51E-06	1.79E-08	5.61E-07	1.03E-08	7.03E-05	0.00E+00	7.24E-05
732000	1.52E-06	1.79E-08	5.65E-07	1.03E-08	7.06E-05	0.00E+00	7.28E-05
734000	1.54E-06	1.80E-08	5.68E-07	1.03E-08	7.11E-05	0.00E+00	7.32E-05
736000	1.55E-06	1.80E-08	5.72E-07	1.03E-08	7.15E-05	0.00E+00	7.37E-05
738000	1.56E-06	1.81E-08	5.75E-07	1.03E-08	7.20E-05	0.00E+00	7.42E-05

740000	1.57E-06	1.81E-08	5.77E-07	1.03E-08	7.25E-05	0.00E+00	7.47E-05
742000	1.58E-06	1.81E-08	5.79E-07	1.03E-08	7.29E-05	0.00E+00	7.51E-05
744000	1.58E-06	1.82E-08	5.81E-07	1.03E-08	7.33E-05	0.00E+00	7.55E-05
746000	1.59E-06	1.82E-08	5.82E-07	1.03E-08	7.36E-05	0.00E+00	7.58E-05
748000	1.59E-06	1.82E-08	5.83E-07	1.03E-08	7.38E-05	0.00E+00	7.6E-05
750000	1.59E-06	1.83E-08	5.84E-07	1.03E-08	7.40E-05	0.00E+00	7.62E-05
752000	1.60E-06	1.83E-08	5.84E-07	1.03E-08	7.41E-05	0.00E+00	7.63E-05
754000	1.60E-06	1.83E-08	5.85E-07	1.03E-08	7.42E-05	0.00E+00	7.64E-05
756000	1.60E-06	1.84E-08	5.85E-07	1.03E-08	7.43E-05	0.00E+00	7.65E-05
758000	1.60E-06	1.84E-08	5.86E-07	1.03E-08	7.43E-05	0.00E+00	7.65E-05
760000	1.60E-06	1.85E-08	5.88E-07	1.03E-08	7.44E-05	0.00E+00	7.66E-05
762000	1.61E-06	1.86E-08	5.90E-07	1.03E-08	7.45E-05	0.00E+00	7.67E-05
764000	1.61E-06	1.87E-08	5.92E-07	1.03E-08	7.47E-05	0.00E+00	7.69E-05
766000	1.62E-06	1.87E-08	5.95E-07	1.03E-08	7.49E-05	0.00E+00	7.71E-05
768000	1.62E-06	1.88E-08	5.99E-07	1.03E-08	7.52E-05	0.00E+00	7.75E-05
770000	1.63E-06	1.89E-08	6.02E-07	1.03E-08	7.56E-05	0.00E+00	7.79E-05
772000	1.65E-06	1.90E-08	6.06E-07	1.03E-08	7.61E-05	0.00E+00	7.84E-05
774000	1.66E-06	1.91E-08	6.09E-07	1.03E-08	7.66E-05	0.00E+00	7.89E-05
776000	1.67E-06	1.91E-08	6.11E-07	1.03E-08	7.70E-05	0.00E+00	7.93E-05
778000	1.68E-06	1.92E-08	6.14E-07	1.03E-08	7.75E-05	0.00E+00	7.98E-05
780000	1.69E-06	1.92E-08	6.15E-07	1.03E-08	7.79E-05	0.00E+00	8.02E-05
782000	1.70E-06	1.92E-08	6.16E-07	1.03E-08	7.82E-05	0.00E+00	8.05E-05
784000	1.70E-06	1.93E-08	6.17E-07	1.03E-08	7.85E-05	0.00E+00	8.08E-05
786000	1.71E-06	1.93E-08	6.18E-07	1.03E-08	7.87E-05	0.00E+00	8.1E-05
788000	1.71E-06	1.93E-08	6.19E-07	1.03E-08	7.88E-05	0.00E+00	8.12E-05
790000	1.71E-06	1.94E-08	6.19E-07	1.03E-08	7.89E-05	0.00E+00	8.13E-05
792000	1.71E-06	1.94E-08	6.20E-07	1.03E-08	7.90E-05	0.00E+00	8.14E-05
794000	1.71E-06	1.95E-08	6.21E-07	1.03E-08	7.91E-05	0.00E+00	8.14E-05
796000	1.72E-06	1.96E-08	6.23E-07	1.03E-08	7.92E-05	0.00E+00	8.16E-05
798000	1.72E-06	1.96E-08	6.26E-07	1.03E-08	7.93E-05	0.00E+00	8.17E-05
800000	1.73E-06	1.97E-08	6.29E-07	1.03E-08	7.96E-05	0.00E+00	8.19E-05
802000	1.73E-06	1.98E-08	6.32E-07	1.03E-08	7.99E-05	0.00E+00	8.22E-05
804000	1.74E-06	1.99E-08	6.36E-07	1.03E-08	8.02E-05	0.00E+00	8.26E-05
806000	1.75E-06	2.00E-08	6.39E-07	1.03E-08	8.07E-05	0.00E+00	8.31E-05
808000	1.76E-06	2.01E-08	6.42E-07	1.03E-08	8.11E-05	0.00E+00	8.36E-05
810000	1.78E-06	2.02E-08	6.45E-07	1.03E-08	8.16E-05	0.00E+00	8.41E-05
812000	1.79E-06	2.02E-08	6.47E-07	1.03E-08	8.21E-05	0.00E+00	8.45E-05
814000	1.80E-06	2.03E-08	6.49E-07	1.03E-08	8.25E-05	0.00E+00	8.49E-05
816000	1.81E-06	2.03E-08	6.50E-07	1.03E-08	8.28E-05	0.00E+00	8.53E-05
818000	1.81E-06	2.04E-08	6.51E-07	1.03E-08	8.31E-05	0.00E+00	8.56E-05
820000	1.82E-06	2.04E-08	6.52E-07	1.03E-08	8.33E-05	0.00E+00	8.58E-05
822000	1.82E-06	2.04E-08	6.52E-07	1.03E-08	8.34E-05	0.00E+00	8.59E-05
824000	1.83E-06	2.05E-08	6.53E-07	1.03E-08	8.36E-05	0.00E+00	8.61E-05
826000	1.83E-06	2.05E-08	6.54E-07	1.03E-08	8.37E-05	0.00E+00	8.62E-05
828000	1.83E-06	2.05E-08	6.56E-07	1.03E-08	8.38E-05	0.00E+00	8.63E-05
830000	1.83E-06	2.06E-08	6.58E-07	1.03E-08	8.39E-05	0.00E+00	8.65E-05
832000	1.84E-06	2.07E-08	6.61E-07	1.03E-08	8.41E-05	0.00E+00	8.67E-05

834000	1.84E-06	2.08E-08	6.64E-07	1.03E-08	8.44E-05	0.00E+00	8.7E-05
836000	1.85E-06	2.09E-08	6.67E-07	1.03E-08	8.48E-05	0.00E+00	8.73E-05
838000	1.86E-06	2.10E-08	6.71E-07	1.03E-08	8.52E-05	0.00E+00	8.78E-05
840000	1.87E-06	2.11E-08	6.74E-07	1.03E-08	8.57E-05	0.00E+00	8.83E-05
842000	1.88E-06	2.12E-08	6.77E-07	1.03E-08	8.62E-05	0.00E+00	8.87E-05
844000	1.89E-06	2.12E-08	6.79E-07	1.03E-08	8.66E-05	0.00E+00	8.92E-05
846000	1.90E-06	2.13E-08	6.81E-07	1.03E-08	8.70E-05	0.00E+00	8.96E-05
848000	1.92E-06	2.14E-08	6.83E-07	1.03E-08	8.74E-05	0.00E+00	9E-05
850000	1.92E-06	2.14E-08	6.84E-07	1.03E-08	8.77E-05	0.00E+00	9.03E-05
852000	1.93E-06	2.15E-08	6.85E-07	1.03E-08	8.79E-05	0.00E+00	9.05E-05
854000	1.94E-06	2.15E-08	6.86E-07	1.03E-08	8.81E-05	0.00E+00	9.07E-05
856000	1.94E-06	2.15E-08	6.87E-07	1.03E-08	8.82E-05	0.00E+00	9.09E-05
858000	1.95E-06	2.16E-08	6.89E-07	1.03E-08	8.83E-05	0.00E+00	9.1E-05
860000	1.95E-06	2.16E-08	6.90E-07	1.03E-08	8.85E-05	0.00E+00	9.12E-05
862000	1.95E-06	2.17E-08	6.93E-07	1.03E-08	8.87E-05	0.00E+00	9.14E-05
864000	1.96E-06	2.17E-08	6.96E-07	1.03E-08	8.90E-05	0.00E+00	9.16E-05
866000	1.96E-06	2.18E-08	6.99E-07	1.03E-08	8.93E-05	0.00E+00	9.2E-05
868000	1.97E-06	2.19E-08	7.03E-07	1.03E-08	8.97E-05	0.00E+00	9.24E-05
870000	1.98E-06	2.21E-08	7.06E-07	1.03E-08	9.02E-05	0.00E+00	9.29E-05
872000	1.99E-06	2.22E-08	7.10E-07	1.03E-08	9.07E-05	0.00E+00	9.34E-05
874000	2.00E-06	2.23E-08	7.12E-07	1.03E-08	9.12E-05	0.00E+00	9.39E-05
876000	2.02E-06	2.24E-08	7.15E-07	1.03E-08	9.16E-05	0.00E+00	9.44E-05
878000	2.03E-06	2.25E-08	7.16E-07	1.03E-08	9.20E-05	0.00E+00	9.48E-05
880000	2.04E-06	2.26E-08	7.18E-07	1.03E-08	9.24E-05	0.00E+00	9.51E-05
882000	2.05E-06	2.26E-08	7.19E-07	1.03E-08	9.26E-05	0.00E+00	9.54E-05
884000	2.06E-06	2.27E-08	7.20E-07	1.03E-08	9.28E-05	0.00E+00	9.57E-05
886000	2.06E-06	2.27E-08	7.21E-07	1.03E-08	9.30E-05	0.00E+00	9.58E-05
888000	2.07E-06	2.28E-08	7.23E-07	1.03E-08	9.32E-05	0.00E+00	9.6E-05
890000	2.07E-06	2.28E-08	7.25E-07	1.03E-08	9.34E-05	0.00E+00	9.62E-05
892000	2.07E-06	2.29E-08	7.28E-07	1.03E-08	9.36E-05	0.00E+00	9.64E-05
894000	2.08E-06	2.29E-08	7.31E-07	1.03E-08	9.39E-05	0.00E+00	9.67E-05
896000	2.09E-06	2.30E-08	7.34E-07	1.03E-08	9.43E-05	0.00E+00	9.71E-05
898000	2.10E-06	2.31E-08	7.38E-07	1.03E-08	9.47E-05	0.00E+00	9.76E-05
900000	2.11E-06	2.33E-08	7.41E-07	1.03E-08	9.52E-05	0.00E+00	9.81E-05
902000	2.12E-06	2.34E-08	7.45E-07	1.03E-08	9.58E-05	0.00E+00	9.86E-05
904000	2.13E-06	2.35E-08	7.48E-07	1.03E-08	9.63E-05	0.00E+00	9.92E-05
906000	2.15E-06	2.37E-08	7.50E-07	1.03E-08	9.67E-05	0.00E+00	9.97E-05
908000	2.16E-06	2.38E-08	7.52E-07	1.03E-08	9.71E-05	0.00E+00	0.0001
910000	2.17E-06	2.39E-08	7.53E-07	1.03E-08	9.75E-05	0.00E+00	0.0001
912000	2.18E-06	2.40E-08	7.55E-07	1.04E-08	9.77E-05	0.00E+00	0.000101
914000	2.18E-06	2.41E-08	7.56E-07	1.04E-08	9.80E-05	0.00E+00	0.000101
916000	2.19E-06	2.41E-08	7.58E-07	1.04E-08	9.82E-05	0.00E+00	0.000101
918000	2.20E-06	2.42E-08	7.61E-07	1.04E-08	9.84E-05	0.00E+00	0.000101
920000	2.20E-06	2.43E-08	7.63E-07	1.04E-08	9.86E-05	0.00E+00	0.000102
922000	2.21E-06	2.43E-08	7.67E-07	1.04E-08	9.90E-05	0.00E+00	0.000102
924000	2.22E-06	2.44E-08	7.70E-07	1.04E-08	9.94E-05	0.00E+00	0.000102
926000	2.23E-06	2.45E-08	7.74E-07	1.04E-08	9.98E-05	0.00E+00	0.000103

928000	2.24E-06	2.46E-08	7.78E-07	1.04E-08	1.00E-04	0.00E+00	0.000103
930000	2.25E-06	2.48E-08	7.81E-07	1.04E-08	1.01E-04	0.00E+00	0.000104
932000	2.26E-06	2.49E-08	7.84E-07	1.04E-08	1.01E-04	0.00E+00	0.000104
934000	2.28E-06	2.51E-08	7.87E-07	1.04E-08	1.02E-04	0.00E+00	0.000105
936000	2.29E-06	2.52E-08	7.89E-07	1.04E-08	1.02E-04	0.00E+00	0.000105
938000	2.30E-06	2.53E-08	7.91E-07	1.04E-08	1.03E-04	0.00E+00	0.000106
940000	2.31E-06	2.55E-08	7.92E-07	1.04E-08	1.03E-04	0.00E+00	0.000106
942000	2.32E-06	2.56E-08	7.94E-07	1.04E-08	1.03E-04	0.00E+00	0.000106
944000	2.32E-06	2.57E-08	7.96E-07	1.04E-08	1.03E-04	0.00E+00	0.000107
946000	2.33E-06	2.58E-08	7.99E-07	1.05E-08	1.04E-04	0.00E+00	0.000107
948000	2.34E-06	2.58E-08	8.02E-07	1.05E-08	1.04E-04	0.00E+00	0.000107
950000	2.35E-06	2.59E-08	8.06E-07	1.05E-08	1.04E-04	0.00E+00	0.000108
952000	2.35E-06	2.61E-08	8.10E-07	1.05E-08	1.05E-04	0.00E+00	0.000108
954000	2.37E-06	2.62E-08	8.13E-07	1.05E-08	1.05E-04	0.00E+00	0.000109
956000	2.38E-06	2.63E-08	8.17E-07	1.05E-08	1.06E-04	0.00E+00	0.000109
958000	2.39E-06	2.64E-08	8.20E-07	1.06E-08	1.06E-04	0.00E+00	0.00011
960000	2.41E-06	2.66E-08	8.23E-07	1.06E-08	1.07E-04	0.00E+00	0.00011
962000	2.42E-06	2.67E-08	8.25E-07	1.06E-08	1.07E-04	0.00E+00	0.000111
964000	2.43E-06	2.69E-08	8.27E-07	1.06E-08	1.08E-04	0.00E+00	0.000111
966000	2.44E-06	2.70E-08	8.29E-07	1.06E-08	1.08E-04	0.00E+00	0.000111
968000	2.45E-06	2.71E-08	8.31E-07	1.06E-08	1.08E-04	0.00E+00	0.000112
970000	2.46E-06	2.72E-08	8.33E-07	1.06E-08	1.09E-04	0.00E+00	0.000112
972000	2.46E-06	2.73E-08	8.36E-07	1.06E-08	1.09E-04	0.00E+00	0.000112
974000	2.47E-06	2.75E-08	8.39E-07	1.06E-08	1.09E-04	0.00E+00	0.000113
976000	2.48E-06	2.76E-08	8.43E-07	1.06E-08	1.10E-04	0.00E+00	0.000113
978000	2.49E-06	2.77E-08	8.47E-07	1.06E-08	1.10E-04	0.00E+00	0.000114
980000	2.51E-06	2.79E-08	8.50E-07	1.06E-08	1.11E-04	0.00E+00	0.000114
982000	2.52E-06	2.80E-08	8.54E-07	1.06E-08	1.11E-04	0.00E+00	0.000115
984000	2.53E-06	2.82E-08	8.57E-07	1.07E-08	1.12E-04	0.00E+00	0.000115
986000	2.55E-06	2.83E-08	8.60E-07	1.07E-08	1.12E-04	0.00E+00	0.000116
988000	2.56E-06	2.85E-08	8.62E-07	1.07E-08	1.13E-04	0.00E+00	0.000116
990000	2.57E-06	2.86E-08	8.64E-07	1.08E-08	1.13E-04	0.00E+00	0.000116
992000	2.58E-06	2.87E-08	8.67E-07	1.08E-08	1.13E-04	0.00E+00	0.000117
994000	2.59E-06	2.88E-08	8.69E-07	1.09E-08	1.14E-04	0.00E+00	0.000117
996000	2.59E-06	2.90E-08	8.72E-07	1.09E-08	1.14E-04	0.00E+00	0.000117
998000	2.60E-06	2.91E-08	8.75E-07	1.10E-08	1.14E-04	0.00E+00	0.000118
1000000	2.61E-06	2.92E-08	8.79E-07	1.11E-08	1.15E-04	0.00E+00	0.000118

Intake (mg/kg body wt/day)
0.0000E+00
0.0000E+00
0.0000E+00
0.0000E+00
0.0000E+00
0.0000E+00
0.0000E+00
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0.0000E+00
0.0000E+00
0.0000E+00
0.0000E+00
1.1430E-21
1.1620E-19
6.2127E-18
1.9412E-16
3.8455E-15
5.1599E-14
4.9501E-13
3.5506E-12
1.9765E-11
8.8118E-11
3.2316E-10
9.9746E-10
2.6429E-09
6.1162E-09
1.2551E-08
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3.1975E-06
3.2068E-06
3.2176E-06
3.2302E-06
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Uranium Intake Combined Case, Present Climate
Death Valley, no pumping

Time (yr)	Concentration in Water (micrograms/L)						
	U-235	U-233	U-236	U-234	U-238	U-232	Total
250	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
2000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
4000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
6000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
8000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
10000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
12000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
14000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
16000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
18000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
20000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
22000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
24000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
26000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
28000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
30000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
32000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
34000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
36000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
38000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
40000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
42000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
44000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
46000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
48000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
50000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
52000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
54000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
56000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
58000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
60000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
62000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
64000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
66000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
68000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
70000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
72000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
74000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
76000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
78000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
80000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0

82000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
84000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
86000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
88000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
90000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
92000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
94000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
96000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
98000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
100000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
102000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
104000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
106000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
108000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
110000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
112000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
114000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
116000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
118000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
120000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
122000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
124000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
126000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
128000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
130000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
132000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
134000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
136000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
138000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
140000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
142000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
144000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
146000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
148000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
150000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
152000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
154000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
156000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
158000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
160000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
162000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
164000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
166000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
168000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
170000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
172000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
174000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0

176000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
178000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
180000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
182000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
184000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
186000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
188000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
190000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
192000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
194000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
196000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
198000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
200000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
202000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
204000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
206000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
208000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
210000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
212000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
214000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
216000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
218000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
220000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
222000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
224000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
226000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
228000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
230000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
232000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
234000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
236000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
238000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
240000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
242000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
244000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
246000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
248000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
250000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
252000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
254000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
256000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
258000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
260000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
262000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
264000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
266000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
268000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0

270000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
272000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
274000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
276000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
278000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
280000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
282000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
284000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
286000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
288000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
290000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
292000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
294000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
296000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
298000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
300000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
302000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
304000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
306000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
308000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
310000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
312000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
314000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
316000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
318000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
320000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
322000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
324000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
326000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
328000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
330000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
332000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
334000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
336000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
338000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
340000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
342000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
344000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
346000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
348000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
350000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
352000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
354000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
356000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
358000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
360000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
362000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0

364000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
366000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
368000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
370000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
372000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
374000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
376000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
378000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
380000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
382000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
384000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
386000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
388000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
390000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
392000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
394000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
396000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
398000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
400000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
402000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
404000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
406000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
408000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
410000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
412000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
414000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
416000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
418000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
420000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
422000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
424000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
426000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
428000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
430000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
432000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
434000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
436000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
438000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
440000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
442000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
444000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
446000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
448000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
450000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
452000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
454000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
456000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0

458000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
460000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
462000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
464000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
466000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
468000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
470000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
472000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
474000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
476000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
478000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
480000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
482000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
484000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
486000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
488000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
490000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
492000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
494000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
496000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
498000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
500000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
502000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
504000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
506000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
508000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
510000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
512000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
514000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
516000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
518000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
520000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
522000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
524000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
526000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
528000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
530000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
532000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
534000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
536000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
538000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
540000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
542000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
544000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
546000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
548000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
550000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0

552000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
554000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
556000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
558000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
560000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
562000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
564000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
566000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
568000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
570000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
572000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
574000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
576000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
578000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
580000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
582000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
584000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
586000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
588000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
590000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
592000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
594000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
596000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
598000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
600000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
602000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
604000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
606000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
608000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
610000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
612000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
614000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
616000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
618000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
620000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
622000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
624000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
626000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
628000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
630000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
632000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
634000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
636000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
638000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
640000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
642000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
644000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0

646000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
648000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
650000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
652000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
654000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
656000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
658000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
660000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
662000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
664000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
666000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
668000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
670000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
672000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
674000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
676000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
678000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
680000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
682000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
684000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
686000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
688000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
690000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
692000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
694000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
696000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
698000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
700000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
702000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
704000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
706000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
708000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
710000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
712000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
714000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
716000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
718000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
720000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
722000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
724000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
726000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
728000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
730000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
732000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
734000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
736000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
738000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0

740000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
742000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
744000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
746000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
748000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
750000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
752000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
754000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
756000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
758000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
760000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
762000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
764000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
766000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
768000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
770000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
772000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
774000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
776000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
778000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
780000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
782000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
784000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
786000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
788000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
790000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
792000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
794000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
796000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
798000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
800000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
802000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
804000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
806000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
808000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
810000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
812000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
814000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
816000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
818000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
820000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
822000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
824000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
826000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
828000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
830000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
832000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0

834000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
836000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
838000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
840000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
842000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
844000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
846000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
848000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
850000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
852000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
854000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
856000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
858000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
860000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
862000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
864000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
866000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
868000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
870000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
872000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
874000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
876000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
878000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
880000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
882000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
884000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
886000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
888000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
890000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
892000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
894000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
896000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
898000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
900000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
902000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
904000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
906000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
908000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
910000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
912000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
914000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
916000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
918000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
920000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
922000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
924000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
926000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0

928000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
930000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
932000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
934000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
936000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
938000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
940000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
942000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
944000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
946000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
948000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
950000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
952000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
954000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
956000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
958000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
960000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
962000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
964000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
966000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
968000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
970000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
972000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
974000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
976000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
978000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
980000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
982000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
984000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
986000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
988000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
990000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
992000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
994000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
996000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
998000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
1000000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0

Intake (mg/kg body wt/day)
0.0000E+00
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0.0000E+00

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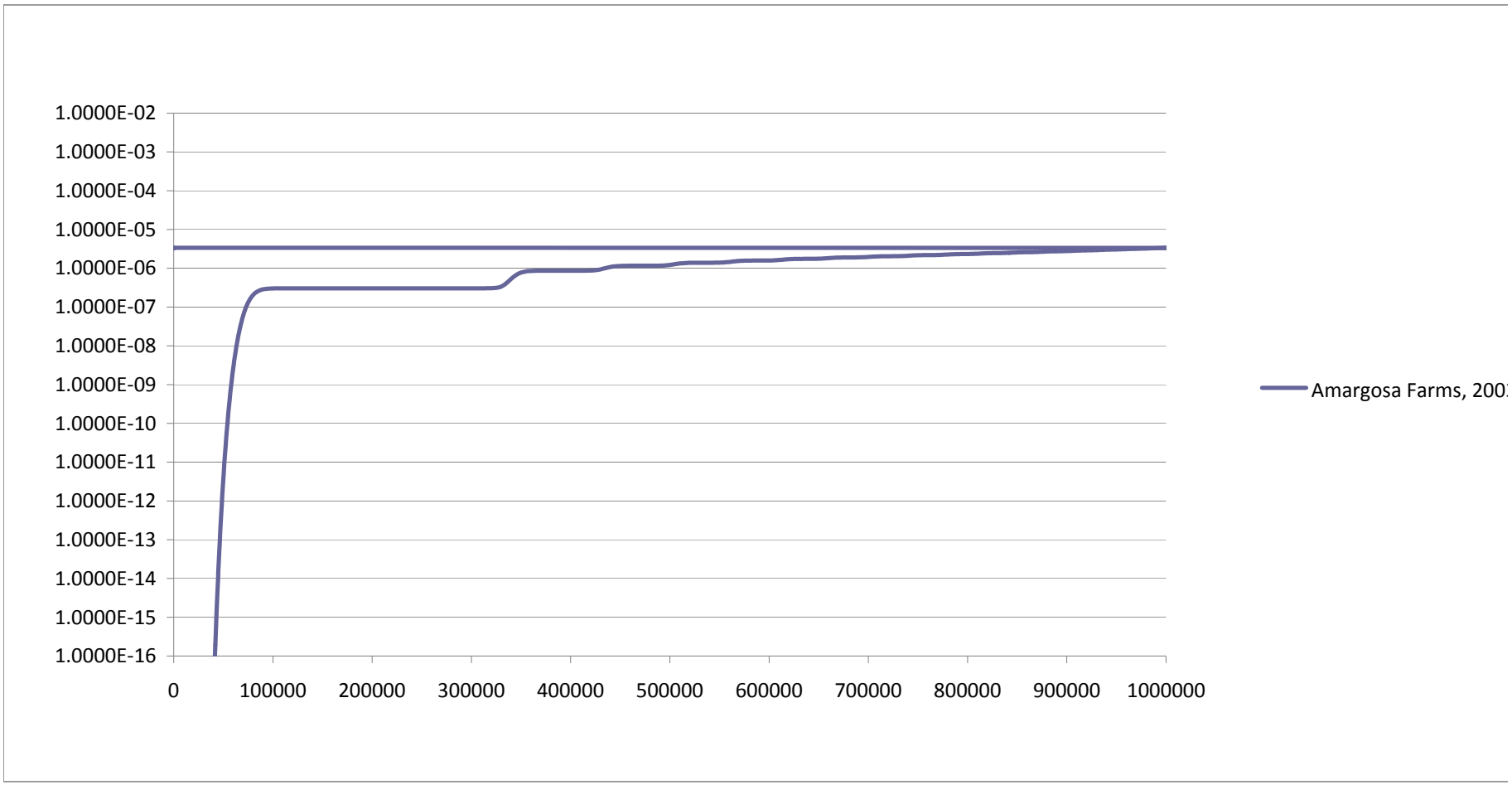
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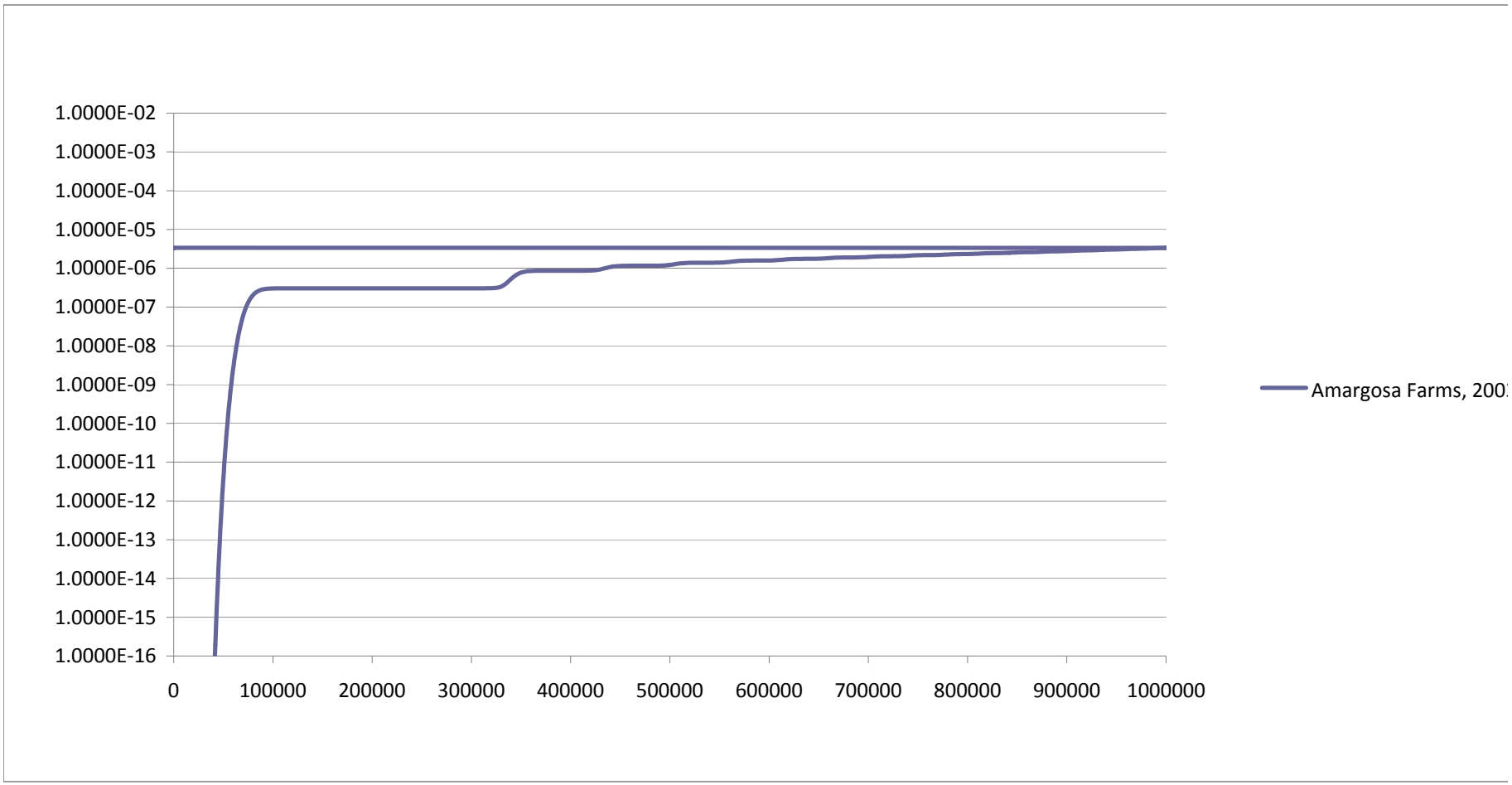
900000
1000000
Amargosa Farms, 200

ms, 2003 Pumping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300000
400000
500000
600000
700000
800000
900000
1000000
Amargosa Farms, 200

ms, 2003 Pumping

Uranium Intake Combined Case, Wet Climate
Amargosa Farms, 2003 Pumping

Time (yr)	Concentration in Water (milligrams/L)						
	U-235	U-233	U-236	U-234	U-238	U-232	Total
250	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
2000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
4000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
6000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
8000	1.38E-23	1.34E-25	4.46E-24	1.65E-25	5.70E-22	1.56E-118	5.88E-22
10000	2.46E-16	2.40E-18	7.96E-17	2.94E-18	1.02E-14	3.39E-111	1.05E-14
12000	3.11E-12	3.04E-14	1.01E-12	3.73E-14	1.29E-10	4.94E-107	1.33E-10
14000	7.65E-10	7.46E-12	2.48E-10	9.16E-12	3.17E-08	1.27E-104	3.27E-08
16000	1.73E-08	1.69E-10	5.60E-09	2.07E-10	7.15E-07	2.52E-103	7.38E-07
18000	8.78E-08	8.56E-10	2.84E-08	1.05E-09	3.63E-06	8.95E-103	3.75E-06
20000	1.81E-07	1.77E-09	5.86E-08	2.17E-09	7.48E-06	9.52E-103	7.73E-06
22000	2.31E-07	2.28E-09	7.50E-08	2.77E-09	9.58E-06	4.22E-103	9.89E-06
24000	2.45E-07	2.48E-09	7.95E-08	2.94E-09	1.02E-05	9.72E-104	1.05E-05
26000	2.48E-07	2.61E-09	8.02E-08	2.97E-09	1.03E-05	1.36E-104	1.06E-05
28000	2.48E-07	2.74E-09	8.03E-08	2.97E-09	1.03E-05	1.29E-105	1.06E-05
30000	2.48E-07	2.82E-09	8.03E-08	2.97E-09	1.03E-05	8.93E-107	1.06E-05
32000	2.48E-07	2.86E-09	8.03E-08	2.97E-09	1.03E-05	4.82E-108	1.06E-05
34000	2.48E-07	2.87E-09	8.03E-08	2.97E-09	1.03E-05	2.12E-109	1.06E-05
36000	2.48E-07	2.88E-09	8.03E-08	2.97E-09	1.03E-05	7.89E-111	1.06E-05
38000	2.48E-07	2.88E-09	8.03E-08	2.97E-09	1.03E-05	2.54E-112	1.06E-05
40000	2.48E-07	2.88E-09	8.03E-08	2.97E-09	1.03E-05	7.25E-114	1.06E-05
42000	2.48E-07	2.88E-09	8.03E-08	2.97E-09	1.03E-05	1.86E-115	1.06E-05
44000	2.48E-07	2.88E-09	8.03E-08	2.97E-09	1.03E-05	5.73E-117	1.06E-05
46000	2.48E-07	2.88E-09	8.03E-08	2.97E-09	1.03E-05	0.00E+00	1.06E-05
48000	2.48E-07	2.88E-09	8.03E-08	2.97E-09	1.03E-05	0.00E+00	1.06E-05
50000	2.48E-07	2.88E-09	8.03E-08	2.97E-09	1.03E-05	0.00E+00	1.06E-05
52000	2.48E-07	2.88E-09	8.03E-08	2.97E-09	1.03E-05	0.00E+00	1.06E-05
54000	2.48E-07	2.88E-09	8.03E-08	2.97E-09	1.03E-05	0.00E+00	1.06E-05
56000	2.48E-07	2.88E-09	8.03E-08	2.97E-09	1.03E-05	0.00E+00	1.06E-05
58000	2.48E-07	2.88E-09	8.03E-08	2.97E-09	1.03E-05	0.00E+00	1.06E-05
60000	2.48E-07	2.88E-09	8.03E-08	2.97E-09	1.03E-05	0.00E+00	1.06E-05
62000	2.48E-07	2.88E-09	8.03E-08	2.97E-09	1.03E-05	0.00E+00	1.06E-05
64000	2.48E-07	2.88E-09	8.03E-08	2.97E-09	1.03E-05	0.00E+00	1.06E-05
66000	2.48E-07	2.88E-09	8.03E-08	2.97E-09	1.03E-05	0.00E+00	1.06E-05
68000	2.48E-07	2.88E-09	8.03E-08	2.97E-09	1.03E-05	0.00E+00	1.06E-05
70000	2.48E-07	2.88E-09	8.03E-08	2.97E-09	1.03E-05	0.00E+00	1.06E-05
72000	2.48E-07	2.88E-09	8.03E-08	2.97E-09	1.03E-05	0.00E+00	1.06E-05
74000	2.48E-07	2.88E-09	8.03E-08	2.97E-09	1.03E-05	0.00E+00	1.06E-05
76000	2.48E-07	2.88E-09	8.03E-08	2.97E-09	1.03E-05	0.00E+00	1.06E-05
78000	2.48E-07	2.88E-09	8.03E-08	2.97E-09	1.03E-05	0.00E+00	1.06E-05
80000	2.48E-07	2.88E-09	8.03E-08	2.97E-09	1.03E-05	0.00E+00	1.06E-05

82000	2.48E-07	2.88E-09	8.03E-08	2.97E-09	1.03E-05	0.00E+00	1.06E-05
84000	2.48E-07	2.88E-09	8.03E-08	2.97E-09	1.03E-05	0.00E+00	1.06E-05
86000	2.48E-07	2.88E-09	8.03E-08	2.97E-09	1.03E-05	0.00E+00	1.06E-05
88000	2.48E-07	2.88E-09	8.03E-08	2.97E-09	1.03E-05	0.00E+00	1.06E-05
90000	2.48E-07	2.88E-09	8.03E-08	2.97E-09	1.03E-05	0.00E+00	1.06E-05
92000	2.48E-07	2.88E-09	8.03E-08	2.97E-09	1.03E-05	0.00E+00	1.06E-05
94000	2.48E-07	2.88E-09	8.03E-08	2.97E-09	1.03E-05	0.00E+00	1.06E-05
96000	2.48E-07	2.88E-09	8.03E-08	2.97E-09	1.03E-05	0.00E+00	1.06E-05
98000	2.48E-07	2.88E-09	8.03E-08	2.97E-09	1.03E-05	0.00E+00	1.06E-05
100000	2.48E-07	2.88E-09	8.03E-08	2.97E-09	1.03E-05	0.00E+00	1.06E-05
102000	2.48E-07	2.88E-09	8.03E-08	2.97E-09	1.03E-05	0.00E+00	1.06E-05
104000	2.48E-07	2.88E-09	8.03E-08	2.97E-09	1.03E-05	0.00E+00	1.06E-05
106000	2.48E-07	2.88E-09	8.03E-08	2.97E-09	1.03E-05	0.00E+00	1.06E-05
108000	2.48E-07	2.88E-09	8.03E-08	2.97E-09	1.03E-05	0.00E+00	1.06E-05
110000	2.48E-07	2.88E-09	8.03E-08	2.97E-09	1.03E-05	0.00E+00	1.06E-05
112000	2.48E-07	2.88E-09	8.03E-08	2.97E-09	1.03E-05	0.00E+00	1.06E-05
114000	2.48E-07	2.88E-09	8.03E-08	2.97E-09	1.03E-05	0.00E+00	1.06E-05
116000	2.48E-07	2.88E-09	8.03E-08	2.97E-09	1.03E-05	0.00E+00	1.06E-05
118000	2.48E-07	2.88E-09	8.03E-08	2.97E-09	1.03E-05	0.00E+00	1.06E-05
120000	2.48E-07	2.88E-09	8.03E-08	2.97E-09	1.03E-05	0.00E+00	1.06E-05
122000	2.48E-07	2.88E-09	8.03E-08	2.97E-09	1.03E-05	0.00E+00	1.06E-05
124000	2.48E-07	2.88E-09	8.03E-08	2.97E-09	1.03E-05	0.00E+00	1.06E-05
126000	2.48E-07	2.88E-09	8.03E-08	2.97E-09	1.03E-05	0.00E+00	1.06E-05
128000	2.48E-07	2.88E-09	8.03E-08	2.97E-09	1.03E-05	0.00E+00	1.06E-05
130000	2.48E-07	2.88E-09	8.03E-08	2.97E-09	1.03E-05	0.00E+00	1.06E-05
132000	2.48E-07	2.88E-09	8.03E-08	2.97E-09	1.03E-05	0.00E+00	1.06E-05
134000	2.48E-07	2.88E-09	8.03E-08	2.97E-09	1.03E-05	0.00E+00	1.06E-05
136000	2.48E-07	2.88E-09	8.03E-08	2.97E-09	1.03E-05	0.00E+00	1.06E-05
138000	2.48E-07	2.88E-09	8.03E-08	2.97E-09	1.03E-05	0.00E+00	1.06E-05
140000	2.48E-07	2.88E-09	8.03E-08	2.97E-09	1.03E-05	0.00E+00	1.06E-05
142000	2.48E-07	2.88E-09	8.03E-08	2.97E-09	1.03E-05	0.00E+00	1.06E-05
144000	2.48E-07	2.88E-09	8.03E-08	2.97E-09	1.03E-05	0.00E+00	1.06E-05
146000	2.48E-07	2.88E-09	8.03E-08	2.97E-09	1.03E-05	0.00E+00	1.06E-05
148000	2.48E-07	2.88E-09	8.03E-08	2.97E-09	1.03E-05	0.00E+00	1.06E-05
150000	2.48E-07	2.88E-09	8.03E-08	2.97E-09	1.03E-05	0.00E+00	1.06E-05
152000	2.48E-07	2.88E-09	8.03E-08	2.97E-09	1.03E-05	0.00E+00	1.06E-05
154000	2.48E-07	2.88E-09	8.03E-08	2.97E-09	1.03E-05	0.00E+00	1.06E-05
156000	2.48E-07	2.88E-09	8.03E-08	2.97E-09	1.03E-05	0.00E+00	1.06E-05
158000	2.48E-07	2.88E-09	8.03E-08	2.97E-09	1.03E-05	0.00E+00	1.06E-05
160000	2.48E-07	2.88E-09	8.03E-08	2.97E-09	1.03E-05	0.00E+00	1.06E-05
162000	2.48E-07	2.88E-09	8.03E-08	2.97E-09	1.03E-05	0.00E+00	1.06E-05
164000	2.48E-07	2.88E-09	8.03E-08	2.97E-09	1.03E-05	0.00E+00	1.06E-05
166000	2.48E-07	2.88E-09	8.03E-08	2.97E-09	1.03E-05	0.00E+00	1.06E-05
168000	2.48E-07	2.88E-09	8.03E-08	2.97E-09	1.03E-05	0.00E+00	1.06E-05
170000	2.48E-07	2.88E-09	8.03E-08	2.97E-09	1.03E-05	0.00E+00	1.06E-05
172000	2.48E-07	2.88E-09	8.03E-08	2.97E-09	1.03E-05	0.00E+00	1.06E-05
174000	2.48E-07	2.88E-09	8.03E-08	2.97E-09	1.03E-05	0.00E+00	1.06E-05

176000	2.48E-07	2.88E-09	8.03E-08	2.97E-09	1.03E-05	0.00E+00	1.06E-05
178000	2.48E-07	2.88E-09	8.03E-08	2.97E-09	1.03E-05	0.00E+00	1.06E-05
180000	2.48E-07	2.88E-09	8.03E-08	3.02E-09	1.03E-05	0.00E+00	1.06E-05
182000	2.48E-07	2.88E-09	8.03E-08	3.55E-09	1.03E-05	0.00E+00	1.06E-05
184000	2.48E-07	2.88E-09	8.03E-08	4.96E-09	1.03E-05	0.00E+00	1.06E-05
186000	2.48E-07	2.88E-09	8.03E-08	6.26E-09	1.03E-05	0.00E+00	1.06E-05
188000	2.48E-07	2.88E-09	8.03E-08	6.79E-09	1.03E-05	0.00E+00	1.06E-05
190000	2.48E-07	2.88E-09	8.03E-08	6.91E-09	1.03E-05	0.00E+00	1.06E-05
192000	2.48E-07	2.88E-09	8.03E-08	6.93E-09	1.03E-05	0.00E+00	1.06E-05
194000	2.48E-07	2.88E-09	8.03E-08	6.93E-09	1.03E-05	0.00E+00	1.06E-05
196000	2.48E-07	2.88E-09	8.03E-08	6.93E-09	1.03E-05	0.00E+00	1.06E-05
198000	2.48E-07	2.88E-09	8.03E-08	6.93E-09	1.03E-05	0.00E+00	1.06E-05
200000	2.48E-07	2.88E-09	8.03E-08	6.93E-09	1.03E-05	0.00E+00	1.06E-05
202000	2.48E-07	2.88E-09	8.03E-08	6.93E-09	1.03E-05	0.00E+00	1.06E-05
204000	2.48E-07	2.88E-09	8.03E-08	6.93E-09	1.03E-05	0.00E+00	1.06E-05
206000	2.48E-07	2.88E-09	8.03E-08	6.93E-09	1.03E-05	0.00E+00	1.06E-05
208000	2.48E-07	2.88E-09	8.03E-08	6.93E-09	1.03E-05	0.00E+00	1.06E-05
210000	2.48E-07	2.88E-09	8.03E-08	6.93E-09	1.03E-05	0.00E+00	1.06E-05
212000	2.48E-07	2.88E-09	8.03E-08	6.93E-09	1.03E-05	0.00E+00	1.06E-05
214000	2.48E-07	2.88E-09	8.03E-08	6.93E-09	1.03E-05	0.00E+00	1.06E-05
216000	2.48E-07	2.88E-09	8.03E-08	6.93E-09	1.03E-05	0.00E+00	1.06E-05
218000	2.48E-07	2.88E-09	8.03E-08	6.93E-09	1.03E-05	0.00E+00	1.06E-05
220000	2.48E-07	2.89E-09	8.03E-08	6.93E-09	1.03E-05	0.00E+00	1.06E-05
222000	2.48E-07	2.94E-09	8.03E-08	6.93E-09	1.03E-05	0.00E+00	1.06E-05
224000	2.48E-07	3.07E-09	8.03E-08	6.93E-09	1.03E-05	0.00E+00	1.06E-05
226000	2.48E-07	3.24E-09	8.03E-08	6.93E-09	1.03E-05	0.00E+00	1.06E-05
228000	2.48E-07	3.37E-09	8.03E-08	6.93E-09	1.03E-05	0.00E+00	1.06E-05
230000	2.48E-07	3.44E-09	8.03E-08	6.93E-09	1.03E-05	0.00E+00	1.06E-05
232000	2.48E-07	3.46E-09	8.03E-08	6.93E-09	1.03E-05	0.00E+00	1.06E-05
234000	2.48E-07	3.47E-09	8.03E-08	6.93E-09	1.03E-05	0.00E+00	1.06E-05
236000	2.48E-07	3.47E-09	8.03E-08	6.93E-09	1.03E-05	0.00E+00	1.06E-05
238000	2.48E-07	3.47E-09	8.03E-08	6.93E-09	1.03E-05	0.00E+00	1.06E-05
240000	2.48E-07	3.47E-09	8.03E-08	6.93E-09	1.03E-05	0.00E+00	1.06E-05
242000	2.48E-07	3.47E-09	8.03E-08	6.93E-09	1.03E-05	0.00E+00	1.06E-05
244000	2.48E-07	3.47E-09	8.03E-08	6.93E-09	1.03E-05	0.00E+00	1.06E-05
246000	2.48E-07	3.47E-09	8.03E-08	6.93E-09	1.03E-05	0.00E+00	1.06E-05
248000	2.48E-07	3.47E-09	8.03E-08	6.93E-09	1.03E-05	0.00E+00	1.06E-05
250000	2.48E-07	3.47E-09	8.03E-08	6.93E-09	1.03E-05	0.00E+00	1.06E-05
252000	2.48E-07	3.47E-09	8.03E-08	7.02E-09	1.03E-05	0.00E+00	1.06E-05
254000	2.48E-07	3.47E-09	8.03E-08	7.48E-09	1.03E-05	0.00E+00	1.06E-05
256000	2.48E-07	3.48E-09	8.03E-08	8.16E-09	1.03E-05	0.00E+00	1.06E-05
258000	2.48E-07	3.58E-09	8.03E-08	8.57E-09	1.03E-05	0.00E+00	1.06E-05
260000	2.48E-07	4.34E-09	8.03E-08	8.69E-09	1.03E-05	0.00E+00	1.06E-05
262000	2.50E-07	5.85E-09	8.03E-08	8.72E-09	1.03E-05	0.00E+00	1.06E-05
264000	2.84E-07	6.96E-09	8.03E-08	8.72E-09	1.03E-05	0.00E+00	1.06E-05
266000	4.08E-07	7.35E-09	8.03E-08	8.72E-09	1.03E-05	0.00E+00	1.08E-05
268000	5.52E-07	7.43E-09	8.03E-08	8.72E-09	1.03E-05	0.00E+00	1.09E-05

270000	6.23E-07	7.44E-09	8.03E-08	8.72E-09	1.03E-05	0.00E+00	1.1E-05
272000	6.42E-07	7.44E-09	8.03E-08	8.72E-09	1.03E-05	0.00E+00	1.1E-05
274000	6.45E-07	7.44E-09	8.03E-08	8.72E-09	1.03E-05	0.00E+00	1.1E-05
276000	6.45E-07	7.44E-09	8.03E-08	8.72E-09	1.03E-05	0.00E+00	1.1E-05
278000	6.45E-07	7.44E-09	8.03E-08	8.72E-09	1.03E-05	0.00E+00	1.1E-05
280000	6.45E-07	7.44E-09	8.06E-08	8.72E-09	1.04E-05	0.00E+00	1.11E-05
282000	6.45E-07	7.44E-09	8.82E-08	8.72E-09	1.20E-05	0.00E+00	1.28E-05
284000	6.45E-07	7.44E-09	1.27E-07	8.72E-09	1.80E-05	0.00E+00	1.87E-05
286000	6.45E-07	7.44E-09	1.85E-07	8.72E-09	2.49E-05	0.00E+00	2.57E-05
288000	6.45E-07	7.44E-09	2.20E-07	8.72E-09	2.83E-05	0.00E+00	2.92E-05
290000	6.45E-07	7.44E-09	2.30E-07	8.72E-09	2.92E-05	0.00E+00	3.01E-05
292000	6.45E-07	7.44E-09	2.32E-07	8.72E-09	2.93E-05	0.00E+00	3.02E-05
294000	6.45E-07	7.44E-09	2.32E-07	8.72E-09	2.94E-05	0.00E+00	3.03E-05
296000	6.45E-07	7.44E-09	2.32E-07	8.72E-09	2.94E-05	0.00E+00	3.03E-05
298000	6.45E-07	7.44E-09	2.32E-07	8.72E-09	2.94E-05	0.00E+00	3.03E-05
300000	6.45E-07	7.44E-09	2.32E-07	8.72E-09	2.94E-05	0.00E+00	3.03E-05
302000	6.45E-07	7.44E-09	2.32E-07	8.72E-09	2.94E-05	0.00E+00	3.03E-05
304000	6.45E-07	7.44E-09	2.32E-07	8.72E-09	2.94E-05	0.00E+00	3.03E-05
306000	6.45E-07	7.44E-09	2.32E-07	8.72E-09	2.94E-05	0.00E+00	3.03E-05
308000	6.45E-07	7.45E-09	2.32E-07	8.75E-09	2.94E-05	0.00E+00	3.03E-05
310000	6.45E-07	7.50E-09	2.32E-07	8.99E-09	2.94E-05	0.00E+00	3.03E-05
312000	6.45E-07	7.58E-09	2.32E-07	9.47E-09	2.94E-05	0.00E+00	3.03E-05
314000	6.45E-07	7.66E-09	2.32E-07	9.82E-09	2.94E-05	0.00E+00	3.03E-05
316000	6.45E-07	7.72E-09	2.32E-07	9.94E-09	2.94E-05	0.00E+00	3.03E-05
318000	6.45E-07	7.74E-09	2.32E-07	9.96E-09	2.94E-05	0.00E+00	3.03E-05
320000	6.45E-07	7.75E-09	2.32E-07	9.97E-09	2.94E-05	0.00E+00	3.03E-05
322000	6.45E-07	7.75E-09	2.32E-07	9.97E-09	2.94E-05	0.00E+00	3.03E-05
324000	6.45E-07	7.75E-09	2.32E-07	9.97E-09	2.94E-05	0.00E+00	3.03E-05
326000	6.45E-07	7.75E-09	2.32E-07	9.97E-09	2.94E-05	0.00E+00	3.03E-05
328000	6.45E-07	7.75E-09	2.32E-07	9.97E-09	2.94E-05	0.00E+00	3.03E-05
330000	6.45E-07	7.75E-09	2.32E-07	9.97E-09	2.94E-05	0.00E+00	3.03E-05
332000	6.45E-07	7.75E-09	2.32E-07	9.97E-09	2.94E-05	0.00E+00	3.03E-05
334000	6.45E-07	7.75E-09	2.32E-07	9.97E-09	2.94E-05	0.00E+00	3.03E-05
336000	6.45E-07	7.75E-09	2.32E-07	9.97E-09	2.94E-05	0.00E+00	3.03E-05
338000	6.45E-07	7.75E-09	2.32E-07	9.97E-09	2.94E-05	0.00E+00	3.03E-05
340000	6.45E-07	7.75E-09	2.32E-07	9.97E-09	2.94E-05	0.00E+00	3.03E-05
342000	6.45E-07	7.75E-09	2.32E-07	9.97E-09	2.94E-05	0.00E+00	3.03E-05
344000	6.45E-07	7.75E-09	2.32E-07	9.97E-09	2.94E-05	0.00E+00	3.03E-05
346000	6.45E-07	7.75E-09	2.32E-07	9.97E-09	2.94E-05	0.00E+00	3.03E-05
348000	6.45E-07	7.75E-09	2.32E-07	9.97E-09	2.94E-05	0.00E+00	3.03E-05
350000	6.45E-07	7.80E-09	2.32E-07	9.97E-09	2.94E-05	0.00E+00	3.03E-05
352000	6.45E-07	8.19E-09	2.32E-07	9.97E-09	2.94E-05	0.00E+00	3.03E-05
354000	6.45E-07	8.95E-09	2.32E-07	9.97E-09	2.94E-05	0.00E+00	3.03E-05
356000	6.45E-07	9.51E-09	2.32E-07	9.97E-09	2.94E-05	0.00E+00	3.03E-05
358000	6.51E-07	9.70E-09	2.32E-07	1.00E-08	2.94E-05	0.00E+00	3.03E-05
360000	6.91E-07	9.74E-09	2.32E-07	1.03E-08	2.94E-05	0.00E+00	3.03E-05
362000	7.70E-07	9.75E-09	2.32E-07	1.06E-08	2.94E-05	0.00E+00	3.04E-05

364000	8.28E-07	9.75E-09	2.32E-07	1.08E-08	2.94E-05	0.00E+00	3.04E-05
366000	8.49E-07	9.75E-09	2.32E-07	1.08E-08	2.94E-05	0.00E+00	3.05E-05
368000	8.53E-07	9.75E-09	2.32E-07	1.08E-08	2.94E-05	0.00E+00	3.05E-05
370000	8.53E-07	9.75E-09	2.32E-07	1.08E-08	2.94E-05	0.00E+00	3.05E-05
372000	8.53E-07	9.75E-09	2.32E-07	1.08E-08	2.94E-05	0.00E+00	3.05E-05
374000	8.53E-07	9.75E-09	2.35E-07	1.08E-08	2.95E-05	0.00E+00	3.06E-05
376000	8.53E-07	9.76E-09	2.50E-07	1.08E-08	3.09E-05	0.00E+00	3.2E-05
378000	8.53E-07	9.80E-09	2.81E-07	1.08E-08	3.44E-05	0.00E+00	3.56E-05
380000	8.54E-07	9.86E-09	3.04E-07	1.08E-08	3.78E-05	0.00E+00	3.89E-05
382000	8.54E-07	9.91E-09	3.12E-07	1.08E-08	3.91E-05	0.00E+00	4.03E-05
384000	8.54E-07	9.94E-09	3.14E-07	1.08E-08	3.94E-05	0.00E+00	4.06E-05
386000	8.54E-07	9.95E-09	3.14E-07	1.08E-08	3.95E-05	0.00E+00	4.07E-05
388000	8.54E-07	9.95E-09	3.14E-07	1.08E-08	3.95E-05	0.00E+00	4.07E-05
390000	8.54E-07	9.95E-09	3.14E-07	1.08E-08	3.95E-05	0.00E+00	4.07E-05
392000	8.54E-07	9.95E-09	3.14E-07	1.08E-08	3.95E-05	0.00E+00	4.07E-05
394000	8.54E-07	9.95E-09	3.14E-07	1.08E-08	3.95E-05	0.00E+00	4.07E-05
396000	8.54E-07	9.95E-09	3.14E-07	1.08E-08	3.95E-05	0.00E+00	4.07E-05
398000	8.54E-07	9.95E-09	3.14E-07	1.08E-08	3.95E-05	0.00E+00	4.07E-05
400000	8.54E-07	9.95E-09	3.14E-07	1.08E-08	3.95E-05	0.00E+00	4.07E-05
402000	8.54E-07	9.95E-09	3.14E-07	1.08E-08	3.95E-05	0.00E+00	4.07E-05
404000	8.54E-07	9.95E-09	3.14E-07	1.09E-08	3.95E-05	0.00E+00	4.07E-05
406000	8.54E-07	9.95E-09	3.14E-07	1.11E-08	3.95E-05	0.00E+00	4.07E-05
408000	8.54E-07	9.95E-09	3.14E-07	1.13E-08	3.95E-05	0.00E+00	4.07E-05
410000	8.54E-07	9.95E-09	3.14E-07	1.13E-08	3.95E-05	0.00E+00	4.07E-05
412000	8.54E-07	9.95E-09	3.14E-07	1.14E-08	3.95E-05	0.00E+00	4.07E-05
414000	8.54E-07	9.95E-09	3.14E-07	1.14E-08	3.95E-05	0.00E+00	4.07E-05
416000	8.54E-07	9.95E-09	3.14E-07	1.14E-08	3.95E-05	0.00E+00	4.07E-05
418000	8.54E-07	9.95E-09	3.14E-07	1.14E-08	3.95E-05	0.00E+00	4.07E-05
420000	8.54E-07	9.99E-09	3.14E-07	1.14E-08	3.95E-05	0.00E+00	4.07E-05
422000	8.54E-07	1.03E-08	3.14E-07	1.14E-08	3.95E-05	0.00E+00	4.07E-05
424000	8.54E-07	1.08E-08	3.14E-07	1.14E-08	3.95E-05	0.00E+00	4.07E-05
426000	8.54E-07	1.12E-08	3.14E-07	1.14E-08	3.95E-05	0.00E+00	4.07E-05
428000	8.54E-07	1.14E-08	3.14E-07	1.14E-08	3.95E-05	0.00E+00	4.07E-05
430000	8.58E-07	1.14E-08	3.14E-07	1.14E-08	3.95E-05	0.00E+00	4.07E-05
432000	8.90E-07	1.14E-08	3.14E-07	1.14E-08	3.95E-05	0.00E+00	4.07E-05
434000	9.51E-07	1.14E-08	3.14E-07	1.14E-08	3.95E-05	0.00E+00	4.08E-05
436000	9.96E-07	1.15E-08	3.14E-07	1.14E-08	3.95E-05	0.00E+00	4.08E-05
438000	1.01E-06	1.15E-08	3.14E-07	1.14E-08	3.95E-05	0.00E+00	4.08E-05
440000	1.01E-06	1.15E-08	3.14E-07	1.14E-08	3.95E-05	0.00E+00	4.08E-05
442000	1.02E-06	1.16E-08	3.15E-07	1.14E-08	3.95E-05	0.00E+00	4.08E-05
444000	1.02E-06	1.16E-08	3.23E-07	1.14E-08	3.97E-05	0.00E+00	4.1E-05
446000	1.02E-06	1.16E-08	3.45E-07	1.14E-08	4.12E-05	0.00E+00	4.26E-05
448000	1.02E-06	1.16E-08	3.66E-07	1.14E-08	4.41E-05	0.00E+00	4.55E-05
450000	1.02E-06	1.16E-08	3.74E-07	1.16E-08	4.63E-05	0.00E+00	4.77E-05
452000	1.02E-06	1.16E-08	3.76E-07	1.17E-08	4.71E-05	0.00E+00	4.85E-05
454000	1.02E-06	1.16E-08	3.76E-07	1.17E-08	4.72E-05	0.00E+00	4.86E-05
456000	1.02E-06	1.16E-08	3.76E-07	1.17E-08	4.72E-05	0.00E+00	4.87E-05

458000	1.02E-06	1.16E-08	3.76E-07	1.17E-08	4.72E-05	0.00E+00	4.87E-05
460000	1.02E-06	1.16E-08	3.76E-07	1.17E-08	4.72E-05	0.00E+00	4.87E-05
462000	1.02E-06	1.16E-08	3.76E-07	1.17E-08	4.72E-05	0.00E+00	4.87E-05
464000	1.02E-06	1.16E-08	3.76E-07	1.17E-08	4.72E-05	0.00E+00	4.87E-05
466000	1.02E-06	1.16E-08	3.76E-07	1.17E-08	4.72E-05	0.00E+00	4.87E-05
468000	1.02E-06	1.16E-08	3.76E-07	1.17E-08	4.72E-05	0.00E+00	4.87E-05
470000	1.02E-06	1.16E-08	3.76E-07	1.17E-08	4.72E-05	0.00E+00	4.87E-05
472000	1.02E-06	1.16E-08	3.76E-07	1.17E-08	4.72E-05	0.00E+00	4.87E-05
474000	1.02E-06	1.16E-08	3.76E-07	1.17E-08	4.72E-05	0.00E+00	4.87E-05
476000	1.02E-06	1.16E-08	3.76E-07	1.17E-08	4.72E-05	0.00E+00	4.87E-05
478000	1.02E-06	1.16E-08	3.76E-07	1.17E-08	4.72E-05	0.00E+00	4.87E-05
480000	1.02E-06	1.16E-08	3.76E-07	1.17E-08	4.72E-05	0.00E+00	4.87E-05
482000	1.02E-06	1.18E-08	3.76E-07	1.17E-08	4.72E-05	0.00E+00	4.87E-05
484000	1.02E-06	1.23E-08	3.76E-07	1.17E-08	4.72E-05	0.00E+00	4.87E-05
486000	1.02E-06	1.26E-08	3.76E-07	1.17E-08	4.72E-05	0.00E+00	4.87E-05
488000	1.02E-06	1.27E-08	3.76E-07	1.17E-08	4.72E-05	0.00E+00	4.87E-05
490000	1.02E-06	1.28E-08	3.76E-07	1.18E-08	4.72E-05	0.00E+00	4.87E-05
492000	1.03E-06	1.28E-08	3.76E-07	1.18E-08	4.72E-05	0.00E+00	4.87E-05
494000	1.07E-06	1.28E-08	3.76E-07	1.19E-08	4.72E-05	0.00E+00	4.87E-05
496000	1.12E-06	1.29E-08	3.76E-07	1.19E-08	4.72E-05	0.00E+00	4.88E-05
498000	1.14E-06	1.29E-08	3.76E-07	1.19E-08	4.72E-05	0.00E+00	4.88E-05
500000	1.15E-06	1.29E-08	3.79E-07	1.19E-08	4.72E-05	0.00E+00	4.88E-05
502000	1.15E-06	1.29E-08	3.92E-07	1.19E-08	4.74E-05	0.00E+00	4.9E-05
504000	1.15E-06	1.29E-08	4.12E-07	1.19E-08	4.87E-05	0.00E+00	5.03E-05
506000	1.15E-06	1.29E-08	4.23E-07	1.19E-08	5.11E-05	0.00E+00	5.27E-05
508000	1.15E-06	1.29E-08	4.27E-07	1.19E-08	5.29E-05	0.00E+00	5.45E-05
510000	1.15E-06	1.29E-08	4.27E-07	1.19E-08	5.36E-05	0.00E+00	5.52E-05
512000	1.15E-06	1.29E-08	4.28E-07	1.19E-08	5.37E-05	0.00E+00	5.53E-05
514000	1.15E-06	1.29E-08	4.28E-07	1.19E-08	5.37E-05	0.00E+00	5.53E-05
516000	1.15E-06	1.29E-08	4.28E-07	1.19E-08	5.37E-05	0.00E+00	5.53E-05
518000	1.15E-06	1.29E-08	4.28E-07	1.19E-08	5.37E-05	0.00E+00	5.53E-05
520000	1.15E-06	1.29E-08	4.28E-07	1.19E-08	5.37E-05	0.00E+00	5.53E-05
522000	1.15E-06	1.29E-08	4.28E-07	1.19E-08	5.37E-05	0.00E+00	5.53E-05
524000	1.15E-06	1.29E-08	4.28E-07	1.19E-08	5.37E-05	0.00E+00	5.53E-05
526000	1.15E-06	1.29E-08	4.28E-07	1.19E-08	5.37E-05	0.00E+00	5.53E-05
528000	1.15E-06	1.29E-08	4.28E-07	1.19E-08	5.37E-05	0.00E+00	5.53E-05
530000	1.15E-06	1.29E-08	4.28E-07	1.19E-08	5.37E-05	0.00E+00	5.53E-05
532000	1.15E-06	1.29E-08	4.28E-07	1.20E-08	5.37E-05	0.00E+00	5.53E-05
534000	1.15E-06	1.29E-08	4.28E-07	1.20E-08	5.37E-05	0.00E+00	5.53E-05
536000	1.15E-06	1.32E-08	4.28E-07	1.20E-08	5.37E-05	0.00E+00	5.53E-05
538000	1.15E-06	1.36E-08	4.28E-07	1.20E-08	5.37E-05	0.00E+00	5.53E-05
540000	1.15E-06	1.38E-08	4.28E-07	1.20E-08	5.37E-05	0.00E+00	5.53E-05
542000	1.15E-06	1.39E-08	4.28E-07	1.20E-08	5.37E-05	0.00E+00	5.53E-05
544000	1.15E-06	1.39E-08	4.28E-07	1.20E-08	5.37E-05	0.00E+00	5.53E-05
546000	1.17E-06	1.40E-08	4.28E-07	1.20E-08	5.37E-05	0.00E+00	5.53E-05
548000	1.21E-06	1.40E-08	4.28E-07	1.20E-08	5.37E-05	0.00E+00	5.54E-05
550000	1.25E-06	1.40E-08	4.30E-07	1.20E-08	5.37E-05	0.00E+00	5.54E-05

552000	1.27E-06	1.40E-08	4.41E-07	1.20E-08	5.37E-05	0.00E+00	5.55E-05
554000	1.27E-06	1.40E-08	4.58E-07	1.20E-08	5.42E-05	0.00E+00	5.6E-05
556000	1.27E-06	1.40E-08	4.69E-07	1.20E-08	5.60E-05	0.00E+00	5.78E-05
558000	1.27E-06	1.40E-08	4.72E-07	1.20E-08	5.81E-05	0.00E+00	5.99E-05
560000	1.27E-06	1.40E-08	4.72E-07	1.20E-08	5.92E-05	0.00E+00	6.09E-05
562000	1.27E-06	1.40E-08	4.72E-07	1.20E-08	5.94E-05	0.00E+00	6.12E-05
564000	1.27E-06	1.40E-08	4.72E-07	1.20E-08	5.95E-05	0.00E+00	6.12E-05
566000	1.27E-06	1.40E-08	4.72E-07	1.20E-08	5.95E-05	0.00E+00	6.12E-05
568000	1.27E-06	1.40E-08	4.72E-07	1.20E-08	5.95E-05	0.00E+00	6.12E-05
570000	1.27E-06	1.40E-08	4.72E-07	1.20E-08	5.95E-05	0.00E+00	6.12E-05
572000	1.27E-06	1.40E-08	4.72E-07	1.20E-08	5.95E-05	0.00E+00	6.12E-05
574000	1.27E-06	1.40E-08	4.72E-07	1.21E-08	5.95E-05	0.00E+00	6.12E-05
576000	1.27E-06	1.40E-08	4.72E-07	1.21E-08	5.95E-05	0.00E+00	6.12E-05
578000	1.27E-06	1.40E-08	4.72E-07	1.21E-08	5.95E-05	0.00E+00	6.12E-05
580000	1.27E-06	1.40E-08	4.72E-07	1.21E-08	5.95E-05	0.00E+00	6.12E-05
582000	1.27E-06	1.40E-08	4.72E-07	1.21E-08	5.95E-05	0.00E+00	6.12E-05
584000	1.27E-06	1.41E-08	4.72E-07	1.21E-08	5.95E-05	0.00E+00	6.12E-05
586000	1.27E-06	1.44E-08	4.72E-07	1.21E-08	5.95E-05	0.00E+00	6.12E-05
588000	1.27E-06	1.47E-08	4.72E-07	1.21E-08	5.95E-05	0.00E+00	6.12E-05
590000	1.27E-06	1.49E-08	4.72E-07	1.21E-08	5.95E-05	0.00E+00	6.12E-05
592000	1.27E-06	1.49E-08	4.72E-07	1.21E-08	5.95E-05	0.00E+00	6.12E-05
594000	1.29E-06	1.49E-08	4.73E-07	1.21E-08	5.95E-05	0.00E+00	6.13E-05
596000	1.33E-06	1.49E-08	4.76E-07	1.21E-08	5.95E-05	0.00E+00	6.13E-05
598000	1.36E-06	1.49E-08	4.89E-07	1.21E-08	5.95E-05	0.00E+00	6.14E-05
600000	1.38E-06	1.49E-08	5.03E-07	1.21E-08	6.00E-05	0.00E+00	6.19E-05
602000	1.38E-06	1.49E-08	5.11E-07	1.21E-08	6.16E-05	0.00E+00	6.35E-05
604000	1.38E-06	1.49E-08	5.12E-07	1.21E-08	6.35E-05	0.00E+00	6.54E-05
606000	1.38E-06	1.49E-08	5.13E-07	1.21E-08	6.44E-05	0.00E+00	6.63E-05
608000	1.38E-06	1.49E-08	5.13E-07	1.21E-08	6.46E-05	0.00E+00	6.65E-05
610000	1.38E-06	1.49E-08	5.13E-07	1.21E-08	6.47E-05	0.00E+00	6.66E-05
612000	1.38E-06	1.49E-08	5.13E-07	1.21E-08	6.47E-05	0.00E+00	6.66E-05
614000	1.38E-06	1.49E-08	5.13E-07	1.21E-08	6.47E-05	0.00E+00	6.66E-05
616000	1.38E-06	1.49E-08	5.13E-07	1.20E-08	6.47E-05	0.00E+00	6.66E-05
618000	1.38E-06	1.49E-08	5.13E-07	1.20E-08	6.47E-05	0.00E+00	6.66E-05
620000	1.38E-06	1.49E-08	5.13E-07	1.20E-08	6.47E-05	0.00E+00	6.66E-05
622000	1.38E-06	1.49E-08	5.13E-07	1.20E-08	6.47E-05	0.00E+00	6.66E-05
624000	1.38E-06	1.49E-08	5.13E-07	1.20E-08	6.47E-05	0.00E+00	6.66E-05
626000	1.38E-06	1.50E-08	5.13E-07	1.20E-08	6.47E-05	0.00E+00	6.66E-05
628000	1.38E-06	1.50E-08	5.13E-07	1.20E-08	6.47E-05	0.00E+00	6.66E-05
630000	1.38E-06	1.52E-08	5.13E-07	1.20E-08	6.47E-05	0.00E+00	6.66E-05
632000	1.38E-06	1.55E-08	5.13E-07	1.20E-08	6.47E-05	0.00E+00	6.66E-05
634000	1.38E-06	1.58E-08	5.13E-07	1.20E-08	6.47E-05	0.00E+00	6.66E-05
636000	1.38E-06	1.59E-08	5.13E-07	1.20E-08	6.47E-05	0.00E+00	6.66E-05
638000	1.39E-06	1.59E-08	5.16E-07	1.20E-08	6.47E-05	0.00E+00	6.66E-05
640000	1.43E-06	1.59E-08	5.28E-07	1.20E-08	6.47E-05	0.00E+00	6.67E-05
642000	1.46E-06	1.59E-08	5.41E-07	1.20E-08	6.51E-05	0.00E+00	6.71E-05
644000	1.48E-06	1.59E-08	5.48E-07	1.20E-08	6.66E-05	0.00E+00	6.87E-05

646000	1.49E-06	1.59E-08	5.50E-07	1.20E-08	6.84E-05	0.00E+00	7.05E-05
648000	1.49E-06	1.59E-08	5.50E-07	1.20E-08	6.93E-05	0.00E+00	7.13E-05
650000	1.49E-06	1.59E-08	5.50E-07	1.20E-08	6.95E-05	0.00E+00	7.16E-05
652000	1.49E-06	1.59E-08	5.50E-07	1.20E-08	6.95E-05	0.00E+00	7.16E-05
654000	1.49E-06	1.59E-08	5.50E-07	1.20E-08	6.95E-05	0.00E+00	7.16E-05
656000	1.49E-06	1.59E-08	5.50E-07	1.20E-08	6.95E-05	0.00E+00	7.16E-05
658000	1.49E-06	1.59E-08	5.50E-07	1.20E-08	6.95E-05	0.00E+00	7.16E-05
660000	1.49E-06	1.59E-08	5.50E-07	1.20E-08	6.95E-05	0.00E+00	7.16E-05
662000	1.49E-06	1.59E-08	5.50E-07	1.20E-08	6.95E-05	0.00E+00	7.16E-05
664000	1.49E-06	1.59E-08	5.50E-07	1.20E-08	6.95E-05	0.00E+00	7.16E-05
666000	1.49E-06	1.59E-08	5.50E-07	1.20E-08	6.95E-05	0.00E+00	7.16E-05
668000	1.49E-06	1.59E-08	5.50E-07	1.20E-08	6.95E-05	0.00E+00	7.16E-05
670000	1.49E-06	1.59E-08	5.50E-07	1.20E-08	6.95E-05	0.00E+00	7.16E-05
672000	1.49E-06	1.61E-08	5.50E-07	1.20E-08	6.95E-05	0.00E+00	7.16E-05
674000	1.49E-06	1.64E-08	5.50E-07	1.20E-08	6.95E-05	0.00E+00	7.16E-05
676000	1.49E-06	1.67E-08	5.51E-07	1.20E-08	6.95E-05	0.00E+00	7.16E-05
678000	1.49E-06	1.69E-08	5.58E-07	1.20E-08	6.95E-05	0.00E+00	7.16E-05
680000	1.51E-06	1.69E-08	5.71E-07	1.20E-08	6.96E-05	0.00E+00	7.17E-05
682000	1.55E-06	1.70E-08	5.81E-07	1.20E-08	7.03E-05	0.00E+00	7.24E-05
684000	1.58E-06	1.70E-08	5.85E-07	1.20E-08	7.20E-05	0.00E+00	7.41E-05
686000	1.60E-06	1.70E-08	5.85E-07	1.20E-08	7.35E-05	0.00E+00	7.57E-05
688000	1.60E-06	1.70E-08	5.85E-07	1.20E-08	7.42E-05	0.00E+00	7.64E-05
690000	1.60E-06	1.70E-08	5.85E-07	1.20E-08	7.43E-05	0.00E+00	7.65E-05
692000	1.60E-06	1.70E-08	5.85E-07	1.20E-08	7.43E-05	0.00E+00	7.65E-05
694000	1.60E-06	1.70E-08	5.85E-07	1.20E-08	7.43E-05	0.00E+00	7.65E-05
696000	1.60E-06	1.70E-08	5.85E-07	1.20E-08	7.43E-05	0.00E+00	7.65E-05
698000	1.60E-06	1.70E-08	5.85E-07	1.20E-08	7.43E-05	0.00E+00	7.65E-05
700000	1.60E-06	1.70E-08	5.85E-07	1.19E-08	7.43E-05	0.00E+00	7.65E-05
702000	1.60E-06	1.70E-08	5.85E-07	1.19E-08	7.43E-05	0.00E+00	7.65E-05
704000	1.60E-06	1.70E-08	5.85E-07	1.19E-08	7.43E-05	0.00E+00	7.65E-05
706000	1.60E-06	1.70E-08	5.85E-07	1.19E-08	7.43E-05	0.00E+00	7.65E-05
708000	1.60E-06	1.70E-08	5.85E-07	1.19E-08	7.43E-05	0.00E+00	7.65E-05
710000	1.60E-06	1.70E-08	5.85E-07	1.19E-08	7.43E-05	0.00E+00	7.65E-05
712000	1.60E-06	1.71E-08	5.86E-07	1.19E-08	7.43E-05	0.00E+00	7.65E-05
714000	1.60E-06	1.75E-08	5.90E-07	1.19E-08	7.43E-05	0.00E+00	7.66E-05
716000	1.60E-06	1.79E-08	6.03E-07	1.19E-08	7.43E-05	0.00E+00	7.66E-05
718000	1.61E-06	1.80E-08	6.14E-07	1.19E-08	7.46E-05	0.00E+00	7.68E-05
720000	1.65E-06	1.81E-08	6.19E-07	1.19E-08	7.58E-05	0.00E+00	7.81E-05
722000	1.69E-06	1.81E-08	6.20E-07	1.19E-08	7.76E-05	0.00E+00	7.99E-05
724000	1.71E-06	1.81E-08	6.20E-07	1.19E-08	7.87E-05	0.00E+00	8.1E-05
726000	1.71E-06	1.81E-08	6.20E-07	1.19E-08	7.90E-05	0.00E+00	8.14E-05
728000	1.71E-06	1.81E-08	6.20E-07	1.19E-08	7.91E-05	0.00E+00	8.14E-05
730000	1.71E-06	1.81E-08	6.20E-07	1.19E-08	7.91E-05	0.00E+00	8.14E-05
732000	1.71E-06	1.81E-08	6.20E-07	1.19E-08	7.91E-05	0.00E+00	8.14E-05
734000	1.71E-06	1.81E-08	6.20E-07	1.19E-08	7.91E-05	0.00E+00	8.14E-05
736000	1.71E-06	1.81E-08	6.20E-07	1.19E-08	7.91E-05	0.00E+00	8.14E-05
738000	1.71E-06	1.81E-08	6.20E-07	1.19E-08	7.91E-05	0.00E+00	8.14E-05

740000	1.71E-06	1.81E-08	6.20E-07	1.19E-08	7.91E-05	0.00E+00	8.14E-05
742000	1.71E-06	1.81E-08	6.20E-07	1.19E-08	7.91E-05	0.00E+00	8.14E-05
744000	1.71E-06	1.81E-08	6.20E-07	1.19E-08	7.91E-05	0.00E+00	8.14E-05
746000	1.71E-06	1.81E-08	6.20E-07	1.19E-08	7.91E-05	0.00E+00	8.14E-05
748000	1.71E-06	1.82E-08	6.23E-07	1.19E-08	7.91E-05	0.00E+00	8.14E-05
750000	1.71E-06	1.85E-08	6.33E-07	1.19E-08	7.91E-05	0.00E+00	8.15E-05
752000	1.72E-06	1.89E-08	6.46E-07	1.19E-08	7.92E-05	0.00E+00	8.16E-05
754000	1.73E-06	1.91E-08	6.52E-07	1.19E-08	8.01E-05	0.00E+00	8.25E-05
756000	1.77E-06	1.92E-08	6.53E-07	1.19E-08	8.19E-05	0.00E+00	8.43E-05
758000	1.81E-06	1.92E-08	6.54E-07	1.19E-08	8.32E-05	0.00E+00	8.57E-05
760000	1.83E-06	1.93E-08	6.54E-07	1.19E-08	8.36E-05	0.00E+00	8.61E-05
762000	1.83E-06	1.93E-08	6.54E-07	1.19E-08	8.37E-05	0.00E+00	8.62E-05
764000	1.83E-06	1.93E-08	6.54E-07	1.19E-08	8.37E-05	0.00E+00	8.62E-05
766000	1.83E-06	1.93E-08	6.54E-07	1.19E-08	8.37E-05	0.00E+00	8.62E-05
768000	1.83E-06	1.93E-08	6.54E-07	1.19E-08	8.37E-05	0.00E+00	8.62E-05
770000	1.83E-06	1.93E-08	6.54E-07	1.19E-08	8.37E-05	0.00E+00	8.62E-05
772000	1.83E-06	1.93E-08	6.54E-07	1.19E-08	8.37E-05	0.00E+00	8.62E-05
774000	1.83E-06	1.93E-08	6.54E-07	1.19E-08	8.37E-05	0.00E+00	8.62E-05
776000	1.83E-06	1.93E-08	6.54E-07	1.19E-08	8.37E-05	0.00E+00	8.62E-05
778000	1.83E-06	1.93E-08	6.54E-07	1.19E-08	8.37E-05	0.00E+00	8.62E-05
780000	1.83E-06	1.93E-08	6.54E-07	1.19E-08	8.37E-05	0.00E+00	8.62E-05
782000	1.83E-06	1.93E-08	6.61E-07	1.19E-08	8.37E-05	0.00E+00	8.63E-05
784000	1.83E-06	1.94E-08	6.74E-07	1.19E-08	8.38E-05	0.00E+00	8.63E-05
786000	1.83E-06	1.98E-08	6.83E-07	1.19E-08	8.44E-05	0.00E+00	8.7E-05
788000	1.85E-06	2.02E-08	6.86E-07	1.19E-08	8.61E-05	0.00E+00	8.86E-05
790000	1.89E-06	2.03E-08	6.87E-07	1.19E-08	8.76E-05	0.00E+00	9.02E-05
792000	1.93E-06	2.03E-08	6.87E-07	1.19E-08	8.82E-05	0.00E+00	9.09E-05
794000	1.95E-06	2.04E-08	6.87E-07	1.19E-08	8.84E-05	0.00E+00	9.1E-05
796000	1.95E-06	2.04E-08	6.87E-07	1.19E-08	8.84E-05	0.00E+00	9.11E-05
798000	1.95E-06	2.04E-08	6.87E-07	1.19E-08	8.84E-05	0.00E+00	9.11E-05
800000	1.95E-06	2.04E-08	6.87E-07	1.19E-08	8.84E-05	0.00E+00	9.11E-05
802000	1.95E-06	2.04E-08	6.87E-07	1.19E-08	8.84E-05	0.00E+00	9.11E-05
804000	1.95E-06	2.04E-08	6.87E-07	1.19E-08	8.84E-05	0.00E+00	9.11E-05
806000	1.95E-06	2.05E-08	6.87E-07	1.19E-08	8.84E-05	0.00E+00	9.11E-05
808000	1.95E-06	2.05E-08	6.87E-07	1.19E-08	8.84E-05	0.00E+00	9.11E-05
810000	1.95E-06	2.05E-08	6.87E-07	1.19E-08	8.84E-05	0.00E+00	9.11E-05
812000	1.95E-06	2.05E-08	6.90E-07	1.19E-08	8.84E-05	0.00E+00	9.11E-05
814000	1.95E-06	2.05E-08	7.01E-07	1.19E-08	8.84E-05	0.00E+00	9.11E-05
816000	1.95E-06	2.06E-08	7.13E-07	1.19E-08	8.86E-05	0.00E+00	9.13E-05
818000	1.95E-06	2.09E-08	7.20E-07	1.19E-08	8.99E-05	0.00E+00	9.26E-05
820000	1.98E-06	2.13E-08	7.21E-07	1.20E-08	9.17E-05	0.00E+00	9.45E-05
822000	2.02E-06	2.15E-08	7.21E-07	1.20E-08	9.29E-05	0.00E+00	9.56E-05
824000	2.06E-06	2.16E-08	7.21E-07	1.20E-08	9.32E-05	0.00E+00	9.6E-05
826000	2.07E-06	2.16E-08	7.21E-07	1.20E-08	9.32E-05	0.00E+00	9.61E-05
828000	2.07E-06	2.16E-08	7.21E-07	1.20E-08	9.33E-05	0.00E+00	9.61E-05
830000	2.07E-06	2.17E-08	7.21E-07	1.20E-08	9.33E-05	0.00E+00	9.61E-05
832000	2.07E-06	2.17E-08	7.21E-07	1.20E-08	9.33E-05	0.00E+00	9.61E-05

834000	2.07E-06	2.17E-08	7.21E-07	1.20E-08	9.33E-05	0.00E+00	9.61E-05
836000	2.07E-06	2.18E-08	7.21E-07	1.20E-08	9.33E-05	0.00E+00	9.61E-05
838000	2.07E-06	2.18E-08	7.21E-07	1.20E-08	9.33E-05	0.00E+00	9.61E-05
840000	2.07E-06	2.18E-08	7.22E-07	1.20E-08	9.33E-05	0.00E+00	9.61E-05
842000	2.07E-06	2.18E-08	7.25E-07	1.20E-08	9.33E-05	0.00E+00	9.61E-05
844000	2.07E-06	2.18E-08	7.36E-07	1.20E-08	9.33E-05	0.00E+00	9.61E-05
846000	2.07E-06	2.18E-08	7.49E-07	1.20E-08	9.37E-05	0.00E+00	9.66E-05
848000	2.08E-06	2.21E-08	7.55E-07	1.20E-08	9.53E-05	0.00E+00	9.82E-05
850000	2.11E-06	2.26E-08	7.57E-07	1.20E-08	9.71E-05	0.00E+00	0.0001
852000	2.16E-06	2.29E-08	7.57E-07	1.20E-08	9.80E-05	0.00E+00	0.000101
854000	2.19E-06	2.31E-08	7.57E-07	1.20E-08	9.83E-05	0.00E+00	0.000101
856000	2.20E-06	2.31E-08	7.57E-07	1.20E-08	9.83E-05	0.00E+00	0.000101
858000	2.20E-06	2.31E-08	7.57E-07	1.20E-08	9.83E-05	0.00E+00	0.000101
860000	2.20E-06	2.31E-08	7.57E-07	1.20E-08	9.83E-05	0.00E+00	0.000101
862000	2.20E-06	2.31E-08	7.57E-07	1.21E-08	9.83E-05	0.00E+00	0.000101
864000	2.20E-06	2.31E-08	7.57E-07	1.21E-08	9.83E-05	0.00E+00	0.000101
866000	2.20E-06	2.32E-08	7.57E-07	1.21E-08	9.83E-05	0.00E+00	0.000101
868000	2.20E-06	2.32E-08	7.57E-07	1.21E-08	9.83E-05	0.00E+00	0.000101
870000	2.20E-06	2.33E-08	7.61E-07	1.21E-08	9.83E-05	0.00E+00	0.000101
872000	2.20E-06	2.33E-08	7.72E-07	1.21E-08	9.83E-05	0.00E+00	0.000101
874000	2.20E-06	2.33E-08	7.86E-07	1.21E-08	9.88E-05	0.00E+00	0.000102
876000	2.21E-06	2.34E-08	7.92E-07	1.21E-08	1.00E-04	0.00E+00	0.000103
878000	2.24E-06	2.39E-08	7.94E-07	1.21E-08	1.02E-04	0.00E+00	0.000105
880000	2.29E-06	2.44E-08	7.94E-07	1.21E-08	1.03E-04	0.00E+00	0.000106
882000	2.32E-06	2.46E-08	7.94E-07	1.21E-08	1.03E-04	0.00E+00	0.000107
884000	2.33E-06	2.47E-08	7.94E-07	1.21E-08	1.04E-04	0.00E+00	0.000107
886000	2.33E-06	2.47E-08	7.94E-07	1.21E-08	1.04E-04	0.00E+00	0.000107
888000	2.33E-06	2.47E-08	7.94E-07	1.21E-08	1.04E-04	0.00E+00	0.000107
890000	2.33E-06	2.47E-08	7.94E-07	1.21E-08	1.04E-04	0.00E+00	0.000107
892000	2.33E-06	2.47E-08	7.94E-07	1.21E-08	1.04E-04	0.00E+00	0.000107
894000	2.33E-06	2.47E-08	7.94E-07	1.21E-08	1.04E-04	0.00E+00	0.000107
896000	2.33E-06	2.48E-08	7.95E-07	1.21E-08	1.04E-04	0.00E+00	0.000107
898000	2.33E-06	2.49E-08	8.03E-07	1.21E-08	1.04E-04	0.00E+00	0.000107
900000	2.33E-06	2.49E-08	8.17E-07	1.22E-08	1.04E-04	0.00E+00	0.000107
902000	2.34E-06	2.50E-08	8.27E-07	1.22E-08	1.05E-04	0.00E+00	0.000108
904000	2.36E-06	2.52E-08	8.31E-07	1.23E-08	1.07E-04	0.00E+00	0.00011
906000	2.41E-06	2.58E-08	8.32E-07	1.23E-08	1.08E-04	0.00E+00	0.000111
908000	2.45E-06	2.62E-08	8.32E-07	1.24E-08	1.09E-04	0.00E+00	0.000112
910000	2.46E-06	2.63E-08	8.32E-07	1.24E-08	1.09E-04	0.00E+00	0.000112
912000	2.46E-06	2.63E-08	8.32E-07	1.24E-08	1.09E-04	0.00E+00	0.000112
914000	2.47E-06	2.63E-08	8.32E-07	1.24E-08	1.09E-04	0.00E+00	0.000112
916000	2.47E-06	2.63E-08	8.32E-07	1.24E-08	1.09E-04	0.00E+00	0.000112
918000	2.47E-06	2.63E-08	8.32E-07	1.24E-08	1.09E-04	0.00E+00	0.000112
920000	2.47E-06	2.63E-08	8.32E-07	1.24E-08	1.09E-04	0.00E+00	0.000112
922000	2.47E-06	2.63E-08	8.33E-07	1.24E-08	1.09E-04	0.00E+00	0.000112
924000	2.47E-06	2.64E-08	8.40E-07	1.24E-08	1.09E-04	0.00E+00	0.000112
926000	2.47E-06	2.64E-08	8.54E-07	1.24E-08	1.09E-04	0.00E+00	0.000113

928000	2.48E-06	2.66E-08	8.64E-07	1.24E-08	1.11E-04	0.00E+00	0.000115
930000	2.53E-06	2.71E-08	8.68E-07	1.24E-08	1.13E-04	0.00E+00	0.000116
932000	2.57E-06	2.77E-08	8.68E-07	1.24E-08	1.13E-04	0.00E+00	0.000117
934000	2.59E-06	2.79E-08	8.68E-07	1.24E-08	1.14E-04	0.00E+00	0.000117
936000	2.60E-06	2.80E-08	8.68E-07	1.24E-08	1.14E-04	0.00E+00	0.000117
938000	2.60E-06	2.80E-08	8.68E-07	1.24E-08	1.14E-04	0.00E+00	0.000117
940000	2.60E-06	2.80E-08	8.68E-07	1.25E-08	1.14E-04	0.00E+00	0.000117
942000	2.60E-06	2.80E-08	8.68E-07	1.28E-08	1.14E-04	0.00E+00	0.000117
944000	2.60E-06	2.80E-08	8.68E-07	1.30E-08	1.14E-04	0.00E+00	0.000117
946000	2.60E-06	2.80E-08	8.69E-07	1.30E-08	1.14E-04	0.00E+00	0.000117
948000	2.60E-06	2.80E-08	8.74E-07	1.30E-08	1.14E-04	0.00E+00	0.000117
950000	2.60E-06	2.80E-08	8.87E-07	1.30E-08	1.14E-04	0.00E+00	0.000118
952000	2.62E-06	2.82E-08	9.00E-07	1.30E-08	1.16E-04	0.00E+00	0.00012
954000	2.67E-06	2.87E-08	9.05E-07	1.30E-08	1.18E-04	0.00E+00	0.000122
956000	2.71E-06	2.93E-08	9.06E-07	1.30E-08	1.19E-04	0.00E+00	0.000122
958000	2.73E-06	2.96E-08	9.06E-07	1.30E-08	1.19E-04	0.00E+00	0.000123
960000	2.73E-06	2.97E-08	9.06E-07	1.30E-08	1.19E-04	0.00E+00	0.000123
962000	2.73E-06	2.97E-08	9.06E-07	1.30E-08	1.19E-04	0.00E+00	0.000123
964000	2.73E-06	2.97E-08	9.06E-07	1.30E-08	1.19E-04	0.00E+00	0.000123
966000	2.73E-06	2.97E-08	9.06E-07	1.30E-08	1.19E-04	0.00E+00	0.000123
968000	2.73E-06	2.97E-08	9.06E-07	1.30E-08	1.19E-04	0.00E+00	0.000123
970000	2.73E-06	2.97E-08	9.07E-07	1.30E-08	1.19E-04	0.00E+00	0.000123
972000	2.73E-06	2.97E-08	9.18E-07	1.30E-08	1.19E-04	0.00E+00	0.000123
974000	2.76E-06	2.99E-08	9.48E-07	1.30E-08	1.22E-04	0.00E+00	0.000126
976000	2.84E-06	3.08E-08	9.75E-07	1.30E-08	1.27E-04	0.00E+00	0.000131
978000	2.95E-06	3.21E-08	9.87E-07	1.30E-08	1.29E-04	0.00E+00	0.000133
980000	3.00E-06	3.30E-08	9.89E-07	1.30E-08	1.30E-04	0.00E+00	0.000134
982000	3.01E-06	3.33E-08	9.90E-07	1.30E-08	1.30E-04	0.00E+00	0.000134
984000	3.01E-06	3.35E-08	9.90E-07	1.30E-08	1.30E-04	0.00E+00	0.000134
986000	3.01E-06	3.35E-08	9.90E-07	1.30E-08	1.30E-04	0.00E+00	0.000134
988000	3.01E-06	3.35E-08	9.90E-07	1.30E-08	1.30E-04	0.00E+00	0.000134
990000	3.01E-06	3.35E-08	9.90E-07	1.30E-08	1.30E-04	0.00E+00	0.000134
992000	3.01E-06	3.35E-08	9.90E-07	1.30E-08	1.30E-04	0.00E+00	0.000134
994000	3.01E-06	3.35E-08	9.90E-07	1.30E-08	1.30E-04	0.00E+00	0.000134
996000	3.01E-06	3.35E-08	9.90E-07	1.30E-08	1.30E-04	0.00E+00	0.000134
998000	3.01E-06	3.35E-08	9.90E-07	1.30E-08	1.30E-04	0.00E+00	0.000134
1000000	3.01E-06	3.35E-08	9.90E-07	1.30E-08	1.30E-04	0.00E+00	0.000134

Intake (mg/kg body wt/day)
0.0000E+00
0.0000E+00
0.0000E+00
0.0000E+00
1.6811E-23
3.0024E-16
3.8037E-12
9.3408E-10
2.1099E-08
1.0720E-07
2.2078E-07
2.8263E-07
2.9972E-07
3.0251E-07
3.0282E-07
3.0284E-07
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Uranium Intake Combined Case, Wet Climate
Furnace Creek, no pumping

Time (yr)	Concentration in Water (micrograms/L)						
	U-235	U-233	U-236	U-234	U-238	U-232	Total
250	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
2000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
4000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
6000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
8000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
10000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
12000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
14000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
16000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
18000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
20000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
22000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
24000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
26000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
28000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
30000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
32000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
34000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
36000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
38000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
40000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
42000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
44000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
46000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
48000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
50000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
52000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
54000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
56000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
58000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
60000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
62000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
64000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
66000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
68000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
70000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
72000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
74000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
76000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
78000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
80000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0

82000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
84000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
86000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
88000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
90000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
92000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
94000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
96000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
98000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
100000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
102000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
104000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
106000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
108000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
110000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
112000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
114000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
116000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
118000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
120000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
122000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
124000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
126000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
128000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
130000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
132000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
134000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
136000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
138000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
140000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
142000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
144000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
146000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
148000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
150000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
152000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
154000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
156000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
158000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
160000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
162000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
164000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
166000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
168000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
170000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
172000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
174000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0

176000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
178000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
180000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
182000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
184000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
186000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
188000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
190000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
192000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
194000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
196000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
198000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
200000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
202000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
204000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
206000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
208000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
210000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
212000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
214000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
216000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
218000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
220000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
222000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
224000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
226000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
228000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
230000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
232000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
234000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
236000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
238000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
240000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
242000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
244000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
246000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
248000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
250000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
252000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
254000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
256000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
258000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
260000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
262000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
264000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
266000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
268000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0

270000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
272000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
274000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
276000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
278000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
280000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
282000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
284000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
286000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
288000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
290000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
292000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
294000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
296000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
298000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
300000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
302000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
304000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
306000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
308000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
310000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
312000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
314000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
316000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
318000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
320000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
322000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
324000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
326000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
328000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
330000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
332000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
334000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
336000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
338000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
340000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
342000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
344000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
346000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
348000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
350000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
352000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
354000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
356000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
358000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
360000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
362000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0

364000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
366000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
368000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
370000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
372000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
374000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
376000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
378000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
380000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
382000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
384000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
386000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
388000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
390000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
392000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
394000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
396000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
398000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
400000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
402000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
404000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
406000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
408000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
410000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
412000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
414000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
416000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
418000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
420000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
422000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
424000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
426000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
428000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
430000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
432000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
434000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
436000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
438000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
440000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
442000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
444000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
446000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
448000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
450000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
452000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
454000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
456000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0

458000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
460000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
462000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
464000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
466000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
468000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
470000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
472000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
474000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
476000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
478000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
480000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
482000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
484000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
486000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
488000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
490000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
492000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
494000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
496000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
498000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
500000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
502000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
504000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
506000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
508000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
510000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
512000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
514000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
516000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
518000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
520000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
522000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
524000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
526000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
528000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
530000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
532000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
534000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
536000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
538000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
540000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
542000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
544000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
546000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
548000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
550000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0

552000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
554000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
556000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
558000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
560000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
562000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
564000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
566000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
568000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
570000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
572000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
574000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
576000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
578000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
580000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
582000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
584000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
586000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
588000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
590000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
592000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
594000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
596000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
598000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
600000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
602000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
604000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
606000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
608000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
610000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
612000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
614000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
616000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
618000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
620000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
622000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
624000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
626000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
628000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
630000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
632000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
634000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
636000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
638000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
640000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
642000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
644000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0

646000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
648000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
650000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
652000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
654000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
656000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
658000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
660000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
662000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
664000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
666000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
668000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
670000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
672000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
674000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
676000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
678000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
680000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
682000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
684000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
686000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
688000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
690000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
692000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
694000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
696000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
698000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
700000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
702000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
704000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
706000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
708000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
710000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
712000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
714000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
716000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
718000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
720000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
722000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
724000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
726000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
728000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
730000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
732000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
734000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
736000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
738000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0

740000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
742000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
744000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
746000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
748000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
750000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
752000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
754000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
756000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
758000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
760000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
762000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
764000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
766000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
768000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
770000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
772000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
774000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
776000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
778000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
780000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
782000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
784000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
786000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
788000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
790000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
792000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
794000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
796000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
798000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
800000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
802000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
804000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
806000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
808000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
810000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
812000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
814000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
816000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
818000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
820000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
822000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
824000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
826000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
828000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
830000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
832000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0

834000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
836000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
838000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
840000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
842000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
844000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
846000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
848000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
850000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
852000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
854000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
856000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
858000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
860000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
862000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
864000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
866000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
868000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
870000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
872000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
874000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
876000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
878000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
880000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
882000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
884000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
886000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
888000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
890000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
892000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
894000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
896000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
898000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
900000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
902000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
904000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
906000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
908000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
910000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
912000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
914000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
916000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
918000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
920000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
922000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
924000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
926000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0

928000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
930000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
932000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
934000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
936000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
938000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
940000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
942000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
944000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
946000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
948000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
950000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
952000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
954000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
956000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
958000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
960000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
962000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
964000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
966000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
968000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
970000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
972000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
974000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
976000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
978000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
980000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
982000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
984000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
986000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
988000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
990000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
992000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
994000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
996000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
998000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
1000000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0

Intake (mg/kg body wt/day)
0.0000E+00
0.0000E+00
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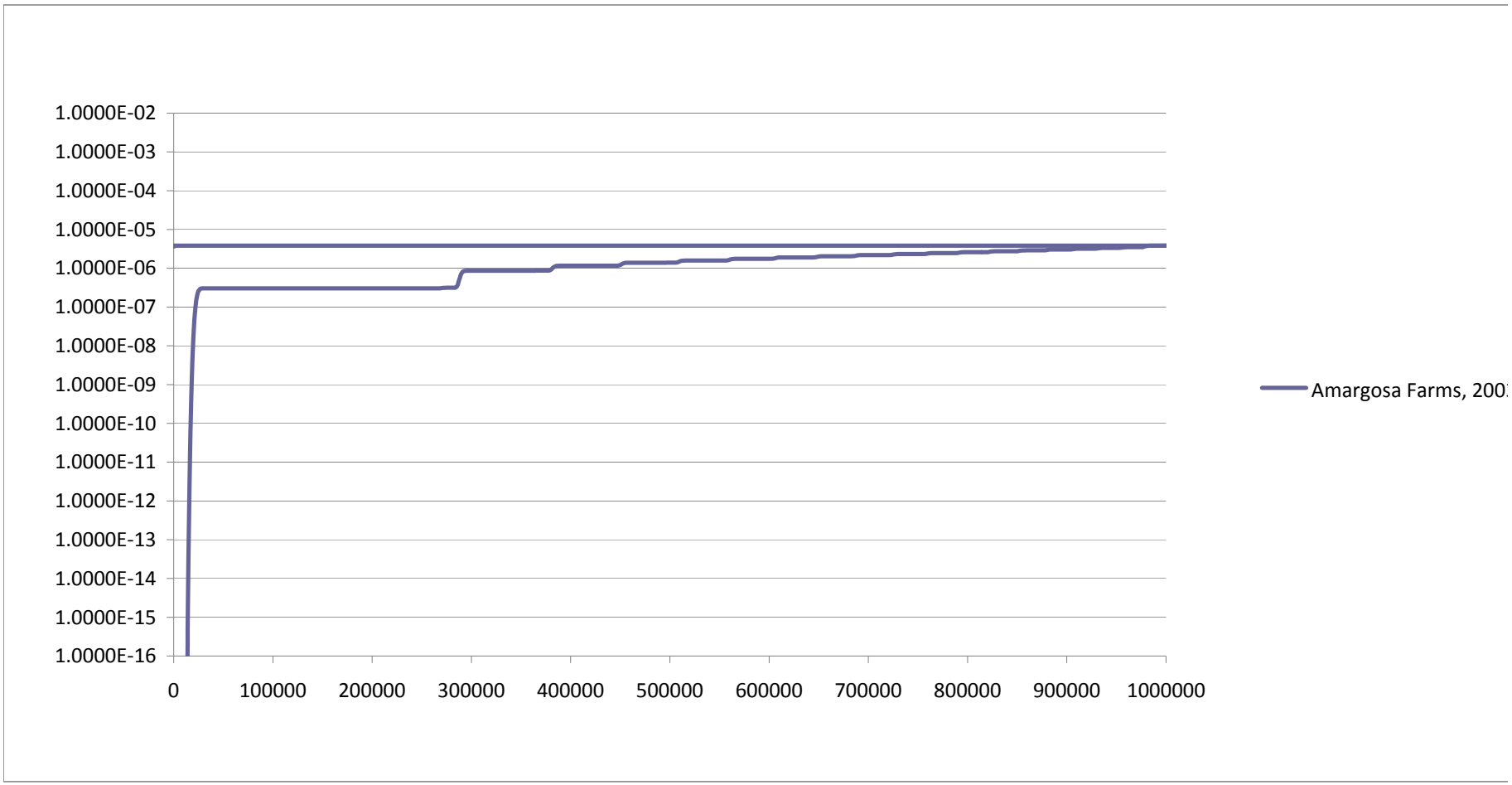
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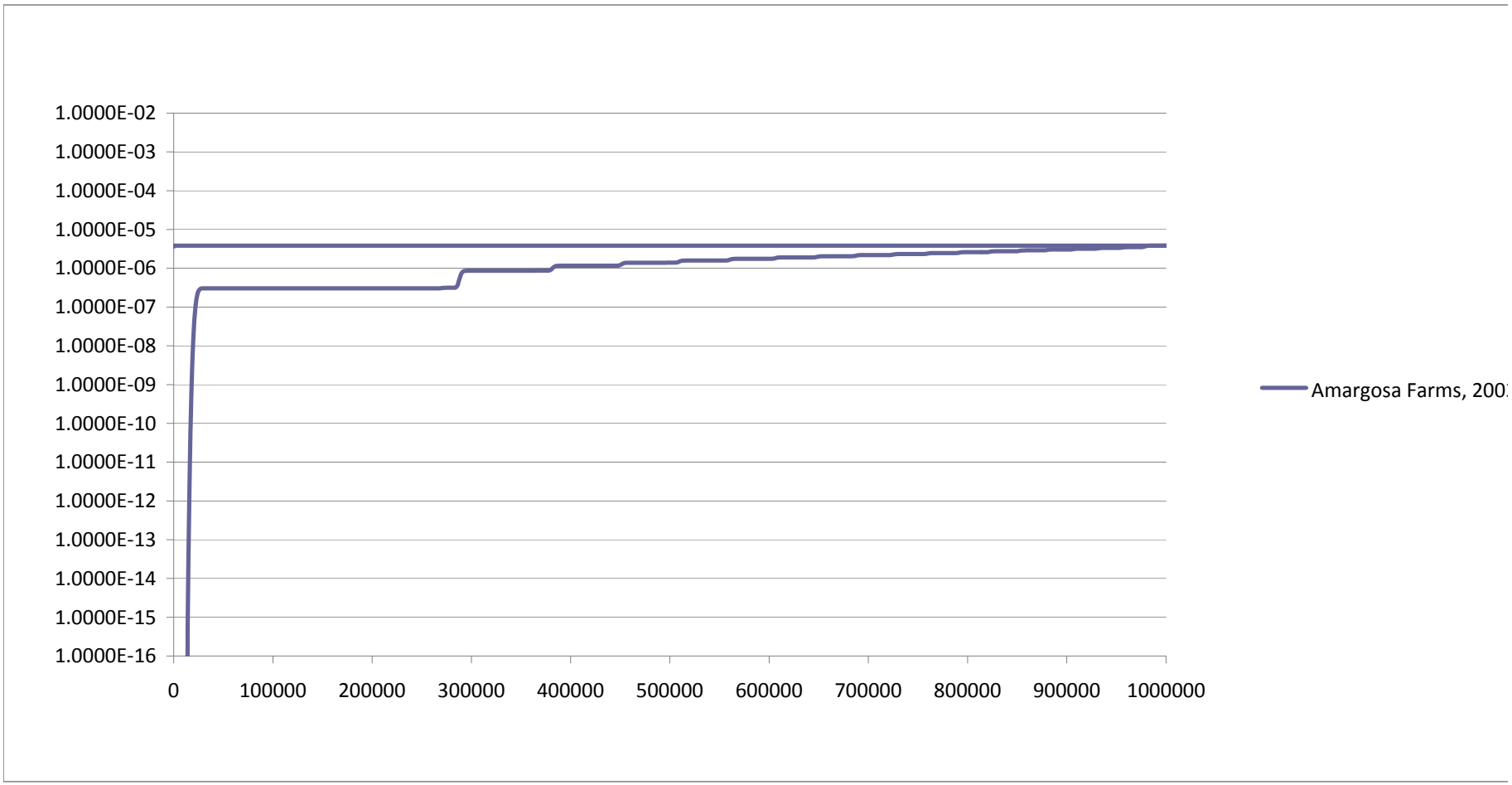
Amargosa Farms, 200

ms, 2003 Pumping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400000
500000
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700000
800000
900000
1000000
Amargosa Farms, 200

ms, 2003 Pumping

Peak Intakes (mg/kg body wt.-day) of Metals During One Million Years After Closure

	Molybdenum	Nickel	Vanadium	Uranium
Amargosa Farms, Pumping, Present Climate	3.00E-03	1.37E-02	6.04E-06	3.47E-06
Amargosa Farms, Pumping, Wet Climate	3.00E-03	1.37E-02	6.04E-06	3.84E-06
Death Valley,No-Pumping, Present Climate	6.80E-04	0.00E+00	0.00E+00	0.00E+00
Death Valley,No-Pumping, Wet Climate	1.74E-04	0.00E+00	0.00E+00	0.00E+00
Furnace Creek springs area, No-Pumping, Present Climate	2.99E-03	0.00E+00	0.00E+00	0.00E+00
Furnace Creek springs area, No-Pumping, Wetter Climate	7.67E-04	0.00E+00	1.00E-21	0.00E+00
Oral Reference Dose (mg/kg body wt.-day)	5.00E-03	2.00E-02	7.00E-03	3.00E-03

Inventory Released at UZ-SZ Interface
Combined TSPA Case
Contaminant Molybdenum

Time (yr)	Flux In (g/yr)	Cumulative (g)
2.50E+02	1.79E+05	0.00E+00
2.00E+03	1.79E+05	3.13E+08
4.00E+03	1.79E+05	6.70E+08
6.00E+03	1.79E+05	1.03E+09
8.00E+03	1.79E+05	1.38E+09
1.00E+04	1.79E+05	1.74E+09
1.20E+04	1.79E+05	2.10E+09
1.40E+04	1.79E+05	2.46E+09
1.60E+04	1.79E+05	2.81E+09
1.80E+04	1.79E+05	3.17E+09
2.00E+04	1.79E+05	3.53E+09
2.20E+04	1.79E+05	3.88E+09
2.40E+04	1.79E+05	4.24E+09
2.60E+04	1.79E+05	4.60E+09
2.80E+04	1.79E+05	4.96E+09
3.00E+04	1.79E+05	5.31E+09
3.20E+04	1.79E+05	5.67E+09
3.40E+04	1.79E+05	6.03E+09
3.60E+04	1.79E+05	6.38E+09
3.80E+04	1.79E+05	6.74E+09
4.00E+04	1.79E+05	7.10E+09
4.20E+04	1.79E+05	7.46E+09
4.40E+04	1.79E+05	7.81E+09
4.60E+04	1.79E+05	8.17E+09
4.80E+04	1.79E+05	8.53E+09
5.00E+04	1.79E+05	8.89E+09
5.20E+04	1.79E+05	9.24E+09
5.40E+04	1.79E+05	9.60E+09
5.60E+04	1.79E+05	9.96E+09
5.80E+04	1.79E+05	1.03E+10
6.00E+04	1.79E+05	1.07E+10
6.20E+04	1.79E+05	1.10E+10
6.40E+04	1.79E+05	1.14E+10
6.60E+04	1.79E+05	1.17E+10
6.80E+04	1.79E+05	1.21E+10
7.00E+04	1.79E+05	1.25E+10
7.20E+04	1.79E+05	1.28E+10
7.40E+04	1.79E+05	1.32E+10
7.60E+04	1.79E+05	1.35E+10
7.80E+04	1.79E+05	1.39E+10
8.00E+04	1.79E+05	1.42E+10
8.20E+04	1.79E+05	1.46E+10

8.40E+04	1.79E+05	1.50E+10
8.60E+04	1.79E+05	1.53E+10
8.80E+04	1.79E+05	1.57E+10
9.00E+04	1.79E+05	1.60E+10
9.20E+04	1.79E+05	1.64E+10
9.40E+04	1.79E+05	1.67E+10
9.60E+04	1.79E+05	1.71E+10
9.80E+04	1.79E+05	1.75E+10
1.00E+05	1.79E+05	1.78E+10
1.02E+05	1.79E+05	1.82E+10
1.04E+05	1.79E+05	1.85E+10
1.06E+05	1.79E+05	1.89E+10
1.08E+05	1.79E+05	1.92E+10
1.10E+05	1.79E+05	1.96E+10
1.12E+05	1.79E+05	2.00E+10
1.14E+05	1.79E+05	2.03E+10
1.16E+05	1.79E+05	2.07E+10
1.18E+05	1.79E+05	2.10E+10
1.20E+05	1.79E+05	2.14E+10
1.22E+05	1.79E+05	2.17E+10
1.24E+05	1.79E+05	2.21E+10
1.26E+05	1.79E+05	2.25E+10
1.28E+05	1.79E+05	2.28E+10
1.30E+05	1.79E+05	2.32E+10
1.32E+05	1.79E+05	2.35E+10
1.34E+05	1.79E+05	2.39E+10
1.36E+05	1.79E+05	2.42E+10
1.38E+05	1.79E+05	2.46E+10
1.40E+05	1.79E+05	2.50E+10
1.42E+05	1.79E+05	2.53E+10
1.44E+05	1.79E+05	2.57E+10
1.46E+05	1.79E+05	2.60E+10
1.48E+05	1.79E+05	2.64E+10
1.50E+05	1.79E+05	2.67E+10
1.52E+05	1.79E+05	2.71E+10
1.54E+05	1.79E+05	2.75E+10
1.56E+05	1.79E+05	2.78E+10
1.58E+05	1.79E+05	2.82E+10
1.60E+05	1.79E+05	2.85E+10
1.62E+05	1.79E+05	2.89E+10
1.64E+05	1.79E+05	2.92E+10
1.66E+05	1.79E+05	2.96E+10
1.68E+05	1.79E+05	3.00E+10
1.70E+05	1.79E+05	3.03E+10
1.72E+05	1.79E+05	3.07E+10
1.74E+05	1.79E+05	3.10E+10
1.76E+05	1.79E+05	3.14E+10

1.78E+05	1.79E+05	3.17E+10
1.80E+05	1.79E+05	3.21E+10
1.82E+05	1.79E+05	3.25E+10
1.84E+05	1.79E+05	3.28E+10
1.86E+05	1.79E+05	3.32E+10
1.88E+05	1.79E+05	3.35E+10
1.90E+05	1.79E+05	3.39E+10
1.92E+05	1.79E+05	3.42E+10
1.94E+05	1.79E+05	3.46E+10
1.96E+05	1.79E+05	3.50E+10
1.98E+05	1.79E+05	3.53E+10
2.00E+05	1.79E+05	3.57E+10
2.02E+05	1.79E+05	3.60E+10
2.04E+05	1.79E+05	3.64E+10
2.06E+05	1.79E+05	3.67E+10
2.08E+05	1.79E+05	3.71E+10
2.10E+05	1.79E+05	3.75E+10
2.12E+05	1.79E+05	3.78E+10
2.14E+05	1.79E+05	3.82E+10
2.16E+05	1.79E+05	3.85E+10
2.18E+05	1.79E+05	3.89E+10
2.20E+05	1.79E+05	3.92E+10
2.22E+05	1.79E+05	3.96E+10
2.24E+05	1.79E+05	4.00E+10
2.26E+05	1.79E+05	4.03E+10
2.28E+05	1.79E+05	4.07E+10
2.30E+05	1.79E+05	4.10E+10
2.32E+05	1.79E+05	4.14E+10
2.34E+05	1.79E+05	4.17E+10
2.36E+05	1.79E+05	4.21E+10
2.38E+05	1.79E+05	4.25E+10
2.40E+05	1.79E+05	4.28E+10
2.42E+05	1.79E+05	4.32E+10
2.44E+05	1.79E+05	4.35E+10
2.46E+05	1.79E+05	4.39E+10
2.48E+05	1.79E+05	4.42E+10
2.50E+05	1.79E+05	4.46E+10
2.52E+05	1.79E+05	4.50E+10
2.54E+05	1.79E+05	4.53E+10
2.56E+05	1.79E+05	4.57E+10
2.58E+05	1.79E+05	4.60E+10
2.60E+05	1.79E+05	4.64E+10
2.62E+05	1.79E+05	4.67E+10
2.64E+05	1.79E+05	4.71E+10
2.66E+05	1.79E+05	4.75E+10
2.68E+05	1.79E+05	4.78E+10
2.70E+05	1.79E+05	4.82E+10

2.72E+05	1.79E+05	4.85E+10
2.74E+05	1.79E+05	4.89E+10
2.76E+05	1.79E+05	4.92E+10
2.78E+05	1.79E+05	4.96E+10
2.80E+05	1.79E+05	5.00E+10
2.82E+05	1.79E+05	5.03E+10
2.84E+05	1.79E+05	5.07E+10
2.86E+05	1.79E+05	5.10E+10
2.88E+05	1.79E+05	5.14E+10
2.90E+05	1.79E+05	5.17E+10
2.92E+05	1.79E+05	5.21E+10
2.94E+05	1.79E+05	5.25E+10
2.96E+05	1.79E+05	5.28E+10
2.98E+05	1.79E+05	5.32E+10
3.00E+05	1.79E+05	5.35E+10
3.02E+05	1.79E+05	5.39E+10
3.04E+05	1.79E+05	5.43E+10
3.06E+05	1.79E+05	5.46E+10
3.08E+05	1.79E+05	5.50E+10
3.10E+05	1.79E+05	5.53E+10
3.12E+05	1.79E+05	5.57E+10
3.14E+05	1.79E+05	5.60E+10
3.16E+05	1.79E+05	5.64E+10
3.18E+05	1.79E+05	5.68E+10
3.20E+05	1.79E+05	5.71E+10
3.22E+05	1.79E+05	5.75E+10
3.24E+05	1.79E+05	5.78E+10
3.26E+05	1.79E+05	5.82E+10
3.28E+05	1.79E+05	5.85E+10
3.30E+05	1.79E+05	5.89E+10
3.32E+05	1.79E+05	5.93E+10
3.34E+05	1.79E+05	5.96E+10
3.36E+05	1.79E+05	6.00E+10
3.38E+05	1.79E+05	6.03E+10
3.40E+05	1.79E+05	6.07E+10
3.42E+05	1.79E+05	6.10E+10
3.44E+05	1.79E+05	6.14E+10
3.46E+05	1.79E+05	6.18E+10
3.48E+05	1.79E+05	6.21E+10
3.50E+05	1.79E+05	6.25E+10
3.52E+05	1.79E+05	6.28E+10
3.54E+05	1.79E+05	6.32E+10
3.56E+05	1.79E+05	6.35E+10
3.58E+05	1.79E+05	6.39E+10
3.60E+05	1.79E+05	6.43E+10
3.62E+05	1.79E+05	6.46E+10
3.64E+05	1.79E+05	6.50E+10

3.66E+05	1.79E+05	6.53E+10
3.68E+05	1.79E+05	6.57E+10
3.70E+05	1.79E+05	6.60E+10
3.72E+05	1.79E+05	6.64E+10
3.74E+05	1.79E+05	6.68E+10
3.76E+05	1.79E+05	6.71E+10
3.78E+05	1.79E+05	6.75E+10
3.80E+05	1.79E+05	6.78E+10
3.82E+05	1.79E+05	6.82E+10
3.84E+05	1.79E+05	6.85E+10
3.86E+05	1.79E+05	6.89E+10
3.88E+05	1.79E+05	6.93E+10
3.90E+05	1.79E+05	6.96E+10
3.92E+05	1.79E+05	7.00E+10
3.94E+05	1.79E+05	7.03E+10
3.96E+05	1.79E+05	7.07E+10
3.98E+05	1.79E+05	7.10E+10
4.00E+05	1.79E+05	7.14E+10
4.02E+05	1.79E+05	7.18E+10
4.04E+05	1.79E+05	7.21E+10
4.06E+05	1.79E+05	7.25E+10
4.08E+05	1.79E+05	7.28E+10
4.10E+05	1.79E+05	7.32E+10
4.12E+05	1.79E+05	7.35E+10
4.14E+05	1.79E+05	7.39E+10
4.16E+05	1.79E+05	7.43E+10
4.18E+05	1.79E+05	7.46E+10
4.20E+05	1.79E+05	7.50E+10
4.22E+05	1.79E+05	7.53E+10
4.24E+05	1.79E+05	7.57E+10
4.26E+05	1.79E+05	7.60E+10
4.28E+05	1.79E+05	7.64E+10
4.30E+05	1.79E+05	7.68E+10
4.32E+05	1.79E+05	7.71E+10
4.34E+05	1.79E+05	7.75E+10
4.36E+05	1.79E+05	7.78E+10
4.38E+05	1.79E+05	7.82E+10
4.40E+05	1.79E+05	7.85E+10
4.42E+05	1.79E+05	7.89E+10
4.44E+05	1.79E+05	7.93E+10
4.46E+05	1.79E+05	7.96E+10
4.48E+05	1.79E+05	8.00E+10
4.50E+05	1.79E+05	8.03E+10
4.52E+05	1.79E+05	8.07E+10
4.54E+05	1.79E+05	8.10E+10
4.56E+05	1.79E+05	8.14E+10
4.58E+05	1.79E+05	8.18E+10

4.60E+05	1.79E+05	8.21E+10
4.62E+05	1.79E+05	8.25E+10
4.64E+05	1.79E+05	8.28E+10
4.66E+05	1.79E+05	8.32E+10
4.68E+05	1.79E+05	8.35E+10
4.70E+05	1.79E+05	8.39E+10
4.72E+05	1.79E+05	8.43E+10
4.74E+05	1.79E+05	8.46E+10
4.76E+05	1.79E+05	8.50E+10
4.78E+05	1.79E+05	8.53E+10
4.80E+05	1.79E+05	8.57E+10
4.82E+05	1.79E+05	8.60E+10
4.84E+05	1.79E+05	8.64E+10
4.86E+05	1.79E+05	8.68E+10
4.88E+05	1.79E+05	8.71E+10
4.90E+05	1.79E+05	8.75E+10
4.92E+05	1.79E+05	8.78E+10
4.94E+05	1.79E+05	8.82E+10
4.96E+05	1.79E+05	8.85E+10
4.98E+05	1.79E+05	8.89E+10
5.00E+05	3.24E+05	8.94E+10
5.02E+05	3.24E+05	9.01E+10
5.04E+05	3.24E+05	9.07E+10
5.06E+05	3.24E+05	9.13E+10
5.08E+05	3.24E+05	9.20E+10
5.10E+05	3.24E+05	9.26E+10
5.12E+05	3.24E+05	9.33E+10
5.14E+05	3.24E+05	9.39E+10
5.16E+05	3.24E+05	9.46E+10
5.18E+05	3.24E+05	9.52E+10
5.20E+05	3.24E+05	9.59E+10
5.22E+05	3.24E+05	9.65E+10
5.24E+05	3.24E+05	9.72E+10
5.26E+05	3.24E+05	9.78E+10
5.28E+05	3.24E+05	9.85E+10
5.30E+05	3.24E+05	9.91E+10
5.32E+05	3.24E+05	9.98E+10
5.34E+05	3.24E+05	1.00E+11
5.36E+05	3.24E+05	1.01E+11
5.38E+05	3.24E+05	1.02E+11
5.40E+05	3.24E+05	1.02E+11
5.42E+05	3.24E+05	1.03E+11
5.44E+05	3.24E+05	1.04E+11
5.46E+05	3.24E+05	1.04E+11
5.48E+05	3.24E+05	1.05E+11
5.50E+05	3.24E+05	1.06E+11
5.52E+05	3.24E+05	1.06E+11

5.54E+05	3.24E+05	1.07E+11
5.56E+05	3.24E+05	1.08E+11
5.58E+05	3.24E+05	1.08E+11
5.60E+05	3.24E+05	1.09E+11
5.62E+05	3.24E+05	1.10E+11
5.64E+05	3.24E+05	1.10E+11
5.66E+05	3.24E+05	1.11E+11
5.68E+05	3.24E+05	1.11E+11
5.70E+05	3.24E+05	1.12E+11
5.72E+05	3.24E+05	1.13E+11
5.74E+05	3.24E+05	1.13E+11
5.76E+05	3.24E+05	1.14E+11
5.78E+05	3.24E+05	1.15E+11
5.80E+05	3.24E+05	1.15E+11
5.82E+05	3.24E+05	1.16E+11
5.84E+05	3.24E+05	1.17E+11
5.86E+05	3.24E+05	1.17E+11
5.88E+05	3.24E+05	1.18E+11
5.90E+05	3.24E+05	1.19E+11
5.92E+05	3.24E+05	1.19E+11
5.94E+05	3.24E+05	1.20E+11
5.96E+05	3.24E+05	1.21E+11
5.98E+05	3.24E+05	1.21E+11
6.00E+05	3.24E+05	1.22E+11
6.02E+05	3.24E+05	1.22E+11
6.04E+05	3.24E+05	1.23E+11
6.06E+05	3.24E+05	1.24E+11
6.08E+05	3.24E+05	1.24E+11
6.10E+05	3.24E+05	1.25E+11
6.12E+05	3.24E+05	1.26E+11
6.14E+05	3.24E+05	1.26E+11
6.16E+05	3.24E+05	1.27E+11
6.18E+05	3.24E+05	1.28E+11
6.20E+05	3.24E+05	1.28E+11
6.22E+05	3.24E+05	1.29E+11
6.24E+05	3.24E+05	1.30E+11
6.26E+05	3.24E+05	1.30E+11
6.28E+05	3.24E+05	1.31E+11
6.30E+05	3.24E+05	1.32E+11
6.32E+05	3.24E+05	1.32E+11
6.34E+05	3.24E+05	1.33E+11
6.36E+05	3.24E+05	1.34E+11
6.38E+05	3.24E+05	1.34E+11
6.40E+05	3.24E+05	1.35E+11
6.42E+05	3.24E+05	1.35E+11
6.44E+05	3.24E+05	1.36E+11
6.46E+05	3.24E+05	1.37E+11

6.48E+05	3.24E+05	1.37E+11
6.50E+05	3.24E+05	1.38E+11
6.52E+05	3.24E+05	1.39E+11
6.54E+05	3.24E+05	1.39E+11
6.56E+05	3.24E+05	1.40E+11
6.58E+05	3.24E+05	1.41E+11
6.60E+05	3.24E+05	1.41E+11
6.62E+05	3.24E+05	1.42E+11
6.64E+05	3.24E+05	1.43E+11
6.66E+05	3.24E+05	1.43E+11
6.68E+05	3.24E+05	1.44E+11
6.70E+05	3.24E+05	1.45E+11
6.72E+05	3.24E+05	1.45E+11
6.74E+05	3.24E+05	1.46E+11
6.76E+05	3.24E+05	1.47E+11
6.78E+05	3.24E+05	1.47E+11
6.80E+05	3.24E+05	1.48E+11
6.82E+05	3.24E+05	1.48E+11
6.84E+05	3.24E+05	1.49E+11
6.86E+05	3.24E+05	1.50E+11
6.88E+05	3.24E+05	1.50E+11
6.90E+05	3.24E+05	1.51E+11
6.92E+05	3.24E+05	1.52E+11
6.94E+05	3.24E+05	1.52E+11
6.96E+05	3.24E+05	1.53E+11
6.98E+05	3.24E+05	1.54E+11
7.00E+05	3.24E+05	1.54E+11
7.02E+05	3.24E+05	1.55E+11
7.04E+05	3.24E+05	1.56E+11
7.06E+05	3.24E+05	1.56E+11
7.08E+05	3.24E+05	1.57E+11
7.10E+05	3.24E+05	1.58E+11
7.12E+05	3.24E+05	1.58E+11
7.14E+05	3.24E+05	1.59E+11
7.16E+05	3.24E+05	1.59E+11
7.18E+05	3.24E+05	1.60E+11
7.20E+05	3.24E+05	1.61E+11
7.22E+05	3.24E+05	1.61E+11
7.24E+05	3.24E+05	1.62E+11
7.26E+05	3.24E+05	1.63E+11
7.28E+05	3.24E+05	1.63E+11
7.30E+05	3.24E+05	1.64E+11
7.32E+05	3.24E+05	1.65E+11
7.34E+05	3.24E+05	1.65E+11
7.36E+05	3.24E+05	1.66E+11
7.38E+05	3.24E+05	1.67E+11
7.40E+05	3.24E+05	1.67E+11

7.42E+05	3.24E+05	1.68E+11
7.44E+05	3.24E+05	1.69E+11
7.46E+05	3.24E+05	1.69E+11
7.48E+05	3.24E+05	1.70E+11
7.50E+05	3.24E+05	1.71E+11
7.52E+05	3.24E+05	1.71E+11
7.54E+05	3.24E+05	1.72E+11
7.56E+05	3.24E+05	1.72E+11
7.58E+05	3.24E+05	1.73E+11
7.60E+05	3.24E+05	1.74E+11
7.62E+05	3.24E+05	1.74E+11
7.64E+05	3.24E+05	1.75E+11
7.66E+05	3.24E+05	1.76E+11
7.68E+05	3.24E+05	1.76E+11
7.70E+05	3.24E+05	1.77E+11
7.72E+05	3.24E+05	1.78E+11
7.74E+05	3.24E+05	1.78E+11
7.76E+05	3.24E+05	1.79E+11
7.78E+05	3.24E+05	1.80E+11
7.80E+05	3.24E+05	1.80E+11
7.82E+05	3.24E+05	1.81E+11
7.84E+05	3.24E+05	1.82E+11
7.86E+05	3.24E+05	1.82E+11
7.88E+05	3.24E+05	1.83E+11
7.90E+05	3.24E+05	1.83E+11
7.92E+05	3.24E+05	1.84E+11
7.94E+05	3.24E+05	1.85E+11
7.96E+05	3.24E+05	1.85E+11
7.98E+05	3.24E+05	1.86E+11
8.00E+05	3.24E+05	1.87E+11
8.02E+05	3.24E+05	1.87E+11
8.04E+05	3.24E+05	1.88E+11
8.06E+05	3.24E+05	1.89E+11
8.08E+05	3.24E+05	1.89E+11
8.10E+05	3.24E+05	1.90E+11
8.12E+05	3.24E+05	1.91E+11
8.14E+05	3.24E+05	1.91E+11
8.16E+05	3.24E+05	1.92E+11
8.18E+05	3.24E+05	1.93E+11
8.20E+05	3.24E+05	1.93E+11
8.22E+05	3.24E+05	1.94E+11
8.24E+05	3.24E+05	1.95E+11
8.26E+05	3.24E+05	1.95E+11
8.28E+05	3.24E+05	1.96E+11
8.30E+05	3.24E+05	1.96E+11
8.32E+05	3.24E+05	1.97E+11
8.34E+05	3.24E+05	1.98E+11

8.36E+05	3.24E+05	1.98E+11
8.38E+05	3.24E+05	1.99E+11
8.40E+05	3.24E+05	2.00E+11
8.42E+05	3.24E+05	2.00E+11
8.44E+05	3.24E+05	2.01E+11
8.46E+05	3.24E+05	2.02E+11
8.48E+05	3.24E+05	2.02E+11
8.50E+05	3.24E+05	2.03E+11
8.52E+05	3.24E+05	2.04E+11
8.54E+05	3.24E+05	2.04E+11
8.56E+05	3.24E+05	2.05E+11
8.58E+05	3.24E+05	2.06E+11
8.60E+05	3.24E+05	2.06E+11
8.62E+05	3.24E+05	2.07E+11
8.64E+05	3.24E+05	2.08E+11
8.66E+05	3.24E+05	2.08E+11
8.68E+05	3.24E+05	2.09E+11
8.70E+05	3.24E+05	2.09E+11
8.72E+05	3.24E+05	2.10E+11
8.74E+05	3.24E+05	2.11E+11
8.76E+05	3.24E+05	2.11E+11
8.78E+05	3.24E+05	2.12E+11
8.80E+05	3.24E+05	2.13E+11
8.82E+05	3.24E+05	2.13E+11
8.84E+05	3.24E+05	2.14E+11
8.86E+05	3.24E+05	2.15E+11
8.88E+05	3.24E+05	2.15E+11
8.90E+05	3.24E+05	2.16E+11
8.92E+05	3.24E+05	2.17E+11
8.94E+05	3.24E+05	2.17E+11
8.96E+05	3.24E+05	2.18E+11
8.98E+05	3.24E+05	2.19E+11
9.00E+05	3.24E+05	2.19E+11
9.02E+05	3.24E+05	2.20E+11
9.04E+05	3.24E+05	2.20E+11
9.06E+05	3.24E+05	2.21E+11
9.08E+05	3.24E+05	2.22E+11
9.10E+05	3.24E+05	2.22E+11
9.12E+05	3.24E+05	2.23E+11
9.14E+05	3.24E+05	2.24E+11
9.16E+05	3.24E+05	2.24E+11
9.18E+05	3.24E+05	2.25E+11
9.20E+05	3.24E+05	2.26E+11
9.22E+05	3.24E+05	2.26E+11
9.24E+05	3.24E+05	2.27E+11
9.26E+05	3.24E+05	2.28E+11
9.28E+05	3.24E+05	2.28E+11

9.30E+05	3.24E+05	2.29E+11
9.32E+05	3.24E+05	2.30E+11
9.34E+05	3.24E+05	2.30E+11
9.36E+05	3.24E+05	2.31E+11
9.38E+05	3.24E+05	2.32E+11
9.40E+05	3.24E+05	2.32E+11
9.42E+05	3.24E+05	2.33E+11
9.44E+05	3.24E+05	2.33E+11
9.46E+05	3.24E+05	2.34E+11
9.48E+05	3.24E+05	2.35E+11
9.50E+05	3.24E+05	2.35E+11
9.52E+05	3.24E+05	2.36E+11
9.54E+05	3.24E+05	2.37E+11
9.56E+05	3.24E+05	2.37E+11
9.58E+05	3.24E+05	2.38E+11
9.60E+05	3.24E+05	2.39E+11
9.62E+05	3.24E+05	2.39E+11
9.64E+05	3.24E+05	2.40E+11
9.66E+05	3.24E+05	2.41E+11
9.68E+05	3.24E+05	2.41E+11
9.70E+05	3.24E+05	2.42E+11
9.72E+05	3.24E+05	2.43E+11
9.74E+05	3.24E+05	2.43E+11
9.76E+05	3.24E+05	2.44E+11
9.78E+05	3.24E+05	2.44E+11
9.80E+05	3.24E+05	2.45E+11
9.82E+05	3.24E+05	2.46E+11
9.84E+05	3.24E+05	2.46E+11
9.86E+05	3.24E+05	2.47E+11
9.88E+05	3.24E+05	2.48E+11
9.90E+05	3.24E+05	2.48E+11
9.92E+05	3.24E+05	2.49E+11
9.94E+05	3.24E+05	2.50E+11
9.96E+05	3.24E+05	2.50E+11
9.98E+05	3.24E+05	2.51E+11
1.00E+06	3.24E+05	2.52E+11

Inventory Released at UZ-SZ Interface
Combined TSPA Case
Contaminant Nickel

Time (yr)	Flux In (g/yr)	Cumulative (g)
2.50E+02	8.3250E+05	0.0000E+00
2.00E+03	8.3250E+05	1.4569E+09
4.00E+03	8.3250E+05	3.1219E+09
6.00E+03	8.3250E+05	4.7869E+09
8.00E+03	8.3250E+05	6.4519E+09
1.00E+04	8.3250E+05	8.1169E+09
1.20E+04	8.3250E+05	9.7819E+09
1.40E+04	8.3250E+05	1.1447E+10
1.60E+04	8.3250E+05	1.3112E+10
1.80E+04	8.3250E+05	1.4777E+10
2.00E+04	8.3250E+05	1.6442E+10
2.20E+04	8.3250E+05	1.8107E+10
2.40E+04	8.3250E+05	1.9772E+10
2.60E+04	8.3250E+05	2.1437E+10
2.80E+04	8.3250E+05	2.3102E+10
3.00E+04	8.3250E+05	2.4767E+10
3.20E+04	8.3250E+05	2.6432E+10
3.40E+04	8.3250E+05	2.8097E+10
3.60E+04	8.3250E+05	2.9762E+10
3.80E+04	8.3250E+05	3.1427E+10
40000	8.3250E+05	3.3092E+10
42000	8.3250E+05	3.4757E+10
44000	8.3250E+05	3.6422E+10
46000	8.3250E+05	3.8087E+10
48000	8.3250E+05	3.9752E+10
50000	8.3250E+05	4.1417E+10
52000	8.3250E+05	4.3082E+10
54000	8.3250E+05	4.4747E+10
56000	8.3250E+05	4.6412E+10
58000	8.3250E+05	4.8077E+10
60000	8.3250E+05	4.9742E+10
62000	8.3250E+05	5.1407E+10
64000	8.3250E+05	5.3072E+10
66000	8.3250E+05	5.4737E+10
68000	8.3250E+05	5.6402E+10
70000	8.3250E+05	5.8067E+10
72000	8.3250E+05	5.9732E+10
74000	8.3250E+05	6.1397E+10
76000	8.3250E+05	6.3062E+10
78000	8.3250E+05	6.4727E+10
80000	8.3250E+05	6.6392E+10
82000	8.3250E+05	6.8057E+10

84000	8.3250E+05	6.9722E+10
86000	8.3250E+05	7.1387E+10
88000	8.3250E+05	7.3052E+10
90000	8.3250E+05	7.4717E+10
92000	8.3250E+05	7.6382E+10
94000	8.3250E+05	7.8047E+10
96000	8.3250E+05	7.9712E+10
98000	8.3250E+05	8.1377E+10
100000	8.3250E+05	8.3042E+10
102000	8.3250E+05	8.4707E+10
104000	8.3250E+05	8.6372E+10
106000	8.3250E+05	8.8037E+10
108000	8.3250E+05	8.9702E+10
110000	8.3250E+05	9.1367E+10
112000	8.3250E+05	9.3032E+10
114000	8.3250E+05	9.4697E+10
116000	8.3250E+05	9.6362E+10
118000	8.3250E+05	9.8027E+10
120000	8.3250E+05	9.9692E+10
122000	8.3250E+05	1.0136E+11
124000	8.3250E+05	1.0302E+11
126000	8.3250E+05	1.0469E+11
128000	8.3250E+05	1.0635E+11
130000	8.3250E+05	1.0802E+11
132000	8.3250E+05	1.0968E+11
134000	8.3250E+05	1.1135E+11
136000	8.3250E+05	1.1301E+11
138000	8.3250E+05	1.1468E+11
140000	8.3250E+05	1.1634E+11
142000	8.3250E+05	1.1801E+11
144000	8.3250E+05	1.1967E+11
146000	8.3250E+05	1.2134E+11
148000	8.3250E+05	1.2300E+11
150000	8.3250E+05	1.2467E+11
152000	8.3250E+05	1.2633E+11
154000	8.3250E+05	1.2800E+11
156000	8.3250E+05	1.2966E+11
158000	8.3250E+05	1.3133E+11
160000	8.3250E+05	1.3299E+11
162000	8.3250E+05	1.3466E+11
164000	8.3250E+05	1.3632E+11
166000	8.3250E+05	1.3799E+11
168000	8.3250E+05	1.3965E+11
170000	8.3250E+05	1.4132E+11
172000	8.3250E+05	1.4298E+11
174000	8.3250E+05	1.4465E+11
176000	8.3250E+05	1.4631E+11

178000	8.3250E+05	1.4798E+11
180000	8.3250E+05	1.4964E+11
182000	8.3250E+05	1.5131E+11
184000	8.3250E+05	1.5297E+11
186000	8.3250E+05	1.5464E+11
188000	8.3250E+05	1.5630E+11
190000	8.3250E+05	1.5797E+11
192000	8.3250E+05	1.5963E+11
194000	8.3250E+05	1.6130E+11
196000	8.3250E+05	1.6296E+11
198000	8.3250E+05	1.6463E+11
200000	8.3250E+05	1.6629E+11
202000	8.3250E+05	1.6796E+11
204000	8.3250E+05	1.6962E+11
206000	8.3250E+05	1.7129E+11
208000	8.3250E+05	1.7295E+11
210000	8.3250E+05	1.7462E+11
212000	8.3250E+05	1.7628E+11
214000	8.3250E+05	1.7795E+11
216000	8.3250E+05	1.7961E+11
218000	8.3250E+05	1.8128E+11
220000	8.3250E+05	1.8294E+11
222000	8.3250E+05	1.8461E+11
224000	8.3250E+05	1.8627E+11
226000	8.3250E+05	1.8794E+11
228000	8.3250E+05	1.8960E+11
230000	8.3250E+05	1.9127E+11
232000	8.3250E+05	1.9293E+11
234000	8.3250E+05	1.9460E+11
236000	8.3250E+05	1.9626E+11
238000	8.3250E+05	1.9793E+11
240000	8.3250E+05	1.9959E+11
242000	8.3250E+05	2.0126E+11
244000	8.3250E+05	2.0292E+11
246000	8.3250E+05	2.0459E+11
248000	8.3250E+05	2.0625E+11
250000	8.3250E+05	2.0792E+11
252000	8.3250E+05	2.0958E+11
254000	8.3250E+05	2.1125E+11
256000	8.3250E+05	2.1291E+11
258000	8.3250E+05	2.1458E+11
260000	8.3250E+05	2.1624E+11
262000	8.3250E+05	2.1791E+11
264000	8.3250E+05	2.1957E+11
266000	8.3250E+05	2.2124E+11
268000	8.3250E+05	2.2290E+11
270000	8.3250E+05	2.2457E+11

272000	8.3250E+05	2.2623E+11
274000	8.3250E+05	2.2790E+11
276000	8.3250E+05	2.2956E+11
278000	8.3250E+05	2.3123E+11
280000	8.3250E+05	2.3289E+11
282000	8.3250E+05	2.3456E+11
284000	8.3250E+05	2.3622E+11
286000	8.3250E+05	2.3789E+11
288000	8.3250E+05	2.3955E+11
290000	8.3250E+05	2.4122E+11
292000	8.3250E+05	2.4288E+11
294000	8.3250E+05	2.4455E+11
296000	8.3250E+05	2.4621E+11
298000	8.3250E+05	2.4788E+11
300000	8.3250E+05	2.4954E+11
302000	8.3250E+05	2.5121E+11
304000	8.3250E+05	2.5287E+11
306000	8.3250E+05	2.5454E+11
308000	8.3250E+05	2.5620E+11
310000	8.3250E+05	2.5787E+11
312000	8.3250E+05	2.5953E+11
314000	8.3250E+05	2.6120E+11
316000	8.3250E+05	2.6286E+11
318000	8.3250E+05	2.6453E+11
320000	8.3250E+05	2.6619E+11
322000	8.3250E+05	2.6786E+11
324000	8.3250E+05	2.6952E+11
326000	8.3250E+05	2.7119E+11
328000	8.3250E+05	2.7285E+11
330000	8.3250E+05	2.7452E+11
332000	8.3250E+05	2.7618E+11
334000	8.3250E+05	2.7785E+11
336000	8.3250E+05	2.7951E+11
338000	8.3250E+05	2.8118E+11
340000	8.3250E+05	2.8284E+11
342000	8.3250E+05	2.8451E+11
344000	8.3250E+05	2.8617E+11
346000	8.3250E+05	2.8784E+11
348000	8.3250E+05	2.8950E+11
350000	8.3250E+05	2.9117E+11
352000	8.3250E+05	2.9283E+11
354000	8.3250E+05	2.9450E+11
356000	8.3250E+05	2.9616E+11
358000	8.3250E+05	2.9783E+11
360000	8.3250E+05	2.9949E+11
362000	8.3250E+05	3.0116E+11
364000	8.3250E+05	3.0282E+11

366000	8.3250E+05	3.0449E+11
368000	8.3250E+05	3.0615E+11
370000	8.3250E+05	3.0782E+11
372000	8.3250E+05	3.0948E+11
374000	8.3250E+05	3.1115E+11
376000	8.3250E+05	3.1281E+11
378000	8.3250E+05	3.1448E+11
380000	8.3250E+05	3.1614E+11
382000	8.3250E+05	3.1781E+11
384000	8.3250E+05	3.1947E+11
386000	8.3250E+05	3.2114E+11
388000	8.3250E+05	3.2280E+11
390000	8.3250E+05	3.2447E+11
392000	8.3250E+05	3.2613E+11
394000	8.3250E+05	3.2780E+11
396000	8.3250E+05	3.2946E+11
398000	8.3250E+05	3.3113E+11
400000	8.3250E+05	3.3279E+11
402000	8.3250E+05	3.3446E+11
404000	8.3250E+05	3.3612E+11
406000	8.3250E+05	3.3779E+11
408000	8.3250E+05	3.3945E+11
410000	8.3250E+05	3.4112E+11
412000	8.3250E+05	3.4278E+11
414000	8.3250E+05	3.4445E+11
416000	8.3250E+05	3.4611E+11
418000	8.3250E+05	3.4778E+11
420000	8.3250E+05	3.4944E+11
422000	8.3250E+05	3.5111E+11
424000	8.3250E+05	3.5277E+11
426000	8.3250E+05	3.5444E+11
428000	8.3250E+05	3.5610E+11
430000	8.3250E+05	3.5777E+11
432000	8.3250E+05	3.5943E+11
434000	8.3250E+05	3.6110E+11
436000	8.3250E+05	3.6276E+11
438000	8.3250E+05	3.6443E+11
440000	8.3250E+05	3.6609E+11
442000	8.3250E+05	3.6776E+11
444000	8.3250E+05	3.6942E+11
446000	8.3250E+05	3.7109E+11
448000	8.3250E+05	3.7275E+11
450000	8.3250E+05	3.7442E+11
452000	8.3250E+05	3.7608E+11
454000	8.3250E+05	3.7775E+11
456000	8.3250E+05	3.7941E+11
458000	8.3250E+05	3.8108E+11

460000	8.3250E+05	3.8274E+11
462000	8.3250E+05	3.8441E+11
464000	8.3250E+05	3.8607E+11
466000	8.3250E+05	3.8774E+11
468000	8.3250E+05	3.8940E+11
470000	8.3250E+05	3.9107E+11
472000	8.3250E+05	3.9273E+11
474000	8.3250E+05	3.9440E+11
476000	8.3250E+05	3.9606E+11
478000	8.3250E+05	3.9773E+11
480000	8.3250E+05	3.9939E+11
482000	8.3250E+05	4.0106E+11
484000	8.3250E+05	4.0272E+11
486000	8.3250E+05	4.0439E+11
488000	8.3250E+05	4.0605E+11
490000	8.3250E+05	4.0772E+11
492000	8.3250E+05	4.0938E+11
494000	8.3250E+05	4.1105E+11
496000	8.3250E+05	4.1271E+11
498000	8.3250E+05	4.1438E+11
500000	1.5326E+06	4.1674E+11
502000	1.5326E+06	4.1981E+11
504000	1.5326E+06	4.2287E+11
506000	1.5326E+06	4.2594E+11
508000	1.5326E+06	4.2900E+11
510000	1.5326E+06	4.3207E+11
512000	1.5326E+06	4.3513E+11
514000	1.5326E+06	4.3820E+11
516000	1.5326E+06	4.4127E+11
518000	1.5326E+06	4.4433E+11
520000	1.5326E+06	4.4740E+11
522000	1.5326E+06	4.5046E+11
524000	1.5326E+06	4.5353E+11
526000	1.5326E+06	4.5659E+11
528000	1.5326E+06	4.5966E+11
530000	1.5326E+06	4.6272E+11
532000	1.5326E+06	4.6579E+11
534000	1.5326E+06	4.6885E+11
536000	1.5326E+06	4.7192E+11
538000	1.5326E+06	4.7498E+11
540000	1.5326E+06	4.7805E+11
542000	1.5326E+06	4.8111E+11
544000	1.5326E+06	4.8418E+11
546000	1.5326E+06	4.8724E+11
548000	1.5326E+06	4.9031E+11
550000	1.5326E+06	4.9337E+11
552000	1.5326E+06	4.9644E+11

554000	1.5326E+06	4.9950E+11
556000	1.5326E+06	5.0257E+11
558000	1.5326E+06	5.0563E+11
560000	1.5326E+06	5.0870E+11
562000	1.5326E+06	5.1176E+11
564000	1.5326E+06	5.1483E+11
566000	1.5326E+06	5.1789E+11
568000	1.5326E+06	5.2096E+11
570000	1.5326E+06	5.2402E+11
572000	1.5326E+06	5.2709E+11
574000	1.5326E+06	5.3015E+11
576000	1.5326E+06	5.3322E+11
578000	1.5326E+06	5.3628E+11
580000	1.5326E+06	5.3935E+11
582000	1.5326E+06	5.4242E+11
584000	1.5326E+06	5.4548E+11
586000	1.5326E+06	5.4855E+11
588000	1.5326E+06	5.5161E+11
590000	1.5326E+06	5.5468E+11
592000	1.5326E+06	5.5774E+11
594000	1.5326E+06	5.6081E+11
596000	1.5326E+06	5.6387E+11
598000	1.5326E+06	5.6694E+11
600000	1.5326E+06	5.7000E+11
602000	1.5326E+06	5.7307E+11
604000	1.5326E+06	5.7613E+11
606000	1.5326E+06	5.7920E+11
608000	1.5326E+06	5.8226E+11
610000	1.5326E+06	5.8533E+11
612000	1.5326E+06	5.8839E+11
614000	1.5326E+06	5.9146E+11
616000	1.5326E+06	5.9452E+11
618000	1.5326E+06	5.9759E+11
620000	1.5326E+06	6.0065E+11
622000	1.5326E+06	6.0372E+11
624000	1.5326E+06	6.0678E+11
626000	1.5326E+06	6.0985E+11
628000	1.5326E+06	6.1291E+11
630000	1.5326E+06	6.1598E+11
632000	1.5326E+06	6.1904E+11
634000	1.5326E+06	6.2211E+11
636000	1.5326E+06	6.2517E+11
638000	1.5326E+06	6.2824E+11
640000	1.5326E+06	6.3130E+11
642000	1.5326E+06	6.3437E+11
644000	1.5326E+06	6.3743E+11
646000	1.5326E+06	6.4050E+11

648000	1.5326E+06	6.4357E+11
650000	1.5326E+06	6.4663E+11
652000	1.5326E+06	6.4970E+11
654000	1.5326E+06	6.5276E+11
656000	1.5326E+06	6.5583E+11
658000	1.5326E+06	6.5889E+11
660000	1.5326E+06	6.6196E+11
662000	1.5326E+06	6.6502E+11
664000	1.5326E+06	6.6809E+11
666000	1.5326E+06	6.7115E+11
668000	1.5326E+06	6.7422E+11
670000	1.5326E+06	6.7728E+11
672000	1.5326E+06	6.8035E+11
674000	1.5326E+06	6.8341E+11
676000	1.5326E+06	6.8648E+11
678000	1.5326E+06	6.8954E+11
680000	1.5326E+06	6.9261E+11
682000	1.5326E+06	6.9567E+11
684000	1.5326E+06	6.9874E+11
686000	1.5326E+06	7.0180E+11
688000	1.5326E+06	7.0487E+11
690000	1.5326E+06	7.0793E+11
692000	1.5326E+06	7.1100E+11
694000	1.5326E+06	7.1406E+11
696000	1.5326E+06	7.1713E+11
698000	1.5326E+06	7.2019E+11
700000	1.5326E+06	7.2326E+11
702000	1.5326E+06	7.2632E+11
704000	1.5326E+06	7.2939E+11
706000	1.5326E+06	7.3245E+11
708000	1.5326E+06	7.3552E+11
710000	1.5326E+06	7.3858E+11
712000	1.5326E+06	7.4165E+11
714000	1.5326E+06	7.4471E+11
716000	1.5326E+06	7.4778E+11
718000	1.5326E+06	7.5085E+11
720000	1.5326E+06	7.5391E+11
722000	1.5326E+06	7.5698E+11
724000	1.5326E+06	7.6004E+11
726000	1.5326E+06	7.6311E+11
728000	1.5326E+06	7.6617E+11
730000	1.5326E+06	7.6924E+11
732000	1.5326E+06	7.7230E+11
734000	1.5326E+06	7.7537E+11
736000	1.5326E+06	7.7843E+11
738000	1.5326E+06	7.8150E+11
740000	1.5326E+06	7.8456E+11

742000	1.5326E+06	7.8763E+11
744000	1.5326E+06	7.9069E+11
746000	1.5326E+06	7.9376E+11
748000	1.5326E+06	7.9682E+11
750000	1.5326E+06	7.9989E+11
752000	1.5326E+06	8.0295E+11
754000	1.5326E+06	8.0602E+11
756000	1.5326E+06	8.0908E+11
758000	1.5326E+06	8.1215E+11
760000	1.5326E+06	8.1521E+11
762000	1.5326E+06	8.1828E+11
764000	1.5326E+06	8.2134E+11
766000	1.5326E+06	8.2441E+11
768000	1.5326E+06	8.2747E+11
770000	1.5326E+06	8.3054E+11
772000	1.5326E+06	8.3360E+11
774000	1.5326E+06	8.3667E+11
776000	1.5326E+06	8.3973E+11
778000	1.5326E+06	8.4280E+11
780000	1.5326E+06	8.4586E+11
782000	1.5326E+06	8.4893E+11
784000	1.5326E+06	8.5200E+11
786000	1.5326E+06	8.5506E+11
788000	1.5326E+06	8.5813E+11
790000	1.5326E+06	8.6119E+11
792000	1.5326E+06	8.6426E+11
794000	1.5326E+06	8.6732E+11
796000	1.5326E+06	8.7039E+11
798000	1.5326E+06	8.7345E+11
800000	1.5326E+06	8.7652E+11
802000	1.5326E+06	8.7958E+11
804000	1.5326E+06	8.8265E+11
806000	1.5326E+06	8.8571E+11
808000	1.5326E+06	8.8878E+11
810000	1.5326E+06	8.9184E+11
812000	1.5326E+06	8.9491E+11
814000	1.5326E+06	8.9797E+11
816000	1.5326E+06	9.0104E+11
818000	1.5326E+06	9.0410E+11
820000	1.5326E+06	9.0717E+11
822000	1.5326E+06	9.1023E+11
824000	1.5326E+06	9.1330E+11
826000	1.5326E+06	9.1636E+11
828000	1.5326E+06	9.1943E+11
830000	1.5326E+06	9.2249E+11
832000	1.5326E+06	9.2556E+11
834000	1.5326E+06	9.2862E+11

836000	1.5326E+06	9.3169E+11
838000	1.5326E+06	9.3475E+11
840000	1.5326E+06	9.3782E+11
842000	1.5326E+06	9.4088E+11
844000	1.5326E+06	9.4395E+11
846000	1.5326E+06	9.4701E+11
848000	1.5326E+06	9.5008E+11
850000	1.5326E+06	9.5315E+11
852000	1.5326E+06	9.5621E+11
854000	1.5326E+06	9.5928E+11
856000	1.5326E+06	9.6234E+11
858000	1.5326E+06	9.6541E+11
860000	1.5326E+06	9.6847E+11
862000	1.5326E+06	9.7154E+11
864000	1.5326E+06	9.7460E+11
866000	1.5326E+06	9.7767E+11
868000	1.5326E+06	9.8073E+11
870000	1.5326E+06	9.8380E+11
872000	1.5326E+06	9.8686E+11
874000	1.5326E+06	9.8993E+11
876000	1.5326E+06	9.9299E+11
878000	1.5326E+06	9.9606E+11
880000	1.5326E+06	9.9912E+11
882000	1.5326E+06	1.0022E+12
884000	1.5326E+06	1.0053E+12
886000	1.5326E+06	1.0083E+12
888000	1.5326E+06	1.0114E+12
890000	1.5326E+06	1.0144E+12
892000	1.5326E+06	1.0175E+12
894000	1.5326E+06	1.0206E+12
896000	1.5326E+06	1.0236E+12
898000	1.5326E+06	1.0267E+12
900000	1.5326E+06	1.0298E+12
902000	1.5326E+06	1.0328E+12
904000	1.5326E+06	1.0359E+12
906000	1.5326E+06	1.0390E+12
908000	1.5326E+06	1.0420E+12
910000	1.5326E+06	1.0451E+12
912000	1.5326E+06	1.0482E+12
914000	1.5326E+06	1.0512E+12
916000	1.5326E+06	1.0543E+12
918000	1.5326E+06	1.0574E+12
920000	1.5326E+06	1.0604E+12
922000	1.5326E+06	1.0635E+12
924000	1.5326E+06	1.0666E+12
926000	1.5326E+06	1.0696E+12
928000	1.5326E+06	1.0727E+12

930000	1.5326E+06	1.0758E+12
932000	1.5326E+06	1.0788E+12
934000	1.5326E+06	1.0819E+12
936000	1.5326E+06	1.0849E+12
938000	1.5326E+06	1.0880E+12
940000	1.5326E+06	1.0911E+12
942000	1.5326E+06	1.0941E+12
944000	1.5326E+06	1.0972E+12
946000	1.5326E+06	1.1003E+12
948000	1.5326E+06	1.1033E+12
950000	1.5326E+06	1.1064E+12
952000	1.5326E+06	1.1095E+12
954000	1.5326E+06	1.1125E+12
956000	1.5326E+06	1.1156E+12
958000	1.5326E+06	1.1187E+12
960000	1.5326E+06	1.1217E+12
962000	1.5326E+06	1.1248E+12
964000	1.5326E+06	1.1279E+12
966000	1.5326E+06	1.1309E+12
968000	1.5326E+06	1.1340E+12
970000	1.5326E+06	1.1371E+12
972000	1.5326E+06	1.1401E+12
974000	1.5326E+06	1.1432E+12
976000	1.5326E+06	1.1462E+12
978000	1.5326E+06	1.1493E+12
980000	1.5326E+06	1.1524E+12
982000	1.5326E+06	1.1554E+12
984000	1.5326E+06	1.1585E+12
986000	1.5326E+06	1.1616E+12
988000	1.5326E+06	1.1646E+12
990000	1.5326E+06	1.1677E+12
992000	1.5326E+06	1.1708E+12
994000	1.5326E+06	1.1738E+12
996000	1.5326E+06	1.1769E+12
998000	1.5326E+06	1.1800E+12
1000000	1.5326E+06	1.1830E+12

Inventory Released at UZ-SZ Interface
Combined TSPA Case
Contaminant Vanadium

Time (yr)	Flux In (g/yr)	Cumulative (g)
2.50E+02	7.00E+02	0.00E+00
2.00E+03	7.00E+02	1.23E+06
4.00E+03	7.00E+02	2.63E+06
6.00E+03	7.00E+02	4.03E+06
8.00E+03	7.00E+02	5.43E+06
1.00E+04	7.00E+02	6.83E+06
1.20E+04	7.00E+02	8.23E+06
1.40E+04	7.00E+02	9.63E+06
1.60E+04	7.00E+02	1.10E+07
1.80E+04	7.00E+02	1.24E+07
2.00E+04	7.00E+02	1.38E+07
2.20E+04	7.00E+02	1.52E+07
2.40E+04	7.00E+02	1.66E+07
2.60E+04	7.00E+02	1.80E+07
2.80E+04	7.00E+02	1.94E+07
3.00E+04	7.00E+02	2.08E+07
3.20E+04	7.00E+02	2.22E+07
3.40E+04	7.00E+02	2.36E+07
3.60E+04	7.00E+02	2.50E+07
3.80E+04	7.00E+02	2.64E+07
4.00E+04	7.00E+02	2.78E+07
4.20E+04	7.00E+02	2.92E+07
4.40E+04	7.00E+02	3.06E+07
4.60E+04	7.00E+02	3.20E+07
4.80E+04	7.00E+02	3.34E+07
5.00E+04	7.00E+02	3.48E+07
5.20E+04	7.00E+02	3.62E+07
5.40E+04	7.00E+02	3.76E+07
5.60E+04	7.00E+02	3.90E+07
5.80E+04	7.00E+02	4.04E+07
6.00E+04	7.00E+02	4.18E+07
6.20E+04	7.00E+02	4.32E+07
6.40E+04	7.00E+02	4.46E+07
6.60E+04	7.00E+02	4.60E+07
6.80E+04	7.00E+02	4.74E+07
7.00E+04	7.00E+02	4.88E+07
7.20E+04	7.00E+02	5.02E+07
7.40E+04	7.00E+02	5.16E+07
7.60E+04	7.00E+02	5.30E+07
7.80E+04	7.00E+02	5.44E+07
8.00E+04	7.00E+02	5.58E+07
8.20E+04	7.00E+02	5.72E+07

8.40E+04	7.00E+02	5.86E+07
8.60E+04	7.00E+02	6.00E+07
8.80E+04	7.00E+02	6.14E+07
9.00E+04	7.00E+02	6.28E+07
9.20E+04	7.00E+02	6.42E+07
9.40E+04	7.00E+02	6.56E+07
9.60E+04	7.00E+02	6.70E+07
9.80E+04	7.00E+02	6.84E+07
1.00E+05	7.00E+02	6.98E+07
1.02E+05	7.00E+02	7.12E+07
1.04E+05	7.00E+02	7.26E+07
1.06E+05	7.00E+02	7.40E+07
1.08E+05	7.00E+02	7.54E+07
1.10E+05	7.00E+02	7.68E+07
1.12E+05	7.00E+02	7.82E+07
1.14E+05	7.00E+02	7.96E+07
1.16E+05	7.00E+02	8.10E+07
1.18E+05	7.00E+02	8.24E+07
1.20E+05	7.00E+02	8.38E+07
1.22E+05	7.00E+02	8.52E+07
1.24E+05	7.00E+02	8.66E+07
1.26E+05	7.00E+02	8.80E+07
1.28E+05	7.00E+02	8.94E+07
1.30E+05	7.00E+02	9.08E+07
1.32E+05	7.00E+02	9.22E+07
1.34E+05	7.00E+02	9.36E+07
1.36E+05	7.00E+02	9.50E+07
1.38E+05	7.00E+02	9.64E+07
1.40E+05	7.00E+02	9.78E+07
1.42E+05	7.00E+02	9.92E+07
1.44E+05	7.00E+02	1.01E+08
1.46E+05	7.00E+02	1.02E+08
1.48E+05	7.00E+02	1.03E+08
1.50E+05	7.00E+02	1.05E+08
1.52E+05	7.00E+02	1.06E+08
1.54E+05	7.00E+02	1.08E+08
1.56E+05	7.00E+02	1.09E+08
1.58E+05	7.00E+02	1.10E+08
1.60E+05	7.00E+02	1.12E+08
1.62E+05	7.00E+02	1.13E+08
1.64E+05	7.00E+02	1.15E+08
1.66E+05	7.00E+02	1.16E+08
1.68E+05	7.00E+02	1.17E+08
1.70E+05	7.00E+02	1.19E+08
1.72E+05	7.00E+02	1.20E+08
1.74E+05	7.00E+02	1.22E+08
1.76E+05	7.00E+02	1.23E+08

1.78E+05	7.00E+02	1.24E+08
1.80E+05	7.00E+02	1.26E+08
1.82E+05	7.00E+02	1.27E+08
1.84E+05	7.00E+02	1.29E+08
1.86E+05	7.00E+02	1.30E+08
1.88E+05	7.00E+02	1.31E+08
1.90E+05	7.00E+02	1.33E+08
1.92E+05	7.00E+02	1.34E+08
1.94E+05	7.00E+02	1.36E+08
1.96E+05	7.00E+02	1.37E+08
1.98E+05	7.00E+02	1.38E+08
2.00E+05	7.00E+02	1.40E+08
2.02E+05	7.00E+02	1.41E+08
2.04E+05	7.00E+02	1.43E+08
2.06E+05	7.00E+02	1.44E+08
2.08E+05	7.00E+02	1.45E+08
2.10E+05	7.00E+02	1.47E+08
2.12E+05	7.00E+02	1.48E+08
2.14E+05	7.00E+02	1.50E+08
2.16E+05	7.00E+02	1.51E+08
2.18E+05	7.00E+02	1.52E+08
2.20E+05	7.00E+02	1.54E+08
2.22E+05	7.00E+02	1.55E+08
2.24E+05	7.00E+02	1.57E+08
2.26E+05	7.00E+02	1.58E+08
2.28E+05	7.00E+02	1.59E+08
2.30E+05	7.00E+02	1.61E+08
2.32E+05	7.00E+02	1.62E+08
2.34E+05	7.00E+02	1.64E+08
2.36E+05	7.00E+02	1.65E+08
2.38E+05	7.00E+02	1.66E+08
2.40E+05	7.00E+02	1.68E+08
2.42E+05	7.00E+02	1.69E+08
2.44E+05	7.00E+02	1.71E+08
2.46E+05	7.00E+02	1.72E+08
2.48E+05	7.00E+02	1.73E+08
2.50E+05	7.00E+02	1.75E+08
2.52E+05	7.00E+02	1.76E+08
2.54E+05	7.00E+02	1.78E+08
2.56E+05	7.00E+02	1.79E+08
2.58E+05	7.00E+02	1.80E+08
2.60E+05	7.00E+02	1.82E+08
2.62E+05	7.00E+02	1.83E+08
2.64E+05	7.00E+02	1.85E+08
2.66E+05	7.00E+02	1.86E+08
2.68E+05	7.00E+02	1.87E+08
2.70E+05	7.00E+02	1.89E+08

2.72E+05	7.00E+02	1.90E+08
2.74E+05	7.00E+02	1.92E+08
2.76E+05	7.00E+02	1.93E+08
2.78E+05	7.00E+02	1.94E+08
2.80E+05	7.00E+02	1.96E+08
2.82E+05	7.00E+02	1.97E+08
2.84E+05	7.00E+02	1.99E+08
2.86E+05	7.00E+02	2.00E+08
2.88E+05	7.00E+02	2.01E+08
2.90E+05	7.00E+02	2.03E+08
2.92E+05	7.00E+02	2.04E+08
2.94E+05	7.00E+02	2.06E+08
2.96E+05	7.00E+02	2.07E+08
2.98E+05	7.00E+02	2.08E+08
3.00E+05	7.00E+02	2.10E+08
3.02E+05	7.00E+02	2.11E+08
3.04E+05	7.00E+02	2.13E+08
3.06E+05	7.00E+02	2.14E+08
3.08E+05	7.00E+02	2.15E+08
3.10E+05	7.00E+02	2.17E+08
3.12E+05	7.00E+02	2.18E+08
3.14E+05	7.00E+02	2.20E+08
3.16E+05	7.00E+02	2.21E+08
3.18E+05	7.00E+02	2.22E+08
3.20E+05	7.00E+02	2.24E+08
3.22E+05	7.00E+02	2.25E+08
3.24E+05	7.00E+02	2.27E+08
3.26E+05	7.00E+02	2.28E+08
3.28E+05	7.00E+02	2.29E+08
3.30E+05	7.00E+02	2.31E+08
3.32E+05	7.00E+02	2.32E+08
3.34E+05	7.00E+02	2.34E+08
3.36E+05	7.00E+02	2.35E+08
3.38E+05	7.00E+02	2.36E+08
3.40E+05	7.00E+02	2.38E+08
3.42E+05	7.00E+02	2.39E+08
3.44E+05	7.00E+02	2.41E+08
3.46E+05	7.00E+02	2.42E+08
3.48E+05	7.00E+02	2.43E+08
3.50E+05	7.00E+02	2.45E+08
3.52E+05	7.00E+02	2.46E+08
3.54E+05	7.00E+02	2.48E+08
3.56E+05	7.00E+02	2.49E+08
3.58E+05	7.00E+02	2.50E+08
3.60E+05	7.00E+02	2.52E+08
3.62E+05	7.00E+02	2.53E+08
3.64E+05	7.00E+02	2.55E+08

3.66E+05	7.00E+02	2.56E+08
3.68E+05	7.00E+02	2.57E+08
3.70E+05	7.00E+02	2.59E+08
3.72E+05	7.00E+02	2.60E+08
3.74E+05	7.00E+02	2.62E+08
3.76E+05	7.00E+02	2.63E+08
3.78E+05	7.00E+02	2.64E+08
3.80E+05	7.00E+02	2.66E+08
3.82E+05	7.00E+02	2.67E+08
3.84E+05	7.00E+02	2.69E+08
3.86E+05	7.00E+02	2.70E+08
3.88E+05	7.00E+02	2.71E+08
3.90E+05	7.00E+02	2.73E+08
3.92E+05	7.00E+02	2.74E+08
3.94E+05	7.00E+02	2.76E+08
3.96E+05	7.00E+02	2.77E+08
3.98E+05	7.00E+02	2.78E+08
4.00E+05	7.00E+02	2.80E+08
4.02E+05	7.00E+02	2.81E+08
4.04E+05	7.00E+02	2.83E+08
4.06E+05	7.00E+02	2.84E+08
4.08E+05	7.00E+02	2.85E+08
4.10E+05	7.00E+02	2.87E+08
4.12E+05	7.00E+02	2.88E+08
4.14E+05	7.00E+02	2.90E+08
4.16E+05	7.00E+02	2.91E+08
4.18E+05	7.00E+02	2.92E+08
4.20E+05	7.00E+02	2.94E+08
4.22E+05	7.00E+02	2.95E+08
4.24E+05	7.00E+02	2.97E+08
4.26E+05	7.00E+02	2.98E+08
4.28E+05	7.00E+02	2.99E+08
4.30E+05	7.00E+02	3.01E+08
4.32E+05	7.00E+02	3.02E+08
4.34E+05	7.00E+02	3.04E+08
4.36E+05	7.00E+02	3.05E+08
4.38E+05	7.00E+02	3.06E+08
4.40E+05	7.00E+02	3.08E+08
4.42E+05	7.00E+02	3.09E+08
4.44E+05	7.00E+02	3.11E+08
4.46E+05	7.00E+02	3.12E+08
4.48E+05	7.00E+02	3.13E+08
4.50E+05	7.00E+02	3.15E+08
4.52E+05	7.00E+02	3.16E+08
4.54E+05	7.00E+02	3.18E+08
4.56E+05	7.00E+02	3.19E+08
4.58E+05	7.00E+02	3.20E+08

4.60E+05	7.00E+02	3.22E+08
4.62E+05	7.00E+02	3.23E+08
4.64E+05	7.00E+02	3.25E+08
4.66E+05	7.00E+02	3.26E+08
4.68E+05	7.00E+02	3.27E+08
4.70E+05	7.00E+02	3.29E+08
4.72E+05	7.00E+02	3.30E+08
4.74E+05	7.00E+02	3.32E+08
4.76E+05	7.00E+02	3.33E+08
4.78E+05	7.00E+02	3.34E+08
4.80E+05	7.00E+02	3.36E+08
4.82E+05	7.00E+02	3.37E+08
4.84E+05	7.00E+02	3.39E+08
4.86E+05	7.00E+02	3.40E+08
4.88E+05	7.00E+02	3.41E+08
4.90E+05	7.00E+02	3.43E+08
4.92E+05	7.00E+02	3.44E+08
4.94E+05	7.00E+02	3.46E+08
4.96E+05	7.00E+02	3.47E+08
4.98E+05	7.00E+02	3.48E+08
5.00E+05	7.00E+02	3.50E+08
5.02E+05	7.00E+02	3.51E+08
5.04E+05	7.00E+02	3.53E+08
5.06E+05	7.00E+02	3.54E+08
5.08E+05	7.00E+02	3.55E+08
5.10E+05	7.00E+02	3.57E+08
5.12E+05	7.00E+02	3.58E+08
5.14E+05	7.00E+02	3.60E+08
5.16E+05	7.00E+02	3.61E+08
5.18E+05	7.00E+02	3.62E+08
5.20E+05	7.00E+02	3.64E+08
5.22E+05	7.00E+02	3.65E+08
5.24E+05	7.00E+02	3.67E+08
5.26E+05	7.00E+02	3.68E+08
5.28E+05	7.00E+02	3.69E+08
5.30E+05	7.00E+02	3.71E+08
5.32E+05	7.00E+02	3.72E+08
5.34E+05	7.00E+02	3.74E+08
5.36E+05	7.00E+02	3.75E+08
5.38E+05	7.00E+02	3.76E+08
5.40E+05	7.00E+02	3.78E+08
5.42E+05	7.00E+02	3.79E+08
5.44E+05	7.00E+02	3.81E+08
5.46E+05	7.00E+02	3.82E+08
5.48E+05	7.00E+02	3.83E+08
5.50E+05	7.00E+02	3.85E+08
5.52E+05	7.00E+02	3.86E+08

5.54E+05	7.00E+02	3.88E+08
5.56E+05	7.00E+02	3.89E+08
5.58E+05	7.00E+02	3.90E+08
5.60E+05	7.00E+02	3.92E+08
5.62E+05	7.00E+02	3.93E+08
5.64E+05	7.00E+02	3.95E+08
5.66E+05	7.00E+02	3.96E+08
5.68E+05	7.00E+02	3.97E+08
5.70E+05	7.00E+02	3.99E+08
5.72E+05	7.00E+02	4.00E+08
5.74E+05	7.00E+02	4.02E+08
5.76E+05	7.00E+02	4.03E+08
5.78E+05	7.00E+02	4.04E+08
5.80E+05	7.00E+02	4.06E+08
5.82E+05	7.00E+02	4.07E+08
5.84E+05	7.00E+02	4.09E+08
5.86E+05	7.00E+02	4.10E+08
5.88E+05	7.00E+02	4.11E+08
5.90E+05	7.00E+02	4.13E+08
5.92E+05	7.00E+02	4.14E+08
5.94E+05	7.00E+02	4.16E+08
5.96E+05	7.00E+02	4.17E+08
5.98E+05	7.00E+02	4.18E+08
6.00E+05	7.00E+02	4.20E+08
6.02E+05	7.00E+02	4.21E+08
6.04E+05	7.00E+02	4.23E+08
6.06E+05	7.00E+02	4.24E+08
6.08E+05	7.00E+02	4.25E+08
6.10E+05	7.00E+02	4.27E+08
6.12E+05	7.00E+02	4.28E+08
6.14E+05	7.00E+02	4.30E+08
6.16E+05	7.00E+02	4.31E+08
6.18E+05	7.00E+02	4.32E+08
6.20E+05	7.00E+02	4.34E+08
6.22E+05	7.00E+02	4.35E+08
6.24E+05	7.00E+02	4.37E+08
6.26E+05	7.00E+02	4.38E+08
6.28E+05	7.00E+02	4.39E+08
6.30E+05	7.00E+02	4.41E+08
6.32E+05	7.00E+02	4.42E+08
6.34E+05	7.00E+02	4.44E+08
6.36E+05	7.00E+02	4.45E+08
6.38E+05	7.00E+02	4.46E+08
6.40E+05	7.00E+02	4.48E+08
6.42E+05	7.00E+02	4.49E+08
6.44E+05	7.00E+02	4.51E+08
6.46E+05	7.00E+02	4.52E+08

6.48E+05	7.00E+02	4.53E+08
6.50E+05	7.00E+02	4.55E+08
6.52E+05	7.00E+02	4.56E+08
6.54E+05	7.00E+02	4.58E+08
6.56E+05	7.00E+02	4.59E+08
6.58E+05	7.00E+02	4.60E+08
6.60E+05	7.00E+02	4.62E+08
6.62E+05	7.00E+02	4.63E+08
6.64E+05	7.00E+02	4.65E+08
6.66E+05	7.00E+02	4.66E+08
6.68E+05	7.00E+02	4.67E+08
6.70E+05	7.00E+02	4.69E+08
6.72E+05	7.00E+02	4.70E+08
6.74E+05	7.00E+02	4.72E+08
6.76E+05	7.00E+02	4.73E+08
6.78E+05	7.00E+02	4.74E+08
6.80E+05	7.00E+02	4.76E+08
6.82E+05	7.00E+02	4.77E+08
6.84E+05	7.00E+02	4.79E+08
6.86E+05	7.00E+02	4.80E+08
6.88E+05	7.00E+02	4.81E+08
6.90E+05	7.00E+02	4.83E+08
6.92E+05	7.00E+02	4.84E+08
6.94E+05	7.00E+02	4.86E+08
6.96E+05	7.00E+02	4.87E+08
6.98E+05	7.00E+02	4.88E+08
7.00E+05	7.00E+02	4.90E+08
7.02E+05	7.00E+02	4.91E+08
7.04E+05	7.00E+02	4.93E+08
7.06E+05	7.00E+02	4.94E+08
7.08E+05	7.00E+02	4.95E+08
7.10E+05	7.00E+02	4.97E+08
7.12E+05	7.00E+02	4.98E+08
7.14E+05	7.00E+02	5.00E+08
7.16E+05	7.00E+02	5.01E+08
7.18E+05	7.00E+02	5.02E+08
7.20E+05	7.00E+02	5.04E+08
7.22E+05	7.00E+02	5.05E+08
7.24E+05	7.00E+02	5.07E+08
7.26E+05	7.00E+02	5.08E+08
7.28E+05	7.00E+02	5.09E+08
7.30E+05	7.00E+02	5.11E+08
7.32E+05	7.00E+02	5.12E+08
7.34E+05	7.00E+02	5.14E+08
7.36E+05	7.00E+02	5.15E+08
7.38E+05	7.00E+02	5.16E+08
7.40E+05	7.00E+02	5.18E+08

7.42E+05	7.00E+02	5.19E+08
7.44E+05	7.00E+02	5.21E+08
7.46E+05	7.00E+02	5.22E+08
7.48E+05	7.00E+02	5.23E+08
7.50E+05	7.00E+02	5.25E+08
7.52E+05	7.00E+02	5.26E+08
7.54E+05	7.00E+02	5.28E+08
7.56E+05	7.00E+02	5.29E+08
7.58E+05	7.00E+02	5.30E+08
7.60E+05	7.00E+02	5.32E+08
7.62E+05	7.00E+02	5.33E+08
7.64E+05	7.00E+02	5.35E+08
7.66E+05	7.00E+02	5.36E+08
7.68E+05	7.00E+02	5.37E+08
7.70E+05	7.00E+02	5.39E+08
7.72E+05	7.00E+02	5.40E+08
7.74E+05	7.00E+02	5.42E+08
7.76E+05	7.00E+02	5.43E+08
7.78E+05	7.00E+02	5.44E+08
7.80E+05	7.00E+02	5.46E+08
7.82E+05	7.00E+02	5.47E+08
7.84E+05	7.00E+02	5.49E+08
7.86E+05	7.00E+02	5.50E+08
7.88E+05	7.00E+02	5.51E+08
7.90E+05	7.00E+02	5.53E+08
7.92E+05	7.00E+02	5.54E+08
7.94E+05	7.00E+02	5.56E+08
7.96E+05	7.00E+02	5.57E+08
7.98E+05	7.00E+02	5.58E+08
8.00E+05	7.00E+02	5.60E+08
8.02E+05	7.00E+02	5.61E+08
8.04E+05	7.00E+02	5.63E+08
8.06E+05	7.00E+02	5.64E+08
8.08E+05	7.00E+02	5.65E+08
8.10E+05	7.00E+02	5.67E+08
8.12E+05	7.00E+02	5.68E+08
8.14E+05	7.00E+02	5.70E+08
8.16E+05	7.00E+02	5.71E+08
8.18E+05	7.00E+02	5.72E+08
8.20E+05	7.00E+02	5.74E+08
8.22E+05	7.00E+02	5.75E+08
8.24E+05	7.00E+02	5.77E+08
8.26E+05	7.00E+02	5.78E+08
8.28E+05	7.00E+02	5.79E+08
8.30E+05	7.00E+02	5.81E+08
8.32E+05	7.00E+02	5.82E+08
8.34E+05	7.00E+02	5.84E+08

8.36E+05	7.00E+02	5.85E+08
8.38E+05	7.00E+02	5.86E+08
8.40E+05	7.00E+02	5.88E+08
8.42E+05	7.00E+02	5.89E+08
8.44E+05	7.00E+02	5.91E+08
8.46E+05	7.00E+02	5.92E+08
8.48E+05	7.00E+02	5.93E+08
8.50E+05	7.00E+02	5.95E+08
8.52E+05	7.00E+02	5.96E+08
8.54E+05	7.00E+02	5.98E+08
8.56E+05	7.00E+02	5.99E+08
8.58E+05	7.00E+02	6.00E+08
8.60E+05	7.00E+02	6.02E+08
8.62E+05	7.00E+02	6.03E+08
8.64E+05	7.00E+02	6.05E+08
8.66E+05	7.00E+02	6.06E+08
8.68E+05	7.00E+02	6.07E+08
8.70E+05	7.00E+02	6.09E+08
8.72E+05	7.00E+02	6.10E+08
8.74E+05	7.00E+02	6.12E+08
8.76E+05	7.00E+02	6.13E+08
8.78E+05	7.00E+02	6.14E+08
8.80E+05	7.00E+02	6.16E+08
8.82E+05	7.00E+02	6.17E+08
8.84E+05	7.00E+02	6.19E+08
8.86E+05	7.00E+02	6.20E+08
8.88E+05	7.00E+02	6.21E+08
8.90E+05	7.00E+02	6.23E+08
8.92E+05	7.00E+02	6.24E+08
8.94E+05	7.00E+02	6.26E+08
8.96E+05	7.00E+02	6.27E+08
8.98E+05	7.00E+02	6.28E+08
9.00E+05	7.00E+02	6.30E+08
9.02E+05	7.00E+02	6.31E+08
9.04E+05	7.00E+02	6.33E+08
9.06E+05	7.00E+02	6.34E+08
9.08E+05	7.00E+02	6.35E+08
9.10E+05	7.00E+02	6.37E+08
9.12E+05	7.00E+02	6.38E+08
9.14E+05	7.00E+02	6.40E+08
9.16E+05	7.00E+02	6.41E+08
9.18E+05	7.00E+02	6.42E+08
9.20E+05	7.00E+02	6.44E+08
9.22E+05	7.00E+02	6.45E+08
9.24E+05	7.00E+02	6.47E+08
9.26E+05	7.00E+02	6.48E+08
9.28E+05	7.00E+02	6.49E+08

9.30E+05	7.00E+02	6.51E+08
9.32E+05	7.00E+02	6.52E+08
9.34E+05	7.00E+02	6.54E+08
9.36E+05	7.00E+02	6.55E+08
9.38E+05	7.00E+02	6.56E+08
9.40E+05	7.00E+02	6.58E+08
9.42E+05	7.00E+02	6.59E+08
9.44E+05	7.00E+02	6.61E+08
9.46E+05	7.00E+02	6.62E+08
9.48E+05	7.00E+02	6.63E+08
9.50E+05	7.00E+02	6.65E+08
9.52E+05	7.00E+02	6.66E+08
9.54E+05	7.00E+02	6.68E+08
9.56E+05	7.00E+02	6.69E+08
9.58E+05	7.00E+02	6.70E+08
9.60E+05	7.00E+02	6.72E+08
9.62E+05	7.00E+02	6.73E+08
9.64E+05	7.00E+02	6.75E+08
9.66E+05	7.00E+02	6.76E+08
9.68E+05	7.00E+02	6.77E+08
9.70E+05	7.00E+02	6.79E+08
9.72E+05	7.00E+02	6.80E+08
9.74E+05	7.00E+02	6.82E+08
9.76E+05	7.00E+02	6.83E+08
9.78E+05	7.00E+02	6.84E+08
9.80E+05	7.00E+02	6.86E+08
9.82E+05	7.00E+02	6.87E+08
9.84E+05	7.00E+02	6.89E+08
9.86E+05	7.00E+02	6.90E+08
9.88E+05	7.00E+02	6.91E+08
9.90E+05	7.00E+02	6.93E+08
9.92E+05	7.00E+02	6.94E+08
9.94E+05	7.00E+02	6.96E+08
9.96E+05	7.00E+02	6.97E+08
9.98E+05	7.00E+02	6.98E+08
1.00E+06	7.00E+02	7.00E+08

Inventory Released Beyond 18 km
Combined TSPA Case
Contaminant Molybdenum

Time (yr)	Flux In (g/yr)	Cumulative (g)
2.5000E+02	9.8588E+04	0.0000E+00
2.0000E+03	1.3359E+05	2.0316E+08
4.0000E+03	1.7291E+05	5.0966E+08
6.0000E+03	1.7291E+05	8.5548E+08
8.0000E+03	1.7291E+05	1.2013E+09
1.0000E+04	1.7291E+05	1.5471E+09
1.2000E+04	1.7291E+05	1.8929E+09
1.4000E+04	1.7291E+05	2.2387E+09
1.6000E+04	1.7291E+05	2.5846E+09
1.8000E+04	1.7291E+05	2.9304E+09
2.0000E+04	1.7291E+05	3.2762E+09
2.2000E+04	1.7291E+05	3.6220E+09
2.4000E+04	1.7291E+05	3.9678E+09
2.6000E+04	1.7291E+05	4.3136E+09
2.8000E+04	1.7291E+05	4.6595E+09
3.0000E+04	1.7291E+05	5.0053E+09
3.2000E+04	1.7291E+05	5.3511E+09
3.4000E+04	1.7291E+05	5.6969E+09
3.6000E+04	1.7291E+05	6.0427E+09
3.8000E+04	1.7291E+05	6.3885E+09
4.0000E+04	1.7291E+05	6.7344E+09
4.2000E+04	1.7291E+05	7.0802E+09
4.4000E+04	1.7291E+05	7.4260E+09
4.6000E+04	1.7291E+05	7.7718E+09
4.8000E+04	1.7291E+05	8.1176E+09
5.0000E+04	1.7291E+05	8.4634E+09
5.2000E+04	1.7291E+05	8.8093E+09
5.4000E+04	1.7291E+05	9.1551E+09
5.6000E+04	1.7291E+05	9.5009E+09
5.8000E+04	1.7291E+05	9.8467E+09
6.0000E+04	1.7291E+05	1.0193E+10
6.2000E+04	1.7291E+05	1.0538E+10
6.4000E+04	1.7291E+05	1.0884E+10
6.6000E+04	1.7291E+05	1.1230E+10
6.8000E+04	1.7291E+05	1.1576E+10
7.0000E+04	1.7291E+05	1.1922E+10
7.2000E+04	1.7291E+05	1.2267E+10
7.4000E+04	1.7291E+05	1.2613E+10
7.6000E+04	1.7291E+05	1.2959E+10
7.8000E+04	1.7291E+05	1.3305E+10
8.0000E+04	1.7291E+05	1.3651E+10
8.2000E+04	1.7291E+05	1.3997E+10

8.4000E+04	1.7291E+05	1.4342E+10
8.6000E+04	1.7291E+05	1.4688E+10
8.8000E+04	1.7291E+05	1.5034E+10
9.0000E+04	1.7291E+05	1.5380E+10
9.2000E+04	1.7291E+05	1.5726E+10
9.4000E+04	1.7291E+05	1.6071E+10
9.6000E+04	1.7291E+05	1.6417E+10
9.8000E+04	1.7291E+05	1.6763E+10
1.0000E+05	1.7291E+05	1.7109E+10
1.0200E+05	1.7291E+05	1.7455E+10
1.0400E+05	1.7291E+05	1.7800E+10
1.0600E+05	1.7291E+05	1.8146E+10
1.0800E+05	1.7291E+05	1.8492E+10
1.1000E+05	1.7291E+05	1.8838E+10
1.1200E+05	1.7291E+05	1.9184E+10
1.1400E+05	1.7291E+05	1.9530E+10
1.1600E+05	1.7291E+05	1.9875E+10
1.1800E+05	1.7291E+05	2.0221E+10
1.2000E+05	1.7291E+05	2.0567E+10
1.2200E+05	1.7291E+05	2.0913E+10
1.2400E+05	1.7291E+05	2.1259E+10
1.2600E+05	1.7291E+05	2.1604E+10
1.2800E+05	1.7291E+05	2.1950E+10
1.3000E+05	1.7291E+05	2.2296E+10
1.3200E+05	1.7291E+05	2.2642E+10
1.3400E+05	1.7291E+05	2.2988E+10
1.3600E+05	1.7291E+05	2.3334E+10
1.3800E+05	1.7291E+05	2.3679E+10
1.4000E+05	1.7291E+05	2.4025E+10
1.4200E+05	1.7291E+05	2.4371E+10
1.4400E+05	1.7291E+05	2.4717E+10
1.4600E+05	1.7291E+05	2.5063E+10
1.4800E+05	1.7291E+05	2.5408E+10
1.5000E+05	1.7291E+05	2.5754E+10
1.5200E+05	1.7291E+05	2.6100E+10
1.5400E+05	1.7291E+05	2.6446E+10
1.5600E+05	1.7291E+05	2.6792E+10
1.5800E+05	1.7291E+05	2.7138E+10
1.6000E+05	1.7291E+05	2.7483E+10
1.6200E+05	1.7291E+05	2.7829E+10
1.6400E+05	1.7291E+05	2.8175E+10
1.6600E+05	1.7291E+05	2.8521E+10
1.6800E+05	1.7291E+05	2.8867E+10
1.7000E+05	1.7291E+05	2.9212E+10
1.7200E+05	1.7291E+05	2.9558E+10
1.7400E+05	1.7291E+05	2.9904E+10
1.7600E+05	1.7291E+05	3.0250E+10

1.7800E+05	1.7291E+05	3.0596E+10
1.8000E+05	1.7291E+05	3.0942E+10
1.8200E+05	1.7291E+05	3.1287E+10
1.8400E+05	1.7291E+05	3.1633E+10
1.8600E+05	1.7291E+05	3.1979E+10
1.8800E+05	1.7291E+05	3.2325E+10
1.9000E+05	1.7291E+05	3.2671E+10
1.9200E+05	1.7291E+05	3.3016E+10
1.9400E+05	1.7291E+05	3.3362E+10
1.9600E+05	1.7291E+05	3.3708E+10
1.9800E+05	1.7291E+05	3.4054E+10
2.0000E+05	1.7291E+05	3.4400E+10
2.0200E+05	1.7291E+05	3.4746E+10
2.0400E+05	1.7291E+05	3.5091E+10
2.0600E+05	1.7291E+05	3.5437E+10
2.0800E+05	1.7291E+05	3.5783E+10
2.1000E+05	1.7291E+05	3.6129E+10
2.1200E+05	1.7291E+05	3.6475E+10
2.1400E+05	1.7291E+05	3.6820E+10
2.1600E+05	1.7291E+05	3.7166E+10
2.1800E+05	1.7291E+05	3.7512E+10
2.2000E+05	1.7291E+05	3.7858E+10
2.2200E+05	1.7291E+05	3.8204E+10
2.2400E+05	1.7291E+05	3.8549E+10
2.2600E+05	1.7291E+05	3.8895E+10
2.2800E+05	1.7291E+05	3.9241E+10
2.3000E+05	1.7291E+05	3.9587E+10
2.3200E+05	1.7291E+05	3.9933E+10
2.3400E+05	1.7291E+05	4.0279E+10
2.3600E+05	1.7291E+05	4.0624E+10
2.3800E+05	1.7291E+05	4.0970E+10
2.4000E+05	1.7291E+05	4.1316E+10
2.4200E+05	1.7291E+05	4.1662E+10
2.4400E+05	1.7291E+05	4.2008E+10
2.4600E+05	1.7291E+05	4.2353E+10
2.4800E+05	1.7291E+05	4.2699E+10
2.5000E+05	1.7291E+05	4.3045E+10
2.5200E+05	1.7291E+05	4.3391E+10
2.5400E+05	1.7291E+05	4.3737E+10
2.5600E+05	1.7291E+05	4.4083E+10
2.5800E+05	1.7291E+05	4.4428E+10
2.6000E+05	1.7291E+05	4.4774E+10
2.6200E+05	1.7291E+05	4.5120E+10
2.6400E+05	1.7291E+05	4.5466E+10
2.6600E+05	1.7291E+05	4.5812E+10
2.6800E+05	1.7291E+05	4.6157E+10
2.7000E+05	1.7291E+05	4.6503E+10

2.7200E+05	1.7291E+05	4.6849E+10
2.7400E+05	1.7291E+05	4.7195E+10
2.7600E+05	1.7291E+05	4.7541E+10
2.7800E+05	1.7291E+05	4.7887E+10
2.8000E+05	1.7291E+05	4.8232E+10
2.8200E+05	1.7291E+05	4.8578E+10
2.8400E+05	1.7291E+05	4.8924E+10
2.8600E+05	1.7291E+05	4.9270E+10
2.8800E+05	1.7291E+05	4.9616E+10
2.9000E+05	1.7291E+05	4.9961E+10
2.9200E+05	1.7291E+05	5.0307E+10
2.9400E+05	1.7291E+05	5.0653E+10
2.9600E+05	1.7291E+05	5.0999E+10
2.9800E+05	1.7291E+05	5.1345E+10
3.0000E+05	1.7291E+05	5.1691E+10
3.0200E+05	1.7291E+05	5.2036E+10
3.0400E+05	1.7291E+05	5.2382E+10
3.0600E+05	1.7291E+05	5.2728E+10
3.0800E+05	1.7291E+05	5.3074E+10
3.1000E+05	1.7291E+05	5.3420E+10
3.1200E+05	1.7291E+05	5.3765E+10
3.1400E+05	1.7291E+05	5.4111E+10
3.1600E+05	1.7291E+05	5.4457E+10
3.1800E+05	1.7291E+05	5.4803E+10
3.2000E+05	1.7291E+05	5.5149E+10
3.2200E+05	1.7291E+05	5.5494E+10
3.2400E+05	1.7291E+05	5.5840E+10
3.2600E+05	1.7291E+05	5.6186E+10
3.2800E+05	1.7291E+05	5.6532E+10
3.3000E+05	1.7291E+05	5.6878E+10
3.3200E+05	1.7291E+05	5.7224E+10
3.3400E+05	1.7291E+05	5.7569E+10
3.3600E+05	1.7291E+05	5.7915E+10
3.3800E+05	1.7291E+05	5.8261E+10
3.4000E+05	1.7291E+05	5.8607E+10
3.4200E+05	1.7291E+05	5.8953E+10
3.4400E+05	1.7291E+05	5.9298E+10
3.4600E+05	1.7291E+05	5.9644E+10
3.4800E+05	1.7291E+05	5.9990E+10
3.5000E+05	1.7291E+05	6.0336E+10
3.5200E+05	1.7291E+05	6.0682E+10
3.5400E+05	1.7291E+05	6.1028E+10
3.5600E+05	1.7291E+05	6.1373E+10
3.5800E+05	1.7291E+05	6.1719E+10
3.6000E+05	1.7291E+05	6.2065E+10
3.6200E+05	1.7291E+05	6.2411E+10
3.6400E+05	1.7291E+05	6.2757E+10

3.6600E+05	1.7291E+05	6.3102E+10
3.6800E+05	1.7291E+05	6.3448E+10
3.7000E+05	1.7291E+05	6.3794E+10
3.7200E+05	1.7291E+05	6.4140E+10
3.7400E+05	1.7291E+05	6.4486E+10
3.7600E+05	1.7291E+05	6.4832E+10
3.7800E+05	1.7291E+05	6.5177E+10
3.8000E+05	1.7291E+05	6.5523E+10
3.8200E+05	1.7291E+05	6.5869E+10
3.8400E+05	1.7291E+05	6.6215E+10
3.8600E+05	1.7291E+05	6.6561E+10
3.8800E+05	1.7291E+05	6.6906E+10
3.9000E+05	1.7291E+05	6.7252E+10
3.9200E+05	1.7291E+05	6.7598E+10
3.9400E+05	1.7291E+05	6.7944E+10
3.9600E+05	1.7291E+05	6.8290E+10
3.9800E+05	1.7291E+05	6.8636E+10
4.0000E+05	1.7291E+05	6.8981E+10
4.0200E+05	1.7291E+05	6.9327E+10
4.0400E+05	1.7291E+05	6.9673E+10
4.0600E+05	1.7291E+05	7.0019E+10
4.0800E+05	1.7291E+05	7.0365E+10
4.1000E+05	1.7291E+05	7.0710E+10
4.1200E+05	1.7291E+05	7.1056E+10
4.1400E+05	1.7291E+05	7.1402E+10
4.1600E+05	1.7291E+05	7.1748E+10
4.1800E+05	1.7291E+05	7.2094E+10
4.2000E+05	1.7291E+05	7.2440E+10
4.2200E+05	1.7291E+05	7.2785E+10
4.2400E+05	1.7291E+05	7.3131E+10
4.2600E+05	1.7291E+05	7.3477E+10
4.2800E+05	1.7291E+05	7.3823E+10
4.3000E+05	1.7291E+05	7.4169E+10
4.3200E+05	1.7291E+05	7.4514E+10
4.3400E+05	1.7291E+05	7.4860E+10
4.3600E+05	1.7291E+05	7.5206E+10
4.3800E+05	1.7291E+05	7.5552E+10
4.4000E+05	1.7291E+05	7.5898E+10
4.4200E+05	1.7291E+05	7.6243E+10
4.4400E+05	1.7291E+05	7.6589E+10
4.4600E+05	1.7291E+05	7.6935E+10
4.4800E+05	1.7291E+05	7.7281E+10
4.5000E+05	1.7291E+05	7.7627E+10
4.5200E+05	1.7291E+05	7.7973E+10
4.5400E+05	1.7291E+05	7.8318E+10
4.5600E+05	1.7291E+05	7.8664E+10
4.5800E+05	1.7291E+05	7.9010E+10

4.6000E+05	1.7291E+05	7.9356E+10
4.6200E+05	1.7291E+05	7.9702E+10
4.6400E+05	1.7291E+05	8.0047E+10
4.6600E+05	1.7291E+05	8.0393E+10
4.6800E+05	1.7291E+05	8.0739E+10
4.7000E+05	1.7291E+05	8.1085E+10
4.7200E+05	1.7291E+05	8.1431E+10
4.7400E+05	1.7291E+05	8.1777E+10
4.7600E+05	1.7291E+05	8.2122E+10
4.7800E+05	1.7291E+05	8.2468E+10
4.8000E+05	1.7291E+05	8.2814E+10
4.8200E+05	1.7291E+05	8.3160E+10
4.8400E+05	1.7291E+05	8.3506E+10
4.8600E+05	1.7291E+05	8.3851E+10
4.8800E+05	1.7291E+05	8.4197E+10
4.9000E+05	1.7291E+05	8.4543E+10
4.9200E+05	1.7291E+05	8.4889E+10
4.9400E+05	1.7291E+05	8.5235E+10
4.9600E+05	1.7291E+05	8.5581E+10
4.9800E+05	1.7291E+05	8.5926E+10
5.0000E+05	1.7291E+05	8.6272E+10
5.0200E+05	2.9600E+05	8.6741E+10
5.0400E+05	2.9600E+05	8.7333E+10
5.0600E+05	2.9600E+05	8.7925E+10
5.0800E+05	2.9600E+05	8.8517E+10
5.1000E+05	2.9600E+05	8.9109E+10
5.1200E+05	2.9600E+05	8.9701E+10
5.1400E+05	2.9600E+05	9.0293E+10
5.1600E+05	2.9600E+05	9.0885E+10
5.1800E+05	2.9600E+05	9.1477E+10
5.2000E+05	2.9600E+05	9.2069E+10
5.2200E+05	2.9600E+05	9.2661E+10
5.2400E+05	2.9600E+05	9.3253E+10
5.2600E+05	2.9600E+05	9.3845E+10
5.2800E+05	2.9600E+05	9.4437E+10
5.3000E+05	2.9600E+05	9.5029E+10
5.3200E+05	2.9600E+05	9.5621E+10
5.3400E+05	2.9600E+05	9.6213E+10
5.3600E+05	2.9600E+05	9.6805E+10
5.3800E+05	2.9600E+05	9.7397E+10
5.4000E+05	2.9600E+05	9.7989E+10
5.4200E+05	2.9600E+05	9.8581E+10
5.4400E+05	2.9600E+05	9.9173E+10
5.4600E+05	2.9600E+05	9.9765E+10
5.4800E+05	2.9600E+05	1.0036E+11
5.5000E+05	2.9600E+05	1.0095E+11
5.5200E+05	2.9600E+05	1.0154E+11

5.5400E+05	2.9600E+05	1.0213E+11
5.5600E+05	2.9600E+05	1.0273E+11
5.5800E+05	2.9600E+05	1.0332E+11
5.6000E+05	2.9600E+05	1.0391E+11
5.6200E+05	2.9600E+05	1.0450E+11
5.6400E+05	2.9600E+05	1.0509E+11
5.6600E+05	2.9600E+05	1.0569E+11
5.6800E+05	2.9600E+05	1.0628E+11
5.7000E+05	2.9600E+05	1.0687E+11
5.7200E+05	2.9600E+05	1.0746E+11
5.7400E+05	2.9600E+05	1.0805E+11
5.7600E+05	2.9600E+05	1.0865E+11
5.7800E+05	2.9600E+05	1.0924E+11
5.8000E+05	2.9600E+05	1.0983E+11
5.8200E+05	2.9600E+05	1.1042E+11
5.8400E+05	2.9600E+05	1.1101E+11
5.8600E+05	2.9600E+05	1.1161E+11
5.8800E+05	2.9600E+05	1.1220E+11
5.9000E+05	2.9600E+05	1.1279E+11
5.9200E+05	2.9600E+05	1.1338E+11
5.9400E+05	2.9600E+05	1.1397E+11
5.9600E+05	2.9600E+05	1.1457E+11
5.9800E+05	2.9600E+05	1.1516E+11
6.0000E+05	2.9600E+05	1.1575E+11
6.0200E+05	2.9600E+05	1.1634E+11
6.0400E+05	2.9600E+05	1.1693E+11
6.0600E+05	2.9600E+05	1.1753E+11
6.0800E+05	2.9600E+05	1.1812E+11
6.1000E+05	2.9600E+05	1.1871E+11
6.1200E+05	2.9600E+05	1.1930E+11
6.1400E+05	2.9600E+05	1.1989E+11
6.1600E+05	2.9600E+05	1.2049E+11
6.1800E+05	2.9600E+05	1.2108E+11
6.2000E+05	2.9600E+05	1.2167E+11
6.2200E+05	2.9600E+05	1.2226E+11
6.2400E+05	2.9600E+05	1.2285E+11
6.2600E+05	2.9600E+05	1.2345E+11
6.2800E+05	2.9600E+05	1.2404E+11
6.3000E+05	2.9600E+05	1.2463E+11
6.3200E+05	2.9600E+05	1.2522E+11
6.3400E+05	2.9600E+05	1.2581E+11
6.3600E+05	2.9600E+05	1.2641E+11
6.3800E+05	2.9600E+05	1.2700E+11
6.4000E+05	2.9600E+05	1.2759E+11
6.4200E+05	2.9600E+05	1.2818E+11
6.4400E+05	2.9600E+05	1.2877E+11
6.4600E+05	2.9600E+05	1.2937E+11

6.4800E+05	2.9600E+05	1.2996E+11
6.5000E+05	2.9600E+05	1.3055E+11
6.5200E+05	2.9600E+05	1.3114E+11
6.5400E+05	2.9600E+05	1.3173E+11
6.5600E+05	2.9600E+05	1.3233E+11
6.5800E+05	2.9600E+05	1.3292E+11
6.6000E+05	2.9600E+05	1.3351E+11
6.6200E+05	2.9600E+05	1.3410E+11
6.6400E+05	2.9600E+05	1.3469E+11
6.6600E+05	2.9600E+05	1.3529E+11
6.6800E+05	2.9600E+05	1.3588E+11
6.7000E+05	2.9600E+05	1.3647E+11
6.7200E+05	2.9600E+05	1.3706E+11
6.7400E+05	2.9600E+05	1.3765E+11
6.7600E+05	2.9600E+05	1.3825E+11
6.7800E+05	2.9600E+05	1.3884E+11
6.8000E+05	2.9600E+05	1.3943E+11
6.8200E+05	2.9600E+05	1.4002E+11
6.8400E+05	2.9600E+05	1.4061E+11
6.8600E+05	2.9600E+05	1.4121E+11
6.8800E+05	2.9600E+05	1.4180E+11
6.9000E+05	2.9600E+05	1.4239E+11
6.9200E+05	2.9600E+05	1.4298E+11
6.9400E+05	2.9600E+05	1.4357E+11
6.9600E+05	2.9600E+05	1.4417E+11
6.9800E+05	2.9600E+05	1.4476E+11
7.0000E+05	2.9600E+05	1.4535E+11
7.0200E+05	2.9600E+05	1.4594E+11
7.0400E+05	2.9600E+05	1.4653E+11
7.0600E+05	2.9600E+05	1.4713E+11
7.0800E+05	2.9600E+05	1.4772E+11
7.1000E+05	2.9600E+05	1.4831E+11
7.1200E+05	2.9600E+05	1.4890E+11
7.1400E+05	2.9600E+05	1.4949E+11
7.1600E+05	2.9600E+05	1.5009E+11
7.1800E+05	2.9600E+05	1.5068E+11
7.2000E+05	2.9600E+05	1.5127E+11
7.2200E+05	2.9600E+05	1.5186E+11
7.2400E+05	2.9600E+05	1.5245E+11
7.2600E+05	2.9600E+05	1.5305E+11
7.2800E+05	2.9600E+05	1.5364E+11
7.3000E+05	2.9600E+05	1.5423E+11
7.3200E+05	2.9600E+05	1.5482E+11
7.3400E+05	2.9600E+05	1.5541E+11
7.3600E+05	2.9600E+05	1.5601E+11
7.3800E+05	2.9600E+05	1.5660E+11
7.4000E+05	2.9600E+05	1.5719E+11

7.4200E+05	2.9600E+05	1.5778E+11
7.4400E+05	2.9600E+05	1.5837E+11
7.4600E+05	2.9600E+05	1.5897E+11
7.4800E+05	2.9600E+05	1.5956E+11
7.5000E+05	2.9600E+05	1.6015E+11
7.5200E+05	2.9600E+05	1.6074E+11
7.5400E+05	2.9600E+05	1.6133E+11
7.5600E+05	2.9600E+05	1.6193E+11
7.5800E+05	2.9600E+05	1.6252E+11
7.6000E+05	2.9600E+05	1.6311E+11
7.6200E+05	2.9600E+05	1.6370E+11
7.6400E+05	2.9600E+05	1.6429E+11
7.6600E+05	2.9600E+05	1.6489E+11
7.6800E+05	2.9600E+05	1.6548E+11
7.7000E+05	2.9600E+05	1.6607E+11
7.7200E+05	2.9600E+05	1.6666E+11
7.7400E+05	2.9600E+05	1.6725E+11
7.7600E+05	2.9600E+05	1.6785E+11
7.7800E+05	2.9600E+05	1.6844E+11
7.8000E+05	2.9600E+05	1.6903E+11
7.8200E+05	2.9600E+05	1.6962E+11
7.8400E+05	2.9600E+05	1.7021E+11
7.8600E+05	2.9600E+05	1.7081E+11
7.8800E+05	2.9600E+05	1.7140E+11
7.9000E+05	2.9600E+05	1.7199E+11
7.9200E+05	2.9600E+05	1.7258E+11
7.9400E+05	2.9600E+05	1.7317E+11
7.9600E+05	2.9600E+05	1.7377E+11
7.9800E+05	2.9600E+05	1.7436E+11
8.0000E+05	2.9600E+05	1.7495E+11
8.0200E+05	2.9600E+05	1.7554E+11
8.0400E+05	2.9600E+05	1.7613E+11
8.0600E+05	2.9600E+05	1.7673E+11
8.0800E+05	2.9600E+05	1.7732E+11
8.1000E+05	2.9600E+05	1.7791E+11
8.1200E+05	2.9600E+05	1.7850E+11
8.1400E+05	2.9600E+05	1.7909E+11
8.1600E+05	2.9600E+05	1.7969E+11
8.1800E+05	2.9600E+05	1.8028E+11
8.2000E+05	2.9600E+05	1.8087E+11
8.2200E+05	2.9600E+05	1.8146E+11
8.2400E+05	2.9600E+05	1.8205E+11
8.2600E+05	2.9600E+05	1.8265E+11
8.2800E+05	2.9600E+05	1.8324E+11
8.3000E+05	2.9600E+05	1.8383E+11
8.3200E+05	2.9600E+05	1.8442E+11
8.3400E+05	2.9600E+05	1.8501E+11

8.3600E+05	2.9600E+05	1.8561E+11
8.3800E+05	2.9600E+05	1.8620E+11
8.4000E+05	2.9600E+05	1.8679E+11
8.4200E+05	2.9600E+05	1.8738E+11
8.4400E+05	2.9600E+05	1.8797E+11
8.4600E+05	2.9600E+05	1.8857E+11
8.4800E+05	2.9600E+05	1.8916E+11
8.5000E+05	2.9600E+05	1.8975E+11
8.5200E+05	2.9600E+05	1.9034E+11
8.5400E+05	2.9600E+05	1.9093E+11
8.5600E+05	2.9600E+05	1.9153E+11
8.5800E+05	2.9600E+05	1.9212E+11
8.6000E+05	2.9600E+05	1.9271E+11
8.6200E+05	2.9600E+05	1.9330E+11
8.6400E+05	2.9600E+05	1.9389E+11
8.6600E+05	2.9600E+05	1.9449E+11
8.6800E+05	2.9600E+05	1.9508E+11
8.7000E+05	2.9600E+05	1.9567E+11
8.7200E+05	2.9600E+05	1.9626E+11
8.7400E+05	2.9600E+05	1.9685E+11
8.7600E+05	2.9600E+05	1.9745E+11
8.7800E+05	2.9600E+05	1.9804E+11
8.8000E+05	2.9600E+05	1.9863E+11
8.8200E+05	2.9600E+05	1.9922E+11
8.8400E+05	2.9600E+05	1.9981E+11
8.8600E+05	2.9600E+05	2.0041E+11
8.8800E+05	2.9600E+05	2.0100E+11
8.9000E+05	2.9600E+05	2.0159E+11
8.9200E+05	2.9600E+05	2.0218E+11
8.9400E+05	2.9600E+05	2.0277E+11
8.9600E+05	2.9600E+05	2.0337E+11
8.9800E+05	2.9600E+05	2.0396E+11
9.0000E+05	2.9600E+05	2.0455E+11
9.0200E+05	2.9600E+05	2.0514E+11
9.0400E+05	2.9600E+05	2.0574E+11
9.0600E+05	2.9600E+05	2.0633E+11
9.0800E+05	2.9600E+05	2.0692E+11
9.1000E+05	2.9600E+05	2.0751E+11
9.1200E+05	2.9600E+05	2.0810E+11
9.1400E+05	2.9600E+05	2.0870E+11
9.1600E+05	2.9600E+05	2.0929E+11
9.1800E+05	2.9600E+05	2.0988E+11
9.2000E+05	2.9600E+05	2.1047E+11
9.2200E+05	2.9600E+05	2.1106E+11
9.2400E+05	2.9600E+05	2.1166E+11
9.2600E+05	2.9600E+05	2.1225E+11
9.2800E+05	2.9600E+05	2.1284E+11

9.3000E+05	2.9600E+05	2.1343E+11
9.3200E+05	2.9600E+05	2.1402E+11
9.3400E+05	2.9600E+05	2.1462E+11
9.3600E+05	2.9600E+05	2.1521E+11
9.3800E+05	2.9600E+05	2.1580E+11
9.4000E+05	2.9600E+05	2.1639E+11
9.4200E+05	2.9600E+05	2.1698E+11
9.4400E+05	2.9600E+05	2.1758E+11
9.4600E+05	2.9600E+05	2.1817E+11
9.4800E+05	2.9600E+05	2.1876E+11
9.5000E+05	2.9600E+05	2.1935E+11
9.5200E+05	2.9600E+05	2.1994E+11
9.5400E+05	2.9600E+05	2.2054E+11
9.5600E+05	2.9600E+05	2.2113E+11
9.5800E+05	2.9600E+05	2.2172E+11
9.6000E+05	2.9600E+05	2.2231E+11
9.6200E+05	2.9600E+05	2.2290E+11
9.6400E+05	2.9600E+05	2.2350E+11
9.6600E+05	2.9600E+05	2.2409E+11
9.6800E+05	2.9600E+05	2.2468E+11
9.7000E+05	2.9600E+05	2.2527E+11
9.7200E+05	2.9600E+05	2.2586E+11
9.7400E+05	2.9600E+05	2.2646E+11
9.7600E+05	2.9600E+05	2.2705E+11
9.7800E+05	2.9600E+05	2.2764E+11
9.8000E+05	2.9600E+05	2.2823E+11
9.8200E+05	2.9600E+05	2.2882E+11
9.8400E+05	2.9600E+05	2.2942E+11
9.8600E+05	2.9600E+05	2.3001E+11
9.8800E+05	2.9600E+05	2.3060E+11
9.9000E+05	2.9600E+05	2.3119E+11
9.9200E+05	2.9600E+05	2.3178E+11
9.9400E+05	2.9600E+05	2.3238E+11
9.9600E+05	2.9600E+05	2.3297E+11
9.9800E+05	2.9600E+05	2.3356E+11
1.0000E+06	2.9600E+05	2.3415E+11

Inventory Released Beyond 18 km
Combined TSPA Case
Contaminant Nickel

Time (yr)	Flux In (g/yr)	Cumulative (g)
2.50E+02	0.00E+00	0.00E+00
2.00E+03	0.00E+00	0.00E+00
4.00E+03	0.00E+00	0.00E+00
6.00E+03	1.68E+05	1.68E+08
8.00E+03	2.50E+05	5.86E+08
1.00E+04	3.33E+05	1.17E+09
1.20E+04	3.33E+05	1.83E+09
1.40E+04	3.78E+05	2.55E+09
1.60E+04	4.16E+05	3.34E+09
1.80E+04	4.16E+05	4.17E+09
2.00E+04	4.58E+05	5.05E+09
2.20E+04	4.58E+05	5.96E+09
2.40E+04	4.58E+05	6.88E+09
2.60E+04	5.00E+05	7.84E+09
2.80E+04	5.00E+05	8.83E+09
3.00E+04	5.00E+05	9.83E+09
3.20E+04	5.00E+05	1.08E+10
3.40E+04	5.00E+05	1.18E+10
3.60E+04	5.19E+05	1.29E+10
3.80E+04	5.19E+05	1.39E+10
4.00E+04	5.41E+05	1.50E+10
4.20E+04	5.41E+05	1.60E+10
4.40E+04	5.41E+05	1.71E+10
4.60E+04	5.41E+05	1.82E+10
4.80E+04	5.41E+05	1.93E+10
5.00E+04	5.61E+05	2.04E+10
5.20E+04	5.61E+05	2.15E+10
5.40E+04	5.61E+05	2.26E+10
5.60E+04	5.61E+05	2.37E+10
5.80E+04	5.83E+05	2.49E+10
6.00E+04	5.83E+05	2.61E+10
6.20E+04	5.83E+05	2.72E+10
6.40E+04	5.83E+05	2.84E+10
6.60E+04	5.83E+05	2.96E+10
6.80E+04	5.83E+05	3.07E+10
7.00E+04	5.83E+05	3.19E+10
7.20E+04	6.03E+05	3.31E+10
7.40E+04	6.03E+05	3.43E+10
7.60E+04	6.03E+05	3.55E+10
7.80E+04	6.03E+05	3.67E+10
8.00E+04	6.03E+05	3.79E+10
8.20E+04	6.03E+05	3.91E+10

8.40E+04	6.03E+05	4.03E+10
8.60E+04	6.03E+05	4.15E+10
8.80E+04	6.03E+05	4.27E+10
9.00E+04	6.03E+05	4.39E+10
9.20E+04	6.03E+05	4.51E+10
9.40E+04	6.03E+05	4.63E+10
9.60E+04	6.03E+05	4.75E+10
9.80E+04	6.03E+05	4.87E+10
1.00E+05	6.03E+05	4.99E+10
1.02E+05	6.24E+05	5.12E+10
1.04E+05	6.24E+05	5.24E+10
1.06E+05	6.24E+05	5.37E+10
1.08E+05	6.24E+05	5.49E+10
1.10E+05	6.24E+05	5.62E+10
1.12E+05	6.24E+05	5.74E+10
1.14E+05	6.24E+05	5.87E+10
1.16E+05	6.24E+05	5.99E+10
1.18E+05	6.24E+05	6.12E+10
1.20E+05	6.24E+05	6.24E+10
1.22E+05	6.24E+05	6.37E+10
1.24E+05	6.24E+05	6.49E+10
1.26E+05	6.24E+05	6.62E+10
1.28E+05	6.24E+05	6.74E+10
1.30E+05	6.24E+05	6.87E+10
1.32E+05	6.24E+05	6.99E+10
1.34E+05	6.24E+05	7.12E+10
1.36E+05	6.24E+05	7.24E+10
1.38E+05	6.24E+05	7.37E+10
1.40E+05	6.24E+05	7.49E+10
1.42E+05	6.24E+05	7.61E+10
1.44E+05	6.24E+05	7.74E+10
1.46E+05	6.24E+05	7.86E+10
1.48E+05	6.24E+05	7.99E+10
1.50E+05	6.24E+05	8.11E+10
1.52E+05	6.24E+05	8.24E+10
1.54E+05	6.24E+05	8.36E+10
1.56E+05	6.24E+05	8.49E+10
1.58E+05	6.24E+05	8.61E+10
1.60E+05	6.24E+05	8.74E+10
1.62E+05	6.24E+05	8.86E+10
1.64E+05	6.44E+05	8.99E+10
1.66E+05	6.44E+05	9.12E+10
1.68E+05	6.44E+05	9.25E+10
1.70E+05	6.44E+05	9.38E+10
1.72E+05	6.44E+05	9.51E+10
1.74E+05	6.44E+05	9.63E+10
1.76E+05	6.44E+05	9.76E+10

1.78E+05	6.44E+05	9.89E+10
1.80E+05	6.44E+05	1.00E+11
1.82E+05	6.44E+05	1.02E+11
1.84E+05	6.44E+05	1.03E+11
1.86E+05	6.44E+05	1.04E+11
1.88E+05	6.44E+05	1.05E+11
1.90E+05	6.44E+05	1.07E+11
1.92E+05	6.44E+05	1.08E+11
1.94E+05	6.44E+05	1.09E+11
1.96E+05	6.44E+05	1.11E+11
1.98E+05	6.44E+05	1.12E+11
2.00E+05	6.44E+05	1.13E+11
2.02E+05	6.44E+05	1.14E+11
2.04E+05	6.66E+05	1.16E+11
2.06E+05	6.66E+05	1.17E+11
2.08E+05	6.66E+05	1.18E+11
2.10E+05	6.66E+05	1.20E+11
2.12E+05	6.66E+05	1.21E+11
2.14E+05	6.66E+05	1.22E+11
2.16E+05	6.66E+05	1.24E+11
2.18E+05	6.66E+05	1.25E+11
2.20E+05	6.66E+05	1.26E+11
2.22E+05	6.66E+05	1.28E+11
2.24E+05	6.66E+05	1.29E+11
2.26E+05	6.66E+05	1.30E+11
2.28E+05	6.66E+05	1.32E+11
2.30E+05	6.66E+05	1.33E+11
2.32E+05	6.66E+05	1.34E+11
2.34E+05	6.66E+05	1.36E+11
2.36E+05	6.66E+05	1.37E+11
2.38E+05	6.66E+05	1.38E+11
2.40E+05	6.66E+05	1.40E+11
2.42E+05	6.66E+05	1.41E+11
2.44E+05	6.66E+05	1.42E+11
2.46E+05	6.66E+05	1.44E+11
2.48E+05	6.66E+05	1.45E+11
2.50E+05	6.66E+05	1.46E+11
2.52E+05	6.66E+05	1.48E+11
2.54E+05	6.66E+05	1.49E+11
2.56E+05	6.66E+05	1.50E+11
2.58E+05	6.66E+05	1.52E+11
2.60E+05	6.66E+05	1.53E+11
2.62E+05	6.66E+05	1.54E+11
2.64E+05	6.66E+05	1.56E+11
2.66E+05	6.66E+05	1.57E+11
2.68E+05	6.66E+05	1.58E+11
2.70E+05	6.66E+05	1.60E+11

2.72E+05	6.66E+05	1.61E+11
2.74E+05	6.66E+05	1.62E+11
2.76E+05	6.66E+05	1.64E+11
2.78E+05	6.66E+05	1.65E+11
2.80E+05	6.66E+05	1.66E+11
2.82E+05	6.66E+05	1.68E+11
2.84E+05	6.66E+05	1.69E+11
2.86E+05	6.66E+05	1.70E+11
2.88E+05	6.66E+05	1.72E+11
2.90E+05	6.66E+05	1.73E+11
2.92E+05	6.66E+05	1.74E+11
2.94E+05	6.66E+05	1.76E+11
2.96E+05	6.66E+05	1.77E+11
2.98E+05	6.66E+05	1.78E+11
3.00E+05	6.66E+05	1.80E+11
3.02E+05	6.66E+05	1.81E+11
3.04E+05	6.66E+05	1.82E+11
3.06E+05	6.66E+05	1.84E+11
3.08E+05	6.66E+05	1.85E+11
3.10E+05	6.66E+05	1.86E+11
3.12E+05	6.66E+05	1.88E+11
3.14E+05	6.66E+05	1.89E+11
3.16E+05	6.66E+05	1.90E+11
3.18E+05	6.66E+05	1.92E+11
3.20E+05	6.66E+05	1.93E+11
3.22E+05	6.66E+05	1.94E+11
3.24E+05	6.66E+05	1.96E+11
3.26E+05	6.66E+05	1.97E+11
3.28E+05	6.66E+05	1.98E+11
3.30E+05	6.66E+05	2.00E+11
3.32E+05	7.56E+05	2.01E+11
3.34E+05	7.56E+05	2.03E+11
3.36E+05	7.56E+05	2.04E+11
3.38E+05	7.56E+05	2.06E+11
3.40E+05	7.56E+05	2.07E+11
3.42E+05	7.56E+05	2.09E+11
3.44E+05	7.56E+05	2.10E+11
3.46E+05	7.56E+05	2.12E+11
3.48E+05	7.56E+05	2.13E+11
3.50E+05	7.56E+05	2.15E+11
3.52E+05	7.56E+05	2.16E+11
3.54E+05	7.56E+05	2.18E+11
3.56E+05	7.56E+05	2.19E+11
3.58E+05	7.56E+05	2.21E+11
3.60E+05	7.56E+05	2.22E+11
3.62E+05	7.56E+05	2.24E+11
3.64E+05	7.56E+05	2.25E+11

3.66E+05	7.56E+05	2.27E+11
3.68E+05	7.56E+05	2.28E+11
3.70E+05	7.56E+05	2.30E+11
3.72E+05	7.56E+05	2.31E+11
3.74E+05	7.56E+05	2.33E+11
3.76E+05	7.56E+05	2.34E+11
3.78E+05	7.56E+05	2.36E+11
3.80E+05	7.56E+05	2.37E+11
3.82E+05	7.56E+05	2.39E+11
3.84E+05	7.56E+05	2.40E+11
3.86E+05	7.56E+05	2.42E+11
3.88E+05	7.56E+05	2.43E+11
3.90E+05	7.56E+05	2.45E+11
3.92E+05	7.56E+05	2.46E+11
3.94E+05	7.56E+05	2.48E+11
3.96E+05	7.56E+05	2.49E+11
3.98E+05	7.56E+05	2.51E+11
4.00E+05	7.56E+05	2.52E+11
4.02E+05	7.56E+05	2.54E+11
4.04E+05	7.56E+05	2.55E+11
4.06E+05	7.56E+05	2.57E+11
4.08E+05	7.56E+05	2.58E+11
4.10E+05	7.56E+05	2.60E+11
4.12E+05	7.56E+05	2.62E+11
4.14E+05	7.56E+05	2.63E+11
4.16E+05	7.56E+05	2.65E+11
4.18E+05	7.56E+05	2.66E+11
4.20E+05	7.56E+05	2.68E+11
4.22E+05	7.56E+05	2.69E+11
4.24E+05	7.56E+05	2.71E+11
4.26E+05	7.56E+05	2.72E+11
4.28E+05	7.56E+05	2.74E+11
4.30E+05	7.56E+05	2.75E+11
4.32E+05	7.56E+05	2.77E+11
4.34E+05	7.56E+05	2.78E+11
4.36E+05	7.56E+05	2.80E+11
4.38E+05	7.56E+05	2.81E+11
4.40E+05	7.56E+05	2.83E+11
4.42E+05	7.56E+05	2.84E+11
4.44E+05	7.56E+05	2.86E+11
4.46E+05	7.56E+05	2.87E+11
4.48E+05	7.56E+05	2.89E+11
4.50E+05	7.56E+05	2.90E+11
4.52E+05	7.56E+05	2.92E+11
4.54E+05	7.56E+05	2.93E+11
4.56E+05	7.56E+05	2.95E+11
4.58E+05	7.56E+05	2.96E+11

4.60E+05	7.56E+05	2.98E+11
4.62E+05	7.56E+05	2.99E+11
4.64E+05	7.56E+05	3.01E+11
4.66E+05	7.56E+05	3.02E+11
4.68E+05	7.56E+05	3.04E+11
4.70E+05	7.56E+05	3.05E+11
4.72E+05	7.56E+05	3.07E+11
4.74E+05	7.56E+05	3.08E+11
4.76E+05	7.56E+05	3.10E+11
4.78E+05	7.56E+05	3.11E+11
4.80E+05	7.56E+05	3.13E+11
4.82E+05	7.56E+05	3.14E+11
4.84E+05	7.56E+05	3.16E+11
4.86E+05	7.56E+05	3.17E+11
4.88E+05	7.56E+05	3.19E+11
4.90E+05	7.56E+05	3.20E+11
4.92E+05	7.56E+05	3.22E+11
4.94E+05	7.56E+05	3.24E+11
4.96E+05	7.56E+05	3.25E+11
4.98E+05	7.56E+05	3.27E+11
5.00E+05	7.56E+05	3.28E+11
5.02E+05	7.56E+05	3.30E+11
5.04E+05	7.56E+05	3.31E+11
5.06E+05	1.29E+06	3.33E+11
5.08E+05	1.29E+06	3.36E+11
5.10E+05	1.29E+06	3.38E+11
5.12E+05	1.29E+06	3.41E+11
5.14E+05	1.29E+06	3.43E+11
5.16E+05	1.29E+06	3.46E+11
5.18E+05	1.29E+06	3.49E+11
5.20E+05	1.29E+06	3.51E+11
5.22E+05	1.29E+06	3.54E+11
5.24E+05	1.29E+06	3.56E+11
5.26E+05	1.29E+06	3.59E+11
5.28E+05	1.29E+06	3.62E+11
5.30E+05	1.29E+06	3.64E+11
5.32E+05	1.29E+06	3.67E+11
5.34E+05	1.29E+06	3.69E+11
5.36E+05	1.29E+06	3.72E+11
5.38E+05	1.29E+06	3.75E+11
5.40E+05	1.29E+06	3.77E+11
5.42E+05	1.29E+06	3.80E+11
5.44E+05	1.29E+06	3.82E+11
5.46E+05	1.29E+06	3.85E+11
5.48E+05	1.29E+06	3.87E+11
5.50E+05	1.29E+06	3.90E+11
5.52E+05	1.29E+06	3.93E+11

5.54E+05	1.29E+06	3.95E+11
5.56E+05	1.29E+06	3.98E+11
5.58E+05	1.29E+06	4.00E+11
5.60E+05	1.29E+06	4.03E+11
5.62E+05	1.29E+06	4.06E+11
5.64E+05	1.29E+06	4.08E+11
5.66E+05	1.29E+06	4.11E+11
5.68E+05	1.29E+06	4.13E+11
5.70E+05	1.29E+06	4.16E+11
5.72E+05	1.29E+06	4.19E+11
5.74E+05	1.29E+06	4.21E+11
5.76E+05	1.29E+06	4.24E+11
5.78E+05	1.29E+06	4.26E+11
5.80E+05	1.29E+06	4.29E+11
5.82E+05	1.29E+06	4.31E+11
5.84E+05	1.29E+06	4.34E+11
5.86E+05	1.29E+06	4.37E+11
5.88E+05	1.29E+06	4.39E+11
5.90E+05	1.29E+06	4.42E+11
5.92E+05	1.29E+06	4.44E+11
5.94E+05	1.29E+06	4.47E+11
5.96E+05	1.29E+06	4.50E+11
5.98E+05	1.29E+06	4.52E+11
6.00E+05	1.29E+06	4.55E+11
6.02E+05	1.29E+06	4.57E+11
6.04E+05	1.29E+06	4.60E+11
6.06E+05	1.29E+06	4.63E+11
6.08E+05	1.29E+06	4.65E+11
6.10E+05	1.29E+06	4.68E+11
6.12E+05	1.29E+06	4.70E+11
6.14E+05	1.29E+06	4.73E+11
6.16E+05	1.29E+06	4.76E+11
6.18E+05	1.29E+06	4.78E+11
6.20E+05	1.29E+06	4.81E+11
6.22E+05	1.29E+06	4.83E+11
6.24E+05	1.29E+06	4.86E+11
6.26E+05	1.29E+06	4.88E+11
6.28E+05	1.29E+06	4.91E+11
6.30E+05	1.29E+06	4.94E+11
6.32E+05	1.29E+06	4.96E+11
6.34E+05	1.29E+06	4.99E+11
6.36E+05	1.29E+06	5.01E+11
6.38E+05	1.29E+06	5.04E+11
6.40E+05	1.29E+06	5.07E+11
6.42E+05	1.29E+06	5.09E+11
6.44E+05	1.29E+06	5.12E+11
6.46E+05	1.29E+06	5.14E+11

6.48E+05	1.29E+06	5.17E+11
6.50E+05	1.29E+06	5.20E+11
6.52E+05	1.29E+06	5.22E+11
6.54E+05	1.29E+06	5.25E+11
6.56E+05	1.29E+06	5.27E+11
6.58E+05	1.29E+06	5.30E+11
6.60E+05	1.29E+06	5.32E+11
6.62E+05	1.29E+06	5.35E+11
6.64E+05	1.29E+06	5.38E+11
6.66E+05	1.29E+06	5.40E+11
6.68E+05	1.29E+06	5.43E+11
6.70E+05	1.36E+06	5.45E+11
6.72E+05	1.36E+06	5.48E+11
6.74E+05	1.36E+06	5.51E+11
6.76E+05	1.36E+06	5.54E+11
6.78E+05	1.36E+06	5.56E+11
6.80E+05	1.36E+06	5.59E+11
6.82E+05	1.36E+06	5.62E+11
6.84E+05	1.36E+06	5.64E+11
6.86E+05	1.36E+06	5.67E+11
6.88E+05	1.36E+06	5.70E+11
6.90E+05	1.36E+06	5.73E+11
6.92E+05	1.36E+06	5.75E+11
6.94E+05	1.36E+06	5.78E+11
6.96E+05	1.36E+06	5.81E+11
6.98E+05	1.36E+06	5.83E+11
7.00E+05	1.36E+06	5.86E+11
7.02E+05	1.36E+06	5.89E+11
7.04E+05	1.36E+06	5.92E+11
7.06E+05	1.36E+06	5.94E+11
7.08E+05	1.36E+06	5.97E+11
7.10E+05	1.36E+06	6.00E+11
7.12E+05	1.36E+06	6.02E+11
7.14E+05	1.36E+06	6.05E+11
7.16E+05	1.36E+06	6.08E+11
7.18E+05	1.36E+06	6.11E+11
7.20E+05	1.36E+06	6.13E+11
7.22E+05	1.36E+06	6.16E+11
7.24E+05	1.36E+06	6.19E+11
7.26E+05	1.36E+06	6.21E+11
7.28E+05	1.36E+06	6.24E+11
7.30E+05	1.36E+06	6.27E+11
7.32E+05	1.36E+06	6.30E+11
7.34E+05	1.36E+06	6.32E+11
7.36E+05	1.36E+06	6.35E+11
7.38E+05	1.36E+06	6.38E+11
7.40E+05	1.36E+06	6.40E+11

7.42E+05	1.36E+06	6.43E+11
7.44E+05	1.36E+06	6.46E+11
7.46E+05	1.36E+06	6.49E+11
7.48E+05	1.36E+06	6.51E+11
7.50E+05	1.36E+06	6.54E+11
7.52E+05	1.36E+06	6.57E+11
7.54E+05	1.36E+06	6.59E+11
7.56E+05	1.36E+06	6.62E+11
7.58E+05	1.36E+06	6.65E+11
7.60E+05	1.36E+06	6.68E+11
7.62E+05	1.36E+06	6.70E+11
7.64E+05	1.36E+06	6.73E+11
7.66E+05	1.36E+06	6.76E+11
7.68E+05	1.36E+06	6.78E+11
7.70E+05	1.36E+06	6.81E+11
7.72E+05	1.36E+06	6.84E+11
7.74E+05	1.36E+06	6.86E+11
7.76E+05	1.36E+06	6.89E+11
7.78E+05	1.36E+06	6.92E+11
7.80E+05	1.36E+06	6.95E+11
7.82E+05	1.36E+06	6.97E+11
7.84E+05	1.36E+06	7.00E+11
7.86E+05	1.36E+06	7.03E+11
7.88E+05	1.36E+06	7.05E+11
7.90E+05	1.36E+06	7.08E+11
7.92E+05	1.36E+06	7.11E+11
7.94E+05	1.36E+06	7.14E+11
7.96E+05	1.36E+06	7.16E+11
7.98E+05	1.36E+06	7.19E+11
8.00E+05	1.36E+06	7.22E+11
8.02E+05	1.36E+06	7.24E+11
8.04E+05	1.36E+06	7.27E+11
8.06E+05	1.36E+06	7.30E+11
8.08E+05	1.36E+06	7.33E+11
8.10E+05	1.36E+06	7.35E+11
8.12E+05	1.36E+06	7.38E+11
8.14E+05	1.36E+06	7.41E+11
8.16E+05	1.36E+06	7.43E+11
8.18E+05	1.36E+06	7.46E+11
8.20E+05	1.36E+06	7.49E+11
8.22E+05	1.36E+06	7.52E+11
8.24E+05	1.36E+06	7.54E+11
8.26E+05	1.36E+06	7.57E+11
8.28E+05	1.36E+06	7.60E+11
8.30E+05	1.36E+06	7.62E+11
8.32E+05	1.36E+06	7.65E+11
8.34E+05	1.36E+06	7.68E+11

8.36E+05	1.36E+06	7.71E+11
8.38E+05	1.36E+06	7.73E+11
8.40E+05	1.36E+06	7.76E+11
8.42E+05	1.36E+06	7.79E+11
8.44E+05	1.36E+06	7.81E+11
8.46E+05	1.36E+06	7.84E+11
8.48E+05	1.36E+06	7.87E+11
8.50E+05	1.36E+06	7.90E+11
8.52E+05	1.36E+06	7.92E+11
8.54E+05	1.36E+06	7.95E+11
8.56E+05	1.36E+06	7.98E+11
8.58E+05	1.36E+06	8.00E+11
8.60E+05	1.36E+06	8.03E+11
8.62E+05	1.36E+06	8.06E+11
8.64E+05	1.36E+06	8.09E+11
8.66E+05	1.36E+06	8.11E+11
8.68E+05	1.36E+06	8.14E+11
8.70E+05	1.36E+06	8.17E+11
8.72E+05	1.36E+06	8.19E+11
8.74E+05	1.36E+06	8.22E+11
8.76E+05	1.36E+06	8.25E+11
8.78E+05	1.36E+06	8.28E+11
8.80E+05	1.36E+06	8.30E+11
8.82E+05	1.36E+06	8.33E+11
8.84E+05	1.36E+06	8.36E+11
8.86E+05	1.36E+06	8.38E+11
8.88E+05	1.36E+06	8.41E+11
8.90E+05	1.36E+06	8.44E+11
8.92E+05	1.36E+06	8.47E+11
8.94E+05	1.36E+06	8.49E+11
8.96E+05	1.36E+06	8.52E+11
8.98E+05	1.36E+06	8.55E+11
9.00E+05	1.36E+06	8.57E+11
9.02E+05	1.36E+06	8.60E+11
9.04E+05	1.36E+06	8.63E+11
9.06E+05	1.36E+06	8.66E+11
9.08E+05	1.36E+06	8.68E+11
9.10E+05	1.36E+06	8.71E+11
9.12E+05	1.36E+06	8.74E+11
9.14E+05	1.36E+06	8.76E+11
9.16E+05	1.36E+06	8.79E+11
9.18E+05	1.36E+06	8.82E+11
9.20E+05	1.36E+06	8.84E+11
9.22E+05	1.36E+06	8.87E+11
9.24E+05	1.36E+06	8.90E+11
9.26E+05	1.36E+06	8.93E+11
9.28E+05	1.36E+06	8.95E+11

9.30E+05	1.36E+06	8.98E+11
9.32E+05	1.36E+06	9.01E+11
9.34E+05	1.36E+06	9.03E+11
9.36E+05	1.36E+06	9.06E+11
9.38E+05	1.36E+06	9.09E+11
9.40E+05	1.36E+06	9.12E+11
9.42E+05	1.36E+06	9.14E+11
9.44E+05	1.36E+06	9.17E+11
9.46E+05	1.36E+06	9.20E+11
9.48E+05	1.36E+06	9.22E+11
9.50E+05	1.36E+06	9.25E+11
9.52E+05	1.36E+06	9.28E+11
9.54E+05	1.36E+06	9.31E+11
9.56E+05	1.36E+06	9.33E+11
9.58E+05	1.36E+06	9.36E+11
9.60E+05	1.36E+06	9.39E+11
9.62E+05	1.36E+06	9.41E+11
9.64E+05	1.36E+06	9.44E+11
9.66E+05	1.36E+06	9.47E+11
9.68E+05	1.36E+06	9.50E+11
9.70E+05	1.36E+06	9.52E+11
9.72E+05	1.36E+06	9.55E+11
9.74E+05	1.36E+06	9.58E+11
9.76E+05	1.36E+06	9.60E+11
9.78E+05	1.36E+06	9.63E+11
9.80E+05	1.36E+06	9.66E+11
9.82E+05	1.36E+06	9.69E+11
9.84E+05	1.36E+06	9.71E+11
9.86E+05	1.36E+06	9.74E+11
9.88E+05	1.36E+06	9.77E+11
9.90E+05	1.36E+06	9.79E+11
9.92E+05	1.36E+06	9.82E+11
9.94E+05	1.36E+06	9.85E+11
9.96E+05	1.36E+06	9.88E+11
9.98E+05	1.36E+06	9.90E+11
1.00E+06	1.36E+06	9.93E+11

Inventory Released Beyond 18 km
Combined TSPA Case
Contaminant Vanadium

Time (yr)	Flux In (g/yr)	Cumulative (g)
2.50E+02	0.00E+00	0.00E+00
2.00E+03	0.00E+00	0.00E+00
4.00E+03	1.37E+02	1.37E+05
6.00E+03	2.77E+02	5.52E+05
8.00E+03	3.12E+02	1.14E+06
1.00E+04	3.47E+02	1.80E+06
1.20E+04	3.82E+02	2.53E+06
1.40E+04	4.17E+02	3.33E+06
1.60E+04	4.17E+02	4.16E+06
1.80E+04	4.17E+02	5.00E+06
2.00E+04	4.34E+02	5.85E+06
2.20E+04	4.52E+02	6.74E+06
2.40E+04	4.52E+02	7.64E+06
2.60E+04	4.69E+02	8.56E+06
2.80E+04	4.69E+02	9.50E+06
3.00E+04	4.69E+02	1.04E+07
3.20E+04	4.69E+02	1.14E+07
3.40E+04	4.69E+02	1.23E+07
3.60E+04	4.87E+02	1.33E+07
3.80E+04	4.87E+02	1.42E+07
4.00E+04	4.87E+02	1.52E+07
4.20E+04	4.87E+02	1.62E+07
4.40E+04	4.87E+02	1.72E+07
4.60E+04	4.87E+02	1.81E+07
4.80E+04	4.87E+02	1.91E+07
5.00E+04	4.87E+02	2.01E+07
5.20E+04	4.87E+02	2.11E+07
5.40E+04	5.04E+02	2.21E+07
5.60E+04	5.04E+02	2.31E+07
5.80E+04	5.04E+02	2.41E+07
6.00E+04	5.04E+02	2.51E+07
6.20E+04	5.04E+02	2.61E+07
6.40E+04	5.04E+02	2.71E+07
6.60E+04	5.04E+02	2.81E+07
6.80E+04	5.04E+02	2.91E+07
7.00E+04	5.22E+02	3.01E+07
7.20E+04	5.22E+02	3.12E+07
7.40E+04	5.22E+02	3.22E+07
7.60E+04	5.22E+02	3.33E+07
7.80E+04	5.22E+02	3.43E+07
8.00E+04	5.22E+02	3.54E+07
8.20E+04	5.22E+02	3.64E+07

8.40E+04	5.22E+02	3.74E+07
8.60E+04	5.22E+02	3.85E+07
8.80E+04	5.22E+02	3.95E+07
9.00E+04	5.22E+02	4.06E+07
9.20E+04	5.22E+02	4.16E+07
9.40E+04	5.22E+02	4.27E+07
9.60E+04	5.39E+02	4.37E+07
9.80E+04	5.39E+02	4.48E+07
1.00E+05	5.39E+02	4.59E+07
1.02E+05	5.39E+02	4.70E+07
1.04E+05	5.39E+02	4.80E+07
1.06E+05	5.39E+02	4.91E+07
1.08E+05	5.39E+02	5.02E+07
1.10E+05	5.39E+02	5.13E+07
1.12E+05	5.39E+02	5.24E+07
1.14E+05	5.39E+02	5.34E+07
1.16E+05	5.39E+02	5.45E+07
1.18E+05	5.39E+02	5.56E+07
1.20E+05	5.39E+02	5.67E+07
1.22E+05	5.57E+02	5.78E+07
1.24E+05	5.57E+02	5.89E+07
1.26E+05	5.57E+02	6.00E+07
1.28E+05	5.57E+02	6.11E+07
1.30E+05	5.57E+02	6.22E+07
1.32E+05	5.57E+02	6.33E+07
1.34E+05	5.57E+02	6.45E+07
1.36E+05	5.57E+02	6.56E+07
1.38E+05	5.57E+02	6.67E+07
1.40E+05	5.57E+02	6.78E+07
1.42E+05	5.57E+02	6.89E+07
1.44E+05	5.57E+02	7.00E+07
1.46E+05	5.57E+02	7.11E+07
1.48E+05	5.57E+02	7.23E+07
1.50E+05	5.57E+02	7.34E+07
1.52E+05	5.57E+02	7.45E+07
1.54E+05	5.57E+02	7.56E+07
1.56E+05	5.57E+02	7.67E+07
1.58E+05	5.57E+02	7.78E+07
1.60E+05	5.57E+02	7.89E+07
1.62E+05	5.57E+02	8.01E+07
1.64E+05	5.57E+02	8.12E+07
1.66E+05	5.57E+02	8.23E+07
1.68E+05	5.57E+02	8.34E+07
1.70E+05	5.57E+02	8.45E+07
1.72E+05	5.57E+02	8.56E+07
1.74E+05	5.57E+02	8.67E+07
1.76E+05	5.57E+02	8.79E+07

1.78E+05	5.57E+02	8.90E+07
1.80E+05	5.57E+02	9.01E+07
1.82E+05	5.57E+02	9.12E+07
1.84E+05	5.71E+02	9.23E+07
1.86E+05	5.71E+02	9.35E+07
1.88E+05	5.71E+02	9.46E+07
1.90E+05	5.71E+02	9.58E+07
1.92E+05	5.71E+02	9.69E+07
1.94E+05	5.71E+02	9.80E+07
1.96E+05	5.71E+02	9.92E+07
1.98E+05	5.71E+02	1.00E+08
2.00E+05	5.71E+02	1.01E+08
2.02E+05	5.71E+02	1.03E+08
2.04E+05	5.71E+02	1.04E+08
2.06E+05	5.71E+02	1.05E+08
2.08E+05	5.71E+02	1.06E+08
2.10E+05	5.71E+02	1.07E+08
2.12E+05	5.71E+02	1.08E+08
2.14E+05	5.71E+02	1.09E+08
2.16E+05	5.71E+02	1.11E+08
2.18E+05	5.71E+02	1.12E+08
2.20E+05	5.71E+02	1.13E+08
2.22E+05	5.71E+02	1.14E+08
2.24E+05	5.71E+02	1.15E+08
2.26E+05	5.71E+02	1.16E+08
2.28E+05	5.71E+02	1.17E+08
2.30E+05	5.71E+02	1.19E+08
2.32E+05	5.71E+02	1.20E+08
2.34E+05	5.71E+02	1.21E+08
2.36E+05	5.71E+02	1.22E+08
2.38E+05	5.71E+02	1.23E+08
2.40E+05	5.71E+02	1.24E+08
2.42E+05	5.71E+02	1.25E+08
2.44E+05	5.71E+02	1.27E+08
2.46E+05	5.71E+02	1.28E+08
2.48E+05	5.71E+02	1.29E+08
2.50E+05	5.71E+02	1.30E+08
2.52E+05	5.85E+02	1.31E+08
2.54E+05	5.85E+02	1.32E+08
2.56E+05	5.85E+02	1.34E+08
2.58E+05	5.85E+02	1.35E+08
2.60E+05	5.85E+02	1.36E+08
2.62E+05	5.85E+02	1.37E+08
2.64E+05	5.85E+02	1.38E+08
2.66E+05	5.85E+02	1.39E+08
2.68E+05	5.85E+02	1.41E+08
2.70E+05	5.85E+02	1.42E+08

2.72E+05	5.85E+02	1.43E+08
2.74E+05	5.85E+02	1.44E+08
2.76E+05	5.85E+02	1.45E+08
2.78E+05	5.85E+02	1.46E+08
2.80E+05	5.85E+02	1.48E+08
2.82E+05	5.85E+02	1.49E+08
2.84E+05	5.85E+02	1.50E+08
2.86E+05	5.85E+02	1.51E+08
2.88E+05	5.85E+02	1.52E+08
2.90E+05	5.85E+02	1.53E+08
2.92E+05	5.85E+02	1.55E+08
2.94E+05	5.85E+02	1.56E+08
2.96E+05	5.85E+02	1.57E+08
2.98E+05	5.85E+02	1.58E+08
3.00E+05	5.85E+02	1.59E+08
3.02E+05	5.85E+02	1.60E+08
3.04E+05	5.85E+02	1.62E+08
3.06E+05	5.85E+02	1.63E+08
3.08E+05	5.85E+02	1.64E+08
3.10E+05	5.85E+02	1.65E+08
3.12E+05	5.85E+02	1.66E+08
3.14E+05	5.85E+02	1.67E+08
3.16E+05	5.85E+02	1.69E+08
3.18E+05	5.85E+02	1.70E+08
3.20E+05	5.85E+02	1.71E+08
3.22E+05	5.85E+02	1.72E+08
3.24E+05	5.85E+02	1.73E+08
3.26E+05	5.85E+02	1.74E+08
3.28E+05	5.85E+02	1.76E+08
3.30E+05	5.85E+02	1.77E+08
3.32E+05	5.85E+02	1.78E+08
3.34E+05	5.85E+02	1.79E+08
3.36E+05	5.85E+02	1.80E+08
3.38E+05	5.85E+02	1.82E+08
3.40E+05	5.85E+02	1.83E+08
3.42E+05	5.85E+02	1.84E+08
3.44E+05	5.85E+02	1.85E+08
3.46E+05	5.85E+02	1.86E+08
3.48E+05	5.85E+02	1.87E+08
3.50E+05	5.85E+02	1.89E+08
3.52E+05	5.85E+02	1.90E+08
3.54E+05	5.85E+02	1.91E+08
3.56E+05	5.85E+02	1.92E+08
3.58E+05	5.85E+02	1.93E+08
3.60E+05	5.85E+02	1.94E+08
3.62E+05	5.85E+02	1.96E+08
3.64E+05	5.85E+02	1.97E+08

3.66E+05	5.85E+02	1.98E+08
3.68E+05	5.85E+02	1.99E+08
3.70E+05	5.85E+02	2.00E+08
3.72E+05	5.85E+02	2.01E+08
3.74E+05	5.85E+02	2.03E+08
3.76E+05	5.85E+02	2.04E+08
3.78E+05	5.85E+02	2.05E+08
3.80E+05	5.85E+02	2.06E+08
3.82E+05	5.85E+02	2.07E+08
3.84E+05	5.85E+02	2.08E+08
3.86E+05	5.85E+02	2.10E+08
3.88E+05	5.85E+02	2.11E+08
3.90E+05	5.85E+02	2.12E+08
3.92E+05	5.85E+02	2.13E+08
3.94E+05	5.85E+02	2.14E+08
3.96E+05	5.85E+02	2.15E+08
3.98E+05	5.85E+02	2.17E+08
4.00E+05	5.85E+02	2.18E+08
4.02E+05	5.85E+02	2.19E+08
4.04E+05	5.85E+02	2.20E+08
4.06E+05	5.85E+02	2.21E+08
4.08E+05	5.85E+02	2.22E+08
4.10E+05	5.85E+02	2.24E+08
4.12E+05	5.85E+02	2.25E+08
4.14E+05	5.85E+02	2.26E+08
4.16E+05	5.85E+02	2.27E+08
4.18E+05	5.85E+02	2.28E+08
4.20E+05	5.85E+02	2.29E+08
4.22E+05	5.85E+02	2.31E+08
4.24E+05	5.85E+02	2.32E+08
4.26E+05	5.85E+02	2.33E+08
4.28E+05	5.85E+02	2.34E+08
4.30E+05	5.85E+02	2.35E+08
4.32E+05	5.85E+02	2.37E+08
4.34E+05	5.85E+02	2.38E+08
4.36E+05	5.85E+02	2.39E+08
4.38E+05	5.85E+02	2.40E+08
4.40E+05	5.85E+02	2.41E+08
4.42E+05	5.85E+02	2.42E+08
4.44E+05	5.85E+02	2.44E+08
4.46E+05	5.85E+02	2.45E+08
4.48E+05	5.85E+02	2.46E+08
4.50E+05	5.85E+02	2.47E+08
4.52E+05	5.85E+02	2.48E+08
4.54E+05	5.85E+02	2.49E+08
4.56E+05	5.85E+02	2.51E+08
4.58E+05	5.85E+02	2.52E+08

4.60E+05	5.85E+02	2.53E+08
4.62E+05	5.85E+02	2.54E+08
4.64E+05	5.85E+02	2.55E+08
4.66E+05	5.85E+02	2.56E+08
4.68E+05	5.85E+02	2.58E+08
4.70E+05	5.85E+02	2.59E+08
4.72E+05	5.85E+02	2.60E+08
4.74E+05	5.85E+02	2.61E+08
4.76E+05	5.85E+02	2.62E+08
4.78E+05	5.85E+02	2.63E+08
4.80E+05	5.85E+02	2.65E+08
4.82E+05	5.85E+02	2.66E+08
4.84E+05	5.85E+02	2.67E+08
4.86E+05	5.85E+02	2.68E+08
4.88E+05	5.85E+02	2.69E+08
4.90E+05	5.85E+02	2.70E+08
4.92E+05	5.85E+02	2.72E+08
4.94E+05	5.85E+02	2.73E+08
4.96E+05	5.85E+02	2.74E+08
4.98E+05	5.85E+02	2.75E+08
5.00E+05	5.85E+02	2.76E+08
5.02E+05	5.85E+02	2.77E+08
5.04E+05	5.96E+02	2.79E+08
5.06E+05	5.96E+02	2.80E+08
5.08E+05	5.96E+02	2.81E+08
5.10E+05	5.96E+02	2.82E+08
5.12E+05	5.96E+02	2.83E+08
5.14E+05	5.96E+02	2.85E+08
5.16E+05	5.96E+02	2.86E+08
5.18E+05	5.96E+02	2.87E+08
5.20E+05	5.96E+02	2.88E+08
5.22E+05	5.96E+02	2.89E+08
5.24E+05	5.96E+02	2.91E+08
5.26E+05	5.96E+02	2.92E+08
5.28E+05	5.96E+02	2.93E+08
5.30E+05	5.96E+02	2.94E+08
5.32E+05	5.96E+02	2.95E+08
5.34E+05	5.96E+02	2.97E+08
5.36E+05	5.96E+02	2.98E+08
5.38E+05	5.96E+02	2.99E+08
5.40E+05	5.96E+02	3.00E+08
5.42E+05	5.96E+02	3.01E+08
5.44E+05	5.96E+02	3.03E+08
5.46E+05	5.96E+02	3.04E+08
5.48E+05	5.96E+02	3.05E+08
5.50E+05	5.96E+02	3.06E+08
5.52E+05	5.96E+02	3.07E+08

5.54E+05	5.96E+02	3.08E+08
5.56E+05	5.96E+02	3.10E+08
5.58E+05	5.96E+02	3.11E+08
5.60E+05	5.96E+02	3.12E+08
5.62E+05	5.96E+02	3.13E+08
5.64E+05	5.96E+02	3.14E+08
5.66E+05	5.96E+02	3.16E+08
5.68E+05	5.96E+02	3.17E+08
5.70E+05	5.96E+02	3.18E+08
5.72E+05	5.96E+02	3.19E+08
5.74E+05	5.96E+02	3.20E+08
5.76E+05	5.96E+02	3.22E+08
5.78E+05	5.96E+02	3.23E+08
5.80E+05	5.96E+02	3.24E+08
5.82E+05	5.96E+02	3.25E+08
5.84E+05	5.96E+02	3.26E+08
5.86E+05	5.96E+02	3.28E+08
5.88E+05	5.96E+02	3.29E+08
5.90E+05	5.96E+02	3.30E+08
5.92E+05	5.96E+02	3.31E+08
5.94E+05	5.96E+02	3.32E+08
5.96E+05	5.96E+02	3.34E+08
5.98E+05	5.96E+02	3.35E+08
6.00E+05	5.96E+02	3.36E+08
6.02E+05	5.96E+02	3.37E+08
6.04E+05	5.96E+02	3.38E+08
6.06E+05	5.96E+02	3.39E+08
6.08E+05	5.96E+02	3.41E+08
6.10E+05	5.96E+02	3.42E+08
6.12E+05	5.96E+02	3.43E+08
6.14E+05	5.96E+02	3.44E+08
6.16E+05	5.96E+02	3.45E+08
6.18E+05	5.96E+02	3.47E+08
6.20E+05	5.96E+02	3.48E+08
6.22E+05	5.96E+02	3.49E+08
6.24E+05	5.96E+02	3.50E+08
6.26E+05	5.96E+02	3.51E+08
6.28E+05	5.96E+02	3.53E+08
6.30E+05	5.96E+02	3.54E+08
6.32E+05	5.96E+02	3.55E+08
6.34E+05	5.96E+02	3.56E+08
6.36E+05	5.96E+02	3.57E+08
6.38E+05	5.96E+02	3.59E+08
6.40E+05	5.96E+02	3.60E+08
6.42E+05	5.96E+02	3.61E+08
6.44E+05	5.96E+02	3.62E+08
6.46E+05	5.96E+02	3.63E+08

6.48E+05	5.96E+02	3.65E+08
6.50E+05	5.96E+02	3.66E+08
6.52E+05	5.96E+02	3.67E+08
6.54E+05	5.96E+02	3.68E+08
6.56E+05	5.96E+02	3.69E+08
6.58E+05	5.96E+02	3.71E+08
6.60E+05	5.96E+02	3.72E+08
6.62E+05	5.96E+02	3.73E+08
6.64E+05	5.96E+02	3.74E+08
6.66E+05	5.96E+02	3.75E+08
6.68E+05	5.96E+02	3.76E+08
6.70E+05	5.96E+02	3.78E+08
6.72E+05	5.96E+02	3.79E+08
6.74E+05	5.96E+02	3.80E+08
6.76E+05	5.96E+02	3.81E+08
6.78E+05	5.96E+02	3.82E+08
6.80E+05	5.96E+02	3.84E+08
6.82E+05	5.96E+02	3.85E+08
6.84E+05	5.96E+02	3.86E+08
6.86E+05	5.96E+02	3.87E+08
6.88E+05	5.96E+02	3.88E+08
6.90E+05	5.96E+02	3.90E+08
6.92E+05	5.96E+02	3.91E+08
6.94E+05	5.96E+02	3.92E+08
6.96E+05	5.96E+02	3.93E+08
6.98E+05	5.96E+02	3.94E+08
7.00E+05	5.96E+02	3.96E+08
7.02E+05	5.96E+02	3.97E+08
7.04E+05	5.96E+02	3.98E+08
7.06E+05	5.96E+02	3.99E+08
7.08E+05	5.96E+02	4.00E+08
7.10E+05	5.96E+02	4.02E+08
7.12E+05	5.96E+02	4.03E+08
7.14E+05	5.96E+02	4.04E+08
7.16E+05	5.96E+02	4.05E+08
7.18E+05	5.96E+02	4.06E+08
7.20E+05	5.96E+02	4.07E+08
7.22E+05	5.96E+02	4.09E+08
7.24E+05	5.96E+02	4.10E+08
7.26E+05	5.96E+02	4.11E+08
7.28E+05	5.96E+02	4.12E+08
7.30E+05	5.96E+02	4.13E+08
7.32E+05	5.96E+02	4.15E+08
7.34E+05	5.96E+02	4.16E+08
7.36E+05	5.96E+02	4.17E+08
7.38E+05	5.96E+02	4.18E+08
7.40E+05	5.96E+02	4.19E+08

7.42E+05	5.96E+02	4.21E+08
7.44E+05	5.96E+02	4.22E+08
7.46E+05	5.96E+02	4.23E+08
7.48E+05	5.96E+02	4.24E+08
7.50E+05	5.96E+02	4.25E+08
7.52E+05	5.96E+02	4.27E+08
7.54E+05	5.96E+02	4.28E+08
7.56E+05	5.96E+02	4.29E+08
7.58E+05	5.96E+02	4.30E+08
7.60E+05	5.96E+02	4.31E+08
7.62E+05	5.96E+02	4.33E+08
7.64E+05	5.96E+02	4.34E+08
7.66E+05	5.96E+02	4.35E+08
7.68E+05	5.96E+02	4.36E+08
7.70E+05	5.96E+02	4.37E+08
7.72E+05	5.96E+02	4.38E+08
7.74E+05	5.96E+02	4.40E+08
7.76E+05	5.96E+02	4.41E+08
7.78E+05	5.96E+02	4.42E+08
7.80E+05	5.96E+02	4.43E+08
7.82E+05	5.96E+02	4.44E+08
7.84E+05	5.96E+02	4.46E+08
7.86E+05	5.96E+02	4.47E+08
7.88E+05	5.96E+02	4.48E+08
7.90E+05	5.96E+02	4.49E+08
7.92E+05	5.96E+02	4.50E+08
7.94E+05	5.96E+02	4.52E+08
7.96E+05	5.96E+02	4.53E+08
7.98E+05	5.96E+02	4.54E+08
8.00E+05	5.96E+02	4.55E+08
8.02E+05	5.96E+02	4.56E+08
8.04E+05	5.96E+02	4.58E+08
8.06E+05	5.96E+02	4.59E+08
8.08E+05	5.96E+02	4.60E+08
8.10E+05	5.96E+02	4.61E+08
8.12E+05	5.96E+02	4.62E+08
8.14E+05	5.96E+02	4.64E+08
8.16E+05	5.96E+02	4.65E+08
8.18E+05	5.96E+02	4.66E+08
8.20E+05	5.96E+02	4.67E+08
8.22E+05	5.96E+02	4.68E+08
8.24E+05	5.96E+02	4.70E+08
8.26E+05	5.96E+02	4.71E+08
8.28E+05	5.96E+02	4.72E+08
8.30E+05	5.96E+02	4.73E+08
8.32E+05	5.96E+02	4.74E+08
8.34E+05	5.96E+02	4.75E+08

8.36E+05	5.96E+02	4.77E+08
8.38E+05	5.96E+02	4.78E+08
8.40E+05	5.96E+02	4.79E+08
8.42E+05	5.96E+02	4.80E+08
8.44E+05	5.96E+02	4.81E+08
8.46E+05	5.96E+02	4.83E+08
8.48E+05	5.96E+02	4.84E+08
8.50E+05	5.96E+02	4.85E+08
8.52E+05	5.96E+02	4.86E+08
8.54E+05	5.96E+02	4.87E+08
8.56E+05	5.96E+02	4.89E+08
8.58E+05	5.96E+02	4.90E+08
8.60E+05	5.96E+02	4.91E+08
8.62E+05	5.96E+02	4.92E+08
8.64E+05	5.96E+02	4.93E+08
8.66E+05	5.96E+02	4.95E+08
8.68E+05	5.96E+02	4.96E+08
8.70E+05	5.96E+02	4.97E+08
8.72E+05	5.96E+02	4.98E+08
8.74E+05	5.96E+02	4.99E+08
8.76E+05	5.96E+02	5.01E+08
8.78E+05	5.96E+02	5.02E+08
8.80E+05	5.96E+02	5.03E+08
8.82E+05	5.96E+02	5.04E+08
8.84E+05	5.96E+02	5.05E+08
8.86E+05	5.96E+02	5.06E+08
8.88E+05	5.96E+02	5.08E+08
8.90E+05	5.96E+02	5.09E+08
8.92E+05	5.96E+02	5.10E+08
8.94E+05	5.96E+02	5.11E+08
8.96E+05	5.96E+02	5.12E+08
8.98E+05	5.96E+02	5.14E+08
9.00E+05	5.96E+02	5.15E+08
9.02E+05	5.96E+02	5.16E+08
9.04E+05	5.96E+02	5.17E+08
9.06E+05	5.96E+02	5.18E+08
9.08E+05	5.96E+02	5.20E+08
9.10E+05	5.96E+02	5.21E+08
9.12E+05	5.96E+02	5.22E+08
9.14E+05	5.96E+02	5.23E+08
9.16E+05	5.96E+02	5.24E+08
9.18E+05	5.96E+02	5.26E+08
9.20E+05	5.96E+02	5.27E+08
9.22E+05	5.96E+02	5.28E+08
9.24E+05	5.96E+02	5.29E+08
9.26E+05	5.96E+02	5.30E+08
9.28E+05	5.96E+02	5.32E+08

9.30E+05	5.96E+02	5.33E+08
9.32E+05	5.96E+02	5.34E+08
9.34E+05	5.96E+02	5.35E+08
9.36E+05	5.96E+02	5.36E+08
9.38E+05	5.96E+02	5.37E+08
9.40E+05	5.96E+02	5.39E+08
9.42E+05	5.96E+02	5.40E+08
9.44E+05	5.96E+02	5.41E+08
9.46E+05	5.96E+02	5.42E+08
9.48E+05	5.96E+02	5.43E+08
9.50E+05	5.96E+02	5.45E+08
9.52E+05	5.96E+02	5.46E+08
9.54E+05	5.96E+02	5.47E+08
9.56E+05	5.96E+02	5.48E+08
9.58E+05	5.96E+02	5.49E+08
9.60E+05	5.96E+02	5.51E+08
9.62E+05	5.96E+02	5.52E+08
9.64E+05	5.96E+02	5.53E+08
9.66E+05	5.96E+02	5.54E+08
9.68E+05	5.96E+02	5.55E+08
9.70E+05	5.96E+02	5.57E+08
9.72E+05	5.96E+02	5.58E+08
9.74E+05	5.96E+02	5.59E+08
9.76E+05	5.96E+02	5.60E+08
9.78E+05	5.96E+02	5.61E+08
9.80E+05	5.96E+02	5.63E+08
9.82E+05	5.96E+02	5.64E+08
9.84E+05	5.96E+02	5.65E+08
9.86E+05	5.96E+02	5.66E+08
9.88E+05	5.96E+02	5.67E+08
9.90E+05	5.96E+02	5.69E+08
9.92E+05	5.96E+02	5.70E+08
9.94E+05	5.96E+02	5.71E+08
9.96E+05	5.96E+02	5.72E+08
9.98E+05	5.96E+02	5.73E+08
1.00E+06	5.96E+02	5.74E+08

Inventory Released At Amargosa Farms, Present Climate
Contaminant Molybdenum

Time (yr)	Flux In (g/yr)	Cumulative (g)
2.50E+02	0.00E+00	0.00E+00
2.00E+03	1.25E+05	1.10E+08
4.00E+03	1.64E+05	3.99E+08
6.00E+03	1.73E+05	7.37E+08
8.00E+03	1.73E+05	1.08E+09
1.00E+04	1.73E+05	1.43E+09
1.20E+04	1.73E+05	1.77E+09
1.40E+04	1.73E+05	2.12E+09
1.60E+04	1.73E+05	2.47E+09
1.80E+04	1.73E+05	2.81E+09
2.00E+04	1.73E+05	3.16E+09
2.20E+04	1.73E+05	3.50E+09
2.40E+04	1.73E+05	3.85E+09
2.60E+04	1.73E+05	4.19E+09
2.80E+04	1.73E+05	4.54E+09
3.00E+04	1.73E+05	4.89E+09
3.20E+04	1.73E+05	5.23E+09
3.40E+04	1.73E+05	5.58E+09
3.60E+04	1.73E+05	5.92E+09
3.80E+04	1.73E+05	6.27E+09
4.00E+04	1.73E+05	6.62E+09
4.20E+04	1.73E+05	6.96E+09
4.40E+04	1.73E+05	7.31E+09
4.60E+04	1.73E+05	7.65E+09
4.80E+04	1.73E+05	8.00E+09
5.00E+04	1.73E+05	8.34E+09
5.20E+04	1.73E+05	8.69E+09
5.40E+04	1.73E+05	9.04E+09
5.60E+04	1.73E+05	9.38E+09
5.80E+04	1.73E+05	9.73E+09
6.00E+04	1.73E+05	1.01E+10
6.20E+04	1.73E+05	1.04E+10
6.40E+04	1.73E+05	1.08E+10
6.60E+04	1.73E+05	1.11E+10
6.80E+04	1.73E+05	1.15E+10
7.00E+04	1.73E+05	1.18E+10
7.20E+04	1.73E+05	1.21E+10
7.40E+04	1.73E+05	1.25E+10
7.60E+04	1.73E+05	1.28E+10
7.80E+04	1.73E+05	1.32E+10
8.00E+04	1.73E+05	1.35E+10
8.20E+04	1.73E+05	1.39E+10

8.40E+04	1.73E+05	1.42E+10
8.60E+04	1.73E+05	1.46E+10
8.80E+04	1.73E+05	1.49E+10
9.00E+04	1.73E+05	1.53E+10
9.20E+04	1.73E+05	1.56E+10
9.40E+04	1.73E+05	1.60E+10
9.60E+04	1.73E+05	1.63E+10
9.80E+04	1.73E+05	1.66E+10
1.00E+05	1.73E+05	1.70E+10
1.02E+05	1.73E+05	1.73E+10
1.04E+05	1.73E+05	1.77E+10
1.06E+05	1.73E+05	1.80E+10
1.08E+05	1.73E+05	1.84E+10
1.10E+05	1.73E+05	1.87E+10
1.12E+05	1.73E+05	1.91E+10
1.14E+05	1.73E+05	1.94E+10
1.16E+05	1.73E+05	1.98E+10
1.18E+05	1.73E+05	2.01E+10
1.20E+05	1.73E+05	2.04E+10
1.22E+05	1.73E+05	2.08E+10
1.24E+05	1.73E+05	2.11E+10
1.26E+05	1.73E+05	2.15E+10
1.28E+05	1.73E+05	2.18E+10
1.30E+05	1.73E+05	2.22E+10
1.32E+05	1.73E+05	2.25E+10
1.34E+05	1.73E+05	2.29E+10
1.36E+05	1.73E+05	2.32E+10
1.38E+05	1.73E+05	2.36E+10
1.40E+05	1.73E+05	2.39E+10
1.42E+05	1.73E+05	2.43E+10
1.44E+05	1.73E+05	2.46E+10
1.46E+05	1.73E+05	2.49E+10
1.48E+05	1.73E+05	2.53E+10
1.50E+05	1.73E+05	2.56E+10
1.52E+05	1.73E+05	2.60E+10
1.54E+05	1.73E+05	2.63E+10
1.56E+05	1.73E+05	2.67E+10
1.58E+05	1.73E+05	2.70E+10
1.60E+05	1.73E+05	2.74E+10
1.62E+05	1.73E+05	2.77E+10
1.64E+05	1.73E+05	2.81E+10
1.66E+05	1.73E+05	2.84E+10
1.68E+05	1.73E+05	2.87E+10
1.70E+05	1.73E+05	2.91E+10
1.72E+05	1.73E+05	2.94E+10
1.74E+05	1.73E+05	2.98E+10
1.76E+05	1.73E+05	3.01E+10

1.78E+05	1.73E+05	3.05E+10
1.80E+05	1.73E+05	3.08E+10
1.82E+05	1.73E+05	3.12E+10
1.84E+05	1.73E+05	3.15E+10
1.86E+05	1.73E+05	3.19E+10
1.88E+05	1.73E+05	3.22E+10
1.90E+05	1.73E+05	3.26E+10
1.92E+05	1.73E+05	3.29E+10
1.94E+05	1.73E+05	3.32E+10
1.96E+05	1.73E+05	3.36E+10
1.98E+05	1.73E+05	3.39E+10
2.00E+05	1.73E+05	3.43E+10
2.02E+05	1.73E+05	3.46E+10
2.04E+05	1.73E+05	3.50E+10
2.06E+05	1.73E+05	3.53E+10
2.08E+05	1.73E+05	3.57E+10
2.10E+05	1.73E+05	3.60E+10
2.12E+05	1.73E+05	3.64E+10
2.14E+05	1.73E+05	3.67E+10
2.16E+05	1.73E+05	3.70E+10
2.18E+05	1.73E+05	3.74E+10
2.20E+05	1.73E+05	3.77E+10
2.22E+05	1.73E+05	3.81E+10
2.24E+05	1.73E+05	3.84E+10
2.26E+05	1.73E+05	3.88E+10
2.28E+05	1.73E+05	3.91E+10
2.30E+05	1.73E+05	3.95E+10
2.32E+05	1.73E+05	3.98E+10
2.34E+05	1.73E+05	4.02E+10
2.36E+05	1.73E+05	4.05E+10
2.38E+05	1.73E+05	4.09E+10
2.40E+05	1.73E+05	4.12E+10
2.42E+05	1.73E+05	4.15E+10
2.44E+05	1.73E+05	4.19E+10
2.46E+05	1.73E+05	4.22E+10
2.48E+05	1.73E+05	4.26E+10
2.50E+05	1.73E+05	4.29E+10
2.52E+05	1.73E+05	4.33E+10
2.54E+05	1.73E+05	4.36E+10
2.56E+05	1.73E+05	4.40E+10
2.58E+05	1.73E+05	4.43E+10
2.60E+05	1.73E+05	4.47E+10
2.62E+05	1.73E+05	4.50E+10
2.64E+05	1.73E+05	4.53E+10
2.66E+05	1.73E+05	4.57E+10
2.68E+05	1.73E+05	4.60E+10
2.70E+05	1.73E+05	4.64E+10

2.72E+05	1.73E+05	4.67E+10
2.74E+05	1.73E+05	4.71E+10
2.76E+05	1.73E+05	4.74E+10
2.78E+05	1.73E+05	4.78E+10
2.80E+05	1.73E+05	4.81E+10
2.82E+05	1.73E+05	4.85E+10
2.84E+05	1.73E+05	4.88E+10
2.86E+05	1.73E+05	4.92E+10
2.88E+05	1.73E+05	4.95E+10
2.90E+05	1.73E+05	4.98E+10
2.92E+05	1.73E+05	5.02E+10
2.94E+05	1.73E+05	5.05E+10
2.96E+05	1.73E+05	5.09E+10
2.98E+05	1.73E+05	5.12E+10
3.00E+05	1.73E+05	5.16E+10
3.02E+05	1.73E+05	5.19E+10
3.04E+05	1.73E+05	5.23E+10
3.06E+05	1.73E+05	5.26E+10
3.08E+05	1.73E+05	5.30E+10
3.10E+05	1.73E+05	5.33E+10
3.12E+05	1.73E+05	5.36E+10
3.14E+05	1.73E+05	5.40E+10
3.16E+05	1.73E+05	5.43E+10
3.18E+05	1.73E+05	5.47E+10
3.20E+05	1.73E+05	5.50E+10
3.22E+05	1.73E+05	5.54E+10
3.24E+05	1.73E+05	5.57E+10
3.26E+05	1.73E+05	5.61E+10
3.28E+05	1.73E+05	5.64E+10
3.30E+05	1.73E+05	5.68E+10
3.32E+05	1.73E+05	5.71E+10
3.34E+05	1.73E+05	5.75E+10
3.36E+05	1.73E+05	5.78E+10
3.38E+05	1.73E+05	5.81E+10
3.40E+05	1.73E+05	5.85E+10
3.42E+05	1.73E+05	5.88E+10
3.44E+05	1.73E+05	5.92E+10
3.46E+05	1.73E+05	5.95E+10
3.48E+05	1.73E+05	5.99E+10
3.50E+05	1.73E+05	6.02E+10
3.52E+05	1.73E+05	6.06E+10
3.54E+05	1.73E+05	6.09E+10
3.56E+05	1.73E+05	6.13E+10
3.58E+05	1.73E+05	6.16E+10
3.60E+05	1.73E+05	6.19E+10
3.62E+05	1.73E+05	6.23E+10
3.64E+05	1.73E+05	6.26E+10

3.66E+05	1.73E+05	6.30E+10
3.68E+05	1.73E+05	6.33E+10
3.70E+05	1.73E+05	6.37E+10
3.72E+05	1.73E+05	6.40E+10
3.74E+05	1.73E+05	6.44E+10
3.76E+05	1.73E+05	6.47E+10
3.78E+05	1.73E+05	6.51E+10
3.80E+05	1.73E+05	6.54E+10
3.82E+05	1.73E+05	6.58E+10
3.84E+05	1.73E+05	6.61E+10
3.86E+05	1.73E+05	6.64E+10
3.88E+05	1.73E+05	6.68E+10
3.90E+05	1.73E+05	6.71E+10
3.92E+05	1.73E+05	6.75E+10
3.94E+05	1.73E+05	6.78E+10
3.96E+05	1.73E+05	6.82E+10
3.98E+05	1.73E+05	6.85E+10
4.00E+05	1.73E+05	6.89E+10
4.02E+05	1.73E+05	6.92E+10
4.04E+05	1.73E+05	6.96E+10
4.06E+05	1.73E+05	6.99E+10
4.08E+05	1.73E+05	7.02E+10
4.10E+05	1.73E+05	7.06E+10
4.12E+05	1.73E+05	7.09E+10
4.14E+05	1.73E+05	7.13E+10
4.16E+05	1.73E+05	7.16E+10
4.18E+05	1.73E+05	7.20E+10
4.20E+05	1.73E+05	7.23E+10
4.22E+05	1.73E+05	7.27E+10
4.24E+05	1.73E+05	7.30E+10
4.26E+05	1.73E+05	7.34E+10
4.28E+05	1.73E+05	7.37E+10
4.30E+05	1.73E+05	7.40E+10
4.32E+05	1.73E+05	7.44E+10
4.34E+05	1.73E+05	7.47E+10
4.36E+05	1.73E+05	7.51E+10
4.38E+05	1.73E+05	7.54E+10
4.40E+05	1.73E+05	7.58E+10
4.42E+05	1.73E+05	7.61E+10
4.44E+05	1.73E+05	7.65E+10
4.46E+05	1.73E+05	7.68E+10
4.48E+05	1.73E+05	7.72E+10
4.50E+05	1.73E+05	7.75E+10
4.52E+05	1.73E+05	7.79E+10
4.54E+05	1.73E+05	7.82E+10
4.56E+05	1.73E+05	7.85E+10
4.58E+05	1.73E+05	7.89E+10

4.60E+05	1.73E+05	7.92E+10
4.62E+05	1.73E+05	7.96E+10
4.64E+05	1.73E+05	7.99E+10
4.66E+05	1.73E+05	8.03E+10
4.68E+05	1.73E+05	8.06E+10
4.70E+05	1.73E+05	8.10E+10
4.72E+05	1.73E+05	8.13E+10
4.74E+05	1.73E+05	8.17E+10
4.76E+05	1.73E+05	8.20E+10
4.78E+05	1.73E+05	8.23E+10
4.80E+05	1.73E+05	8.27E+10
4.82E+05	1.73E+05	8.30E+10
4.84E+05	1.73E+05	8.34E+10
4.86E+05	1.73E+05	8.37E+10
4.88E+05	1.73E+05	8.41E+10
4.90E+05	1.73E+05	8.44E+10
4.92E+05	1.73E+05	8.48E+10
4.94E+05	1.73E+05	8.51E+10
4.96E+05	1.73E+05	8.55E+10
4.98E+05	1.73E+05	8.58E+10
5.00E+05	1.73E+05	8.62E+10
5.02E+05	2.96E+05	8.66E+10
5.04E+05	2.96E+05	8.72E+10
5.06E+05	2.96E+05	8.78E+10
5.08E+05	2.96E+05	8.84E+10
5.10E+05	2.96E+05	8.90E+10
5.12E+05	2.96E+05	8.96E+10
5.14E+05	2.96E+05	9.02E+10
5.16E+05	2.96E+05	9.08E+10
5.18E+05	2.96E+05	9.14E+10
5.20E+05	2.96E+05	9.20E+10
5.22E+05	2.96E+05	9.25E+10
5.24E+05	2.96E+05	9.31E+10
5.26E+05	2.96E+05	9.37E+10
5.28E+05	2.96E+05	9.43E+10
5.30E+05	2.96E+05	9.49E+10
5.32E+05	2.96E+05	9.55E+10
5.34E+05	2.96E+05	9.61E+10
5.36E+05	2.96E+05	9.67E+10
5.38E+05	2.96E+05	9.73E+10
5.40E+05	2.96E+05	9.79E+10
5.42E+05	2.96E+05	9.85E+10
5.44E+05	2.96E+05	9.91E+10
5.46E+05	2.96E+05	9.96E+10
5.48E+05	2.96E+05	1.00E+11
5.50E+05	2.96E+05	1.01E+11
5.52E+05	2.96E+05	1.01E+11

5.54E+05	2.96E+05	1.02E+11
5.56E+05	2.96E+05	1.03E+11
5.58E+05	2.96E+05	1.03E+11
5.60E+05	2.96E+05	1.04E+11
5.62E+05	2.96E+05	1.04E+11
5.64E+05	2.96E+05	1.05E+11
5.66E+05	2.96E+05	1.06E+11
5.68E+05	2.96E+05	1.06E+11
5.70E+05	2.96E+05	1.07E+11
5.72E+05	2.96E+05	1.07E+11
5.74E+05	2.96E+05	1.08E+11
5.76E+05	2.96E+05	1.09E+11
5.78E+05	2.96E+05	1.09E+11
5.80E+05	2.96E+05	1.10E+11
5.82E+05	2.96E+05	1.10E+11
5.84E+05	2.96E+05	1.11E+11
5.86E+05	2.96E+05	1.11E+11
5.88E+05	2.96E+05	1.12E+11
5.90E+05	2.96E+05	1.13E+11
5.92E+05	2.96E+05	1.13E+11
5.94E+05	2.96E+05	1.14E+11
5.96E+05	2.96E+05	1.14E+11
5.98E+05	2.96E+05	1.15E+11
6.00E+05	2.96E+05	1.16E+11
6.02E+05	2.96E+05	1.16E+11
6.04E+05	2.96E+05	1.17E+11
6.06E+05	2.96E+05	1.17E+11
6.08E+05	2.96E+05	1.18E+11
6.10E+05	2.96E+05	1.19E+11
6.12E+05	2.96E+05	1.19E+11
6.14E+05	2.96E+05	1.20E+11
6.16E+05	2.96E+05	1.20E+11
6.18E+05	2.96E+05	1.21E+11
6.20E+05	2.96E+05	1.22E+11
6.22E+05	2.96E+05	1.22E+11
6.24E+05	2.96E+05	1.23E+11
6.26E+05	2.96E+05	1.23E+11
6.28E+05	2.96E+05	1.24E+11
6.30E+05	2.96E+05	1.25E+11
6.32E+05	2.96E+05	1.25E+11
6.34E+05	2.96E+05	1.26E+11
6.36E+05	2.96E+05	1.26E+11
6.38E+05	2.96E+05	1.27E+11
6.40E+05	2.96E+05	1.27E+11
6.42E+05	2.96E+05	1.28E+11
6.44E+05	2.96E+05	1.29E+11
6.46E+05	2.96E+05	1.29E+11

6.48E+05	2.96E+05	1.30E+11
6.50E+05	2.96E+05	1.30E+11
6.52E+05	2.96E+05	1.31E+11
6.54E+05	2.96E+05	1.32E+11
6.56E+05	2.96E+05	1.32E+11
6.58E+05	2.96E+05	1.33E+11
6.60E+05	2.96E+05	1.33E+11
6.62E+05	2.96E+05	1.34E+11
6.64E+05	2.96E+05	1.35E+11
6.66E+05	2.96E+05	1.35E+11
6.68E+05	2.96E+05	1.36E+11
6.70E+05	2.96E+05	1.36E+11
6.72E+05	2.96E+05	1.37E+11
6.74E+05	2.96E+05	1.38E+11
6.76E+05	2.96E+05	1.38E+11
6.78E+05	2.96E+05	1.39E+11
6.80E+05	2.96E+05	1.39E+11
6.82E+05	2.96E+05	1.40E+11
6.84E+05	2.96E+05	1.40E+11
6.86E+05	2.96E+05	1.41E+11
6.88E+05	2.96E+05	1.42E+11
6.90E+05	2.96E+05	1.42E+11
6.92E+05	2.96E+05	1.43E+11
6.94E+05	2.96E+05	1.43E+11
6.96E+05	2.96E+05	1.44E+11
6.98E+05	2.96E+05	1.45E+11
7.00E+05	2.96E+05	1.45E+11
7.02E+05	2.96E+05	1.46E+11
7.04E+05	2.96E+05	1.46E+11
7.06E+05	2.96E+05	1.47E+11
7.08E+05	2.96E+05	1.48E+11
7.10E+05	2.96E+05	1.48E+11
7.12E+05	2.96E+05	1.49E+11
7.14E+05	2.96E+05	1.49E+11
7.16E+05	2.96E+05	1.50E+11
7.18E+05	2.96E+05	1.51E+11
7.20E+05	2.96E+05	1.51E+11
7.22E+05	2.96E+05	1.52E+11
7.24E+05	2.96E+05	1.52E+11
7.26E+05	2.96E+05	1.53E+11
7.28E+05	2.96E+05	1.54E+11
7.30E+05	2.96E+05	1.54E+11
7.32E+05	2.96E+05	1.55E+11
7.34E+05	2.96E+05	1.55E+11
7.36E+05	2.96E+05	1.56E+11
7.38E+05	2.96E+05	1.56E+11
7.40E+05	2.96E+05	1.57E+11

7.42E+05	2.96E+05	1.58E+11
7.44E+05	2.96E+05	1.58E+11
7.46E+05	2.96E+05	1.59E+11
7.48E+05	2.96E+05	1.59E+11
7.50E+05	2.96E+05	1.60E+11
7.52E+05	2.96E+05	1.61E+11
7.54E+05	2.96E+05	1.61E+11
7.56E+05	2.96E+05	1.62E+11
7.58E+05	2.96E+05	1.62E+11
7.60E+05	2.96E+05	1.63E+11
7.62E+05	2.96E+05	1.64E+11
7.64E+05	2.96E+05	1.64E+11
7.66E+05	2.96E+05	1.65E+11
7.68E+05	2.96E+05	1.65E+11
7.70E+05	2.96E+05	1.66E+11
7.72E+05	2.96E+05	1.67E+11
7.74E+05	2.96E+05	1.67E+11
7.76E+05	2.96E+05	1.68E+11
7.78E+05	2.96E+05	1.68E+11
7.80E+05	2.96E+05	1.69E+11
7.82E+05	2.96E+05	1.70E+11
7.84E+05	2.96E+05	1.70E+11
7.86E+05	2.96E+05	1.71E+11
7.88E+05	2.96E+05	1.71E+11
7.90E+05	2.96E+05	1.72E+11
7.92E+05	2.96E+05	1.72E+11
7.94E+05	2.96E+05	1.73E+11
7.96E+05	2.96E+05	1.74E+11
7.98E+05	2.96E+05	1.74E+11
8.00E+05	2.96E+05	1.75E+11
8.02E+05	2.96E+05	1.75E+11
8.04E+05	2.96E+05	1.76E+11
8.06E+05	2.96E+05	1.77E+11
8.08E+05	2.96E+05	1.77E+11
8.10E+05	2.96E+05	1.78E+11
8.12E+05	2.96E+05	1.78E+11
8.14E+05	2.96E+05	1.79E+11
8.16E+05	2.96E+05	1.80E+11
8.18E+05	2.96E+05	1.80E+11
8.20E+05	2.96E+05	1.81E+11
8.22E+05	2.96E+05	1.81E+11
8.24E+05	2.96E+05	1.82E+11
8.26E+05	2.96E+05	1.83E+11
8.28E+05	2.96E+05	1.83E+11
8.30E+05	2.96E+05	1.84E+11
8.32E+05	2.96E+05	1.84E+11
8.34E+05	2.96E+05	1.85E+11

8.36E+05	2.96E+05	1.85E+11
8.38E+05	2.96E+05	1.86E+11
8.40E+05	2.96E+05	1.87E+11
8.42E+05	2.96E+05	1.87E+11
8.44E+05	2.96E+05	1.88E+11
8.46E+05	2.96E+05	1.88E+11
8.48E+05	2.96E+05	1.89E+11
8.50E+05	2.96E+05	1.90E+11
8.52E+05	2.96E+05	1.90E+11
8.54E+05	2.96E+05	1.91E+11
8.56E+05	2.96E+05	1.91E+11
8.58E+05	2.96E+05	1.92E+11
8.60E+05	2.96E+05	1.93E+11
8.62E+05	2.96E+05	1.93E+11
8.64E+05	2.96E+05	1.94E+11
8.66E+05	2.96E+05	1.94E+11
8.68E+05	2.96E+05	1.95E+11
8.70E+05	2.96E+05	1.96E+11
8.72E+05	2.96E+05	1.96E+11
8.74E+05	2.96E+05	1.97E+11
8.76E+05	2.96E+05	1.97E+11
8.78E+05	2.96E+05	1.98E+11
8.80E+05	2.96E+05	1.99E+11
8.82E+05	2.96E+05	1.99E+11
8.84E+05	2.96E+05	2.00E+11
8.86E+05	2.96E+05	2.00E+11
8.88E+05	2.96E+05	2.01E+11
8.90E+05	2.96E+05	2.01E+11
8.92E+05	2.96E+05	2.02E+11
8.94E+05	2.96E+05	2.03E+11
8.96E+05	2.96E+05	2.03E+11
8.98E+05	2.96E+05	2.04E+11
9.00E+05	2.96E+05	2.04E+11
9.02E+05	2.96E+05	2.05E+11
9.04E+05	2.96E+05	2.06E+11
9.06E+05	2.96E+05	2.06E+11
9.08E+05	2.96E+05	2.07E+11
9.10E+05	2.96E+05	2.07E+11
9.12E+05	2.96E+05	2.08E+11
9.14E+05	2.96E+05	2.09E+11
9.16E+05	2.96E+05	2.09E+11
9.18E+05	2.96E+05	2.10E+11
9.20E+05	2.96E+05	2.10E+11
9.22E+05	2.96E+05	2.11E+11
9.24E+05	2.96E+05	2.12E+11
9.26E+05	2.96E+05	2.12E+11
9.28E+05	2.96E+05	2.13E+11

9.30E+05	2.96E+05	2.13E+11
9.32E+05	2.96E+05	2.14E+11
9.34E+05	2.96E+05	2.14E+11
9.36E+05	2.96E+05	2.15E+11
9.38E+05	2.96E+05	2.16E+11
9.40E+05	2.96E+05	2.16E+11
9.42E+05	2.96E+05	2.17E+11
9.44E+05	2.96E+05	2.17E+11
9.46E+05	2.96E+05	2.18E+11
9.48E+05	2.96E+05	2.19E+11
9.50E+05	2.96E+05	2.19E+11
9.52E+05	2.96E+05	2.20E+11
9.54E+05	2.96E+05	2.20E+11
9.56E+05	2.96E+05	2.21E+11
9.58E+05	2.96E+05	2.22E+11
9.60E+05	2.96E+05	2.22E+11
9.62E+05	2.96E+05	2.23E+11
9.64E+05	2.96E+05	2.23E+11
9.66E+05	2.96E+05	2.24E+11
9.68E+05	2.96E+05	2.25E+11
9.70E+05	2.96E+05	2.25E+11
9.72E+05	2.96E+05	2.26E+11
9.74E+05	2.96E+05	2.26E+11
9.76E+05	2.96E+05	2.27E+11
9.78E+05	2.96E+05	2.28E+11
9.80E+05	2.96E+05	2.28E+11
9.82E+05	2.96E+05	2.29E+11
9.84E+05	2.96E+05	2.29E+11
9.86E+05	2.96E+05	2.30E+11
9.88E+05	2.96E+05	2.30E+11
9.90E+05	2.96E+05	2.31E+11
9.92E+05	2.96E+05	2.32E+11
9.94E+05	2.96E+05	2.32E+11
9.96E+05	2.96E+05	2.33E+11
9.98E+05	2.96E+05	2.33E+11
1.00E+06	2.96E+05	2.34E+11

Inventory Released At Amargosa Farms, Present Climate
Contaminant Nickel

Time (yr)	Flux In (g/yr)	Cumulative (g)
2.50E+02	0.00E+00	0.00E+00
2.00E+03	0.00E+00	0.00E+00
4.00E+03	0.00E+00	0.00E+00
6.00E+03	0.00E+00	0.00E+00
8.00E+03	0.00E+00	0.00E+00
1.00E+04	0.00E+00	0.00E+00
1.20E+04	0.00E+00	0.00E+00
1.40E+04	0.00E+00	0.00E+00
1.60E+04	0.00E+00	0.00E+00
1.80E+04	0.00E+00	0.00E+00
2.00E+04	0.00E+00	0.00E+00
2.20E+04	0.00E+00	0.00E+00
2.40E+04	0.00E+00	0.00E+00
2.60E+04	0.00E+00	0.00E+00
2.80E+04	0.00E+00	0.00E+00
3.00E+04	0.00E+00	0.00E+00
3.20E+04	0.00E+00	0.00E+00
3.40E+04	0.00E+00	0.00E+00
3.60E+04	0.00E+00	0.00E+00
3.80E+04	0.00E+00	0.00E+00
4.00E+04	0.00E+00	0.00E+00
4.20E+04	0.00E+00	0.00E+00
4.40E+04	0.00E+00	0.00E+00
4.60E+04	0.00E+00	0.00E+00
4.80E+04	0.00E+00	0.00E+00
5.00E+04	0.00E+00	0.00E+00
5.20E+04	0.00E+00	0.00E+00
5.40E+04	0.00E+00	0.00E+00
5.60E+04	0.00E+00	0.00E+00
5.80E+04	0.00E+00	0.00E+00
6.00E+04	0.00E+00	0.00E+00
6.20E+04	0.00E+00	0.00E+00
6.40E+04	0.00E+00	0.00E+00
6.60E+04	0.00E+00	0.00E+00
6.80E+04	0.00E+00	0.00E+00
7.00E+04	0.00E+00	0.00E+00
7.20E+04	0.00E+00	0.00E+00
7.40E+04	0.00E+00	0.00E+00
7.60E+04	0.00E+00	0.00E+00
7.80E+04	0.00E+00	0.00E+00
8.00E+04	0.00E+00	0.00E+00
8.20E+04	0.00E+00	0.00E+00

8.40E+04	0.00E+00	0.00E+00
8.60E+04	0.00E+00	0.00E+00
8.80E+04	0.00E+00	0.00E+00
9.00E+04	0.00E+00	0.00E+00
9.20E+04	4.62E-12	4.62E-09
9.40E+04	3.24E-11	4.17E-08
9.60E+04	1.76E-10	2.50E-07
9.80E+04	9.69E-10	1.40E-06
1.00E+05	4.85E-09	7.21E-06
1.02E+05	2.24E-08	3.45E-05
1.04E+05	9.62E-08	1.53E-04
1.06E+05	3.85E-07	6.34E-04
1.08E+05	1.44E-06	2.46E-03
1.10E+05	5.07E-06	8.97E-03
1.12E+05	1.68E-05	3.09E-02
1.14E+05	5.27E-05	1.00E-01
1.16E+05	1.57E-04	3.10E-01
1.18E+05	4.44E-04	9.12E-01
1.20E+05	1.20E-03	2.56E+00
1.22E+05	3.10E-03	6.86E+00
1.24E+05	7.67E-03	1.76E+01
1.26E+05	1.82E-02	4.35E+01
1.28E+05	4.17E-02	1.03E+02
1.30E+05	9.18E-02	2.37E+02
1.32E+05	1.95E-01	5.24E+02
1.34E+05	4.02E-01	1.12E+03
1.36E+05	8.03E-01	2.33E+03
1.38E+05	1.55E+00	4.68E+03
1.40E+05	2.92E+00	9.16E+03
1.42E+05	5.34E+00	1.74E+04
1.44E+05	9.52E+00	3.23E+04
1.46E+05	1.65E+01	5.83E+04
1.48E+05	2.80E+01	1.03E+05
1.50E+05	4.64E+01	1.77E+05
1.52E+05	7.52E+01	2.99E+05
1.54E+05	1.19E+02	4.94E+05
1.56E+05	1.86E+02	7.99E+05
1.58E+05	2.83E+02	1.27E+06
1.60E+05	4.23E+02	1.97E+06
1.62E+05	6.22E+02	3.02E+06
1.64E+05	8.99E+02	4.54E+06
1.66E+05	1.28E+03	6.72E+06
1.68E+05	1.79E+03	9.78E+06
1.70E+05	2.46E+03	1.40E+07
1.72E+05	3.34E+03	1.98E+07
1.74E+05	4.47E+03	2.76E+07
1.76E+05	5.90E+03	3.80E+07

1.78E+05	7.68E+03	5.16E+07
1.80E+05	9.89E+03	6.91E+07
1.82E+05	1.26E+04	9.16E+07
1.84E+05	1.58E+04	1.20E+08
1.86E+05	1.96E+04	1.55E+08
1.88E+05	2.41E+04	1.99E+08
1.90E+05	2.94E+04	2.53E+08
1.92E+05	3.54E+04	3.17E+08
1.94E+05	4.22E+04	3.95E+08
1.96E+05	5.00E+04	4.87E+08
1.98E+05	5.86E+04	5.96E+08
2.00E+05	6.81E+04	7.22E+08
2.02E+05	7.85E+04	8.69E+08
2.04E+05	8.98E+04	1.04E+09
2.06E+05	1.02E+05	1.23E+09
2.08E+05	1.15E+05	1.45E+09
2.10E+05	1.29E+05	1.69E+09
2.12E+05	1.43E+05	1.96E+09
2.14E+05	1.59E+05	2.26E+09
2.16E+05	1.74E+05	2.60E+09
2.18E+05	1.90E+05	2.96E+09
2.20E+05	2.07E+05	3.36E+09
2.22E+05	2.24E+05	3.79E+09
2.24E+05	2.41E+05	4.25E+09
2.26E+05	2.58E+05	4.75E+09
2.28E+05	2.75E+05	5.29E+09
2.30E+05	2.92E+05	5.85E+09
2.32E+05	3.09E+05	6.45E+09
2.34E+05	3.25E+05	7.09E+09
2.36E+05	3.41E+05	7.75E+09
2.38E+05	3.57E+05	8.45E+09
2.40E+05	3.72E+05	9.18E+09
2.42E+05	3.87E+05	9.94E+09
2.44E+05	4.01E+05	1.07E+10
2.46E+05	4.15E+05	1.15E+10
2.48E+05	4.28E+05	1.24E+10
2.50E+05	4.40E+05	1.33E+10
2.52E+05	4.52E+05	1.41E+10
2.54E+05	4.63E+05	1.51E+10
2.56E+05	4.74E+05	1.60E+10
2.58E+05	4.84E+05	1.70E+10
2.60E+05	4.93E+05	1.79E+10
2.62E+05	5.02E+05	1.89E+10
2.64E+05	5.10E+05	1.99E+10
2.66E+05	5.18E+05	2.10E+10
2.68E+05	5.25E+05	2.20E+10
2.70E+05	5.32E+05	2.31E+10

2.72E+05	5.39E+05	2.41E+10
2.74E+05	5.44E+05	2.52E+10
2.76E+05	5.50E+05	2.63E+10
2.78E+05	5.55E+05	2.74E+10
2.80E+05	5.60E+05	2.85E+10
2.82E+05	5.64E+05	2.97E+10
2.84E+05	5.68E+05	3.08E+10
2.86E+05	5.72E+05	3.19E+10
2.88E+05	5.76E+05	3.31E+10
2.90E+05	5.79E+05	3.42E+10
2.92E+05	5.82E+05	3.54E+10
2.94E+05	5.85E+05	3.66E+10
2.96E+05	5.88E+05	3.77E+10
2.98E+05	5.91E+05	3.89E+10
3.00E+05	5.93E+05	4.01E+10
3.02E+05	5.95E+05	4.13E+10
3.04E+05	5.98E+05	4.25E+10
3.06E+05	6.00E+05	4.37E+10
3.08E+05	6.01E+05	4.49E+10
3.10E+05	6.03E+05	4.61E+10
3.12E+05	6.05E+05	4.73E+10
3.14E+05	6.06E+05	4.85E+10
3.16E+05	6.08E+05	4.97E+10
3.18E+05	6.09E+05	5.09E+10
3.20E+05	6.11E+05	5.22E+10
3.22E+05	6.12E+05	5.34E+10
3.24E+05	6.13E+05	5.46E+10
3.26E+05	6.14E+05	5.58E+10
3.28E+05	6.15E+05	5.71E+10
3.30E+05	6.16E+05	5.83E+10
3.32E+05	6.17E+05	5.95E+10
3.34E+05	6.18E+05	6.08E+10
3.36E+05	6.19E+05	6.20E+10
3.38E+05	6.20E+05	6.32E+10
3.40E+05	6.20E+05	6.45E+10
3.42E+05	6.21E+05	6.57E+10
3.44E+05	6.22E+05	6.70E+10
3.46E+05	6.23E+05	6.82E+10
3.48E+05	6.23E+05	6.95E+10
3.50E+05	6.24E+05	7.07E+10
3.52E+05	6.25E+05	7.19E+10
3.54E+05	6.25E+05	7.32E+10
3.56E+05	6.26E+05	7.44E+10
3.58E+05	6.27E+05	7.57E+10
3.60E+05	6.28E+05	7.70E+10
3.62E+05	6.28E+05	7.82E+10
3.64E+05	6.29E+05	7.95E+10

3.66E+05	6.30E+05	8.07E+10
3.68E+05	6.31E+05	8.20E+10
3.70E+05	6.31E+05	8.33E+10
3.72E+05	6.32E+05	8.45E+10
3.74E+05	6.33E+05	8.58E+10
3.76E+05	6.34E+05	8.70E+10
3.78E+05	6.35E+05	8.83E+10
3.80E+05	6.36E+05	8.96E+10
3.82E+05	6.37E+05	9.09E+10
3.84E+05	6.37E+05	9.21E+10
3.86E+05	6.38E+05	9.34E+10
3.88E+05	6.39E+05	9.47E+10
3.90E+05	6.40E+05	9.60E+10
3.92E+05	6.41E+05	9.72E+10
3.94E+05	6.42E+05	9.85E+10
3.96E+05	6.43E+05	9.98E+10
3.98E+05	6.44E+05	1.01E+11
4.00E+05	6.45E+05	1.02E+11
4.02E+05	6.46E+05	1.04E+11
4.04E+05	6.47E+05	1.05E+11
4.06E+05	6.48E+05	1.06E+11
4.08E+05	6.49E+05	1.08E+11
4.10E+05	6.50E+05	1.09E+11
4.12E+05	6.51E+05	1.10E+11
4.14E+05	6.52E+05	1.11E+11
4.16E+05	6.53E+05	1.13E+11
4.18E+05	6.54E+05	1.14E+11
4.20E+05	6.55E+05	1.15E+11
4.22E+05	6.55E+05	1.17E+11
4.24E+05	6.56E+05	1.18E+11
4.26E+05	6.57E+05	1.19E+11
4.28E+05	6.58E+05	1.21E+11
4.30E+05	6.58E+05	1.22E+11
4.32E+05	6.59E+05	1.23E+11
4.34E+05	6.60E+05	1.25E+11
4.36E+05	6.60E+05	1.26E+11
4.38E+05	6.61E+05	1.27E+11
4.40E+05	6.61E+05	1.29E+11
4.42E+05	6.62E+05	1.30E+11
4.44E+05	6.62E+05	1.31E+11
4.46E+05	6.63E+05	1.33E+11
4.48E+05	6.63E+05	1.34E+11
4.50E+05	6.63E+05	1.35E+11
4.52E+05	6.64E+05	1.37E+11
4.54E+05	6.64E+05	1.38E+11
4.56E+05	6.64E+05	1.39E+11
4.58E+05	6.65E+05	1.40E+11

4.60E+05	6.65E+05	1.42E+11
4.62E+05	6.65E+05	1.43E+11
4.64E+05	6.65E+05	1.44E+11
4.66E+05	6.65E+05	1.46E+11
4.68E+05	6.65E+05	1.47E+11
4.70E+05	6.65E+05	1.48E+11
4.72E+05	6.65E+05	1.50E+11
4.74E+05	6.66E+05	1.51E+11
4.76E+05	6.66E+05	1.52E+11
4.78E+05	6.66E+05	1.54E+11
4.80E+05	6.66E+05	1.55E+11
4.82E+05	6.66E+05	1.56E+11
4.84E+05	6.66E+05	1.58E+11
4.86E+05	6.66E+05	1.59E+11
4.88E+05	6.66E+05	1.60E+11
4.90E+05	6.66E+05	1.62E+11
4.92E+05	6.66E+05	1.63E+11
4.94E+05	6.66E+05	1.64E+11
4.96E+05	6.67E+05	1.66E+11
4.98E+05	6.67E+05	1.67E+11
5.00E+05	6.67E+05	1.68E+11
5.02E+05	6.67E+05	1.70E+11
5.04E+05	6.68E+05	1.71E+11
5.06E+05	6.68E+05	1.72E+11
5.08E+05	6.69E+05	1.74E+11
5.10E+05	6.70E+05	1.75E+11
5.12E+05	6.71E+05	1.76E+11
5.14E+05	6.72E+05	1.78E+11
5.16E+05	6.73E+05	1.79E+11
5.18E+05	6.74E+05	1.81E+11
5.20E+05	6.76E+05	1.82E+11
5.22E+05	6.78E+05	1.83E+11
5.24E+05	6.80E+05	1.85E+11
5.26E+05	6.82E+05	1.86E+11
5.28E+05	6.84E+05	1.87E+11
5.30E+05	6.86E+05	1.89E+11
5.32E+05	6.89E+05	1.90E+11
5.34E+05	6.91E+05	1.91E+11
5.36E+05	6.94E+05	1.93E+11
5.38E+05	6.97E+05	1.94E+11
5.40E+05	7.00E+05	1.96E+11
5.42E+05	7.03E+05	1.97E+11
5.44E+05	7.06E+05	1.98E+11
5.46E+05	7.09E+05	2.00E+11
5.48E+05	7.12E+05	2.01E+11
5.50E+05	7.15E+05	2.03E+11
5.52E+05	7.18E+05	2.04E+11

5.54E+05	7.20E+05	2.06E+11
5.56E+05	7.23E+05	2.07E+11
5.58E+05	7.26E+05	2.08E+11
5.60E+05	7.28E+05	2.10E+11
5.62E+05	7.31E+05	2.11E+11
5.64E+05	7.33E+05	2.13E+11
5.66E+05	7.35E+05	2.14E+11
5.68E+05	7.37E+05	2.16E+11
5.70E+05	7.39E+05	2.17E+11
5.72E+05	7.41E+05	2.19E+11
5.74E+05	7.42E+05	2.20E+11
5.76E+05	7.44E+05	2.22E+11
5.78E+05	7.45E+05	2.23E+11
5.80E+05	7.47E+05	2.25E+11
5.82E+05	7.48E+05	2.26E+11
5.84E+05	7.49E+05	2.28E+11
5.86E+05	7.50E+05	2.29E+11
5.88E+05	7.50E+05	2.31E+11
5.90E+05	7.51E+05	2.32E+11
5.92E+05	7.52E+05	2.34E+11
5.94E+05	7.52E+05	2.35E+11
5.96E+05	7.53E+05	2.37E+11
5.98E+05	7.53E+05	2.38E+11
6.00E+05	7.54E+05	2.40E+11
6.02E+05	7.54E+05	2.41E+11
6.04E+05	7.54E+05	2.43E+11
6.06E+05	7.55E+05	2.44E+11
6.08E+05	7.55E+05	2.46E+11
6.10E+05	7.55E+05	2.47E+11
6.12E+05	7.55E+05	2.49E+11
6.14E+05	7.55E+05	2.50E+11
6.16E+05	7.55E+05	2.52E+11
6.18E+05	7.55E+05	2.53E+11
6.20E+05	7.56E+05	2.55E+11
6.22E+05	7.56E+05	2.56E+11
6.24E+05	7.56E+05	2.58E+11
6.26E+05	7.56E+05	2.59E+11
6.28E+05	7.56E+05	2.61E+11
6.30E+05	7.56E+05	2.62E+11
6.32E+05	7.56E+05	2.64E+11
6.34E+05	7.56E+05	2.65E+11
6.36E+05	7.56E+05	2.67E+11
6.38E+05	7.56E+05	2.68E+11
6.40E+05	7.56E+05	2.70E+11
6.42E+05	7.56E+05	2.71E+11
6.44E+05	7.56E+05	2.73E+11
6.46E+05	7.56E+05	2.74E+11

6.48E+05	7.56E+05	2.76E+11
6.50E+05	7.56E+05	2.77E+11
6.52E+05	7.56E+05	2.79E+11
6.54E+05	7.56E+05	2.80E+11
6.56E+05	7.56E+05	2.82E+11
6.58E+05	7.57E+05	2.83E+11
6.60E+05	7.57E+05	2.85E+11
6.62E+05	7.57E+05	2.87E+11
6.64E+05	7.58E+05	2.88E+11
6.66E+05	7.59E+05	2.90E+11
6.68E+05	7.59E+05	2.91E+11
6.70E+05	7.61E+05	2.93E+11
6.72E+05	7.62E+05	2.94E+11
6.74E+05	7.64E+05	2.96E+11
6.76E+05	7.67E+05	2.97E+11
6.78E+05	7.70E+05	2.99E+11
6.80E+05	7.73E+05	3.00E+11
6.82E+05	7.78E+05	3.02E+11
6.84E+05	7.83E+05	3.03E+11
6.86E+05	7.89E+05	3.05E+11
6.88E+05	7.96E+05	3.07E+11
6.90E+05	8.04E+05	3.08E+11
6.92E+05	8.13E+05	3.10E+11
6.94E+05	8.22E+05	3.11E+11
6.96E+05	8.33E+05	3.13E+11
6.98E+05	8.45E+05	3.15E+11
7.00E+05	8.58E+05	3.16E+11
7.02E+05	8.72E+05	3.18E+11
7.04E+05	8.87E+05	3.20E+11
7.06E+05	9.02E+05	3.22E+11
7.08E+05	9.18E+05	3.24E+11
7.10E+05	9.35E+05	3.25E+11
7.12E+05	9.52E+05	3.27E+11
7.14E+05	9.70E+05	3.29E+11
7.16E+05	9.88E+05	3.31E+11
7.18E+05	1.01E+06	3.33E+11
7.20E+05	1.02E+06	3.35E+11
7.22E+05	1.04E+06	3.37E+11
7.24E+05	1.06E+06	3.39E+11
7.26E+05	1.08E+06	3.41E+11
7.28E+05	1.09E+06	3.44E+11
7.30E+05	1.11E+06	3.46E+11
7.32E+05	1.12E+06	3.48E+11
7.34E+05	1.14E+06	3.50E+11
7.36E+05	1.15E+06	3.53E+11
7.38E+05	1.17E+06	3.55E+11
7.40E+05	1.18E+06	3.57E+11

7.42E+05	1.19E+06	3.60E+11
7.44E+05	1.20E+06	3.62E+11
7.46E+05	1.21E+06	3.64E+11
7.48E+05	1.22E+06	3.67E+11
7.50E+05	1.23E+06	3.69E+11
7.52E+05	1.24E+06	3.72E+11
7.54E+05	1.24E+06	3.74E+11
7.56E+05	1.25E+06	3.77E+11
7.58E+05	1.25E+06	3.79E+11
7.60E+05	1.26E+06	3.82E+11
7.62E+05	1.26E+06	3.84E+11
7.64E+05	1.27E+06	3.87E+11
7.66E+05	1.27E+06	3.89E+11
7.68E+05	1.27E+06	3.92E+11
7.70E+05	1.28E+06	3.94E+11
7.72E+05	1.28E+06	3.97E+11
7.74E+05	1.28E+06	4.00E+11
7.76E+05	1.28E+06	4.02E+11
7.78E+05	1.29E+06	4.05E+11
7.80E+05	1.29E+06	4.07E+11
7.82E+05	1.29E+06	4.10E+11
7.84E+05	1.29E+06	4.12E+11
7.86E+05	1.29E+06	4.15E+11
7.88E+05	1.29E+06	4.18E+11
7.90E+05	1.29E+06	4.20E+11
7.92E+05	1.29E+06	4.23E+11
7.94E+05	1.29E+06	4.25E+11
7.96E+05	1.29E+06	4.28E+11
7.98E+05	1.29E+06	4.31E+11
8.00E+05	1.29E+06	4.33E+11
8.02E+05	1.29E+06	4.36E+11
8.04E+05	1.29E+06	4.38E+11
8.06E+05	1.29E+06	4.41E+11
8.08E+05	1.29E+06	4.43E+11
8.10E+05	1.29E+06	4.46E+11
8.12E+05	1.29E+06	4.49E+11
8.14E+05	1.29E+06	4.51E+11
8.16E+05	1.29E+06	4.54E+11
8.18E+05	1.29E+06	4.56E+11
8.20E+05	1.29E+06	4.59E+11
8.22E+05	1.29E+06	4.62E+11
8.24E+05	1.29E+06	4.64E+11
8.26E+05	1.29E+06	4.67E+11
8.28E+05	1.29E+06	4.69E+11
8.30E+05	1.29E+06	4.72E+11
8.32E+05	1.29E+06	4.75E+11
8.34E+05	1.29E+06	4.77E+11

8.36E+05	1.30E+06	4.80E+11
8.38E+05	1.30E+06	4.82E+11
8.40E+05	1.30E+06	4.85E+11
8.42E+05	1.30E+06	4.87E+11
8.44E+05	1.30E+06	4.90E+11
8.46E+05	1.30E+06	4.93E+11
8.48E+05	1.30E+06	4.95E+11
8.50E+05	1.30E+06	4.98E+11
8.52E+05	1.30E+06	5.00E+11
8.54E+05	1.30E+06	5.03E+11
8.56E+05	1.30E+06	5.06E+11
8.58E+05	1.30E+06	5.08E+11
8.60E+05	1.30E+06	5.11E+11
8.62E+05	1.30E+06	5.13E+11
8.64E+05	1.31E+06	5.16E+11
8.66E+05	1.31E+06	5.19E+11
8.68E+05	1.31E+06	5.21E+11
8.70E+05	1.31E+06	5.24E+11
8.72E+05	1.31E+06	5.27E+11
8.74E+05	1.31E+06	5.29E+11
8.76E+05	1.32E+06	5.32E+11
8.78E+05	1.32E+06	5.34E+11
8.80E+05	1.32E+06	5.37E+11
8.82E+05	1.32E+06	5.40E+11
8.84E+05	1.32E+06	5.42E+11
8.86E+05	1.33E+06	5.45E+11
8.88E+05	1.33E+06	5.48E+11
8.90E+05	1.33E+06	5.50E+11
8.92E+05	1.33E+06	5.53E+11
8.94E+05	1.33E+06	5.56E+11
8.96E+05	1.34E+06	5.58E+11
8.98E+05	1.34E+06	5.61E+11
9.00E+05	1.34E+06	5.64E+11
9.02E+05	1.34E+06	5.66E+11
9.04E+05	1.34E+06	5.69E+11
9.06E+05	1.34E+06	5.72E+11
9.08E+05	1.35E+06	5.74E+11
9.10E+05	1.35E+06	5.77E+11
9.12E+05	1.35E+06	5.80E+11
9.14E+05	1.35E+06	5.82E+11
9.16E+05	1.35E+06	5.85E+11
9.18E+05	1.35E+06	5.88E+11
9.20E+05	1.35E+06	5.91E+11
9.22E+05	1.35E+06	5.93E+11
9.24E+05	1.35E+06	5.96E+11
9.26E+05	1.35E+06	5.99E+11
9.28E+05	1.35E+06	6.01E+11

9.30E+05	1.35E+06	6.04E+11
9.32E+05	1.35E+06	6.07E+11
9.34E+05	1.35E+06	6.10E+11
9.36E+05	1.35E+06	6.12E+11
9.38E+05	1.35E+06	6.15E+11
9.40E+05	1.35E+06	6.18E+11
9.42E+05	1.36E+06	6.20E+11
9.44E+05	1.36E+06	6.23E+11
9.46E+05	1.36E+06	6.26E+11
9.48E+05	1.36E+06	6.28E+11
9.50E+05	1.36E+06	6.31E+11
9.52E+05	1.36E+06	6.34E+11
9.54E+05	1.36E+06	6.37E+11
9.56E+05	1.36E+06	6.39E+11
9.58E+05	1.36E+06	6.42E+11
9.60E+05	1.36E+06	6.45E+11
9.62E+05	1.36E+06	6.47E+11
9.64E+05	1.36E+06	6.50E+11
9.66E+05	1.36E+06	6.53E+11
9.68E+05	1.36E+06	6.56E+11
9.70E+05	1.36E+06	6.58E+11
9.72E+05	1.36E+06	6.61E+11
9.74E+05	1.36E+06	6.64E+11
9.76E+05	1.36E+06	6.66E+11
9.78E+05	1.36E+06	6.69E+11
9.80E+05	1.36E+06	6.72E+11
9.82E+05	1.36E+06	6.75E+11
9.84E+05	1.36E+06	6.77E+11
9.86E+05	1.36E+06	6.80E+11
9.88E+05	1.36E+06	6.83E+11
9.90E+05	1.36E+06	6.85E+11
9.92E+05	1.36E+06	6.88E+11
9.94E+05	1.36E+06	6.91E+11
9.96E+05	1.36E+06	6.94E+11
9.98E+05	1.36E+06	6.96E+11
1.00E+06	1.36E+06	6.99E+11

Inventory Released At Amargosa Farms, Present Climate
Contaminant Vanadium

Time (yr)	Flux In (g/yr)	Cumulative (g)
2.50E+02	0.00E+00	0.0000E+00
2.00E+03	0.00E+00	0.0000E+00
4.00E+03	0.00E+00	0.0000E+00
6.00E+03	0.00E+00	0.0000E+00
8.00E+03	0.00E+00	0.0000E+00
1.00E+04	0.00E+00	0.0000E+00
1.20E+04	0.00E+00	0.0000E+00
1.40E+04	0.00E+00	0.0000E+00
1.60E+04	0.00E+00	0.0000E+00
1.80E+04	0.00E+00	0.0000E+00
2.00E+04	0.00E+00	0.0000E+00
2.20E+04	0.00E+00	0.0000E+00
2.40E+04	0.00E+00	0.0000E+00
2.60E+04	0.00E+00	0.0000E+00
2.80E+04	0.00E+00	0.0000E+00
3.00E+04	0.00E+00	0.0000E+00
3.20E+04	0.00E+00	0.0000E+00
3.40E+04	0.00E+00	0.0000E+00
3.60E+04	0.00E+00	0.0000E+00
3.80E+04	0.00E+00	0.0000E+00
4.00E+04	0.00E+00	0.0000E+00
4.20E+04	0.00E+00	0.0000E+00
4.40E+04	0.00E+00	0.0000E+00
4.60E+04	0.00E+00	0.0000E+00
4.80E+04	0.00E+00	0.0000E+00
5.00E+04	1.13E-14	1.1346E-11
5.20E+04	3.25E-13	3.4770E-10
5.40E+04	6.62E-12	7.2920E-09
5.60E+04	1.03E-10	1.1650E-07
5.80E+04	1.25E-09	1.4698E-06
6.00E+04	1.23E-08	1.5017E-05
6.20E+04	9.96E-08	1.2695E-04
6.40E+04	6.78E-07	9.0467E-04
6.60E+04	3.94E-06	5.5228E-03
6.80E+04	1.98E-05	2.9297E-02
7.00E+04	8.76E-05	1.3674E-01
7.20E+04	3.43E-04	5.6783E-01
7.40E+04	1.21E-03	2.1186E+00
7.60E+04	3.84E-03	7.1647E+00
7.80E+04	1.11E-02	2.2137E+01
8.00E+04	2.97E-02	6.2934E+01
8.20E+04	7.31E-02	1.6569E+02

8.40E+04	1.68E-01	4.0631E+02
8.60E+04	3.59E-01	9.3305E+02
8.80E+04	7.24E-01	2.0161E+03
9.00E+04	1.38E+00	4.1175E+03
9.20E+04	2.49E+00	7.9800E+03
9.40E+04	4.27E+00	1.4732E+04
9.60E+04	7.00E+00	2.5996E+04
9.80E+04	1.10E+01	4.3987E+04
1.00E+05	1.66E+01	7.1582E+04
1.02E+05	2.42E+01	1.1234E+05
1.04E+05	3.40E+01	1.7047E+05
1.06E+05	4.63E+01	2.5070E+05
1.08E+05	6.12E+01	3.5813E+05
1.10E+05	7.87E+01	4.9800E+05
1.12E+05	9.87E+01	6.7539E+05
1.14E+05	1.21E+02	8.9500E+05
1.16E+05	1.45E+02	1.1609E+06
1.18E+05	1.70E+02	1.4762E+06
1.20E+05	1.97E+02	1.8433E+06
1.22E+05	2.23E+02	2.2631E+06
1.24E+05	2.50E+02	2.7358E+06
1.26E+05	2.75E+02	3.2605E+06
1.28E+05	3.00E+02	3.8354E+06
1.30E+05	3.23E+02	4.4579E+06
1.32E+05	3.44E+02	5.1249E+06
1.34E+05	3.64E+02	5.8330E+06
1.36E+05	3.82E+02	6.5785E+06
1.38E+05	3.98E+02	7.3576E+06
1.40E+05	4.12E+02	8.1667E+06
1.42E+05	4.24E+02	9.0022E+06
1.44E+05	4.35E+02	9.8608E+06
1.46E+05	4.44E+02	1.0740E+07
1.48E+05	4.52E+02	1.1636E+07
1.50E+05	4.59E+02	1.2547E+07
1.52E+05	4.65E+02	1.3471E+07
1.54E+05	4.70E+02	1.4406E+07
1.56E+05	4.75E+02	1.5351E+07
1.58E+05	4.79E+02	1.6305E+07
1.60E+05	4.82E+02	1.7266E+07
1.62E+05	4.85E+02	1.8233E+07
1.64E+05	4.88E+02	1.9207E+07
1.66E+05	4.91E+02	2.0186E+07
1.68E+05	4.93E+02	2.1170E+07
1.70E+05	4.96E+02	2.2160E+07
1.72E+05	4.98E+02	2.3154E+07
1.74E+05	5.00E+02	2.4152E+07
1.76E+05	5.02E+02	2.5155E+07

1.78E+05	5.04E+02	2.6162E+07
1.80E+05	5.06E+02	2.7172E+07
1.82E+05	5.08E+02	2.8187E+07
1.84E+05	5.10E+02	2.9206E+07
1.86E+05	5.12E+02	3.0228E+07
1.88E+05	5.14E+02	3.1253E+07
1.90E+05	5.15E+02	3.2282E+07
1.92E+05	5.17E+02	3.3314E+07
1.94E+05	5.18E+02	3.4349E+07
1.96E+05	5.20E+02	3.5387E+07
1.98E+05	5.21E+02	3.6428E+07
2.00E+05	5.23E+02	3.7471E+07
2.02E+05	5.24E+02	3.8518E+07
2.04E+05	5.25E+02	3.9567E+07
2.06E+05	5.27E+02	4.0619E+07
2.08E+05	5.28E+02	4.1674E+07
2.10E+05	5.29E+02	4.2732E+07
2.12E+05	5.31E+02	4.3792E+07
2.14E+05	5.32E+02	4.4855E+07
2.16E+05	5.33E+02	4.5921E+07
2.18E+05	5.35E+02	4.6989E+07
2.20E+05	5.36E+02	4.8059E+07
2.22E+05	5.37E+02	4.9133E+07
2.24E+05	5.39E+02	5.0208E+07
2.26E+05	5.40E+02	5.1287E+07
2.28E+05	5.41E+02	5.2368E+07
2.30E+05	5.43E+02	5.3452E+07
2.32E+05	5.44E+02	5.4538E+07
2.34E+05	5.45E+02	5.5628E+07
2.36E+05	5.47E+02	5.6720E+07
2.38E+05	5.48E+02	5.7814E+07
2.40E+05	5.49E+02	5.8911E+07
2.42E+05	5.50E+02	6.0011E+07
2.44E+05	5.51E+02	6.1113E+07
2.46E+05	5.52E+02	6.2216E+07
2.48E+05	5.53E+02	6.3322E+07
2.50E+05	5.54E+02	6.4429E+07
2.52E+05	5.55E+02	6.5538E+07
2.54E+05	5.55E+02	6.6647E+07
2.56E+05	5.56E+02	6.7758E+07
2.58E+05	5.56E+02	6.8869E+07
2.60E+05	5.56E+02	6.9981E+07
2.62E+05	5.56E+02	7.1094E+07
2.64E+05	5.57E+02	7.2207E+07
2.66E+05	5.57E+02	7.3320E+07
2.68E+05	5.57E+02	7.4434E+07
2.70E+05	5.57E+02	7.5548E+07

2.72E+05	5.57E+02	7.6662E+07
2.74E+05	5.57E+02	7.7777E+07
2.76E+05	5.57E+02	7.8891E+07
2.78E+05	5.58E+02	8.0006E+07
2.80E+05	5.58E+02	8.1122E+07
2.82E+05	5.58E+02	8.2238E+07
2.84E+05	5.59E+02	8.3354E+07
2.86E+05	5.59E+02	8.4472E+07
2.88E+05	5.60E+02	8.5591E+07
2.90E+05	5.60E+02	8.6711E+07
2.92E+05	5.61E+02	8.7832E+07
2.94E+05	5.62E+02	8.8955E+07
2.96E+05	5.63E+02	9.0079E+07
2.98E+05	5.64E+02	9.1206E+07
3.00E+05	5.64E+02	9.2334E+07
3.02E+05	5.65E+02	9.3463E+07
3.04E+05	5.66E+02	9.4595E+07
3.06E+05	5.67E+02	9.5727E+07
3.08E+05	5.68E+02	9.6862E+07
3.10E+05	5.68E+02	9.7998E+07
3.12E+05	5.69E+02	9.9134E+07
3.14E+05	5.69E+02	1.0027E+08
3.16E+05	5.70E+02	1.0141E+08
3.18E+05	5.70E+02	1.0255E+08
3.20E+05	5.70E+02	1.0369E+08
3.22E+05	5.70E+02	1.0483E+08
3.24E+05	5.71E+02	1.0597E+08
3.26E+05	5.71E+02	1.0711E+08
3.28E+05	5.71E+02	1.0826E+08
3.30E+05	5.71E+02	1.0940E+08
3.32E+05	5.71E+02	1.1054E+08
3.34E+05	5.71E+02	1.1168E+08
3.36E+05	5.71E+02	1.1282E+08
3.38E+05	5.71E+02	1.1397E+08
3.40E+05	5.71E+02	1.1511E+08
3.42E+05	5.71E+02	1.1625E+08
3.44E+05	5.72E+02	1.1739E+08
3.46E+05	5.72E+02	1.1854E+08
3.48E+05	5.72E+02	1.1968E+08
3.50E+05	5.72E+02	1.2083E+08
3.52E+05	5.73E+02	1.2197E+08
3.54E+05	5.73E+02	1.2312E+08
3.56E+05	5.74E+02	1.2426E+08
3.58E+05	5.75E+02	1.2541E+08
3.60E+05	5.75E+02	1.2656E+08
3.62E+05	5.76E+02	1.2771E+08
3.64E+05	5.77E+02	1.2887E+08

3.66E+05	5.78E+02	1.3002E+08
3.68E+05	5.79E+02	1.3118E+08
3.70E+05	5.80E+02	1.3234E+08
3.72E+05	5.80E+02	1.3350E+08
3.74E+05	5.81E+02	1.3466E+08
3.76E+05	5.82E+02	1.3582E+08
3.78E+05	5.82E+02	1.3699E+08
3.80E+05	5.83E+02	1.3815E+08
3.82E+05	5.83E+02	1.3932E+08
3.84E+05	5.84E+02	1.4049E+08
3.86E+05	5.84E+02	1.4165E+08
3.88E+05	5.84E+02	1.4282E+08
3.90E+05	5.85E+02	1.4399E+08
3.92E+05	5.85E+02	1.4516E+08
3.94E+05	5.85E+02	1.4633E+08
3.96E+05	5.85E+02	1.4750E+08
3.98E+05	5.85E+02	1.4867E+08
4.00E+05	5.85E+02	1.4984E+08
4.02E+05	5.85E+02	1.5101E+08
4.04E+05	5.85E+02	1.5218E+08
4.06E+05	5.85E+02	1.5335E+08
4.08E+05	5.85E+02	1.5452E+08
4.10E+05	5.85E+02	1.5569E+08
4.12E+05	5.85E+02	1.5686E+08
4.14E+05	5.85E+02	1.5803E+08
4.16E+05	5.85E+02	1.5920E+08
4.18E+05	5.85E+02	1.6037E+08
4.20E+05	5.85E+02	1.6154E+08
4.22E+05	5.85E+02	1.6271E+08
4.24E+05	5.85E+02	1.6388E+08
4.26E+05	5.85E+02	1.6505E+08
4.28E+05	5.85E+02	1.6622E+08
4.30E+05	5.85E+02	1.6739E+08
4.32E+05	5.85E+02	1.6857E+08
4.34E+05	5.85E+02	1.6974E+08
4.36E+05	5.85E+02	1.7091E+08
4.38E+05	5.85E+02	1.7208E+08
4.40E+05	5.85E+02	1.7325E+08
4.42E+05	5.85E+02	1.7442E+08
4.44E+05	5.85E+02	1.7559E+08
4.46E+05	5.85E+02	1.7676E+08
4.48E+05	5.85E+02	1.7793E+08
4.50E+05	5.85E+02	1.7910E+08
4.52E+05	5.85E+02	1.8027E+08
4.54E+05	5.85E+02	1.8144E+08
4.56E+05	5.85E+02	1.8261E+08
4.58E+05	5.85E+02	1.8378E+08

4.60E+05	5.85E+02	1.8495E+08
4.62E+05	5.85E+02	1.8612E+08
4.64E+05	5.85E+02	1.8729E+08
4.66E+05	5.85E+02	1.8846E+08
4.68E+05	5.85E+02	1.8963E+08
4.70E+05	5.85E+02	1.9080E+08
4.72E+05	5.85E+02	1.9197E+08
4.74E+05	5.85E+02	1.9314E+08
4.76E+05	5.85E+02	1.9431E+08
4.78E+05	5.85E+02	1.9548E+08
4.80E+05	5.85E+02	1.9665E+08
4.82E+05	5.85E+02	1.9783E+08
4.84E+05	5.85E+02	1.9900E+08
4.86E+05	5.85E+02	2.0017E+08
4.88E+05	5.85E+02	2.0134E+08
4.90E+05	5.85E+02	2.0251E+08
4.92E+05	5.85E+02	2.0368E+08
4.94E+05	5.85E+02	2.0485E+08
4.96E+05	5.85E+02	2.0602E+08
4.98E+05	5.85E+02	2.0719E+08
5.00E+05	5.85E+02	2.0836E+08
5.02E+05	5.85E+02	2.0953E+08
5.04E+05	5.85E+02	2.1070E+08
5.06E+05	5.85E+02	2.1187E+08
5.08E+05	5.85E+02	2.1304E+08
5.10E+05	5.85E+02	2.1421E+08
5.12E+05	5.85E+02	2.1538E+08
5.14E+05	5.85E+02	2.1655E+08
5.16E+05	5.85E+02	2.1772E+08
5.18E+05	5.85E+02	2.1889E+08
5.20E+05	5.85E+02	2.2006E+08
5.22E+05	5.85E+02	2.2123E+08
5.24E+05	5.85E+02	2.2240E+08
5.26E+05	5.85E+02	2.2357E+08
5.28E+05	5.85E+02	2.2474E+08
5.30E+05	5.85E+02	2.2591E+08
5.32E+05	5.85E+02	2.2709E+08
5.34E+05	5.85E+02	2.2826E+08
5.36E+05	5.85E+02	2.2943E+08
5.38E+05	5.85E+02	2.3060E+08
5.40E+05	5.85E+02	2.3177E+08
5.42E+05	5.85E+02	2.3294E+08
5.44E+05	5.85E+02	2.3411E+08
5.46E+05	5.85E+02	2.3528E+08
5.48E+05	5.85E+02	2.3645E+08
5.50E+05	5.85E+02	2.3762E+08
5.52E+05	5.85E+02	2.3879E+08

5.54E+05	5.85E+02	2.3996E+08
5.56E+05	5.85E+02	2.4113E+08
5.58E+05	5.85E+02	2.4230E+08
5.60E+05	5.85E+02	2.4347E+08
5.62E+05	5.85E+02	2.4464E+08
5.64E+05	5.85E+02	2.4581E+08
5.66E+05	5.85E+02	2.4698E+08
5.68E+05	5.85E+02	2.4815E+08
5.70E+05	5.85E+02	2.4932E+08
5.72E+05	5.85E+02	2.5049E+08
5.74E+05	5.85E+02	2.5166E+08
5.76E+05	5.85E+02	2.5283E+08
5.78E+05	5.85E+02	2.5400E+08
5.80E+05	5.85E+02	2.5517E+08
5.82E+05	5.85E+02	2.5635E+08
5.84E+05	5.85E+02	2.5752E+08
5.86E+05	5.85E+02	2.5869E+08
5.88E+05	5.85E+02	2.5986E+08
5.90E+05	5.85E+02	2.6103E+08
5.92E+05	5.85E+02	2.6220E+08
5.94E+05	5.85E+02	2.6337E+08
5.96E+05	5.85E+02	2.6454E+08
5.98E+05	5.86E+02	2.6571E+08
6.00E+05	5.86E+02	2.6688E+08
6.02E+05	5.86E+02	2.6805E+08
6.04E+05	5.86E+02	2.6923E+08
6.06E+05	5.87E+02	2.7040E+08
6.08E+05	5.87E+02	2.7157E+08
6.10E+05	5.88E+02	2.7275E+08
6.12E+05	5.89E+02	2.7393E+08
6.14E+05	5.89E+02	2.7510E+08
6.16E+05	5.90E+02	2.7628E+08
6.18E+05	5.91E+02	2.7746E+08
6.20E+05	5.91E+02	2.7865E+08
6.22E+05	5.92E+02	2.7983E+08
6.24E+05	5.93E+02	2.8101E+08
6.26E+05	5.93E+02	2.8220E+08
6.28E+05	5.94E+02	2.8339E+08
6.30E+05	5.94E+02	2.8457E+08
6.32E+05	5.95E+02	2.8576E+08
6.34E+05	5.95E+02	2.8695E+08
6.36E+05	5.95E+02	2.8814E+08
6.38E+05	5.95E+02	2.8933E+08
6.40E+05	5.96E+02	2.9052E+08
6.42E+05	5.96E+02	2.9172E+08
6.44E+05	5.96E+02	2.9291E+08
6.46E+05	5.96E+02	2.9410E+08

6.48E+05	5.96E+02	2.9529E+08
6.50E+05	5.96E+02	2.9648E+08
6.52E+05	5.96E+02	2.9768E+08
6.54E+05	5.96E+02	2.9887E+08
6.56E+05	5.96E+02	3.0006E+08
6.58E+05	5.96E+02	3.0125E+08
6.60E+05	5.96E+02	3.0245E+08
6.62E+05	5.96E+02	3.0364E+08
6.64E+05	5.96E+02	3.0483E+08
6.66E+05	5.96E+02	3.0603E+08
6.68E+05	5.96E+02	3.0722E+08
6.70E+05	5.96E+02	3.0841E+08
6.72E+05	5.96E+02	3.0960E+08
6.74E+05	5.96E+02	3.1080E+08
6.76E+05	5.96E+02	3.1199E+08
6.78E+05	5.96E+02	3.1318E+08
6.80E+05	5.96E+02	3.1437E+08
6.82E+05	5.96E+02	3.1557E+08
6.84E+05	5.96E+02	3.1676E+08
6.86E+05	5.96E+02	3.1795E+08
6.88E+05	5.96E+02	3.1915E+08
6.90E+05	5.96E+02	3.2034E+08
6.92E+05	5.96E+02	3.2153E+08
6.94E+05	5.96E+02	3.2272E+08
6.96E+05	5.96E+02	3.2392E+08
6.98E+05	5.96E+02	3.2511E+08
7.00E+05	5.96E+02	3.2630E+08
7.02E+05	5.96E+02	3.2750E+08
7.04E+05	5.96E+02	3.2869E+08
7.06E+05	5.96E+02	3.2988E+08
7.08E+05	5.96E+02	3.3107E+08
7.10E+05	5.96E+02	3.3227E+08
7.12E+05	5.96E+02	3.3346E+08
7.14E+05	5.96E+02	3.3465E+08
7.16E+05	5.96E+02	3.3584E+08
7.18E+05	5.96E+02	3.3704E+08
7.20E+05	5.96E+02	3.3823E+08
7.22E+05	5.96E+02	3.3942E+08
7.24E+05	5.96E+02	3.4062E+08
7.26E+05	5.96E+02	3.4181E+08
7.28E+05	5.96E+02	3.4300E+08
7.30E+05	5.96E+02	3.4419E+08
7.32E+05	5.96E+02	3.4539E+08
7.34E+05	5.96E+02	3.4658E+08
7.36E+05	5.96E+02	3.4777E+08
7.38E+05	5.96E+02	3.4897E+08
7.40E+05	5.96E+02	3.5016E+08

7.42E+05	5.96E+02	3.5135E+08
7.44E+05	5.96E+02	3.5254E+08
7.46E+05	5.96E+02	3.5374E+08
7.48E+05	5.96E+02	3.5493E+08
7.50E+05	5.96E+02	3.5612E+08
7.52E+05	5.96E+02	3.5732E+08
7.54E+05	5.96E+02	3.5851E+08
7.56E+05	5.96E+02	3.5970E+08
7.58E+05	5.96E+02	3.6089E+08
7.60E+05	5.96E+02	3.6209E+08
7.62E+05	5.96E+02	3.6328E+08
7.64E+05	5.96E+02	3.6447E+08
7.66E+05	5.96E+02	3.6566E+08
7.68E+05	5.96E+02	3.6686E+08
7.70E+05	5.96E+02	3.6805E+08
7.72E+05	5.96E+02	3.6924E+08
7.74E+05	5.96E+02	3.7044E+08
7.76E+05	5.96E+02	3.7163E+08
7.78E+05	5.96E+02	3.7282E+08
7.80E+05	5.96E+02	3.7401E+08
7.82E+05	5.96E+02	3.7521E+08
7.84E+05	5.96E+02	3.7640E+08
7.86E+05	5.96E+02	3.7759E+08
7.88E+05	5.96E+02	3.7879E+08
7.90E+05	5.96E+02	3.7998E+08
7.92E+05	5.96E+02	3.8117E+08
7.94E+05	5.96E+02	3.8236E+08
7.96E+05	5.96E+02	3.8356E+08
7.98E+05	5.96E+02	3.8475E+08
8.00E+05	5.96E+02	3.8594E+08
8.02E+05	5.96E+02	3.8714E+08
8.04E+05	5.96E+02	3.8833E+08
8.06E+05	5.96E+02	3.8952E+08
8.08E+05	5.96E+02	3.9071E+08
8.10E+05	5.96E+02	3.9191E+08
8.12E+05	5.96E+02	3.9310E+08
8.14E+05	5.96E+02	3.9429E+08
8.16E+05	5.96E+02	3.9548E+08
8.18E+05	5.96E+02	3.9668E+08
8.20E+05	5.96E+02	3.9787E+08
8.22E+05	5.96E+02	3.9906E+08
8.24E+05	5.96E+02	4.0026E+08
8.26E+05	5.96E+02	4.0145E+08
8.28E+05	5.96E+02	4.0264E+08
8.30E+05	5.96E+02	4.0383E+08
8.32E+05	5.96E+02	4.0503E+08
8.34E+05	5.96E+02	4.0622E+08

8.36E+05	5.96E+02	4.0741E+08
8.38E+05	5.96E+02	4.0861E+08
8.40E+05	5.96E+02	4.0980E+08
8.42E+05	5.96E+02	4.1099E+08
8.44E+05	5.96E+02	4.1218E+08
8.46E+05	5.96E+02	4.1338E+08
8.48E+05	5.96E+02	4.1457E+08
8.50E+05	5.96E+02	4.1576E+08
8.52E+05	5.96E+02	4.1696E+08
8.54E+05	5.96E+02	4.1815E+08
8.56E+05	5.96E+02	4.1934E+08
8.58E+05	5.96E+02	4.2053E+08
8.60E+05	5.96E+02	4.2173E+08
8.62E+05	5.96E+02	4.2292E+08
8.64E+05	5.96E+02	4.2411E+08
8.66E+05	5.96E+02	4.2530E+08
8.68E+05	5.96E+02	4.2650E+08
8.70E+05	5.96E+02	4.2769E+08
8.72E+05	5.96E+02	4.2888E+08
8.74E+05	5.96E+02	4.3008E+08
8.76E+05	5.96E+02	4.3127E+08
8.78E+05	5.96E+02	4.3246E+08
8.80E+05	5.96E+02	4.3365E+08
8.82E+05	5.96E+02	4.3485E+08
8.84E+05	5.96E+02	4.3604E+08
8.86E+05	5.96E+02	4.3723E+08
8.88E+05	5.96E+02	4.3843E+08
8.90E+05	5.96E+02	4.3962E+08
8.92E+05	5.96E+02	4.4081E+08
8.94E+05	5.96E+02	4.4200E+08
8.96E+05	5.96E+02	4.4320E+08
8.98E+05	5.96E+02	4.4439E+08
9.00E+05	5.96E+02	4.4558E+08
9.02E+05	5.96E+02	4.4678E+08
9.04E+05	5.96E+02	4.4797E+08
9.06E+05	5.96E+02	4.4916E+08
9.08E+05	5.96E+02	4.5035E+08
9.10E+05	5.96E+02	4.5155E+08
9.12E+05	5.96E+02	4.5274E+08
9.14E+05	5.96E+02	4.5393E+08
9.16E+05	5.96E+02	4.5512E+08
9.18E+05	5.96E+02	4.5632E+08
9.20E+05	5.96E+02	4.5751E+08
9.22E+05	5.96E+02	4.5870E+08
9.24E+05	5.96E+02	4.5990E+08
9.26E+05	5.96E+02	4.6109E+08
9.28E+05	5.96E+02	4.6228E+08

9.30E+05	5.96E+02	4.6347E+08
9.32E+05	5.96E+02	4.6467E+08
9.34E+05	5.96E+02	4.6586E+08
9.36E+05	5.96E+02	4.6705E+08
9.38E+05	5.96E+02	4.6825E+08
9.40E+05	5.96E+02	4.6944E+08
9.42E+05	5.96E+02	4.7063E+08
9.44E+05	5.96E+02	4.7182E+08
9.46E+05	5.96E+02	4.7302E+08
9.48E+05	5.96E+02	4.7421E+08
9.50E+05	5.96E+02	4.7540E+08
9.52E+05	5.96E+02	4.7660E+08
9.54E+05	5.96E+02	4.7779E+08
9.56E+05	5.96E+02	4.7898E+08
9.58E+05	5.96E+02	4.8017E+08
9.60E+05	5.96E+02	4.8137E+08
9.62E+05	5.96E+02	4.8256E+08
9.64E+05	5.96E+02	4.8375E+08
9.66E+05	5.96E+02	4.8494E+08
9.68E+05	5.96E+02	4.8614E+08
9.70E+05	5.96E+02	4.8733E+08
9.72E+05	5.96E+02	4.8852E+08
9.74E+05	5.96E+02	4.8972E+08
9.76E+05	5.96E+02	4.9091E+08
9.78E+05	5.96E+02	4.9210E+08
9.80E+05	5.96E+02	4.9329E+08
9.82E+05	5.96E+02	4.9449E+08
9.84E+05	5.96E+02	4.9568E+08
9.86E+05	5.96E+02	4.9687E+08
9.88E+05	5.96E+02	4.9807E+08
9.90E+05	5.96E+02	4.9926E+08
9.92E+05	5.96E+02	5.0045E+08
9.94E+05	5.96E+02	5.0164E+08
9.96E+05	5.96E+02	5.0284E+08
9.98E+05	5.96E+02	5.0403E+08
1.00E+06	5.96E+02	5.0522E+08

Inventory Released At Amargosa Farms, Wet climate
Contaminant Molybdenum

Time (yr)	Flux In (g/yr)	Cumulative (g)
2.50E+02	8.35E-01	0.00E+00
2.00E+03	1.34E+05	1.17E+08
4.00E+03	1.73E+05	4.23E+08
6.00E+03	1.73E+05	7.69E+08
8.00E+03	1.73E+05	1.12E+09
1.00E+04	1.73E+05	1.46E+09
1.20E+04	1.73E+05	1.81E+09
1.40E+04	1.73E+05	2.15E+09
1.60E+04	1.73E+05	2.50E+09
1.80E+04	1.73E+05	2.84E+09
2.00E+04	1.73E+05	3.19E+09
2.20E+04	1.73E+05	3.54E+09
2.40E+04	1.73E+05	3.88E+09
2.60E+04	1.73E+05	4.23E+09
2.80E+04	1.73E+05	4.57E+09
3.00E+04	1.73E+05	4.92E+09
3.20E+04	1.73E+05	5.26E+09
3.40E+04	1.73E+05	5.61E+09
3.60E+04	1.73E+05	5.96E+09
3.80E+04	1.73E+05	6.30E+09
4.00E+04	1.73E+05	6.65E+09
4.20E+04	1.73E+05	6.99E+09
4.40E+04	1.73E+05	7.34E+09
4.60E+04	1.73E+05	7.69E+09
4.80E+04	1.73E+05	8.03E+09
5.00E+04	1.73E+05	8.38E+09
5.20E+04	1.73E+05	8.72E+09
5.40E+04	1.73E+05	9.07E+09
5.60E+04	1.73E+05	9.41E+09
5.80E+04	1.73E+05	9.76E+09
6.00E+04	1.73E+05	1.01E+10
6.20E+04	1.73E+05	1.05E+10
6.40E+04	1.73E+05	1.08E+10
6.60E+04	1.73E+05	1.11E+10
6.80E+04	1.73E+05	1.15E+10
7.00E+04	1.73E+05	1.18E+10
7.20E+04	1.73E+05	1.22E+10
7.40E+04	1.73E+05	1.25E+10
7.60E+04	1.73E+05	1.29E+10
7.80E+04	1.73E+05	1.32E+10
8.00E+04	1.73E+05	1.36E+10
8.20E+04	1.73E+05	1.39E+10

8.40E+04	1.73E+05	1.43E+10
8.60E+04	1.73E+05	1.46E+10
8.80E+04	1.73E+05	1.49E+10
9.00E+04	1.73E+05	1.53E+10
9.20E+04	1.73E+05	1.56E+10
9.40E+04	1.73E+05	1.60E+10
9.60E+04	1.73E+05	1.63E+10
9.80E+04	1.73E+05	1.67E+10
1.00E+05	1.73E+05	1.70E+10
1.02E+05	1.73E+05	1.74E+10
1.04E+05	1.73E+05	1.77E+10
1.06E+05	1.73E+05	1.81E+10
1.08E+05	1.73E+05	1.84E+10
1.10E+05	1.73E+05	1.88E+10
1.12E+05	1.73E+05	1.91E+10
1.14E+05	1.73E+05	1.94E+10
1.16E+05	1.73E+05	1.98E+10
1.18E+05	1.73E+05	2.01E+10
1.20E+05	1.73E+05	2.05E+10
1.22E+05	1.73E+05	2.08E+10
1.24E+05	1.73E+05	2.12E+10
1.26E+05	1.73E+05	2.15E+10
1.28E+05	1.73E+05	2.19E+10
1.30E+05	1.73E+05	2.22E+10
1.32E+05	1.73E+05	2.26E+10
1.34E+05	1.73E+05	2.29E+10
1.36E+05	1.73E+05	2.32E+10
1.38E+05	1.73E+05	2.36E+10
1.40E+05	1.73E+05	2.39E+10
1.42E+05	1.73E+05	2.43E+10
1.44E+05	1.73E+05	2.46E+10
1.46E+05	1.73E+05	2.50E+10
1.48E+05	1.73E+05	2.53E+10
1.50E+05	1.73E+05	2.57E+10
1.52E+05	1.73E+05	2.60E+10
1.54E+05	1.73E+05	2.64E+10
1.56E+05	1.73E+05	2.67E+10
1.58E+05	1.73E+05	2.71E+10
1.60E+05	1.73E+05	2.74E+10
1.62E+05	1.73E+05	2.77E+10
1.64E+05	1.73E+05	2.81E+10
1.66E+05	1.73E+05	2.84E+10
1.68E+05	1.73E+05	2.88E+10
1.70E+05	1.73E+05	2.91E+10
1.72E+05	1.73E+05	2.95E+10
1.74E+05	1.73E+05	2.98E+10
1.76E+05	1.73E+05	3.02E+10

1.78E+05	1.73E+05	3.05E+10
1.80E+05	1.73E+05	3.09E+10
1.82E+05	1.73E+05	3.12E+10
1.84E+05	1.73E+05	3.15E+10
1.86E+05	1.73E+05	3.19E+10
1.88E+05	1.73E+05	3.22E+10
1.90E+05	1.73E+05	3.26E+10
1.92E+05	1.73E+05	3.29E+10
1.94E+05	1.73E+05	3.33E+10
1.96E+05	1.73E+05	3.36E+10
1.98E+05	1.73E+05	3.40E+10
2.00E+05	1.73E+05	3.43E+10
2.02E+05	1.73E+05	3.47E+10
2.04E+05	1.73E+05	3.50E+10
2.06E+05	1.73E+05	3.54E+10
2.08E+05	1.73E+05	3.57E+10
2.10E+05	1.73E+05	3.60E+10
2.12E+05	1.73E+05	3.64E+10
2.14E+05	1.73E+05	3.67E+10
2.16E+05	1.73E+05	3.71E+10
2.18E+05	1.73E+05	3.74E+10
2.20E+05	1.73E+05	3.78E+10
2.22E+05	1.73E+05	3.81E+10
2.24E+05	1.73E+05	3.85E+10
2.26E+05	1.73E+05	3.88E+10
2.28E+05	1.73E+05	3.92E+10
2.30E+05	1.73E+05	3.95E+10
2.32E+05	1.73E+05	3.98E+10
2.34E+05	1.73E+05	4.02E+10
2.36E+05	1.73E+05	4.05E+10
2.38E+05	1.73E+05	4.09E+10
2.40E+05	1.73E+05	4.12E+10
2.42E+05	1.73E+05	4.16E+10
2.44E+05	1.73E+05	4.19E+10
2.46E+05	1.73E+05	4.23E+10
2.48E+05	1.73E+05	4.26E+10
2.50E+05	1.73E+05	4.30E+10
2.52E+05	1.73E+05	4.33E+10
2.54E+05	1.73E+05	4.37E+10
2.56E+05	1.73E+05	4.40E+10
2.58E+05	1.73E+05	4.43E+10
2.60E+05	1.73E+05	4.47E+10
2.62E+05	1.73E+05	4.50E+10
2.64E+05	1.73E+05	4.54E+10
2.66E+05	1.73E+05	4.57E+10
2.68E+05	1.73E+05	4.61E+10
2.70E+05	1.73E+05	4.64E+10

2.72E+05	1.73E+05	4.68E+10
2.74E+05	1.73E+05	4.71E+10
2.76E+05	1.73E+05	4.75E+10
2.78E+05	1.73E+05	4.78E+10
2.80E+05	1.73E+05	4.81E+10
2.82E+05	1.73E+05	4.85E+10
2.84E+05	1.73E+05	4.88E+10
2.86E+05	1.73E+05	4.92E+10
2.88E+05	1.73E+05	4.95E+10
2.90E+05	1.73E+05	4.99E+10
2.92E+05	1.73E+05	5.02E+10
2.94E+05	1.73E+05	5.06E+10
2.96E+05	1.73E+05	5.09E+10
2.98E+05	1.73E+05	5.13E+10
3.00E+05	1.73E+05	5.16E+10
3.02E+05	1.73E+05	5.20E+10
3.04E+05	1.73E+05	5.23E+10
3.06E+05	1.73E+05	5.26E+10
3.08E+05	1.73E+05	5.30E+10
3.10E+05	1.73E+05	5.33E+10
3.12E+05	1.73E+05	5.37E+10
3.14E+05	1.73E+05	5.40E+10
3.16E+05	1.73E+05	5.44E+10
3.18E+05	1.73E+05	5.47E+10
3.20E+05	1.73E+05	5.51E+10
3.22E+05	1.73E+05	5.54E+10
3.24E+05	1.73E+05	5.58E+10
3.26E+05	1.73E+05	5.61E+10
3.28E+05	1.73E+05	5.64E+10
3.30E+05	1.73E+05	5.68E+10
3.32E+05	1.73E+05	5.71E+10
3.34E+05	1.73E+05	5.75E+10
3.36E+05	1.73E+05	5.78E+10
3.38E+05	1.73E+05	5.82E+10
3.40E+05	1.73E+05	5.85E+10
3.42E+05	1.73E+05	5.89E+10
3.44E+05	1.73E+05	5.92E+10
3.46E+05	1.73E+05	5.96E+10
3.48E+05	1.73E+05	5.99E+10
3.50E+05	1.73E+05	6.02E+10
3.52E+05	1.73E+05	6.06E+10
3.54E+05	1.73E+05	6.09E+10
3.56E+05	1.73E+05	6.13E+10
3.58E+05	1.73E+05	6.16E+10
3.60E+05	1.73E+05	6.20E+10
3.62E+05	1.73E+05	6.23E+10
3.64E+05	1.73E+05	6.27E+10

3.66E+05	1.73E+05	6.30E+10
3.68E+05	1.73E+05	6.34E+10
3.70E+05	1.73E+05	6.37E+10
3.72E+05	1.73E+05	6.41E+10
3.74E+05	1.73E+05	6.44E+10
3.76E+05	1.73E+05	6.47E+10
3.78E+05	1.73E+05	6.51E+10
3.80E+05	1.73E+05	6.54E+10
3.82E+05	1.73E+05	6.58E+10
3.84E+05	1.73E+05	6.61E+10
3.86E+05	1.73E+05	6.65E+10
3.88E+05	1.73E+05	6.68E+10
3.90E+05	1.73E+05	6.72E+10
3.92E+05	1.73E+05	6.75E+10
3.94E+05	1.73E+05	6.79E+10
3.96E+05	1.73E+05	6.82E+10
3.98E+05	1.73E+05	6.85E+10
4.00E+05	1.73E+05	6.89E+10
4.02E+05	1.73E+05	6.92E+10
4.04E+05	1.73E+05	6.96E+10
4.06E+05	1.73E+05	6.99E+10
4.08E+05	1.73E+05	7.03E+10
4.10E+05	1.73E+05	7.06E+10
4.12E+05	1.73E+05	7.10E+10
4.14E+05	1.73E+05	7.13E+10
4.16E+05	1.73E+05	7.17E+10
4.18E+05	1.73E+05	7.20E+10
4.20E+05	1.73E+05	7.24E+10
4.22E+05	1.73E+05	7.27E+10
4.24E+05	1.73E+05	7.30E+10
4.26E+05	1.73E+05	7.34E+10
4.28E+05	1.73E+05	7.37E+10
4.30E+05	1.73E+05	7.41E+10
4.32E+05	1.73E+05	7.44E+10
4.34E+05	1.73E+05	7.48E+10
4.36E+05	1.73E+05	7.51E+10
4.38E+05	1.73E+05	7.55E+10
4.40E+05	1.73E+05	7.58E+10
4.42E+05	1.73E+05	7.62E+10
4.44E+05	1.73E+05	7.65E+10
4.46E+05	1.73E+05	7.68E+10
4.48E+05	1.73E+05	7.72E+10
4.50E+05	1.73E+05	7.75E+10
4.52E+05	1.73E+05	7.79E+10
4.54E+05	1.73E+05	7.82E+10
4.56E+05	1.73E+05	7.86E+10
4.58E+05	1.73E+05	7.89E+10

4.60E+05	1.73E+05	7.93E+10
4.62E+05	1.73E+05	7.96E+10
4.64E+05	1.73E+05	8.00E+10
4.66E+05	1.73E+05	8.03E+10
4.68E+05	1.73E+05	8.07E+10
4.70E+05	1.73E+05	8.10E+10
4.72E+05	1.73E+05	8.13E+10
4.74E+05	1.73E+05	8.17E+10
4.76E+05	1.73E+05	8.20E+10
4.78E+05	1.73E+05	8.24E+10
4.80E+05	1.73E+05	8.27E+10
4.82E+05	1.73E+05	8.31E+10
4.84E+05	1.73E+05	8.34E+10
4.86E+05	1.73E+05	8.38E+10
4.88E+05	1.73E+05	8.41E+10
4.90E+05	1.73E+05	8.45E+10
4.92E+05	1.73E+05	8.48E+10
4.94E+05	1.73E+05	8.51E+10
4.96E+05	1.73E+05	8.55E+10
4.98E+05	1.73E+05	8.58E+10
5.00E+05	1.73E+05	8.62E+10
5.02E+05	2.96E+05	8.67E+10
5.04E+05	2.96E+05	8.72E+10
5.06E+05	2.96E+05	8.78E+10
5.08E+05	2.96E+05	8.84E+10
5.10E+05	2.96E+05	8.90E+10
5.12E+05	2.96E+05	8.96E+10
5.14E+05	2.96E+05	9.02E+10
5.16E+05	2.96E+05	9.08E+10
5.18E+05	2.96E+05	9.14E+10
5.20E+05	2.96E+05	9.20E+10
5.22E+05	2.96E+05	9.26E+10
5.24E+05	2.96E+05	9.32E+10
5.26E+05	2.96E+05	9.38E+10
5.28E+05	2.96E+05	9.44E+10
5.30E+05	2.96E+05	9.49E+10
5.32E+05	2.96E+05	9.55E+10
5.34E+05	2.96E+05	9.61E+10
5.36E+05	2.96E+05	9.67E+10
5.38E+05	2.96E+05	9.73E+10
5.40E+05	2.96E+05	9.79E+10
5.42E+05	2.96E+05	9.85E+10
5.44E+05	2.96E+05	9.91E+10
5.46E+05	2.96E+05	9.97E+10
5.48E+05	2.96E+05	1.00E+11
5.50E+05	2.96E+05	1.01E+11
5.52E+05	2.96E+05	1.01E+11

5.54E+05	2.96E+05	1.02E+11
5.56E+05	2.96E+05	1.03E+11
5.58E+05	2.96E+05	1.03E+11
5.60E+05	2.96E+05	1.04E+11
5.62E+05	2.96E+05	1.04E+11
5.64E+05	2.96E+05	1.05E+11
5.66E+05	2.96E+05	1.06E+11
5.68E+05	2.96E+05	1.06E+11
5.70E+05	2.96E+05	1.07E+11
5.72E+05	2.96E+05	1.07E+11
5.74E+05	2.96E+05	1.08E+11
5.76E+05	2.96E+05	1.09E+11
5.78E+05	2.96E+05	1.09E+11
5.80E+05	2.96E+05	1.10E+11
5.82E+05	2.96E+05	1.10E+11
5.84E+05	2.96E+05	1.11E+11
5.86E+05	2.96E+05	1.12E+11
5.88E+05	2.96E+05	1.12E+11
5.90E+05	2.96E+05	1.13E+11
5.92E+05	2.96E+05	1.13E+11
5.94E+05	2.96E+05	1.14E+11
5.96E+05	2.96E+05	1.14E+11
5.98E+05	2.96E+05	1.15E+11
6.00E+05	2.96E+05	1.16E+11
6.02E+05	2.96E+05	1.16E+11
6.04E+05	2.96E+05	1.17E+11
6.06E+05	2.96E+05	1.17E+11
6.08E+05	2.96E+05	1.18E+11
6.10E+05	2.96E+05	1.19E+11
6.12E+05	2.96E+05	1.19E+11
6.14E+05	2.96E+05	1.20E+11
6.16E+05	2.96E+05	1.20E+11
6.18E+05	2.96E+05	1.21E+11
6.20E+05	2.96E+05	1.22E+11
6.22E+05	2.96E+05	1.22E+11
6.24E+05	2.96E+05	1.23E+11
6.26E+05	2.96E+05	1.23E+11
6.28E+05	2.96E+05	1.24E+11
6.30E+05	2.96E+05	1.25E+11
6.32E+05	2.96E+05	1.25E+11
6.34E+05	2.96E+05	1.26E+11
6.36E+05	2.96E+05	1.26E+11
6.38E+05	2.96E+05	1.27E+11
6.40E+05	2.96E+05	1.28E+11
6.42E+05	2.96E+05	1.28E+11
6.44E+05	2.96E+05	1.29E+11
6.46E+05	2.96E+05	1.29E+11

6.48E+05	2.96E+05	1.30E+11
6.50E+05	2.96E+05	1.30E+11
6.52E+05	2.96E+05	1.31E+11
6.54E+05	2.96E+05	1.32E+11
6.56E+05	2.96E+05	1.32E+11
6.58E+05	2.96E+05	1.33E+11
6.60E+05	2.96E+05	1.33E+11
6.62E+05	2.96E+05	1.34E+11
6.64E+05	2.96E+05	1.35E+11
6.66E+05	2.96E+05	1.35E+11
6.68E+05	2.96E+05	1.36E+11
6.70E+05	2.96E+05	1.36E+11
6.72E+05	2.96E+05	1.37E+11
6.74E+05	2.96E+05	1.38E+11
6.76E+05	2.96E+05	1.38E+11
6.78E+05	2.96E+05	1.39E+11
6.80E+05	2.96E+05	1.39E+11
6.82E+05	2.96E+05	1.40E+11
6.84E+05	2.96E+05	1.41E+11
6.86E+05	2.96E+05	1.41E+11
6.88E+05	2.96E+05	1.42E+11
6.90E+05	2.96E+05	1.42E+11
6.92E+05	2.96E+05	1.43E+11
6.94E+05	2.96E+05	1.43E+11
6.96E+05	2.96E+05	1.44E+11
6.98E+05	2.96E+05	1.45E+11
7.00E+05	2.96E+05	1.45E+11
7.02E+05	2.96E+05	1.46E+11
7.04E+05	2.96E+05	1.46E+11
7.06E+05	2.96E+05	1.47E+11
7.08E+05	2.96E+05	1.48E+11
7.10E+05	2.96E+05	1.48E+11
7.12E+05	2.96E+05	1.49E+11
7.14E+05	2.96E+05	1.49E+11
7.16E+05	2.96E+05	1.50E+11
7.18E+05	2.96E+05	1.51E+11
7.20E+05	2.96E+05	1.51E+11
7.22E+05	2.96E+05	1.52E+11
7.24E+05	2.96E+05	1.52E+11
7.26E+05	2.96E+05	1.53E+11
7.28E+05	2.96E+05	1.54E+11
7.30E+05	2.96E+05	1.54E+11
7.32E+05	2.96E+05	1.55E+11
7.34E+05	2.96E+05	1.55E+11
7.36E+05	2.96E+05	1.56E+11
7.38E+05	2.96E+05	1.57E+11
7.40E+05	2.96E+05	1.57E+11

7.42E+05	2.96E+05	1.58E+11
7.44E+05	2.96E+05	1.58E+11
7.46E+05	2.96E+05	1.59E+11
7.48E+05	2.96E+05	1.59E+11
7.50E+05	2.96E+05	1.60E+11
7.52E+05	2.96E+05	1.61E+11
7.54E+05	2.96E+05	1.61E+11
7.56E+05	2.96E+05	1.62E+11
7.58E+05	2.96E+05	1.62E+11
7.60E+05	2.96E+05	1.63E+11
7.62E+05	2.96E+05	1.64E+11
7.64E+05	2.96E+05	1.64E+11
7.66E+05	2.96E+05	1.65E+11
7.68E+05	2.96E+05	1.65E+11
7.70E+05	2.96E+05	1.66E+11
7.72E+05	2.96E+05	1.67E+11
7.74E+05	2.96E+05	1.67E+11
7.76E+05	2.96E+05	1.68E+11
7.78E+05	2.96E+05	1.68E+11
7.80E+05	2.96E+05	1.69E+11
7.82E+05	2.96E+05	1.70E+11
7.84E+05	2.96E+05	1.70E+11
7.86E+05	2.96E+05	1.71E+11
7.88E+05	2.96E+05	1.71E+11
7.90E+05	2.96E+05	1.72E+11
7.92E+05	2.96E+05	1.72E+11
7.94E+05	2.96E+05	1.73E+11
7.96E+05	2.96E+05	1.74E+11
7.98E+05	2.96E+05	1.74E+11
8.00E+05	2.96E+05	1.75E+11
8.02E+05	2.96E+05	1.75E+11
8.04E+05	2.96E+05	1.76E+11
8.06E+05	2.96E+05	1.77E+11
8.08E+05	2.96E+05	1.77E+11
8.10E+05	2.96E+05	1.78E+11
8.12E+05	2.96E+05	1.78E+11
8.14E+05	2.96E+05	1.79E+11
8.16E+05	2.96E+05	1.80E+11
8.18E+05	2.96E+05	1.80E+11
8.20E+05	2.96E+05	1.81E+11
8.22E+05	2.96E+05	1.81E+11
8.24E+05	2.96E+05	1.82E+11
8.26E+05	2.96E+05	1.83E+11
8.28E+05	2.96E+05	1.83E+11
8.30E+05	2.96E+05	1.84E+11
8.32E+05	2.96E+05	1.84E+11
8.34E+05	2.96E+05	1.85E+11

8.36E+05	2.96E+05	1.86E+11
8.38E+05	2.96E+05	1.86E+11
8.40E+05	2.96E+05	1.87E+11
8.42E+05	2.96E+05	1.87E+11
8.44E+05	2.96E+05	1.88E+11
8.46E+05	2.96E+05	1.88E+11
8.48E+05	2.96E+05	1.89E+11
8.50E+05	2.96E+05	1.90E+11
8.52E+05	2.96E+05	1.90E+11
8.54E+05	2.96E+05	1.91E+11
8.56E+05	2.96E+05	1.91E+11
8.58E+05	2.96E+05	1.92E+11
8.60E+05	2.96E+05	1.93E+11
8.62E+05	2.96E+05	1.93E+11
8.64E+05	2.96E+05	1.94E+11
8.66E+05	2.96E+05	1.94E+11
8.68E+05	2.96E+05	1.95E+11
8.70E+05	2.96E+05	1.96E+11
8.72E+05	2.96E+05	1.96E+11
8.74E+05	2.96E+05	1.97E+11
8.76E+05	2.96E+05	1.97E+11
8.78E+05	2.96E+05	1.98E+11
8.80E+05	2.96E+05	1.99E+11
8.82E+05	2.96E+05	1.99E+11
8.84E+05	2.96E+05	2.00E+11
8.86E+05	2.96E+05	2.00E+11
8.88E+05	2.96E+05	2.01E+11
8.90E+05	2.96E+05	2.02E+11
8.92E+05	2.96E+05	2.02E+11
8.94E+05	2.96E+05	2.03E+11
8.96E+05	2.96E+05	2.03E+11
8.98E+05	2.96E+05	2.04E+11
9.00E+05	2.96E+05	2.04E+11
9.02E+05	2.96E+05	2.05E+11
9.04E+05	2.96E+05	2.06E+11
9.06E+05	2.96E+05	2.06E+11
9.08E+05	2.96E+05	2.07E+11
9.10E+05	2.96E+05	2.07E+11
9.12E+05	2.96E+05	2.08E+11
9.14E+05	2.96E+05	2.09E+11
9.16E+05	2.96E+05	2.09E+11
9.18E+05	2.96E+05	2.10E+11
9.20E+05	2.96E+05	2.10E+11
9.22E+05	2.96E+05	2.11E+11
9.24E+05	2.96E+05	2.12E+11
9.26E+05	2.96E+05	2.12E+11
9.28E+05	2.96E+05	2.13E+11

9.30E+05	2.96E+05	2.13E+11
9.32E+05	2.96E+05	2.14E+11
9.34E+05	2.96E+05	2.15E+11
9.36E+05	2.96E+05	2.15E+11
9.38E+05	2.96E+05	2.16E+11
9.40E+05	2.96E+05	2.16E+11
9.42E+05	2.96E+05	2.17E+11
9.44E+05	2.96E+05	2.17E+11
9.46E+05	2.96E+05	2.18E+11
9.48E+05	2.96E+05	2.19E+11
9.50E+05	2.96E+05	2.19E+11
9.52E+05	2.96E+05	2.20E+11
9.54E+05	2.96E+05	2.20E+11
9.56E+05	2.96E+05	2.21E+11
9.58E+05	2.96E+05	2.22E+11
9.60E+05	2.96E+05	2.22E+11
9.62E+05	2.96E+05	2.23E+11
9.64E+05	2.96E+05	2.23E+11
9.66E+05	2.96E+05	2.24E+11
9.68E+05	2.96E+05	2.25E+11
9.70E+05	2.96E+05	2.25E+11
9.72E+05	2.96E+05	2.26E+11
9.74E+05	2.96E+05	2.26E+11
9.76E+05	2.96E+05	2.27E+11
9.78E+05	2.96E+05	2.28E+11
9.80E+05	2.96E+05	2.28E+11
9.82E+05	2.96E+05	2.29E+11
9.84E+05	2.96E+05	2.29E+11
9.86E+05	2.96E+05	2.30E+11
9.88E+05	2.96E+05	2.31E+11
9.90E+05	2.96E+05	2.31E+11
9.92E+05	2.96E+05	2.32E+11
9.94E+05	2.96E+05	2.32E+11
9.96E+05	2.96E+05	2.33E+11
9.98E+05	2.96E+05	2.33E+11
1.00E+06	2.96E+05	2.34E+11

Inventory Released At Amargosa Farms, Wet climate
Contaminant Nickel

Time (yr)	Flux In (g/yr)	Cumulative (g)
2.50E+02	0.00E+00	0.00E+00
2.00E+03	0.00E+00	0.00E+00
4.00E+03	0.00E+00	0.00E+00
6.00E+03	0.00E+00	0.00E+00
8.00E+03	0.00E+00	0.00E+00
1.00E+04	0.00E+00	0.00E+00
1.20E+04	0.00E+00	0.00E+00
1.40E+04	0.00E+00	0.00E+00
1.60E+04	0.00E+00	0.00E+00
1.80E+04	0.00E+00	0.00E+00
2.00E+04	0.00E+00	0.00E+00
2.20E+04	0.00E+00	0.00E+00
2.40E+04	0.00E+00	0.00E+00
2.60E+04	0.00E+00	0.00E+00
2.80E+04	1.29E-10	1.29E-07
3.00E+04	5.63E-08	5.65E-05
3.20E+04	8.40E-06	8.51E-03
3.40E+04	5.39E-04	5.56E-01
3.60E+04	1.75E-02	1.86E+01
3.80E+04	3.24E-01	3.61E+02
4.00E+04	3.79E+00	4.48E+03
4.20E+04	3.00E+01	3.83E+04
4.40E+04	1.72E+02	2.40E+05
4.60E+04	7.43E+02	1.16E+06
4.80E+04	2.54E+03	4.44E+06
5.00E+04	7.07E+03	1.40E+07
5.20E+04	1.66E+04	3.77E+07
5.40E+04	3.34E+04	8.76E+07
5.60E+04	5.91E+04	1.80E+08
5.80E+04	9.41E+04	3.33E+08
6.00E+04	1.36E+05	5.64E+08
6.20E+04	1.83E+05	8.84E+08
6.40E+04	2.31E+05	1.30E+09
6.60E+04	2.77E+05	1.81E+09
6.80E+04	3.19E+05	2.40E+09
7.00E+04	3.56E+05	3.08E+09
7.20E+04	3.87E+05	3.82E+09
7.40E+04	4.13E+05	4.62E+09
7.60E+04	4.35E+05	5.47E+09
7.80E+04	4.53E+05	6.36E+09
8.00E+04	4.67E+05	7.28E+09
8.20E+04	4.79E+05	8.22E+09

8.40E+04	4.89E+05	9.19E+09
8.60E+04	4.97E+05	1.02E+10
8.80E+04	5.05E+05	1.12E+10
9.00E+04	5.12E+05	1.22E+10
9.20E+04	5.19E+05	1.32E+10
9.40E+04	5.25E+05	1.43E+10
9.60E+04	5.31E+05	1.53E+10
9.80E+04	5.36E+05	1.64E+10
1.00E+05	5.41E+05	1.75E+10
1.02E+05	5.46E+05	1.86E+10
1.04E+05	5.51E+05	1.97E+10
1.06E+05	5.56E+05	2.08E+10
1.08E+05	5.60E+05	2.19E+10
1.10E+05	5.65E+05	2.30E+10
1.12E+05	5.69E+05	2.41E+10
1.14E+05	5.73E+05	2.53E+10
1.16E+05	5.77E+05	2.64E+10
1.18E+05	5.80E+05	2.76E+10
1.20E+05	5.83E+05	2.87E+10
1.22E+05	5.86E+05	2.99E+10
1.24E+05	5.90E+05	3.11E+10
1.26E+05	5.93E+05	3.23E+10
1.28E+05	5.95E+05	3.35E+10
1.30E+05	5.98E+05	3.47E+10
1.32E+05	5.99E+05	3.59E+10
1.34E+05	6.01E+05	3.71E+10
1.36E+05	6.01E+05	3.83E+10
1.38E+05	6.02E+05	3.95E+10
1.40E+05	6.02E+05	4.07E+10
1.42E+05	6.03E+05	4.19E+10
1.44E+05	6.03E+05	4.31E+10
1.46E+05	6.03E+05	4.43E+10
1.48E+05	6.04E+05	4.55E+10
1.50E+05	6.05E+05	4.67E+10
1.52E+05	6.07E+05	4.79E+10
1.54E+05	6.09E+05	4.91E+10
1.56E+05	6.12E+05	5.03E+10
1.58E+05	6.15E+05	5.16E+10
1.60E+05	6.17E+05	5.28E+10
1.62E+05	6.19E+05	5.40E+10
1.64E+05	6.21E+05	5.53E+10
1.66E+05	6.22E+05	5.65E+10
1.68E+05	6.23E+05	5.78E+10
1.70E+05	6.24E+05	5.90E+10
1.72E+05	6.24E+05	6.03E+10
1.74E+05	6.24E+05	6.15E+10
1.76E+05	6.24E+05	6.28E+10

1.78E+05	6.24E+05	6.40E+10
1.80E+05	6.24E+05	6.53E+10
1.82E+05	6.24E+05	6.65E+10
1.84E+05	6.24E+05	6.78E+10
1.86E+05	6.24E+05	6.90E+10
1.88E+05	6.24E+05	7.03E+10
1.90E+05	6.24E+05	7.15E+10
1.92E+05	6.24E+05	7.28E+10
1.94E+05	6.24E+05	7.40E+10
1.96E+05	6.24E+05	7.52E+10
1.98E+05	6.24E+05	7.65E+10
2.00E+05	6.24E+05	7.77E+10
2.02E+05	6.24E+05	7.90E+10
2.04E+05	6.25E+05	8.02E+10
2.06E+05	6.25E+05	8.15E+10
2.08E+05	6.25E+05	8.27E+10
2.10E+05	6.26E+05	8.40E+10
2.12E+05	6.28E+05	8.52E+10
2.14E+05	6.30E+05	8.65E+10
2.16E+05	6.32E+05	8.78E+10
2.18E+05	6.35E+05	8.90E+10
2.20E+05	6.37E+05	9.03E+10
2.22E+05	6.40E+05	9.16E+10
2.24E+05	6.41E+05	9.29E+10
2.26E+05	6.42E+05	9.42E+10
2.28E+05	6.43E+05	9.54E+10
2.30E+05	6.44E+05	9.67E+10
2.32E+05	6.44E+05	9.80E+10
2.34E+05	6.44E+05	9.93E+10
2.36E+05	6.44E+05	1.01E+11
2.38E+05	6.44E+05	1.02E+11
2.40E+05	6.44E+05	1.03E+11
2.42E+05	6.44E+05	1.04E+11
2.44E+05	6.44E+05	1.06E+11
2.46E+05	6.45E+05	1.07E+11
2.48E+05	6.45E+05	1.08E+11
2.50E+05	6.46E+05	1.10E+11
2.52E+05	6.47E+05	1.11E+11
2.54E+05	6.49E+05	1.12E+11
2.56E+05	6.52E+05	1.14E+11
2.58E+05	6.55E+05	1.15E+11
2.60E+05	6.58E+05	1.16E+11
2.62E+05	6.60E+05	1.17E+11
2.64E+05	6.62E+05	1.19E+11
2.66E+05	6.63E+05	1.20E+11
2.68E+05	6.64E+05	1.21E+11
2.70E+05	6.65E+05	1.23E+11

2.72E+05	6.65E+05	1.24E+11
2.74E+05	6.66E+05	1.25E+11
2.76E+05	6.66E+05	1.27E+11
2.78E+05	6.66E+05	1.28E+11
2.80E+05	6.66E+05	1.29E+11
2.82E+05	6.66E+05	1.31E+11
2.84E+05	6.66E+05	1.32E+11
2.86E+05	6.66E+05	1.33E+11
2.88E+05	6.66E+05	1.35E+11
2.90E+05	6.66E+05	1.36E+11
2.92E+05	6.66E+05	1.37E+11
2.94E+05	6.66E+05	1.39E+11
2.96E+05	6.66E+05	1.40E+11
2.98E+05	6.66E+05	1.41E+11
3.00E+05	6.66E+05	1.43E+11
3.02E+05	6.66E+05	1.44E+11
3.04E+05	6.66E+05	1.45E+11
3.06E+05	6.66E+05	1.47E+11
3.08E+05	6.66E+05	1.48E+11
3.10E+05	6.66E+05	1.49E+11
3.12E+05	6.66E+05	1.51E+11
3.14E+05	6.66E+05	1.52E+11
3.16E+05	6.66E+05	1.53E+11
3.18E+05	6.66E+05	1.55E+11
3.20E+05	6.66E+05	1.56E+11
3.22E+05	6.66E+05	1.57E+11
3.24E+05	6.66E+05	1.59E+11
3.26E+05	6.66E+05	1.60E+11
3.28E+05	6.66E+05	1.61E+11
3.30E+05	6.66E+05	1.63E+11
3.32E+05	6.66E+05	1.64E+11
3.34E+05	6.66E+05	1.65E+11
3.36E+05	6.66E+05	1.67E+11
3.38E+05	6.66E+05	1.68E+11
3.40E+05	6.66E+05	1.69E+11
3.42E+05	6.66E+05	1.71E+11
3.44E+05	6.66E+05	1.72E+11
3.46E+05	6.66E+05	1.73E+11
3.48E+05	6.66E+05	1.75E+11
3.50E+05	6.66E+05	1.76E+11
3.52E+05	6.66E+05	1.77E+11
3.54E+05	6.66E+05	1.79E+11
3.56E+05	6.66E+05	1.80E+11
3.58E+05	6.66E+05	1.81E+11
3.60E+05	6.66E+05	1.83E+11
3.62E+05	6.66E+05	1.84E+11
3.64E+05	6.66E+05	1.85E+11

3.66E+05	6.66E+05	1.87E+11
3.68E+05	6.66E+05	1.88E+11
3.70E+05	6.66E+05	1.89E+11
3.72E+05	6.66E+05	1.91E+11
3.74E+05	6.67E+05	1.92E+11
3.76E+05	6.68E+05	1.93E+11
3.78E+05	6.71E+05	1.95E+11
3.80E+05	6.76E+05	1.96E+11
3.82E+05	6.83E+05	1.97E+11
3.84E+05	6.93E+05	1.99E+11
3.86E+05	7.04E+05	2.00E+11
3.88E+05	7.16E+05	2.02E+11
3.90E+05	7.26E+05	2.03E+11
3.92E+05	7.36E+05	2.04E+11
3.94E+05	7.43E+05	2.06E+11
3.96E+05	7.48E+05	2.07E+11
3.98E+05	7.51E+05	2.09E+11
4.00E+05	7.53E+05	2.10E+11
4.02E+05	7.54E+05	2.12E+11
4.04E+05	7.55E+05	2.13E+11
4.06E+05	7.56E+05	2.15E+11
4.08E+05	7.56E+05	2.16E+11
4.10E+05	7.56E+05	2.18E+11
4.12E+05	7.56E+05	2.20E+11
4.14E+05	7.56E+05	2.21E+11
4.16E+05	7.56E+05	2.23E+11
4.18E+05	7.56E+05	2.24E+11
4.20E+05	7.56E+05	2.26E+11
4.22E+05	7.56E+05	2.27E+11
4.24E+05	7.56E+05	2.29E+11
4.26E+05	7.56E+05	2.30E+11
4.28E+05	7.56E+05	2.32E+11
4.30E+05	7.56E+05	2.33E+11
4.32E+05	7.56E+05	2.35E+11
4.34E+05	7.56E+05	2.36E+11
4.36E+05	7.56E+05	2.38E+11
4.38E+05	7.56E+05	2.39E+11
4.40E+05	7.56E+05	2.41E+11
4.42E+05	7.56E+05	2.42E+11
4.44E+05	7.56E+05	2.44E+11
4.46E+05	7.56E+05	2.45E+11
4.48E+05	7.56E+05	2.47E+11
4.50E+05	7.56E+05	2.48E+11
4.52E+05	7.56E+05	2.50E+11
4.54E+05	7.56E+05	2.51E+11
4.56E+05	7.56E+05	2.53E+11
4.58E+05	7.56E+05	2.54E+11

4.60E+05	7.56E+05	2.56E+11
4.62E+05	7.56E+05	2.57E+11
4.64E+05	7.56E+05	2.59E+11
4.66E+05	7.56E+05	2.60E+11
4.68E+05	7.56E+05	2.62E+11
4.70E+05	7.56E+05	2.63E+11
4.72E+05	7.56E+05	2.65E+11
4.74E+05	7.56E+05	2.66E+11
4.76E+05	7.56E+05	2.68E+11
4.78E+05	7.56E+05	2.69E+11
4.80E+05	7.56E+05	2.71E+11
4.82E+05	7.56E+05	2.72E+11
4.84E+05	7.56E+05	2.74E+11
4.86E+05	7.56E+05	2.75E+11
4.88E+05	7.56E+05	2.77E+11
4.90E+05	7.56E+05	2.78E+11
4.92E+05	7.56E+05	2.80E+11
4.94E+05	7.56E+05	2.82E+11
4.96E+05	7.56E+05	2.83E+11
4.98E+05	7.56E+05	2.85E+11
5.00E+05	7.56E+05	2.86E+11
5.02E+05	7.56E+05	2.88E+11
5.04E+05	7.56E+05	2.89E+11
5.06E+05	7.56E+05	2.91E+11
5.08E+05	7.56E+05	2.92E+11
5.10E+05	7.56E+05	2.94E+11
5.12E+05	7.56E+05	2.95E+11
5.14E+05	7.56E+05	2.97E+11
5.16E+05	7.56E+05	2.98E+11
5.18E+05	7.56E+05	3.00E+11
5.20E+05	7.56E+05	3.01E+11
5.22E+05	7.56E+05	3.03E+11
5.24E+05	7.56E+05	3.04E+11
5.26E+05	7.56E+05	3.06E+11
5.28E+05	7.56E+05	3.07E+11
5.30E+05	7.56E+05	3.09E+11
5.32E+05	7.56E+05	3.10E+11
5.34E+05	7.56E+05	3.12E+11
5.36E+05	7.56E+05	3.13E+11
5.38E+05	7.56E+05	3.15E+11
5.40E+05	7.56E+05	3.16E+11
5.42E+05	7.56E+05	3.18E+11
5.44E+05	7.57E+05	3.19E+11
5.46E+05	7.59E+05	3.21E+11
5.48E+05	7.64E+05	3.22E+11
5.50E+05	7.78E+05	3.24E+11
5.52E+05	8.03E+05	3.25E+11

5.54E+05	8.42E+05	3.27E+11
5.56E+05	8.97E+05	3.29E+11
5.58E+05	9.62E+05	3.31E+11
5.60E+05	1.03E+06	3.33E+11
5.62E+05	1.10E+06	3.35E+11
5.64E+05	1.16E+06	3.37E+11
5.66E+05	1.20E+06	3.39E+11
5.68E+05	1.24E+06	3.42E+11
5.70E+05	1.26E+06	3.44E+11
5.72E+05	1.27E+06	3.47E+11
5.74E+05	1.28E+06	3.49E+11
5.76E+05	1.29E+06	3.52E+11
5.78E+05	1.29E+06	3.55E+11
5.80E+05	1.29E+06	3.57E+11
5.82E+05	1.29E+06	3.60E+11
5.84E+05	1.29E+06	3.62E+11
5.86E+05	1.29E+06	3.65E+11
5.88E+05	1.29E+06	3.68E+11
5.90E+05	1.29E+06	3.70E+11
5.92E+05	1.29E+06	3.73E+11
5.94E+05	1.29E+06	3.75E+11
5.96E+05	1.29E+06	3.78E+11
5.98E+05	1.29E+06	3.81E+11
6.00E+05	1.29E+06	3.83E+11
6.02E+05	1.29E+06	3.86E+11
6.04E+05	1.29E+06	3.88E+11
6.06E+05	1.29E+06	3.91E+11
6.08E+05	1.29E+06	3.93E+11
6.10E+05	1.29E+06	3.96E+11
6.12E+05	1.29E+06	3.99E+11
6.14E+05	1.29E+06	4.01E+11
6.16E+05	1.29E+06	4.04E+11
6.18E+05	1.29E+06	4.06E+11
6.20E+05	1.29E+06	4.09E+11
6.22E+05	1.29E+06	4.12E+11
6.24E+05	1.29E+06	4.14E+11
6.26E+05	1.29E+06	4.17E+11
6.28E+05	1.29E+06	4.19E+11
6.30E+05	1.29E+06	4.22E+11
6.32E+05	1.29E+06	4.25E+11
6.34E+05	1.29E+06	4.27E+11
6.36E+05	1.29E+06	4.30E+11
6.38E+05	1.29E+06	4.32E+11
6.40E+05	1.29E+06	4.35E+11
6.42E+05	1.29E+06	4.37E+11
6.44E+05	1.29E+06	4.40E+11
6.46E+05	1.29E+06	4.43E+11

6.48E+05	1.29E+06	4.45E+11
6.50E+05	1.29E+06	4.48E+11
6.52E+05	1.29E+06	4.50E+11
6.54E+05	1.29E+06	4.53E+11
6.56E+05	1.29E+06	4.56E+11
6.58E+05	1.29E+06	4.58E+11
6.60E+05	1.29E+06	4.61E+11
6.62E+05	1.29E+06	4.63E+11
6.64E+05	1.29E+06	4.66E+11
6.66E+05	1.29E+06	4.69E+11
6.68E+05	1.29E+06	4.71E+11
6.70E+05	1.29E+06	4.74E+11
6.72E+05	1.29E+06	4.76E+11
6.74E+05	1.29E+06	4.79E+11
6.76E+05	1.29E+06	4.81E+11
6.78E+05	1.29E+06	4.84E+11
6.80E+05	1.29E+06	4.87E+11
6.82E+05	1.29E+06	4.89E+11
6.84E+05	1.29E+06	4.92E+11
6.86E+05	1.29E+06	4.94E+11
6.88E+05	1.29E+06	4.97E+11
6.90E+05	1.29E+06	5.00E+11
6.92E+05	1.29E+06	5.02E+11
6.94E+05	1.29E+06	5.05E+11
6.96E+05	1.29E+06	5.07E+11
6.98E+05	1.29E+06	5.10E+11
7.00E+05	1.29E+06	5.13E+11
7.02E+05	1.29E+06	5.15E+11
7.04E+05	1.29E+06	5.18E+11
7.06E+05	1.29E+06	5.20E+11
7.08E+05	1.29E+06	5.23E+11
7.10E+05	1.29E+06	5.25E+11
7.12E+05	1.30E+06	5.28E+11
7.14E+05	1.30E+06	5.31E+11
7.16E+05	1.30E+06	5.33E+11
7.18E+05	1.30E+06	5.36E+11
7.20E+05	1.31E+06	5.38E+11
7.22E+05	1.32E+06	5.41E+11
7.24E+05	1.32E+06	5.44E+11
7.26E+05	1.33E+06	5.46E+11
7.28E+05	1.34E+06	5.49E+11
7.30E+05	1.34E+06	5.52E+11
7.32E+05	1.35E+06	5.54E+11
7.34E+05	1.35E+06	5.57E+11
7.36E+05	1.35E+06	5.60E+11
7.38E+05	1.35E+06	5.63E+11
7.40E+05	1.36E+06	5.65E+11

7.42E+05	1.36E+06	5.68E+11
7.44E+05	1.36E+06	5.71E+11
7.46E+05	1.36E+06	5.73E+11
7.48E+05	1.36E+06	5.76E+11
7.50E+05	1.36E+06	5.79E+11
7.52E+05	1.36E+06	5.82E+11
7.54E+05	1.36E+06	5.84E+11
7.56E+05	1.36E+06	5.87E+11
7.58E+05	1.36E+06	5.90E+11
7.60E+05	1.36E+06	5.92E+11
7.62E+05	1.36E+06	5.95E+11
7.64E+05	1.36E+06	5.98E+11
7.66E+05	1.36E+06	6.01E+11
7.68E+05	1.36E+06	6.03E+11
7.70E+05	1.36E+06	6.06E+11
7.72E+05	1.36E+06	6.09E+11
7.74E+05	1.36E+06	6.11E+11
7.76E+05	1.36E+06	6.14E+11
7.78E+05	1.36E+06	6.17E+11
7.80E+05	1.36E+06	6.20E+11
7.82E+05	1.36E+06	6.22E+11
7.84E+05	1.36E+06	6.25E+11
7.86E+05	1.36E+06	6.28E+11
7.88E+05	1.36E+06	6.30E+11
7.90E+05	1.36E+06	6.33E+11
7.92E+05	1.36E+06	6.36E+11
7.94E+05	1.36E+06	6.38E+11
7.96E+05	1.36E+06	6.41E+11
7.98E+05	1.36E+06	6.44E+11
8.00E+05	1.36E+06	6.47E+11
8.02E+05	1.36E+06	6.49E+11
8.04E+05	1.36E+06	6.52E+11
8.06E+05	1.36E+06	6.55E+11
8.08E+05	1.36E+06	6.57E+11
8.10E+05	1.36E+06	6.60E+11
8.12E+05	1.36E+06	6.63E+11
8.14E+05	1.36E+06	6.66E+11
8.16E+05	1.36E+06	6.68E+11
8.18E+05	1.36E+06	6.71E+11
8.20E+05	1.36E+06	6.74E+11
8.22E+05	1.36E+06	6.76E+11
8.24E+05	1.36E+06	6.79E+11
8.26E+05	1.36E+06	6.82E+11
8.28E+05	1.36E+06	6.85E+11
8.30E+05	1.36E+06	6.87E+11
8.32E+05	1.36E+06	6.90E+11
8.34E+05	1.36E+06	6.93E+11

8.36E+05	1.36E+06	6.95E+11
8.38E+05	1.36E+06	6.98E+11
8.40E+05	1.36E+06	7.01E+11
8.42E+05	1.36E+06	7.04E+11
8.44E+05	1.36E+06	7.06E+11
8.46E+05	1.36E+06	7.09E+11
8.48E+05	1.36E+06	7.12E+11
8.50E+05	1.36E+06	7.14E+11
8.52E+05	1.36E+06	7.17E+11
8.54E+05	1.36E+06	7.20E+11
8.56E+05	1.36E+06	7.23E+11
8.58E+05	1.36E+06	7.25E+11
8.60E+05	1.36E+06	7.28E+11
8.62E+05	1.36E+06	7.31E+11
8.64E+05	1.36E+06	7.33E+11
8.66E+05	1.36E+06	7.36E+11
8.68E+05	1.36E+06	7.39E+11
8.70E+05	1.36E+06	7.42E+11
8.72E+05	1.36E+06	7.44E+11
8.74E+05	1.36E+06	7.47E+11
8.76E+05	1.36E+06	7.50E+11
8.78E+05	1.36E+06	7.52E+11
8.80E+05	1.36E+06	7.55E+11
8.82E+05	1.36E+06	7.58E+11
8.84E+05	1.36E+06	7.61E+11
8.86E+05	1.36E+06	7.63E+11
8.88E+05	1.36E+06	7.66E+11
8.90E+05	1.36E+06	7.69E+11
8.92E+05	1.36E+06	7.71E+11
8.94E+05	1.36E+06	7.74E+11
8.96E+05	1.36E+06	7.77E+11
8.98E+05	1.36E+06	7.80E+11
9.00E+05	1.36E+06	7.82E+11
9.02E+05	1.36E+06	7.85E+11
9.04E+05	1.36E+06	7.88E+11
9.06E+05	1.36E+06	7.90E+11
9.08E+05	1.36E+06	7.93E+11
9.10E+05	1.36E+06	7.96E+11
9.12E+05	1.36E+06	7.99E+11
9.14E+05	1.36E+06	8.01E+11
9.16E+05	1.36E+06	8.04E+11
9.18E+05	1.36E+06	8.07E+11
9.20E+05	1.36E+06	8.09E+11
9.22E+05	1.36E+06	8.12E+11
9.24E+05	1.36E+06	8.15E+11
9.26E+05	1.36E+06	8.18E+11
9.28E+05	1.36E+06	8.20E+11

9.30E+05	1.36E+06	8.23E+11
9.32E+05	1.36E+06	8.26E+11
9.34E+05	1.36E+06	8.28E+11
9.36E+05	1.36E+06	8.31E+11
9.38E+05	1.36E+06	8.34E+11
9.40E+05	1.36E+06	8.36E+11
9.42E+05	1.36E+06	8.39E+11
9.44E+05	1.36E+06	8.42E+11
9.46E+05	1.36E+06	8.45E+11
9.48E+05	1.36E+06	8.47E+11
9.50E+05	1.36E+06	8.50E+11
9.52E+05	1.36E+06	8.53E+11
9.54E+05	1.36E+06	8.55E+11
9.56E+05	1.36E+06	8.58E+11
9.58E+05	1.36E+06	8.61E+11
9.60E+05	1.36E+06	8.64E+11
9.62E+05	1.36E+06	8.66E+11
9.64E+05	1.36E+06	8.69E+11
9.66E+05	1.36E+06	8.72E+11
9.68E+05	1.36E+06	8.74E+11
9.70E+05	1.36E+06	8.77E+11
9.72E+05	1.36E+06	8.80E+11
9.74E+05	1.36E+06	8.83E+11
9.76E+05	1.36E+06	8.85E+11
9.78E+05	1.36E+06	8.88E+11
9.80E+05	1.36E+06	8.91E+11
9.82E+05	1.36E+06	8.93E+11
9.84E+05	1.36E+06	8.96E+11
9.86E+05	1.36E+06	8.99E+11
9.88E+05	1.36E+06	9.02E+11
9.90E+05	1.36E+06	9.04E+11
9.92E+05	1.36E+06	9.07E+11
9.94E+05	1.36E+06	9.10E+11
9.96E+05	1.36E+06	9.12E+11
9.98E+05	1.36E+06	9.15E+11
1.00E+06	1.36E+06	9.18E+11

Inventory Released At Amargosa Farms, Wet climate
Contaminant Vanadium

Time (yr)	Flux In (g/yr)	Cumulative (g)
2.50E+02	0.00E+00	0.0000E+00
2.00E+03	0.00E+00	0.0000E+00
4.00E+03	0.00E+00	0.0000E+00
6.00E+03	0.00E+00	0.0000E+00
8.00E+03	0.00E+00	0.0000E+00
1.00E+04	0.00E+00	0.0000E+00
1.20E+04	0.00E+00	0.0000E+00
1.40E+04	0.00E+00	0.0000E+00
1.60E+04	3.19E-11	3.1911E-08
1.80E+04	1.97E-07	1.9692E-04
2.00E+04	9.94E-05	9.9822E-02
2.20E+04	8.94E-03	9.1411E+00
2.40E+04	2.34E-01	2.5235E+02
2.60E+04	2.49E+00	2.9744E+03
2.80E+04	1.35E+01	1.8959E+04
3.00E+04	4.43E+01	7.6721E+04
3.20E+04	9.97E+01	2.2071E+05
3.40E+04	1.71E+02	4.9118E+05
3.60E+04	2.41E+02	9.0297E+05
3.80E+04	3.00E+02	1.4436E+06
4.00E+04	3.44E+02	2.0869E+06
4.20E+04	3.76E+02	2.8062E+06
4.40E+04	3.98E+02	3.5794E+06
4.60E+04	4.13E+02	4.3905E+06
4.80E+04	4.26E+02	5.2298E+06
5.00E+04	4.37E+02	6.0927E+06
5.20E+04	4.47E+02	6.9764E+06
5.40E+04	4.55E+02	7.8782E+06
5.60E+04	4.61E+02	8.7948E+06
5.80E+04	4.66E+02	9.7222E+06
6.00E+04	4.69E+02	1.0657E+07
6.20E+04	4.73E+02	1.1600E+07
6.40E+04	4.78E+02	1.2550E+07
6.60E+04	4.82E+02	1.3510E+07
6.80E+04	4.85E+02	1.4476E+07
7.00E+04	4.86E+02	1.5447E+07
7.20E+04	4.87E+02	1.6420E+07
7.40E+04	4.87E+02	1.7394E+07
7.60E+04	4.87E+02	1.8369E+07
7.80E+04	4.88E+02	1.9345E+07
8.00E+04	4.91E+02	2.0324E+07
8.20E+04	4.95E+02	2.1309E+07

8.40E+04	4.98E+02	2.2302E+07
8.60E+04	5.01E+02	2.3302E+07
8.80E+04	5.03E+02	2.4306E+07
9.00E+04	5.04E+02	2.5313E+07
9.20E+04	5.04E+02	2.6320E+07
9.40E+04	5.05E+02	2.7329E+07
9.60E+04	5.07E+02	2.8341E+07
9.80E+04	5.11E+02	2.9358E+07
1.00E+05	5.15E+02	3.0383E+07
1.02E+05	5.18E+02	3.1417E+07
1.04E+05	5.21E+02	3.2456E+07
1.06E+05	5.22E+02	3.3498E+07
1.08E+05	5.22E+02	3.4541E+07
1.10E+05	5.22E+02	3.5586E+07
1.12E+05	5.22E+02	3.6630E+07
1.14E+05	5.22E+02	3.7674E+07
1.16E+05	5.22E+02	3.8719E+07
1.18E+05	5.22E+02	3.9763E+07
1.20E+05	5.23E+02	4.0809E+07
1.22E+05	5.25E+02	4.1857E+07
1.24E+05	5.29E+02	4.2910E+07
1.26E+05	5.33E+02	4.3972E+07
1.28E+05	5.36E+02	4.5040E+07
1.30E+05	5.38E+02	4.6113E+07
1.32E+05	5.39E+02	4.7190E+07
1.34E+05	5.39E+02	4.8267E+07
1.36E+05	5.39E+02	4.9345E+07
1.38E+05	5.39E+02	5.0423E+07
1.40E+05	5.39E+02	5.1501E+07
1.42E+05	5.39E+02	5.2579E+07
1.44E+05	5.39E+02	5.3657E+07
1.46E+05	5.40E+02	5.4736E+07
1.48E+05	5.41E+02	5.5817E+07
1.50E+05	5.45E+02	5.6903E+07
1.52E+05	5.49E+02	5.7998E+07
1.54E+05	5.53E+02	5.9100E+07
1.56E+05	5.55E+02	6.0208E+07
1.58E+05	5.57E+02	6.1320E+07
1.60E+05	5.57E+02	6.2434E+07
1.62E+05	5.57E+02	6.3548E+07
1.64E+05	5.57E+02	6.4662E+07
1.66E+05	5.57E+02	6.5777E+07
1.68E+05	5.57E+02	6.6891E+07
1.70E+05	5.57E+02	6.8006E+07
1.72E+05	5.57E+02	6.9120E+07
1.74E+05	5.57E+02	7.0234E+07
1.76E+05	5.57E+02	7.1349E+07

1.78E+05	5.57E+02	7.2463E+07
1.80E+05	5.57E+02	7.3578E+07
1.82E+05	5.57E+02	7.4692E+07
1.84E+05	5.57E+02	7.5806E+07
1.86E+05	5.57E+02	7.6921E+07
1.88E+05	5.57E+02	7.8035E+07
1.90E+05	5.57E+02	7.9150E+07
1.92E+05	5.57E+02	8.0264E+07
1.94E+05	5.57E+02	8.1378E+07
1.96E+05	5.57E+02	8.2493E+07
1.98E+05	5.57E+02	8.3607E+07
2.00E+05	5.57E+02	8.4722E+07
2.02E+05	5.57E+02	8.5836E+07
2.04E+05	5.57E+02	8.6950E+07
2.06E+05	5.57E+02	8.8065E+07
2.08E+05	5.58E+02	8.9180E+07
2.10E+05	5.59E+02	9.0296E+07
2.12E+05	5.62E+02	9.1417E+07
2.14E+05	5.65E+02	9.2543E+07
2.16E+05	5.68E+02	9.3676E+07
2.18E+05	5.70E+02	9.4814E+07
2.20E+05	5.71E+02	9.5954E+07
2.22E+05	5.71E+02	9.7096E+07
2.24E+05	5.71E+02	9.8238E+07
2.26E+05	5.71E+02	9.9380E+07
2.28E+05	5.71E+02	1.0052E+08
2.30E+05	5.71E+02	1.0167E+08
2.32E+05	5.71E+02	1.0281E+08
2.34E+05	5.71E+02	1.0395E+08
2.36E+05	5.71E+02	1.0509E+08
2.38E+05	5.71E+02	1.0623E+08
2.40E+05	5.71E+02	1.0738E+08
2.42E+05	5.71E+02	1.0852E+08
2.44E+05	5.71E+02	1.0966E+08
2.46E+05	5.71E+02	1.1080E+08
2.48E+05	5.71E+02	1.1195E+08
2.50E+05	5.71E+02	1.1309E+08
2.52E+05	5.71E+02	1.1423E+08
2.54E+05	5.71E+02	1.1537E+08
2.56E+05	5.71E+02	1.1652E+08
2.58E+05	5.71E+02	1.1766E+08
2.60E+05	5.71E+02	1.1880E+08
2.62E+05	5.71E+02	1.1994E+08
2.64E+05	5.71E+02	1.2109E+08
2.66E+05	5.71E+02	1.2223E+08
2.68E+05	5.71E+02	1.2337E+08
2.70E+05	5.71E+02	1.2451E+08

2.72E+05	5.71E+02	1.2566E+08
2.74E+05	5.71E+02	1.2680E+08
2.76E+05	5.72E+02	1.2794E+08
2.78E+05	5.74E+02	1.2909E+08
2.80E+05	5.77E+02	1.3024E+08
2.82E+05	5.81E+02	1.3140E+08
2.84E+05	5.83E+02	1.3256E+08
2.86E+05	5.84E+02	1.3373E+08
2.88E+05	5.85E+02	1.3490E+08
2.90E+05	5.85E+02	1.3607E+08
2.92E+05	5.85E+02	1.3724E+08
2.94E+05	5.85E+02	1.3841E+08
2.96E+05	5.85E+02	1.3958E+08
2.98E+05	5.85E+02	1.4075E+08
3.00E+05	5.85E+02	1.4192E+08
3.02E+05	5.85E+02	1.4309E+08
3.04E+05	5.85E+02	1.4426E+08
3.06E+05	5.85E+02	1.4543E+08
3.08E+05	5.85E+02	1.4660E+08
3.10E+05	5.85E+02	1.4777E+08
3.12E+05	5.85E+02	1.4894E+08
3.14E+05	5.85E+02	1.5011E+08
3.16E+05	5.85E+02	1.5128E+08
3.18E+05	5.85E+02	1.5245E+08
3.20E+05	5.85E+02	1.5362E+08
3.22E+05	5.85E+02	1.5479E+08
3.24E+05	5.85E+02	1.5596E+08
3.26E+05	5.85E+02	1.5713E+08
3.28E+05	5.85E+02	1.5830E+08
3.30E+05	5.85E+02	1.5947E+08
3.32E+05	5.85E+02	1.6065E+08
3.34E+05	5.85E+02	1.6182E+08
3.36E+05	5.85E+02	1.6299E+08
3.38E+05	5.85E+02	1.6416E+08
3.40E+05	5.85E+02	1.6533E+08
3.42E+05	5.85E+02	1.6650E+08
3.44E+05	5.85E+02	1.6767E+08
3.46E+05	5.85E+02	1.6884E+08
3.48E+05	5.85E+02	1.7001E+08
3.50E+05	5.85E+02	1.7118E+08
3.52E+05	5.85E+02	1.7235E+08
3.54E+05	5.85E+02	1.7352E+08
3.56E+05	5.85E+02	1.7469E+08
3.58E+05	5.85E+02	1.7586E+08
3.60E+05	5.85E+02	1.7703E+08
3.62E+05	5.85E+02	1.7820E+08
3.64E+05	5.85E+02	1.7937E+08

3.66E+05	5.85E+02	1.8054E+08
3.68E+05	5.85E+02	1.8171E+08
3.70E+05	5.85E+02	1.8288E+08
3.72E+05	5.85E+02	1.8405E+08
3.74E+05	5.85E+02	1.8522E+08
3.76E+05	5.85E+02	1.8639E+08
3.78E+05	5.85E+02	1.8756E+08
3.80E+05	5.85E+02	1.8873E+08
3.82E+05	5.85E+02	1.8991E+08
3.84E+05	5.85E+02	1.9108E+08
3.86E+05	5.85E+02	1.9225E+08
3.88E+05	5.85E+02	1.9342E+08
3.90E+05	5.85E+02	1.9459E+08
3.92E+05	5.85E+02	1.9576E+08
3.94E+05	5.85E+02	1.9693E+08
3.96E+05	5.85E+02	1.9810E+08
3.98E+05	5.85E+02	1.9927E+08
4.00E+05	5.85E+02	2.0044E+08
4.02E+05	5.85E+02	2.0161E+08
4.04E+05	5.85E+02	2.0278E+08
4.06E+05	5.85E+02	2.0395E+08
4.08E+05	5.85E+02	2.0512E+08
4.10E+05	5.85E+02	2.0629E+08
4.12E+05	5.85E+02	2.0746E+08
4.14E+05	5.85E+02	2.0863E+08
4.16E+05	5.85E+02	2.0980E+08
4.18E+05	5.85E+02	2.1097E+08
4.20E+05	5.85E+02	2.1214E+08
4.22E+05	5.85E+02	2.1331E+08
4.24E+05	5.85E+02	2.1448E+08
4.26E+05	5.85E+02	2.1565E+08
4.28E+05	5.85E+02	2.1682E+08
4.30E+05	5.85E+02	2.1799E+08
4.32E+05	5.85E+02	2.1917E+08
4.34E+05	5.85E+02	2.2034E+08
4.36E+05	5.85E+02	2.2151E+08
4.38E+05	5.85E+02	2.2268E+08
4.40E+05	5.85E+02	2.2385E+08
4.42E+05	5.85E+02	2.2502E+08
4.44E+05	5.85E+02	2.2619E+08
4.46E+05	5.85E+02	2.2736E+08
4.48E+05	5.85E+02	2.2853E+08
4.50E+05	5.85E+02	2.2970E+08
4.52E+05	5.85E+02	2.3087E+08
4.54E+05	5.85E+02	2.3204E+08
4.56E+05	5.85E+02	2.3321E+08
4.58E+05	5.85E+02	2.3438E+08

4.60E+05	5.85E+02	2.3555E+08
4.62E+05	5.85E+02	2.3672E+08
4.64E+05	5.85E+02	2.3789E+08
4.66E+05	5.85E+02	2.3906E+08
4.68E+05	5.85E+02	2.4023E+08
4.70E+05	5.85E+02	2.4140E+08
4.72E+05	5.85E+02	2.4257E+08
4.74E+05	5.85E+02	2.4374E+08
4.76E+05	5.85E+02	2.4491E+08
4.78E+05	5.85E+02	2.4608E+08
4.80E+05	5.85E+02	2.4725E+08
4.82E+05	5.85E+02	2.4843E+08
4.84E+05	5.85E+02	2.4960E+08
4.86E+05	5.85E+02	2.5077E+08
4.88E+05	5.85E+02	2.5194E+08
4.90E+05	5.85E+02	2.5311E+08
4.92E+05	5.85E+02	2.5428E+08
4.94E+05	5.85E+02	2.5545E+08
4.96E+05	5.85E+02	2.5662E+08
4.98E+05	5.85E+02	2.5779E+08
5.00E+05	5.85E+02	2.5896E+08
5.02E+05	5.85E+02	2.6013E+08
5.04E+05	5.85E+02	2.6130E+08
5.06E+05	5.85E+02	2.6247E+08
5.08E+05	5.85E+02	2.6364E+08
5.10E+05	5.85E+02	2.6481E+08
5.12E+05	5.85E+02	2.6598E+08
5.14E+05	5.85E+02	2.6715E+08
5.16E+05	5.85E+02	2.6832E+08
5.18E+05	5.85E+02	2.6949E+08
5.20E+05	5.85E+02	2.7066E+08
5.22E+05	5.85E+02	2.7183E+08
5.24E+05	5.85E+02	2.7300E+08
5.26E+05	5.85E+02	2.7417E+08
5.28E+05	5.86E+02	2.7535E+08
5.30E+05	5.87E+02	2.7652E+08
5.32E+05	5.90E+02	2.7770E+08
5.34E+05	5.93E+02	2.7888E+08
5.36E+05	5.95E+02	2.8007E+08
5.38E+05	5.96E+02	2.8126E+08
5.40E+05	5.96E+02	2.8245E+08
5.42E+05	5.96E+02	2.8364E+08
5.44E+05	5.96E+02	2.8483E+08
5.46E+05	5.96E+02	2.8603E+08
5.48E+05	5.96E+02	2.8722E+08
5.50E+05	5.96E+02	2.8841E+08
5.52E+05	5.96E+02	2.8960E+08

5.54E+05	5.96E+02	2.9080E+08
5.56E+05	5.96E+02	2.9199E+08
5.58E+05	5.96E+02	2.9318E+08
5.60E+05	5.96E+02	2.9438E+08
5.62E+05	5.96E+02	2.9557E+08
5.64E+05	5.96E+02	2.9676E+08
5.66E+05	5.96E+02	2.9795E+08
5.68E+05	5.96E+02	2.9915E+08
5.70E+05	5.96E+02	3.0034E+08
5.72E+05	5.96E+02	3.0153E+08
5.74E+05	5.96E+02	3.0272E+08
5.76E+05	5.96E+02	3.0392E+08
5.78E+05	5.96E+02	3.0511E+08
5.80E+05	5.96E+02	3.0630E+08
5.82E+05	5.96E+02	3.0750E+08
5.84E+05	5.96E+02	3.0869E+08
5.86E+05	5.96E+02	3.0988E+08
5.88E+05	5.96E+02	3.1107E+08
5.90E+05	5.96E+02	3.1227E+08
5.92E+05	5.96E+02	3.1346E+08
5.94E+05	5.96E+02	3.1465E+08
5.96E+05	5.96E+02	3.1585E+08
5.98E+05	5.96E+02	3.1704E+08
6.00E+05	5.96E+02	3.1823E+08
6.02E+05	5.96E+02	3.1942E+08
6.04E+05	5.96E+02	3.2062E+08
6.06E+05	5.96E+02	3.2181E+08
6.08E+05	5.96E+02	3.2300E+08
6.10E+05	5.96E+02	3.2420E+08
6.12E+05	5.96E+02	3.2539E+08
6.14E+05	5.96E+02	3.2658E+08
6.16E+05	5.96E+02	3.2777E+08
6.18E+05	5.96E+02	3.2897E+08
6.20E+05	5.96E+02	3.3016E+08
6.22E+05	5.96E+02	3.3135E+08
6.24E+05	5.96E+02	3.3254E+08
6.26E+05	5.96E+02	3.3374E+08
6.28E+05	5.96E+02	3.3493E+08
6.30E+05	5.96E+02	3.3612E+08
6.32E+05	5.96E+02	3.3732E+08
6.34E+05	5.96E+02	3.3851E+08
6.36E+05	5.96E+02	3.3970E+08
6.38E+05	5.96E+02	3.4089E+08
6.40E+05	5.96E+02	3.4209E+08
6.42E+05	5.96E+02	3.4328E+08
6.44E+05	5.96E+02	3.4447E+08
6.46E+05	5.96E+02	3.4567E+08

6.48E+05	5.96E+02	3.4686E+08
6.50E+05	5.96E+02	3.4805E+08
6.52E+05	5.96E+02	3.4924E+08
6.54E+05	5.96E+02	3.5044E+08
6.56E+05	5.96E+02	3.5163E+08
6.58E+05	5.96E+02	3.5282E+08
6.60E+05	5.96E+02	3.5402E+08
6.62E+05	5.96E+02	3.5521E+08
6.64E+05	5.96E+02	3.5640E+08
6.66E+05	5.96E+02	3.5759E+08
6.68E+05	5.96E+02	3.5879E+08
6.70E+05	5.96E+02	3.5998E+08
6.72E+05	5.96E+02	3.6117E+08
6.74E+05	5.96E+02	3.6236E+08
6.76E+05	5.96E+02	3.6356E+08
6.78E+05	5.96E+02	3.6475E+08
6.80E+05	5.96E+02	3.6594E+08
6.82E+05	5.96E+02	3.6714E+08
6.84E+05	5.96E+02	3.6833E+08
6.86E+05	5.96E+02	3.6952E+08
6.88E+05	5.96E+02	3.7071E+08
6.90E+05	5.96E+02	3.7191E+08
6.92E+05	5.96E+02	3.7310E+08
6.94E+05	5.96E+02	3.7429E+08
6.96E+05	5.96E+02	3.7549E+08
6.98E+05	5.96E+02	3.7668E+08
7.00E+05	5.96E+02	3.7787E+08
7.02E+05	5.96E+02	3.7906E+08
7.04E+05	5.96E+02	3.8026E+08
7.06E+05	5.96E+02	3.8145E+08
7.08E+05	5.96E+02	3.8264E+08
7.10E+05	5.96E+02	3.8384E+08
7.12E+05	5.96E+02	3.8503E+08
7.14E+05	5.96E+02	3.8622E+08
7.16E+05	5.96E+02	3.8741E+08
7.18E+05	5.96E+02	3.8861E+08
7.20E+05	5.96E+02	3.8980E+08
7.22E+05	5.96E+02	3.9099E+08
7.24E+05	5.96E+02	3.9218E+08
7.26E+05	5.96E+02	3.9338E+08
7.28E+05	5.96E+02	3.9457E+08
7.30E+05	5.96E+02	3.9576E+08
7.32E+05	5.96E+02	3.9696E+08
7.34E+05	5.96E+02	3.9815E+08
7.36E+05	5.96E+02	3.9934E+08
7.38E+05	5.96E+02	4.0053E+08
7.40E+05	5.96E+02	4.0173E+08

7.42E+05	5.96E+02	4.0292E+08
7.44E+05	5.96E+02	4.0411E+08
7.46E+05	5.96E+02	4.0531E+08
7.48E+05	5.96E+02	4.0650E+08
7.50E+05	5.96E+02	4.0769E+08
7.52E+05	5.96E+02	4.0888E+08
7.54E+05	5.96E+02	4.1008E+08
7.56E+05	5.96E+02	4.1127E+08
7.58E+05	5.96E+02	4.1246E+08
7.60E+05	5.96E+02	4.1366E+08
7.62E+05	5.96E+02	4.1485E+08
7.64E+05	5.96E+02	4.1604E+08
7.66E+05	5.96E+02	4.1723E+08
7.68E+05	5.96E+02	4.1843E+08
7.70E+05	5.96E+02	4.1962E+08
7.72E+05	5.96E+02	4.2081E+08
7.74E+05	5.96E+02	4.2200E+08
7.76E+05	5.96E+02	4.2320E+08
7.78E+05	5.96E+02	4.2439E+08
7.80E+05	5.96E+02	4.2558E+08
7.82E+05	5.96E+02	4.2678E+08
7.84E+05	5.96E+02	4.2797E+08
7.86E+05	5.96E+02	4.2916E+08
7.88E+05	5.96E+02	4.3035E+08
7.90E+05	5.96E+02	4.3155E+08
7.92E+05	5.96E+02	4.3274E+08
7.94E+05	5.96E+02	4.3393E+08
7.96E+05	5.96E+02	4.3513E+08
7.98E+05	5.96E+02	4.3632E+08
8.00E+05	5.96E+02	4.3751E+08
8.02E+05	5.96E+02	4.3870E+08
8.04E+05	5.96E+02	4.3990E+08
8.06E+05	5.96E+02	4.4109E+08
8.08E+05	5.96E+02	4.4228E+08
8.10E+05	5.96E+02	4.4348E+08
8.12E+05	5.96E+02	4.4467E+08
8.14E+05	5.96E+02	4.4586E+08
8.16E+05	5.96E+02	4.4705E+08
8.18E+05	5.96E+02	4.4825E+08
8.20E+05	5.96E+02	4.4944E+08
8.22E+05	5.96E+02	4.5063E+08
8.24E+05	5.96E+02	4.5182E+08
8.26E+05	5.96E+02	4.5302E+08
8.28E+05	5.96E+02	4.5421E+08
8.30E+05	5.96E+02	4.5540E+08
8.32E+05	5.96E+02	4.5660E+08
8.34E+05	5.96E+02	4.5779E+08

8.36E+05	5.96E+02	4.5898E+08
8.38E+05	5.96E+02	4.6017E+08
8.40E+05	5.96E+02	4.6137E+08
8.42E+05	5.96E+02	4.6256E+08
8.44E+05	5.96E+02	4.6375E+08
8.46E+05	5.96E+02	4.6495E+08
8.48E+05	5.96E+02	4.6614E+08
8.50E+05	5.96E+02	4.6733E+08
8.52E+05	5.96E+02	4.6852E+08
8.54E+05	5.96E+02	4.6972E+08
8.56E+05	5.96E+02	4.7091E+08
8.58E+05	5.96E+02	4.7210E+08
8.60E+05	5.96E+02	4.7330E+08
8.62E+05	5.96E+02	4.7449E+08
8.64E+05	5.96E+02	4.7568E+08
8.66E+05	5.96E+02	4.7687E+08
8.68E+05	5.96E+02	4.7807E+08
8.70E+05	5.96E+02	4.7926E+08
8.72E+05	5.96E+02	4.8045E+08
8.74E+05	5.96E+02	4.8164E+08
8.76E+05	5.96E+02	4.8284E+08
8.78E+05	5.96E+02	4.8403E+08
8.80E+05	5.96E+02	4.8522E+08
8.82E+05	5.96E+02	4.8642E+08
8.84E+05	5.96E+02	4.8761E+08
8.86E+05	5.96E+02	4.8880E+08
8.88E+05	5.96E+02	4.8999E+08
8.90E+05	5.96E+02	4.9119E+08
8.92E+05	5.96E+02	4.9238E+08
8.94E+05	5.96E+02	4.9357E+08
8.96E+05	5.96E+02	4.9477E+08
8.98E+05	5.96E+02	4.9596E+08
9.00E+05	5.96E+02	4.9715E+08
9.02E+05	5.96E+02	4.9834E+08
9.04E+05	5.96E+02	4.9954E+08
9.06E+05	5.96E+02	5.0073E+08
9.08E+05	5.96E+02	5.0192E+08
9.10E+05	5.96E+02	5.0312E+08
9.12E+05	5.96E+02	5.0431E+08
9.14E+05	5.96E+02	5.0550E+08
9.16E+05	5.96E+02	5.0669E+08
9.18E+05	5.96E+02	5.0789E+08
9.20E+05	5.96E+02	5.0908E+08
9.22E+05	5.96E+02	5.1027E+08
9.24E+05	5.96E+02	5.1146E+08
9.26E+05	5.96E+02	5.1266E+08
9.28E+05	5.96E+02	5.1385E+08

9.30E+05	5.96E+02	5.1504E+08
9.32E+05	5.96E+02	5.1624E+08
9.34E+05	5.96E+02	5.1743E+08
9.36E+05	5.96E+02	5.1862E+08
9.38E+05	5.96E+02	5.1981E+08
9.40E+05	5.96E+02	5.2101E+08
9.42E+05	5.96E+02	5.2220E+08
9.44E+05	5.96E+02	5.2339E+08
9.46E+05	5.96E+02	5.2459E+08
9.48E+05	5.96E+02	5.2578E+08
9.50E+05	5.96E+02	5.2697E+08
9.52E+05	5.96E+02	5.2816E+08
9.54E+05	5.96E+02	5.2936E+08
9.56E+05	5.96E+02	5.3055E+08
9.58E+05	5.96E+02	5.3174E+08
9.60E+05	5.96E+02	5.3294E+08
9.62E+05	5.96E+02	5.3413E+08
9.64E+05	5.96E+02	5.3532E+08
9.66E+05	5.96E+02	5.3651E+08
9.68E+05	5.96E+02	5.3771E+08
9.70E+05	5.96E+02	5.3890E+08
9.72E+05	5.96E+02	5.4009E+08
9.74E+05	5.96E+02	5.4128E+08
9.76E+05	5.96E+02	5.4248E+08
9.78E+05	5.96E+02	5.4367E+08
9.80E+05	5.96E+02	5.4486E+08
9.82E+05	5.96E+02	5.4606E+08
9.84E+05	5.96E+02	5.4725E+08
9.86E+05	5.96E+02	5.4844E+08
9.88E+05	5.96E+02	5.4963E+08
9.90E+05	5.96E+02	5.5083E+08
9.92E+05	5.96E+02	5.5202E+08
9.94E+05	5.96E+02	5.5321E+08
9.96E+05	5.96E+02	5.5441E+08
9.98E+05	5.96E+02	5.5560E+08
1.00E+06	5.96E+02	5.5679E+08

Inventory Released Into Death Valley, Present Climate
Contaminant Molybdenum

Time (yr)	Flux In (g/yr)	Cumulative (g)
2.50E+02	0.00E+00	0.00E+00
2.00E+03	0.00E+00	0.00E+00
4.00E+03	0.00E+00	0.00E+00
6.00E+03	0.00E+00	0.00E+00
8.00E+03	0.00E+00	0.00E+00
1.00E+04	0.00E+00	0.00E+00
1.20E+04	0.00E+00	0.00E+00
1.40E+04	0.00E+00	0.00E+00
1.60E+04	0.00E+00	0.00E+00
1.80E+04	0.00E+00	0.00E+00
2.00E+04	0.00E+00	0.00E+00
2.20E+04	0.00E+00	0.00E+00
2.40E+04	3.27E-08	3.27E-05
2.60E+04	3.04E-04	3.04E-01
2.80E+04	2.72E-01	2.72E+02
3.00E+04	3.81E+01	3.86E+04
3.20E+04	1.22E+03	1.29E+06
3.40E+04	1.21E+04	1.46E+07
3.60E+04	4.87E+04	7.53E+07
3.80E+04	1.04E+05	2.28E+08
4.00E+04	1.47E+05	4.78E+08
4.20E+04	1.66E+05	7.91E+08
4.40E+04	1.72E+05	1.13E+09
4.60E+04	1.73E+05	1.47E+09
4.80E+04	1.73E+05	1.82E+09
5.00E+04	1.73E+05	2.17E+09
5.20E+04	1.73E+05	2.51E+09
5.40E+04	1.73E+05	2.86E+09
5.60E+04	1.73E+05	3.20E+09
5.80E+04	1.73E+05	3.55E+09
6.00E+04	1.73E+05	3.89E+09
6.20E+04	1.73E+05	4.24E+09
6.40E+04	1.73E+05	4.59E+09
6.60E+04	1.73E+05	4.93E+09
6.80E+04	1.73E+05	5.28E+09
7.00E+04	1.73E+05	5.62E+09
7.20E+04	1.73E+05	5.97E+09
7.40E+04	1.73E+05	6.32E+09
7.60E+04	1.73E+05	6.66E+09
7.80E+04	1.73E+05	7.01E+09
8.00E+04	1.73E+05	7.35E+09
8.20E+04	1.73E+05	7.70E+09

8.40E+04	1.73E+05	8.04E+09
8.60E+04	1.73E+05	8.39E+09
8.80E+04	1.73E+05	8.74E+09
9.00E+04	1.73E+05	9.08E+09
9.20E+04	1.73E+05	9.43E+09
9.40E+04	1.73E+05	9.77E+09
9.60E+04	1.73E+05	1.01E+10
9.80E+04	1.73E+05	1.05E+10
1.00E+05	1.73E+05	1.08E+10
1.02E+05	1.73E+05	1.12E+10
1.04E+05	1.73E+05	1.15E+10
1.06E+05	1.73E+05	1.18E+10
1.08E+05	1.73E+05	1.22E+10
1.10E+05	1.73E+05	1.25E+10
1.12E+05	1.73E+05	1.29E+10
1.14E+05	1.73E+05	1.32E+10
1.16E+05	1.73E+05	1.36E+10
1.18E+05	1.73E+05	1.39E+10
1.20E+05	1.73E+05	1.43E+10
1.22E+05	1.73E+05	1.46E+10
1.24E+05	1.73E+05	1.50E+10
1.26E+05	1.73E+05	1.53E+10
1.28E+05	1.73E+05	1.57E+10
1.30E+05	1.73E+05	1.60E+10
1.32E+05	1.73E+05	1.63E+10
1.34E+05	1.73E+05	1.67E+10
1.36E+05	1.73E+05	1.70E+10
1.38E+05	1.73E+05	1.74E+10
1.40E+05	1.73E+05	1.77E+10
1.42E+05	1.73E+05	1.81E+10
1.44E+05	1.73E+05	1.84E+10
1.46E+05	1.73E+05	1.88E+10
1.48E+05	1.73E+05	1.91E+10
1.50E+05	1.73E+05	1.95E+10
1.52E+05	1.73E+05	1.98E+10
1.54E+05	1.73E+05	2.01E+10
1.56E+05	1.73E+05	2.05E+10
1.58E+05	1.73E+05	2.08E+10
1.60E+05	1.73E+05	2.12E+10
1.62E+05	1.73E+05	2.15E+10
1.64E+05	1.73E+05	2.19E+10
1.66E+05	1.73E+05	2.22E+10
1.68E+05	1.73E+05	2.26E+10
1.70E+05	1.73E+05	2.29E+10
1.72E+05	1.73E+05	2.33E+10
1.74E+05	1.73E+05	2.36E+10
1.76E+05	1.73E+05	2.40E+10

1.78E+05	1.73E+05	2.43E+10
1.80E+05	1.73E+05	2.46E+10
1.82E+05	1.73E+05	2.50E+10
1.84E+05	1.73E+05	2.53E+10
1.86E+05	1.73E+05	2.57E+10
1.88E+05	1.73E+05	2.60E+10
1.90E+05	1.73E+05	2.64E+10
1.92E+05	1.73E+05	2.67E+10
1.94E+05	1.73E+05	2.71E+10
1.96E+05	1.73E+05	2.74E+10
1.98E+05	1.73E+05	2.78E+10
2.00E+05	1.73E+05	2.81E+10
2.02E+05	1.73E+05	2.84E+10
2.04E+05	1.73E+05	2.88E+10
2.06E+05	1.73E+05	2.91E+10
2.08E+05	1.73E+05	2.95E+10
2.10E+05	1.73E+05	2.98E+10
2.12E+05	1.73E+05	3.02E+10
2.14E+05	1.73E+05	3.05E+10
2.16E+05	1.73E+05	3.09E+10
2.18E+05	1.73E+05	3.12E+10
2.20E+05	1.73E+05	3.16E+10
2.22E+05	1.73E+05	3.19E+10
2.24E+05	1.73E+05	3.23E+10
2.26E+05	1.73E+05	3.26E+10
2.28E+05	1.73E+05	3.29E+10
2.30E+05	1.73E+05	3.33E+10
2.32E+05	1.73E+05	3.36E+10
2.34E+05	1.73E+05	3.40E+10
2.36E+05	1.73E+05	3.43E+10
2.38E+05	1.73E+05	3.47E+10
2.40E+05	1.73E+05	3.50E+10
2.42E+05	1.73E+05	3.54E+10
2.44E+05	1.73E+05	3.57E+10
2.46E+05	1.73E+05	3.61E+10
2.48E+05	1.73E+05	3.64E+10
2.50E+05	1.73E+05	3.67E+10
2.52E+05	1.73E+05	3.71E+10
2.54E+05	1.73E+05	3.74E+10
2.56E+05	1.73E+05	3.78E+10
2.58E+05	1.73E+05	3.81E+10
2.60E+05	1.73E+05	3.85E+10
2.62E+05	1.73E+05	3.88E+10
2.64E+05	1.73E+05	3.92E+10
2.66E+05	1.73E+05	3.95E+10
2.68E+05	1.73E+05	3.99E+10
2.70E+05	1.73E+05	4.02E+10

2.72E+05	1.73E+05	4.06E+10
2.74E+05	1.73E+05	4.09E+10
2.76E+05	1.73E+05	4.12E+10
2.78E+05	1.73E+05	4.16E+10
2.80E+05	1.73E+05	4.19E+10
2.82E+05	1.73E+05	4.23E+10
2.84E+05	1.73E+05	4.26E+10
2.86E+05	1.73E+05	4.30E+10
2.88E+05	1.73E+05	4.33E+10
2.90E+05	1.73E+05	4.37E+10
2.92E+05	1.73E+05	4.40E+10
2.94E+05	1.73E+05	4.44E+10
2.96E+05	1.73E+05	4.47E+10
2.98E+05	1.73E+05	4.50E+10
3.00E+05	1.73E+05	4.54E+10
3.02E+05	1.73E+05	4.57E+10
3.04E+05	1.73E+05	4.61E+10
3.06E+05	1.73E+05	4.64E+10
3.08E+05	1.73E+05	4.68E+10
3.10E+05	1.73E+05	4.71E+10
3.12E+05	1.73E+05	4.75E+10
3.14E+05	1.73E+05	4.78E+10
3.16E+05	1.73E+05	4.82E+10
3.18E+05	1.73E+05	4.85E+10
3.20E+05	1.73E+05	4.89E+10
3.22E+05	1.73E+05	4.92E+10
3.24E+05	1.73E+05	4.95E+10
3.26E+05	1.73E+05	4.99E+10
3.28E+05	1.73E+05	5.02E+10
3.30E+05	1.73E+05	5.06E+10
3.32E+05	1.73E+05	5.09E+10
3.34E+05	1.73E+05	5.13E+10
3.36E+05	1.73E+05	5.16E+10
3.38E+05	1.73E+05	5.20E+10
3.40E+05	1.73E+05	5.23E+10
3.42E+05	1.73E+05	5.27E+10
3.44E+05	1.73E+05	5.30E+10
3.46E+05	1.73E+05	5.33E+10
3.48E+05	1.73E+05	5.37E+10
3.50E+05	1.73E+05	5.40E+10
3.52E+05	1.73E+05	5.44E+10
3.54E+05	1.73E+05	5.47E+10
3.56E+05	1.73E+05	5.51E+10
3.58E+05	1.73E+05	5.54E+10
3.60E+05	1.73E+05	5.58E+10
3.62E+05	1.73E+05	5.61E+10
3.64E+05	1.73E+05	5.65E+10

3.66E+05	1.73E+05	5.68E+10
3.68E+05	1.73E+05	5.72E+10
3.70E+05	1.73E+05	5.75E+10
3.72E+05	1.73E+05	5.78E+10
3.74E+05	1.73E+05	5.82E+10
3.76E+05	1.73E+05	5.85E+10
3.78E+05	1.73E+05	5.89E+10
3.80E+05	1.73E+05	5.92E+10
3.82E+05	1.73E+05	5.96E+10
3.84E+05	1.73E+05	5.99E+10
3.86E+05	1.73E+05	6.03E+10
3.88E+05	1.73E+05	6.06E+10
3.90E+05	1.73E+05	6.10E+10
3.92E+05	1.73E+05	6.13E+10
3.94E+05	1.73E+05	6.16E+10
3.96E+05	1.73E+05	6.20E+10
3.98E+05	1.73E+05	6.23E+10
4.00E+05	1.73E+05	6.27E+10
4.02E+05	1.73E+05	6.30E+10
4.04E+05	1.73E+05	6.34E+10
4.06E+05	1.73E+05	6.37E+10
4.08E+05	1.73E+05	6.41E+10
4.10E+05	1.73E+05	6.44E+10
4.12E+05	1.73E+05	6.48E+10
4.14E+05	1.73E+05	6.51E+10
4.16E+05	1.73E+05	6.54E+10
4.18E+05	1.73E+05	6.58E+10
4.20E+05	1.73E+05	6.61E+10
4.22E+05	1.73E+05	6.65E+10
4.24E+05	1.73E+05	6.68E+10
4.26E+05	1.73E+05	6.72E+10
4.28E+05	1.73E+05	6.75E+10
4.30E+05	1.73E+05	6.79E+10
4.32E+05	1.73E+05	6.82E+10
4.34E+05	1.73E+05	6.86E+10
4.36E+05	1.73E+05	6.89E+10
4.38E+05	1.73E+05	6.93E+10
4.40E+05	1.73E+05	6.96E+10
4.42E+05	1.73E+05	6.99E+10
4.44E+05	1.73E+05	7.03E+10
4.46E+05	1.73E+05	7.06E+10
4.48E+05	1.73E+05	7.10E+10
4.50E+05	1.73E+05	7.13E+10
4.52E+05	1.73E+05	7.17E+10
4.54E+05	1.73E+05	7.20E+10
4.56E+05	1.73E+05	7.24E+10
4.58E+05	1.73E+05	7.27E+10

4.60E+05	1.73E+05	7.31E+10
4.62E+05	1.73E+05	7.34E+10
4.64E+05	1.73E+05	7.37E+10
4.66E+05	1.73E+05	7.41E+10
4.68E+05	1.73E+05	7.44E+10
4.70E+05	1.73E+05	7.48E+10
4.72E+05	1.73E+05	7.51E+10
4.74E+05	1.73E+05	7.55E+10
4.76E+05	1.73E+05	7.58E+10
4.78E+05	1.73E+05	7.62E+10
4.80E+05	1.73E+05	7.65E+10
4.82E+05	1.73E+05	7.69E+10
4.84E+05	1.73E+05	7.72E+10
4.86E+05	1.73E+05	7.76E+10
4.88E+05	1.73E+05	7.79E+10
4.90E+05	1.73E+05	7.82E+10
4.92E+05	1.73E+05	7.86E+10
4.94E+05	1.73E+05	7.89E+10
4.96E+05	1.73E+05	7.93E+10
4.98E+05	1.73E+05	7.96E+10
5.00E+05	1.73E+05	8.00E+10
5.02E+05	1.73E+05	8.03E+10
5.04E+05	1.73E+05	8.07E+10
5.06E+05	1.73E+05	8.10E+10
5.08E+05	1.73E+05	8.14E+10
5.10E+05	1.73E+05	8.17E+10
5.12E+05	1.73E+05	8.20E+10
5.14E+05	1.73E+05	8.24E+10
5.16E+05	1.73E+05	8.27E+10
5.18E+05	1.73E+05	8.31E+10
5.20E+05	1.73E+05	8.34E+10
5.22E+05	1.73E+05	8.38E+10
5.24E+05	1.73E+05	8.41E+10
5.26E+05	1.73E+05	8.45E+10
5.28E+05	1.73E+05	8.48E+10
5.30E+05	1.73E+05	8.52E+10
5.32E+05	1.74E+05	8.55E+10
5.34E+05	1.86E+05	8.59E+10
5.36E+05	2.21E+05	8.63E+10
5.38E+05	2.63E+05	8.68E+10
5.40E+05	2.88E+05	8.73E+10
5.42E+05	2.95E+05	8.79E+10
5.44E+05	2.96E+05	8.85E+10
5.46E+05	2.96E+05	8.91E+10
5.48E+05	2.96E+05	8.97E+10
5.50E+05	2.96E+05	9.03E+10
5.52E+05	2.96E+05	9.09E+10

5.54E+05	2.96E+05	9.14E+10
5.56E+05	2.96E+05	9.20E+10
5.58E+05	2.96E+05	9.26E+10
5.60E+05	2.96E+05	9.32E+10
5.62E+05	2.96E+05	9.38E+10
5.64E+05	2.96E+05	9.44E+10
5.66E+05	2.96E+05	9.50E+10
5.68E+05	2.96E+05	9.56E+10
5.70E+05	2.96E+05	9.62E+10
5.72E+05	2.96E+05	9.68E+10
5.74E+05	2.96E+05	9.74E+10
5.76E+05	2.96E+05	9.80E+10
5.78E+05	2.96E+05	9.85E+10
5.80E+05	2.96E+05	9.91E+10
5.82E+05	2.96E+05	9.97E+10
5.84E+05	2.96E+05	1.00E+11
5.86E+05	2.96E+05	1.01E+11
5.88E+05	2.96E+05	1.02E+11
5.90E+05	2.96E+05	1.02E+11
5.92E+05	2.96E+05	1.03E+11
5.94E+05	2.96E+05	1.03E+11
5.96E+05	2.96E+05	1.04E+11
5.98E+05	2.96E+05	1.04E+11
6.00E+05	2.96E+05	1.05E+11
6.02E+05	2.96E+05	1.06E+11
6.04E+05	2.96E+05	1.06E+11
6.06E+05	2.96E+05	1.07E+11
6.08E+05	2.96E+05	1.07E+11
6.10E+05	2.96E+05	1.08E+11
6.12E+05	2.96E+05	1.09E+11
6.14E+05	2.96E+05	1.09E+11
6.16E+05	2.96E+05	1.10E+11
6.18E+05	2.96E+05	1.10E+11
6.20E+05	2.96E+05	1.11E+11
6.22E+05	2.96E+05	1.12E+11
6.24E+05	2.96E+05	1.12E+11
6.26E+05	2.96E+05	1.13E+11
6.28E+05	2.96E+05	1.13E+11
6.30E+05	2.96E+05	1.14E+11
6.32E+05	2.96E+05	1.15E+11
6.34E+05	2.96E+05	1.15E+11
6.36E+05	2.96E+05	1.16E+11
6.38E+05	2.96E+05	1.16E+11
6.40E+05	2.96E+05	1.17E+11
6.42E+05	2.96E+05	1.17E+11
6.44E+05	2.96E+05	1.18E+11
6.46E+05	2.96E+05	1.19E+11

6.48E+05	2.96E+05	1.19E+11
6.50E+05	2.96E+05	1.20E+11
6.52E+05	2.96E+05	1.20E+11
6.54E+05	2.96E+05	1.21E+11
6.56E+05	2.96E+05	1.22E+11
6.58E+05	2.96E+05	1.22E+11
6.60E+05	2.96E+05	1.23E+11
6.62E+05	2.96E+05	1.23E+11
6.64E+05	2.96E+05	1.24E+11
6.66E+05	2.96E+05	1.25E+11
6.68E+05	2.96E+05	1.25E+11
6.70E+05	2.96E+05	1.26E+11
6.72E+05	2.96E+05	1.26E+11
6.74E+05	2.96E+05	1.27E+11
6.76E+05	2.96E+05	1.28E+11
6.78E+05	2.96E+05	1.28E+11
6.80E+05	2.96E+05	1.29E+11
6.82E+05	2.96E+05	1.29E+11
6.84E+05	2.96E+05	1.30E+11
6.86E+05	2.96E+05	1.31E+11
6.88E+05	2.96E+05	1.31E+11
6.90E+05	2.96E+05	1.32E+11
6.92E+05	2.96E+05	1.32E+11
6.94E+05	2.96E+05	1.33E+11
6.96E+05	2.96E+05	1.33E+11
6.98E+05	2.96E+05	1.34E+11
7.00E+05	2.96E+05	1.35E+11
7.02E+05	2.96E+05	1.35E+11
7.04E+05	2.96E+05	1.36E+11
7.06E+05	2.96E+05	1.36E+11
7.08E+05	2.96E+05	1.37E+11
7.10E+05	2.96E+05	1.38E+11
7.12E+05	2.96E+05	1.38E+11
7.14E+05	2.96E+05	1.39E+11
7.16E+05	2.96E+05	1.39E+11
7.18E+05	2.96E+05	1.40E+11
7.20E+05	2.96E+05	1.41E+11
7.22E+05	2.96E+05	1.41E+11
7.24E+05	2.96E+05	1.42E+11
7.26E+05	2.96E+05	1.42E+11
7.28E+05	2.96E+05	1.43E+11
7.30E+05	2.96E+05	1.44E+11
7.32E+05	2.96E+05	1.44E+11
7.34E+05	2.96E+05	1.45E+11
7.36E+05	2.96E+05	1.45E+11
7.38E+05	2.96E+05	1.46E+11
7.40E+05	2.96E+05	1.47E+11

7.42E+05	2.96E+05	1.47E+11
7.44E+05	2.96E+05	1.48E+11
7.46E+05	2.96E+05	1.48E+11
7.48E+05	2.96E+05	1.49E+11
7.50E+05	2.96E+05	1.49E+11
7.52E+05	2.96E+05	1.50E+11
7.54E+05	2.96E+05	1.51E+11
7.56E+05	2.96E+05	1.51E+11
7.58E+05	2.96E+05	1.52E+11
7.60E+05	2.96E+05	1.52E+11
7.62E+05	2.96E+05	1.53E+11
7.64E+05	2.96E+05	1.54E+11
7.66E+05	2.96E+05	1.54E+11
7.68E+05	2.96E+05	1.55E+11
7.70E+05	2.96E+05	1.55E+11
7.72E+05	2.96E+05	1.56E+11
7.74E+05	2.96E+05	1.57E+11
7.76E+05	2.96E+05	1.57E+11
7.78E+05	2.96E+05	1.58E+11
7.80E+05	2.96E+05	1.58E+11
7.82E+05	2.96E+05	1.59E+11
7.84E+05	2.96E+05	1.60E+11
7.86E+05	2.96E+05	1.60E+11
7.88E+05	2.96E+05	1.61E+11
7.90E+05	2.96E+05	1.61E+11
7.92E+05	2.96E+05	1.62E+11
7.94E+05	2.96E+05	1.62E+11
7.96E+05	2.96E+05	1.63E+11
7.98E+05	2.96E+05	1.64E+11
8.00E+05	2.96E+05	1.64E+11
8.02E+05	2.96E+05	1.65E+11
8.04E+05	2.96E+05	1.65E+11
8.06E+05	2.96E+05	1.66E+11
8.08E+05	2.96E+05	1.67E+11
8.10E+05	2.96E+05	1.67E+11
8.12E+05	2.96E+05	1.68E+11
8.14E+05	2.96E+05	1.68E+11
8.16E+05	2.96E+05	1.69E+11
8.18E+05	2.96E+05	1.70E+11
8.20E+05	2.96E+05	1.70E+11
8.22E+05	2.96E+05	1.71E+11
8.24E+05	2.96E+05	1.71E+11
8.26E+05	2.96E+05	1.72E+11
8.28E+05	2.96E+05	1.73E+11
8.30E+05	2.96E+05	1.73E+11
8.32E+05	2.96E+05	1.74E+11
8.34E+05	2.96E+05	1.74E+11

8.36E+05	2.96E+05	1.75E+11
8.38E+05	2.96E+05	1.76E+11
8.40E+05	2.96E+05	1.76E+11
8.42E+05	2.96E+05	1.77E+11
8.44E+05	2.96E+05	1.77E+11
8.46E+05	2.96E+05	1.78E+11
8.48E+05	2.96E+05	1.78E+11
8.50E+05	2.96E+05	1.79E+11
8.52E+05	2.96E+05	1.80E+11
8.54E+05	2.96E+05	1.80E+11
8.56E+05	2.96E+05	1.81E+11
8.58E+05	2.96E+05	1.81E+11
8.60E+05	2.96E+05	1.82E+11
8.62E+05	2.96E+05	1.83E+11
8.64E+05	2.96E+05	1.83E+11
8.66E+05	2.96E+05	1.84E+11
8.68E+05	2.96E+05	1.84E+11
8.70E+05	2.96E+05	1.85E+11
8.72E+05	2.96E+05	1.86E+11
8.74E+05	2.96E+05	1.86E+11
8.76E+05	2.96E+05	1.87E+11
8.78E+05	2.96E+05	1.87E+11
8.80E+05	2.96E+05	1.88E+11
8.82E+05	2.96E+05	1.89E+11
8.84E+05	2.96E+05	1.89E+11
8.86E+05	2.96E+05	1.90E+11
8.88E+05	2.96E+05	1.90E+11
8.90E+05	2.96E+05	1.91E+11
8.92E+05	2.96E+05	1.91E+11
8.94E+05	2.96E+05	1.92E+11
8.96E+05	2.96E+05	1.93E+11
8.98E+05	2.96E+05	1.93E+11
9.00E+05	2.96E+05	1.94E+11
9.02E+05	2.96E+05	1.94E+11
9.04E+05	2.96E+05	1.95E+11
9.06E+05	2.96E+05	1.96E+11
9.08E+05	2.96E+05	1.96E+11
9.10E+05	2.96E+05	1.97E+11
9.12E+05	2.96E+05	1.97E+11
9.14E+05	2.96E+05	1.98E+11
9.16E+05	2.96E+05	1.99E+11
9.18E+05	2.96E+05	1.99E+11
9.20E+05	2.96E+05	2.00E+11
9.22E+05	2.96E+05	2.00E+11
9.24E+05	2.96E+05	2.01E+11
9.26E+05	2.96E+05	2.02E+11
9.28E+05	2.96E+05	2.02E+11

9.30E+05	2.96E+05	2.03E+11
9.32E+05	2.96E+05	2.03E+11
9.34E+05	2.96E+05	2.04E+11
9.36E+05	2.96E+05	2.05E+11
9.38E+05	2.96E+05	2.05E+11
9.40E+05	2.96E+05	2.06E+11
9.42E+05	2.96E+05	2.06E+11
9.44E+05	2.96E+05	2.07E+11
9.46E+05	2.96E+05	2.07E+11
9.48E+05	2.96E+05	2.08E+11
9.50E+05	2.96E+05	2.09E+11
9.52E+05	2.96E+05	2.09E+11
9.54E+05	2.96E+05	2.10E+11
9.56E+05	2.96E+05	2.10E+11
9.58E+05	2.96E+05	2.11E+11
9.60E+05	2.96E+05	2.12E+11
9.62E+05	2.96E+05	2.12E+11
9.64E+05	2.96E+05	2.13E+11
9.66E+05	2.96E+05	2.13E+11
9.68E+05	2.96E+05	2.14E+11
9.70E+05	2.96E+05	2.15E+11
9.72E+05	2.96E+05	2.15E+11
9.74E+05	2.96E+05	2.16E+11
9.76E+05	2.96E+05	2.16E+11
9.78E+05	2.96E+05	2.17E+11
9.80E+05	2.96E+05	2.18E+11
9.82E+05	2.96E+05	2.18E+11
9.84E+05	2.96E+05	2.19E+11
9.86E+05	2.96E+05	2.19E+11
9.88E+05	2.96E+05	2.20E+11
9.90E+05	2.96E+05	2.21E+11
9.92E+05	2.96E+05	2.21E+11
9.94E+05	2.96E+05	2.22E+11
9.96E+05	2.96E+05	2.22E+11
9.98E+05	2.96E+05	2.23E+11
1.00E+06	2.96E+05	2.23E+11

Inventory Released Into Death Valley, Present Climate
Contaminant Nickel

Time (yr)	Flux In (g/yr)	Cumulative (g)
2.50E+02	0.00E+00	0.00E+00
2.00E+03	0.00E+00	0.00E+00
4.00E+03	0.00E+00	0.00E+00
6.00E+03	0.00E+00	0.00E+00
8.00E+03	0.00E+00	0.00E+00
1.00E+04	0.00E+00	0.00E+00
1.20E+04	0.00E+00	0.00E+00
1.40E+04	0.00E+00	0.00E+00
1.60E+04	0.00E+00	0.00E+00
1.80E+04	0.00E+00	0.00E+00
2.00E+04	0.00E+00	0.00E+00
2.20E+04	0.00E+00	0.00E+00
2.40E+04	0.00E+00	0.00E+00
2.60E+04	0.00E+00	0.00E+00
2.80E+04	0.00E+00	0.00E+00
3.00E+04	0.00E+00	0.00E+00
3.20E+04	0.00E+00	0.00E+00
3.40E+04	0.00E+00	0.00E+00
3.60E+04	0.00E+00	0.00E+00
3.80E+04	0.00E+00	0.00E+00
4.00E+04	0.00E+00	0.00E+00
4.20E+04	0.00E+00	0.00E+00
4.40E+04	0.00E+00	0.00E+00
4.60E+04	0.00E+00	0.00E+00
4.80E+04	0.00E+00	0.00E+00
5.00E+04	0.00E+00	0.00E+00
5.20E+04	0.00E+00	0.00E+00
5.40E+04	0.00E+00	0.00E+00
5.60E+04	0.00E+00	0.00E+00
5.80E+04	0.00E+00	0.00E+00
6.00E+04	0.00E+00	0.00E+00
6.20E+04	0.00E+00	0.00E+00
6.40E+04	0.00E+00	0.00E+00
6.60E+04	0.00E+00	0.00E+00
6.80E+04	0.00E+00	0.00E+00
7.00E+04	0.00E+00	0.00E+00
7.20E+04	0.00E+00	0.00E+00
7.40E+04	0.00E+00	0.00E+00
7.60E+04	0.00E+00	0.00E+00
7.80E+04	0.00E+00	0.00E+00
8.00E+04	0.00E+00	0.00E+00
8.20E+04	0.00E+00	0.00E+00

8.40E+04	0.00E+00	0.00E+00
8.60E+04	0.00E+00	0.00E+00
8.80E+04	0.00E+00	0.00E+00
9.00E+04	0.00E+00	0.00E+00
9.20E+04	0.00E+00	0.00E+00
9.40E+04	0.00E+00	0.00E+00
9.60E+04	0.00E+00	0.00E+00
9.80E+04	0.00E+00	0.00E+00
1.00E+05	0.00E+00	0.00E+00
1.02E+05	0.00E+00	0.00E+00
1.04E+05	0.00E+00	0.00E+00
1.06E+05	0.00E+00	0.00E+00
1.08E+05	0.00E+00	0.00E+00
1.10E+05	0.00E+00	0.00E+00
1.12E+05	0.00E+00	0.00E+00
1.14E+05	0.00E+00	0.00E+00
1.16E+05	0.00E+00	0.00E+00
1.18E+05	0.00E+00	0.00E+00
1.20E+05	0.00E+00	0.00E+00
1.22E+05	0.00E+00	0.00E+00
1.24E+05	0.00E+00	0.00E+00
1.26E+05	0.00E+00	0.00E+00
1.28E+05	0.00E+00	0.00E+00
1.30E+05	0.00E+00	0.00E+00
1.32E+05	0.00E+00	0.00E+00
1.34E+05	0.00E+00	0.00E+00
1.36E+05	0.00E+00	0.00E+00
1.38E+05	0.00E+00	0.00E+00
1.40E+05	0.00E+00	0.00E+00
1.42E+05	0.00E+00	0.00E+00
1.44E+05	0.00E+00	0.00E+00
1.46E+05	0.00E+00	0.00E+00
1.48E+05	0.00E+00	0.00E+00
1.50E+05	0.00E+00	0.00E+00
1.52E+05	0.00E+00	0.00E+00
1.54E+05	0.00E+00	0.00E+00
1.56E+05	0.00E+00	0.00E+00
1.58E+05	0.00E+00	0.00E+00
1.60E+05	0.00E+00	0.00E+00
1.62E+05	0.00E+00	0.00E+00
1.64E+05	0.00E+00	0.00E+00
1.66E+05	0.00E+00	0.00E+00
1.68E+05	0.00E+00	0.00E+00
1.70E+05	0.00E+00	0.00E+00
1.72E+05	0.00E+00	0.00E+00
1.74E+05	0.00E+00	0.00E+00
1.76E+05	0.00E+00	0.00E+00

1.78E+05	0.00E+00	0.00E+00
1.80E+05	0.00E+00	0.00E+00
1.82E+05	0.00E+00	0.00E+00
1.84E+05	0.00E+00	0.00E+00
1.86E+05	0.00E+00	0.00E+00
1.88E+05	0.00E+00	0.00E+00
1.90E+05	0.00E+00	0.00E+00
1.92E+05	0.00E+00	0.00E+00
1.94E+05	0.00E+00	0.00E+00
1.96E+05	0.00E+00	0.00E+00
1.98E+05	0.00E+00	0.00E+00
2.00E+05	0.00E+00	0.00E+00
2.02E+05	0.00E+00	0.00E+00
2.04E+05	0.00E+00	0.00E+00
2.06E+05	0.00E+00	0.00E+00
2.08E+05	0.00E+00	0.00E+00
2.10E+05	0.00E+00	0.00E+00
2.12E+05	0.00E+00	0.00E+00
2.14E+05	0.00E+00	0.00E+00
2.16E+05	0.00E+00	0.00E+00
2.18E+05	0.00E+00	0.00E+00
2.20E+05	0.00E+00	0.00E+00
2.22E+05	0.00E+00	0.00E+00
2.24E+05	0.00E+00	0.00E+00
2.26E+05	0.00E+00	0.00E+00
2.28E+05	0.00E+00	0.00E+00
2.30E+05	0.00E+00	0.00E+00
2.32E+05	0.00E+00	0.00E+00
2.34E+05	0.00E+00	0.00E+00
2.36E+05	0.00E+00	0.00E+00
2.38E+05	0.00E+00	0.00E+00
2.40E+05	0.00E+00	0.00E+00
2.42E+05	0.00E+00	0.00E+00
2.44E+05	0.00E+00	0.00E+00
2.46E+05	0.00E+00	0.00E+00
2.48E+05	0.00E+00	0.00E+00
2.50E+05	0.00E+00	0.00E+00
2.52E+05	0.00E+00	0.00E+00
2.54E+05	0.00E+00	0.00E+00
2.56E+05	0.00E+00	0.00E+00
2.58E+05	0.00E+00	0.00E+00
2.60E+05	0.00E+00	0.00E+00
2.62E+05	0.00E+00	0.00E+00
2.64E+05	0.00E+00	0.00E+00
2.66E+05	0.00E+00	0.00E+00
2.68E+05	0.00E+00	0.00E+00
2.70E+05	0.00E+00	0.00E+00

2.72E+05	0.00E+00	0.00E+00
2.74E+05	0.00E+00	0.00E+00
2.76E+05	0.00E+00	0.00E+00
2.78E+05	0.00E+00	0.00E+00
2.80E+05	0.00E+00	0.00E+00
2.82E+05	0.00E+00	0.00E+00
2.84E+05	0.00E+00	0.00E+00
2.86E+05	0.00E+00	0.00E+00
2.88E+05	0.00E+00	0.00E+00
2.90E+05	0.00E+00	0.00E+00
2.92E+05	0.00E+00	0.00E+00
2.94E+05	0.00E+00	0.00E+00
2.96E+05	0.00E+00	0.00E+00
2.98E+05	0.00E+00	0.00E+00
3.00E+05	0.00E+00	0.00E+00
3.02E+05	0.00E+00	0.00E+00
3.04E+05	0.00E+00	0.00E+00
3.06E+05	0.00E+00	0.00E+00
3.08E+05	0.00E+00	0.00E+00
3.10E+05	0.00E+00	0.00E+00
3.12E+05	0.00E+00	0.00E+00
3.14E+05	0.00E+00	0.00E+00
3.16E+05	0.00E+00	0.00E+00
3.18E+05	0.00E+00	0.00E+00
3.20E+05	0.00E+00	0.00E+00
3.22E+05	0.00E+00	0.00E+00
3.24E+05	0.00E+00	0.00E+00
3.26E+05	0.00E+00	0.00E+00
3.28E+05	0.00E+00	0.00E+00
3.30E+05	0.00E+00	0.00E+00
3.32E+05	0.00E+00	0.00E+00
3.34E+05	0.00E+00	0.00E+00
3.36E+05	0.00E+00	0.00E+00
3.38E+05	0.00E+00	0.00E+00
3.40E+05	0.00E+00	0.00E+00
3.42E+05	0.00E+00	0.00E+00
3.44E+05	0.00E+00	0.00E+00
3.46E+05	0.00E+00	0.00E+00
3.48E+05	0.00E+00	0.00E+00
3.50E+05	0.00E+00	0.00E+00
3.52E+05	0.00E+00	0.00E+00
3.54E+05	0.00E+00	0.00E+00
3.56E+05	0.00E+00	0.00E+00
3.58E+05	0.00E+00	0.00E+00
3.60E+05	0.00E+00	0.00E+00
3.62E+05	0.00E+00	0.00E+00
3.64E+05	0.00E+00	0.00E+00

3.66E+05	0.00E+00	0.00E+00
3.68E+05	0.00E+00	0.00E+00
3.70E+05	0.00E+00	0.00E+00
3.72E+05	0.00E+00	0.00E+00
3.74E+05	0.00E+00	0.00E+00
3.76E+05	0.00E+00	0.00E+00
3.78E+05	0.00E+00	0.00E+00
3.80E+05	0.00E+00	0.00E+00
3.82E+05	0.00E+00	0.00E+00
3.84E+05	0.00E+00	0.00E+00
3.86E+05	0.00E+00	0.00E+00
3.88E+05	0.00E+00	0.00E+00
3.90E+05	0.00E+00	0.00E+00
3.92E+05	0.00E+00	0.00E+00
3.94E+05	0.00E+00	0.00E+00
3.96E+05	0.00E+00	0.00E+00
3.98E+05	0.00E+00	0.00E+00
4.00E+05	0.00E+00	0.00E+00
4.02E+05	0.00E+00	0.00E+00
4.04E+05	0.00E+00	0.00E+00
4.06E+05	0.00E+00	0.00E+00
4.08E+05	0.00E+00	0.00E+00
4.10E+05	0.00E+00	0.00E+00
4.12E+05	0.00E+00	0.00E+00
4.14E+05	0.00E+00	0.00E+00
4.16E+05	0.00E+00	0.00E+00
4.18E+05	0.00E+00	0.00E+00
4.20E+05	0.00E+00	0.00E+00
4.22E+05	0.00E+00	0.00E+00
4.24E+05	0.00E+00	0.00E+00
4.26E+05	0.00E+00	0.00E+00
4.28E+05	0.00E+00	0.00E+00
4.30E+05	0.00E+00	0.00E+00
4.32E+05	0.00E+00	0.00E+00
4.34E+05	0.00E+00	0.00E+00
4.36E+05	0.00E+00	0.00E+00
4.38E+05	0.00E+00	0.00E+00
4.40E+05	0.00E+00	0.00E+00
4.42E+05	0.00E+00	0.00E+00
4.44E+05	0.00E+00	0.00E+00
4.46E+05	0.00E+00	0.00E+00
4.48E+05	0.00E+00	0.00E+00
4.50E+05	0.00E+00	0.00E+00
4.52E+05	0.00E+00	0.00E+00
4.54E+05	0.00E+00	0.00E+00
4.56E+05	0.00E+00	0.00E+00
4.58E+05	0.00E+00	0.00E+00

4.60E+05	0.00E+00	0.00E+00
4.62E+05	0.00E+00	0.00E+00
4.64E+05	0.00E+00	0.00E+00
4.66E+05	0.00E+00	0.00E+00
4.68E+05	0.00E+00	0.00E+00
4.70E+05	0.00E+00	0.00E+00
4.72E+05	0.00E+00	0.00E+00
4.74E+05	0.00E+00	0.00E+00
4.76E+05	0.00E+00	0.00E+00
4.78E+05	0.00E+00	0.00E+00
4.80E+05	0.00E+00	0.00E+00
4.82E+05	0.00E+00	0.00E+00
4.84E+05	0.00E+00	0.00E+00
4.86E+05	0.00E+00	0.00E+00
4.88E+05	0.00E+00	0.00E+00
4.90E+05	0.00E+00	0.00E+00
4.92E+05	0.00E+00	0.00E+00
4.94E+05	0.00E+00	0.00E+00
4.96E+05	0.00E+00	0.00E+00
4.98E+05	0.00E+00	0.00E+00
5.00E+05	0.00E+00	0.00E+00
5.02E+05	0.00E+00	0.00E+00
5.04E+05	0.00E+00	0.00E+00
5.06E+05	0.00E+00	0.00E+00
5.08E+05	0.00E+00	0.00E+00
5.10E+05	0.00E+00	0.00E+00
5.12E+05	0.00E+00	0.00E+00
5.14E+05	0.00E+00	0.00E+00
5.16E+05	0.00E+00	0.00E+00
5.18E+05	0.00E+00	0.00E+00
5.20E+05	0.00E+00	0.00E+00
5.22E+05	0.00E+00	0.00E+00
5.24E+05	0.00E+00	0.00E+00
5.26E+05	0.00E+00	0.00E+00
5.28E+05	0.00E+00	0.00E+00
5.30E+05	0.00E+00	0.00E+00
5.32E+05	0.00E+00	0.00E+00
5.34E+05	0.00E+00	0.00E+00
5.36E+05	0.00E+00	0.00E+00
5.38E+05	0.00E+00	0.00E+00
5.40E+05	0.00E+00	0.00E+00
5.42E+05	0.00E+00	0.00E+00
5.44E+05	0.00E+00	0.00E+00
5.46E+05	0.00E+00	0.00E+00
5.48E+05	0.00E+00	0.00E+00
5.50E+05	0.00E+00	0.00E+00
5.52E+05	0.00E+00	0.00E+00

5.54E+05	0.00E+00	0.00E+00
5.56E+05	0.00E+00	0.00E+00
5.58E+05	0.00E+00	0.00E+00
5.60E+05	0.00E+00	0.00E+00
5.62E+05	0.00E+00	0.00E+00
5.64E+05	0.00E+00	0.00E+00
5.66E+05	0.00E+00	0.00E+00
5.68E+05	0.00E+00	0.00E+00
5.70E+05	0.00E+00	0.00E+00
5.72E+05	0.00E+00	0.00E+00
5.74E+05	0.00E+00	0.00E+00
5.76E+05	0.00E+00	0.00E+00
5.78E+05	0.00E+00	0.00E+00
5.80E+05	0.00E+00	0.00E+00
5.82E+05	0.00E+00	0.00E+00
5.84E+05	0.00E+00	0.00E+00
5.86E+05	0.00E+00	0.00E+00
5.88E+05	0.00E+00	0.00E+00
5.90E+05	0.00E+00	0.00E+00
5.92E+05	0.00E+00	0.00E+00
5.94E+05	0.00E+00	0.00E+00
5.96E+05	0.00E+00	0.00E+00
5.98E+05	0.00E+00	0.00E+00
6.00E+05	0.00E+00	0.00E+00
6.02E+05	0.00E+00	0.00E+00
6.04E+05	0.00E+00	0.00E+00
6.06E+05	0.00E+00	0.00E+00
6.08E+05	0.00E+00	0.00E+00
6.10E+05	0.00E+00	0.00E+00
6.12E+05	0.00E+00	0.00E+00
6.14E+05	0.00E+00	0.00E+00
6.16E+05	0.00E+00	0.00E+00
6.18E+05	0.00E+00	0.00E+00
6.20E+05	0.00E+00	0.00E+00
6.22E+05	0.00E+00	0.00E+00
6.24E+05	0.00E+00	0.00E+00
6.26E+05	0.00E+00	0.00E+00
6.28E+05	0.00E+00	0.00E+00
6.30E+05	0.00E+00	0.00E+00
6.32E+05	0.00E+00	0.00E+00
6.34E+05	0.00E+00	0.00E+00
6.36E+05	0.00E+00	0.00E+00
6.38E+05	0.00E+00	0.00E+00
6.40E+05	0.00E+00	0.00E+00
6.42E+05	0.00E+00	0.00E+00
6.44E+05	0.00E+00	0.00E+00
6.46E+05	0.00E+00	0.00E+00

6.48E+05	0.00E+00	0.00E+00
6.50E+05	0.00E+00	0.00E+00
6.52E+05	0.00E+00	0.00E+00
6.54E+05	0.00E+00	0.00E+00
6.56E+05	0.00E+00	0.00E+00
6.58E+05	0.00E+00	0.00E+00
6.60E+05	0.00E+00	0.00E+00
6.62E+05	0.00E+00	0.00E+00
6.64E+05	0.00E+00	0.00E+00
6.66E+05	0.00E+00	0.00E+00
6.68E+05	0.00E+00	0.00E+00
6.70E+05	0.00E+00	0.00E+00
6.72E+05	0.00E+00	0.00E+00
6.74E+05	0.00E+00	0.00E+00
6.76E+05	0.00E+00	0.00E+00
6.78E+05	0.00E+00	0.00E+00
6.80E+05	0.00E+00	0.00E+00
6.82E+05	0.00E+00	0.00E+00
6.84E+05	0.00E+00	0.00E+00
6.86E+05	0.00E+00	0.00E+00
6.88E+05	0.00E+00	0.00E+00
6.90E+05	0.00E+00	0.00E+00
6.92E+05	0.00E+00	0.00E+00
6.94E+05	0.00E+00	0.00E+00
6.96E+05	0.00E+00	0.00E+00
6.98E+05	0.00E+00	0.00E+00
7.00E+05	0.00E+00	0.00E+00
7.02E+05	0.00E+00	0.00E+00
7.04E+05	0.00E+00	0.00E+00
7.06E+05	0.00E+00	0.00E+00
7.08E+05	0.00E+00	0.00E+00
7.10E+05	0.00E+00	0.00E+00
7.12E+05	0.00E+00	0.00E+00
7.14E+05	0.00E+00	0.00E+00
7.16E+05	0.00E+00	0.00E+00
7.18E+05	0.00E+00	0.00E+00
7.20E+05	0.00E+00	0.00E+00
7.22E+05	0.00E+00	0.00E+00
7.24E+05	0.00E+00	0.00E+00
7.26E+05	0.00E+00	0.00E+00
7.28E+05	0.00E+00	0.00E+00
7.30E+05	0.00E+00	0.00E+00
7.32E+05	0.00E+00	0.00E+00
7.34E+05	0.00E+00	0.00E+00
7.36E+05	0.00E+00	0.00E+00
7.38E+05	0.00E+00	0.00E+00
7.40E+05	0.00E+00	0.00E+00

7.42E+05	0.00E+00	0.00E+00
7.44E+05	0.00E+00	0.00E+00
7.46E+05	0.00E+00	0.00E+00
7.48E+05	0.00E+00	0.00E+00
7.50E+05	0.00E+00	0.00E+00
7.52E+05	0.00E+00	0.00E+00
7.54E+05	0.00E+00	0.00E+00
7.56E+05	0.00E+00	0.00E+00
7.58E+05	0.00E+00	0.00E+00
7.60E+05	0.00E+00	0.00E+00
7.62E+05	0.00E+00	0.00E+00
7.64E+05	0.00E+00	0.00E+00
7.66E+05	0.00E+00	0.00E+00
7.68E+05	0.00E+00	0.00E+00
7.70E+05	0.00E+00	0.00E+00
7.72E+05	0.00E+00	0.00E+00
7.74E+05	0.00E+00	0.00E+00
7.76E+05	0.00E+00	0.00E+00
7.78E+05	0.00E+00	0.00E+00
7.80E+05	0.00E+00	0.00E+00
7.82E+05	0.00E+00	0.00E+00
7.84E+05	0.00E+00	0.00E+00
7.86E+05	0.00E+00	0.00E+00
7.88E+05	0.00E+00	0.00E+00
7.90E+05	0.00E+00	0.00E+00
7.92E+05	0.00E+00	0.00E+00
7.94E+05	0.00E+00	0.00E+00
7.96E+05	0.00E+00	0.00E+00
7.98E+05	0.00E+00	0.00E+00
8.00E+05	0.00E+00	0.00E+00
8.02E+05	0.00E+00	0.00E+00
8.04E+05	0.00E+00	0.00E+00
8.06E+05	0.00E+00	0.00E+00
8.08E+05	0.00E+00	0.00E+00
8.10E+05	0.00E+00	0.00E+00
8.12E+05	0.00E+00	0.00E+00
8.14E+05	0.00E+00	0.00E+00
8.16E+05	0.00E+00	0.00E+00
8.18E+05	0.00E+00	0.00E+00
8.20E+05	0.00E+00	0.00E+00
8.22E+05	0.00E+00	0.00E+00
8.24E+05	0.00E+00	0.00E+00
8.26E+05	0.00E+00	0.00E+00
8.28E+05	0.00E+00	0.00E+00
8.30E+05	0.00E+00	0.00E+00
8.32E+05	0.00E+00	0.00E+00
8.34E+05	0.00E+00	0.00E+00

8.36E+05	0.00E+00	0.00E+00
8.38E+05	0.00E+00	0.00E+00
8.40E+05	0.00E+00	0.00E+00
8.42E+05	0.00E+00	0.00E+00
8.44E+05	0.00E+00	0.00E+00
8.46E+05	0.00E+00	0.00E+00
8.48E+05	0.00E+00	0.00E+00
8.50E+05	0.00E+00	0.00E+00
8.52E+05	0.00E+00	0.00E+00
8.54E+05	0.00E+00	0.00E+00
8.56E+05	0.00E+00	0.00E+00
8.58E+05	0.00E+00	0.00E+00
8.60E+05	0.00E+00	0.00E+00
8.62E+05	0.00E+00	0.00E+00
8.64E+05	0.00E+00	0.00E+00
8.66E+05	0.00E+00	0.00E+00
8.68E+05	0.00E+00	0.00E+00
8.70E+05	0.00E+00	0.00E+00
8.72E+05	0.00E+00	0.00E+00
8.74E+05	0.00E+00	0.00E+00
8.76E+05	0.00E+00	0.00E+00
8.78E+05	0.00E+00	0.00E+00
8.80E+05	0.00E+00	0.00E+00
8.82E+05	0.00E+00	0.00E+00
8.84E+05	0.00E+00	0.00E+00
8.86E+05	0.00E+00	0.00E+00
8.88E+05	0.00E+00	0.00E+00
8.90E+05	0.00E+00	0.00E+00
8.92E+05	0.00E+00	0.00E+00
8.94E+05	0.00E+00	0.00E+00
8.96E+05	0.00E+00	0.00E+00
8.98E+05	0.00E+00	0.00E+00
9.00E+05	0.00E+00	0.00E+00
9.02E+05	0.00E+00	0.00E+00
9.04E+05	0.00E+00	0.00E+00
9.06E+05	0.00E+00	0.00E+00
9.08E+05	0.00E+00	0.00E+00
9.10E+05	0.00E+00	0.00E+00
9.12E+05	0.00E+00	0.00E+00
9.14E+05	0.00E+00	0.00E+00
9.16E+05	0.00E+00	0.00E+00
9.18E+05	0.00E+00	0.00E+00
9.20E+05	0.00E+00	0.00E+00
9.22E+05	0.00E+00	0.00E+00
9.24E+05	0.00E+00	0.00E+00
9.26E+05	0.00E+00	0.00E+00
9.28E+05	0.00E+00	0.00E+00

9.30E+05	0.00E+00	0.00E+00
9.32E+05	0.00E+00	0.00E+00
9.34E+05	0.00E+00	0.00E+00
9.36E+05	0.00E+00	0.00E+00
9.38E+05	0.00E+00	0.00E+00
9.40E+05	0.00E+00	0.00E+00
9.42E+05	0.00E+00	0.00E+00
9.44E+05	0.00E+00	0.00E+00
9.46E+05	0.00E+00	0.00E+00
9.48E+05	0.00E+00	0.00E+00
9.50E+05	0.00E+00	0.00E+00
9.52E+05	0.00E+00	0.00E+00
9.54E+05	0.00E+00	0.00E+00
9.56E+05	0.00E+00	0.00E+00
9.58E+05	0.00E+00	0.00E+00
9.60E+05	0.00E+00	0.00E+00
9.62E+05	0.00E+00	0.00E+00
9.64E+05	0.00E+00	0.00E+00
9.66E+05	0.00E+00	0.00E+00
9.68E+05	0.00E+00	0.00E+00
9.70E+05	0.00E+00	0.00E+00
9.72E+05	0.00E+00	0.00E+00
9.74E+05	0.00E+00	0.00E+00
9.76E+05	0.00E+00	0.00E+00
9.78E+05	0.00E+00	0.00E+00
9.80E+05	0.00E+00	0.00E+00
9.82E+05	0.00E+00	0.00E+00
9.84E+05	0.00E+00	0.00E+00
9.86E+05	0.00E+00	0.00E+00
9.88E+05	0.00E+00	0.00E+00
9.90E+05	0.00E+00	0.00E+00
9.92E+05	0.00E+00	0.00E+00
9.94E+05	0.00E+00	0.00E+00
9.96E+05	0.00E+00	0.00E+00
9.98E+05	0.00E+00	0.00E+00
1.00E+06	0.00E+00	0.00E+00

Inventory Released Into Death Valley, Present Climate
Contaminant Vanadium

Time (yr)	Flux In (g/yr)	Cumulative (g)
2.50E+02	0.00E+00	0.0000E+00
2.00E+03	0.00E+00	0.0000E+00
4.00E+03	0.00E+00	0.0000E+00
6.00E+03	0.00E+00	0.0000E+00
8.00E+03	0.00E+00	0.0000E+00
1.00E+04	0.00E+00	0.0000E+00
1.20E+04	0.00E+00	0.0000E+00
1.40E+04	0.00E+00	0.0000E+00
1.60E+04	0.00E+00	0.0000E+00
1.80E+04	0.00E+00	0.0000E+00
2.00E+04	0.00E+00	0.0000E+00
2.20E+04	0.00E+00	0.0000E+00
2.40E+04	0.00E+00	0.0000E+00
2.60E+04	0.00E+00	0.0000E+00
2.80E+04	0.00E+00	0.0000E+00
3.00E+04	0.00E+00	0.0000E+00
3.20E+04	0.00E+00	0.0000E+00
3.40E+04	0.00E+00	0.0000E+00
3.60E+04	0.00E+00	0.0000E+00
3.80E+04	0.00E+00	0.0000E+00
4.00E+04	0.00E+00	0.0000E+00
4.20E+04	0.00E+00	0.0000E+00
4.40E+04	0.00E+00	0.0000E+00
4.60E+04	0.00E+00	0.0000E+00
4.80E+04	0.00E+00	0.0000E+00
5.00E+04	0.00E+00	0.0000E+00
5.20E+04	0.00E+00	0.0000E+00
5.40E+04	0.00E+00	0.0000E+00
5.60E+04	0.00E+00	0.0000E+00
5.80E+04	0.00E+00	0.0000E+00
6.00E+04	0.00E+00	0.0000E+00
6.20E+04	0.00E+00	0.0000E+00
6.40E+04	0.00E+00	0.0000E+00
6.60E+04	0.00E+00	0.0000E+00
6.80E+04	0.00E+00	0.0000E+00
7.00E+04	0.00E+00	0.0000E+00
7.20E+04	0.00E+00	0.0000E+00
7.40E+04	0.00E+00	0.0000E+00
7.60E+04	0.00E+00	0.0000E+00
7.80E+04	0.00E+00	0.0000E+00
8.00E+04	0.00E+00	0.0000E+00
8.20E+04	0.00E+00	0.0000E+00

8.40E+04	0.00E+00	0.0000E+00
8.60E+04	0.00E+00	0.0000E+00
8.80E+04	0.00E+00	0.0000E+00
9.00E+04	0.00E+00	0.0000E+00
9.20E+04	0.00E+00	0.0000E+00
9.40E+04	0.00E+00	0.0000E+00
9.60E+04	0.00E+00	0.0000E+00
9.80E+04	0.00E+00	0.0000E+00
1.00E+05	0.00E+00	0.0000E+00
1.02E+05	0.00E+00	0.0000E+00
1.04E+05	0.00E+00	0.0000E+00
1.06E+05	0.00E+00	0.0000E+00
1.08E+05	0.00E+00	0.0000E+00
1.10E+05	0.00E+00	0.0000E+00
1.12E+05	0.00E+00	0.0000E+00
1.14E+05	0.00E+00	0.0000E+00
1.16E+05	0.00E+00	0.0000E+00
1.18E+05	0.00E+00	0.0000E+00
1.20E+05	0.00E+00	0.0000E+00
1.22E+05	0.00E+00	0.0000E+00
1.24E+05	0.00E+00	0.0000E+00
1.26E+05	0.00E+00	0.0000E+00
1.28E+05	0.00E+00	0.0000E+00
1.30E+05	0.00E+00	0.0000E+00
1.32E+05	0.00E+00	0.0000E+00
1.34E+05	0.00E+00	0.0000E+00
1.36E+05	0.00E+00	0.0000E+00
1.38E+05	0.00E+00	0.0000E+00
1.40E+05	0.00E+00	0.0000E+00
1.42E+05	0.00E+00	0.0000E+00
1.44E+05	0.00E+00	0.0000E+00
1.46E+05	0.00E+00	0.0000E+00
1.48E+05	0.00E+00	0.0000E+00
1.50E+05	0.00E+00	0.0000E+00
1.52E+05	0.00E+00	0.0000E+00
1.54E+05	0.00E+00	0.0000E+00
1.56E+05	0.00E+00	0.0000E+00
1.58E+05	0.00E+00	0.0000E+00
1.60E+05	0.00E+00	0.0000E+00
1.62E+05	0.00E+00	0.0000E+00
1.64E+05	0.00E+00	0.0000E+00
1.66E+05	0.00E+00	0.0000E+00
1.68E+05	0.00E+00	0.0000E+00
1.70E+05	0.00E+00	0.0000E+00
1.72E+05	0.00E+00	0.0000E+00
1.74E+05	0.00E+00	0.0000E+00
1.76E+05	0.00E+00	0.0000E+00

1.78E+05	0.00E+00	0.0000E+00
1.80E+05	0.00E+00	0.0000E+00
1.82E+05	0.00E+00	0.0000E+00
1.84E+05	0.00E+00	0.0000E+00
1.86E+05	0.00E+00	0.0000E+00
1.88E+05	0.00E+00	0.0000E+00
1.90E+05	0.00E+00	0.0000E+00
1.92E+05	0.00E+00	0.0000E+00
1.94E+05	0.00E+00	0.0000E+00
1.96E+05	0.00E+00	0.0000E+00
1.98E+05	0.00E+00	0.0000E+00
2.00E+05	0.00E+00	0.0000E+00
2.02E+05	0.00E+00	0.0000E+00
2.04E+05	0.00E+00	0.0000E+00
2.06E+05	0.00E+00	0.0000E+00
2.08E+05	0.00E+00	0.0000E+00
2.10E+05	0.00E+00	0.0000E+00
2.12E+05	0.00E+00	0.0000E+00
2.14E+05	0.00E+00	0.0000E+00
2.16E+05	0.00E+00	0.0000E+00
2.18E+05	0.00E+00	0.0000E+00
2.20E+05	0.00E+00	0.0000E+00
2.22E+05	0.00E+00	0.0000E+00
2.24E+05	0.00E+00	0.0000E+00
2.26E+05	0.00E+00	0.0000E+00
2.28E+05	0.00E+00	0.0000E+00
2.30E+05	0.00E+00	0.0000E+00
2.32E+05	0.00E+00	0.0000E+00
2.34E+05	0.00E+00	0.0000E+00
2.36E+05	0.00E+00	0.0000E+00
2.38E+05	0.00E+00	0.0000E+00
2.40E+05	0.00E+00	0.0000E+00
2.42E+05	0.00E+00	0.0000E+00
2.44E+05	0.00E+00	0.0000E+00
2.46E+05	0.00E+00	0.0000E+00
2.48E+05	0.00E+00	0.0000E+00
2.50E+05	0.00E+00	0.0000E+00
2.52E+05	0.00E+00	0.0000E+00
2.54E+05	0.00E+00	0.0000E+00
2.56E+05	0.00E+00	0.0000E+00
2.58E+05	0.00E+00	0.0000E+00
2.60E+05	0.00E+00	0.0000E+00
2.62E+05	0.00E+00	0.0000E+00
2.64E+05	0.00E+00	0.0000E+00
2.66E+05	0.00E+00	0.0000E+00
2.68E+05	0.00E+00	0.0000E+00
2.70E+05	0.00E+00	0.0000E+00

2.72E+05	0.00E+00	0.0000E+00
2.74E+05	0.00E+00	0.0000E+00
2.76E+05	0.00E+00	0.0000E+00
2.78E+05	0.00E+00	0.0000E+00
2.80E+05	0.00E+00	0.0000E+00
2.82E+05	0.00E+00	0.0000E+00
2.84E+05	0.00E+00	0.0000E+00
2.86E+05	0.00E+00	0.0000E+00
2.88E+05	0.00E+00	0.0000E+00
2.90E+05	0.00E+00	0.0000E+00
2.92E+05	0.00E+00	0.0000E+00
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2.96E+05	0.00E+00	0.0000E+00
2.98E+05	0.00E+00	0.0000E+00
3.00E+05	0.00E+00	0.0000E+00
3.02E+05	0.00E+00	0.0000E+00
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3.22E+05	0.00E+00	0.0000E+00
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3.66E+05	0.00E+00	0.0000E+00
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5.66E+05	0.00E+00	0.0000E+00
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7.84E+05	0.00E+00	0.0000E+00
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8.00E+05	0.00E+00	0.0000E+00
8.02E+05	0.00E+00	0.0000E+00
8.04E+05	0.00E+00	0.0000E+00
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8.36E+05	0.00E+00	0.0000E+00
8.38E+05	0.00E+00	0.0000E+00
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8.42E+05	0.00E+00	0.0000E+00
8.44E+05	0.00E+00	0.0000E+00
8.46E+05	0.00E+00	0.0000E+00
8.48E+05	0.00E+00	0.0000E+00
8.50E+05	0.00E+00	0.0000E+00
8.52E+05	0.00E+00	0.0000E+00
8.54E+05	0.00E+00	0.0000E+00
8.56E+05	0.00E+00	0.0000E+00
8.58E+05	0.00E+00	0.0000E+00
8.60E+05	0.00E+00	0.0000E+00
8.62E+05	0.00E+00	0.0000E+00
8.64E+05	0.00E+00	0.0000E+00
8.66E+05	0.00E+00	0.0000E+00
8.68E+05	0.00E+00	0.0000E+00
8.70E+05	0.00E+00	0.0000E+00
8.72E+05	0.00E+00	0.0000E+00
8.74E+05	0.00E+00	0.0000E+00
8.76E+05	0.00E+00	0.0000E+00
8.78E+05	0.00E+00	0.0000E+00
8.80E+05	0.00E+00	0.0000E+00
8.82E+05	0.00E+00	0.0000E+00
8.84E+05	0.00E+00	0.0000E+00
8.86E+05	0.00E+00	0.0000E+00
8.88E+05	0.00E+00	0.0000E+00
8.90E+05	0.00E+00	0.0000E+00
8.92E+05	0.00E+00	0.0000E+00
8.94E+05	0.00E+00	0.0000E+00
8.96E+05	0.00E+00	0.0000E+00
8.98E+05	0.00E+00	0.0000E+00
9.00E+05	0.00E+00	0.0000E+00
9.02E+05	0.00E+00	0.0000E+00
9.04E+05	0.00E+00	0.0000E+00
9.06E+05	0.00E+00	0.0000E+00
9.08E+05	0.00E+00	0.0000E+00
9.10E+05	0.00E+00	0.0000E+00
9.12E+05	0.00E+00	0.0000E+00
9.14E+05	0.00E+00	0.0000E+00
9.16E+05	0.00E+00	0.0000E+00
9.18E+05	0.00E+00	0.0000E+00
9.20E+05	0.00E+00	0.0000E+00
9.22E+05	0.00E+00	0.0000E+00
9.24E+05	0.00E+00	0.0000E+00
9.26E+05	0.00E+00	0.0000E+00
9.28E+05	0.00E+00	0.0000E+00

9.30E+05	0.00E+00	0.0000E+00
9.32E+05	0.00E+00	0.0000E+00
9.34E+05	0.00E+00	0.0000E+00
9.36E+05	0.00E+00	0.0000E+00
9.38E+05	0.00E+00	0.0000E+00
9.40E+05	0.00E+00	0.0000E+00
9.42E+05	0.00E+00	0.0000E+00
9.44E+05	0.00E+00	0.0000E+00
9.46E+05	0.00E+00	0.0000E+00
9.48E+05	0.00E+00	0.0000E+00
9.50E+05	0.00E+00	0.0000E+00
9.52E+05	0.00E+00	0.0000E+00
9.54E+05	0.00E+00	0.0000E+00
9.56E+05	0.00E+00	0.0000E+00
9.58E+05	0.00E+00	0.0000E+00
9.60E+05	0.00E+00	0.0000E+00
9.62E+05	0.00E+00	0.0000E+00
9.64E+05	0.00E+00	0.0000E+00
9.66E+05	0.00E+00	0.0000E+00
9.68E+05	0.00E+00	0.0000E+00
9.70E+05	0.00E+00	0.0000E+00
9.72E+05	0.00E+00	0.0000E+00
9.74E+05	0.00E+00	0.0000E+00
9.76E+05	0.00E+00	0.0000E+00
9.78E+05	0.00E+00	0.0000E+00
9.80E+05	0.00E+00	0.0000E+00
9.82E+05	0.00E+00	0.0000E+00
9.84E+05	0.00E+00	0.0000E+00
9.86E+05	0.00E+00	0.0000E+00
9.88E+05	0.00E+00	0.0000E+00
9.90E+05	0.00E+00	0.0000E+00
9.92E+05	0.00E+00	0.0000E+00
9.94E+05	0.00E+00	0.0000E+00
9.96E+05	0.00E+00	0.0000E+00
9.98E+05	0.00E+00	0.0000E+00
1.00E+06	0.00E+00	0.0000E+00

Inventory Released Into Death Valley, Wet Climate
Contaminant Molybdenum

Time (yr)	Flux In (g/yr)	Cumulative (g)
2.50E+02	0.00E+00	0.00E+00
2.00E+03	0.00E+00	0.00E+00
4.00E+03	0.00E+00	0.00E+00
6.00E+03	2.72E-10	2.72E-07
8.00E+03	1.90E+02	1.90E+05
1.00E+04	9.69E+04	9.73E+07
1.20E+04	1.51E+05	3.45E+08
1.40E+04	1.73E+05	6.68E+08
1.60E+04	1.73E+05	1.01E+09
1.80E+04	1.73E+05	1.36E+09
2.00E+04	1.73E+05	1.71E+09
2.20E+04	1.73E+05	2.05E+09
2.40E+04	1.73E+05	2.40E+09
2.60E+04	1.73E+05	2.74E+09
2.80E+04	1.73E+05	3.09E+09
3.00E+04	1.73E+05	3.43E+09
3.20E+04	1.73E+05	3.78E+09
3.40E+04	1.73E+05	4.13E+09
3.60E+04	1.73E+05	4.47E+09
3.80E+04	1.73E+05	4.82E+09
4.00E+04	1.73E+05	5.16E+09
4.20E+04	1.73E+05	5.51E+09
4.40E+04	1.73E+05	5.86E+09
4.60E+04	1.73E+05	6.20E+09
4.80E+04	1.73E+05	6.55E+09
5.00E+04	1.73E+05	6.89E+09
5.20E+04	1.73E+05	7.24E+09
5.40E+04	1.73E+05	7.58E+09
5.60E+04	1.73E+05	7.93E+09
5.80E+04	1.73E+05	8.28E+09
6.00E+04	1.73E+05	8.62E+09
6.20E+04	1.73E+05	8.97E+09
6.40E+04	1.73E+05	9.31E+09
6.60E+04	1.73E+05	9.66E+09
6.80E+04	1.73E+05	1.00E+10
7.00E+04	1.73E+05	1.04E+10
7.20E+04	1.73E+05	1.07E+10
7.40E+04	1.73E+05	1.10E+10
7.60E+04	1.73E+05	1.14E+10
7.80E+04	1.73E+05	1.17E+10
8.00E+04	1.73E+05	1.21E+10
8.20E+04	1.73E+05	1.24E+10

8.40E+04	1.73E+05	1.28E+10
8.60E+04	1.73E+05	1.31E+10
8.80E+04	1.73E+05	1.35E+10
9.00E+04	1.73E+05	1.38E+10
9.20E+04	1.73E+05	1.42E+10
9.40E+04	1.73E+05	1.45E+10
9.60E+04	1.73E+05	1.48E+10
9.80E+04	1.73E+05	1.52E+10
1.00E+05	1.73E+05	1.55E+10
1.02E+05	1.73E+05	1.59E+10
1.04E+05	1.73E+05	1.62E+10
1.06E+05	1.73E+05	1.66E+10
1.08E+05	1.73E+05	1.69E+10
1.10E+05	1.73E+05	1.73E+10
1.12E+05	1.73E+05	1.76E+10
1.14E+05	1.73E+05	1.80E+10
1.16E+05	1.73E+05	1.83E+10
1.18E+05	1.73E+05	1.87E+10
1.20E+05	1.73E+05	1.90E+10
1.22E+05	1.73E+05	1.93E+10
1.24E+05	1.73E+05	1.97E+10
1.26E+05	1.73E+05	2.00E+10
1.28E+05	1.73E+05	2.04E+10
1.30E+05	1.73E+05	2.07E+10
1.32E+05	1.73E+05	2.11E+10
1.34E+05	1.73E+05	2.14E+10
1.36E+05	1.73E+05	2.18E+10
1.38E+05	1.73E+05	2.21E+10
1.40E+05	1.73E+05	2.25E+10
1.42E+05	1.73E+05	2.28E+10
1.44E+05	1.73E+05	2.31E+10
1.46E+05	1.73E+05	2.35E+10
1.48E+05	1.73E+05	2.38E+10
1.50E+05	1.73E+05	2.42E+10
1.52E+05	1.73E+05	2.45E+10
1.54E+05	1.73E+05	2.49E+10
1.56E+05	1.73E+05	2.52E+10
1.58E+05	1.73E+05	2.56E+10
1.60E+05	1.73E+05	2.59E+10
1.62E+05	1.73E+05	2.63E+10
1.64E+05	1.73E+05	2.66E+10
1.66E+05	1.73E+05	2.70E+10
1.68E+05	1.73E+05	2.73E+10
1.70E+05	1.73E+05	2.76E+10
1.72E+05	1.73E+05	2.80E+10
1.74E+05	1.73E+05	2.83E+10
1.76E+05	1.73E+05	2.87E+10

1.78E+05	1.73E+05	2.90E+10
1.80E+05	1.73E+05	2.94E+10
1.82E+05	1.73E+05	2.97E+10
1.84E+05	1.73E+05	3.01E+10
1.86E+05	1.73E+05	3.04E+10
1.88E+05	1.73E+05	3.08E+10
1.90E+05	1.73E+05	3.11E+10
1.92E+05	1.73E+05	3.14E+10
1.94E+05	1.73E+05	3.18E+10
1.96E+05	1.73E+05	3.21E+10
1.98E+05	1.73E+05	3.25E+10
2.00E+05	1.73E+05	3.28E+10
2.02E+05	1.73E+05	3.32E+10
2.04E+05	1.73E+05	3.35E+10
2.06E+05	1.73E+05	3.39E+10
2.08E+05	1.73E+05	3.42E+10
2.10E+05	1.73E+05	3.46E+10
2.12E+05	1.73E+05	3.49E+10
2.14E+05	1.73E+05	3.53E+10
2.16E+05	1.73E+05	3.56E+10
2.18E+05	1.73E+05	3.59E+10
2.20E+05	1.73E+05	3.63E+10
2.22E+05	1.73E+05	3.66E+10
2.24E+05	1.73E+05	3.70E+10
2.26E+05	1.73E+05	3.73E+10
2.28E+05	1.73E+05	3.77E+10
2.30E+05	1.73E+05	3.80E+10
2.32E+05	1.73E+05	3.84E+10
2.34E+05	1.73E+05	3.87E+10
2.36E+05	1.73E+05	3.91E+10
2.38E+05	1.73E+05	3.94E+10
2.40E+05	1.73E+05	3.97E+10
2.42E+05	1.73E+05	4.01E+10
2.44E+05	1.73E+05	4.04E+10
2.46E+05	1.73E+05	4.08E+10
2.48E+05	1.73E+05	4.11E+10
2.50E+05	1.73E+05	4.15E+10
2.52E+05	1.73E+05	4.18E+10
2.54E+05	1.73E+05	4.22E+10
2.56E+05	1.73E+05	4.25E+10
2.58E+05	1.73E+05	4.29E+10
2.60E+05	1.73E+05	4.32E+10
2.62E+05	1.73E+05	4.35E+10
2.64E+05	1.73E+05	4.39E+10
2.66E+05	1.73E+05	4.42E+10
2.68E+05	1.73E+05	4.46E+10
2.70E+05	1.73E+05	4.49E+10

2.72E+05	1.73E+05	4.53E+10
2.74E+05	1.73E+05	4.56E+10
2.76E+05	1.73E+05	4.60E+10
2.78E+05	1.73E+05	4.63E+10
2.80E+05	1.73E+05	4.67E+10
2.82E+05	1.73E+05	4.70E+10
2.84E+05	1.73E+05	4.74E+10
2.86E+05	1.73E+05	4.77E+10
2.88E+05	1.73E+05	4.80E+10
2.90E+05	1.73E+05	4.84E+10
2.92E+05	1.73E+05	4.87E+10
2.94E+05	1.73E+05	4.91E+10
2.96E+05	1.73E+05	4.94E+10
2.98E+05	1.73E+05	4.98E+10
3.00E+05	1.73E+05	5.01E+10
3.02E+05	1.73E+05	5.05E+10
3.04E+05	1.73E+05	5.08E+10
3.06E+05	1.73E+05	5.12E+10
3.08E+05	1.73E+05	5.15E+10
3.10E+05	1.73E+05	5.18E+10
3.12E+05	1.73E+05	5.22E+10
3.14E+05	1.73E+05	5.25E+10
3.16E+05	1.73E+05	5.29E+10
3.18E+05	1.73E+05	5.32E+10
3.20E+05	1.73E+05	5.36E+10
3.22E+05	1.73E+05	5.39E+10
3.24E+05	1.73E+05	5.43E+10
3.26E+05	1.73E+05	5.46E+10
3.28E+05	1.73E+05	5.50E+10
3.30E+05	1.73E+05	5.53E+10
3.32E+05	1.73E+05	5.57E+10
3.34E+05	1.73E+05	5.60E+10
3.36E+05	1.73E+05	5.63E+10
3.38E+05	1.73E+05	5.67E+10
3.40E+05	1.73E+05	5.70E+10
3.42E+05	1.73E+05	5.74E+10
3.44E+05	1.73E+05	5.77E+10
3.46E+05	1.73E+05	5.81E+10
3.48E+05	1.73E+05	5.84E+10
3.50E+05	1.73E+05	5.88E+10
3.52E+05	1.73E+05	5.91E+10
3.54E+05	1.73E+05	5.95E+10
3.56E+05	1.73E+05	5.98E+10
3.58E+05	1.73E+05	6.01E+10
3.60E+05	1.73E+05	6.05E+10
3.62E+05	1.73E+05	6.08E+10
3.64E+05	1.73E+05	6.12E+10

3.66E+05	1.73E+05	6.15E+10
3.68E+05	1.73E+05	6.19E+10
3.70E+05	1.73E+05	6.22E+10
3.72E+05	1.73E+05	6.26E+10
3.74E+05	1.73E+05	6.29E+10
3.76E+05	1.73E+05	6.33E+10
3.78E+05	1.73E+05	6.36E+10
3.80E+05	1.73E+05	6.40E+10
3.82E+05	1.73E+05	6.43E+10
3.84E+05	1.73E+05	6.46E+10
3.86E+05	1.73E+05	6.50E+10
3.88E+05	1.73E+05	6.53E+10
3.90E+05	1.73E+05	6.57E+10
3.92E+05	1.73E+05	6.60E+10
3.94E+05	1.73E+05	6.64E+10
3.96E+05	1.73E+05	6.67E+10
3.98E+05	1.73E+05	6.71E+10
4.00E+05	1.73E+05	6.74E+10
4.02E+05	1.73E+05	6.78E+10
4.04E+05	1.73E+05	6.81E+10
4.06E+05	1.73E+05	6.84E+10
4.08E+05	1.73E+05	6.88E+10
4.10E+05	1.73E+05	6.91E+10
4.12E+05	1.73E+05	6.95E+10
4.14E+05	1.73E+05	6.98E+10
4.16E+05	1.73E+05	7.02E+10
4.18E+05	1.73E+05	7.05E+10
4.20E+05	1.73E+05	7.09E+10
4.22E+05	1.73E+05	7.12E+10
4.24E+05	1.73E+05	7.16E+10
4.26E+05	1.73E+05	7.19E+10
4.28E+05	1.73E+05	7.23E+10
4.30E+05	1.73E+05	7.26E+10
4.32E+05	1.73E+05	7.29E+10
4.34E+05	1.73E+05	7.33E+10
4.36E+05	1.73E+05	7.36E+10
4.38E+05	1.73E+05	7.40E+10
4.40E+05	1.73E+05	7.43E+10
4.42E+05	1.73E+05	7.47E+10
4.44E+05	1.73E+05	7.50E+10
4.46E+05	1.73E+05	7.54E+10
4.48E+05	1.73E+05	7.57E+10
4.50E+05	1.73E+05	7.61E+10
4.52E+05	1.73E+05	7.64E+10
4.54E+05	1.73E+05	7.67E+10
4.56E+05	1.73E+05	7.71E+10
4.58E+05	1.73E+05	7.74E+10

4.60E+05	1.73E+05	7.78E+10
4.62E+05	1.73E+05	7.81E+10
4.64E+05	1.73E+05	7.85E+10
4.66E+05	1.73E+05	7.88E+10
4.68E+05	1.73E+05	7.92E+10
4.70E+05	1.73E+05	7.95E+10
4.72E+05	1.73E+05	7.99E+10
4.74E+05	1.73E+05	8.02E+10
4.76E+05	1.73E+05	8.06E+10
4.78E+05	1.73E+05	8.09E+10
4.80E+05	1.73E+05	8.12E+10
4.82E+05	1.73E+05	8.16E+10
4.84E+05	1.73E+05	8.19E+10
4.86E+05	1.73E+05	8.23E+10
4.88E+05	1.73E+05	8.26E+10
4.90E+05	1.73E+05	8.30E+10
4.92E+05	1.73E+05	8.33E+10
4.94E+05	1.73E+05	8.37E+10
4.96E+05	1.73E+05	8.40E+10
4.98E+05	1.73E+05	8.44E+10
5.00E+05	1.73E+05	8.47E+10
5.02E+05	1.73E+05	8.50E+10
5.04E+05	1.73E+05	8.54E+10
5.06E+05	1.73E+05	8.57E+10
5.08E+05	1.73E+05	8.61E+10
5.10E+05	2.78E+05	8.65E+10
5.12E+05	2.96E+05	8.71E+10
5.14E+05	2.96E+05	8.77E+10
5.16E+05	2.96E+05	8.83E+10
5.18E+05	2.96E+05	8.89E+10
5.20E+05	2.96E+05	8.95E+10
5.22E+05	2.96E+05	9.01E+10
5.24E+05	2.96E+05	9.07E+10
5.26E+05	2.96E+05	9.13E+10
5.28E+05	2.96E+05	9.18E+10
5.30E+05	2.96E+05	9.24E+10
5.32E+05	2.96E+05	9.30E+10
5.34E+05	2.96E+05	9.36E+10
5.36E+05	2.96E+05	9.42E+10
5.38E+05	2.96E+05	9.48E+10
5.40E+05	2.96E+05	9.54E+10
5.42E+05	2.96E+05	9.60E+10
5.44E+05	2.96E+05	9.66E+10
5.46E+05	2.96E+05	9.72E+10
5.48E+05	2.96E+05	9.78E+10
5.50E+05	2.96E+05	9.84E+10
5.52E+05	2.96E+05	9.90E+10

5.54E+05	2.96E+05	9.95E+10
5.56E+05	2.96E+05	1.00E+11
5.58E+05	2.96E+05	1.01E+11
5.60E+05	2.96E+05	1.01E+11
5.62E+05	2.96E+05	1.02E+11
5.64E+05	2.96E+05	1.03E+11
5.66E+05	2.96E+05	1.03E+11
5.68E+05	2.96E+05	1.04E+11
5.70E+05	2.96E+05	1.04E+11
5.72E+05	2.96E+05	1.05E+11
5.74E+05	2.96E+05	1.05E+11
5.76E+05	2.96E+05	1.06E+11
5.78E+05	2.96E+05	1.07E+11
5.80E+05	2.96E+05	1.07E+11
5.82E+05	2.96E+05	1.08E+11
5.84E+05	2.96E+05	1.08E+11
5.86E+05	2.96E+05	1.09E+11
5.88E+05	2.96E+05	1.10E+11
5.90E+05	2.96E+05	1.10E+11
5.92E+05	2.96E+05	1.11E+11
5.94E+05	2.96E+05	1.11E+11
5.96E+05	2.96E+05	1.12E+11
5.98E+05	2.96E+05	1.13E+11
6.00E+05	2.96E+05	1.13E+11
6.02E+05	2.96E+05	1.14E+11
6.04E+05	2.96E+05	1.14E+11
6.06E+05	2.96E+05	1.15E+11
6.08E+05	2.96E+05	1.16E+11
6.10E+05	2.96E+05	1.16E+11
6.12E+05	2.96E+05	1.17E+11
6.14E+05	2.96E+05	1.17E+11
6.16E+05	2.96E+05	1.18E+11
6.18E+05	2.96E+05	1.18E+11
6.20E+05	2.96E+05	1.19E+11
6.22E+05	2.96E+05	1.20E+11
6.24E+05	2.96E+05	1.20E+11
6.26E+05	2.96E+05	1.21E+11
6.28E+05	2.96E+05	1.21E+11
6.30E+05	2.96E+05	1.22E+11
6.32E+05	2.96E+05	1.23E+11
6.34E+05	2.96E+05	1.23E+11
6.36E+05	2.96E+05	1.24E+11
6.38E+05	2.96E+05	1.24E+11
6.40E+05	2.96E+05	1.25E+11
6.42E+05	2.96E+05	1.26E+11
6.44E+05	2.96E+05	1.26E+11
6.46E+05	2.96E+05	1.27E+11

6.48E+05	2.96E+05	1.27E+11
6.50E+05	2.96E+05	1.28E+11
6.52E+05	2.96E+05	1.29E+11
6.54E+05	2.96E+05	1.29E+11
6.56E+05	2.96E+05	1.30E+11
6.58E+05	2.96E+05	1.30E+11
6.60E+05	2.96E+05	1.31E+11
6.62E+05	2.96E+05	1.32E+11
6.64E+05	2.96E+05	1.32E+11
6.66E+05	2.96E+05	1.33E+11
6.68E+05	2.96E+05	1.33E+11
6.70E+05	2.96E+05	1.34E+11
6.72E+05	2.96E+05	1.34E+11
6.74E+05	2.96E+05	1.35E+11
6.76E+05	2.96E+05	1.36E+11
6.78E+05	2.96E+05	1.36E+11
6.80E+05	2.96E+05	1.37E+11
6.82E+05	2.96E+05	1.37E+11
6.84E+05	2.96E+05	1.38E+11
6.86E+05	2.96E+05	1.39E+11
6.88E+05	2.96E+05	1.39E+11
6.90E+05	2.96E+05	1.40E+11
6.92E+05	2.96E+05	1.40E+11
6.94E+05	2.96E+05	1.41E+11
6.96E+05	2.96E+05	1.42E+11
6.98E+05	2.96E+05	1.42E+11
7.00E+05	2.96E+05	1.43E+11
7.02E+05	2.96E+05	1.43E+11
7.04E+05	2.96E+05	1.44E+11
7.06E+05	2.96E+05	1.45E+11
7.08E+05	2.96E+05	1.45E+11
7.10E+05	2.96E+05	1.46E+11
7.12E+05	2.96E+05	1.46E+11
7.14E+05	2.96E+05	1.47E+11
7.16E+05	2.96E+05	1.47E+11
7.18E+05	2.96E+05	1.48E+11
7.20E+05	2.96E+05	1.49E+11
7.22E+05	2.96E+05	1.49E+11
7.24E+05	2.96E+05	1.50E+11
7.26E+05	2.96E+05	1.50E+11
7.28E+05	2.96E+05	1.51E+11
7.30E+05	2.96E+05	1.52E+11
7.32E+05	2.96E+05	1.52E+11
7.34E+05	2.96E+05	1.53E+11
7.36E+05	2.96E+05	1.53E+11
7.38E+05	2.96E+05	1.54E+11
7.40E+05	2.96E+05	1.55E+11

7.42E+05	2.96E+05	1.55E+11
7.44E+05	2.96E+05	1.56E+11
7.46E+05	2.96E+05	1.56E+11
7.48E+05	2.96E+05	1.57E+11
7.50E+05	2.96E+05	1.58E+11
7.52E+05	2.96E+05	1.58E+11
7.54E+05	2.96E+05	1.59E+11
7.56E+05	2.96E+05	1.59E+11
7.58E+05	2.96E+05	1.60E+11
7.60E+05	2.96E+05	1.61E+11
7.62E+05	2.96E+05	1.61E+11
7.64E+05	2.96E+05	1.62E+11
7.66E+05	2.96E+05	1.62E+11
7.68E+05	2.96E+05	1.63E+11
7.70E+05	2.96E+05	1.63E+11
7.72E+05	2.96E+05	1.64E+11
7.74E+05	2.96E+05	1.65E+11
7.76E+05	2.96E+05	1.65E+11
7.78E+05	2.96E+05	1.66E+11
7.80E+05	2.96E+05	1.66E+11
7.82E+05	2.96E+05	1.67E+11
7.84E+05	2.96E+05	1.68E+11
7.86E+05	2.96E+05	1.68E+11
7.88E+05	2.96E+05	1.69E+11
7.90E+05	2.96E+05	1.69E+11
7.92E+05	2.96E+05	1.70E+11
7.94E+05	2.96E+05	1.71E+11
7.96E+05	2.96E+05	1.71E+11
7.98E+05	2.96E+05	1.72E+11
8.00E+05	2.96E+05	1.72E+11
8.02E+05	2.96E+05	1.73E+11
8.04E+05	2.96E+05	1.74E+11
8.06E+05	2.96E+05	1.74E+11
8.08E+05	2.96E+05	1.75E+11
8.10E+05	2.96E+05	1.75E+11
8.12E+05	2.96E+05	1.76E+11
8.14E+05	2.96E+05	1.77E+11
8.16E+05	2.96E+05	1.77E+11
8.18E+05	2.96E+05	1.78E+11
8.20E+05	2.96E+05	1.78E+11
8.22E+05	2.96E+05	1.79E+11
8.24E+05	2.96E+05	1.79E+11
8.26E+05	2.96E+05	1.80E+11
8.28E+05	2.96E+05	1.81E+11
8.30E+05	2.96E+05	1.81E+11
8.32E+05	2.96E+05	1.82E+11
8.34E+05	2.96E+05	1.82E+11

8.36E+05	2.96E+05	1.83E+11
8.38E+05	2.96E+05	1.84E+11
8.40E+05	2.96E+05	1.84E+11
8.42E+05	2.96E+05	1.85E+11
8.44E+05	2.96E+05	1.85E+11
8.46E+05	2.96E+05	1.86E+11
8.48E+05	2.96E+05	1.87E+11
8.50E+05	2.96E+05	1.87E+11
8.52E+05	2.96E+05	1.88E+11
8.54E+05	2.96E+05	1.88E+11
8.56E+05	2.96E+05	1.89E+11
8.58E+05	2.96E+05	1.90E+11
8.60E+05	2.96E+05	1.90E+11
8.62E+05	2.96E+05	1.91E+11
8.64E+05	2.96E+05	1.91E+11
8.66E+05	2.96E+05	1.92E+11
8.68E+05	2.96E+05	1.92E+11
8.70E+05	2.96E+05	1.93E+11
8.72E+05	2.96E+05	1.94E+11
8.74E+05	2.96E+05	1.94E+11
8.76E+05	2.96E+05	1.95E+11
8.78E+05	2.96E+05	1.95E+11
8.80E+05	2.96E+05	1.96E+11
8.82E+05	2.96E+05	1.97E+11
8.84E+05	2.96E+05	1.97E+11
8.86E+05	2.96E+05	1.98E+11
8.88E+05	2.96E+05	1.98E+11
8.90E+05	2.96E+05	1.99E+11
8.92E+05	2.96E+05	2.00E+11
8.94E+05	2.96E+05	2.00E+11
8.96E+05	2.96E+05	2.01E+11
8.98E+05	2.96E+05	2.01E+11
9.00E+05	2.96E+05	2.02E+11
9.02E+05	2.96E+05	2.03E+11
9.04E+05	2.96E+05	2.03E+11
9.06E+05	2.96E+05	2.04E+11
9.08E+05	2.96E+05	2.04E+11
9.10E+05	2.96E+05	2.05E+11
9.12E+05	2.96E+05	2.06E+11
9.14E+05	2.96E+05	2.06E+11
9.16E+05	2.96E+05	2.07E+11
9.18E+05	2.96E+05	2.07E+11
9.20E+05	2.96E+05	2.08E+11
9.22E+05	2.96E+05	2.08E+11
9.24E+05	2.96E+05	2.09E+11
9.26E+05	2.96E+05	2.10E+11
9.28E+05	2.96E+05	2.10E+11

9.30E+05	2.96E+05	2.11E+11
9.32E+05	2.96E+05	2.11E+11
9.34E+05	2.96E+05	2.12E+11
9.36E+05	2.96E+05	2.13E+11
9.38E+05	2.96E+05	2.13E+11
9.40E+05	2.96E+05	2.14E+11
9.42E+05	2.96E+05	2.14E+11
9.44E+05	2.96E+05	2.15E+11
9.46E+05	2.96E+05	2.16E+11
9.48E+05	2.96E+05	2.16E+11
9.50E+05	2.96E+05	2.17E+11
9.52E+05	2.96E+05	2.17E+11
9.54E+05	2.96E+05	2.18E+11
9.56E+05	2.96E+05	2.19E+11
9.58E+05	2.96E+05	2.19E+11
9.60E+05	2.96E+05	2.20E+11
9.62E+05	2.96E+05	2.20E+11
9.64E+05	2.96E+05	2.21E+11
9.66E+05	2.96E+05	2.21E+11
9.68E+05	2.96E+05	2.22E+11
9.70E+05	2.96E+05	2.23E+11
9.72E+05	2.96E+05	2.23E+11
9.74E+05	2.96E+05	2.24E+11
9.76E+05	2.96E+05	2.24E+11
9.78E+05	2.96E+05	2.25E+11
9.80E+05	2.96E+05	2.26E+11
9.82E+05	2.96E+05	2.26E+11
9.84E+05	2.96E+05	2.27E+11
9.86E+05	2.96E+05	2.27E+11
9.88E+05	2.96E+05	2.28E+11
9.90E+05	2.96E+05	2.29E+11
9.92E+05	2.96E+05	2.29E+11
9.94E+05	2.96E+05	2.30E+11
9.96E+05	2.96E+05	2.30E+11
9.98E+05	2.96E+05	2.31E+11
1.00E+06	2.96E+05	2.32E+11

Inventory Released Into Death Valley, Wet Climate
Contaminant Nickel

Time (yr)	Flux In (g/yr)	Cumulative (g)
2.50E+02	0.00E+00	0.00E+00
2.00E+03	0.00E+00	0.00E+00
4.00E+03	0.00E+00	0.00E+00
6.00E+03	0.00E+00	0.00E+00
8.00E+03	0.00E+00	0.00E+00
1.00E+04	0.00E+00	0.00E+00
1.20E+04	0.00E+00	0.00E+00
1.40E+04	0.00E+00	0.00E+00
1.60E+04	0.00E+00	0.00E+00
1.80E+04	0.00E+00	0.00E+00
2.00E+04	0.00E+00	0.00E+00
2.20E+04	0.00E+00	0.00E+00
2.40E+04	0.00E+00	0.00E+00
2.60E+04	0.00E+00	0.00E+00
2.80E+04	0.00E+00	0.00E+00
3.00E+04	0.00E+00	0.00E+00
3.20E+04	0.00E+00	0.00E+00
3.40E+04	0.00E+00	0.00E+00
3.60E+04	0.00E+00	0.00E+00
3.80E+04	0.00E+00	0.00E+00
4.00E+04	0.00E+00	0.00E+00
4.20E+04	0.00E+00	0.00E+00
4.40E+04	0.00E+00	0.00E+00
4.60E+04	0.00E+00	0.00E+00
4.80E+04	0.00E+00	0.00E+00
5.00E+04	0.00E+00	0.00E+00
5.20E+04	0.00E+00	0.00E+00
5.40E+04	0.00E+00	0.00E+00
5.60E+04	0.00E+00	0.00E+00
5.80E+04	0.00E+00	0.00E+00
6.00E+04	0.00E+00	0.00E+00
6.20E+04	0.00E+00	0.00E+00
6.40E+04	0.00E+00	0.00E+00
6.60E+04	0.00E+00	0.00E+00
6.80E+04	0.00E+00	0.00E+00
7.00E+04	0.00E+00	0.00E+00
7.20E+04	0.00E+00	0.00E+00
7.40E+04	0.00E+00	0.00E+00
7.60E+04	0.00E+00	0.00E+00
7.80E+04	0.00E+00	0.00E+00
8.00E+04	0.00E+00	0.00E+00
8.20E+04	0.00E+00	0.00E+00

8.40E+04	0.00E+00	0.00E+00
8.60E+04	0.00E+00	0.00E+00
8.80E+04	0.00E+00	0.00E+00
9.00E+04	0.00E+00	0.00E+00
9.20E+04	0.00E+00	0.00E+00
9.40E+04	0.00E+00	0.00E+00
9.60E+04	0.00E+00	0.00E+00
9.80E+04	0.00E+00	0.00E+00
1.00E+05	0.00E+00	0.00E+00
1.02E+05	0.00E+00	0.00E+00
1.04E+05	0.00E+00	0.00E+00
1.06E+05	0.00E+00	0.00E+00
1.08E+05	0.00E+00	0.00E+00
1.10E+05	0.00E+00	0.00E+00
1.12E+05	0.00E+00	0.00E+00
1.14E+05	0.00E+00	0.00E+00
1.16E+05	0.00E+00	0.00E+00
1.18E+05	0.00E+00	0.00E+00
1.20E+05	0.00E+00	0.00E+00
1.22E+05	0.00E+00	0.00E+00
1.24E+05	0.00E+00	0.00E+00
1.26E+05	0.00E+00	0.00E+00
1.28E+05	0.00E+00	0.00E+00
1.30E+05	0.00E+00	0.00E+00
1.32E+05	0.00E+00	0.00E+00
1.34E+05	0.00E+00	0.00E+00
1.36E+05	0.00E+00	0.00E+00
1.38E+05	0.00E+00	0.00E+00
1.40E+05	0.00E+00	0.00E+00
1.42E+05	0.00E+00	0.00E+00
1.44E+05	0.00E+00	0.00E+00
1.46E+05	0.00E+00	0.00E+00
1.48E+05	0.00E+00	0.00E+00
1.50E+05	0.00E+00	0.00E+00
1.52E+05	0.00E+00	0.00E+00
1.54E+05	0.00E+00	0.00E+00
1.56E+05	0.00E+00	0.00E+00
1.58E+05	0.00E+00	0.00E+00
1.60E+05	0.00E+00	0.00E+00
1.62E+05	0.00E+00	0.00E+00
1.64E+05	0.00E+00	0.00E+00
1.66E+05	0.00E+00	0.00E+00
1.68E+05	0.00E+00	0.00E+00
1.70E+05	0.00E+00	0.00E+00
1.72E+05	0.00E+00	0.00E+00
1.74E+05	0.00E+00	0.00E+00
1.76E+05	0.00E+00	0.00E+00

1.78E+05	0.00E+00	0.00E+00
1.80E+05	0.00E+00	0.00E+00
1.82E+05	0.00E+00	0.00E+00
1.84E+05	0.00E+00	0.00E+00
1.86E+05	0.00E+00	0.00E+00
1.88E+05	0.00E+00	0.00E+00
1.90E+05	0.00E+00	0.00E+00
1.92E+05	0.00E+00	0.00E+00
1.94E+05	0.00E+00	0.00E+00
1.96E+05	0.00E+00	0.00E+00
1.98E+05	0.00E+00	0.00E+00
2.00E+05	0.00E+00	0.00E+00
2.02E+05	0.00E+00	0.00E+00
2.04E+05	0.00E+00	0.00E+00
2.06E+05	0.00E+00	0.00E+00
2.08E+05	0.00E+00	0.00E+00
2.10E+05	0.00E+00	0.00E+00
2.12E+05	0.00E+00	0.00E+00
2.14E+05	0.00E+00	0.00E+00
2.16E+05	0.00E+00	0.00E+00
2.18E+05	0.00E+00	0.00E+00
2.20E+05	0.00E+00	0.00E+00
2.22E+05	0.00E+00	0.00E+00
2.24E+05	0.00E+00	0.00E+00
2.26E+05	0.00E+00	0.00E+00
2.28E+05	0.00E+00	0.00E+00
2.30E+05	0.00E+00	0.00E+00
2.32E+05	0.00E+00	0.00E+00
2.34E+05	0.00E+00	0.00E+00
2.36E+05	0.00E+00	0.00E+00
2.38E+05	0.00E+00	0.00E+00
2.40E+05	0.00E+00	0.00E+00
2.42E+05	0.00E+00	0.00E+00
2.44E+05	0.00E+00	0.00E+00
2.46E+05	0.00E+00	0.00E+00
2.48E+05	0.00E+00	0.00E+00
2.50E+05	0.00E+00	0.00E+00
2.52E+05	0.00E+00	0.00E+00
2.54E+05	0.00E+00	0.00E+00
2.56E+05	0.00E+00	0.00E+00
2.58E+05	0.00E+00	0.00E+00
2.60E+05	0.00E+00	0.00E+00
2.62E+05	0.00E+00	0.00E+00
2.64E+05	0.00E+00	0.00E+00
2.66E+05	0.00E+00	0.00E+00
2.68E+05	0.00E+00	0.00E+00
2.70E+05	0.00E+00	0.00E+00

2.72E+05	0.00E+00	0.00E+00
2.74E+05	0.00E+00	0.00E+00
2.76E+05	0.00E+00	0.00E+00
2.78E+05	0.00E+00	0.00E+00
2.80E+05	0.00E+00	0.00E+00
2.82E+05	0.00E+00	0.00E+00
2.84E+05	0.00E+00	0.00E+00
2.86E+05	0.00E+00	0.00E+00
2.88E+05	0.00E+00	0.00E+00
2.90E+05	0.00E+00	0.00E+00
2.92E+05	0.00E+00	0.00E+00
2.94E+05	0.00E+00	0.00E+00
2.96E+05	0.00E+00	0.00E+00
2.98E+05	0.00E+00	0.00E+00
3.00E+05	0.00E+00	0.00E+00
3.02E+05	0.00E+00	0.00E+00
3.04E+05	0.00E+00	0.00E+00
3.06E+05	0.00E+00	0.00E+00
3.08E+05	0.00E+00	0.00E+00
3.10E+05	0.00E+00	0.00E+00
3.12E+05	0.00E+00	0.00E+00
3.14E+05	0.00E+00	0.00E+00
3.16E+05	0.00E+00	0.00E+00
3.18E+05	0.00E+00	0.00E+00
3.20E+05	0.00E+00	0.00E+00
3.22E+05	0.00E+00	0.00E+00
3.24E+05	0.00E+00	0.00E+00
3.26E+05	0.00E+00	0.00E+00
3.28E+05	0.00E+00	0.00E+00
3.30E+05	0.00E+00	0.00E+00
3.32E+05	0.00E+00	0.00E+00
3.34E+05	0.00E+00	0.00E+00
3.36E+05	0.00E+00	0.00E+00
3.38E+05	0.00E+00	0.00E+00
3.40E+05	0.00E+00	0.00E+00
3.42E+05	0.00E+00	0.00E+00
3.44E+05	0.00E+00	0.00E+00
3.46E+05	0.00E+00	0.00E+00
3.48E+05	0.00E+00	0.00E+00
3.50E+05	0.00E+00	0.00E+00
3.52E+05	0.00E+00	0.00E+00
3.54E+05	0.00E+00	0.00E+00
3.56E+05	0.00E+00	0.00E+00
3.58E+05	0.00E+00	0.00E+00
3.60E+05	0.00E+00	0.00E+00
3.62E+05	0.00E+00	0.00E+00
3.64E+05	0.00E+00	0.00E+00

3.66E+05	0.00E+00	0.00E+00
3.68E+05	0.00E+00	0.00E+00
3.70E+05	0.00E+00	0.00E+00
3.72E+05	0.00E+00	0.00E+00
3.74E+05	0.00E+00	0.00E+00
3.76E+05	0.00E+00	0.00E+00
3.78E+05	0.00E+00	0.00E+00
3.80E+05	0.00E+00	0.00E+00
3.82E+05	0.00E+00	0.00E+00
3.84E+05	0.00E+00	0.00E+00
3.86E+05	0.00E+00	0.00E+00
3.88E+05	0.00E+00	0.00E+00
3.90E+05	0.00E+00	0.00E+00
3.92E+05	0.00E+00	0.00E+00
3.94E+05	0.00E+00	0.00E+00
3.96E+05	0.00E+00	0.00E+00
3.98E+05	0.00E+00	0.00E+00
4.00E+05	0.00E+00	0.00E+00
4.02E+05	0.00E+00	0.00E+00
4.04E+05	0.00E+00	0.00E+00
4.06E+05	0.00E+00	0.00E+00
4.08E+05	0.00E+00	0.00E+00
4.10E+05	0.00E+00	0.00E+00
4.12E+05	0.00E+00	0.00E+00
4.14E+05	0.00E+00	0.00E+00
4.16E+05	0.00E+00	0.00E+00
4.18E+05	0.00E+00	0.00E+00
4.20E+05	0.00E+00	0.00E+00
4.22E+05	0.00E+00	0.00E+00
4.24E+05	0.00E+00	0.00E+00
4.26E+05	0.00E+00	0.00E+00
4.28E+05	0.00E+00	0.00E+00
4.30E+05	0.00E+00	0.00E+00
4.32E+05	0.00E+00	0.00E+00
4.34E+05	0.00E+00	0.00E+00
4.36E+05	0.00E+00	0.00E+00
4.38E+05	0.00E+00	0.00E+00
4.40E+05	0.00E+00	0.00E+00
4.42E+05	0.00E+00	0.00E+00
4.44E+05	0.00E+00	0.00E+00
4.46E+05	0.00E+00	0.00E+00
4.48E+05	0.00E+00	0.00E+00
4.50E+05	0.00E+00	0.00E+00
4.52E+05	0.00E+00	0.00E+00
4.54E+05	0.00E+00	0.00E+00
4.56E+05	0.00E+00	0.00E+00
4.58E+05	0.00E+00	0.00E+00

4.60E+05	0.00E+00	0.00E+00
4.62E+05	0.00E+00	0.00E+00
4.64E+05	0.00E+00	0.00E+00
4.66E+05	0.00E+00	0.00E+00
4.68E+05	0.00E+00	0.00E+00
4.70E+05	0.00E+00	0.00E+00
4.72E+05	0.00E+00	0.00E+00
4.74E+05	0.00E+00	0.00E+00
4.76E+05	0.00E+00	0.00E+00
4.78E+05	0.00E+00	0.00E+00
4.80E+05	0.00E+00	0.00E+00
4.82E+05	0.00E+00	0.00E+00
4.84E+05	0.00E+00	0.00E+00
4.86E+05	0.00E+00	0.00E+00
4.88E+05	0.00E+00	0.00E+00
4.90E+05	0.00E+00	0.00E+00
4.92E+05	0.00E+00	0.00E+00
4.94E+05	0.00E+00	0.00E+00
4.96E+05	0.00E+00	0.00E+00
4.98E+05	0.00E+00	0.00E+00
5.00E+05	0.00E+00	0.00E+00
5.02E+05	0.00E+00	0.00E+00
5.04E+05	0.00E+00	0.00E+00
5.06E+05	0.00E+00	0.00E+00
5.08E+05	0.00E+00	0.00E+00
5.10E+05	0.00E+00	0.00E+00
5.12E+05	0.00E+00	0.00E+00
5.14E+05	0.00E+00	0.00E+00
5.16E+05	0.00E+00	0.00E+00
5.18E+05	0.00E+00	0.00E+00
5.20E+05	0.00E+00	0.00E+00
5.22E+05	0.00E+00	0.00E+00
5.24E+05	0.00E+00	0.00E+00
5.26E+05	0.00E+00	0.00E+00
5.28E+05	0.00E+00	0.00E+00
5.30E+05	0.00E+00	0.00E+00
5.32E+05	0.00E+00	0.00E+00
5.34E+05	0.00E+00	0.00E+00
5.36E+05	0.00E+00	0.00E+00
5.38E+05	0.00E+00	0.00E+00
5.40E+05	0.00E+00	0.00E+00
5.42E+05	0.00E+00	0.00E+00
5.44E+05	0.00E+00	0.00E+00
5.46E+05	0.00E+00	0.00E+00
5.48E+05	0.00E+00	0.00E+00
5.50E+05	0.00E+00	0.00E+00
5.52E+05	0.00E+00	0.00E+00

5.54E+05	0.00E+00	0.00E+00
5.56E+05	0.00E+00	0.00E+00
5.58E+05	0.00E+00	0.00E+00
5.60E+05	0.00E+00	0.00E+00
5.62E+05	0.00E+00	0.00E+00
5.64E+05	0.00E+00	0.00E+00
5.66E+05	0.00E+00	0.00E+00
5.68E+05	0.00E+00	0.00E+00
5.70E+05	0.00E+00	0.00E+00
5.72E+05	0.00E+00	0.00E+00
5.74E+05	0.00E+00	0.00E+00
5.76E+05	0.00E+00	0.00E+00
5.78E+05	0.00E+00	0.00E+00
5.80E+05	0.00E+00	0.00E+00
5.82E+05	0.00E+00	0.00E+00
5.84E+05	0.00E+00	0.00E+00
5.86E+05	0.00E+00	0.00E+00
5.88E+05	0.00E+00	0.00E+00
5.90E+05	0.00E+00	0.00E+00
5.92E+05	0.00E+00	0.00E+00
5.94E+05	0.00E+00	0.00E+00
5.96E+05	0.00E+00	0.00E+00
5.98E+05	0.00E+00	0.00E+00
6.00E+05	0.00E+00	0.00E+00
6.02E+05	0.00E+00	0.00E+00
6.04E+05	0.00E+00	0.00E+00
6.06E+05	0.00E+00	0.00E+00
6.08E+05	0.00E+00	0.00E+00
6.10E+05	0.00E+00	0.00E+00
6.12E+05	0.00E+00	0.00E+00
6.14E+05	0.00E+00	0.00E+00
6.16E+05	0.00E+00	0.00E+00
6.18E+05	0.00E+00	0.00E+00
6.20E+05	0.00E+00	0.00E+00
6.22E+05	0.00E+00	0.00E+00
6.24E+05	0.00E+00	0.00E+00
6.26E+05	0.00E+00	0.00E+00
6.28E+05	0.00E+00	0.00E+00
6.30E+05	0.00E+00	0.00E+00
6.32E+05	0.00E+00	0.00E+00
6.34E+05	0.00E+00	0.00E+00
6.36E+05	0.00E+00	0.00E+00
6.38E+05	0.00E+00	0.00E+00
6.40E+05	0.00E+00	0.00E+00
6.42E+05	0.00E+00	0.00E+00
6.44E+05	0.00E+00	0.00E+00
6.46E+05	0.00E+00	0.00E+00

6.48E+05	0.00E+00	0.00E+00
6.50E+05	0.00E+00	0.00E+00
6.52E+05	0.00E+00	0.00E+00
6.54E+05	0.00E+00	0.00E+00
6.56E+05	0.00E+00	0.00E+00
6.58E+05	0.00E+00	0.00E+00
6.60E+05	0.00E+00	0.00E+00
6.62E+05	0.00E+00	0.00E+00
6.64E+05	0.00E+00	0.00E+00
6.66E+05	0.00E+00	0.00E+00
6.68E+05	0.00E+00	0.00E+00
6.70E+05	0.00E+00	0.00E+00
6.72E+05	0.00E+00	0.00E+00
6.74E+05	0.00E+00	0.00E+00
6.76E+05	0.00E+00	0.00E+00
6.78E+05	0.00E+00	0.00E+00
6.80E+05	0.00E+00	0.00E+00
6.82E+05	0.00E+00	0.00E+00
6.84E+05	0.00E+00	0.00E+00
6.86E+05	0.00E+00	0.00E+00
6.88E+05	0.00E+00	0.00E+00
6.90E+05	0.00E+00	0.00E+00
6.92E+05	0.00E+00	0.00E+00
6.94E+05	0.00E+00	0.00E+00
6.96E+05	0.00E+00	0.00E+00
6.98E+05	0.00E+00	0.00E+00
7.00E+05	0.00E+00	0.00E+00
7.02E+05	0.00E+00	0.00E+00
7.04E+05	0.00E+00	0.00E+00
7.06E+05	0.00E+00	0.00E+00
7.08E+05	0.00E+00	0.00E+00
7.10E+05	0.00E+00	0.00E+00
7.12E+05	0.00E+00	0.00E+00
7.14E+05	0.00E+00	0.00E+00
7.16E+05	0.00E+00	0.00E+00
7.18E+05	0.00E+00	0.00E+00
7.20E+05	0.00E+00	0.00E+00
7.22E+05	0.00E+00	0.00E+00
7.24E+05	0.00E+00	0.00E+00
7.26E+05	0.00E+00	0.00E+00
7.28E+05	0.00E+00	0.00E+00
7.30E+05	0.00E+00	0.00E+00
7.32E+05	0.00E+00	0.00E+00
7.34E+05	0.00E+00	0.00E+00
7.36E+05	0.00E+00	0.00E+00
7.38E+05	0.00E+00	0.00E+00
7.40E+05	0.00E+00	0.00E+00

7.42E+05	0.00E+00	0.00E+00
7.44E+05	0.00E+00	0.00E+00
7.46E+05	0.00E+00	0.00E+00
7.48E+05	0.00E+00	0.00E+00
7.50E+05	0.00E+00	0.00E+00
7.52E+05	0.00E+00	0.00E+00
7.54E+05	0.00E+00	0.00E+00
7.56E+05	0.00E+00	0.00E+00
7.58E+05	0.00E+00	0.00E+00
7.60E+05	0.00E+00	0.00E+00
7.62E+05	0.00E+00	0.00E+00
7.64E+05	0.00E+00	0.00E+00
7.66E+05	0.00E+00	0.00E+00
7.68E+05	0.00E+00	0.00E+00
7.70E+05	0.00E+00	0.00E+00
7.72E+05	0.00E+00	0.00E+00
7.74E+05	0.00E+00	0.00E+00
7.76E+05	0.00E+00	0.00E+00
7.78E+05	0.00E+00	0.00E+00
7.80E+05	0.00E+00	0.00E+00
7.82E+05	0.00E+00	0.00E+00
7.84E+05	0.00E+00	0.00E+00
7.86E+05	0.00E+00	0.00E+00
7.88E+05	0.00E+00	0.00E+00
7.90E+05	0.00E+00	0.00E+00
7.92E+05	0.00E+00	0.00E+00
7.94E+05	0.00E+00	0.00E+00
7.96E+05	0.00E+00	0.00E+00
7.98E+05	0.00E+00	0.00E+00
8.00E+05	0.00E+00	0.00E+00
8.02E+05	0.00E+00	0.00E+00
8.04E+05	0.00E+00	0.00E+00
8.06E+05	0.00E+00	0.00E+00
8.08E+05	0.00E+00	0.00E+00
8.10E+05	0.00E+00	0.00E+00
8.12E+05	0.00E+00	0.00E+00
8.14E+05	0.00E+00	0.00E+00
8.16E+05	0.00E+00	0.00E+00
8.18E+05	0.00E+00	0.00E+00
8.20E+05	0.00E+00	0.00E+00
8.22E+05	0.00E+00	0.00E+00
8.24E+05	0.00E+00	0.00E+00
8.26E+05	0.00E+00	0.00E+00
8.28E+05	0.00E+00	0.00E+00
8.30E+05	0.00E+00	0.00E+00
8.32E+05	0.00E+00	0.00E+00
8.34E+05	0.00E+00	0.00E+00

8.36E+05	0.00E+00	0.00E+00
8.38E+05	0.00E+00	0.00E+00
8.40E+05	0.00E+00	0.00E+00
8.42E+05	0.00E+00	0.00E+00
8.44E+05	0.00E+00	0.00E+00
8.46E+05	0.00E+00	0.00E+00
8.48E+05	0.00E+00	0.00E+00
8.50E+05	0.00E+00	0.00E+00
8.52E+05	0.00E+00	0.00E+00
8.54E+05	0.00E+00	0.00E+00
8.56E+05	0.00E+00	0.00E+00
8.58E+05	0.00E+00	0.00E+00
8.60E+05	0.00E+00	0.00E+00
8.62E+05	0.00E+00	0.00E+00
8.64E+05	0.00E+00	0.00E+00
8.66E+05	0.00E+00	0.00E+00
8.68E+05	0.00E+00	0.00E+00
8.70E+05	0.00E+00	0.00E+00
8.72E+05	0.00E+00	0.00E+00
8.74E+05	0.00E+00	0.00E+00
8.76E+05	0.00E+00	0.00E+00
8.78E+05	0.00E+00	0.00E+00
8.80E+05	0.00E+00	0.00E+00
8.82E+05	0.00E+00	0.00E+00
8.84E+05	0.00E+00	0.00E+00
8.86E+05	0.00E+00	0.00E+00
8.88E+05	0.00E+00	0.00E+00
8.90E+05	0.00E+00	0.00E+00
8.92E+05	0.00E+00	0.00E+00
8.94E+05	0.00E+00	0.00E+00
8.96E+05	0.00E+00	0.00E+00
8.98E+05	0.00E+00	0.00E+00
9.00E+05	0.00E+00	0.00E+00
9.02E+05	0.00E+00	0.00E+00
9.04E+05	0.00E+00	0.00E+00
9.06E+05	0.00E+00	0.00E+00
9.08E+05	0.00E+00	0.00E+00
9.10E+05	0.00E+00	0.00E+00
9.12E+05	0.00E+00	0.00E+00
9.14E+05	0.00E+00	0.00E+00
9.16E+05	0.00E+00	0.00E+00
9.18E+05	0.00E+00	0.00E+00
9.20E+05	0.00E+00	0.00E+00
9.22E+05	0.00E+00	0.00E+00
9.24E+05	0.00E+00	0.00E+00
9.26E+05	0.00E+00	0.00E+00
9.28E+05	0.00E+00	0.00E+00

9.30E+05	0.00E+00	0.00E+00
9.32E+05	0.00E+00	0.00E+00
9.34E+05	0.00E+00	0.00E+00
9.36E+05	0.00E+00	0.00E+00
9.38E+05	0.00E+00	0.00E+00
9.40E+05	0.00E+00	0.00E+00
9.42E+05	0.00E+00	0.00E+00
9.44E+05	0.00E+00	0.00E+00
9.46E+05	0.00E+00	0.00E+00
9.48E+05	0.00E+00	0.00E+00
9.50E+05	0.00E+00	0.00E+00
9.52E+05	0.00E+00	0.00E+00
9.54E+05	0.00E+00	0.00E+00
9.56E+05	0.00E+00	0.00E+00
9.58E+05	0.00E+00	0.00E+00
9.60E+05	0.00E+00	0.00E+00
9.62E+05	0.00E+00	0.00E+00
9.64E+05	0.00E+00	0.00E+00
9.66E+05	0.00E+00	0.00E+00
9.68E+05	0.00E+00	0.00E+00
9.70E+05	0.00E+00	0.00E+00
9.72E+05	0.00E+00	0.00E+00
9.74E+05	0.00E+00	0.00E+00
9.76E+05	0.00E+00	0.00E+00
9.78E+05	0.00E+00	0.00E+00
9.80E+05	0.00E+00	0.00E+00
9.82E+05	0.00E+00	0.00E+00
9.84E+05	0.00E+00	0.00E+00
9.86E+05	0.00E+00	0.00E+00
9.88E+05	0.00E+00	0.00E+00
9.90E+05	0.00E+00	0.00E+00
9.92E+05	0.00E+00	0.00E+00
9.94E+05	0.00E+00	0.00E+00
9.96E+05	0.00E+00	0.00E+00
9.98E+05	0.00E+00	0.00E+00
1.00E+06	0.00E+00	0.00E+00

Inventory Released Into Death Valley, Wet Climate
Contaminant Vanadium

Time (yr)	Flux In (g/yr)	Cumulative (g)
2.50E+02	0.00E+00	0.0000E+00
2.00E+03	0.00E+00	0.0000E+00
4.00E+03	0.00E+00	0.0000E+00
6.00E+03	0.00E+00	0.0000E+00
8.00E+03	0.00E+00	0.0000E+00
1.00E+04	0.00E+00	0.0000E+00
1.20E+04	0.00E+00	0.0000E+00
1.40E+04	0.00E+00	0.0000E+00
1.60E+04	0.00E+00	0.0000E+00
1.80E+04	0.00E+00	0.0000E+00
2.00E+04	0.00E+00	0.0000E+00
2.20E+04	0.00E+00	0.0000E+00
2.40E+04	0.00E+00	0.0000E+00
2.60E+04	0.00E+00	0.0000E+00
2.80E+04	0.00E+00	0.0000E+00
3.00E+04	0.00E+00	0.0000E+00
3.20E+04	0.00E+00	0.0000E+00
3.40E+04	0.00E+00	0.0000E+00
3.60E+04	0.00E+00	0.0000E+00
3.80E+04	0.00E+00	0.0000E+00
4.00E+04	0.00E+00	0.0000E+00
4.20E+04	0.00E+00	0.0000E+00
4.40E+04	0.00E+00	0.0000E+00
4.60E+04	0.00E+00	0.0000E+00
4.80E+04	0.00E+00	0.0000E+00
5.00E+04	0.00E+00	0.0000E+00
5.20E+04	0.00E+00	0.0000E+00
5.40E+04	0.00E+00	0.0000E+00
5.60E+04	0.00E+00	0.0000E+00
5.80E+04	0.00E+00	0.0000E+00
6.00E+04	0.00E+00	0.0000E+00
6.20E+04	0.00E+00	0.0000E+00
6.40E+04	0.00E+00	0.0000E+00
6.60E+04	0.00E+00	0.0000E+00
6.80E+04	0.00E+00	0.0000E+00
7.00E+04	0.00E+00	0.0000E+00
7.20E+04	0.00E+00	0.0000E+00
7.40E+04	0.00E+00	0.0000E+00
7.60E+04	0.00E+00	0.0000E+00
7.80E+04	0.00E+00	0.0000E+00
8.00E+04	0.00E+00	0.0000E+00
8.20E+04	0.00E+00	0.0000E+00

8.40E+04	0.00E+00	0.0000E+00
8.60E+04	0.00E+00	0.0000E+00
8.80E+04	0.00E+00	0.0000E+00
9.00E+04	0.00E+00	0.0000E+00
9.20E+04	0.00E+00	0.0000E+00
9.40E+04	0.00E+00	0.0000E+00
9.60E+04	0.00E+00	0.0000E+00
9.80E+04	0.00E+00	0.0000E+00
1.00E+05	0.00E+00	0.0000E+00
1.02E+05	0.00E+00	0.0000E+00
1.04E+05	0.00E+00	0.0000E+00
1.06E+05	0.00E+00	0.0000E+00
1.08E+05	0.00E+00	0.0000E+00
1.10E+05	0.00E+00	0.0000E+00
1.12E+05	0.00E+00	0.0000E+00
1.14E+05	0.00E+00	0.0000E+00
1.16E+05	0.00E+00	0.0000E+00
1.18E+05	0.00E+00	0.0000E+00
1.20E+05	0.00E+00	0.0000E+00
1.22E+05	0.00E+00	0.0000E+00
1.24E+05	0.00E+00	0.0000E+00
1.26E+05	0.00E+00	0.0000E+00
1.28E+05	0.00E+00	0.0000E+00
1.30E+05	0.00E+00	0.0000E+00
1.32E+05	0.00E+00	0.0000E+00
1.34E+05	0.00E+00	0.0000E+00
1.36E+05	0.00E+00	0.0000E+00
1.38E+05	0.00E+00	0.0000E+00
1.40E+05	0.00E+00	0.0000E+00
1.42E+05	0.00E+00	0.0000E+00
1.44E+05	0.00E+00	0.0000E+00
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1.62E+05	0.00E+00	0.0000E+00
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1.70E+05	0.00E+00	0.0000E+00
1.72E+05	0.00E+00	0.0000E+00
1.74E+05	0.00E+00	0.0000E+00
1.76E+05	0.00E+00	0.0000E+00

1.78E+05	0.00E+00	0.0000E+00
1.80E+05	0.00E+00	0.0000E+00
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1.98E+05	0.00E+00	0.0000E+00
2.00E+05	0.00E+00	0.0000E+00
2.02E+05	0.00E+00	0.0000E+00
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7.88E+05	0.00E+00	0.0000E+00
7.90E+05	0.00E+00	0.0000E+00
7.92E+05	0.00E+00	0.0000E+00
7.94E+05	0.00E+00	0.0000E+00
7.96E+05	0.00E+00	0.0000E+00
7.98E+05	0.00E+00	0.0000E+00
8.00E+05	0.00E+00	0.0000E+00
8.02E+05	0.00E+00	0.0000E+00
8.04E+05	0.00E+00	0.0000E+00
8.06E+05	0.00E+00	0.0000E+00
8.08E+05	0.00E+00	0.0000E+00
8.10E+05	0.00E+00	0.0000E+00
8.12E+05	0.00E+00	0.0000E+00
8.14E+05	0.00E+00	0.0000E+00
8.16E+05	0.00E+00	0.0000E+00
8.18E+05	0.00E+00	0.0000E+00
8.20E+05	0.00E+00	0.0000E+00
8.22E+05	0.00E+00	0.0000E+00
8.24E+05	0.00E+00	0.0000E+00
8.26E+05	0.00E+00	0.0000E+00
8.28E+05	0.00E+00	0.0000E+00
8.30E+05	0.00E+00	0.0000E+00
8.32E+05	0.00E+00	0.0000E+00
8.34E+05	0.00E+00	0.0000E+00

8.36E+05	0.00E+00	0.0000E+00
8.38E+05	0.00E+00	0.0000E+00
8.40E+05	0.00E+00	0.0000E+00
8.42E+05	0.00E+00	0.0000E+00
8.44E+05	0.00E+00	0.0000E+00
8.46E+05	0.00E+00	0.0000E+00
8.48E+05	0.00E+00	0.0000E+00
8.50E+05	0.00E+00	0.0000E+00
8.52E+05	0.00E+00	0.0000E+00
8.54E+05	0.00E+00	0.0000E+00
8.56E+05	0.00E+00	0.0000E+00
8.58E+05	0.00E+00	0.0000E+00
8.60E+05	0.00E+00	0.0000E+00
8.62E+05	0.00E+00	0.0000E+00
8.64E+05	0.00E+00	0.0000E+00
8.66E+05	0.00E+00	0.0000E+00
8.68E+05	0.00E+00	0.0000E+00
8.70E+05	0.00E+00	0.0000E+00
8.72E+05	0.00E+00	0.0000E+00
8.74E+05	0.00E+00	0.0000E+00
8.76E+05	0.00E+00	0.0000E+00
8.78E+05	0.00E+00	0.0000E+00
8.80E+05	0.00E+00	0.0000E+00
8.82E+05	0.00E+00	0.0000E+00
8.84E+05	0.00E+00	0.0000E+00
8.86E+05	0.00E+00	0.0000E+00
8.88E+05	0.00E+00	0.0000E+00
8.90E+05	0.00E+00	0.0000E+00
8.92E+05	0.00E+00	0.0000E+00
8.94E+05	0.00E+00	0.0000E+00
8.96E+05	0.00E+00	0.0000E+00
8.98E+05	0.00E+00	0.0000E+00
9.00E+05	0.00E+00	0.0000E+00
9.02E+05	0.00E+00	0.0000E+00
9.04E+05	0.00E+00	0.0000E+00
9.06E+05	0.00E+00	0.0000E+00
9.08E+05	0.00E+00	0.0000E+00
9.10E+05	0.00E+00	0.0000E+00
9.12E+05	0.00E+00	0.0000E+00
9.14E+05	0.00E+00	0.0000E+00
9.16E+05	0.00E+00	0.0000E+00
9.18E+05	0.00E+00	0.0000E+00
9.20E+05	0.00E+00	0.0000E+00
9.22E+05	0.00E+00	0.0000E+00
9.24E+05	0.00E+00	0.0000E+00
9.26E+05	0.00E+00	0.0000E+00
9.28E+05	0.00E+00	0.0000E+00

9.30E+05	0.00E+00	0.0000E+00
9.32E+05	0.00E+00	0.0000E+00
9.34E+05	0.00E+00	0.0000E+00
9.36E+05	0.00E+00	0.0000E+00
9.38E+05	0.00E+00	0.0000E+00
9.40E+05	0.00E+00	0.0000E+00
9.42E+05	0.00E+00	0.0000E+00
9.44E+05	0.00E+00	0.0000E+00
9.46E+05	0.00E+00	0.0000E+00
9.48E+05	0.00E+00	0.0000E+00
9.50E+05	0.00E+00	0.0000E+00
9.52E+05	0.00E+00	0.0000E+00
9.54E+05	0.00E+00	0.0000E+00
9.56E+05	0.00E+00	0.0000E+00
9.58E+05	0.00E+00	0.0000E+00
9.60E+05	0.00E+00	0.0000E+00
9.62E+05	0.00E+00	0.0000E+00
9.64E+05	0.00E+00	0.0000E+00
9.66E+05	0.00E+00	0.0000E+00
9.68E+05	0.00E+00	0.0000E+00
9.70E+05	0.00E+00	0.0000E+00
9.72E+05	0.00E+00	0.0000E+00
9.74E+05	7.62E-15	7.6161E-12
9.76E+05	1.15E-14	2.6734E-11
9.78E+05	1.73E-14	5.5567E-11
9.80E+05	1.93E-14	9.2171E-11
9.82E+05	2.88E-14	1.4028E-10
9.84E+05	3.66E-14	2.0571E-10
9.86E+05	5.20E-14	2.9431E-10
9.88E+05	6.54E-14	4.1174E-10
9.90E+05	9.52E-14	5.7238E-10
9.92E+05	1.23E-13	7.9068E-10
9.94E+05	1.64E-13	1.0774E-09
9.96E+05	2.22E-13	1.4632E-09
9.98E+05	2.92E-13	1.9778E-09
1.00E+06	3.88E-13	2.6580E-09

Mass Balance of Metals
Combined TSPA Case, No Pumping, Present Climate

Mass Balance of Metals
Combined TSPA Case, No Pumping, Present Climate
All amounts in grams
Molybdenum

Time (yr)	Released from UZ to SZ	Held in Path Between UZ and 18km	Released Beyond 18 km	Held in Path Between 18 km and Death Valley	Released Into Death Valley
1.00E+04	1.74E+09	1.94E+08	1.55E+09	1.55E+09	0.00E+00
5.00E+04	8.89E+09	4.22E+08	8.46E+09	6.30E+09	2.17E+09
1.00E+05	1.78E+10	7.07E+08	1.71E+10	6.30E+09	1.08E+10
3.00E+05	5.35E+10	1.85E+09	5.17E+10	6.30E+09	4.54E+10
5.00E+05	8.94E+10	3.13E+09	8.63E+10	6.30E+09	8.00E+10
8.00E+05	1.87E+11	1.18E+10	1.75E+11	1.07E+10	1.64E+11
1.00E+06	2.52E+11	1.75E+10	2.34E+11	1.07E+10	2.23E+11

Mass Balance of Metals
Combined TSPA Case, No Pumping, Present Climate
All amounts in grams
Nickel

Time (yr)	Released from UZ to SZ	Held in Path Between UZ and 18km	Released Beyond 18 km	Held in Path Between 18 km and Death Valley	Released Into Death Valley
1.00E+04	8.12E+09	6.95E+09	1.17E+09	1.17E+09	0.00E+00
5.00E+04	4.14E+10	2.10E+10	2.04E+10	2.04E+10	0.00E+00
1.00E+05	8.30E+10	3.31E+10	4.99E+10	4.99E+10	0.00E+00
3.00E+05	2.50E+11	6.99E+10	1.80E+11	1.80E+11	0.00E+00
5.00E+05	4.17E+11	8.87E+10	3.28E+11	3.28E+11	0.00E+00
8.00E+05	8.77E+11	1.55E+11	7.22E+11	7.22E+11	0.00E+00
1.00E+06	1.18E+12	1.90E+11	9.93E+11	9.93E+11	0.00E+00

Mass Balance of Metals
Combined TSPA Case, No Pumping, Present Climate
All amounts in grams
Vanadium

Time (yr)	Released from UZ to SZ	Held in Path Between UZ and 18km	Released Beyond 18 km	Held in Path Between 18 km and Death Valley	Released Into Death Valley
1.00E+04	6.83E+06	5.02E+06	1.80E+06	1.80E+06	0.00E+00
5.00E+04	3.48E+07	1.47E+07	2.01E+07	2.01E+07	0.00E+00
1.00E+05	6.98E+07	2.39E+07	4.59E+07	4.59E+07	0.00E+00
3.00E+05	2.10E+08	5.06E+07	1.59E+08	1.59E+08	0.00E+00
5.00E+05	3.50E+08	7.35E+07	2.76E+08	2.76E+08	0.00E+00
8.00E+05	5.60E+08	1.05E+08	4.55E+08	4.55E+08	0.00E+00
1.00E+06	7.00E+08	1.25E+08	5.74E+08	5.74E+08	0.00E+00

Mass Balance of Metals
Combined TSPA Case, No Pumping, Wet Climate

Mass Balance of Metals
Combined TSPA Case, No Pumping, Wet Climate
All amounts in grams
Molybdenum

Time (yr)	Released from UZ to SZ	Held in Path Between UZ and 18km	Released Beyond 18 km	Held in Path Between 18 km and Death Valley	Released Into Death Valley
1.00E+04	1.74E+09	1.94E+08	1.55E+09	1.45E+09	9.73E+07
5.00E+04	8.89E+09	4.22E+08	8.46E+09	1.57E+09	6.89E+09
1.00E+05	1.78E+10	7.07E+08	1.71E+10	1.57E+09	1.55E+10
3.00E+05	5.35E+10	1.85E+09	5.17E+10	1.57E+09	5.01E+10
5.00E+05	8.94E+10	3.13E+09	8.63E+10	1.57E+09	8.47E+10
8.00E+05	1.87E+11	1.18E+10	1.75E+11	2.59E+09	1.72E+11
1.00E+06	2.52E+11	1.75E+10	2.34E+11	2.59E+09	2.32E+11

Mass Balance of Metals
Combined TSPA Case, No Pumping, Wet Climate
All amounts in grams
Nickel

Time (yr)	Released from UZ to SZ	Held in Path Between UZ and 18km	Released Beyond 18 km	Held in Path Between 18 km and Death Valley	Released Into Death Valley
1.00E+04	8.12E+09	6.95E+09	1.17E+09	1.17E+09	0.00E+00
5.00E+04	4.14E+10	2.10E+10	2.04E+10	2.04E+10	0.00E+00
1.00E+05	8.30E+10	3.31E+10	4.99E+10	4.99E+10	0.00E+00
3.00E+05	2.50E+11	6.99E+10	1.80E+11	1.80E+11	0.00E+00
5.00E+05	4.17E+11	8.87E+10	3.28E+11	3.28E+11	0.00E+00
8.00E+05	8.77E+11	1.55E+11	7.22E+11	7.22E+11	0.00E+00
1.00E+06	1.18E+12	1.90E+11	9.93E+11	9.93E+11	0.00E+00

Mass Balance of Metals
Combined TSPA Case, No Pumping, Wet Climate
All amounts in grams
Vanadium

Time (yr)	Released from UZ to SZ	Held in Path Between UZ and 18km	Released Beyond 18 km	Held in Path Between 18 km and Death Valley	Released Into Death Valley
1.00E+04	6.83E+06	5.02E+06	1.80E+06	1.80E+06	0.00E+00
5.00E+04	3.48E+07	1.47E+07	2.01E+07	2.01E+07	0.00E+00
1.00E+05	6.98E+07	2.39E+07	4.59E+07	4.59E+07	0.00E+00
3.00E+05	2.10E+08	5.06E+07	1.59E+08	1.59E+08	0.00E+00
5.00E+05	3.50E+08	7.35E+07	2.76E+08	2.76E+08	0.00E+00
8.00E+05	5.60E+08	1.05E+08	4.55E+08	4.55E+08	0.00E+00
1.00E+06	7.00E+08	1.25E+08	5.74E+08	5.74E+08	2.66E-09

Mass Balance of Metals
Combined TSPA Case, Pumping, Present Climate

Mass Balance of Metals
Combined TSPA Case, Pumping, Present Climate
All amounts in grams
Molybdenum

Time (yr)	Released from UZ to SZ	Held in Path Between UZ and 18km	Released Beyond 18 km	Held in Path Between 18 km and Amargosa Farms	Accumulated at Amargosa Farms
1.00E+04	1.74E+09	1.94E+08	1.55E+09	1.19E+08	1.43E+09
5.00E+04	8.89E+09	4.22E+08	8.46E+09	1.19E+08	8.34E+09
1.00E+05	1.78E+10	7.07E+08	1.71E+10	1.19E+08	1.70E+10
3.00E+05	5.35E+10	1.85E+09	5.17E+10	1.19E+08	5.16E+10
5.00E+05	8.94E+10	3.13E+09	8.63E+10	1.19E+08	8.62E+10
8.00E+05	1.87E+11	1.18E+10	1.75E+11	1.19E+08	1.75E+11
1.00E+06	2.52E+11	1.75E+10	2.34E+11	1.19E+08	2.34E+11

Mass Balance of Metals
Combined TSPA Case, Pumping, Present Climate
All amounts in grams
Nickel

Time (yr)	Released from UZ to SZ	Held in Path Between UZ and 18km	Released Beyond 18 km	Held in Path Between 18 km and Amargosa Farms	Accumulated at Amargosa Farms
1.00E+04	8.12E+09	6.95E+09	1.17E+09	1.17E+09	0.00E+00
5.00E+04	4.14E+10	2.10E+10	2.04E+10	2.04E+10	0.00E+00
1.00E+05	8.30E+10	3.31E+10	4.99E+10	4.99E+10	7.21E-06
3.00E+05	2.50E+11	6.99E+10	1.80E+11	1.40E+11	4.01E+10
5.00E+05	4.17E+11	8.87E+10	3.28E+11	1.60E+11	1.68E+11
8.00E+05	8.77E+11	1.55E+11	7.22E+11	2.89E+11	4.33E+11
1.00E+06	1.18E+12	1.90E+11	9.93E+11	2.94E+11	6.99E+11

Mass Balance of Metals
Combined TSPA Case, Pumping, Present Climate
All amounts in grams
Vanadium

Time (yr)	Released from UZ to SZ	Held in Path Between UZ and 18km	Released Beyond 18 km	Held in Path Between 18 km and Amargosa Farms	Accumulated at Amargosa Farms
1.00E+04	6.83E+06	5.02E+06	1.80E+06	1.80E+06	0.00E+00
5.00E+04	3.48E+07	1.47E+07	2.01E+07	2.01E+07	1.13E-11
1.00E+05	6.98E+07	2.39E+07	4.59E+07	4.58E+07	7.16E+04
3.00E+05	2.10E+08	5.06E+07	1.59E+08	6.69E+07	9.23E+07
5.00E+05	3.50E+08	7.35E+07	2.76E+08	6.80E+07	2.08E+08
8.00E+05	5.60E+08	1.05E+08	4.55E+08	6.93E+07	3.86E+08
1.00E+06	7.00E+08	1.25E+08	5.74E+08	6.93E+07	5.05E+08

Mass Balance of Metals
Combined TSPA Case, Pumping, Wet Climate

Mass Balance of Metals
Combined TSPA Case, Pumping, Wet Climate
All amounts in grams
Molybdenum

Time (yr)	Released from UZ to SZ	Held in Path Between UZ and 18km	Released Beyond 18 km	Held in Path Between 18 km and Amargosa Farms	Accumulated at Amargosa Farms
1.00E+04	1.74E+09	1.94E+08	1.55E+09	8.63E+07	1.46E+09
5.00E+04	8.89E+09	4.22E+08	8.46E+09	8.63E+07	8.38E+09
1.00E+05	1.78E+10	7.07E+08	1.71E+10	8.63E+07	1.70E+10
3.00E+05	5.35E+10	1.85E+09	5.17E+10	8.63E+07	5.16E+10
5.00E+05	8.94E+10	3.13E+09	8.63E+10	8.63E+07	8.62E+10
8.00E+05	1.87E+11	1.18E+10	1.75E+11	8.63E+07	1.75E+11
1.00E+06	2.52E+11	1.75E+10	2.34E+11	8.63E+07	2.34E+11

Mass Balance of Metals
Combined TSPA Case, Pumping, Wet Climate
All amounts in grams
Nickel

1.00E+04	8.12E+09	6.95E+09	1.17E+09	1.17E+09	0.00E+00
5.00E+04	4.14E+10	2.10E+10	2.04E+10	2.04E+10	1.40E+07
1.00E+05	8.30E+10	3.31E+10	4.99E+10	3.25E+10	1.75E+10
3.00E+05	2.50E+11	6.99E+10	1.80E+11	3.69E+10	1.43E+11
5.00E+05	4.17E+11	8.87E+10	3.28E+11	4.20E+10	2.86E+11
8.00E+05	8.77E+11	1.55E+11	7.22E+11	7.51E+10	6.47E+11
1.00E+06	1.18E+12	1.90E+11	9.93E+11	7.51E+10	9.18E+11

Mass Balance of Metals
Combined TSPA Case, Pumping, Wet Climate
All amounts in grams
Vanadium

1.00E+04	6.83E+06	5.02E+06	1.80E+06	1.80E+06	0.00E+00
5.00E+04	3.48E+07	1.47E+07	2.01E+07	1.40E+07	6.09E+06
1.00E+05	6.98E+07	2.39E+07	4.59E+07	1.55E+07	3.04E+07
3.00E+05	2.10E+08	5.06E+07	1.59E+08	1.74E+07	1.42E+08
5.00E+05	3.50E+08	7.35E+07	2.76E+08	1.74E+07	2.59E+08
8.00E+05	5.60E+08	1.05E+08	4.55E+08	1.77E+07	4.38E+08
1.00E+06	7.00E+08	1.25E+08	5.74E+08	1.77E+07	5.57E+08

Soil Concentrations (g/square m)of Metals At Amargosa Farms
Combined Case, Present Climate

Time (yr)	Molybdenum	Nickel	Vanadium	Uranium
10,000	3.06E-03	0.00E+00	0.00E+00	0.00E+00
100,000	3.06E-03	1.80E-14	1.76E-05	1.16E-03
500,000	3.06E-03	2.48E+00	6.20E-04	5.27E-03
1,000,000	5.24E-03	5.05E+00	6.32E-04	1.33E-02

Soil Concentrations (g/square m)of Metals At Amargosa Farms
Combined Case, Wet Climate

Time (yr)	Molybdenum	Nickel	Vanadium	Uranium
10,000	3.06E-03	0.00E+00	0.00E+00	5.26E-09
100,000	3.06E-03	2.01E+00	5.45E-04	6.13E-04
500,000	3.06E-03	2.81E+00	6.20E-04	2.84E-03
1,000,000	5.24E-03	5.05E+00	6.32E-04	7.77E-03

Uranium Soil Concentrations Nominal Case, Present Climate
Amargosa Farms, 2003 Pumping

Time (yr)	Soil Concentration (g/square m)						
	U-235	U-233	U-236	U-234	U-238	U-232	Total
250	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
4000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
6000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
8000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
10000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
12000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
14000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
16000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
18000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
20000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
22000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
24000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
26000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
28000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
30000	0.00E+00	0.00E+00	2.89E-28	2.89E-28	2.85E-24	0.00E+00	2.85E-24
32000	0.00E+00	0.00E+00	9.43E-26	9.43E-26	9.28E-22	0.00E+00	9.28E-22
34000	8.21E-25	0.00E+00	1.28E-23	1.28E-23	1.26E-19	0.00E+00	1.26E-19
36000	1.86E-22	2.22E-26	8.12E-22	8.12E-22	7.99E-18	0.00E+00	7.99E-18
38000	1.87E-20	4.67E-24	2.76E-20	2.76E-20	2.72E-16	0.00E+00	2.72E-16
40000	9.24E-19	4.25E-22	5.59E-19	5.59E-19	5.50E-15	0.00E+00	5.50E-15
42000	2.56E-17	1.95E-20	7.30E-18	7.30E-18	7.19E-14	0.00E+00	7.19E-14
44000	4.36E-16	5.05E-19	6.60E-17	6.60E-17	6.49E-13	0.00E+00	6.49E-13
46000	4.92E-15	8.14E-18	4.34E-16	4.34E-16	4.27E-12	0.00E+00	4.28E-12
48000	3.93E-14	8.78E-17	2.18E-15	2.18E-15	2.14E-11	0.00E+00	2.15E-11
50000	2.32E-13	6.73E-16	8.64E-15	8.64E-15	8.50E-11	0.00E+00	8.52E-11
52000	1.06E-12	3.85E-15	2.79E-14	2.79E-14	2.75E-10	0.00E+00	2.76E-10
54000	3.89E-12	1.71E-14	7.56E-14	7.56E-14	7.43E-10	0.00E+00	7.47E-10
56000	1.17E-11	6.09E-14	1.75E-13	1.75E-13	1.72E-09	0.00E+00	1.73E-09
58000	2.99E-11	1.80E-13	3.54E-13	3.54E-13	3.48E-09	0.00E+00	3.51E-09
60000	6.56E-11	4.49E-13	6.36E-13	6.36E-13	6.25E-09	0.00E+00	6.32E-09
62000	1.27E-10	9.69E-13	1.03E-12	1.03E-12	1.01E-08	0.00E+00	1.02E-08
64000	2.18E-10	1.84E-12	1.52E-12	1.52E-12	1.50E-08	0.00E+00	1.52E-08
66000	3.41E-10	3.14E-12	2.08E-12	2.08E-12	2.05E-08	0.00E+00	2.08E-08
68000	4.90E-10	4.85E-12	2.67E-12	2.67E-12	2.62E-08	0.00E+00	2.67E-08
70000	6.53E-10	6.89E-12	3.23E-12	3.23E-12	3.18E-08	0.00E+00	3.24E-08
72000	8.18E-10	9.12E-12	3.73E-12	3.73E-12	3.67E-08	0.00E+00	3.76E-08
74000	9.72E-10	1.14E-11	4.15E-12	4.15E-12	4.09E-08	0.00E+00	4.19E-08
76000	1.11E-09	1.35E-11	4.49E-12	4.49E-12	4.41E-08	0.00E+00	4.53E-08
78000	1.22E-09	1.53E-11	4.73E-12	4.73E-12	4.66E-08	0.00E+00	4.78E-08
80000	1.30E-09	1.69E-11	4.91E-12	4.91E-12	4.83E-08	0.00E+00	4.96E-08

82000	1.36E-09	1.81E-11	5.03E-12	5.03E-12	4.94E-08	0.00E+00	5.08E-08
84000	1.41E-09	1.92E-11	5.10E-12	5.10E-12	5.02E-08	0.00E+00	5.16E-08
86000	1.44E-09	2.01E-11	5.15E-12	5.15E-12	5.06E-08	0.00E+00	5.21E-08
88000	1.45E-09	2.09E-11	5.18E-12	5.18E-12	5.09E-08	0.00E+00	5.24E-08
90000	1.46E-09	2.17E-11	5.19E-12	5.19E-12	5.11E-08	0.00E+00	5.26E-08
92000	1.47E-09	2.24E-11	5.20E-12	5.20E-12	5.12E-08	0.00E+00	5.27E-08
94000	1.47E-09	2.32E-11	5.21E-12	5.21E-12	5.12E-08	0.00E+00	5.27E-08
96000	1.48E-09	2.39E-11	5.21E-12	5.21E-12	5.12E-08	0.00E+00	5.28E-08
98000	1.48E-09	2.47E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
100000	1.48E-09	2.54E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
102000	1.48E-09	2.61E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
104000	1.48E-09	2.67E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
106000	1.48E-09	2.73E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
108000	1.48E-09	2.78E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
110000	1.48E-09	2.82E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
112000	1.48E-09	2.85E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
114000	1.48E-09	2.88E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
116000	1.48E-09	2.90E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
118000	1.48E-09	2.92E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
120000	1.48E-09	2.93E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
122000	1.48E-09	2.94E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
124000	1.48E-09	2.95E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
126000	1.48E-09	2.95E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
128000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
130000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
132000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
134000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
136000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
138000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
140000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
142000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
144000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
146000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
148000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
150000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
152000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
154000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
156000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
158000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
160000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
162000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
164000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
166000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
168000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
170000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
172000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
174000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08

176000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
178000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
180000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
182000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
184000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
186000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
188000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
190000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
192000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
194000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
196000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
198000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
200000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
202000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
204000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
206000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
208000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
210000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
212000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
214000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
216000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
218000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
220000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
222000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
224000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
226000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
228000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
230000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
232000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
234000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
236000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
238000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
240000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
242000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
244000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
246000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
248000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
250000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
252000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
254000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
256000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
258000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
260000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
262000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
264000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
266000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
268000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08

270000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
272000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
274000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
276000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
278000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
280000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
282000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
284000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
286000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
288000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
290000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
292000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
294000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
296000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
298000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
300000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
302000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
304000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
306000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
308000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
310000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
312000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
314000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
316000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
318000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
320000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
322000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
324000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
326000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
328000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
330000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
332000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
334000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
336000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
338000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
340000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
342000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
344000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
346000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
348000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
350000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
352000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
354000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
356000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
358000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
360000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
362000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08

364000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
366000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
368000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
370000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
372000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
374000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
376000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
378000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
380000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
382000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
384000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
386000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
388000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
390000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
392000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
394000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
396000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
398000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
400000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
402000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
404000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
406000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
408000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
410000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
412000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
414000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
416000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
418000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
420000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
422000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
424000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
426000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
428000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
430000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
432000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
434000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
436000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
438000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
440000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
442000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
444000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
446000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
448000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
450000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
452000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
454000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
456000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08

458000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
460000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
462000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
464000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
466000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
468000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
470000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
472000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
474000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
476000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
478000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
480000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
482000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
484000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
486000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
488000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
490000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
492000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
494000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
496000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
498000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
500000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
502000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
504000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
506000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
508000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
510000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
512000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
514000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
516000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
518000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
520000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
522000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
524000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
526000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
528000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
530000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
532000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
534000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
536000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
538000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
540000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
542000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
544000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
546000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
548000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
550000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08

552000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
554000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
556000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
558000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
560000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
562000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
564000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
566000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
568000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
570000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
572000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
574000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
576000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
578000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
580000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
582000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
584000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
586000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
588000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
590000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
592000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
594000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
596000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
598000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
600000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
602000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
604000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
606000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
608000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
610000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
612000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
614000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
616000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
618000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
620000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
622000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
624000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
626000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
628000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
630000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
632000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
634000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
636000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
638000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
640000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
642000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
644000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08

646000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
648000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
650000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
652000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
654000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
656000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
658000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
660000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
662000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
664000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
666000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
668000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
670000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
672000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
674000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
676000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
678000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
680000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
682000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
684000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
686000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
688000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
690000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
692000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
694000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
696000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
698000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
700000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
702000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
704000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
706000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
708000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
710000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
712000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
714000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
716000	1.48E-09	2.96E-11	5.21E-12	5.21E-12	5.13E-08	0.00E+00	5.28E-08
718000	1.48E-09	2.96E-11	5.22E-12	5.22E-12	5.13E-08	0.00E+00	5.28E-08
720000	1.48E-09	2.96E-11	5.24E-12	5.24E-12	5.13E-08	0.00E+00	5.28E-08
722000	1.48E-09	2.96E-11	5.31E-12	5.31E-12	5.13E-08	0.00E+00	5.28E-08
724000	1.48E-09	2.96E-11	5.54E-12	5.54E-12	5.13E-08	0.00E+00	5.28E-08
726000	1.48E-09	2.96E-11	6.10E-12	6.10E-12	5.13E-08	0.00E+00	5.28E-08
728000	1.48E-09	2.96E-11	7.27E-12	7.27E-12	5.13E-08	0.00E+00	5.28E-08
730000	1.48E-09	2.96E-11	9.38E-12	9.38E-12	5.13E-08	0.00E+00	5.28E-08
732000	1.48E-09	2.96E-11	1.27E-11	1.27E-11	5.13E-08	0.00E+00	5.28E-08
734000	1.48E-09	2.96E-11	1.73E-11	1.73E-11	5.13E-08	0.00E+00	5.28E-08
736000	1.48E-09	2.96E-11	2.31E-11	2.31E-11	5.13E-08	0.00E+00	5.28E-08
738000	1.48E-09	2.96E-11	2.97E-11	2.97E-11	5.13E-08	0.00E+00	5.28E-08

740000	1.48E-09	2.96E-11	3.66E-11	3.66E-11	5.13E-08	0.00E+00	5.28E-08
742000	1.48E-09	2.96E-11	4.32E-11	4.32E-11	5.13E-08	0.00E+00	5.29E-08
744000	1.48E-09	2.96E-11	4.92E-11	4.92E-11	5.13E-08	0.00E+00	5.29E-08
746000	1.48E-09	2.97E-11	5.41E-11	5.41E-11	5.13E-08	0.00E+00	5.29E-08
748000	1.48E-09	2.98E-11	5.80E-11	5.80E-11	5.13E-08	0.00E+00	5.29E-08
750000	1.48E-09	3.01E-11	6.09E-11	6.09E-11	5.13E-08	0.00E+00	5.29E-08
752000	1.48E-09	3.10E-11	6.30E-11	6.30E-11	5.13E-08	0.00E+00	5.29E-08
754000	1.48E-09	3.34E-11	6.44E-11	6.44E-11	5.13E-08	0.00E+00	5.30E-08
756000	1.48E-09	3.84E-11	6.53E-11	6.53E-11	5.15E-08	0.00E+00	5.32E-08
758000	1.48E-09	4.73E-11	6.58E-11	6.58E-11	5.23E-08	0.00E+00	5.40E-08
760000	1.48E-09	6.14E-11	6.61E-11	6.61E-11	5.48E-08	0.00E+00	5.64E-08
762000	1.48E-09	8.10E-11	6.63E-11	6.63E-11	6.07E-08	0.00E+00	6.24E-08
764000	1.49E-09	1.06E-10	6.64E-11	6.64E-11	7.31E-08	0.00E+00	7.49E-08
766000	1.51E-09	1.34E-10	6.65E-11	6.65E-11	9.55E-08	0.00E+00	9.73E-08
768000	1.58E-09	1.63E-10	6.65E-11	6.65E-11	1.31E-07	0.00E+00	1.33E-07
770000	1.76E-09	1.91E-10	6.66E-11	6.66E-11	1.80E-07	0.00E+00	1.82E-07
772000	2.13E-09	2.16E-10	6.67E-11	6.67E-11	2.41E-07	0.00E+00	2.44E-07
774000	2.80E-09	2.37E-10	6.70E-11	6.70E-11	3.12E-07	0.00E+00	3.15E-07
776000	3.86E-09	2.54E-10	6.75E-11	6.75E-11	3.85E-07	0.00E+00	3.89E-07
778000	5.33E-09	2.66E-10	6.85E-11	6.85E-11	4.55E-07	0.00E+00	4.61E-07
780000	7.17E-09	2.75E-10	7.01E-11	7.01E-11	5.18E-07	0.00E+00	5.25E-07
782000	9.27E-09	2.81E-10	7.23E-11	7.23E-11	5.71E-07	0.00E+00	5.80E-07
784000	1.15E-08	2.84E-10	7.50E-11	7.50E-11	6.12E-07	0.00E+00	6.24E-07
786000	1.36E-08	2.87E-10	7.81E-11	7.81E-11	6.43E-07	0.00E+00	6.57E-07
788000	1.54E-08	2.88E-10	8.13E-11	8.13E-11	6.65E-07	0.00E+00	6.80E-07
790000	1.70E-08	2.89E-10	8.44E-11	8.44E-11	6.79E-07	0.00E+00	6.97E-07
792000	1.83E-08	2.90E-10	8.72E-11	8.72E-11	6.89E-07	0.00E+00	7.08E-07
794000	1.92E-08	2.90E-10	8.96E-11	8.96E-11	6.95E-07	0.00E+00	7.14E-07
796000	1.98E-08	2.91E-10	9.14E-11	9.14E-11	6.98E-07	0.00E+00	7.19E-07
798000	2.03E-08	2.91E-10	9.28E-11	9.28E-11	7.00E-07	0.00E+00	7.21E-07
800000	2.06E-08	2.93E-10	9.37E-11	9.37E-11	7.01E-07	0.00E+00	7.22E-07
802000	2.07E-08	2.95E-10	9.44E-11	9.44E-11	7.02E-07	0.00E+00	7.23E-07
804000	2.08E-08	2.99E-10	9.48E-11	9.48E-11	7.02E-07	0.00E+00	7.24E-07
806000	2.09E-08	3.04E-10	9.51E-11	9.51E-11	7.02E-07	0.00E+00	7.24E-07
808000	2.09E-08	3.12E-10	9.54E-11	9.54E-11	7.03E-07	0.00E+00	7.24E-07
810000	2.10E-08	3.23E-10	9.57E-11	9.57E-11	7.03E-07	0.00E+00	7.25E-07
812000	2.10E-08	3.38E-10	9.62E-11	9.62E-11	7.04E-07	0.00E+00	7.26E-07
814000	2.10E-08	3.56E-10	9.71E-11	9.71E-11	7.07E-07	0.00E+00	7.29E-07
816000	2.10E-08	3.78E-10	9.85E-11	9.85E-11	7.14E-07	0.00E+00	7.36E-07
818000	2.10E-08	4.02E-10	1.00E-10	1.00E-10	7.26E-07	0.00E+00	7.47E-07
820000	2.10E-08	4.27E-10	1.03E-10	1.03E-10	7.44E-07	0.00E+00	7.66E-07
822000	2.11E-08	4.50E-10	1.05E-10	1.05E-10	7.69E-07	0.00E+00	7.91E-07
824000	2.13E-08	4.72E-10	1.08E-10	1.08E-10	8.02E-07	0.00E+00	8.24E-07
826000	2.17E-08	4.90E-10	1.11E-10	1.11E-10	8.38E-07	0.00E+00	8.60E-07
828000	2.23E-08	5.06E-10	1.13E-10	1.13E-10	8.76E-07	0.00E+00	8.99E-07
830000	2.30E-08	5.18E-10	1.15E-10	1.15E-10	9.13E-07	0.00E+00	9.36E-07
832000	2.40E-08	5.27E-10	1.17E-10	1.17E-10	9.45E-07	0.00E+00	9.70E-07

834000	2.52E-08	5.34E-10	1.18E-10	1.18E-10	9.73E-07	0.00E+00	9.99E-07
836000	2.64E-08	5.39E-10	1.19E-10	1.19E-10	9.94E-07	0.00E+00	1.02E-06
838000	2.75E-08	5.43E-10	1.20E-10	1.20E-10	1.01E-06	0.00E+00	1.04E-06
840000	2.85E-08	5.46E-10	1.20E-10	1.20E-10	1.02E-06	0.00E+00	1.05E-06
842000	2.93E-08	5.49E-10	1.21E-10	1.21E-10	1.03E-06	0.00E+00	1.06E-06
844000	3.00E-08	5.53E-10	1.21E-10	1.21E-10	1.03E-06	0.00E+00	1.07E-06
846000	3.05E-08	5.58E-10	1.22E-10	1.22E-10	1.04E-06	0.00E+00	1.07E-06
848000	3.09E-08	5.66E-10	1.24E-10	1.24E-10	1.04E-06	0.00E+00	1.07E-06
850000	3.11E-08	5.77E-10	1.26E-10	1.26E-10	1.04E-06	0.00E+00	1.08E-06
852000	3.13E-08	5.90E-10	1.28E-10	1.28E-10	1.05E-06	0.00E+00	1.08E-06
854000	3.15E-08	6.05E-10	1.31E-10	1.31E-10	1.06E-06	0.00E+00	1.10E-06
856000	3.17E-08	6.21E-10	1.34E-10	1.34E-10	1.08E-06	0.00E+00	1.11E-06
858000	3.21E-08	6.37E-10	1.36E-10	1.36E-10	1.10E-06	0.00E+00	1.14E-06
860000	3.27E-08	6.53E-10	1.39E-10	1.39E-10	1.14E-06	0.00E+00	1.17E-06
862000	3.34E-08	6.67E-10	1.41E-10	1.41E-10	1.17E-06	0.00E+00	1.20E-06
864000	3.44E-08	6.80E-10	1.42E-10	1.42E-10	1.21E-06	0.00E+00	1.24E-06
866000	3.55E-08	6.91E-10	1.44E-10	1.44E-10	1.24E-06	0.00E+00	1.28E-06
868000	3.66E-08	7.02E-10	1.45E-10	1.45E-10	1.27E-06	0.00E+00	1.31E-06
870000	3.77E-08	7.11E-10	1.47E-10	1.47E-10	1.30E-06	0.00E+00	1.34E-06
872000	3.86E-08	7.21E-10	1.48E-10	1.48E-10	1.32E-06	0.00E+00	1.36E-06
874000	3.94E-08	7.32E-10	1.50E-10	1.50E-10	1.34E-06	0.00E+00	1.38E-06
876000	4.01E-08	7.44E-10	1.52E-10	1.52E-10	1.36E-06	0.00E+00	1.40E-06
878000	4.06E-08	7.58E-10	1.55E-10	1.55E-10	1.37E-06	0.00E+00	1.41E-06
880000	4.09E-08	7.74E-10	1.57E-10	1.57E-10	1.39E-06	0.00E+00	1.44E-06
882000	4.13E-08	7.90E-10	1.60E-10	1.60E-10	1.42E-06	0.00E+00	1.46E-06
884000	4.16E-08	8.07E-10	1.62E-10	1.62E-10	1.45E-06	0.00E+00	1.50E-06
886000	4.21E-08	8.23E-10	1.64E-10	1.64E-10	1.49E-06	0.00E+00	1.53E-06
888000	4.27E-08	8.38E-10	1.66E-10	1.66E-10	1.52E-06	0.00E+00	1.57E-06
890000	4.35E-08	8.51E-10	1.68E-10	1.68E-10	1.56E-06	0.00E+00	1.60E-06
892000	4.45E-08	8.64E-10	1.70E-10	1.70E-10	1.59E-06	0.00E+00	1.63E-06
894000	4.56E-08	8.77E-10	1.72E-10	1.72E-10	1.61E-06	0.00E+00	1.66E-06
896000	4.68E-08	8.91E-10	1.75E-10	1.75E-10	1.64E-06	0.00E+00	1.68E-06
898000	4.80E-08	9.08E-10	1.78E-10	1.78E-10	1.65E-06	0.00E+00	1.70E-06
900000	4.90E-08	9.26E-10	1.80E-10	1.80E-10	1.67E-06	0.00E+00	1.72E-06
902000	5.00E-08	9.46E-10	1.83E-10	1.83E-10	1.69E-06	0.00E+00	1.74E-06
904000	5.08E-08	9.66E-10	1.86E-10	1.86E-10	1.71E-06	0.00E+00	1.76E-06
906000	5.16E-08	9.86E-10	1.89E-10	1.89E-10	1.74E-06	0.00E+00	1.79E-06
908000	5.25E-08	1.00E-09	1.91E-10	1.91E-10	1.77E-06	0.00E+00	1.83E-06
910000	5.34E-08	1.02E-09	1.94E-10	1.94E-10	1.81E-06	0.00E+00	1.86E-06
912000	5.45E-08	1.04E-09	1.96E-10	1.96E-10	1.85E-06	0.00E+00	1.90E-06
914000	5.56E-08	1.05E-09	1.99E-10	1.99E-10	1.88E-06	0.00E+00	1.94E-06
916000	5.67E-08	1.07E-09	2.02E-10	2.02E-10	1.92E-06	0.00E+00	1.98E-06
918000	5.78E-08	1.09E-09	2.04E-10	2.04E-10	1.96E-06	0.00E+00	2.02E-06
920000	5.89E-08	1.11E-09	2.07E-10	2.07E-10	2.00E-06	0.00E+00	2.06E-06
922000	6.00E-08	1.13E-09	2.09E-10	2.09E-10	2.03E-06	0.00E+00	2.10E-06
924000	6.12E-08	1.15E-09	2.12E-10	2.12E-10	2.07E-06	0.00E+00	2.14E-06
926000	6.24E-08	1.17E-09	2.14E-10	2.14E-10	2.11E-06	0.00E+00	2.18E-06

928000	6.36E-08	1.19E-09	2.17E-10	2.17E-10	2.15E-06	0.00E+00	2.22E-06
930000	6.49E-08	1.22E-09	2.21E-10	2.21E-10	2.19E-06	0.00E+00	2.26E-06
932000	6.62E-08	1.24E-09	2.24E-10	2.24E-10	2.23E-06	0.00E+00	2.30E-06
934000	6.74E-08	1.26E-09	2.27E-10	2.27E-10	2.26E-06	0.00E+00	2.33E-06
936000	6.86E-08	1.28E-09	2.29E-10	2.29E-10	2.30E-06	0.00E+00	2.37E-06
938000	6.97E-08	1.30E-09	2.32E-10	2.32E-10	2.34E-06	0.00E+00	2.41E-06
940000	7.08E-08	1.33E-09	2.35E-10	2.35E-10	2.38E-06	0.00E+00	2.46E-06
942000	7.19E-08	1.35E-09	2.37E-10	2.37E-10	2.43E-06	0.00E+00	2.50E-06
944000	7.31E-08	1.37E-09	2.40E-10	2.40E-10	2.47E-06	0.00E+00	2.54E-06
946000	7.43E-08	1.40E-09	2.43E-10	2.43E-10	2.51E-06	0.00E+00	2.59E-06
948000	7.56E-08	1.42E-09	2.46E-10	2.46E-10	2.55E-06	0.00E+00	2.63E-06
950000	7.69E-08	1.44E-09	2.49E-10	2.49E-10	2.59E-06	0.00E+00	2.67E-06
952000	7.82E-08	1.47E-09	2.52E-10	2.52E-10	2.63E-06	0.00E+00	2.71E-06
954000	7.95E-08	1.49E-09	2.55E-10	2.55E-10	2.67E-06	0.00E+00	2.75E-06
956000	8.09E-08	1.51E-09	2.58E-10	2.58E-10	2.71E-06	0.00E+00	2.80E-06
958000	8.23E-08	1.54E-09	2.61E-10	2.61E-10	2.76E-06	0.00E+00	2.84E-06
960000	8.37E-08	1.56E-09	2.64E-10	2.64E-10	2.80E-06	0.00E+00	2.89E-06
962000	8.50E-08	1.59E-09	2.67E-10	2.67E-10	2.85E-06	0.00E+00	2.94E-06
964000	8.64E-08	1.61E-09	2.70E-10	2.70E-10	2.90E-06	0.00E+00	2.99E-06
966000	8.78E-08	1.63E-09	2.72E-10	2.72E-10	2.94E-06	0.00E+00	3.03E-06
968000	8.92E-08	1.66E-09	2.75E-10	2.75E-10	2.99E-06	0.00E+00	3.08E-06
970000	9.06E-08	1.68E-09	2.77E-10	2.77E-10	3.04E-06	0.00E+00	3.13E-06
972000	9.20E-08	1.71E-09	2.80E-10	2.80E-10	3.08E-06	0.00E+00	3.18E-06
974000	9.33E-08	1.74E-09	2.83E-10	2.83E-10	3.13E-06	0.00E+00	3.22E-06
976000	9.47E-08	1.76E-09	2.86E-10	2.86E-10	3.17E-06	0.00E+00	3.27E-06
978000	9.61E-08	1.79E-09	2.89E-10	2.89E-10	3.22E-06	0.00E+00	3.32E-06
980000	9.75E-08	1.82E-09	2.92E-10	2.92E-10	3.27E-06	0.00E+00	3.37E-06
982000	9.91E-08	1.84E-09	2.95E-10	2.95E-10	3.32E-06	0.00E+00	3.42E-06
984000	1.01E-07	1.87E-09	2.98E-10	2.98E-10	3.37E-06	0.00E+00	3.48E-06
986000	1.02E-07	1.90E-09	3.01E-10	3.01E-10	3.43E-06	0.00E+00	3.53E-06
988000	1.04E-07	1.93E-09	3.04E-10	3.04E-10	3.49E-06	0.00E+00	3.59E-06
990000	1.06E-07	1.95E-09	3.08E-10	3.08E-10	3.54E-06	0.00E+00	3.65E-06
992000	1.07E-07	1.98E-09	3.11E-10	3.11E-10	3.60E-06	0.00E+00	3.71E-06
994000	1.09E-07	2.01E-09	3.14E-10	3.14E-10	3.65E-06	0.00E+00	3.76E-06
996000	1.11E-07	2.04E-09	3.17E-10	3.17E-10	3.70E-06	0.00E+00	3.81E-06
998000	1.12E-07	2.07E-09	3.20E-10	3.20E-10	3.75E-06	0.00E+00	3.87E-06
1000000	1.14E-07	2.10E-09	3.23E-10	3.23E-10	3.81E-06	0.00E+00	3.92E-06

Uranium Soil Concentrations Nominal Case, Wet Climate
Amargosa Farms, 2003 Pumping

Time (yr)	Soil Concentration (g/square m)						
	U-235	U-233	U-236	U-234	U-238	U-232	Total
250	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
4000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
6000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
8000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
10000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
12000	0.00E+00	0.00E+00	1.01E-22	1.01E-22	8.67E-19	0.00E+00	8.67E-19
14000	1.30E-25	3.69E-26	1.38E-17	1.38E-17	1.19E-13	0.00E+00	1.19E-13
16000	5.05E-18	2.63E-21	8.50E-15	8.50E-15	7.32E-11	0.00E+00	7.32E-11
18000	6.07E-14	4.42E-18	2.57E-13	2.57E-13	2.21E-09	0.00E+00	2.21E-09
20000	9.94E-12	3.03E-15	1.32E-12	1.32E-12	1.14E-08	0.00E+00	1.14E-08
22000	1.38E-10	2.93E-13	2.52E-12	2.52E-12	2.17E-08	0.00E+00	2.18E-08
24000	4.55E-10	3.21E-12	3.02E-12	3.02E-12	2.60E-08	0.00E+00	2.65E-08
26000	6.92E-10	9.36E-12	3.12E-12	3.12E-12	2.69E-08	0.00E+00	2.76E-08
28000	7.65E-10	1.36E-11	3.13E-12	3.13E-12	2.70E-08	0.00E+00	2.78E-08
30000	7.77E-10	1.51E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
32000	7.78E-10	1.54E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
34000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
36000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
38000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
40000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
42000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
44000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
46000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
48000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
50000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
52000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
54000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
56000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
58000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
60000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
62000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
64000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
66000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
68000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
70000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
72000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
74000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
76000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
78000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
80000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08

82000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
84000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
86000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
88000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
90000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
92000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
94000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
96000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
98000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
100000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
102000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
104000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
106000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
108000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
110000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
112000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
114000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
116000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
118000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
120000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
122000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
124000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
126000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
128000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
130000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
132000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
134000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
136000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
138000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
140000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
142000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
144000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
146000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
148000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
150000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
152000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
154000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
156000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
158000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
160000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
162000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
164000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
166000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
168000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
170000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
172000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
174000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08

176000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
178000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
180000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
182000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
184000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
186000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
188000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
190000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
192000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
194000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
196000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
198000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
200000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
202000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
204000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
206000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
208000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
210000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
212000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
214000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
216000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
218000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
220000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
222000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
224000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
226000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
228000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
230000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
232000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
234000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
236000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
238000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
240000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
242000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
244000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
246000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
248000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
250000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
252000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
254000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
256000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
258000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
260000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
262000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
264000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
266000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
268000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08

270000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
272000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
274000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
276000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
278000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
280000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
282000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
284000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
286000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
288000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
290000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
292000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
294000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
296000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
298000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
300000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
302000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
304000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
306000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
308000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
310000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
312000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
314000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
316000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
318000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
320000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
322000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
324000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
326000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
328000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
330000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
332000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
334000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
336000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
338000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
340000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
342000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
344000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
346000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
348000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
350000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
352000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
354000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
356000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
358000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
360000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
362000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08

364000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
366000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
368000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
370000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
372000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
374000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
376000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
378000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
380000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
382000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
384000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
386000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
388000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
390000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
392000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
394000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
396000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
398000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
400000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
402000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
404000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
406000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
408000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
410000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
412000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
414000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
416000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
418000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
420000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
422000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
424000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
426000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
428000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
430000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
432000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
434000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
436000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
438000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
440000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
442000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
444000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
446000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
448000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
450000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
452000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
454000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
456000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08

458000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
460000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
462000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
464000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
466000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
468000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
470000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
472000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
474000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
476000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
478000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
480000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
482000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
484000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
486000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
488000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
490000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
492000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
494000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
496000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
498000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
500000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
502000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
504000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
506000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
508000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
510000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
512000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
514000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
516000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
518000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
520000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
522000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
524000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
526000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
528000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
530000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
532000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
534000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
536000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
538000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
540000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
542000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
544000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
546000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
548000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
550000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08

552000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
554000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
556000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
558000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
560000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
562000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
564000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
566000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
568000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
570000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
572000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
574000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
576000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
578000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
580000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
582000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
584000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
586000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
588000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
590000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
592000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
594000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
596000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
598000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
600000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
602000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
604000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
606000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
608000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
610000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
612000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
614000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
616000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
618000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
620000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
622000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
624000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
626000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
628000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
630000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
632000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
634000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
636000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
638000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
640000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
642000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
644000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08

646000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
648000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
650000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
652000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
654000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
656000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
658000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
660000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
662000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
664000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
666000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
668000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
670000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
672000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
674000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
676000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
678000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
680000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
682000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
684000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
686000	7.78E-10	1.55E-11	3.14E-12	3.14E-12	2.70E-08	0.00E+00	2.78E-08
688000	7.78E-10	1.55E-11	3.24E-12	3.24E-12	2.70E-08	0.00E+00	2.78E-08
690000	7.78E-10	1.55E-11	6.16E-12	6.16E-12	2.70E-08	0.00E+00	2.78E-08
692000	7.78E-10	1.55E-11	1.87E-11	1.87E-11	2.70E-08	0.00E+00	2.78E-08
694000	7.78E-10	1.55E-11	3.28E-11	3.28E-11	2.70E-08	0.00E+00	2.78E-08
696000	7.78E-10	1.55E-11	3.87E-11	3.87E-11	2.70E-08	0.00E+00	2.79E-08
698000	7.78E-10	1.55E-11	3.99E-11	3.99E-11	2.70E-08	0.00E+00	2.79E-08
700000	7.78E-10	1.55E-11	4.00E-11	4.00E-11	2.70E-08	0.00E+00	2.79E-08
702000	7.78E-10	1.55E-11	4.00E-11	4.00E-11	2.70E-08	0.00E+00	2.79E-08
704000	7.78E-10	1.55E-11	4.00E-11	4.00E-11	2.70E-08	0.00E+00	2.79E-08
706000	7.78E-10	1.55E-11	4.00E-11	4.00E-11	2.70E-08	0.00E+00	2.79E-08
708000	7.78E-10	1.55E-11	4.00E-11	4.00E-11	2.70E-08	0.00E+00	2.79E-08
710000	7.78E-10	1.55E-11	4.00E-11	4.00E-11	2.70E-08	0.00E+00	2.79E-08
712000	7.78E-10	1.55E-11	4.00E-11	4.00E-11	2.70E-08	0.00E+00	2.79E-08
714000	7.78E-10	1.55E-11	4.00E-11	4.00E-11	2.70E-08	0.00E+00	2.79E-08
716000	7.78E-10	1.60E-11	4.00E-11	4.00E-11	2.70E-08	0.00E+00	2.79E-08
718000	7.78E-10	3.06E-11	4.00E-11	4.00E-11	2.70E-08	0.00E+00	2.79E-08
720000	7.78E-10	9.33E-11	4.00E-11	4.00E-11	2.70E-08	0.00E+00	2.79E-08
722000	7.78E-10	1.64E-10	4.00E-11	4.00E-11	2.70E-08	0.00E+00	2.80E-08
724000	7.78E-10	1.93E-10	4.00E-11	4.00E-11	2.79E-08	0.00E+00	2.90E-08
726000	7.78E-10	1.99E-10	4.00E-11	4.00E-11	5.51E-08	0.00E+00	5.61E-08
728000	7.78E-10	2.00E-10	4.00E-11	4.00E-11	1.72E-07	0.00E+00	1.73E-07
730000	7.78E-10	2.00E-10	4.00E-11	4.00E-11	3.03E-07	0.00E+00	3.04E-07
732000	8.06E-10	2.00E-10	4.00E-11	4.00E-11	3.58E-07	0.00E+00	3.59E-07
734000	1.62E-09	2.00E-10	4.00E-11	4.00E-11	3.68E-07	0.00E+00	3.70E-07
736000	5.11E-09	2.00E-10	4.01E-11	4.01E-11	3.70E-07	0.00E+00	3.75E-07
738000	9.03E-09	2.00E-10	4.15E-11	4.15E-11	3.70E-07	0.00E+00	3.79E-07

740000	1.07E-08	2.00E-10	4.74E-11	4.74E-11	3.70E-07	0.00E+00	3.81E-07
742000	1.10E-08	2.00E-10	5.40E-11	5.40E-11	3.70E-07	0.00E+00	3.81E-07
744000	1.10E-08	2.00E-10	5.68E-11	5.68E-11	3.70E-07	0.00E+00	3.81E-07
746000	1.10E-08	2.03E-10	5.73E-11	5.73E-11	3.70E-07	0.00E+00	3.81E-07
748000	1.10E-08	2.08E-10	5.74E-11	5.74E-11	3.70E-07	0.00E+00	3.81E-07
750000	1.10E-08	2.13E-10	5.74E-11	5.74E-11	3.70E-07	0.00E+00	3.81E-07
752000	1.10E-08	2.17E-10	5.74E-11	5.74E-11	3.70E-07	0.00E+00	3.81E-07
754000	1.10E-08	2.18E-10	5.74E-11	5.74E-11	3.70E-07	0.00E+00	3.81E-07
756000	1.10E-08	2.18E-10	5.74E-11	5.74E-11	3.70E-07	0.00E+00	3.81E-07
758000	1.10E-08	2.19E-10	5.74E-11	5.74E-11	3.70E-07	0.00E+00	3.81E-07
760000	1.10E-08	2.19E-10	5.74E-11	5.74E-11	3.70E-07	0.00E+00	3.81E-07
762000	1.10E-08	2.19E-10	5.74E-11	5.74E-11	3.70E-07	0.00E+00	3.81E-07
764000	1.10E-08	2.19E-10	5.74E-11	5.74E-11	3.70E-07	0.00E+00	3.81E-07
766000	1.10E-08	2.19E-10	5.74E-11	5.74E-11	3.70E-07	0.00E+00	3.81E-07
768000	1.10E-08	2.19E-10	5.74E-11	5.74E-11	3.70E-07	0.00E+00	3.81E-07
770000	1.10E-08	2.26E-10	5.74E-11	5.74E-11	3.70E-07	0.00E+00	3.81E-07
772000	1.10E-08	2.58E-10	5.74E-11	5.74E-11	3.70E-07	0.00E+00	3.81E-07
774000	1.10E-08	2.94E-10	5.86E-11	5.86E-11	3.70E-07	0.00E+00	3.81E-07
776000	1.10E-08	3.08E-10	6.38E-11	6.38E-11	3.70E-07	0.00E+00	3.82E-07
778000	1.10E-08	3.11E-10	6.96E-11	6.96E-11	3.84E-07	0.00E+00	3.96E-07
780000	1.10E-08	3.12E-10	7.20E-11	7.20E-11	4.45E-07	0.00E+00	4.57E-07
782000	1.10E-08	3.12E-10	7.25E-11	7.25E-11	5.13E-07	0.00E+00	5.25E-07
784000	1.11E-08	3.12E-10	7.25E-11	7.25E-11	5.42E-07	0.00E+00	5.53E-07
786000	1.15E-08	3.12E-10	7.25E-11	7.25E-11	5.47E-07	0.00E+00	5.59E-07
788000	1.34E-08	3.12E-10	7.25E-11	7.25E-11	5.48E-07	0.00E+00	5.62E-07
790000	1.55E-08	3.12E-10	7.25E-11	7.25E-11	5.48E-07	0.00E+00	5.64E-07
792000	1.64E-08	3.12E-10	7.25E-11	7.25E-11	5.48E-07	0.00E+00	5.65E-07
794000	1.65E-08	3.12E-10	7.25E-11	7.25E-11	5.48E-07	0.00E+00	5.65E-07
796000	1.66E-08	3.12E-10	7.25E-11	7.25E-11	5.48E-07	0.00E+00	5.65E-07
798000	1.66E-08	3.14E-10	7.25E-11	7.25E-11	5.48E-07	0.00E+00	5.65E-07
800000	1.66E-08	3.17E-10	7.25E-11	7.25E-11	5.48E-07	0.00E+00	5.65E-07
802000	1.66E-08	3.20E-10	7.25E-11	7.25E-11	5.48E-07	0.00E+00	5.65E-07
804000	1.66E-08	3.22E-10	7.26E-11	7.26E-11	5.48E-07	0.00E+00	5.65E-07
806000	1.66E-08	3.30E-10	7.38E-11	7.38E-11	5.48E-07	0.00E+00	5.65E-07
808000	1.66E-08	3.61E-10	7.90E-11	7.90E-11	5.48E-07	0.00E+00	5.65E-07
810000	1.66E-08	3.96E-10	8.48E-11	8.48E-11	5.48E-07	0.00E+00	5.65E-07
812000	1.66E-08	4.10E-10	8.72E-11	8.72E-11	5.49E-07	0.00E+00	5.66E-07
814000	1.66E-08	4.13E-10	8.77E-11	8.77E-11	5.62E-07	0.00E+00	5.79E-07
816000	1.66E-08	4.13E-10	8.78E-11	8.78E-11	6.20E-07	0.00E+00	6.37E-07
818000	1.70E-08	4.13E-10	8.78E-11	8.78E-11	6.84E-07	0.00E+00	7.02E-07
820000	1.88E-08	4.13E-10	8.78E-11	8.78E-11	7.12E-07	0.00E+00	7.31E-07
822000	2.08E-08	4.13E-10	8.78E-11	8.78E-11	7.17E-07	0.00E+00	7.38E-07
824000	2.16E-08	4.13E-10	8.78E-11	8.78E-11	7.18E-07	0.00E+00	7.40E-07
826000	2.18E-08	4.13E-10	8.78E-11	8.78E-11	7.18E-07	0.00E+00	7.40E-07
828000	2.18E-08	4.13E-10	8.78E-11	8.78E-11	7.18E-07	0.00E+00	7.40E-07
830000	2.18E-08	4.13E-10	8.89E-11	8.89E-11	7.18E-07	0.00E+00	7.40E-07
832000	2.18E-08	4.14E-10	9.34E-11	9.34E-11	7.18E-07	0.00E+00	7.40E-07

834000	2.18E-08	4.22E-10	9.86E-11	9.86E-11	7.18E-07	0.00E+00	7.40E-07
836000	2.18E-08	4.54E-10	1.01E-10	1.01E-10	7.18E-07	0.00E+00	7.40E-07
838000	2.18E-08	4.89E-10	1.01E-10	1.01E-10	7.31E-07	0.00E+00	7.54E-07
840000	2.18E-08	5.04E-10	1.01E-10	1.01E-10	7.87E-07	0.00E+00	8.10E-07
842000	2.18E-08	5.08E-10	1.01E-10	1.01E-10	8.50E-07	0.00E+00	8.73E-07
844000	2.18E-08	5.08E-10	1.01E-10	1.01E-10	8.77E-07	0.00E+00	8.99E-07
846000	2.23E-08	5.09E-10	1.01E-10	1.01E-10	8.82E-07	0.00E+00	9.05E-07
848000	2.42E-08	5.09E-10	1.01E-10	1.01E-10	8.83E-07	0.00E+00	9.08E-07
850000	2.63E-08	5.09E-10	1.02E-10	1.02E-10	8.83E-07	0.00E+00	9.10E-07
852000	2.71E-08	5.09E-10	1.07E-10	1.07E-10	8.83E-07	0.00E+00	9.11E-07
854000	2.73E-08	5.16E-10	1.13E-10	1.13E-10	8.83E-07	0.00E+00	9.11E-07
856000	2.73E-08	5.47E-10	1.15E-10	1.15E-10	8.83E-07	0.00E+00	9.11E-07
858000	2.73E-08	5.82E-10	1.16E-10	1.16E-10	8.83E-07	0.00E+00	9.11E-07
860000	2.73E-08	5.99E-10	1.16E-10	1.16E-10	8.83E-07	0.00E+00	9.11E-07
862000	2.73E-08	6.05E-10	1.16E-10	1.16E-10	8.97E-07	0.00E+00	9.25E-07
864000	2.74E-08	6.07E-10	1.16E-10	1.16E-10	9.56E-07	0.00E+00	9.84E-07
866000	2.77E-08	6.07E-10	1.17E-10	1.17E-10	1.02E-06	0.00E+00	1.05E-06
868000	2.94E-08	6.08E-10	1.20E-10	1.20E-10	1.05E-06	0.00E+00	1.08E-06
870000	3.13E-08	6.08E-10	1.25E-10	1.25E-10	1.05E-06	0.00E+00	1.09E-06
872000	3.21E-08	6.08E-10	1.27E-10	1.27E-10	1.06E-06	0.00E+00	1.09E-06
874000	3.22E-08	6.15E-10	1.27E-10	1.27E-10	1.06E-06	0.00E+00	1.09E-06
876000	3.23E-08	6.47E-10	1.27E-10	1.27E-10	1.06E-06	0.00E+00	1.09E-06
878000	3.23E-08	6.83E-10	1.27E-10	1.27E-10	1.07E-06	0.00E+00	1.10E-06
880000	3.23E-08	7.00E-10	1.27E-10	1.27E-10	1.12E-06	0.00E+00	1.16E-06
882000	3.27E-08	7.06E-10	1.28E-10	1.28E-10	1.18E-06	0.00E+00	1.22E-06
884000	3.44E-08	7.08E-10	1.33E-10	1.33E-10	1.21E-06	0.00E+00	1.24E-06
886000	3.64E-08	7.09E-10	1.39E-10	1.39E-10	1.21E-06	0.00E+00	1.25E-06
888000	3.73E-08	7.09E-10	1.41E-10	1.41E-10	1.21E-06	0.00E+00	1.25E-06
890000	3.74E-08	7.16E-10	1.42E-10	1.42E-10	1.21E-06	0.00E+00	1.25E-06
892000	3.74E-08	7.43E-10	1.42E-10	1.42E-10	1.21E-06	0.00E+00	1.25E-06
894000	3.74E-08	7.75E-10	1.42E-10	1.42E-10	1.23E-06	0.00E+00	1.27E-06
896000	3.75E-08	7.90E-10	1.42E-10	1.42E-10	1.29E-06	0.00E+00	1.32E-06
898000	3.78E-08	7.95E-10	1.43E-10	1.43E-10	1.35E-06	0.00E+00	1.39E-06
900000	3.93E-08	7.97E-10	1.47E-10	1.47E-10	1.38E-06	0.00E+00	1.42E-06
902000	4.11E-08	8.03E-10	1.51E-10	1.51E-10	1.39E-06	0.00E+00	1.43E-06
904000	4.18E-08	8.24E-10	1.53E-10	1.53E-10	1.39E-06	0.00E+00	1.43E-06
906000	4.19E-08	8.48E-10	1.54E-10	1.54E-10	1.39E-06	0.00E+00	1.43E-06
908000	4.19E-08	8.59E-10	1.54E-10	1.54E-10	1.39E-06	0.00E+00	1.43E-06
910000	4.23E-08	8.62E-10	1.55E-10	1.55E-10	1.40E-06	0.00E+00	1.44E-06
912000	4.38E-08	8.65E-10	1.59E-10	1.59E-10	1.46E-06	0.00E+00	1.50E-06
914000	4.54E-08	8.73E-10	1.63E-10	1.63E-10	1.52E-06	0.00E+00	1.57E-06
916000	4.61E-08	8.97E-10	1.65E-10	1.65E-10	1.55E-06	0.00E+00	1.60E-06
918000	4.63E-08	9.22E-10	1.65E-10	1.65E-10	1.56E-06	0.00E+00	1.60E-06
920000	4.63E-08	9.33E-10	1.66E-10	1.66E-10	1.56E-06	0.00E+00	1.60E-06
922000	4.66E-08	9.37E-10	1.66E-10	1.66E-10	1.57E-06	0.00E+00	1.62E-06
924000	4.81E-08	9.39E-10	1.66E-10	1.66E-10	1.61E-06	0.00E+00	1.66E-06
926000	4.98E-08	9.48E-10	1.67E-10	1.67E-10	1.67E-06	0.00E+00	1.72E-06

928000	5.05E-08	9.76E-10	1.71E-10	1.71E-10	1.69E-06	0.00E+00	1.74E-06
930000	5.07E-08	1.01E-09	1.75E-10	1.75E-10	1.69E-06	0.00E+00	1.75E-06
932000	5.07E-08	1.02E-09	1.77E-10	1.77E-10	1.69E-06	0.00E+00	1.75E-06
934000	5.10E-08	1.02E-09	1.78E-10	1.78E-10	1.71E-06	0.00E+00	1.76E-06
936000	5.23E-08	1.03E-09	1.78E-10	1.78E-10	1.75E-06	0.00E+00	1.81E-06
938000	5.38E-08	1.04E-09	1.79E-10	1.79E-10	1.81E-06	0.00E+00	1.86E-06
940000	5.44E-08	1.06E-09	1.82E-10	1.82E-10	1.83E-06	0.00E+00	1.89E-06
942000	5.49E-08	1.09E-09	1.85E-10	1.85E-10	1.85E-06	0.00E+00	1.90E-06
944000	5.66E-08	1.11E-09	1.87E-10	1.87E-10	1.90E-06	0.00E+00	1.95E-06
946000	5.84E-08	1.11E-09	1.88E-10	1.88E-10	1.95E-06	0.00E+00	2.01E-06
948000	5.92E-08	1.11E-09	1.91E-10	1.91E-10	1.97E-06	0.00E+00	2.03E-06
950000	5.93E-08	1.12E-09	1.95E-10	1.95E-10	1.98E-06	0.00E+00	2.04E-06
952000	5.93E-08	1.15E-09	1.96E-10	1.96E-10	1.98E-06	0.00E+00	2.04E-06
954000	5.97E-08	1.18E-09	1.96E-10	1.96E-10	1.99E-06	0.00E+00	2.05E-06
956000	6.11E-08	1.19E-09	1.96E-10	1.96E-10	2.04E-06	0.00E+00	2.10E-06
958000	6.28E-08	1.20E-09	1.97E-10	1.97E-10	2.10E-06	0.00E+00	2.16E-06
960000	6.35E-08	1.22E-09	2.01E-10	2.01E-10	2.12E-06	0.00E+00	2.19E-06
962000	6.39E-08	1.25E-09	2.04E-10	2.04E-10	2.14E-06	0.00E+00	2.20E-06
964000	6.52E-08	1.26E-09	2.06E-10	2.06E-10	2.18E-06	0.00E+00	2.25E-06
966000	6.65E-08	1.27E-09	2.07E-10	2.07E-10	2.23E-06	0.00E+00	2.30E-06
968000	6.71E-08	1.28E-09	2.11E-10	2.11E-10	2.25E-06	0.00E+00	2.32E-06
970000	6.76E-08	1.30E-09	2.15E-10	2.15E-10	2.27E-06	0.00E+00	2.34E-06
972000	6.89E-08	1.31E-09	2.17E-10	2.17E-10	2.32E-06	0.00E+00	2.39E-06
974000	7.03E-08	1.32E-09	2.17E-10	2.17E-10	2.37E-06	0.00E+00	2.44E-06
976000	7.10E-08	1.34E-09	2.17E-10	2.17E-10	2.39E-06	0.00E+00	2.46E-06
978000	7.14E-08	1.37E-09	2.18E-10	2.18E-10	2.40E-06	0.00E+00	2.48E-06
980000	7.29E-08	1.38E-09	2.22E-10	2.22E-10	2.46E-06	0.00E+00	2.53E-06
982000	7.45E-08	1.39E-09	2.26E-10	2.26E-10	2.52E-06	0.00E+00	2.59E-06
984000	7.52E-08	1.41E-09	2.27E-10	2.27E-10	2.54E-06	0.00E+00	2.62E-06
986000	7.57E-08	1.44E-09	2.28E-10	2.28E-10	2.56E-06	0.00E+00	2.64E-06
988000	7.72E-08	1.45E-09	2.32E-10	2.32E-10	2.62E-06	0.00E+00	2.70E-06
990000	7.89E-08	1.46E-09	2.35E-10	2.35E-10	2.69E-06	0.00E+00	2.78E-06
992000	7.97E-08	1.49E-09	2.37E-10	2.37E-10	2.72E-06	0.00E+00	2.81E-06
994000	8.01E-08	1.52E-09	2.39E-10	2.39E-10	2.74E-06	0.00E+00	2.82E-06
996000	8.14E-08	1.53E-09	2.46E-10	2.46E-10	2.78E-06	0.00E+00	2.86E-06
998000	8.36E-08	1.55E-09	2.55E-10	2.55E-10	2.84E-06	0.00E+00	2.93E-06
1000000	8.70E-08	1.60E-09	2.59E-10	2.59E-10	2.98E-06	0.00E+00	3.07E-06

Uranium Soil Concentrations Combined Case, Present Climate
Amargosa Farms, 2003 Pumping

Time (yr)	Soil Concentration (g/square m)						
	U-235	U-233	U-236	U-234	U-238	U-232	Total
250	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
4000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
6000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
8000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
10000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
12000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
14000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
16000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
18000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
20000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
22000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
24000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
26000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
28000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
30000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
32000	1.29E-19	9.00E-22	1.33E-21	1.33E-21	5.34E-18	0.00E+00	5.47E-18
34000	1.31E-17	9.15E-20	1.35E-19	1.35E-19	5.43E-16	0.00E+00	5.57E-16
36000	7.01E-16	4.89E-18	7.22E-18	7.22E-18	2.90E-14	0.00E+00	2.98E-14
38000	2.19E-14	1.53E-16	2.26E-16	2.26E-16	9.07E-13	0.00E+00	9.30E-13
40000	4.34E-13	3.03E-15	4.47E-15	4.47E-15	1.80E-11	0.00E+00	1.84E-11
42000	5.82E-12	4.06E-14	6.00E-14	6.00E-14	2.41E-10	0.00E+00	2.47E-10
44000	5.59E-11	3.90E-13	5.75E-13	5.75E-13	2.31E-09	0.00E+00	2.37E-09
46000	4.01E-10	2.80E-12	4.13E-12	4.13E-12	1.66E-08	0.00E+00	1.70E-08
48000	2.23E-09	1.56E-11	2.30E-11	2.30E-11	9.24E-08	0.00E+00	9.47E-08
50000	9.95E-09	6.94E-11	1.02E-10	1.02E-10	4.12E-07	0.00E+00	4.22E-07
52000	3.65E-08	2.55E-10	3.76E-10	3.76E-10	1.51E-06	0.00E+00	1.55E-06
54000	1.13E-07	7.86E-10	1.16E-09	1.16E-09	4.66E-06	0.00E+00	4.78E-06
56000	2.98E-07	2.08E-09	3.07E-09	3.07E-09	1.24E-05	0.00E+00	1.27E-05
58000	6.90E-07	4.82E-09	7.11E-09	7.11E-09	2.86E-05	0.00E+00	2.93E-05
60000	1.42E-06	9.88E-09	1.46E-08	1.46E-08	5.87E-05	0.00E+00	6.01E-05
62000	2.61E-06	1.82E-08	2.69E-08	2.69E-08	1.08E-04	0.00E+00	1.11E-04
64000	4.38E-06	3.06E-08	4.51E-08	4.51E-08	1.81E-04	0.00E+00	1.86E-04
66000	6.76E-06	4.72E-08	6.96E-08	6.96E-08	2.80E-04	0.00E+00	2.87E-04
68000	9.68E-06	6.76E-08	9.97E-08	9.97E-08	4.01E-04	0.00E+00	4.11E-04
70000	1.30E-05	9.07E-08	1.34E-07	1.34E-07	5.38E-04	0.00E+00	5.51E-04
72000	1.65E-05	1.15E-07	1.70E-07	1.70E-07	6.83E-04	0.00E+00	7.00E-04
74000	1.99E-05	1.39E-07	2.05E-07	2.05E-07	8.25E-04	0.00E+00	8.45E-04
76000	2.31E-05	1.62E-07	2.38E-07	2.38E-07	9.56E-04	0.00E+00	9.80E-04
78000	2.59E-05	1.82E-07	2.66E-07	2.66E-07	1.07E-03	0.00E+00	1.10E-03
80000	2.82E-05	1.99E-07	2.90E-07	2.90E-07	1.17E-03	0.00E+00	1.19E-03

82000	3.00E-05	2.13E-07	3.09E-07	3.09E-07	1.24E-03	0.00E+00	1.27E-03
84000	3.13E-05	2.26E-07	3.23E-07	3.23E-07	1.30E-03	0.00E+00	1.33E-03
86000	3.23E-05	2.37E-07	3.33E-07	3.33E-07	1.34E-03	0.00E+00	1.37E-03
88000	3.30E-05	2.48E-07	3.40E-07	3.40E-07	1.37E-03	0.00E+00	1.40E-03
90000	3.34E-05	2.59E-07	3.44E-07	3.44E-07	1.38E-03	0.00E+00	1.42E-03
92000	3.37E-05	2.71E-07	3.47E-07	3.47E-07	1.40E-03	0.00E+00	1.43E-03
94000	3.39E-05	2.84E-07	3.49E-07	3.49E-07	1.40E-03	0.00E+00	1.44E-03
96000	3.40E-05	2.98E-07	3.50E-07	3.50E-07	1.41E-03	0.00E+00	1.44E-03
98000	3.41E-05	3.14E-07	3.51E-07	3.51E-07	1.41E-03	0.00E+00	1.45E-03
100000	3.41E-05	3.30E-07	3.51E-07	3.51E-07	1.41E-03	0.00E+00	1.45E-03
102000	3.42E-05	3.46E-07	3.52E-07	3.52E-07	1.41E-03	0.00E+00	1.45E-03
104000	3.42E-05	3.63E-07	3.52E-07	3.52E-07	1.41E-03	0.00E+00	1.45E-03
106000	3.42E-05	3.78E-07	3.52E-07	3.52E-07	1.41E-03	0.00E+00	1.45E-03
108000	3.42E-05	3.93E-07	3.52E-07	3.52E-07	1.41E-03	0.00E+00	1.45E-03
110000	3.42E-05	4.06E-07	3.52E-07	3.52E-07	1.42E-03	0.00E+00	1.45E-03
112000	3.42E-05	4.18E-07	3.52E-07	3.52E-07	1.42E-03	0.00E+00	1.45E-03
114000	3.42E-05	4.28E-07	3.52E-07	3.52E-07	1.42E-03	0.00E+00	1.45E-03
116000	3.42E-05	4.36E-07	3.52E-07	3.52E-07	1.42E-03	0.00E+00	1.45E-03
118000	3.42E-05	4.43E-07	3.52E-07	3.52E-07	1.42E-03	0.00E+00	1.45E-03
120000	3.42E-05	4.49E-07	3.52E-07	3.52E-07	1.42E-03	0.00E+00	1.45E-03
122000	3.42E-05	4.53E-07	3.52E-07	3.52E-07	1.42E-03	0.00E+00	1.45E-03
124000	3.42E-05	4.57E-07	3.52E-07	3.52E-07	1.42E-03	0.00E+00	1.45E-03
126000	3.42E-05	4.59E-07	3.52E-07	3.52E-07	1.42E-03	0.00E+00	1.45E-03
128000	3.42E-05	4.61E-07	3.52E-07	3.52E-07	1.42E-03	0.00E+00	1.45E-03
130000	3.42E-05	4.62E-07	3.52E-07	3.52E-07	1.42E-03	0.00E+00	1.45E-03
132000	3.42E-05	4.63E-07	3.52E-07	3.52E-07	1.42E-03	0.00E+00	1.45E-03
134000	3.42E-05	4.64E-07	3.52E-07	3.52E-07	1.42E-03	0.00E+00	1.45E-03
136000	3.42E-05	4.65E-07	3.52E-07	3.52E-07	1.42E-03	0.00E+00	1.45E-03
138000	3.42E-05	4.65E-07	3.52E-07	3.52E-07	1.42E-03	0.00E+00	1.45E-03
140000	3.42E-05	4.65E-07	3.52E-07	3.52E-07	1.42E-03	0.00E+00	1.45E-03
142000	3.42E-05	4.65E-07	3.52E-07	3.52E-07	1.42E-03	0.00E+00	1.45E-03
144000	3.42E-05	4.66E-07	3.52E-07	3.52E-07	1.42E-03	0.00E+00	1.45E-03
146000	3.42E-05	4.66E-07	3.52E-07	3.52E-07	1.42E-03	0.00E+00	1.45E-03
148000	3.42E-05	4.66E-07	3.52E-07	3.52E-07	1.42E-03	0.00E+00	1.45E-03
150000	3.42E-05	4.66E-07	3.52E-07	3.52E-07	1.42E-03	0.00E+00	1.45E-03
152000	3.42E-05	4.66E-07	3.52E-07	3.52E-07	1.42E-03	0.00E+00	1.45E-03
154000	3.42E-05	4.66E-07	3.52E-07	3.52E-07	1.42E-03	0.00E+00	1.45E-03
156000	3.42E-05	4.66E-07	3.52E-07	3.52E-07	1.42E-03	0.00E+00	1.45E-03
158000	3.42E-05	4.66E-07	3.52E-07	3.52E-07	1.42E-03	0.00E+00	1.45E-03
160000	3.42E-05	4.66E-07	3.52E-07	3.52E-07	1.42E-03	0.00E+00	1.45E-03
162000	3.42E-05	4.66E-07	3.52E-07	3.52E-07	1.42E-03	0.00E+00	1.45E-03
164000	3.42E-05	4.66E-07	3.52E-07	3.52E-07	1.42E-03	0.00E+00	1.45E-03
166000	3.42E-05	4.66E-07	3.52E-07	3.52E-07	1.42E-03	0.00E+00	1.45E-03
168000	3.42E-05	4.66E-07	3.52E-07	3.52E-07	1.42E-03	0.00E+00	1.45E-03
170000	3.42E-05	4.66E-07	3.52E-07	3.52E-07	1.42E-03	0.00E+00	1.45E-03
172000	3.42E-05	4.66E-07	3.52E-07	3.52E-07	1.42E-03	0.00E+00	1.45E-03
174000	3.42E-05	4.66E-07	3.52E-07	3.52E-07	1.42E-03	0.00E+00	1.45E-03

176000	3.42E-05	4.66E-07	3.52E-07	3.52E-07	1.42E-03	0.00E+00	1.45E-03
178000	3.42E-05	4.66E-07	3.52E-07	3.52E-07	1.42E-03	0.00E+00	1.45E-03
180000	3.42E-05	4.66E-07	3.52E-07	3.52E-07	1.42E-03	0.00E+00	1.45E-03
182000	3.42E-05	4.66E-07	3.52E-07	3.52E-07	1.42E-03	0.00E+00	1.45E-03
184000	3.42E-05	4.66E-07	3.52E-07	3.52E-07	1.42E-03	0.00E+00	1.45E-03
186000	3.42E-05	4.66E-07	3.52E-07	3.52E-07	1.42E-03	0.00E+00	1.45E-03
188000	3.42E-05	4.66E-07	3.52E-07	3.52E-07	1.42E-03	0.00E+00	1.45E-03
190000	3.42E-05	4.66E-07	3.52E-07	3.52E-07	1.42E-03	0.00E+00	1.45E-03
192000	3.42E-05	4.66E-07	3.52E-07	3.52E-07	1.42E-03	0.00E+00	1.45E-03
194000	3.42E-05	4.66E-07	3.52E-07	3.52E-07	1.42E-03	0.00E+00	1.45E-03
196000	3.42E-05	4.66E-07	3.52E-07	3.52E-07	1.42E-03	0.00E+00	1.45E-03
198000	3.42E-05	4.66E-07	3.52E-07	3.52E-07	1.42E-03	0.00E+00	1.45E-03
200000	3.42E-05	4.66E-07	3.52E-07	3.52E-07	1.42E-03	0.00E+00	1.45E-03
202000	3.42E-05	4.66E-07	3.52E-07	3.52E-07	1.42E-03	0.00E+00	1.45E-03
204000	3.42E-05	4.66E-07	3.52E-07	3.52E-07	1.42E-03	0.00E+00	1.45E-03
206000	3.42E-05	4.66E-07	3.52E-07	3.52E-07	1.42E-03	0.00E+00	1.45E-03
208000	3.42E-05	4.66E-07	3.52E-07	3.52E-07	1.42E-03	0.00E+00	1.45E-03
210000	3.42E-05	4.66E-07	3.52E-07	3.52E-07	1.42E-03	0.00E+00	1.45E-03
212000	3.42E-05	4.66E-07	3.52E-07	3.52E-07	1.42E-03	0.00E+00	1.45E-03
214000	3.42E-05	4.66E-07	3.52E-07	3.52E-07	1.42E-03	0.00E+00	1.45E-03
216000	3.42E-05	4.66E-07	3.52E-07	3.52E-07	1.42E-03	0.00E+00	1.45E-03
218000	3.42E-05	4.66E-07	3.53E-07	3.53E-07	1.42E-03	0.00E+00	1.45E-03
220000	3.42E-05	4.66E-07	3.54E-07	3.54E-07	1.42E-03	0.00E+00	1.45E-03
222000	3.42E-05	4.66E-07	3.58E-07	3.58E-07	1.42E-03	0.00E+00	1.45E-03
224000	3.42E-05	4.66E-07	3.64E-07	3.64E-07	1.42E-03	0.00E+00	1.45E-03
226000	3.42E-05	4.66E-07	3.77E-07	3.77E-07	1.42E-03	0.00E+00	1.45E-03
228000	3.42E-05	4.66E-07	3.96E-07	3.96E-07	1.42E-03	0.00E+00	1.45E-03
230000	3.42E-05	4.66E-07	4.23E-07	4.23E-07	1.42E-03	0.00E+00	1.45E-03
232000	3.42E-05	4.66E-07	4.59E-07	4.59E-07	1.42E-03	0.00E+00	1.45E-03
234000	3.42E-05	4.66E-07	5.01E-07	5.01E-07	1.42E-03	0.00E+00	1.45E-03
236000	3.42E-05	4.66E-07	5.48E-07	5.48E-07	1.42E-03	0.00E+00	1.45E-03
238000	3.42E-05	4.66E-07	5.96E-07	5.96E-07	1.42E-03	0.00E+00	1.45E-03
240000	3.42E-05	4.66E-07	6.42E-07	6.42E-07	1.42E-03	0.00E+00	1.45E-03
242000	3.42E-05	4.66E-07	6.84E-07	6.84E-07	1.42E-03	0.00E+00	1.45E-03
244000	3.42E-05	4.66E-07	7.20E-07	7.20E-07	1.42E-03	0.00E+00	1.45E-03
246000	3.42E-05	4.66E-07	7.49E-07	7.49E-07	1.42E-03	0.00E+00	1.45E-03
248000	3.42E-05	4.66E-07	7.71E-07	7.71E-07	1.42E-03	0.00E+00	1.45E-03
250000	3.42E-05	4.66E-07	7.87E-07	7.87E-07	1.42E-03	0.00E+00	1.45E-03
252000	3.42E-05	4.66E-07	7.99E-07	7.99E-07	1.42E-03	0.00E+00	1.45E-03
254000	3.42E-05	4.66E-07	8.07E-07	8.07E-07	1.42E-03	0.00E+00	1.45E-03
256000	3.42E-05	4.66E-07	8.13E-07	8.13E-07	1.42E-03	0.00E+00	1.45E-03
258000	3.42E-05	4.66E-07	8.16E-07	8.16E-07	1.42E-03	0.00E+00	1.45E-03
260000	3.42E-05	4.66E-07	8.18E-07	8.18E-07	1.42E-03	0.00E+00	1.45E-03
262000	3.42E-05	4.66E-07	8.19E-07	8.19E-07	1.42E-03	0.00E+00	1.45E-03
264000	3.42E-05	4.66E-07	8.20E-07	8.20E-07	1.42E-03	0.00E+00	1.45E-03
266000	3.42E-05	4.66E-07	8.20E-07	8.20E-07	1.42E-03	0.00E+00	1.45E-03
268000	3.42E-05	4.66E-07	8.21E-07	8.21E-07	1.42E-03	0.00E+00	1.45E-03

270000	3.42E-05	4.66E-07	8.21E-07	8.21E-07	1.42E-03	0.00E+00	1.45E-03
272000	3.42E-05	4.66E-07	8.21E-07	8.21E-07	1.42E-03	0.00E+00	1.45E-03
274000	3.42E-05	4.66E-07	8.21E-07	8.21E-07	1.42E-03	0.00E+00	1.45E-03
276000	3.42E-05	4.67E-07	8.21E-07	8.21E-07	1.42E-03	0.00E+00	1.45E-03
278000	3.42E-05	4.68E-07	8.21E-07	8.21E-07	1.42E-03	0.00E+00	1.45E-03
280000	3.42E-05	4.70E-07	8.21E-07	8.21E-07	1.42E-03	0.00E+00	1.45E-03
282000	3.42E-05	4.73E-07	8.21E-07	8.21E-07	1.42E-03	0.00E+00	1.45E-03
284000	3.42E-05	4.78E-07	8.21E-07	8.21E-07	1.42E-03	0.00E+00	1.45E-03
286000	3.42E-05	4.85E-07	8.21E-07	8.21E-07	1.42E-03	0.00E+00	1.45E-03
288000	3.42E-05	4.94E-07	8.21E-07	8.21E-07	1.42E-03	0.00E+00	1.45E-03
290000	3.42E-05	5.06E-07	8.22E-07	8.22E-07	1.42E-03	0.00E+00	1.45E-03
292000	3.42E-05	5.21E-07	8.23E-07	8.23E-07	1.42E-03	0.00E+00	1.45E-03
294000	3.42E-05	5.38E-07	8.25E-07	8.25E-07	1.42E-03	0.00E+00	1.45E-03
296000	3.42E-05	5.57E-07	8.29E-07	8.29E-07	1.42E-03	0.00E+00	1.45E-03
298000	3.42E-05	5.79E-07	8.36E-07	8.36E-07	1.42E-03	0.00E+00	1.45E-03
300000	3.42E-05	6.03E-07	8.47E-07	8.47E-07	1.42E-03	0.00E+00	1.45E-03
302000	3.44E-05	6.31E-07	8.61E-07	8.61E-07	1.42E-03	0.00E+00	1.45E-03
304000	3.47E-05	6.63E-07	8.79E-07	8.79E-07	1.42E-03	0.00E+00	1.45E-03
306000	3.54E-05	7.00E-07	8.99E-07	8.99E-07	1.42E-03	0.00E+00	1.45E-03
308000	3.66E-05	7.43E-07	9.20E-07	9.20E-07	1.42E-03	0.00E+00	1.45E-03
310000	3.87E-05	7.90E-07	9.42E-07	9.42E-07	1.42E-03	0.00E+00	1.46E-03
312000	4.16E-05	8.40E-07	9.62E-07	9.62E-07	1.42E-03	0.00E+00	1.46E-03
314000	4.55E-05	8.91E-07	9.79E-07	9.79E-07	1.42E-03	0.00E+00	1.46E-03
316000	5.03E-05	9.40E-07	9.94E-07	9.94E-07	1.42E-03	0.00E+00	1.47E-03
318000	5.57E-05	9.86E-07	1.01E-06	1.01E-06	1.42E-03	0.00E+00	1.48E-03
320000	6.13E-05	1.03E-06	1.01E-06	1.01E-06	1.42E-03	0.00E+00	1.49E-03
322000	6.67E-05	1.06E-06	1.02E-06	1.02E-06	1.44E-03	0.00E+00	1.51E-03
324000	7.17E-05	1.09E-06	1.03E-06	1.03E-06	1.47E-03	0.00E+00	1.55E-03
326000	7.61E-05	1.11E-06	1.03E-06	1.03E-06	1.53E-03	0.00E+00	1.61E-03
328000	7.97E-05	1.12E-06	1.03E-06	1.03E-06	1.63E-03	0.00E+00	1.71E-03
330000	8.25E-05	1.13E-06	1.03E-06	1.03E-06	1.77E-03	0.00E+00	1.86E-03
332000	8.46E-05	1.14E-06	1.03E-06	1.03E-06	1.96E-03	0.00E+00	2.05E-03
334000	8.61E-05	1.14E-06	1.03E-06	1.03E-06	2.19E-03	0.00E+00	2.28E-03
336000	8.71E-05	1.15E-06	1.03E-06	1.03E-06	2.45E-03	0.00E+00	2.54E-03
338000	8.78E-05	1.15E-06	1.03E-06	1.03E-06	2.72E-03	0.00E+00	2.81E-03
340000	8.82E-05	1.15E-06	1.03E-06	1.03E-06	2.98E-03	0.00E+00	3.07E-03
342000	8.85E-05	1.15E-06	1.03E-06	1.03E-06	3.22E-03	0.00E+00	3.31E-03
344000	8.87E-05	1.15E-06	1.03E-06	1.03E-06	3.43E-03	0.00E+00	3.52E-03
346000	8.88E-05	1.15E-06	1.03E-06	1.03E-06	3.60E-03	0.00E+00	3.70E-03
348000	8.88E-05	1.15E-06	1.03E-06	1.03E-06	3.74E-03	0.00E+00	3.83E-03
350000	8.89E-05	1.15E-06	1.04E-06	1.04E-06	3.84E-03	0.00E+00	3.93E-03
352000	8.89E-05	1.15E-06	1.04E-06	1.04E-06	3.91E-03	0.00E+00	4.00E-03
354000	8.89E-05	1.15E-06	1.04E-06	1.04E-06	3.96E-03	0.00E+00	4.05E-03
356000	8.89E-05	1.15E-06	1.05E-06	1.05E-06	3.99E-03	0.00E+00	4.09E-03
358000	8.89E-05	1.15E-06	1.06E-06	1.06E-06	4.02E-03	0.00E+00	4.11E-03
360000	8.89E-05	1.15E-06	1.07E-06	1.07E-06	4.03E-03	0.00E+00	4.12E-03
362000	8.89E-05	1.15E-06	1.08E-06	1.08E-06	4.04E-03	0.00E+00	4.13E-03

364000	8.89E-05	1.15E-06	1.10E-06	1.10E-06	4.04E-03	0.00E+00	4.13E-03
366000	8.89E-05	1.15E-06	1.11E-06	1.11E-06	4.04E-03	0.00E+00	4.14E-03
368000	8.89E-05	1.15E-06	1.13E-06	1.13E-06	4.05E-03	0.00E+00	4.14E-03
370000	8.89E-05	1.16E-06	1.14E-06	1.14E-06	4.05E-03	0.00E+00	4.14E-03
372000	8.89E-05	1.16E-06	1.15E-06	1.15E-06	4.05E-03	0.00E+00	4.14E-03
374000	8.89E-05	1.16E-06	1.16E-06	1.16E-06	4.05E-03	0.00E+00	4.14E-03
376000	8.89E-05	1.17E-06	1.17E-06	1.17E-06	4.05E-03	0.00E+00	4.14E-03
378000	8.89E-05	1.17E-06	1.17E-06	1.17E-06	4.05E-03	0.00E+00	4.14E-03
380000	8.89E-05	1.18E-06	1.17E-06	1.17E-06	4.05E-03	0.00E+00	4.14E-03
382000	8.89E-05	1.19E-06	1.18E-06	1.18E-06	4.05E-03	0.00E+00	4.14E-03
384000	8.89E-05	1.20E-06	1.18E-06	1.18E-06	4.05E-03	0.00E+00	4.14E-03
386000	8.89E-05	1.21E-06	1.18E-06	1.18E-06	4.05E-03	0.00E+00	4.14E-03
388000	8.89E-05	1.23E-06	1.18E-06	1.18E-06	4.05E-03	0.00E+00	4.14E-03
390000	8.89E-05	1.24E-06	1.18E-06	1.18E-06	4.05E-03	0.00E+00	4.14E-03
392000	8.89E-05	1.25E-06	1.18E-06	1.18E-06	4.05E-03	0.00E+00	4.14E-03
394000	8.89E-05	1.26E-06	1.18E-06	1.18E-06	4.05E-03	0.00E+00	4.14E-03
396000	8.90E-05	1.28E-06	1.18E-06	1.18E-06	4.05E-03	0.00E+00	4.14E-03
398000	8.91E-05	1.29E-06	1.18E-06	1.18E-06	4.05E-03	0.00E+00	4.14E-03
400000	8.93E-05	1.31E-06	1.18E-06	1.18E-06	4.05E-03	0.00E+00	4.14E-03
402000	8.98E-05	1.33E-06	1.19E-06	1.19E-06	4.05E-03	0.00E+00	4.14E-03
404000	9.07E-05	1.36E-06	1.19E-06	1.19E-06	4.05E-03	0.00E+00	4.14E-03
406000	9.20E-05	1.38E-06	1.19E-06	1.19E-06	4.05E-03	0.00E+00	4.14E-03
408000	9.38E-05	1.40E-06	1.20E-06	1.20E-06	4.05E-03	0.00E+00	4.15E-03
410000	9.61E-05	1.42E-06	1.21E-06	1.21E-06	4.05E-03	0.00E+00	4.15E-03
412000	9.87E-05	1.44E-06	1.22E-06	1.22E-06	4.05E-03	0.00E+00	4.15E-03
414000	1.02E-04	1.46E-06	1.23E-06	1.23E-06	4.05E-03	0.00E+00	4.16E-03
416000	1.05E-04	1.47E-06	1.24E-06	1.24E-06	4.06E-03	0.00E+00	4.17E-03
418000	1.07E-04	1.48E-06	1.25E-06	1.25E-06	4.08E-03	0.00E+00	4.20E-03
420000	1.10E-04	1.49E-06	1.26E-06	1.26E-06	4.12E-03	0.00E+00	4.23E-03
422000	1.12E-04	1.49E-06	1.26E-06	1.26E-06	4.18E-03	0.00E+00	4.29E-03
424000	1.14E-04	1.50E-06	1.27E-06	1.27E-06	4.26E-03	0.00E+00	4.38E-03
426000	1.15E-04	1.50E-06	1.27E-06	1.27E-06	4.37E-03	0.00E+00	4.48E-03
428000	1.16E-04	1.50E-06	1.27E-06	1.27E-06	4.49E-03	0.00E+00	4.61E-03
430000	1.16E-04	1.50E-06	1.28E-06	1.28E-06	4.63E-03	0.00E+00	4.75E-03
432000	1.17E-04	1.50E-06	1.28E-06	1.28E-06	4.77E-03	0.00E+00	4.89E-03
434000	1.17E-04	1.50E-06	1.28E-06	1.28E-06	4.91E-03	0.00E+00	5.03E-03
436000	1.17E-04	1.50E-06	1.28E-06	1.28E-06	5.03E-03	0.00E+00	5.16E-03
438000	1.17E-04	1.50E-06	1.28E-06	1.28E-06	5.14E-03	0.00E+00	5.26E-03
440000	1.18E-04	1.51E-06	1.28E-06	1.28E-06	5.23E-03	0.00E+00	5.35E-03
442000	1.18E-04	1.51E-06	1.28E-06	1.28E-06	5.29E-03	0.00E+00	5.41E-03
444000	1.18E-04	1.51E-06	1.28E-06	1.28E-06	5.34E-03	0.00E+00	5.46E-03
446000	1.18E-04	1.52E-06	1.28E-06	1.28E-06	5.38E-03	0.00E+00	5.50E-03
448000	1.18E-04	1.52E-06	1.28E-06	1.28E-06	5.40E-03	0.00E+00	5.52E-03
450000	1.18E-04	1.53E-06	1.29E-06	1.29E-06	5.42E-03	0.00E+00	5.54E-03
452000	1.18E-04	1.54E-06	1.29E-06	1.29E-06	5.43E-03	0.00E+00	5.55E-03
454000	1.18E-04	1.54E-06	1.29E-06	1.29E-06	5.43E-03	0.00E+00	5.56E-03
456000	1.18E-04	1.55E-06	1.30E-06	1.30E-06	5.44E-03	0.00E+00	5.56E-03

458000	1.18E-04	1.56E-06	1.31E-06	1.31E-06	5.44E-03	0.00E+00	5.56E-03
460000	1.18E-04	1.57E-06	1.31E-06	1.31E-06	5.44E-03	0.00E+00	5.56E-03
462000	1.18E-04	1.57E-06	1.32E-06	1.32E-06	5.44E-03	0.00E+00	5.56E-03
464000	1.18E-04	1.58E-06	1.33E-06	1.33E-06	5.44E-03	0.00E+00	5.56E-03
466000	1.18E-04	1.59E-06	1.33E-06	1.33E-06	5.44E-03	0.00E+00	5.56E-03
468000	1.18E-04	1.60E-06	1.33E-06	1.33E-06	5.44E-03	0.00E+00	5.56E-03
470000	1.18E-04	1.62E-06	1.34E-06	1.34E-06	5.44E-03	0.00E+00	5.56E-03
472000	1.18E-04	1.63E-06	1.34E-06	1.34E-06	5.44E-03	0.00E+00	5.56E-03
474000	1.18E-04	1.65E-06	1.34E-06	1.34E-06	5.44E-03	0.00E+00	5.56E-03
476000	1.19E-04	1.66E-06	1.34E-06	1.34E-06	5.44E-03	0.00E+00	5.57E-03
478000	1.20E-04	1.68E-06	1.34E-06	1.34E-06	5.44E-03	0.00E+00	5.57E-03
480000	1.21E-04	1.69E-06	1.34E-06	1.34E-06	5.44E-03	0.00E+00	5.57E-03
482000	1.23E-04	1.71E-06	1.34E-06	1.34E-06	5.44E-03	0.00E+00	5.57E-03
484000	1.25E-04	1.72E-06	1.34E-06	1.34E-06	5.45E-03	0.00E+00	5.58E-03
486000	1.27E-04	1.73E-06	1.35E-06	1.35E-06	5.46E-03	0.00E+00	5.59E-03
488000	1.30E-04	1.73E-06	1.35E-06	1.35E-06	5.48E-03	0.00E+00	5.61E-03
490000	1.32E-04	1.74E-06	1.35E-06	1.35E-06	5.51E-03	0.00E+00	5.64E-03
492000	1.34E-04	1.74E-06	1.35E-06	1.35E-06	5.56E-03	0.00E+00	5.69E-03
494000	1.35E-04	1.75E-06	1.35E-06	1.35E-06	5.62E-03	0.00E+00	5.76E-03
496000	1.37E-04	1.75E-06	1.35E-06	1.35E-06	5.71E-03	0.00E+00	5.85E-03
498000	1.38E-04	1.75E-06	1.36E-06	1.36E-06	5.81E-03	0.00E+00	5.95E-03
500000	1.38E-04	1.75E-06	1.36E-06	1.36E-06	5.92E-03	0.00E+00	6.06E-03
502000	1.39E-04	1.76E-06	1.36E-06	1.36E-06	6.03E-03	0.00E+00	6.17E-03
504000	1.39E-04	1.76E-06	1.37E-06	1.37E-06	6.13E-03	0.00E+00	6.27E-03
506000	1.39E-04	1.77E-06	1.37E-06	1.37E-06	6.22E-03	0.00E+00	6.37E-03
508000	1.40E-04	1.77E-06	1.38E-06	1.38E-06	6.30E-03	0.00E+00	6.44E-03
510000	1.40E-04	1.78E-06	1.38E-06	1.38E-06	6.36E-03	0.00E+00	6.51E-03
512000	1.40E-04	1.78E-06	1.38E-06	1.38E-06	6.41E-03	0.00E+00	6.55E-03
514000	1.40E-04	1.79E-06	1.38E-06	1.38E-06	6.44E-03	0.00E+00	6.59E-03
516000	1.40E-04	1.79E-06	1.38E-06	1.38E-06	6.47E-03	0.00E+00	6.61E-03
518000	1.40E-04	1.80E-06	1.39E-06	1.39E-06	6.48E-03	0.00E+00	6.63E-03
520000	1.40E-04	1.80E-06	1.39E-06	1.39E-06	6.50E-03	0.00E+00	6.64E-03
522000	1.40E-04	1.81E-06	1.39E-06	1.39E-06	6.50E-03	0.00E+00	6.65E-03
524000	1.40E-04	1.81E-06	1.39E-06	1.39E-06	6.51E-03	0.00E+00	6.65E-03
526000	1.40E-04	1.82E-06	1.39E-06	1.39E-06	6.51E-03	0.00E+00	6.65E-03
528000	1.40E-04	1.83E-06	1.39E-06	1.39E-06	6.51E-03	0.00E+00	6.65E-03
530000	1.40E-04	1.84E-06	1.39E-06	1.39E-06	6.51E-03	0.00E+00	6.66E-03
532000	1.40E-04	1.85E-06	1.39E-06	1.39E-06	6.51E-03	0.00E+00	6.66E-03
534000	1.40E-04	1.86E-06	1.39E-06	1.39E-06	6.51E-03	0.00E+00	6.66E-03
536000	1.41E-04	1.87E-06	1.39E-06	1.39E-06	6.51E-03	0.00E+00	6.66E-03
538000	1.41E-04	1.89E-06	1.39E-06	1.39E-06	6.51E-03	0.00E+00	6.66E-03
540000	1.42E-04	1.90E-06	1.39E-06	1.39E-06	6.51E-03	0.00E+00	6.66E-03
542000	1.44E-04	1.91E-06	1.40E-06	1.40E-06	6.52E-03	0.00E+00	6.67E-03
544000	1.45E-04	1.92E-06	1.40E-06	1.40E-06	6.53E-03	0.00E+00	6.68E-03
546000	1.47E-04	1.92E-06	1.40E-06	1.40E-06	6.54E-03	0.00E+00	6.69E-03
548000	1.49E-04	1.93E-06	1.40E-06	1.40E-06	6.57E-03	0.00E+00	6.72E-03
550000	1.51E-04	1.93E-06	1.41E-06	1.41E-06	6.61E-03	0.00E+00	6.76E-03

552000	1.53E-04	1.94E-06	1.41E-06	1.41E-06	6.66E-03	0.00E+00	6.82E-03
554000	1.54E-04	1.94E-06	1.41E-06	1.41E-06	6.73E-03	0.00E+00	6.89E-03
556000	1.55E-04	1.95E-06	1.41E-06	1.41E-06	6.82E-03	0.00E+00	6.98E-03
558000	1.56E-04	1.95E-06	1.41E-06	1.41E-06	6.91E-03	0.00E+00	7.07E-03
560000	1.57E-04	1.95E-06	1.41E-06	1.41E-06	7.00E-03	0.00E+00	7.16E-03
562000	1.57E-04	1.96E-06	1.41E-06	1.41E-06	7.09E-03	0.00E+00	7.25E-03
564000	1.58E-04	1.96E-06	1.41E-06	1.41E-06	7.16E-03	0.00E+00	7.32E-03
566000	1.58E-04	1.97E-06	1.41E-06	1.41E-06	7.23E-03	0.00E+00	7.39E-03
568000	1.58E-04	1.97E-06	1.41E-06	1.41E-06	7.28E-03	0.00E+00	7.44E-03
570000	1.58E-04	1.97E-06	1.41E-06	1.41E-06	7.32E-03	0.00E+00	7.48E-03
572000	1.58E-04	1.98E-06	1.41E-06	1.41E-06	7.35E-03	0.00E+00	7.51E-03
574000	1.58E-04	1.98E-06	1.41E-06	1.41E-06	7.37E-03	0.00E+00	7.53E-03
576000	1.58E-04	1.99E-06	1.41E-06	1.41E-06	7.38E-03	0.00E+00	7.55E-03
578000	1.58E-04	1.99E-06	1.41E-06	1.41E-06	7.39E-03	0.00E+00	7.55E-03
580000	1.58E-04	2.00E-06	1.42E-06	1.42E-06	7.40E-03	0.00E+00	7.56E-03
582000	1.58E-04	2.00E-06	1.42E-06	1.42E-06	7.40E-03	0.00E+00	7.56E-03
584000	1.58E-04	2.01E-06	1.42E-06	1.42E-06	7.40E-03	0.00E+00	7.57E-03
586000	1.59E-04	2.02E-06	1.42E-06	1.42E-06	7.40E-03	0.00E+00	7.57E-03
588000	1.59E-04	2.03E-06	1.42E-06	1.42E-06	7.40E-03	0.00E+00	7.57E-03
590000	1.59E-04	2.04E-06	1.42E-06	1.42E-06	7.41E-03	0.00E+00	7.57E-03
592000	1.60E-04	2.05E-06	1.42E-06	1.42E-06	7.41E-03	0.00E+00	7.57E-03
594000	1.61E-04	2.06E-06	1.42E-06	1.42E-06	7.41E-03	0.00E+00	7.58E-03
596000	1.62E-04	2.07E-06	1.42E-06	1.42E-06	7.42E-03	0.00E+00	7.59E-03
598000	1.64E-04	2.08E-06	1.43E-06	1.43E-06	7.44E-03	0.00E+00	7.61E-03
600000	1.65E-04	2.08E-06	1.43E-06	1.43E-06	7.47E-03	0.00E+00	7.64E-03
602000	1.67E-04	2.09E-06	1.43E-06	1.43E-06	7.51E-03	0.00E+00	7.68E-03
604000	1.69E-04	2.09E-06	1.43E-06	1.43E-06	7.57E-03	0.00E+00	7.74E-03
606000	1.70E-04	2.10E-06	1.43E-06	1.43E-06	7.64E-03	0.00E+00	7.81E-03
608000	1.71E-04	2.10E-06	1.43E-06	1.43E-06	7.72E-03	0.00E+00	7.89E-03
610000	1.72E-04	2.11E-06	1.43E-06	1.43E-06	7.80E-03	0.00E+00	7.98E-03
612000	1.73E-04	2.11E-06	1.43E-06	1.43E-06	7.88E-03	0.00E+00	8.06E-03
614000	1.74E-04	2.11E-06	1.43E-06	1.43E-06	7.95E-03	0.00E+00	8.13E-03
616000	1.74E-04	2.12E-06	1.43E-06	1.43E-06	8.01E-03	0.00E+00	8.19E-03
618000	1.75E-04	2.12E-06	1.43E-06	1.43E-06	8.06E-03	0.00E+00	8.24E-03
620000	1.75E-04	2.12E-06	1.43E-06	1.43E-06	8.11E-03	0.00E+00	8.29E-03
622000	1.75E-04	2.13E-06	1.43E-06	1.43E-06	8.14E-03	0.00E+00	8.32E-03
624000	1.75E-04	2.13E-06	1.43E-06	1.43E-06	8.16E-03	0.00E+00	8.34E-03
626000	1.75E-04	2.14E-06	1.43E-06	1.43E-06	8.17E-03	0.00E+00	8.35E-03
628000	1.75E-04	2.14E-06	1.43E-06	1.43E-06	8.18E-03	0.00E+00	8.36E-03
630000	1.75E-04	2.15E-06	1.43E-06	1.43E-06	8.19E-03	0.00E+00	8.37E-03
632000	1.75E-04	2.15E-06	1.43E-06	1.43E-06	8.19E-03	0.00E+00	8.37E-03
634000	1.75E-04	2.16E-06	1.43E-06	1.43E-06	8.20E-03	0.00E+00	8.38E-03
636000	1.75E-04	2.17E-06	1.43E-06	1.43E-06	8.20E-03	0.00E+00	8.38E-03
638000	1.76E-04	2.18E-06	1.43E-06	1.43E-06	8.20E-03	0.00E+00	8.38E-03
640000	1.76E-04	2.19E-06	1.43E-06	1.43E-06	8.21E-03	0.00E+00	8.39E-03
642000	1.77E-04	2.20E-06	1.43E-06	1.43E-06	8.21E-03	0.00E+00	8.40E-03
644000	1.79E-04	2.21E-06	1.43E-06	1.43E-06	8.23E-03	0.00E+00	8.41E-03

646000	1.80E-04	2.21E-06	1.43E-06	1.43E-06	8.26E-03	0.00E+00	8.44E-03
648000	1.81E-04	2.22E-06	1.43E-06	1.43E-06	8.30E-03	0.00E+00	8.48E-03
650000	1.83E-04	2.23E-06	1.43E-06	1.43E-06	8.35E-03	0.00E+00	8.54E-03
652000	1.85E-04	2.23E-06	1.43E-06	1.43E-06	8.41E-03	0.00E+00	8.60E-03
654000	1.86E-04	2.24E-06	1.43E-06	1.43E-06	8.48E-03	0.00E+00	8.67E-03
656000	1.87E-04	2.24E-06	1.43E-06	1.43E-06	8.55E-03	0.00E+00	8.75E-03
658000	1.88E-04	2.24E-06	1.43E-06	1.43E-06	8.62E-03	0.00E+00	8.82E-03
660000	1.89E-04	2.25E-06	1.43E-06	1.43E-06	8.69E-03	0.00E+00	8.88E-03
662000	1.89E-04	2.25E-06	1.43E-06	1.43E-06	8.75E-03	0.00E+00	8.94E-03
664000	1.90E-04	2.25E-06	1.43E-06	1.43E-06	8.79E-03	0.00E+00	8.99E-03
666000	1.90E-04	2.26E-06	1.43E-06	1.43E-06	8.83E-03	0.00E+00	9.03E-03
668000	1.90E-04	2.26E-06	1.43E-06	1.43E-06	8.86E-03	0.00E+00	9.05E-03
670000	1.90E-04	2.26E-06	1.43E-06	1.43E-06	8.88E-03	0.00E+00	9.07E-03
672000	1.90E-04	2.27E-06	1.43E-06	1.43E-06	8.89E-03	0.00E+00	9.09E-03
674000	1.90E-04	2.27E-06	1.43E-06	1.43E-06	8.90E-03	0.00E+00	9.10E-03
676000	1.90E-04	2.28E-06	1.43E-06	1.43E-06	8.91E-03	0.00E+00	9.10E-03
678000	1.91E-04	2.28E-06	1.43E-06	1.43E-06	8.91E-03	0.00E+00	9.11E-03
680000	1.91E-04	2.29E-06	1.43E-06	1.43E-06	8.91E-03	0.00E+00	9.11E-03
682000	1.91E-04	2.30E-06	1.43E-06	1.43E-06	8.92E-03	0.00E+00	9.12E-03
684000	1.92E-04	2.31E-06	1.43E-06	1.43E-06	8.93E-03	0.00E+00	9.13E-03
686000	1.92E-04	2.32E-06	1.43E-06	1.43E-06	8.94E-03	0.00E+00	9.14E-03
688000	1.94E-04	2.33E-06	1.43E-06	1.43E-06	8.97E-03	0.00E+00	9.17E-03
690000	1.95E-04	2.34E-06	1.43E-06	1.43E-06	9.01E-03	0.00E+00	9.21E-03
692000	1.96E-04	2.35E-06	1.43E-06	1.43E-06	9.05E-03	0.00E+00	9.26E-03
694000	1.98E-04	2.35E-06	1.43E-06	1.43E-06	9.11E-03	0.00E+00	9.32E-03
696000	1.99E-04	2.36E-06	1.43E-06	1.43E-06	9.18E-03	0.00E+00	9.38E-03
698000	2.01E-04	2.36E-06	1.42E-06	1.42E-06	9.25E-03	0.00E+00	9.45E-03
700000	2.02E-04	2.37E-06	1.42E-06	1.42E-06	9.31E-03	0.00E+00	9.52E-03
702000	2.03E-04	2.37E-06	1.42E-06	1.42E-06	9.38E-03	0.00E+00	9.58E-03
704000	2.04E-04	2.37E-06	1.42E-06	1.42E-06	9.43E-03	0.00E+00	9.64E-03
706000	2.04E-04	2.38E-06	1.42E-06	1.42E-06	9.47E-03	0.00E+00	9.68E-03
708000	2.05E-04	2.38E-06	1.42E-06	1.42E-06	9.51E-03	0.00E+00	9.72E-03
710000	2.05E-04	2.38E-06	1.42E-06	1.42E-06	9.53E-03	0.00E+00	9.74E-03
712000	2.05E-04	2.39E-06	1.42E-06	1.42E-06	9.55E-03	0.00E+00	9.76E-03
714000	2.05E-04	2.39E-06	1.42E-06	1.42E-06	9.56E-03	0.00E+00	9.78E-03
716000	2.05E-04	2.40E-06	1.42E-06	1.42E-06	9.57E-03	0.00E+00	9.78E-03
718000	2.05E-04	2.40E-06	1.42E-06	1.42E-06	9.58E-03	0.00E+00	9.79E-03
720000	2.05E-04	2.41E-06	1.42E-06	1.42E-06	9.59E-03	0.00E+00	9.80E-03
722000	2.06E-04	2.42E-06	1.42E-06	1.42E-06	9.59E-03	0.00E+00	9.80E-03
724000	2.06E-04	2.43E-06	1.42E-06	1.42E-06	9.60E-03	0.00E+00	9.81E-03
726000	2.07E-04	2.44E-06	1.42E-06	1.42E-06	9.62E-03	0.00E+00	9.83E-03
728000	2.08E-04	2.45E-06	1.42E-06	1.42E-06	9.65E-03	0.00E+00	9.86E-03
730000	2.09E-04	2.46E-06	1.42E-06	1.42E-06	9.69E-03	0.00E+00	9.90E-03
732000	2.10E-04	2.47E-06	1.42E-06	1.42E-06	9.74E-03	0.00E+00	9.95E-03
734000	2.12E-04	2.48E-06	1.42E-06	1.42E-06	9.80E-03	0.00E+00	1.00E-02
736000	2.13E-04	2.48E-06	1.42E-06	1.42E-06	9.86E-03	0.00E+00	1.01E-02
738000	2.15E-04	2.49E-06	1.42E-06	1.42E-06	9.93E-03	0.00E+00	1.02E-02

740000	2.16E-04	2.50E-06	1.42E-06	1.42E-06	9.99E-03	0.00E+00	1.02E-02
742000	2.17E-04	2.50E-06	1.42E-06	1.42E-06	1.01E-02	0.00E+00	1.03E-02
744000	2.18E-04	2.50E-06	1.42E-06	1.42E-06	1.01E-02	0.00E+00	1.03E-02
746000	2.19E-04	2.51E-06	1.42E-06	1.42E-06	1.01E-02	0.00E+00	1.04E-02
748000	2.19E-04	2.51E-06	1.42E-06	1.42E-06	1.02E-02	0.00E+00	1.04E-02
750000	2.20E-04	2.52E-06	1.42E-06	1.42E-06	1.02E-02	0.00E+00	1.04E-02
752000	2.20E-04	2.52E-06	1.42E-06	1.42E-06	1.02E-02	0.00E+00	1.04E-02
754000	2.20E-04	2.53E-06	1.42E-06	1.42E-06	1.02E-02	0.00E+00	1.05E-02
756000	2.20E-04	2.53E-06	1.42E-06	1.42E-06	1.02E-02	0.00E+00	1.05E-02
758000	2.21E-04	2.54E-06	1.42E-06	1.42E-06	1.02E-02	0.00E+00	1.05E-02
760000	2.21E-04	2.55E-06	1.42E-06	1.42E-06	1.03E-02	0.00E+00	1.05E-02
762000	2.21E-04	2.56E-06	1.42E-06	1.42E-06	1.03E-02	0.00E+00	1.05E-02
764000	2.22E-04	2.57E-06	1.42E-06	1.42E-06	1.03E-02	0.00E+00	1.05E-02
766000	2.23E-04	2.58E-06	1.42E-06	1.42E-06	1.03E-02	0.00E+00	1.06E-02
768000	2.24E-04	2.59E-06	1.42E-06	1.42E-06	1.04E-02	0.00E+00	1.06E-02
770000	2.25E-04	2.61E-06	1.42E-06	1.42E-06	1.04E-02	0.00E+00	1.07E-02
772000	2.27E-04	2.62E-06	1.42E-06	1.42E-06	1.05E-02	0.00E+00	1.07E-02
774000	2.28E-04	2.63E-06	1.42E-06	1.42E-06	1.06E-02	0.00E+00	1.08E-02
776000	2.30E-04	2.63E-06	1.42E-06	1.42E-06	1.06E-02	0.00E+00	1.09E-02
778000	2.31E-04	2.64E-06	1.41E-06	1.41E-06	1.07E-02	0.00E+00	1.09E-02
780000	2.33E-04	2.65E-06	1.41E-06	1.41E-06	1.07E-02	0.00E+00	1.10E-02
782000	2.34E-04	2.65E-06	1.41E-06	1.41E-06	1.08E-02	0.00E+00	1.10E-02
784000	2.35E-04	2.66E-06	1.41E-06	1.41E-06	1.08E-02	0.00E+00	1.11E-02
786000	2.35E-04	2.66E-06	1.41E-06	1.41E-06	1.08E-02	0.00E+00	1.11E-02
788000	2.36E-04	2.66E-06	1.41E-06	1.41E-06	1.09E-02	0.00E+00	1.11E-02
790000	2.36E-04	2.67E-06	1.41E-06	1.41E-06	1.09E-02	0.00E+00	1.11E-02
792000	2.36E-04	2.68E-06	1.41E-06	1.41E-06	1.09E-02	0.00E+00	1.11E-02
794000	2.36E-04	2.68E-06	1.41E-06	1.41E-06	1.09E-02	0.00E+00	1.11E-02
796000	2.37E-04	2.69E-06	1.41E-06	1.41E-06	1.09E-02	0.00E+00	1.12E-02
798000	2.37E-04	2.70E-06	1.41E-06	1.41E-06	1.09E-02	0.00E+00	1.12E-02
800000	2.38E-04	2.72E-06	1.41E-06	1.41E-06	1.10E-02	0.00E+00	1.12E-02
802000	2.39E-04	2.73E-06	1.41E-06	1.41E-06	1.10E-02	0.00E+00	1.13E-02
804000	2.40E-04	2.74E-06	1.41E-06	1.41E-06	1.11E-02	0.00E+00	1.13E-02
806000	2.41E-04	2.76E-06	1.41E-06	1.41E-06	1.11E-02	0.00E+00	1.14E-02
808000	2.43E-04	2.77E-06	1.41E-06	1.41E-06	1.12E-02	0.00E+00	1.14E-02
810000	2.45E-04	2.78E-06	1.41E-06	1.41E-06	1.13E-02	0.00E+00	1.15E-02
812000	2.46E-04	2.79E-06	1.41E-06	1.41E-06	1.13E-02	0.00E+00	1.16E-02
814000	2.48E-04	2.79E-06	1.41E-06	1.41E-06	1.14E-02	0.00E+00	1.16E-02
816000	2.49E-04	2.80E-06	1.41E-06	1.41E-06	1.14E-02	0.00E+00	1.17E-02
818000	2.50E-04	2.81E-06	1.41E-06	1.41E-06	1.15E-02	0.00E+00	1.17E-02
820000	2.51E-04	2.81E-06	1.41E-06	1.41E-06	1.15E-02	0.00E+00	1.17E-02
822000	2.51E-04	2.81E-06	1.41E-06	1.41E-06	1.15E-02	0.00E+00	1.18E-02
824000	2.52E-04	2.82E-06	1.41E-06	1.41E-06	1.15E-02	0.00E+00	1.18E-02
826000	2.52E-04	2.82E-06	1.41E-06	1.41E-06	1.15E-02	0.00E+00	1.18E-02
828000	2.52E-04	2.83E-06	1.41E-06	1.41E-06	1.15E-02	0.00E+00	1.18E-02
830000	2.53E-04	2.84E-06	1.41E-06	1.41E-06	1.16E-02	0.00E+00	1.18E-02
832000	2.53E-04	2.85E-06	1.41E-06	1.41E-06	1.16E-02	0.00E+00	1.19E-02

834000	2.54E-04	2.86E-06	1.41E-06	1.41E-06	1.16E-02	0.00E+00	1.19E-02
836000	2.55E-04	2.87E-06	1.41E-06	1.41E-06	1.17E-02	0.00E+00	1.19E-02
838000	2.56E-04	2.89E-06	1.41E-06	1.41E-06	1.17E-02	0.00E+00	1.20E-02
840000	2.58E-04	2.90E-06	1.41E-06	1.41E-06	1.18E-02	0.00E+00	1.21E-02
842000	2.59E-04	2.91E-06	1.41E-06	1.41E-06	1.19E-02	0.00E+00	1.21E-02
844000	2.61E-04	2.93E-06	1.41E-06	1.41E-06	1.19E-02	0.00E+00	1.22E-02
846000	2.63E-04	2.94E-06	1.41E-06	1.41E-06	1.20E-02	0.00E+00	1.23E-02
848000	2.64E-04	2.95E-06	1.41E-06	1.41E-06	1.20E-02	0.00E+00	1.23E-02
850000	2.65E-04	2.95E-06	1.41E-06	1.41E-06	1.21E-02	0.00E+00	1.24E-02
852000	2.66E-04	2.96E-06	1.41E-06	1.41E-06	1.21E-02	0.00E+00	1.24E-02
854000	2.67E-04	2.96E-06	1.41E-06	1.41E-06	1.21E-02	0.00E+00	1.24E-02
856000	2.68E-04	2.97E-06	1.41E-06	1.41E-06	1.22E-02	0.00E+00	1.24E-02
858000	2.68E-04	2.97E-06	1.41E-06	1.41E-06	1.22E-02	0.00E+00	1.25E-02
860000	2.69E-04	2.98E-06	1.41E-06	1.41E-06	1.22E-02	0.00E+00	1.25E-02
862000	2.69E-04	2.99E-06	1.41E-06	1.41E-06	1.22E-02	0.00E+00	1.25E-02
864000	2.70E-04	3.00E-06	1.41E-06	1.41E-06	1.23E-02	0.00E+00	1.25E-02
866000	2.70E-04	3.01E-06	1.41E-06	1.41E-06	1.23E-02	0.00E+00	1.26E-02
868000	2.72E-04	3.02E-06	1.42E-06	1.42E-06	1.24E-02	0.00E+00	1.26E-02
870000	2.73E-04	3.04E-06	1.42E-06	1.42E-06	1.24E-02	0.00E+00	1.27E-02
872000	2.75E-04	3.05E-06	1.42E-06	1.42E-06	1.25E-02	0.00E+00	1.28E-02
874000	2.76E-04	3.07E-06	1.42E-06	1.42E-06	1.26E-02	0.00E+00	1.28E-02
876000	2.78E-04	3.08E-06	1.42E-06	1.42E-06	1.26E-02	0.00E+00	1.29E-02
878000	2.80E-04	3.10E-06	1.42E-06	1.42E-06	1.27E-02	0.00E+00	1.30E-02
880000	2.81E-04	3.11E-06	1.42E-06	1.42E-06	1.27E-02	0.00E+00	1.30E-02
882000	2.82E-04	3.12E-06	1.42E-06	1.42E-06	1.28E-02	0.00E+00	1.31E-02
884000	2.83E-04	3.12E-06	1.42E-06	1.42E-06	1.28E-02	0.00E+00	1.31E-02
886000	2.84E-04	3.13E-06	1.42E-06	1.42E-06	1.28E-02	0.00E+00	1.31E-02
888000	2.85E-04	3.14E-06	1.42E-06	1.42E-06	1.28E-02	0.00E+00	1.31E-02
890000	2.85E-04	3.14E-06	1.42E-06	1.42E-06	1.29E-02	0.00E+00	1.32E-02
892000	2.86E-04	3.15E-06	1.42E-06	1.42E-06	1.29E-02	0.00E+00	1.32E-02
894000	2.87E-04	3.16E-06	1.42E-06	1.42E-06	1.29E-02	0.00E+00	1.32E-02
896000	2.88E-04	3.17E-06	1.42E-06	1.42E-06	1.30E-02	0.00E+00	1.33E-02
898000	2.89E-04	3.19E-06	1.42E-06	1.42E-06	1.31E-02	0.00E+00	1.34E-02
900000	2.90E-04	3.20E-06	1.42E-06	1.42E-06	1.31E-02	0.00E+00	1.34E-02
902000	2.92E-04	3.22E-06	1.42E-06	1.42E-06	1.32E-02	0.00E+00	1.35E-02
904000	2.94E-04	3.24E-06	1.42E-06	1.42E-06	1.33E-02	0.00E+00	1.36E-02
906000	2.96E-04	3.26E-06	1.42E-06	1.42E-06	1.33E-02	0.00E+00	1.36E-02
908000	2.97E-04	3.28E-06	1.42E-06	1.42E-06	1.34E-02	0.00E+00	1.37E-02
910000	2.99E-04	3.29E-06	1.42E-06	1.42E-06	1.34E-02	0.00E+00	1.37E-02
912000	3.00E-04	3.30E-06	1.43E-06	1.43E-06	1.35E-02	0.00E+00	1.38E-02
914000	3.01E-04	3.31E-06	1.43E-06	1.43E-06	1.35E-02	0.00E+00	1.38E-02
916000	3.02E-04	3.32E-06	1.43E-06	1.43E-06	1.35E-02	0.00E+00	1.38E-02
918000	3.03E-04	3.33E-06	1.43E-06	1.43E-06	1.36E-02	0.00E+00	1.39E-02
920000	3.03E-04	3.34E-06	1.43E-06	1.43E-06	1.36E-02	0.00E+00	1.39E-02
922000	3.04E-04	3.35E-06	1.43E-06	1.43E-06	1.36E-02	0.00E+00	1.40E-02
924000	3.05E-04	3.36E-06	1.44E-06	1.44E-06	1.37E-02	0.00E+00	1.40E-02
926000	3.07E-04	3.38E-06	1.44E-06	1.44E-06	1.38E-02	0.00E+00	1.41E-02

928000	3.08E-04	3.39E-06	1.44E-06	1.44E-06	1.38E-02	0.00E+00	1.41E-02
930000	3.10E-04	3.41E-06	1.44E-06	1.44E-06	1.39E-02	0.00E+00	1.42E-02
932000	3.12E-04	3.43E-06	1.44E-06	1.44E-06	1.40E-02	0.00E+00	1.43E-02
934000	3.14E-04	3.45E-06	1.44E-06	1.44E-06	1.40E-02	0.00E+00	1.44E-02
936000	3.16E-04	3.47E-06	1.44E-06	1.44E-06	1.41E-02	0.00E+00	1.44E-02
938000	3.17E-04	3.49E-06	1.44E-06	1.44E-06	1.41E-02	0.00E+00	1.45E-02
940000	3.18E-04	3.51E-06	1.44E-06	1.44E-06	1.42E-02	0.00E+00	1.45E-02
942000	3.20E-04	3.52E-06	1.44E-06	1.44E-06	1.42E-02	0.00E+00	1.46E-02
944000	3.20E-04	3.54E-06	1.44E-06	1.44E-06	1.43E-02	0.00E+00	1.46E-02
946000	3.21E-04	3.55E-06	1.44E-06	1.44E-06	1.43E-02	0.00E+00	1.46E-02
948000	3.22E-04	3.56E-06	1.44E-06	1.44E-06	1.43E-02	0.00E+00	1.47E-02
950000	3.23E-04	3.57E-06	1.44E-06	1.44E-06	1.44E-02	0.00E+00	1.47E-02
952000	3.25E-04	3.59E-06	1.45E-06	1.45E-06	1.45E-02	0.00E+00	1.48E-02
954000	3.26E-04	3.61E-06	1.45E-06	1.45E-06	1.45E-02	0.00E+00	1.49E-02
956000	3.28E-04	3.62E-06	1.45E-06	1.45E-06	1.46E-02	0.00E+00	1.49E-02
958000	3.30E-04	3.64E-06	1.45E-06	1.45E-06	1.47E-02	0.00E+00	1.50E-02
960000	3.32E-04	3.66E-06	1.46E-06	1.46E-06	1.47E-02	0.00E+00	1.51E-02
962000	3.33E-04	3.68E-06	1.46E-06	1.46E-06	1.48E-02	0.00E+00	1.51E-02
964000	3.35E-04	3.70E-06	1.46E-06	1.46E-06	1.48E-02	0.00E+00	1.52E-02
966000	3.36E-04	3.72E-06	1.46E-06	1.46E-06	1.49E-02	0.00E+00	1.52E-02
968000	3.37E-04	3.73E-06	1.46E-06	1.46E-06	1.49E-02	0.00E+00	1.53E-02
970000	3.39E-04	3.75E-06	1.46E-06	1.46E-06	1.50E-02	0.00E+00	1.53E-02
972000	3.40E-04	3.77E-06	1.46E-06	1.46E-06	1.50E-02	0.00E+00	1.54E-02
974000	3.41E-04	3.78E-06	1.46E-06	1.46E-06	1.51E-02	0.00E+00	1.54E-02
976000	3.42E-04	3.80E-06	1.46E-06	1.46E-06	1.51E-02	0.00E+00	1.55E-02
978000	3.44E-04	3.82E-06	1.46E-06	1.46E-06	1.52E-02	0.00E+00	1.55E-02
980000	3.45E-04	3.84E-06	1.46E-06	1.46E-06	1.53E-02	0.00E+00	1.56E-02
982000	3.47E-04	3.86E-06	1.47E-06	1.47E-06	1.53E-02	0.00E+00	1.57E-02
984000	3.49E-04	3.88E-06	1.47E-06	1.47E-06	1.54E-02	0.00E+00	1.58E-02
986000	3.51E-04	3.90E-06	1.47E-06	1.47E-06	1.55E-02	0.00E+00	1.58E-02
988000	3.53E-04	3.92E-06	1.48E-06	1.48E-06	1.55E-02	0.00E+00	1.59E-02
990000	3.54E-04	3.94E-06	1.48E-06	1.48E-06	1.56E-02	0.00E+00	1.59E-02
992000	3.55E-04	3.96E-06	1.49E-06	1.49E-06	1.56E-02	0.00E+00	1.60E-02
994000	3.57E-04	3.97E-06	1.50E-06	1.50E-06	1.57E-02	0.00E+00	1.60E-02
996000	3.58E-04	3.99E-06	1.51E-06	1.51E-06	1.57E-02	0.00E+00	1.61E-02
998000	3.59E-04	4.01E-06	1.52E-06	1.52E-06	1.58E-02	0.00E+00	1.61E-02
1000000	3.60E-04	4.03E-06	1.52E-06	1.52E-06	1.58E-02	0.00E+00	1.62E-02

Uranium Soil Concentrations Combined Case, Wet Climate
Amargosa Farms, 2003 Pumping

Time (yr)	Soil Concentration (g/square m)						
	U-235	U-233	U-236	U-234	U-238	U-232	Total
250	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
4000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
6000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
8000	9.99E-22	9.74E-24	1.20E-23	1.20E-23	4.13E-20	4.63E-117	4.24E-20
10000	1.78E-14	1.74E-16	2.14E-16	2.14E-16	7.38E-13	1.01E-109	7.57E-13
12000	2.26E-10	2.20E-12	2.71E-12	2.71E-12	9.35E-09	1.47E-105	9.59E-09
14000	5.55E-08	5.41E-10	6.64E-10	6.64E-10	2.30E-06	3.77E-103	2.35E-06
16000	1.25E-06	1.22E-08	1.50E-08	1.50E-08	5.19E-05	7.48E-102	5.32E-05
18000	6.37E-06	6.21E-08	7.63E-08	7.63E-08	2.64E-04	2.66E-101	2.70E-04
20000	1.31E-05	1.28E-07	1.57E-07	1.57E-07	5.43E-04	2.83E-101	5.57E-04
22000	1.68E-05	1.65E-07	2.01E-07	2.01E-07	6.95E-04	1.25E-101	7.12E-04
24000	1.78E-05	1.80E-07	2.13E-07	2.13E-07	7.37E-04	2.89E-102	7.56E-04
26000	1.80E-05	1.90E-07	2.15E-07	2.15E-07	7.44E-04	4.04E-103	7.63E-04
28000	1.80E-05	1.99E-07	2.15E-07	2.15E-07	7.45E-04	3.82E-104	7.63E-04
30000	1.80E-05	2.05E-07	2.15E-07	2.15E-07	7.45E-04	2.65E-105	7.63E-04
32000	1.80E-05	2.07E-07	2.15E-07	2.15E-07	7.45E-04	1.43E-106	7.63E-04
34000	1.80E-05	2.08E-07	2.15E-07	2.15E-07	7.45E-04	6.31E-108	7.63E-04
36000	1.80E-05	2.09E-07	2.15E-07	2.15E-07	7.45E-04	2.34E-109	7.63E-04
38000	1.80E-05	2.09E-07	2.15E-07	2.15E-07	7.45E-04	7.55E-111	7.63E-04
40000	1.80E-05	2.09E-07	2.15E-07	2.15E-07	7.45E-04	2.16E-112	7.63E-04
42000	1.80E-05	2.09E-07	2.15E-07	2.15E-07	7.45E-04	5.51E-114	7.63E-04
44000	1.80E-05	2.09E-07	2.15E-07	2.15E-07	7.45E-04	1.70E-115	7.63E-04
46000	1.80E-05	2.09E-07	2.15E-07	2.15E-07	7.45E-04	0.00E+00	7.63E-04
48000	1.80E-05	2.09E-07	2.15E-07	2.15E-07	7.45E-04	0.00E+00	7.63E-04
50000	1.80E-05	2.09E-07	2.15E-07	2.15E-07	7.45E-04	0.00E+00	7.63E-04
52000	1.80E-05	2.09E-07	2.15E-07	2.15E-07	7.45E-04	0.00E+00	7.63E-04
54000	1.80E-05	2.09E-07	2.15E-07	2.15E-07	7.45E-04	0.00E+00	7.63E-04
56000	1.80E-05	2.09E-07	2.15E-07	2.15E-07	7.45E-04	0.00E+00	7.63E-04
58000	1.80E-05	2.09E-07	2.15E-07	2.15E-07	7.45E-04	0.00E+00	7.63E-04
60000	1.80E-05	2.09E-07	2.15E-07	2.15E-07	7.45E-04	0.00E+00	7.63E-04
62000	1.80E-05	2.09E-07	2.15E-07	2.15E-07	7.45E-04	0.00E+00	7.63E-04
64000	1.80E-05	2.09E-07	2.15E-07	2.15E-07	7.45E-04	0.00E+00	7.63E-04
66000	1.80E-05	2.09E-07	2.15E-07	2.15E-07	7.45E-04	0.00E+00	7.63E-04
68000	1.80E-05	2.09E-07	2.15E-07	2.15E-07	7.45E-04	0.00E+00	7.63E-04
70000	1.80E-05	2.09E-07	2.15E-07	2.15E-07	7.45E-04	0.00E+00	7.63E-04
72000	1.80E-05	2.09E-07	2.15E-07	2.15E-07	7.45E-04	0.00E+00	7.63E-04
74000	1.80E-05	2.09E-07	2.15E-07	2.15E-07	7.45E-04	0.00E+00	7.63E-04
76000	1.80E-05	2.09E-07	2.15E-07	2.15E-07	7.45E-04	0.00E+00	7.63E-04
78000	1.80E-05	2.09E-07	2.15E-07	2.15E-07	7.45E-04	0.00E+00	7.63E-04
80000	1.80E-05	2.09E-07	2.15E-07	2.15E-07	7.45E-04	0.00E+00	7.63E-04

82000	1.80E-05	2.09E-07	2.15E-07	2.15E-07	7.45E-04	0.00E+00	7.63E-04
84000	1.80E-05	2.09E-07	2.15E-07	2.15E-07	7.45E-04	0.00E+00	7.63E-04
86000	1.80E-05	2.09E-07	2.15E-07	2.15E-07	7.45E-04	0.00E+00	7.63E-04
88000	1.80E-05	2.09E-07	2.15E-07	2.15E-07	7.45E-04	0.00E+00	7.63E-04
90000	1.80E-05	2.09E-07	2.15E-07	2.15E-07	7.45E-04	0.00E+00	7.63E-04
92000	1.80E-05	2.09E-07	2.15E-07	2.15E-07	7.45E-04	0.00E+00	7.63E-04
94000	1.80E-05	2.09E-07	2.15E-07	2.15E-07	7.45E-04	0.00E+00	7.63E-04
96000	1.80E-05	2.09E-07	2.15E-07	2.15E-07	7.45E-04	0.00E+00	7.63E-04
98000	1.80E-05	2.09E-07	2.15E-07	2.15E-07	7.45E-04	0.00E+00	7.63E-04
100000	1.80E-05	2.09E-07	2.15E-07	2.15E-07	7.45E-04	0.00E+00	7.63E-04
102000	1.80E-05	2.09E-07	2.15E-07	2.15E-07	7.45E-04	0.00E+00	7.63E-04
104000	1.80E-05	2.09E-07	2.15E-07	2.15E-07	7.45E-04	0.00E+00	7.63E-04
106000	1.80E-05	2.09E-07	2.15E-07	2.15E-07	7.45E-04	0.00E+00	7.63E-04
108000	1.80E-05	2.09E-07	2.15E-07	2.15E-07	7.45E-04	0.00E+00	7.63E-04
110000	1.80E-05	2.09E-07	2.15E-07	2.15E-07	7.45E-04	0.00E+00	7.63E-04
112000	1.80E-05	2.09E-07	2.15E-07	2.15E-07	7.45E-04	0.00E+00	7.63E-04
114000	1.80E-05	2.09E-07	2.15E-07	2.15E-07	7.45E-04	0.00E+00	7.63E-04
116000	1.80E-05	2.09E-07	2.15E-07	2.15E-07	7.45E-04	0.00E+00	7.63E-04
118000	1.80E-05	2.09E-07	2.15E-07	2.15E-07	7.45E-04	0.00E+00	7.63E-04
120000	1.80E-05	2.09E-07	2.15E-07	2.15E-07	7.45E-04	0.00E+00	7.63E-04
122000	1.80E-05	2.09E-07	2.15E-07	2.15E-07	7.45E-04	0.00E+00	7.63E-04
124000	1.80E-05	2.09E-07	2.15E-07	2.15E-07	7.45E-04	0.00E+00	7.63E-04
126000	1.80E-05	2.09E-07	2.15E-07	2.15E-07	7.45E-04	0.00E+00	7.63E-04
128000	1.80E-05	2.09E-07	2.15E-07	2.15E-07	7.45E-04	0.00E+00	7.63E-04
130000	1.80E-05	2.09E-07	2.15E-07	2.15E-07	7.45E-04	0.00E+00	7.63E-04
132000	1.80E-05	2.09E-07	2.15E-07	2.15E-07	7.45E-04	0.00E+00	7.63E-04
134000	1.80E-05	2.09E-07	2.15E-07	2.15E-07	7.45E-04	0.00E+00	7.63E-04
136000	1.80E-05	2.09E-07	2.15E-07	2.15E-07	7.45E-04	0.00E+00	7.63E-04
138000	1.80E-05	2.09E-07	2.15E-07	2.15E-07	7.45E-04	0.00E+00	7.63E-04
140000	1.80E-05	2.09E-07	2.15E-07	2.15E-07	7.45E-04	0.00E+00	7.63E-04
142000	1.80E-05	2.09E-07	2.15E-07	2.15E-07	7.45E-04	0.00E+00	7.63E-04
144000	1.80E-05	2.09E-07	2.15E-07	2.15E-07	7.45E-04	0.00E+00	7.63E-04
146000	1.80E-05	2.09E-07	2.15E-07	2.15E-07	7.45E-04	0.00E+00	7.63E-04
148000	1.80E-05	2.09E-07	2.15E-07	2.15E-07	7.45E-04	0.00E+00	7.63E-04
150000	1.80E-05	2.09E-07	2.15E-07	2.15E-07	7.45E-04	0.00E+00	7.63E-04
152000	1.80E-05	2.09E-07	2.15E-07	2.15E-07	7.45E-04	0.00E+00	7.63E-04
154000	1.80E-05	2.09E-07	2.15E-07	2.15E-07	7.45E-04	0.00E+00	7.63E-04
156000	1.80E-05	2.09E-07	2.15E-07	2.15E-07	7.45E-04	0.00E+00	7.63E-04
158000	1.80E-05	2.09E-07	2.15E-07	2.15E-07	7.45E-04	0.00E+00	7.63E-04
160000	1.80E-05	2.09E-07	2.15E-07	2.15E-07	7.45E-04	0.00E+00	7.63E-04
162000	1.80E-05	2.09E-07	2.15E-07	2.15E-07	7.45E-04	0.00E+00	7.63E-04
164000	1.80E-05	2.09E-07	2.15E-07	2.15E-07	7.45E-04	0.00E+00	7.63E-04
166000	1.80E-05	2.09E-07	2.15E-07	2.15E-07	7.45E-04	0.00E+00	7.63E-04
168000	1.80E-05	2.09E-07	2.15E-07	2.15E-07	7.45E-04	0.00E+00	7.63E-04
170000	1.80E-05	2.09E-07	2.15E-07	2.15E-07	7.45E-04	0.00E+00	7.63E-04
172000	1.80E-05	2.09E-07	2.15E-07	2.15E-07	7.45E-04	0.00E+00	7.63E-04
174000	1.80E-05	2.09E-07	2.15E-07	2.15E-07	7.45E-04	0.00E+00	7.63E-04

176000	1.80E-05	2.09E-07	2.15E-07	2.15E-07	7.45E-04	0.00E+00	7.63E-04
178000	1.80E-05	2.09E-07	2.15E-07	2.15E-07	7.45E-04	0.00E+00	7.63E-04
180000	1.80E-05	2.09E-07	2.19E-07	2.19E-07	7.45E-04	0.00E+00	7.63E-04
182000	1.80E-05	2.09E-07	2.58E-07	2.58E-07	7.45E-04	0.00E+00	7.64E-04
184000	1.80E-05	2.09E-07	3.60E-07	3.60E-07	7.45E-04	0.00E+00	7.64E-04
186000	1.80E-05	2.09E-07	4.54E-07	4.54E-07	7.45E-04	0.00E+00	7.64E-04
188000	1.80E-05	2.09E-07	4.93E-07	4.93E-07	7.45E-04	0.00E+00	7.64E-04
190000	1.80E-05	2.09E-07	5.01E-07	5.01E-07	7.45E-04	0.00E+00	7.64E-04
192000	1.80E-05	2.09E-07	5.02E-07	5.02E-07	7.45E-04	0.00E+00	7.64E-04
194000	1.80E-05	2.09E-07	5.03E-07	5.03E-07	7.45E-04	0.00E+00	7.64E-04
196000	1.80E-05	2.09E-07	5.03E-07	5.03E-07	7.45E-04	0.00E+00	7.64E-04
198000	1.80E-05	2.09E-07	5.03E-07	5.03E-07	7.45E-04	0.00E+00	7.64E-04
200000	1.80E-05	2.09E-07	5.03E-07	5.03E-07	7.45E-04	0.00E+00	7.64E-04
202000	1.80E-05	2.09E-07	5.03E-07	5.03E-07	7.45E-04	0.00E+00	7.64E-04
204000	1.80E-05	2.09E-07	5.03E-07	5.03E-07	7.45E-04	0.00E+00	7.64E-04
206000	1.80E-05	2.09E-07	5.03E-07	5.03E-07	7.45E-04	0.00E+00	7.64E-04
208000	1.80E-05	2.09E-07	5.03E-07	5.03E-07	7.45E-04	0.00E+00	7.64E-04
210000	1.80E-05	2.09E-07	5.03E-07	5.03E-07	7.45E-04	0.00E+00	7.64E-04
212000	1.80E-05	2.09E-07	5.03E-07	5.03E-07	7.45E-04	0.00E+00	7.64E-04
214000	1.80E-05	2.09E-07	5.03E-07	5.03E-07	7.45E-04	0.00E+00	7.64E-04
216000	1.80E-05	2.09E-07	5.03E-07	5.03E-07	7.45E-04	0.00E+00	7.64E-04
218000	1.80E-05	2.09E-07	5.03E-07	5.03E-07	7.45E-04	0.00E+00	7.64E-04
220000	1.80E-05	2.10E-07	5.03E-07	5.03E-07	7.45E-04	0.00E+00	7.64E-04
222000	1.80E-05	2.14E-07	5.03E-07	5.03E-07	7.45E-04	0.00E+00	7.64E-04
224000	1.80E-05	2.23E-07	5.03E-07	5.03E-07	7.45E-04	0.00E+00	7.64E-04
226000	1.80E-05	2.35E-07	5.03E-07	5.03E-07	7.45E-04	0.00E+00	7.64E-04
228000	1.80E-05	2.44E-07	5.03E-07	5.03E-07	7.45E-04	0.00E+00	7.64E-04
230000	1.80E-05	2.49E-07	5.03E-07	5.03E-07	7.45E-04	0.00E+00	7.64E-04
232000	1.80E-05	2.51E-07	5.03E-07	5.03E-07	7.45E-04	0.00E+00	7.64E-04
234000	1.80E-05	2.52E-07	5.03E-07	5.03E-07	7.45E-04	0.00E+00	7.64E-04
236000	1.80E-05	2.52E-07	5.03E-07	5.03E-07	7.45E-04	0.00E+00	7.64E-04
238000	1.80E-05	2.52E-07	5.03E-07	5.03E-07	7.45E-04	0.00E+00	7.64E-04
240000	1.80E-05	2.52E-07	5.03E-07	5.03E-07	7.45E-04	0.00E+00	7.64E-04
242000	1.80E-05	2.52E-07	5.03E-07	5.03E-07	7.45E-04	0.00E+00	7.64E-04
244000	1.80E-05	2.52E-07	5.03E-07	5.03E-07	7.45E-04	0.00E+00	7.64E-04
246000	1.80E-05	2.52E-07	5.03E-07	5.03E-07	7.45E-04	0.00E+00	7.64E-04
248000	1.80E-05	2.52E-07	5.03E-07	5.03E-07	7.45E-04	0.00E+00	7.64E-04
250000	1.80E-05	2.52E-07	5.03E-07	5.03E-07	7.45E-04	0.00E+00	7.64E-04
252000	1.80E-05	2.52E-07	5.09E-07	5.09E-07	7.45E-04	0.00E+00	7.64E-04
254000	1.80E-05	2.52E-07	5.42E-07	5.42E-07	7.45E-04	0.00E+00	7.64E-04
256000	1.80E-05	2.52E-07	5.92E-07	5.92E-07	7.45E-04	0.00E+00	7.64E-04
258000	1.80E-05	2.60E-07	6.22E-07	6.22E-07	7.45E-04	0.00E+00	7.64E-04
260000	1.80E-05	3.15E-07	6.31E-07	6.31E-07	7.45E-04	0.00E+00	7.64E-04
262000	1.81E-05	4.24E-07	6.32E-07	6.32E-07	7.45E-04	0.00E+00	7.65E-04
264000	2.06E-05	5.05E-07	6.32E-07	6.32E-07	7.45E-04	0.00E+00	7.67E-04
266000	2.96E-05	5.33E-07	6.32E-07	6.32E-07	7.45E-04	0.00E+00	7.76E-04
268000	4.01E-05	5.39E-07	6.32E-07	6.32E-07	7.45E-04	0.00E+00	7.87E-04

270000	4.52E-05	5.39E-07	6.32E-07	6.32E-07	7.45E-04	0.00E+00	7.92E-04
272000	4.66E-05	5.39E-07	6.32E-07	6.32E-07	7.45E-04	0.00E+00	7.93E-04
274000	4.68E-05	5.39E-07	6.32E-07	6.32E-07	7.45E-04	0.00E+00	7.93E-04
276000	4.68E-05	5.39E-07	6.32E-07	6.32E-07	7.45E-04	0.00E+00	7.93E-04
278000	4.68E-05	5.39E-07	6.32E-07	6.32E-07	7.45E-04	0.00E+00	7.93E-04
280000	4.68E-05	5.39E-07	6.32E-07	6.32E-07	7.52E-04	0.00E+00	8.00E-04
282000	4.68E-05	5.39E-07	6.32E-07	6.32E-07	8.71E-04	0.00E+00	9.20E-04
284000	4.68E-05	5.39E-07	6.32E-07	6.32E-07	1.30E-03	0.00E+00	1.35E-03
286000	4.68E-05	5.39E-07	6.32E-07	6.32E-07	1.81E-03	0.00E+00	1.85E-03
288000	4.68E-05	5.39E-07	6.32E-07	6.32E-07	2.06E-03	0.00E+00	2.10E-03
290000	4.68E-05	5.39E-07	6.32E-07	6.32E-07	2.12E-03	0.00E+00	2.17E-03
292000	4.68E-05	5.39E-07	6.32E-07	6.32E-07	2.13E-03	0.00E+00	2.18E-03
294000	4.68E-05	5.39E-07	6.32E-07	6.32E-07	2.13E-03	0.00E+00	2.18E-03
296000	4.68E-05	5.39E-07	6.32E-07	6.32E-07	2.13E-03	0.00E+00	2.18E-03
298000	4.68E-05	5.39E-07	6.32E-07	6.32E-07	2.13E-03	0.00E+00	2.18E-03
300000	4.68E-05	5.39E-07	6.32E-07	6.32E-07	2.13E-03	0.00E+00	2.18E-03
302000	4.68E-05	5.39E-07	6.32E-07	6.32E-07	2.13E-03	0.00E+00	2.18E-03
304000	4.68E-05	5.39E-07	6.32E-07	6.32E-07	2.13E-03	0.00E+00	2.18E-03
306000	4.68E-05	5.39E-07	6.32E-07	6.32E-07	2.13E-03	0.00E+00	2.18E-03
308000	4.68E-05	5.40E-07	6.35E-07	6.35E-07	2.13E-03	0.00E+00	2.18E-03
310000	4.68E-05	5.44E-07	6.52E-07	6.52E-07	2.13E-03	0.00E+00	2.18E-03
312000	4.68E-05	5.50E-07	6.87E-07	6.87E-07	2.13E-03	0.00E+00	2.18E-03
314000	4.68E-05	5.56E-07	7.12E-07	7.12E-07	2.13E-03	0.00E+00	2.18E-03
316000	4.68E-05	5.59E-07	7.21E-07	7.21E-07	2.13E-03	0.00E+00	2.18E-03
318000	4.68E-05	5.61E-07	7.22E-07	7.22E-07	2.13E-03	0.00E+00	2.18E-03
320000	4.68E-05	5.62E-07	7.23E-07	7.23E-07	2.13E-03	0.00E+00	2.18E-03
322000	4.68E-05	5.62E-07	7.23E-07	7.23E-07	2.13E-03	0.00E+00	2.18E-03
324000	4.68E-05	5.62E-07	7.23E-07	7.23E-07	2.13E-03	0.00E+00	2.18E-03
326000	4.68E-05	5.62E-07	7.23E-07	7.23E-07	2.13E-03	0.00E+00	2.18E-03
328000	4.68E-05	5.62E-07	7.23E-07	7.23E-07	2.13E-03	0.00E+00	2.18E-03
330000	4.68E-05	5.62E-07	7.23E-07	7.23E-07	2.13E-03	0.00E+00	2.18E-03
332000	4.68E-05	5.62E-07	7.23E-07	7.23E-07	2.13E-03	0.00E+00	2.18E-03
334000	4.68E-05	5.62E-07	7.23E-07	7.23E-07	2.13E-03	0.00E+00	2.18E-03
336000	4.68E-05	5.62E-07	7.23E-07	7.23E-07	2.13E-03	0.00E+00	2.18E-03
338000	4.68E-05	5.62E-07	7.23E-07	7.23E-07	2.13E-03	0.00E+00	2.18E-03
340000	4.68E-05	5.62E-07	7.23E-07	7.23E-07	2.13E-03	0.00E+00	2.18E-03
342000	4.68E-05	5.62E-07	7.23E-07	7.23E-07	2.13E-03	0.00E+00	2.18E-03
344000	4.68E-05	5.62E-07	7.23E-07	7.23E-07	2.13E-03	0.00E+00	2.18E-03
346000	4.68E-05	5.62E-07	7.23E-07	7.23E-07	2.13E-03	0.00E+00	2.18E-03
348000	4.68E-05	5.62E-07	7.23E-07	7.23E-07	2.13E-03	0.00E+00	2.18E-03
350000	4.68E-05	5.66E-07	7.23E-07	7.23E-07	2.13E-03	0.00E+00	2.18E-03
352000	4.68E-05	5.94E-07	7.23E-07	7.23E-07	2.13E-03	0.00E+00	2.18E-03
354000	4.68E-05	6.49E-07	7.23E-07	7.23E-07	2.13E-03	0.00E+00	2.18E-03
356000	4.68E-05	6.89E-07	7.23E-07	7.23E-07	2.13E-03	0.00E+00	2.18E-03
358000	4.72E-05	7.04E-07	7.28E-07	7.28E-07	2.13E-03	0.00E+00	2.18E-03
360000	5.01E-05	7.06E-07	7.47E-07	7.47E-07	2.13E-03	0.00E+00	2.18E-03
362000	5.59E-05	7.07E-07	7.69E-07	7.69E-07	2.13E-03	0.00E+00	2.19E-03

364000	6.01E-05	7.07E-07	7.80E-07	7.80E-07	2.13E-03	0.00E+00	2.19E-03
366000	6.16E-05	7.07E-07	7.83E-07	7.83E-07	2.13E-03	0.00E+00	2.19E-03
368000	6.19E-05	7.07E-07	7.83E-07	7.83E-07	2.13E-03	0.00E+00	2.19E-03
370000	6.19E-05	7.07E-07	7.83E-07	7.83E-07	2.13E-03	0.00E+00	2.19E-03
372000	6.19E-05	7.07E-07	7.83E-07	7.83E-07	2.13E-03	0.00E+00	2.19E-03
374000	6.19E-05	7.07E-07	7.83E-07	7.83E-07	2.14E-03	0.00E+00	2.20E-03
376000	6.19E-05	7.08E-07	7.83E-07	7.83E-07	2.24E-03	0.00E+00	2.30E-03
378000	6.19E-05	7.11E-07	7.83E-07	7.83E-07	2.50E-03	0.00E+00	2.56E-03
380000	6.19E-05	7.15E-07	7.83E-07	7.83E-07	2.74E-03	0.00E+00	2.80E-03
382000	6.19E-05	7.18E-07	7.83E-07	7.83E-07	2.84E-03	0.00E+00	2.90E-03
384000	6.19E-05	7.20E-07	7.83E-07	7.83E-07	2.86E-03	0.00E+00	2.93E-03
386000	6.19E-05	7.21E-07	7.83E-07	7.83E-07	2.86E-03	0.00E+00	2.93E-03
388000	6.19E-05	7.22E-07	7.83E-07	7.83E-07	2.86E-03	0.00E+00	2.93E-03
390000	6.19E-05	7.22E-07	7.83E-07	7.83E-07	2.86E-03	0.00E+00	2.93E-03
392000	6.19E-05	7.22E-07	7.83E-07	7.83E-07	2.86E-03	0.00E+00	2.93E-03
394000	6.19E-05	7.22E-07	7.83E-07	7.83E-07	2.86E-03	0.00E+00	2.93E-03
396000	6.19E-05	7.22E-07	7.83E-07	7.83E-07	2.86E-03	0.00E+00	2.93E-03
398000	6.19E-05	7.22E-07	7.83E-07	7.83E-07	2.86E-03	0.00E+00	2.93E-03
400000	6.19E-05	7.22E-07	7.83E-07	7.83E-07	2.86E-03	0.00E+00	2.93E-03
402000	6.19E-05	7.22E-07	7.84E-07	7.84E-07	2.86E-03	0.00E+00	2.93E-03
404000	6.19E-05	7.22E-07	7.89E-07	7.89E-07	2.86E-03	0.00E+00	2.93E-03
406000	6.19E-05	7.22E-07	8.03E-07	8.03E-07	2.86E-03	0.00E+00	2.93E-03
408000	6.19E-05	7.22E-07	8.17E-07	8.17E-07	2.86E-03	0.00E+00	2.93E-03
410000	6.19E-05	7.22E-07	8.22E-07	8.22E-07	2.86E-03	0.00E+00	2.93E-03
412000	6.19E-05	7.22E-07	8.23E-07	8.23E-07	2.86E-03	0.00E+00	2.93E-03
414000	6.20E-05	7.22E-07	8.23E-07	8.23E-07	2.86E-03	0.00E+00	2.93E-03
416000	6.20E-05	7.22E-07	8.23E-07	8.23E-07	2.86E-03	0.00E+00	2.93E-03
418000	6.20E-05	7.22E-07	8.23E-07	8.23E-07	2.86E-03	0.00E+00	2.93E-03
420000	6.20E-05	7.25E-07	8.23E-07	8.23E-07	2.86E-03	0.00E+00	2.93E-03
422000	6.20E-05	7.45E-07	8.23E-07	8.23E-07	2.86E-03	0.00E+00	2.93E-03
424000	6.20E-05	7.86E-07	8.23E-07	8.23E-07	2.86E-03	0.00E+00	2.93E-03
426000	6.20E-05	8.16E-07	8.23E-07	8.23E-07	2.86E-03	0.00E+00	2.93E-03
428000	6.20E-05	8.26E-07	8.23E-07	8.23E-07	2.86E-03	0.00E+00	2.93E-03
430000	6.23E-05	8.28E-07	8.23E-07	8.23E-07	2.86E-03	0.00E+00	2.93E-03
432000	6.45E-05	8.28E-07	8.23E-07	8.23E-07	2.86E-03	0.00E+00	2.93E-03
434000	6.90E-05	8.29E-07	8.23E-07	8.23E-07	2.86E-03	0.00E+00	2.94E-03
436000	7.23E-05	8.31E-07	8.23E-07	8.23E-07	2.86E-03	0.00E+00	2.94E-03
438000	7.34E-05	8.34E-07	8.23E-07	8.23E-07	2.86E-03	0.00E+00	2.94E-03
440000	7.36E-05	8.37E-07	8.23E-07	8.23E-07	2.86E-03	0.00E+00	2.94E-03
442000	7.37E-05	8.39E-07	8.23E-07	8.23E-07	2.86E-03	0.00E+00	2.94E-03
444000	7.37E-05	8.39E-07	8.23E-07	8.23E-07	2.88E-03	0.00E+00	2.96E-03
446000	7.37E-05	8.39E-07	8.24E-07	8.24E-07	2.99E-03	0.00E+00	3.06E-03
448000	7.37E-05	8.39E-07	8.29E-07	8.29E-07	3.20E-03	0.00E+00	3.28E-03
450000	7.37E-05	8.39E-07	8.39E-07	8.39E-07	3.36E-03	0.00E+00	3.44E-03
452000	7.37E-05	8.39E-07	8.46E-07	8.46E-07	3.42E-03	0.00E+00	3.49E-03
454000	7.37E-05	8.39E-07	8.49E-07	8.49E-07	3.43E-03	0.00E+00	3.50E-03
456000	7.37E-05	8.39E-07	8.49E-07	8.49E-07	3.43E-03	0.00E+00	3.50E-03

458000	7.37E-05	8.39E-07	8.49E-07	8.49E-07	3.43E-03	0.00E+00	3.50E-03
460000	7.37E-05	8.39E-07	8.49E-07	8.49E-07	3.43E-03	0.00E+00	3.50E-03
462000	7.37E-05	8.39E-07	8.49E-07	8.49E-07	3.43E-03	0.00E+00	3.50E-03
464000	7.37E-05	8.39E-07	8.49E-07	8.49E-07	3.43E-03	0.00E+00	3.50E-03
466000	7.37E-05	8.39E-07	8.49E-07	8.49E-07	3.43E-03	0.00E+00	3.50E-03
468000	7.37E-05	8.39E-07	8.49E-07	8.49E-07	3.43E-03	0.00E+00	3.50E-03
470000	7.37E-05	8.39E-07	8.49E-07	8.49E-07	3.43E-03	0.00E+00	3.50E-03
472000	7.37E-05	8.39E-07	8.49E-07	8.49E-07	3.43E-03	0.00E+00	3.50E-03
474000	7.37E-05	8.39E-07	8.49E-07	8.49E-07	3.43E-03	0.00E+00	3.50E-03
476000	7.37E-05	8.39E-07	8.49E-07	8.49E-07	3.43E-03	0.00E+00	3.50E-03
478000	7.37E-05	8.40E-07	8.49E-07	8.49E-07	3.43E-03	0.00E+00	3.50E-03
480000	7.37E-05	8.42E-07	8.49E-07	8.49E-07	3.43E-03	0.00E+00	3.50E-03
482000	7.37E-05	8.58E-07	8.49E-07	8.49E-07	3.43E-03	0.00E+00	3.50E-03
484000	7.37E-05	8.90E-07	8.49E-07	8.49E-07	3.43E-03	0.00E+00	3.50E-03
486000	7.37E-05	9.14E-07	8.49E-07	8.49E-07	3.43E-03	0.00E+00	3.50E-03
488000	7.37E-05	9.24E-07	8.50E-07	8.50E-07	3.43E-03	0.00E+00	3.50E-03
490000	7.38E-05	9.27E-07	8.53E-07	8.53E-07	3.43E-03	0.00E+00	3.50E-03
492000	7.46E-05	9.30E-07	8.59E-07	8.59E-07	3.43E-03	0.00E+00	3.50E-03
494000	7.76E-05	9.31E-07	8.63E-07	8.63E-07	3.43E-03	0.00E+00	3.51E-03
496000	8.12E-05	9.32E-07	8.64E-07	8.64E-07	3.43E-03	0.00E+00	3.51E-03
498000	8.29E-05	9.32E-07	8.65E-07	8.65E-07	3.43E-03	0.00E+00	3.51E-03
500000	8.34E-05	9.33E-07	8.65E-07	8.65E-07	3.43E-03	0.00E+00	3.51E-03
502000	8.35E-05	9.33E-07	8.65E-07	8.65E-07	3.44E-03	0.00E+00	3.53E-03
504000	8.35E-05	9.33E-07	8.65E-07	8.65E-07	3.53E-03	0.00E+00	3.62E-03
506000	8.35E-05	9.33E-07	8.65E-07	8.65E-07	3.71E-03	0.00E+00	3.80E-03
508000	8.35E-05	9.33E-07	8.65E-07	8.65E-07	3.84E-03	0.00E+00	3.93E-03
510000	8.35E-05	9.33E-07	8.65E-07	8.65E-07	3.89E-03	0.00E+00	3.97E-03
512000	8.35E-05	9.33E-07	8.65E-07	8.65E-07	3.90E-03	0.00E+00	3.98E-03
514000	8.35E-05	9.33E-07	8.65E-07	8.65E-07	3.90E-03	0.00E+00	3.98E-03
516000	8.35E-05	9.33E-07	8.65E-07	8.65E-07	3.90E-03	0.00E+00	3.98E-03
518000	8.35E-05	9.33E-07	8.65E-07	8.65E-07	3.90E-03	0.00E+00	3.98E-03
520000	8.35E-05	9.33E-07	8.65E-07	8.65E-07	3.90E-03	0.00E+00	3.98E-03
522000	8.35E-05	9.33E-07	8.65E-07	8.65E-07	3.90E-03	0.00E+00	3.98E-03
524000	8.35E-05	9.33E-07	8.65E-07	8.65E-07	3.90E-03	0.00E+00	3.98E-03
526000	8.35E-05	9.33E-07	8.65E-07	8.65E-07	3.90E-03	0.00E+00	3.98E-03
528000	8.35E-05	9.33E-07	8.65E-07	8.65E-07	3.90E-03	0.00E+00	3.98E-03
530000	8.35E-05	9.33E-07	8.65E-07	8.65E-07	3.90E-03	0.00E+00	3.98E-03
532000	8.35E-05	9.33E-07	8.67E-07	8.67E-07	3.90E-03	0.00E+00	3.98E-03
534000	8.35E-05	9.36E-07	8.71E-07	8.71E-07	3.90E-03	0.00E+00	3.98E-03
536000	8.35E-05	9.55E-07	8.73E-07	8.73E-07	3.90E-03	0.00E+00	3.98E-03
538000	8.35E-05	9.83E-07	8.73E-07	8.73E-07	3.90E-03	0.00E+00	3.98E-03
540000	8.35E-05	1.00E-06	8.73E-07	8.73E-07	3.90E-03	0.00E+00	3.98E-03
542000	8.35E-05	1.01E-06	8.73E-07	8.73E-07	3.90E-03	0.00E+00	3.98E-03
544000	8.36E-05	1.01E-06	8.73E-07	8.73E-07	3.90E-03	0.00E+00	3.98E-03
546000	8.47E-05	1.01E-06	8.73E-07	8.73E-07	3.90E-03	0.00E+00	3.98E-03
548000	8.79E-05	1.01E-06	8.73E-07	8.73E-07	3.90E-03	0.00E+00	3.99E-03
550000	9.07E-05	1.01E-06	8.73E-07	8.73E-07	3.90E-03	0.00E+00	3.99E-03

552000	9.19E-05	1.01E-06	8.73E-07	8.73E-07	3.90E-03	0.00E+00	3.99E-03
554000	9.22E-05	1.01E-06	8.73E-07	8.73E-07	3.94E-03	0.00E+00	4.03E-03
556000	9.22E-05	1.01E-06	8.73E-07	8.73E-07	4.07E-03	0.00E+00	4.16E-03
558000	9.22E-05	1.01E-06	8.73E-07	8.73E-07	4.22E-03	0.00E+00	4.31E-03
560000	9.22E-05	1.01E-06	8.73E-07	8.73E-07	4.29E-03	0.00E+00	4.39E-03
562000	9.22E-05	1.01E-06	8.73E-07	8.73E-07	4.31E-03	0.00E+00	4.41E-03
564000	9.22E-05	1.01E-06	8.73E-07	8.73E-07	4.31E-03	0.00E+00	4.41E-03
566000	9.22E-05	1.01E-06	8.73E-07	8.73E-07	4.32E-03	0.00E+00	4.41E-03
568000	9.22E-05	1.01E-06	8.73E-07	8.73E-07	4.32E-03	0.00E+00	4.41E-03
570000	9.22E-05	1.01E-06	8.73E-07	8.73E-07	4.32E-03	0.00E+00	4.41E-03
572000	9.22E-05	1.01E-06	8.74E-07	8.74E-07	4.32E-03	0.00E+00	4.41E-03
574000	9.22E-05	1.01E-06	8.75E-07	8.75E-07	4.32E-03	0.00E+00	4.41E-03
576000	9.22E-05	1.01E-06	8.75E-07	8.75E-07	4.32E-03	0.00E+00	4.41E-03
578000	9.22E-05	1.01E-06	8.75E-07	8.75E-07	4.32E-03	0.00E+00	4.41E-03
580000	9.22E-05	1.01E-06	8.75E-07	8.75E-07	4.32E-03	0.00E+00	4.41E-03
582000	9.22E-05	1.01E-06	8.75E-07	8.75E-07	4.32E-03	0.00E+00	4.41E-03
584000	9.22E-05	1.02E-06	8.75E-07	8.75E-07	4.32E-03	0.00E+00	4.41E-03
586000	9.22E-05	1.05E-06	8.75E-07	8.75E-07	4.32E-03	0.00E+00	4.41E-03
588000	9.22E-05	1.07E-06	8.75E-07	8.75E-07	4.32E-03	0.00E+00	4.41E-03
590000	9.22E-05	1.08E-06	8.75E-07	8.75E-07	4.32E-03	0.00E+00	4.41E-03
592000	9.23E-05	1.08E-06	8.75E-07	8.75E-07	4.32E-03	0.00E+00	4.41E-03
594000	9.34E-05	1.08E-06	8.75E-07	8.75E-07	4.32E-03	0.00E+00	4.41E-03
596000	9.62E-05	1.08E-06	8.75E-07	8.75E-07	4.32E-03	0.00E+00	4.41E-03
598000	9.89E-05	1.08E-06	8.75E-07	8.75E-07	4.32E-03	0.00E+00	4.42E-03
600000	1.00E-04	1.08E-06	8.75E-07	8.75E-07	4.35E-03	0.00E+00	4.45E-03
602000	1.00E-04	1.08E-06	8.75E-07	8.75E-07	4.47E-03	0.00E+00	4.57E-03
604000	1.00E-04	1.08E-06	8.75E-07	8.75E-07	4.60E-03	0.00E+00	4.71E-03
606000	1.00E-04	1.08E-06	8.75E-07	8.75E-07	4.67E-03	0.00E+00	4.77E-03
608000	1.00E-04	1.08E-06	8.75E-07	8.75E-07	4.69E-03	0.00E+00	4.79E-03
610000	1.00E-04	1.08E-06	8.75E-07	8.75E-07	4.69E-03	0.00E+00	4.79E-03
612000	1.00E-04	1.08E-06	8.75E-07	8.75E-07	4.69E-03	0.00E+00	4.79E-03
614000	1.00E-04	1.08E-06	8.74E-07	8.74E-07	4.69E-03	0.00E+00	4.79E-03
616000	1.00E-04	1.08E-06	8.73E-07	8.73E-07	4.69E-03	0.00E+00	4.79E-03
618000	1.00E-04	1.08E-06	8.73E-07	8.73E-07	4.69E-03	0.00E+00	4.79E-03
620000	1.00E-04	1.08E-06	8.73E-07	8.73E-07	4.69E-03	0.00E+00	4.79E-03
622000	1.00E-04	1.08E-06	8.72E-07	8.72E-07	4.69E-03	0.00E+00	4.79E-03
624000	1.00E-04	1.08E-06	8.72E-07	8.72E-07	4.69E-03	0.00E+00	4.79E-03
626000	1.00E-04	1.08E-06	8.72E-07	8.72E-07	4.69E-03	0.00E+00	4.79E-03
628000	1.00E-04	1.09E-06	8.72E-07	8.72E-07	4.69E-03	0.00E+00	4.79E-03
630000	1.00E-04	1.10E-06	8.72E-07	8.72E-07	4.69E-03	0.00E+00	4.79E-03
632000	1.00E-04	1.12E-06	8.72E-07	8.72E-07	4.69E-03	0.00E+00	4.79E-03
634000	1.00E-04	1.14E-06	8.72E-07	8.72E-07	4.69E-03	0.00E+00	4.80E-03
636000	1.00E-04	1.15E-06	8.72E-07	8.72E-07	4.69E-03	0.00E+00	4.80E-03
638000	1.01E-04	1.15E-06	8.72E-07	8.72E-07	4.69E-03	0.00E+00	4.80E-03
640000	1.03E-04	1.15E-06	8.72E-07	8.72E-07	4.69E-03	0.00E+00	4.80E-03
642000	1.06E-04	1.15E-06	8.72E-07	8.72E-07	4.72E-03	0.00E+00	4.83E-03
644000	1.08E-04	1.15E-06	8.72E-07	8.72E-07	4.83E-03	0.00E+00	4.95E-03

646000	1.08E-04	1.15E-06	8.72E-07	8.72E-07	4.96E-03	0.00E+00	5.07E-03
648000	1.08E-04	1.15E-06	8.72E-07	8.72E-07	5.03E-03	0.00E+00	5.14E-03
650000	1.08E-04	1.15E-06	8.72E-07	8.72E-07	5.04E-03	0.00E+00	5.15E-03
652000	1.08E-04	1.15E-06	8.72E-07	8.72E-07	5.05E-03	0.00E+00	5.16E-03
654000	1.08E-04	1.15E-06	8.72E-07	8.72E-07	5.05E-03	0.00E+00	5.16E-03
656000	1.08E-04	1.15E-06	8.70E-07	8.70E-07	5.05E-03	0.00E+00	5.16E-03
658000	1.08E-04	1.15E-06	8.69E-07	8.69E-07	5.05E-03	0.00E+00	5.16E-03
660000	1.08E-04	1.15E-06	8.69E-07	8.69E-07	5.05E-03	0.00E+00	5.16E-03
662000	1.08E-04	1.15E-06	8.69E-07	8.69E-07	5.05E-03	0.00E+00	5.16E-03
664000	1.08E-04	1.15E-06	8.68E-07	8.68E-07	5.05E-03	0.00E+00	5.16E-03
666000	1.08E-04	1.15E-06	8.68E-07	8.68E-07	5.05E-03	0.00E+00	5.16E-03
668000	1.08E-04	1.15E-06	8.68E-07	8.68E-07	5.05E-03	0.00E+00	5.16E-03
670000	1.08E-04	1.16E-06	8.68E-07	8.68E-07	5.05E-03	0.00E+00	5.16E-03
672000	1.08E-04	1.16E-06	8.68E-07	8.68E-07	5.05E-03	0.00E+00	5.16E-03
674000	1.08E-04	1.19E-06	8.68E-07	8.68E-07	5.05E-03	0.00E+00	5.16E-03
676000	1.08E-04	1.21E-06	8.68E-07	8.68E-07	5.05E-03	0.00E+00	5.16E-03
678000	1.08E-04	1.23E-06	8.68E-07	8.68E-07	5.05E-03	0.00E+00	5.16E-03
680000	1.09E-04	1.23E-06	8.68E-07	8.68E-07	5.05E-03	0.00E+00	5.16E-03
682000	1.12E-04	1.23E-06	8.68E-07	8.68E-07	5.10E-03	0.00E+00	5.21E-03
684000	1.15E-04	1.23E-06	8.68E-07	8.68E-07	5.22E-03	0.00E+00	5.34E-03
686000	1.16E-04	1.23E-06	8.68E-07	8.68E-07	5.33E-03	0.00E+00	5.45E-03
688000	1.16E-04	1.23E-06	8.68E-07	8.68E-07	5.38E-03	0.00E+00	5.50E-03
690000	1.16E-04	1.23E-06	8.68E-07	8.68E-07	5.39E-03	0.00E+00	5.51E-03
692000	1.16E-04	1.23E-06	8.68E-07	8.68E-07	5.39E-03	0.00E+00	5.51E-03
694000	1.16E-04	1.23E-06	8.68E-07	8.68E-07	5.39E-03	0.00E+00	5.51E-03
696000	1.16E-04	1.23E-06	8.68E-07	8.68E-07	5.39E-03	0.00E+00	5.51E-03
698000	1.16E-04	1.23E-06	8.67E-07	8.67E-07	5.39E-03	0.00E+00	5.51E-03
700000	1.16E-04	1.23E-06	8.66E-07	8.66E-07	5.39E-03	0.00E+00	5.51E-03
702000	1.16E-04	1.23E-06	8.66E-07	8.66E-07	5.39E-03	0.00E+00	5.51E-03
704000	1.16E-04	1.23E-06	8.66E-07	8.66E-07	5.39E-03	0.00E+00	5.51E-03
706000	1.16E-04	1.23E-06	8.66E-07	8.66E-07	5.39E-03	0.00E+00	5.51E-03
708000	1.16E-04	1.23E-06	8.66E-07	8.66E-07	5.39E-03	0.00E+00	5.51E-03
710000	1.16E-04	1.23E-06	8.66E-07	8.66E-07	5.39E-03	0.00E+00	5.51E-03
712000	1.16E-04	1.24E-06	8.66E-07	8.66E-07	5.39E-03	0.00E+00	5.51E-03
714000	1.16E-04	1.27E-06	8.66E-07	8.66E-07	5.39E-03	0.00E+00	5.51E-03
716000	1.16E-04	1.30E-06	8.66E-07	8.66E-07	5.39E-03	0.00E+00	5.51E-03
718000	1.17E-04	1.31E-06	8.66E-07	8.66E-07	5.41E-03	0.00E+00	5.53E-03
720000	1.19E-04	1.31E-06	8.66E-07	8.66E-07	5.50E-03	0.00E+00	5.62E-03
722000	1.22E-04	1.31E-06	8.66E-07	8.66E-07	5.63E-03	0.00E+00	5.76E-03
724000	1.24E-04	1.32E-06	8.66E-07	8.66E-07	5.71E-03	0.00E+00	5.84E-03
726000	1.24E-04	1.32E-06	8.66E-07	8.66E-07	5.73E-03	0.00E+00	5.86E-03
728000	1.24E-04	1.32E-06	8.66E-07	8.66E-07	5.74E-03	0.00E+00	5.86E-03
730000	1.24E-04	1.32E-06	8.66E-07	8.66E-07	5.74E-03	0.00E+00	5.86E-03
732000	1.24E-04	1.32E-06	8.66E-07	8.66E-07	5.74E-03	0.00E+00	5.86E-03
734000	1.24E-04	1.32E-06	8.66E-07	8.66E-07	5.74E-03	0.00E+00	5.86E-03
736000	1.24E-04	1.32E-06	8.66E-07	8.66E-07	5.74E-03	0.00E+00	5.86E-03
738000	1.24E-04	1.32E-06	8.66E-07	8.66E-07	5.74E-03	0.00E+00	5.86E-03

740000	1.24E-04	1.32E-06	8.65E-07	8.65E-07	5.74E-03	0.00E+00	5.86E-03
742000	1.24E-04	1.32E-06	8.65E-07	8.65E-07	5.74E-03	0.00E+00	5.86E-03
744000	1.24E-04	1.32E-06	8.65E-07	8.65E-07	5.74E-03	0.00E+00	5.86E-03
746000	1.24E-04	1.32E-06	8.65E-07	8.65E-07	5.74E-03	0.00E+00	5.86E-03
748000	1.24E-04	1.32E-06	8.65E-07	8.65E-07	5.74E-03	0.00E+00	5.86E-03
750000	1.24E-04	1.34E-06	8.65E-07	8.65E-07	5.74E-03	0.00E+00	5.86E-03
752000	1.25E-04	1.37E-06	8.65E-07	8.65E-07	5.75E-03	0.00E+00	5.87E-03
754000	1.26E-04	1.39E-06	8.65E-07	8.65E-07	5.81E-03	0.00E+00	5.94E-03
756000	1.29E-04	1.39E-06	8.65E-07	8.65E-07	5.94E-03	0.00E+00	6.07E-03
758000	1.31E-04	1.40E-06	8.65E-07	8.65E-07	6.03E-03	0.00E+00	6.17E-03
760000	1.33E-04	1.40E-06	8.65E-07	8.65E-07	6.07E-03	0.00E+00	6.20E-03
762000	1.33E-04	1.40E-06	8.65E-07	8.65E-07	6.07E-03	0.00E+00	6.21E-03
764000	1.33E-04	1.40E-06	8.65E-07	8.65E-07	6.07E-03	0.00E+00	6.21E-03
766000	1.33E-04	1.40E-06	8.65E-07	8.65E-07	6.07E-03	0.00E+00	6.21E-03
768000	1.33E-04	1.40E-06	8.65E-07	8.65E-07	6.07E-03	0.00E+00	6.21E-03
770000	1.33E-04	1.40E-06	8.65E-07	8.65E-07	6.07E-03	0.00E+00	6.21E-03
772000	1.33E-04	1.40E-06	8.65E-07	8.65E-07	6.07E-03	0.00E+00	6.21E-03
774000	1.33E-04	1.40E-06	8.65E-07	8.65E-07	6.07E-03	0.00E+00	6.21E-03
776000	1.33E-04	1.40E-06	8.65E-07	8.65E-07	6.07E-03	0.00E+00	6.21E-03
778000	1.33E-04	1.40E-06	8.65E-07	8.65E-07	6.07E-03	0.00E+00	6.21E-03
780000	1.33E-04	1.40E-06	8.65E-07	8.65E-07	6.07E-03	0.00E+00	6.21E-03
782000	1.33E-04	1.40E-06	8.66E-07	8.66E-07	6.07E-03	0.00E+00	6.21E-03
784000	1.33E-04	1.41E-06	8.66E-07	8.66E-07	6.08E-03	0.00E+00	6.21E-03
786000	1.33E-04	1.44E-06	8.66E-07	8.66E-07	6.12E-03	0.00E+00	6.26E-03
788000	1.34E-04	1.46E-06	8.66E-07	8.66E-07	6.25E-03	0.00E+00	6.38E-03
790000	1.37E-04	1.47E-06	8.66E-07	8.66E-07	6.36E-03	0.00E+00	6.50E-03
792000	1.40E-04	1.47E-06	8.66E-07	8.66E-07	6.40E-03	0.00E+00	6.54E-03
794000	1.41E-04	1.48E-06	8.66E-07	8.66E-07	6.41E-03	0.00E+00	6.56E-03
796000	1.41E-04	1.48E-06	8.66E-07	8.66E-07	6.41E-03	0.00E+00	6.56E-03
798000	1.41E-04	1.48E-06	8.66E-07	8.66E-07	6.41E-03	0.00E+00	6.56E-03
800000	1.41E-04	1.48E-06	8.66E-07	8.66E-07	6.41E-03	0.00E+00	6.56E-03
802000	1.41E-04	1.48E-06	8.66E-07	8.66E-07	6.41E-03	0.00E+00	6.56E-03
804000	1.41E-04	1.48E-06	8.66E-07	8.66E-07	6.41E-03	0.00E+00	6.56E-03
806000	1.41E-04	1.48E-06	8.66E-07	8.66E-07	6.41E-03	0.00E+00	6.56E-03
808000	1.41E-04	1.48E-06	8.66E-07	8.66E-07	6.41E-03	0.00E+00	6.56E-03
810000	1.41E-04	1.48E-06	8.66E-07	8.66E-07	6.41E-03	0.00E+00	6.56E-03
812000	1.41E-04	1.48E-06	8.66E-07	8.66E-07	6.41E-03	0.00E+00	6.56E-03
814000	1.41E-04	1.48E-06	8.66E-07	8.66E-07	6.41E-03	0.00E+00	6.56E-03
816000	1.41E-04	1.49E-06	8.66E-07	8.66E-07	6.43E-03	0.00E+00	6.58E-03
818000	1.42E-04	1.52E-06	8.66E-07	8.66E-07	6.52E-03	0.00E+00	6.67E-03
820000	1.43E-04	1.55E-06	8.67E-07	8.67E-07	6.66E-03	0.00E+00	6.80E-03
822000	1.47E-04	1.56E-06	8.69E-07	8.69E-07	6.74E-03	0.00E+00	6.89E-03
824000	1.49E-04	1.57E-06	8.69E-07	8.69E-07	6.76E-03	0.00E+00	6.91E-03
826000	1.50E-04	1.57E-06	8.69E-07	8.69E-07	6.77E-03	0.00E+00	6.92E-03
828000	1.50E-04	1.57E-06	8.69E-07	8.69E-07	6.77E-03	0.00E+00	6.92E-03
830000	1.50E-04	1.57E-06	8.69E-07	8.69E-07	6.77E-03	0.00E+00	6.92E-03
832000	1.50E-04	1.57E-06	8.69E-07	8.69E-07	6.77E-03	0.00E+00	6.92E-03

834000	1.50E-04	1.58E-06	8.69E-07	8.69E-07	6.77E-03	0.00E+00	6.92E-03
836000	1.50E-04	1.58E-06	8.69E-07	8.69E-07	6.77E-03	0.00E+00	6.92E-03
838000	1.50E-04	1.58E-06	8.69E-07	8.69E-07	6.77E-03	0.00E+00	6.92E-03
840000	1.50E-04	1.58E-06	8.69E-07	8.69E-07	6.77E-03	0.00E+00	6.92E-03
842000	1.50E-04	1.58E-06	8.69E-07	8.69E-07	6.77E-03	0.00E+00	6.92E-03
844000	1.50E-04	1.58E-06	8.69E-07	8.69E-07	6.77E-03	0.00E+00	6.92E-03
846000	1.50E-04	1.58E-06	8.69E-07	8.69E-07	6.80E-03	0.00E+00	6.95E-03
848000	1.51E-04	1.60E-06	8.69E-07	8.69E-07	6.91E-03	0.00E+00	7.07E-03
850000	1.53E-04	1.64E-06	8.69E-07	8.69E-07	7.05E-03	0.00E+00	7.20E-03
852000	1.57E-04	1.66E-06	8.69E-07	8.69E-07	7.11E-03	0.00E+00	7.27E-03
854000	1.59E-04	1.67E-06	8.69E-07	8.69E-07	7.13E-03	0.00E+00	7.29E-03
856000	1.60E-04	1.67E-06	8.69E-07	8.69E-07	7.13E-03	0.00E+00	7.30E-03
858000	1.60E-04	1.67E-06	8.70E-07	8.70E-07	7.13E-03	0.00E+00	7.30E-03
860000	1.60E-04	1.67E-06	8.73E-07	8.73E-07	7.13E-03	0.00E+00	7.30E-03
862000	1.60E-04	1.68E-06	8.77E-07	8.77E-07	7.13E-03	0.00E+00	7.30E-03
864000	1.60E-04	1.68E-06	8.79E-07	8.79E-07	7.13E-03	0.00E+00	7.30E-03
866000	1.60E-04	1.68E-06	8.80E-07	8.80E-07	7.13E-03	0.00E+00	7.30E-03
868000	1.60E-04	1.69E-06	8.80E-07	8.80E-07	7.13E-03	0.00E+00	7.30E-03
870000	1.60E-04	1.69E-06	8.80E-07	8.80E-07	7.13E-03	0.00E+00	7.30E-03
872000	1.60E-04	1.69E-06	8.80E-07	8.80E-07	7.13E-03	0.00E+00	7.30E-03
874000	1.60E-04	1.69E-06	8.80E-07	8.80E-07	7.17E-03	0.00E+00	7.33E-03
876000	1.60E-04	1.70E-06	8.80E-07	8.80E-07	7.28E-03	0.00E+00	7.45E-03
878000	1.63E-04	1.73E-06	8.80E-07	8.80E-07	7.42E-03	0.00E+00	7.59E-03
880000	1.66E-04	1.77E-06	8.80E-07	8.80E-07	7.49E-03	0.00E+00	7.66E-03
882000	1.69E-04	1.79E-06	8.80E-07	8.80E-07	7.51E-03	0.00E+00	7.68E-03
884000	1.69E-04	1.79E-06	8.80E-07	8.80E-07	7.51E-03	0.00E+00	7.68E-03
886000	1.69E-04	1.79E-06	8.80E-07	8.80E-07	7.51E-03	0.00E+00	7.68E-03
888000	1.69E-04	1.79E-06	8.80E-07	8.80E-07	7.51E-03	0.00E+00	7.68E-03
890000	1.69E-04	1.79E-06	8.80E-07	8.80E-07	7.51E-03	0.00E+00	7.68E-03
892000	1.69E-04	1.79E-06	8.80E-07	8.80E-07	7.51E-03	0.00E+00	7.68E-03
894000	1.69E-04	1.79E-06	8.80E-07	8.80E-07	7.51E-03	0.00E+00	7.68E-03
896000	1.69E-04	1.80E-06	8.80E-07	8.80E-07	7.51E-03	0.00E+00	7.68E-03
898000	1.69E-04	1.80E-06	8.80E-07	8.80E-07	7.51E-03	0.00E+00	7.68E-03
900000	1.69E-04	1.81E-06	8.82E-07	8.82E-07	7.53E-03	0.00E+00	7.70E-03
902000	1.70E-04	1.81E-06	8.88E-07	8.88E-07	7.62E-03	0.00E+00	7.80E-03
904000	1.71E-04	1.83E-06	8.93E-07	8.93E-07	7.77E-03	0.00E+00	7.94E-03
906000	1.75E-04	1.87E-06	8.95E-07	8.95E-07	7.85E-03	0.00E+00	8.03E-03
908000	1.78E-04	1.90E-06	8.96E-07	8.96E-07	7.88E-03	0.00E+00	8.06E-03
910000	1.79E-04	1.91E-06	8.96E-07	8.96E-07	7.88E-03	0.00E+00	8.06E-03
912000	1.79E-04	1.91E-06	8.96E-07	8.96E-07	7.88E-03	0.00E+00	8.06E-03
914000	1.79E-04	1.91E-06	8.96E-07	8.96E-07	7.88E-03	0.00E+00	8.06E-03
916000	1.79E-04	1.91E-06	8.96E-07	8.96E-07	7.88E-03	0.00E+00	8.06E-03
918000	1.79E-04	1.91E-06	8.96E-07	8.96E-07	7.88E-03	0.00E+00	8.06E-03
920000	1.79E-04	1.91E-06	8.96E-07	8.96E-07	7.88E-03	0.00E+00	8.06E-03
922000	1.79E-04	1.91E-06	8.96E-07	8.96E-07	7.88E-03	0.00E+00	8.06E-03
924000	1.79E-04	1.91E-06	8.96E-07	8.96E-07	7.89E-03	0.00E+00	8.07E-03
926000	1.79E-04	1.92E-06	8.96E-07	8.96E-07	7.93E-03	0.00E+00	8.12E-03

928000	1.80E-04	1.93E-06	8.96E-07	8.96E-07	8.06E-03	0.00E+00	8.25E-03
930000	1.84E-04	1.97E-06	8.96E-07	8.96E-07	8.18E-03	0.00E+00	8.37E-03
932000	1.87E-04	2.01E-06	8.96E-07	8.96E-07	8.23E-03	0.00E+00	8.42E-03
934000	1.88E-04	2.02E-06	8.96E-07	8.96E-07	8.24E-03	0.00E+00	8.44E-03
936000	1.88E-04	2.03E-06	8.96E-07	8.96E-07	8.25E-03	0.00E+00	8.44E-03
938000	1.88E-04	2.03E-06	8.97E-07	8.97E-07	8.25E-03	0.00E+00	8.44E-03
940000	1.88E-04	2.03E-06	9.07E-07	9.07E-07	8.25E-03	0.00E+00	8.44E-03
942000	1.88E-04	2.03E-06	9.26E-07	9.26E-07	8.25E-03	0.00E+00	8.44E-03
944000	1.88E-04	2.03E-06	9.40E-07	9.40E-07	8.25E-03	0.00E+00	8.44E-03
946000	1.88E-04	2.03E-06	9.45E-07	9.45E-07	8.25E-03	0.00E+00	8.44E-03
948000	1.88E-04	2.03E-06	9.46E-07	9.46E-07	8.25E-03	0.00E+00	8.44E-03
950000	1.89E-04	2.03E-06	9.46E-07	9.46E-07	8.30E-03	0.00E+00	8.49E-03
952000	1.90E-04	2.04E-06	9.46E-07	9.46E-07	8.44E-03	0.00E+00	8.63E-03
954000	1.93E-04	2.08E-06	9.46E-07	9.46E-07	8.56E-03	0.00E+00	8.76E-03
956000	1.97E-04	2.12E-06	9.46E-07	9.46E-07	8.61E-03	0.00E+00	8.81E-03
958000	1.98E-04	2.15E-06	9.46E-07	9.46E-07	8.62E-03	0.00E+00	8.82E-03
960000	1.98E-04	2.15E-06	9.46E-07	9.46E-07	8.62E-03	0.00E+00	8.83E-03
962000	1.98E-04	2.15E-06	9.46E-07	9.46E-07	8.62E-03	0.00E+00	8.83E-03
964000	1.98E-04	2.15E-06	9.46E-07	9.46E-07	8.62E-03	0.00E+00	8.83E-03
966000	1.98E-04	2.15E-06	9.46E-07	9.46E-07	8.62E-03	0.00E+00	8.83E-03
968000	1.98E-04	2.15E-06	9.46E-07	9.46E-07	8.62E-03	0.00E+00	8.83E-03
970000	1.98E-04	2.15E-06	9.46E-07	9.46E-07	8.63E-03	0.00E+00	8.83E-03
972000	1.98E-04	2.16E-06	9.46E-07	9.46E-07	8.67E-03	0.00E+00	8.87E-03
974000	2.00E-04	2.17E-06	9.46E-07	9.46E-07	8.88E-03	0.00E+00	9.08E-03
976000	2.06E-04	2.23E-06	9.46E-07	9.46E-07	9.19E-03	0.00E+00	9.40E-03
978000	2.14E-04	2.33E-06	9.46E-07	9.46E-07	9.38E-03	0.00E+00	9.60E-03
980000	2.17E-04	2.39E-06	9.46E-07	9.46E-07	9.44E-03	0.00E+00	9.66E-03
982000	2.18E-04	2.42E-06	9.46E-07	9.46E-07	9.45E-03	0.00E+00	9.67E-03
984000	2.18E-04	2.43E-06	9.46E-07	9.46E-07	9.45E-03	0.00E+00	9.67E-03
986000	2.18E-04	2.43E-06	9.46E-07	9.46E-07	9.45E-03	0.00E+00	9.67E-03
988000	2.18E-04	2.43E-06	9.46E-07	9.46E-07	9.45E-03	0.00E+00	9.67E-03
990000	2.18E-04	2.43E-06	9.46E-07	9.46E-07	9.45E-03	0.00E+00	9.67E-03
992000	2.18E-04	2.43E-06	9.46E-07	9.46E-07	9.45E-03	0.00E+00	9.67E-03
994000	2.18E-04	2.43E-06	9.46E-07	9.46E-07	9.45E-03	0.00E+00	9.67E-03
996000	2.18E-04	2.43E-06	9.46E-07	9.46E-07	9.45E-03	0.00E+00	9.67E-03
998000	2.18E-04	2.43E-06	9.46E-07	9.46E-07	9.45E-03	0.00E+00	9.67E-03
1000000	2.18E-04	2.43E-06	9.46E-07	9.46E-07	9.45E-03	0.00E+00	9.67E-03

```
 EQ3/6, Version 7.2b (EQ3/6-V7-REL-V7.2b-PC)
 EQ6 Reaction-Path Code (EQ3/6-V7-EQ6-EXE-R137-P5)
 Supported by the EQLIB library (EQ3/6-V7-EQLIB-LIB-R168-P5)
```


```
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 This work is subject to additional statements and
 disclaimers which may be found in the README.txt file
 included in the EQ3/6 software transmittal package.
```


```
 Run  17:21:38  01/19/99


|-----------------------------------------------------------------------|
|EQ6 input file name= Alloy-22 tuff.6i.txt                              |
|Description=  Water from Alloy-22 corrosion reacting with tuff         |
|Version level= 7.2                                                     |
|Created 01/19/99    Creator= D.H. Lester                               |
|Revised                     Revisor=                                   |
|                                                                       |
|Data base revised to add solid KFe(CrO4)2:2H2O                         |
|                                                                       |
|This run takes the pickup file (step 375)from the corrosion of carbon  |
|steel and Alloy-22 with j13 water for use as input to reaction with    |
|tuff, modeled as a special reactant.                                   |
|                                                                       |
|Surface area of tuff assumed to be: 4.8E5 sq cm based on an assumed    |
|area equivalent to a 1m x1m x 2m rectanglar area containing 128,       |
|0.25 mon a side cubes.                                                 |
|                                                                       |
|-----------------------------------------------------------------------|
| calculational mode   |*normal     | economy           | super economy|
|-----------------------------------------------------------------------|
| model type           | titration  | closed            | *open        |
|-----------------------------------------------------------------------|
| temperature model    |*power      | fluid mixing                     |
|-----------------------------------------------------------------------|
c power model  -->   temp = tstart + tk1*zi + tk2*zi**2 + tk3*zi**3    |
c mixing model -->   temp = (tstart * tk1 + zi*tk2) / (zi + tk1)       |
c-----------------------------------------------------------------------|
| tstart(c)|  25.00    |tk1| 0.0000    |tk2| 0.0000    |tk3| 0.0000    |
|-----------------------------------------------------------------------|
| starting value of zi | 0.00000    |max. value of zi    | 1.00000E+38 |
|-----------------------------------------------------------------------|
| starting time (sec)  | 0.00000    |max. time (sec)     | 1.00000E+38 |
|-----------------------------------------------------------------------|
| max. steps           |     4000  |max. steps w/o print|      150     |
|-----------------------------------------------------------------------|
| linear print interval|            |log print interval  | .2           |
|-----------------------------------------------------------------------|
| suppress mineral phases                                               |
|-----------------------------------------------------------------------|
| phases w/ elements|                        |                       |n
| phases except     |                        |                       |n
| phases except     |                        |                       |n
|-----------------------------------------------------------------------|
| fixed fugacity phases- species, moles(per kg h2o), log fugacity(bars)|
|-----------------------------------------------------------------------|
| CO2(g)                              | 200.00         | -3.5000        |n
```

```
| O2(g)                              | 200.00         | -0.6778        |n
|-----------------------------------------------------------------------|
c                  R A T E     L A W S
c 1 = relative                  rate = rk1 + rk2*zi + (1/2)rk3*zi*zi
c 2 = transition state theory   rate = CHECK DOCUMENTATION
c 3 = specified rate
c 4 = activity term rate        rate = CHECK DOCUMENTATION
c
c                  R E A C T A N T     T Y P E S
c mineral     solid solution     special    aqueous    gas
c
c                  S U R F A C E    T Y P E
c 0 = fixed surface area     1 = fixed specific surface area
c
c                  N O T E S
c status and jreac are normally not set by the user
|-----------------------------------------------------------------------|
| reactants   (ss) solid solution only     (sp) special reactant only  |
|-----------------------------------------------------------------------|
| REACTANT          | Tuff                      |status    | 0            |
| moles remaining   | 100.000                   |destroyed| 0.00000       |
| reactant type     |  special                  |sk        | 4.8E5        |
| surface type      |   0                       |fk        | 1.00000      |
| end-member        |                           |mole fr   |              |ss,n
| volume            |                           |          |              |sp
| element           | Si                        |mole fr   |2.6347E-01    |sp,n
| element           | Al                        |mole fr   |5.1482E-02    |sp,n
| element           | Na                        |mole fr   |2.3878E-02    |sp,n
| element           | K                         |mole fr   |2.1561E-02    |sp,n
| element           | O                         |mole fr   |6.3340E-01    |sp,n
| element           | Fe                        |mole fr   |2.413E-03     |sp,n
| element           | Ca                        |mole fr   |2.057E-03     |sp,n
| element           | Mg                        |mole fr   |1.252E-03     |sp,n
| element           | Mn                        |mole fr   |1.94E-04      |sp,n
| element           | Ti                        |mole fr   |2.53E-04      |sp,n
| element           | P                         |mole fr   |4.35E-05      |sp,n
| DISSOLUTION LAW   |    3                      |          |              |
| rate constant rk1|  2.5e-15                  |csigma1   |              |
| temperature (C)   | 25.0000                   |          |              |
| PRECIPITATION LAW|    0                       |          |              |
|-----------------------------------------------------------------------|
| options                                                               |
|-----------------------------------------------------------------------|
| - SOLID SOLUTIONS -                                                   |
|     ignore solid solutions                                            |
|   * process solid solutions                                           |
| - LOADING OF SPECIES INTO MEMORY -                                    |
|   * don't print                                                       |
|     lists species loaded into memory                                  |
| - LIST DERIVATIVES OF BASIS ELEMENTS AT EACH PRINT POINT -            |
|   * don't print                                                       |
|     print                                                             |
| - LIST ALL SPECIES LOADED INTO MEMORY AND THEIR LOG K VALUES -        |
|   * don't print                                                       |
|     print                                                             |
| - LIST DISTRIBUTION OF AQUEOUS SPECIES AT EACH PRINT POINT -          |
|   * only species > 10**-12 molal                                      |
|     all species                                                       |
|     don't print                                                       |
| - LIST CATION/H+ ACTIVITY RATIOS AT EACH PRINT POINT -                |
|   * don't print                                                       |
|     print                                                             |
| - LIST BULK ELEMENT AND OXIDE COMPOSITION AT EACH PRINT POINT -       |
```

```
|     don't print                                                        |
|    * print                                                             |
| - MINERAL SATURATION STATES -                                          |
|   * print if affinity > -10 kcals                                      |
|     print all                                                          |
|     don't print                                                        |
| - LIST GAS SPECIES SUMMARY AT EACH PRINT POINT -                       |
|     don't print                                                        |
|   * print                                                              |
| - PRINT AQUEOUS MASS AND CONCENTRATION TOTALS -                        |
|   * don't print                                                        |
|     print                                                              |
| - TAB FILES -                                                          |
|   * write                                                              |
|     append to previous tabx file                                       |
|     don't write                                                        |
| - WRITE PICKUP FILE -                                                  |
|     write pickup file at end of run                                    |
|     don't write pickup file                                            |
|   * write pickup file for each print point                             |
| - PHYSICALLY REMOVED SUBSYSTEM -                                       |
|   does nothing                                                         |
|    * transfer minerals but leave trivial mass in the system            |
|     transfer minerals                                                  |
| - CLEAR INITIAL PHYSICALLY REMOVED SUBSYSTEM -                         |
|     does nothing                                                       |
|    * clear p.r.s. before first reaction progress advance               |
| - PHASE BOUNDARY SEARCH -                                              |
|   * step size constrained by predicted phase boundaries                |
|     phase boundaries estimated from Taylor's series and printed        |
|     locations of phase boundaries ignored                              |
| - AUTO BASIS SWITCHING -                                               |
|   * off                                                                |
|     on                                                                 |
| - SUPPRESS REDOX REACTIONS -                                           |
|   * does nothing                                                       |
|     suppress all redox reactions                                       |
| - LINEAR OR LOGARITHMIC TAYLOR'S SERIES -                              |
|   * linear for kcol = 1,kdim, logarithmic for kcol = 1,kbt             |
|     logarithmic for kcol = 1,kbt                                       |
|     linear for kcol = 1,kdim                                           |
| - AZERO AND HYDRATION NUMBERS -                                        |
|   * no change                                                          |
|     read in new azero and hydration numbers                            |
| - PRINT MEAN MOLAL ACTIVITY COEFFICIENTS FOR DISSOLVED SPECIES -       |
|   * does nothing                                                       |
|     print                                                              |
| - PITZER DATABASE INFORMATION -                                        |
|   * print only warnings                                                |
|     print species in model and number of Pitzer coefficients           |
|     print species in model and names of Pitzer coefficients            |
| - PRINT DIAGNOSTIC MESSAGES -                                          |
|   * don't print                                                        |
|     print level 1 messages                                             |
|     print level 2 messages                                             |
| - PRINT PRE-NEWTON-RAPHSON OPTIMIZATION -                              |
|   * don't print                                                        |
|     print summary information                                          |
|     print detailed information                                         |
| - PRINT STEP SIZE AND ORDER -                                          |
|   * don't print                                                        |
|     print scale factor                                                 |
|     print orders and step size scaling factors                         |
```

```
| - CONTROL STEP SIZE AND ORDER PRINT -                                |
|   * does nothing                                                     |
|     print step size and order when delzi .le. dlzmx1                 |
| - NEWTON ITERATIONS -                                                |
|   * don't print                                                      |
|     print summary of newton iterations                               |
|     print summary, residual functions and correction terms           |
|     print summary, residual functions, correction terms and matrix   |
| - PRINT SEARCH ITERATIONS -                                          |
|   * don't print                                                      |
|     print                                                            |
| - PRINT HPSAT ITERATIONS -                                           |
|   * don't print                                                      |
|     print                                                            |
| - PRINT FINITE DIFFERENCE AND DERIVATIVE DATA -                      |
|   * don't print                                                      |
|     print computations from RDERIV, and RTAYLR                       |
|     print computations from RDERIV, RTAYLR, DERIV and TAYLOR         |
| - PRINT KINETICS DIAGNOSTIC MESSAGES -                               |
|   * don't print                                                      |
|     print level 1 diagnostics                                        |
|     print level 1 and level 2 diagnostics                            |
| - PRINT AKMATR -                                                     |
|   * don't print                                                      |
|     print level 1 diagnostics                                        |
| - KILL ITERATION VARIABLES -                                         |
|   * does nothing                                                     |
|     allow selection of variables to remove                           |
|----------------------------------------------------------------------|
| development options  (used for code development)                     |
|----------------------------------------------------------------------|
|    0 check finite difference and Taylor series expression            |
|    0 check reaction rate finite difference and Taylor series         |
|----------------------------------------------------------------------|
| tolerances                        desired values - defaults info-only |
|----------------------------------------------------------------------|
| number of N-R iterations        |                  |  40      itermx |
| p.r.s. transfer interval        |    1.0e+00       |  varies dlzidp |
| residual magnitude              |                  |  1.0e-06 tolbt  |
| correction magnitude            |                  |  1.0e-06 toldl  |
| search/find tolerance           |                  |  varies  tolx   |
| supersaturation                 |                  |  varies  tolsat |
| supersaturation set size        |                  |  varies  tolsst |
| max. size Taylor's series term  |                  |  1.0e-04 screw1 |
| max. initial value betamx       |                  |  n/a     screw2 |
| max. Taylor's series term (kin.)|                  |  1.0e-04 screw3 |
| corrector iteration             |                  |  1.0e-04 screw4 |
| max. size of N-R correction term|                  |  4.0     screw5 |
| step size (economy mode)        |                  |  4.0     screw6 |
| log mass of phases              |                  |  varies  zklogu |
| decrement mass (p.r.s.)         |                  |  2.0     zklogl |
| min. left after p.r.s.          |                  |  .98     zkfac  |
| initial step size               |                  |  varies  dlzmx1 |
| upper limit step size           |                  |  1.0e-04 dlzmx2 |
| maximum order                   |                  |  6       nordlm |
| num. attempted assemblages      |                  |  25      ntrymx |
| slide -> over phase bound.      |                  |  8       npslmx |
| slide -> over redox insta.      |                  |  3       nsslmx |
| fo2 scan control                |                  |  none    ioscan |
|----------------------------------------------------------------------|
c pickup file written by eq6.7.2bR137                                  |
c supported by eqlib.7.2bR168                                          |
|EQ6 input file name= j13_All-22.6i.txt                                |
```

```
|Description= React J-13 water with Carbon Steel and Alloy-22.          |
|Equilibrium with atmospheric gases.                                    |
|Version level= 7.2                                                     |
|Created 01/19/99    Creator= D.H. Lester                               |
|Revised             Revisor=                                           |
|                                                                       |
|Water from well J-13 at the Nevada Test site                           |
|                                                                       |
|Purpose: To model reaction with carbon steel (iron) and alloy C-22     |
|simultaneously to determine an expected Cr concentration in the water |
|corroding the C-22 after breaching the CAM.                            |
|                                                                       |
|It is assumed that a significant amount of carbon steel is still       |
|present. The rate constant for the steel was assumed to be 1.0E-11     |
|which is the higher value suggested in simulation studies at LLNL.     |
|Reference: Eng. Barrier System & Near Field Envir. Perf. Assess.,      |
|FY-96 Activities: End-of-Year Summary, Sept 1996, Wm.G.Halsey, "Report|
|on Initial Simulation of Water Interaction With Mild Steel Containers |
|Rate for C-22 is the median value for dripping at high temp. in the    |
|TSPA simulations for the VA document.                                  |
|The data base was modified to add the solid KFe(CrO4)2:2H2O            |
|Total amount of Steel and C-22 reduced to 20 moles each for a more     |
|realistic proportion of materials contacting 1L of water               |
|-----------------------------------------------------------------------|
| temperature (C)                    |     25.000                       |
|-----------------------------------------------------------------------|
| electrical imbalance               |   5.752163835343278E-14          |
|-----------------------------------------------------------------------|
| number of aqueous master species   |     38                           |
|-----------------------------------------------------------------------|
| position of last pure mineral      |     38                           |
|-----------------------------------------------------------------------|
| position of last solid solution    |     38                           |
|-----------------------------------------------------------------------|
| suppressed species     (suppress,replace,augmentk,augmentg)  value    |
|-----------------------------------------------------------------------|
| Phlogopite               | mineral        | suppress |  0.00000       |
| Annite                   | mineral        | suppress |  0.00000       |
| Clinochlore-14A          | mineral        | suppress |  0.00000       |
| Daphnite-14A             | mineral        | suppress |  0.00000       |
| Clinozoisite             | mineral        | suppress |  0.00000       |
| Epidote                  | mineral        | suppress |  0.00000       |
| Epidote-ord              | mineral        | suppress |  0.00000       |
| Andradite                | mineral        | suppress |  0.00000       |
| Grossular                | mineral        | suppress |  0.00000       |
| Enstatite                | mineral        | suppress |  0.00000       |
| Ferrosilite              | mineral        | suppress |  0.00000       |
| Pyrite                   | mineral        | suppress |  0.00000       |
| Pyrrhotite               | mineral        | suppress |  0.00000       |
| Troilite                 | mineral        | suppress |  0.00000       |
| Alabandite               | mineral        | suppress |  0.00000       |
| Brezinaite               | mineral        | suppress |  0.00000       |
| Chalcocite               | mineral        | suppress |  0.00000       |
| Covellite                | mineral        | suppress |  0.00000       |
| Millerite                | mineral        | suppress |  0.00000       |
| Polydymite               | mineral        | suppress |  0.00000       |
| Vaesite                  | mineral        | suppress |  0.00000       |
| Heazlewoodite            | mineral        | suppress |  0.00000       |
| Galena                   | mineral        | suppress |  0.00000       |
| Sulfur                   | mineral        | suppress |  0.00000       |
| CaZrO3                   | mineral        | suppress |  0.00000       |
| BaZrO3                   | mineral        | suppress |  0.00000       |
| SrZrO3                   | mineral        | suppress |  0.00000       |
```

```
| U2S3                      | mineral        | suppress |  0.00000      |
| U3S5                      | mineral        | suppress |  0.00000      |
| US2                       | mineral        | suppress |  0.00000      |
| US3                       | mineral        | suppress |  0.00000      |
| US                        | mineral        | suppress |  0.00000      |
| US1.9                     | mineral        | suppress |  0.00000      |
| U3P4                      | mineral        | suppress |  0.00000      |
| UP                        | mineral        | suppress |  0.00000      |
| UP2                       | mineral        | suppress |  0.00000      |
| HS-                       | aqueous        | suppress |  0.00000      |
| H2S(aq)                   | aqueous        | suppress |  0.00000      |
| S--                       | aqueous        | suppress |  0.00000      |
|-------------------------------------------------------------------------|
| iopg options                                                            |
|-------------------------------------------------------------------------|
| - pH SCALE CONVENTION -                                                 |
|    * modified NBS                                                       |
|      internal                                                           |
|      rational                                                           |
| - ACTIVITY COEFFICIENT OPTIONS -                                        |
|    * use B-dot equation                                                 |
|      Davies' equation                                                   |
|      Pitzer's equations                                                 |
|-------------------------------------------------------------------------|
| elements, moles and moles aqueous                                       |
|-------------------------------------------------------------------------|
| O                         |  4.005551824589011E+04 |  5.559507731955278E+01 |
| Al                        |  1.482500000694482E-06 |  1.482500019145637E-06 |
| B                         |  1.238799999942330E-05 |  1.238799999942330E-05 |
| Ba                        |  1.000000000006594E-10 |  1.000000000011281E-10 |
| Ca                        |  3.243700000162714E-04 |  3.243700011509316E-04 |
| Ce                        |  1.000000000975802E-24 |  1.000000016217520E-24 |
| Cl                        |  2.014000000000269E-04 |  2.014000000037786E-04 |
| Cr                        |  5.781807397321530E-03 |  5.781807454468000E-03 |
| Cs                        |  1.000000000000039E-10 |  1.000000000000544E-10 |
| Cu                        |  1.050000000528221E-14 |  1.050000000580907E-14 |
| F                         |  1.147500000001528E-04 |  1.147500004328765E-04 |
| Fe                        |  1.919952954201752E+01 |  1.595537342612084E-05 |
| Gd                        |  1.000000001150365E-14 |  1.000000021731823E-14 |
| H                         |  1.110188738405208E+02 |  1.110050058046827E+02 |
| C                         |  1.000043949592144E+04 |  1.058860595036985E-05 |
| P                         |  1.410533350947757E-02 |  2.372975918265704E-04 |
| K                         |  1.289100000000803E-04 |  1.289100000396373E-04 |
| La                        |  1.000000000980088E-14 |  1.000000018242602E-14 |
| Li                        |  1.000000000000469E-10 |  1.000000000226826E-10 |
| Mg                        |  8.269900000408464E-05 |  8.269900046839816E-05 |
| Mn                        |  2.058918681889465E-01 |  5.936700388362538E-04 |
| Mo                        |  2.279165842710737E-03 |  2.279165842710739E-03 |
| N                         |  1.420000000000891E-04 |  1.420000000146733E-04 |
| Na                        |  1.992200000002518E-03 |  1.992200000522818E-03 |
| Nd                        |  1.000000000990082E-14 |  1.000000018691887E-14 |
| Ni                        |  1.282506497668934E-02 |  1.282506502276300E-02 |
| Pb                        |  1.000000000003566E-10 |  1.000000000026304E-10 |
| Pu                        |  1.000000001138469E-14 |  1.000000040025504E-14 |
| S                         |  1.723228395933419E-02 |  1.723228405046097E-02 |
| Si                        |  1.080959007291650E-01 |  1.001324331330382E-04 |
| Sm                        |  1.000000000991962E-14 |  1.000000019056910E-14 |
| Sr                        |  1.000000000034016E-10 |  1.000000005005944E-10 |
| Ti                        |  1.000000000000003E-10 |  1.000000000000003E-10 |
| U                         |  9.999999988006304E-15 |  1.000000013309699E-14 |
| V                         |  9.391010183352800E-05 |  9.391010248599680E-05 |
| Zn                        |  1.000000000089305E-10 |  1.000000000122760E-10 |
| Zr                        |  1.000000000323548E-20 |  1.000000009076516E-20 |
```

master species and logarithmic basis variables		
H2O	H2O	1.744233745977861E+00
Al+++	Al+++	-7.859075643375154E+00
B(OH)3(aq)	B(OH)3(aq)	-4.906998836765602E+00
Ba++	Ba++	-1.000022523560581E+01
Ca++	Ca++	-3.585303375535279E+00
Ce+++	Ce+++	-2.459321656053141E+01
Cl-	Cl-	-3.697245885001159E+00
CrO4--	CrO4--	-6.571016196807416E+00
Cs+	Cs+	-1.000004013234990E+01
Cu++	Cu++	-1.398019979195965E+01
F-	F-	-5.032972238711606E+00
Fe++	Fe++	-1.127614660746010E+01
Gd+++	Gd+++	-1.454688567096544E+01
H+	H+	-1.964245008395162E+00
HCO3-	HCO3-	-9.188536612264688E+00
HPO4--	HPO4--	-8.857359723236194E+00
K+	K+	-3.903017737408557E+00
La+++	La+++	-1.465439109717710E+01
Li+	Li+	-1.001069361457703E+01
Mg++	Mg++	-4.268443524678217E+00
Mn++	Mn++	-3.383096607460100E+00
MoO4--	MoO4--	-2.642224072382743E+00
NO3-	NH3(aq)	-3.853332681432095E+00
Na+	Na+	-2.712382363569266E+00
Nd+++	Nd+++	-1.472203210399781E+01
Ni++	Ni++	-1.991158533616954E+00
Pb++	Pb++	-1.000103289262928E+01
Pu++++	Pu++++	-2.431364732278926E+01
SO4--	SO4--	-2.009960099189770E+00
SiO2(aq)	SiO2(aq)	-3.999425237549123E+00
Sm+++	Sm+++	-1.473451851504836E+01
Sr++	Sr++	-1.013579611396276E+01
Ti(OH)4(aq)	Ti(OH)4(aq)	-9.999999999999998E+00
UO2++	UO2++	-1.472116861498062E+01
VO++	VO++	-9.558464422838552E+00
Zn++	Zn++	-1.000087496209364E+01
Zr(OH)2++	Zr(OH)2++	-2.265552291145033E+01
O2(g)	O2(g)	-6.778000000000000E-01

physically removed subsystem (solid solution, mineral, moles)		
none		

--- Reading the data1 file ---

--- List of Solid Solutions ---

```
 1  Biotite                 No. components=   2
        Model type=   1  (Ideal solution               )
 2  Carbonate-Calcite       No. components=   6
        Model type=   1  (Ideal solution               )
 3  Chlorite-ss             No. components=   2
        Model type=   1  (Ideal solution               )
 4  Clinoptilolite-hy-ss    No. components=   5
        Model type=   1  (Ideal solution               )
 5  Clinoptilolite-ss       No. components=   6
        Model type=   1  (Ideal solution               )
 6  Epidote-ss              No. components=   2
```

```
         Model type=   1  (Ideal solution                )
 7  Garnet-ss               No. components=   2
         Model type=   1  (Ideal solution                )
 8  Orthopyroxene           No. components=   2
         Model type=   1  (Ideal solution                )
 9  Plagioclase             No. components=   2
         Model type=   1  (Ideal solution                )
10  Sanidine-ss             No. components=   2
         Model type=   1  (Ideal solution                )
11  Saponite-tri            No. components=   5
         Model type=   1  (Ideal solution                )
12  Smectite-di             No. components=  12
         Model type=   1  (Ideal solution                )
13  Lanthanide hydroxide    No. components=   5
         Model type=   1  (Ideal solution                )
14  Rhabdophane-ss          No. components=   5
         Model type=   1  (Ideal solution                )
15  Lanthanide fluoride     No. components=   5
         Model type=   1  (Ideal solution                )

--- The data1 file has been successfully read ---

     Switching NO3- into the basis set for NH3(aq)


                       1.000  NO3-
                     + 1.000  H2O
                     + 1.000  H+
                           ==
                       1.000  NH3(aq)
                     + 2.000  O2(g)

                       1.000  NH3(aq)
                     + 2.000  O2(g)
                           ==
                       1.000  H2O
                     + 1.000  H+
                     + 1.000  NO3-

* note - (eq6/flgstz) This run involves at least
      one redox reaction.  The code will therefore use a
      redox parameter and the charge balance constraint.

The species Phlogopite               has been user-suppressed

The species Annite                   has been user-suppressed

The species Clinochlore-14A          has been user-suppressed

The species Daphnite-14A             has been user-suppressed

The species Clinozoisite             has been user-suppressed

The species Epidote                  has been user-suppressed

The species Epidote-ord              has been user-suppressed

The species Andradite                has been user-suppressed

The species Grossular                has been user-suppressed

The species Enstatite                has been user-suppressed
```

```
The species Ferrosilite              has been user-suppressed
The species Pyrite                   has been user-suppressed
The species Pyrrhotite               has been user-suppressed
The species Troilite                 has been user-suppressed
The species Alabandite               has been user-suppressed
The species Brezinaite               has been user-suppressed
The species Chalcocite               has been user-suppressed
The species Covellite                has been user-suppressed
The species Millerite                has been user-suppressed
The species Polydymite               has been user-suppressed
The species Vaesite                  has been user-suppressed
The species Heazlewoodite            has been user-suppressed
The species Galena                   has been user-suppressed
The species Sulfur                   has been user-suppressed
The species CaZrO3                   has been user-suppressed
The species BaZrO3                   has been user-suppressed
The species SrZrO3                   has been user-suppressed
The species U2S3                     has been user-suppressed
The species U3S5                     has been user-suppressed
The species US2                      has been user-suppressed
The species US3                      has been user-suppressed
The species US                       has been user-suppressed
The species US1.9                    has been user-suppressed
The species U3P4                     has been user-suppressed
The species UP                       has been user-suppressed
The species UP2                      has been user-suppressed
The species HS-                      has been user-suppressed
The species H2S(aq)                  has been user-suppressed
The species S--                      has been user-suppressed
--- recalculating component totals ---
               input            adjusted
    O      4.00555E+04    8.55595E+02
```

```
    Al     1.48250E-06    1.48250E-06
    B      1.23880E-05    1.23880E-05
    Ba     1.00000E-10    1.00000E-10
    Ca     3.24370E-04    3.24370E-04
    Ce     1.00000E-24    1.00000E-24
    Cl     2.01400E-04    2.01400E-04
    Cr     5.78181E-03    5.78181E-03
    Cs     1.00000E-10    1.00000E-10
    Cu     1.05000E-14    1.05000E-14
    F      1.14750E-04    1.14750E-04
    Fe     1.91995E+01    1.59554E-05
    Gd     1.00000E-14    1.00000E-14
    H      1.11019E+02    1.11005E+02
    C      1.00004E+04    2.00000E+02
    P      1.41053E-02    2.37298E-04
    K      1.28910E-04    1.28910E-04
    La     1.00000E-14    1.00000E-14
    Li     1.00000E-10    1.00000E-10
    Mg     8.26990E-05    8.26990E-05
    Mn     2.05892E-01    5.93670E-04
    Mo     2.27917E-03    2.27917E-03
    N      1.42000E-04    1.42000E-04
    Na     1.99220E-03    1.99220E-03
    Nd     1.00000E-14    1.00000E-14
    Ni     1.28251E-02    1.28251E-02
    Pb     1.00000E-10    1.00000E-10
    Pu     1.00000E-14    1.00000E-14
    S      1.72323E-02    1.72323E-02
    Si     1.08096E-01    1.00132E-04
    Sm     1.00000E-14    1.00000E-14
    Sr     1.00000E-10    1.00000E-10
    Ti     1.00000E-10    1.00000E-10
    U      1.00000E-14    1.00000E-14
    V      9.39101E-05    9.39101E-05
    Zn     1.00000E-10    1.00000E-10
    Zr     1.00000E-20    1.00000E-20

* note - (eqlib/inbdot) The following aqueous species
      have been assigned a default hard core diameter of
        4.000 Angstroms-
        Cu(NO2)2(aq)
        Nd(HPO4)2-




eeeee  qqq   666
e     q   q 6
eeee  q   q 6666
e     q q q 6   6
eeeee  qqq   666
          q



EQ36, version 7.2b (R137    )
 supported by EQLIB, version 7.2b (R168    )


|EQ6 input file name= Alloy-22 tuff.6i.txt                              |
|Description=  Water from Alloy-22 corrosion reacting with tuff         |
```

```
|Version level= 7.2                                                |
|Created 01/19/99    Creator= D.H. Lester                          |
|Revised                     Revisor=                              |
|                                                                  |
|Data base revised to add solid KFe(CrO4)2:2H2O                    |
|                                                                  |
|This run takes the pickup file (step 375)from the corrosion of carbon |
|steel and Alloy-22 with j13 water for use as input to reaction with   |
|tuff, modeled as a special reactant.                              |
|                                                                  |
|Surface area of tuff assumed to be: 4.8E5 sq cm based on an assumed   |
|area equivalent to a 1m x1m x 2m rectanglar area containing 128,      |
|0.25 mon a side cubes.                                            |
|                                                                  |

|EQ6 input file name= j13_All-22.6i.txt                            |
|Description= React J-13 water with Carbon Steel and Alloy-22.     |
|Equilibrium with atmospheric gases.                               |
|Version level= 7.2                                                |
|Created 01/19/99    Creator= D.H. Lester                          |
|Revised             Revisor=                                      |
|                                                                  |
|Water from well J-13 at the Nevada Test site                      |
|                                                                  |
|Purpose: To model reaction with carbon steel (iron) and alloy C-22    |
|simultaneously to determine an expected Cr concentration in the water |
|corroding the C-22 after breaching the CAM.                       |
|                                                                  |
|It is assumed that a significant amount of carbon steel is still      |
|present. The rate constant for the steel was assumed to be 1.0E-11    |
|which is the higher value suggested in simulation studies at LLNL.    |
|Reference: Eng. Barrier System & Near Field Envir. Perf. Assess.,     |
|FY-96 Activities: End-of-Year Summary, Sept 1996, Wm.G.Halsey, "Report|
|on Initial Simulation of Water Interaction With Mild Steel Containers |
|Rate for C-22 is the median value for dripping at high temp. in the   |
|TSPA simulations for the VA document.                             |
|The data base was modified to add the solid KFe(CrO4)2:2H2O       |
|Total amount of Steel and C-22 reduced to 20 moles each for a more    |
|realistic proportion of materials contacting 1L of water          |
```

data0.nuc.dhl
THERMODYNAMIC DATABASE
This data base is a modified version of data0.nuc.R3 as changed by D.H. Lester

The data base datao.nuc.R3is a composite of data0.alt.V8.R5 and data0.b19.skb, by P. L. Cloke on 15-aug-96. It was specially modified for evaluation of nuclear criticality needs on the Yucca Mt. Project. Six EQ3NR runs were made using input data for elements in J13 well water and components of the current design for waste glass packages. Three runs were saturated with air, at pH 4, 7.41, and 10. The other three were for highly reducing conditions, log fO2 = -80, and carbonated limited to the solubility of atmospheric CO2 in water, 1.0 E-5 m. Solid and solution species appearing on the outputs and which constituted less than 0.1% of dissolved elements, or whose affinities did not exceed 1.0 E-10, on any of the outputs, were deleted from this data base.

The lanthanide data from the .skb data base replaced those in the .alt file in those cases in which there was overlap, except for the lanthanide metals. This includes replacing data for LnO2H, LnO+, and LnO2- by the .skb data for Ln(OH)3 Ln(OH()2+, and Ln(OH)4-, respectively. Ce++++ was added as well as more data for Y. Lanthanide data in the .skb base that aren't in the .alt base were added. LnPO4.xH2O, to which .skb assigned a value of 10 to x, was changed to LnPO4.H2O, in keeping with the formula for rhabdophane (and in keeping with the XRD pattern).

```
  Exceptions:  the .skb data for Eu were not entered as replacements for .alt
  data.  The .skb data for Pm were not entered.  Divalent lanthanide data were
  not entered.

Output package:  eq3
Data set:        cm2
+-------------------------------------------------------------------

  The activity coefficients of aqueous solute species
and the activity of water are calculated according to the
B-dot equation plus others


   No. of elements in the data base =  79
   No. of elements dimensioned for = 100
   No. of active elements =  37

      No. of aqueous species dimensioned for = ***
      No. of aqueous species loaded = 665
      No. of active aqueous species = 583

         No. of aqueous reactions dimensioned for = ***
         No. of aqueous reactions loaded = 585
         No. of active aqueous reactions = 546


            No. of pure minerals dimensioned for = 850
            No. of pure minerals loaded = 690
            No. of active pure minerals = 604

            No. of gases dimensioned for =  80
            No. of gases loaded =  56
            No. of active gases =  56

               No. of solid solutions in the data base =  15
               No. of solid solutions dimensioned for =  50
               No. of active solid solutions =   8

   zistrt =  0.000000E+00 (initial value of zi)
   zimax  =  1.000000E+38 (maximum value of zi)
   timemx =  1.000000E+38 (maximum value of time, sec)
   kstpmx =          4000 (maximum number of steps this run)


      dzprnt =  1.000000E+38 (linear print interval)
      dzprlg =  2.000000E-01 (logarithmic print interval)
      dlzidp =  1.000000E+00 (P.R.S. transfer interval)

      maximum permitted step sizes.....
         dlzmx1 =  1.000000E-09 (nord=0)
         dlzmx2 =  1.000000E+38 (nord.ge.1)
      nordlm =  6 (maximum permitted order)


   Temperature =     25.000 C


   nmodl1 =  3 (physical system switch)
     1 = titration, 2 = closed, 3 = flow-through)
   nmodl2 =  0 (economy mode permission switch)
     0 = normal, 1 = economy, 3 = super economy)
```

```
iopt1  =  1 (kinetic mode switch)
iopt2  =  0 (suppress phase boundary location)
iopt3  =  1 (interfacing output switch)
iopt4  =  1 (permit solid solutions switch)
iopt5  =  1 (remove initial solids switch)
iopt6  =  1 (clear P.R.S. at start switch)
iopt7  =  0 (auto basis switch mode switch)
iopt8  =  0 (linear vs. log Taylor's series)
iopt9  =  0 (not used)
iopt10 =  0 (not used)
iopt11 =  0 (suppress all redox reactions switch)
iopt12 =  0 (not used)
iopt13 =  0 (tab file output switch)
iopt14 =  0 (not used)
iopt15 =  0 (not used)
iopt16-20   (not used)
ifile  =  0 (supplementary input file)

   iopg1  =  0 (choice of act. coeff. equations)
   iopg2  =  0 (choice of pH scale)
   iopg3  =  0 (not used)
   iopg4  =  0 (not used)
   iopg5  =  0 (not used)
   iopg6  =  0 (not used)
   iopg7  =  0 (not used)
   iopg8  =  0 (not used)
   iopg9  =  0 (not used)
   iopg10 =  0 (not used)

iopr1  =  0 (print loading of species from data1)
iopr2  =  0 (print derivatives of basis elements)
iopr3  =  0 (print loaded species and log K values)
iopr4  =  0 (print aqueous species distribution)
iopr5  =  0 (print cation/H+ activity ratios)
iopr6  =  1 (print element/oxide comp. of mineral assemblage)
iopr7  =  0 (print mineral affinity summary)
iopr8  =  1 (print gas fugacity summary)
iopr9  =  0 (print mean molal activity coefficient)
iopr10 =  0 (print tabulation of Pitzer coefficients)
iopr11 =  0 (print major species for each element)
iopr12-20   (not used)

   iodb1  =  0 (enable comp. messages)
   iodb2  =  0 (print pre-Newton-Raphson optimization)
   iodb3  =  0 (print order/scaling info.)
   iodb4  =  0 (print newton iteration info.)
   iodb5  =  0 (print search iterations)
   iodb6  =  0 (print hpsatz iterations)
   iodb7  =  0 (print f.d. and t.s. calculations)
   iodb8  =  0 (turns iodb3 on and off)
   iodb9  =  0 (print kinetics info.)
   iodb10 =  0 (check basis var. f.d. and t.s.)
   iodb11 =  0 (check reac. rate f.d. and t.s.)
   iodb12 =  0 (iteration variable killer option)
   iodb13 =  0 (not used)
   iodb14 =  0 (not used)
   iodb15 =  0 (not used)
   iodb16 =  0 (turn on akmatr prints)
   iodb17-20   (not used)

tolbt  =  1.000000E-06 (residual function convergence tolerance)
toldl  =  1.000000E-06 (correction term convergence tolerance)
tolx   =  1.000000E-06 (sol-sol reactant/product identity tolerance)
```

```
    tolsat =  5.000000E-03 (lower supersaturation tolerance)
    tolsst =  1.000000E-02 (upper supersaturation tolerance)


screw1 =  1.000E-04 (primary step-size parameter for basis variables)
screw2 =    0.00000 (not used)
screw3 =  1.000E-04 (step size parameter for rate functions)
screw4 =  1.000E-04 (corrector parameter for rate functions)
screw5 =    4.00000 (under-relaxation control for n-r iteration)
screw6 =    4.00000 (step size parameter for economy mode)

    zklogu =     -6.000 (threshhold log mass for solids)
    zklogl =      2.000 (log mass decrement for P.R.S shift)
     zkfac =      0.800 (shift adjustment factor)
    zklgmn =     -6.097 (minimum log mass after a shift)


        itermx= 90 (Newton-Raphson iteration limit)
        ntrymx= 25 (phase assemblage try limit)
        npslmx= 12 (critical phase instability slide limit)
        nsslmx=  8 (critical redox instability slide limit)


--- Inactive Loaded Aqueous Species ---


  Ag+                           Am+++
  Ar(aq)                        Au+
  Be++                          Br-
  Cd++                          Co++
  Dy+++                         Er+++
  Eu+++                         Ga+++
  H2AsO4-                       He(aq)
  Hg++                          Ho+++
  I-                            In+++
  Kr(aq)                        Lu+++
  Ne(aq)                        Np++++
  Pd++                          Pr+++
  Ra++                          Rb+
  ReO4-                         Rn(aq)
  RuO4--                        Sb(OH)3(aq)
  Sc+++                         SeO3--
  Sn++                          Tb+++
  TcO4-                         Th++++
  Tl+                           Tm+++
  WO4--                         Xe(aq)
  Y+++                          Yb+++
  HS-                           Ag++
  Am++                          Am++++
  AmO2+                         AmO2++
  Au+++                         Br3-
  BrO-                          BrO3-
  BrO4-                         Co+++
  Eu++                          H2AsO3-
  HSe-                          Hg2++
  I3-                           IO-
  IO3-                          IO4-
  Np+++                         NpO2+
  NpO2++                        Ru(OH)2++
  Ru++                          Ru+++
  RuO4(aq)                      RuO4-
  Se--                          SeO4--
```

```
  Sn++++                        Tc+++
  TcO++                         TcO4--
  TcO4---                       Tl+++
  Yb++                          H2S(aq)
  S--


--- Inactive Loaded Minerals ---


  Alabandite                    Andradite
  Annite                        BaZrO3
  Beidellite-Ca                 Beidellite-K
  Beidellite-Mg                 Beidellite-Na
  Brezinaite                    CaZrO3
  Calcite                       Ce(OH)3
  CePO4:H2O                     CeF3:0.5H2O
  Chalcocite                    Clinochlore-14A
  Clinoptilolite-Ca             Clinoptilolite-Cs
  Clinoptilolite-K              Clinoptilolite-NH4
  Clinoptilolite-Na             Clinoptilolite-Sr
  Clinoptilolite-hy-Ca          Clinoptilolite-hy-Cs
  Clinoptilolite-hy-K           Clinoptilolite-hy-Na
  Clinoptilolite-hy-Sr          Clinozoisite
  Covellite                     Daphnite-14A
  Enstatite                     Epidote
  Epidote-ord                   Ferrosilite
  Galena                        Gd(OH)3
  GdPO4:H2O                     GdF3:0.5H2O
  Grossular                     Heazlewoodite
  La(OH)3                       LaPO4:H2O
  LaF3:0.5H2O                   Magnesite
  Millerite                     Montmor-Ca
  Montmor-K                     Montmor-Mg
  Montmor-Na                    Nd(OH)3(c)
  NdPO4:H2O                     NdF3:0.5H2O
  Nontronite-Ca                 Nontronite-K
  Nontronite-Mg                 Nontronite-Na
  Phlogopite                    Polydymite
  Pyrite                        Pyrrhotite
  Rhodochrosite                 Sulfur
  Saponite-Ca                   Saponite-H
  Saponite-K                    Saponite-Mg
  Saponite-Na                   Siderite
  Sm(OH)3                       SmPO4:H2O
  SmF3:0.5H2O                   Smithsonite
  SrZrO3                        Strontianite
  Titanite                      Troilite
  U2S3                          U3P4
  U3S5                          UP
  UP2                           US
  US1.9                         US2
  US3                           Vaesite


                  --- Reactants and Rate Coefficients ---

   Forward (dissolution/dissociation/destruction)


Tuff
    Specified forward net rate
```

```
rk0=  2.50000E-15   trk0=   25.0
hact=  0.00000     kcal


   Backward (precipitation/association/formation)


  Tuff
      Instantaneous partial equilibrium


            --- Special Reactants ---


  Tuff
          Mol. wt. =       20.586g/mol
          Molar volume =        0.000 cc
                       mol/mol

            O         6.334000000000000E-01
            Al        5.148200000000000E-02
            Ca        2.057000000000000E-03
            Fe        2.413000000000000E-03
            P         4.350000000000000E-05
            K         2.156100000000000E-02
            Mg        1.252000000000000E-03
            Mn        1.940000000000000E-04
            Na        2.387800000000000E-02
            Si        2.634700000000000E-01
            Ti        2.530000000000000E-04

- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -


Stepping to zi=  0.0000E+00, delzi=  0.0000E+00, nord= 0
  time =  0.0000E+00 d, dltime =  0.0000E+00 d

  Attempted species assemblage no.   1

            1      1  H2O
            2      3  Al+++
            3      7  B(OH)3(aq)
            4      8  Ba++
            5     11  Ca++
            6     13  Ce+++
            7     14  Cl-
            8     16  CrO4--
            9     17  Cs+
           10     18  Cu++
           11     22  F-
           12     23  Fe++
           13     25  Gd+++
           14     26  H+
           15     28  HCO3-
           16     29  HPO4--
           17     35  K+
           18     37  La+++
           19     38  Li+
           20     40  Mg++
           21     41  Mn++
           22     42  MoO4--
           23     43  NO3-
           24     44  Na+
```

```
25     45  Nd+++
26     47  Ni++
27     49  Pb++
28     52  Pu++++
29     58  SO4--
30     62  SiO2(aq)
31     63  Sm+++
32     65  Sr++
33     69  Ti(OH)4(aq)
34     72  UO2++
35     73  VO++
36     78  Zn++
37     79  Zr(OH)2++
38     80  O2(g)
39    689  fix     CO2(g)
40    690  fix     O2(g)

iter =    4

- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

                    Reaction progress        =  0.00000000000000E+00
                    Log of reaction progress =    -999.0000000


                    Time =  0.000E+00 sec
                         =  0.000E+00 days
                         =  0.000E+00 years

                    Log sec =     -999.000
                    Log days =    -999.000
                    Log years =   -999.000

                    Temperature    =     25.000 degrees C
                    total pressure =      1.013 bars


Start or re-start of run


                              --- Reactant Summary ---


    Definitions and conventions

         Delta x = x now - x at start
         Affinity is + for forward direction (dissolution),
                     - for reverse direction (precipitation)
         Rates are + for forward direction (dissolution),
                   - for reverse direction (precipitation)


    Reactant                  Moles     Delta moles    Mass, g    Delta Mass, g

 Tuff                       1.0000E+02   0.0000E+00   2.0586E+03   0.0000E+00


               Current total mass =  2.05865E+03 grams
               Delta total mass   =  0.00000E+00 grams
               Delta total volume =      0.00000 cc
```

Reactant	Rel. Rate mol/mol	Rate mol/s	Rate mol/s/cm2
Tuff	1.0000E+00	1.2000E-09	2.5000E-15

Reactant	Affinity kcal/mol	Surface Area mol/s/cm2
Tuff	999.00000	4.8000E+05

Reactant	Rate Constants, mol/s/cm2	
Tuff		
	Forward	2.5000E-15

Affinity of the overall irreversible reaction= 0.000 kcal
Contributions from irreversible reactions
with no thermodynamic data are not included

--- Element Totals for the Aqueous Solution ---

Element	mg/kg soln.	Molality	Moles
O	8.865404E+05	5.561111E+01	5.559508E+01
Al	3.986758E-02	1.482928E-06	1.482500E-06
B	1.334829E-01	1.239157E-05	1.238800E-05
Ba	1.368719E-05	1.000288E-10	1.000000E-10
Ca	1.295702E+01	3.244636E-04	3.243700E-04
Ce	1.396507E-19	1.000288E-24	1.000000E-24
Cl	7.116513E+00	2.014581E-04	2.014000E-04
Cr	2.996352E+02	5.783475E-03	5.781807E-03
Cs	1.324650E-05	1.000288E-10	1.000000E-10
Cu	6.650220E-10	1.050303E-14	1.050000E-14
F	2.172842E+00	1.147831E-04	1.147500E-04
Fe	8.881070E-01	1.595997E-05	1.595537E-05
Gd	1.567289E-09	1.000288E-14	1.000000E-14
H	1.115156E+05	1.110370E+02	1.110050E+02
C	1.267583E-01	1.059166E-05	1.058861E-05
P	7.325643E+00	2.373660E-04	2.372976E-04
K	5.023460E+00	1.289472E-04	1.289100E-04
La	1.384452E-09	1.000288E-14	1.000000E-14
Li	6.917999E-07	1.000288E-10	1.000000E-10
Mg	2.003339E+00	8.272285E-05	8.269900E-05
Mn	3.250700E+01	5.938413E-04	5.936700E-04
Mo	2.179386E+02	2.279823E-03	2.279166E-03
N	1.982366E+00	1.420410E-04	1.420000E-04
Na	4.564845E+01	1.992775E-03	1.992200E-03
Nd	1.437620E-09	1.000288E-14	1.000000E-14
Ni	7.502088E+02	1.282876E-02	1.282506E-02
Pb	2.065134E-05	1.000288E-10	1.000000E-10
Pu	2.431914E-09	1.000288E-14	1.000000E-14
S	5.507393E+02	1.723725E-02	1.723228E-02
Si	2.802950E+00	1.001613E-04	1.001324E-04
Sm	1.498617E-09	1.000288E-14	1.000000E-14
Sr	8.732965E-06	1.000288E-10	1.000000E-10
Ti	4.772134E-06	1.000288E-10	1.000000E-10

U	2.372401E-09	1.000288E-14	1.000000E-14
V	4.768069E+00	9.393719E-05	9.391010E-05
Zn	6.517332E-06	1.000288E-10	1.000000E-10
Zr	9.092171E-16	1.000288E-20	1.000000E-20

Single ion activities and activity coefficients are here defined
with respect to the modified NBS pH scale

	pH	Eh	pe
modified NBS pH scale	2.0406	1.0983	1.8566E+01
rational pH scale	1.9641	1.1028	1.8643E+01

pHCl = 5.8287

Oxygen fugacity = 2.09991E-01
Log oxygen fugacity = -0.67780

Activity of water = 0.99924
Log activity of water = -0.00033

Ionic strength = 5.880049E-02 molal
Sum of molalities = 0.0494650122440
Osmotic coefficient = 0.85806

Mass of solution = 1.003325 kg
Mass of solutes = 0.003613 kg
Conc. of solutes = 0.360110 per cent (w/w)

Moles of solvent H2O = 5.54924E+01
Mass of solvent H2O = 9.99712E-01 kg

Species	Molality	Log molality	Log gamma	Log activity
H+	1.0861E-02	-1.9641	-0.0765	-2.0406
Ni++	1.0209E-02	-1.9910	-0.3466	-2.3376
SO4--	9.7761E-03	-2.0098	-0.3602	-2.3701
HSO4-	4.5008E-03	-2.3467	-0.0849	-2.4316
HCrO4-	4.0507E-03	-2.3925	-0.0849	-2.4774
NiSO4(aq)	2.6184E-03	-2.5820	0.0000	-2.5820
MoO4--	2.2798E-03	-2.6421	-0.3492	-2.9913
Na+	1.9397E-03	-2.7123	-0.0983	-2.8106
Cr2O7--	8.6348E-04	-3.0637	-0.3602	-3.4240
Mn++	4.1403E-04	-3.3830	-0.3466	-3.7295
O2(aq)	2.6166E-04	-3.5823	0.0062	-3.5761
Ca++	2.5991E-04	-3.5852	-0.3466	-3.9317
Cl-	2.0085E-04	-3.6971	-0.0909	-3.7881
MnSO4(aq)	1.7918E-04	-3.7467	0.0000	-3.7467
NO3-	1.4021E-04	-3.8532	-0.0909	-3.9441
K+	1.2506E-04	-3.9029	-0.1044	-4.0073
H3PO4(aq)	1.1923E-04	-3.9236	0.0000	-3.9236
H2PO4-	1.0769E-04	-3.9678	-0.0849	-4.0527
HF(aq)	1.0158E-04	-3.9932	0.0000	-3.9932
SiO2(aq)	1.0016E-04	-3.9993	0.0000	-3.9993
VO2+	7.7218E-05	-4.1123	-0.0983	-4.2106

CaSO4(aq)	6.4460E-05	-4.1907	0.0000	-4.1907
Mg++	5.3912E-05	-4.2683	-0.3139	-4.5822
NaSO4-	5.2994E-05	-4.2758	-0.0849	-4.3607
MgSO4(aq)	2.8802E-05	-4.5406	0.0000	-4.5406
B(OH)3(aq)	1.2392E-05	-4.9069	0.0000	-4.9069
VO2SO4-	1.2140E-05	-4.9158	-0.0849	-5.0007
CO2(aq)	1.0591E-05	-4.9751	0.0062	-4.9689
FeHPO4+	9.8576E-06	-5.0062	-0.0983	-5.1046
F-	9.2716E-06	-5.0328	-0.0878	-5.1207
Fe+++	3.9853E-06	-5.3995	-0.6676	-6.0671
Cr+++	3.9843E-06	-5.3996	-0.6676	-6.0672
KSO4-	3.8649E-06	-5.4129	-0.0849	-5.4977
VO(OH)3(aq)	3.3834E-06	-5.4706	0.0000	-5.4706
NiNO3+	1.6466E-06	-5.7834	-0.0983	-5.8817
H2CrO4(aq)	1.4542E-06	-5.8374	0.0000	-5.8374
FeOH++	1.4431E-06	-5.8407	-0.3761	-6.2168
VO2F(aq)	1.0440E-06	-5.9813	0.0000	-5.9813
AlF2+	8.5211E-07	-6.0695	-0.0983	-6.1678
AlF++	5.3570E-07	-6.2711	-0.3761	-6.6472
MnH2PO4+	4.6356E-07	-6.3339	-0.0983	-6.4322
FeSO4+	3.8794E-07	-6.4112	-0.0983	-6.5096
HCl(aq)	3.1718E-07	-6.4987	0.0000	-6.4987
CrO4--	2.6860E-07	-6.5709	-0.3602	-6.9311
FeF++	2.1127E-07	-6.6752	-0.3761	-7.0513
NiCl+	9.4729E-08	-7.0235	-0.0983	-7.1219
HPO3F-	9.2177E-08	-7.0354	-0.0849	-7.1203
CaNO3+	8.3647E-08	-7.0775	-0.0983	-7.1759
MnCl+	7.6216E-08	-7.1180	-0.0983	-7.2163
H2VO4-	7.2891E-08	-7.1373	-0.0849	-7.2222
CrO3Cl-	6.4830E-08	-7.1882	-0.0849	-7.2731
AlF3(aq)	6.4788E-08	-7.1885	0.0000	-7.1885
HNO3(aq)	5.1609E-08	-7.2873	0.0000	-7.2873
MnF+	4.7658E-08	-7.3219	-0.0983	-7.4202
VO2(OH)2-	4.5172E-08	-7.3451	-0.0849	-7.4300
MnNO3+	4.2136E-08	-7.3753	-0.0983	-7.4737
NaCl(aq)	4.2106E-08	-7.3757	0.0000	-7.3757
H2SO4(aq)	3.3711E-08	-7.4722	0.0000	-7.4722
Fe(SO4)2-	3.0999E-08	-7.5086	-0.0849	-7.5935
VO2HPO4-	3.0676E-08	-7.5132	-0.0849	-7.5981
H2F2(aq)	2.7887E-08	-7.5546	0.0000	-7.5546
Fe(OH)2+	2.7659E-08	-7.5582	-0.0983	-7.6565
KHSO4(aq)	2.4867E-08	-7.6044	0.0000	-7.6044
CrOH++	2.2345E-08	-7.6508	-0.3761	-8.0269
AlSO4+	1.6284E-08	-7.7882	-0.0983	-7.8866
Al+++	1.3837E-08	-7.8590	-0.6676	-8.5265
FeF2+	1.3794E-08	-7.8603	-0.0983	-7.9586
MgF+	5.5957E-09	-8.2521	-0.0983	-8.3505
CaF+	5.3411E-09	-8.2724	-0.0983	-8.3707
CaCl+	4.8188E-09	-8.3171	-0.0983	-8.4154
MgCl+	3.9189E-09	-8.4068	-0.0983	-8.5052
VO2F2-	2.7729E-09	-8.5571	-0.0849	-8.6419
FeNO3++	2.3166E-09	-8.6352	-0.3761	-9.0113
PO3F--	1.5174E-09	-8.8189	-0.3602	-9.1791
HPO4--	1.3892E-09	-8.8572	-0.3602	-9.2175
NaF(aq)	1.1780E-09	-8.9289	0.0000	-8.9289
HCO3-	6.4802E-10	-9.1884	-0.0849	-9.2733
KCl(aq)	5.1294E-10	-9.2899	0.0000	-9.2899
MnHPO4(aq)	4.2954E-10	-9.3670	0.0000	-9.3670
VO++	2.7648E-10	-9.5583	-0.3761	-9.9344
CrCl++	2.3541E-10	-9.6282	-0.3761	-10.0043
HF2-	2.2585E-10	-9.6462	-0.0849	-9.7311
AlF4-	1.4987E-10	-9.8243	-0.0849	-9.9092
VOSO4(aq)	1.4980E-10	-9.8245	0.0000	-9.8245

Mn+++	1.1765E-10	-9.9294	-0.8157	-10.7452
Ti(OH)4(aq)	1.0003E-10	-9.9999	0.0000	-9.9999
Cs+	1.0002E-10	-9.9999	-0.1077	-10.1076

--- Summary of Instantaneously Precipitated Solid Phases ---
(defined by derivatives)

--- Theoretical Rock Composition ---
g/kg

--- Oxide Percentages ---

Oxide Theoretical rock

Total = 0.0000

Phase/end-member		d mol/d zi	d grams/d zi	d vol (cc)/d zi
fix	CO2(g)	0.0000E+00	0.0000E+00	0.0000E+00
fix	O2(g)	0.0000E+00	0.0000E+00	0.0000E+00

--- Summary of Solid Phases (E.S.+P.R.S.) ---

Phase/End-member		Log moles	Moles	Mass, g	Volume, cc
fix	CO2(g)	2.3010	2.0000E+02	8.8020E+03	0.0000E+00
fix	O2(g)	2.3010	2.0000E+02	6.3998E+03	0.0000E+00

	Mass, grams	Volume, cc
Created	1.520172E+04	0.000000E+00
Destroyed	0.000000E+00	0.000000E+00
Net	1.520172E+04	0.000000E+00

Warning-- these volume totals may be incomplete because
of missing partial molar volume data in the data base

--- Summary of Pure Mineral Saturation States ---

Mineral	Log Q/K	Aff, kcal	State
AlF3	-6.680	-9.113	
Anglesite	-4.894	-6.677	
Anhydrite	-1.995	-2.722	
BaZrO3	69.237	94.458	ssatd
Barite	-2.765	-3.772	
Bassanite	-2.640	-3.602	
Boric_acid	-4.749	-6.478	
CaSO4:0.5H2O(beta)	-2.809	-3.832	
CaZrO3	129.700	176.948	ssatd
Celestite	-7.194	-9.815	
Chalcedony	-0.271	-0.370	
Coesite	-0.810	-1.105	
CrO2	-0.909	-1.241	

Cristobalite(alpha)	-0.550	-0.751	
Cristobalite(beta)	-0.994	-1.356	
Crocoite	-4.591	-6.263	
Epsomite	-4.992	-6.811	
Fe(OH)3	-5.602	-7.642	
FeF3	-2.190	-2.988	
Fluorite	-4.136	-5.643	
Goethite	-0.480	-0.655	
Gypsum	-1.820	-2.483	
Hematite	0.000	0.000	
Hexahydrite	-5.227	-7.132	
Ice	-0.139	-0.190	
Jarosite	-5.336	-7.280	
Kieserite	-6.686	-9.121	
Manganite	-4.459	-6.084	
Mercallite	-6.979	-9.521	
Mirabilite	-6.855	-9.352	
MnHPO4	0.000	0.000	
MnO2(gamma)	-1.518	-2.071	
Morenosite	-2.696	-3.678	
NiSO4:6H2O(alpha)	-2.702	-3.687	
Nontronite-Ca	-3.756	-5.124	
Nontronite-H	-2.823	-3.851	
Nontronite-K	-4.147	-5.658	
Nontronite-Mg	-3.826	-5.219	
Nontronite-Na	-4.091	-5.581	
Pentahydrite	-5.567	-7.595	
Pyrolusite	0.000	0.000	
Quartz	0.000	0.000	ssatd
Rutile	-0.354	-0.483	
Sellaite	-5.439	-7.421	
Shcherbinaite	-2.888	-3.940	
SiO2(am)	-1.286	-1.754	
SrZrO3	106.096	144.745	ssatd
Starkeyite	-5.954	-8.123	
Strengite	-1.902	-2.594	
Tridymite	-0.171	-0.234	
fix CO2(g)	0.000	0.000	satd
fix O2(g)	0.000	0.000	satd

--- Summary of Solid Solutions ---

--- Carbonate-Calcite ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Calcite	5.6705E-03	-2.2464	0.0000	-2.2464
Magnesite	4.5525E-04	-3.3417	0.0000	-3.3417
Rhodochrosite	9.9387E-01	-0.0027	0.0000	-0.0027
Siderite	1.2691E-08	-7.8965	0.0000	-7.8965
Smithsonite	5.2900E-08	-7.2765	0.0000	-7.2765
Strontianite	2.2203E-07	-6.6536	0.0000	-6.6536

Mineral	Log Q/K	Aff, kcal	State
Carbonate-Calcite	-10.767	-14.689	
Calcite	-10.767	-14.689	
Magnesite	-10.767	-14.689	
Rhodochrosite	-10.767	-14.689	

Siderite	-10.767	-14.689
Smithsonite	-10.767	-14.689
Strontianite	-10.767	-14.689

--- Clinoptilolite-hy-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-hy-Ca	9.9769E-01	-0.0010	0.0000	-0.0010
Clinoptilolite-hy-Cs	6.6777E-23	-22.1754	0.0000	-22.1754
Clinoptilolite-hy-K	7.3166E-04	-3.1357	0.0000	-3.1357
Clinoptilolite-hy-Na	1.5783E-03	-2.8018	0.0000	-2.8018
Clinoptilolite-hy-Sr	5.6081E-12	-11.2512	0.0000	-11.2512

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-hy-ss	-59.152	-80.700	
Clinoptilolite-hy-Ca	-59.152	-80.700	
Clinoptilolite-hy-Cs	-59.152	-80.700	
Clinoptilolite-hy-K	-59.152	-80.700	
Clinoptilolite-hy-Na	-59.152	-80.700	
Clinoptilolite-hy-Sr	-59.152	-80.700	

--- Clinoptilolite-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-Ca	7.8163E-01	-0.1070	-0.2632	-0.3702
Clinoptilolite-Cs	3.0398E-07	-6.5172	-16.0322	-22.5494
Clinoptilolite-K	9.6807E-02	-1.0141	-2.4947	-3.5088
Clinoptilolite-NH4	1.0307E-51	-50.9869	-125.4277	-176.4146
Clinoptilolite-Na	1.2112E-01	-0.9168	-2.2553	-3.1721
Clinoptilolite-Sr	4.3842E-04	-3.3581	-8.2609	-11.6190

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-ss	-58.784	-80.198	
Clinoptilolite-Ca	-58.784	-80.198	
Clinoptilolite-Cs	-58.784	-80.198	
Clinoptilolite-K	-58.784	-80.198	
Clinoptilolite-NH4	-58.784	-80.198	
Clinoptilolite-Na	-58.784	-80.198	
Clinoptilolite-Sr	-58.784	-80.198	

--- Saponite-tri ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Saponite-Ca	1.4821E-03	-2.8291	1.8955	-0.9336

Saponite-H	9.9737E-01	-0.0011	0.0008	-0.0004
Saponite-K	9.6726E-05	-4.0145	2.6897	-1.3248
Saponite-Mg	9.1179E-04	-3.0401	2.0369	-1.0032
Saponite-Na	1.4347E-04	-3.8432	2.5750	-1.2683

Mineral	Log Q/K	Aff, kcal	State
Saponite-tri	-42.307	-57.719	
Saponite-Ca	-42.307	-57.719	
Saponite-H	-42.307	-57.719	
Saponite-K	-42.307	-57.719	
Saponite-Mg	-42.307	-57.719	
Saponite-Na	-42.307	-57.719	

--- Smectite-di ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Beidellite-Ca	6.3593E-68	-67.1966	45.0217	-22.1749
Beidellite-K	4.1530E-69	-68.3816	45.8157	-22.5659
Beidellite-Mg	3.9121E-68	-67.4076	45.1631	-22.2445
Beidellite-Na	6.1559E-69	-68.2107	45.7012	-22.5095
Montmor-Ca	3.1295E-58	-57.5045	38.5280	-18.9765
Montmor-K	3.3378E-59	-58.4765	39.1793	-19.2973
Montmor-Mg	3.1289E-58	-57.5046	38.5281	-18.9765
Montmor-Na	4.8248E-59	-58.3165	39.0721	-19.2445
Nontronite-Ca	5.6252E-01	-0.2499	0.1674	-0.0825
Nontronite-K	3.6736E-02	-1.4349	0.9614	-0.4735
Nontronite-Mg	3.4629E-01	-0.4606	0.3086	-0.1520
Nontronite-Na	5.4453E-02	-1.2640	0.8469	-0.4171

Mineral	Log Q/K	Aff, kcal	State
Smectite-di	-3.674	-5.012	
Beidellite-Ca	-3.674	-5.012	
Beidellite-K	-3.674	-5.012	
Beidellite-Mg	-3.674	-5.012	
Beidellite-Na	-3.674	-5.012	
Montmor-Ca	-3.674	-5.012	
Montmor-K	-3.674	-5.012	
Montmor-Mg	-3.674	-5.012	
Montmor-Na	-3.674	-5.012	
Nontronite-Ca	-3.674	-5.012	
Nontronite-K	-3.674	-5.012	
Nontronite-Mg	-3.674	-5.012	
Nontronite-Na	-3.674	-5.012	

--- Lanthanide hydroxide ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
La(OH)3	1.2829E-05	-4.8918	0.0000	-4.8918
Ce(OH)3	3.7099E-15	-14.4306	0.0000	-14.4306

Nd(OH)3(c)	3.4718E-01	-0.4594	0.0000	-0.4594
Gd(OH)3	5.8550E-01	-0.2325	0.0000	-0.2325
Sm(OH)3	6.7308E-02	-1.1719	0.0000	-1.1719

Mineral	Log Q/K	Aff, kcal	State
Lanthanide hydroxide	-24.639	-33.614	
La(OH)3	-24.639	-33.614	
Ce(OH)3	-24.639	-33.614	
Nd(OH)3(c)	-24.639	-33.614	
Gd(OH)3	-24.639	-33.614	
Sm(OH)3	-24.639	-33.614	

--- Rhabdophane-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaPO4:H2O	4.1201E-01	-0.3851	0.0000	-0.3851
CePO4:H2O	3.7677E-11	-10.4239	0.0000	-10.4239
NdPO4:H2O	2.2247E-01	-0.6527	0.0000	-0.6527
GdPO4:H2O	1.4936E-01	-0.8258	0.0000	-0.8258
SmPO4:H2O	2.1616E-01	-0.6652	0.0000	-0.6652

Mineral	Log Q/K	Aff, kcal	State
Rhabdophane-ss	-9.764	-13.321	
LaPO4:H2O	-9.764	-13.321	
CePO4:H2O	-9.764	-13.321	
NdPO4:H2O	-9.764	-13.321	
GdPO4:H2O	-9.764	-13.321	
SmPO4:H2O	-9.764	-13.321	

--- Lanthanide fluoride ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaF3:0.5H2O	5.7252E-01	-0.2422	0.0000	-0.2422
CeF3:0.5H2O	8.2978E-11	-10.0810	0.0000	-10.0810
NdF3:0.5H2O	3.8918E-01	-0.4099	0.0000	-0.4099
GdF3:0.5H2O	8.2628E-03	-2.0829	0.0000	-2.0829
SmF3:0.5H2O	3.0037E-02	-1.5223	0.0000	-1.5223

Mineral	Log Q/K	Aff, kcal	State
Lanthanide fluoride	-11.742	-16.019	
LaF3:0.5H2O	-11.742	-16.019	
CeF3:0.5H2O	-11.742	-16.019	
NdF3:0.5H2O	-11.742	-16.019	
GdF3:0.5H2O	-11.742	-16.019	
SmF3:0.5H2O	-11.742	-16.019	

--- Summary of Gases ---

Gas	Fugacity	Log fugacity
Al(g)	4.4786-201	-200.3489
B(g)	8.5659-204	-203.0672
BF3(g)	3.7725E-24	-23.4234
C(g)	3.0917-190	-189.5098
CH4(g)	3.5240-146	-145.4530
CO(g)	6.0395E-49	-48.2190
CO2(g)	3.1623E-04	-3.5000
Ca(g)	7.2342-164	-163.1406
Chlorine	3.5847E-17	-16.4455
Cs(g)	3.5180E-89	-88.4537
Cu(g)	7.5962E-93	-92.1194
Fluorine	1.4789E-72	-71.8301
H2(g)	6.1104E-42	-41.2139
H2O(g)	2.5958E-02	-1.5857
H2S(g)	2.2902-130	-129.6401
HCl(g)	7.3419E-13	-12.1342
HF(g)	5.3223E-09	-8.2739
K(g)	2.2169E-83	-82.6543
Li(g)	7.8245-103	-102.1065
Mg(g)	1.0897-141	-140.9627
Nitrogen	2.6192E-08	-7.5818
NH3(g)	1.8638E-63	-62.7296
NO(g)	5.0961E-20	-19.2928
NO2(g)	3.4845E-14	-13.4579
Na(g)	1.8194E-81	-80.7401
O2(g)	2.0999E-01	-0.6778
Pb(g)	7.6389E-81	-80.1170
S2(g)	3.1322-203	-202.5042
SO2(g)	4.0579E-43	-42.3917
Si(g)	4.2257-221	-220.3741
SiF4(g)	3.5422E-18	-17.4507
Ti(g)	1.6826-231	-230.7740
TiCl4(g)	4.3141E-62	-61.3651
U(g)	1.0090-304	-303.9961
U2Cl10(g)	4.7266-202	-201.3255
U2Cl8(g)	4.0878-216	-215.3885
U2F10(g)	2.5083-120	-119.6006
UCl(g)	6.6042-255	-254.1802
UCl2(g)	1.2931-203	-202.8884
UCl3(g)	5.5459-150	-149.2560
UCl4(g)	1.2879-113	-112.8901
UCl5(g)	1.5389-114	-113.8128
UCl6(g)	3.4162-110	-109.4665
UF(g)	1.0175-240	-239.9925
UF2(g)	7.6091-195	-194.1187
UF3(g)	1.4004-142	-141.8538
UF4(g)	3.8042E-87	-86.4197
UF5(g)	4.7335E-73	-72.3248
UF6(g)	5.7997E-73	-72.2366
UO(g)	7.9689-220	-219.0986
UO2(g)	1.4764-135	-134.8308
UO2Cl2(g)	2.3107E-71	-70.6363
UO2F2(g)	9.8635E-61	-60.0060
UO3(g)	1.0859E-82	-81.9642
UOF4(g)	1.1336E-64	-63.9455
Zn(g)	1.2815E-90	-89.8923

```
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

--- shifting e.s. solid(s) to the p.r.s. (shftz) ---

--- Clearing the Physically Removed System ---

Stepping to zi=  1.0000E-09, delzi=  1.0000E-09, nord= 0
  time =  9.6451E-06 d, dltime =  9.6451E-06 d
Steps completed =     1, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Ti(OH)4(aq)             ) =     -9.9989

Stepping to zi=  1.0000E-09, delzi=  2.8282E-17, nord= 0
  time =  9.6451E-06 d, dltime =  2.7278E-13 d
Steps completed =     2, iter =  1, ncorr = 0
Most rapidly changing is zvclg1(Ti(OH)4(aq)             ) =     -9.9989

- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -


                    Reaction progress        =  9.99999999999997E-10
                    Log of reaction progress =      -9.0000000



                    Time =  8.333E-01 sec
                         =  9.645E-06 days
                         =  2.641E-08 years

                    Log sec =       -0.079
                    Log days =      -5.016
                    Log years =     -7.578

                    Temperature    =     25.000 degrees C
                    total pressure =      1.013 bars


Step size is limited by the print requirement


                              --- Reactant Summary ---


    Reactant                  Moles     Delta moles    Mass, g    Delta Mass, g

 Tuff                       1.0000E+02   1.0000E-09   2.0586E+03   2.0586E-08


               Current total mass =  2.05865E+03 grams
               Delta total mass   =  2.05865E-08 grams
               Delta total volume =      0.00000 cc


    Reactant                Rel. Rate      Rate         Rate
                             mol/mol       mol/s      mol/s/cm2

 Tuff                       1.0000E+00   1.2000E-09   2.5000E-15
```

Reactant	Affinity kcal/mol	Surface Area mol/s/cm2
Tuff	999.00000	4.8000E+05

Reactant	Rate Constants, mol/s/cm2	
Tuff		
	Forward	2.5000E-15

Affinity of the overall irreversible reaction= 0.000 kcal
Contributions from irreversible reactions
with no thermodynamic data are not included

--- Element Totals for the Aqueous Solution ---

Element	mg/kg soln.	Molality	Moles
O	8.865404E+05	5.561111E+01	5.559508E+01
Al	3.986897E-02	1.482979E-06	1.482551E-06
B	1.334829E-01	1.239157E-05	1.238800E-05
Ba	1.368719E-05	1.000288E-10	1.000000E-10
Ca	1.295702E+01	3.244636E-04	3.243700E-04
Ce	1.396507E-19	1.000288E-24	1.000000E-24
Cl	7.116513E+00	2.014581E-04	2.014000E-04
Cr	2.996352E+02	5.783475E-03	5.781807E-03
Cs	1.324650E-05	1.000288E-10	1.000000E-10
Cu	6.650220E-10	1.050303E-14	1.050000E-14
F	2.172842E+00	1.147831E-04	1.147500E-04
Fe	8.881071E-01	1.595998E-05	1.595538E-05
Gd	1.567289E-09	1.000288E-14	1.000000E-14
H	1.115156E+05	1.110370E+02	1.110050E+02
C	1.267583E-01	1.059166E-05	1.058861E-05
P	7.325643E+00	2.373660E-04	2.372976E-04
K	5.023461E+00	1.289472E-04	1.289100E-04
La	1.384452E-09	1.000288E-14	1.000000E-14
Li	6.917999E-07	1.000288E-10	1.000000E-10
Mg	2.003339E+00	8.272285E-05	8.269900E-05
Mn	3.250700E+01	5.938413E-04	5.936700E-04
Mo	2.179386E+02	2.279823E-03	2.279166E-03
N	1.982366E+00	1.420410E-04	1.420000E-04
Na	4.564845E+01	1.992775E-03	1.992200E-03
Nd	1.437620E-09	1.000288E-14	1.000000E-14
Ni	7.502088E+02	1.282876E-02	1.282506E-02
Pb	2.065134E-05	1.000288E-10	1.000000E-10
Pu	2.431914E-09	1.000288E-14	1.000000E-14
S	5.507393E+02	1.723725E-02	1.723228E-02
Si	2.802958E+00	1.001616E-04	1.001327E-04
Sm	1.498617E-09	1.000288E-14	1.000000E-14
Sr	8.732965E-06	1.000288E-10	1.000000E-10
Ti	4.784207E-06	1.002819E-10	1.002530E-10
U	2.372401E-09	1.000288E-14	1.000000E-14
V	4.768069E+00	9.393719E-05	9.391010E-05
Zn	6.517332E-06	1.000288E-10	1.000000E-10
Zr	9.092171E-16	1.000288E-20	1.000000E-20

Single ion activities and activity coefficients are here defined

with respect to the modified NBS pH scale

	pH	Eh	pe
modified NBS pH scale	2.0406	1.0983	1.8566E+01
rational pH scale	1.9641	1.1028	1.8643E+01

pHCl = 5.8287

Oxygen fugacity = 2.09991E-01
Log oxygen fugacity = -0.67780

Activity of water = 0.99924
Log activity of water = -0.00033

Ionic strength = 5.880049E-02 molal
Sum of molalities = 0.0494650122347
Osmotic coefficient = 0.85806

Mass of solution = 1.003325 kg
Mass of solutes = 0.003613 kg
Conc. of solutes = 0.360110 per cent (w/w)

Moles of solvent H2O = 5.54924E+01
Mass of solvent H2O = 9.99712E-01 kg

Species	Molality	Log molality	Log gamma	Log activity
H+	1.0861E-02	-1.9641	-0.0765	-2.0406
Ni++	1.0209E-02	-1.9910	-0.3466	-2.3376
SO4--	9.7761E-03	-2.0098	-0.3602	-2.3701
HSO4-	4.5008E-03	-2.3467	-0.0849	-2.4316
HCrO4-	4.0507E-03	-2.3925	-0.0849	-2.4774
NiSO4(aq)	2.6184E-03	-2.5820	0.0000	-2.5820
MoO4--	2.2798E-03	-2.6421	-0.3492	-2.9913
Na+	1.9397E-03	-2.7123	-0.0983	-2.8106
Cr2O7--	8.6348E-04	-3.0637	-0.3602	-3.4240
Mn++	4.1403E-04	-3.3830	-0.3466	-3.7295
O2(aq)	2.6166E-04	-3.5823	0.0062	-3.5761
Ca++	2.5991E-04	-3.5852	-0.3466	-3.9317
Cl-	2.0085E-04	-3.6971	-0.0909	-3.7881
MnSO4(aq)	1.7918E-04	-3.7467	0.0000	-3.7467
NO3-	1.4021E-04	-3.8532	-0.0909	-3.9441
K+	1.2506E-04	-3.9029	-0.1044	-4.0073
H3PO4(aq)	1.1923E-04	-3.9236	0.0000	-3.9236
H2PO4-	1.0769E-04	-3.9678	-0.0849	-4.0527
HF(aq)	1.0158E-04	-3.9932	0.0000	-3.9932
SiO2(aq)	1.0016E-04	-3.9993	0.0000	-3.9993
VO2+	7.7218E-05	-4.1123	-0.0983	-4.2106
CaSO4(aq)	6.4460E-05	-4.1907	0.0000	-4.1907
Mg++	5.3912E-05	-4.2683	-0.3139	-4.5822
NaSO4-	5.2994E-05	-4.2758	-0.0849	-4.3607
MgSO4(aq)	2.8802E-05	-4.5406	0.0000	-4.5406
B(OH)3(aq)	1.2392E-05	-4.9069	0.0000	-4.9069
VO2SO4-	1.2140E-05	-4.9158	-0.0849	-5.0007
CO2(aq)	1.0591E-05	-4.9751	0.0062	-4.9689

FeHPO4+	9.8576E-06	-5.0062	-0.0983	-5.1046
F-	9.2716E-06	-5.0328	-0.0878	-5.1207
Fe+++	3.9853E-06	-5.3995	-0.6676	-6.0671
Cr+++	3.9843E-06	-5.3996	-0.6676	-6.0672
KSO4-	3.8649E-06	-5.4129	-0.0849	-5.4977
VO(OH)3(aq)	3.3834E-06	-5.4706	0.0000	-5.4706
NiNO3+	1.6466E-06	-5.7834	-0.0983	-5.8817
H2CrO4(aq)	1.4542E-06	-5.8374	0.0000	-5.8374
FeOH++	1.4431E-06	-5.8407	-0.3761	-6.2168
VO2F(aq)	1.0440E-06	-5.9813	0.0000	-5.9813
AlF2+	8.5214E-07	-6.0695	-0.0983	-6.1678
AlF++	5.3571E-07	-6.2711	-0.3761	-6.6472
MnH2PO4+	4.6356E-07	-6.3339	-0.0983	-6.4322
FeSO4+	3.8794E-07	-6.4112	-0.0983	-6.5096
HCl(aq)	3.1718E-07	-6.4987	0.0000	-6.4987
CrO4--	2.6860E-07	-6.5709	-0.3602	-6.9311
FeF++	2.1127E-07	-6.6752	-0.3761	-7.0513
NiCl+	9.4729E-08	-7.0235	-0.0983	-7.1219
HPO3F-	9.2177E-08	-7.0354	-0.0849	-7.1203
CaNO3+	8.3647E-08	-7.0775	-0.0983	-7.1759
MnCl+	7.6216E-08	-7.1180	-0.0983	-7.2163
H2VO4-	7.2891E-08	-7.1373	-0.0849	-7.2222
CrO3Cl-	6.4830E-08	-7.1882	-0.0849	-7.2731
AlF3(aq)	6.4790E-08	-7.1885	0.0000	-7.1885
HNO3(aq)	5.1609E-08	-7.2873	0.0000	-7.2873
MnF+	4.7658E-08	-7.3219	-0.0983	-7.4202
VO2(OH)2-	4.5172E-08	-7.3451	-0.0849	-7.4300
MnNO3+	4.2136E-08	-7.3753	-0.0983	-7.4737
NaCl(aq)	4.2106E-08	-7.3757	0.0000	-7.3757
H2SO4(aq)	3.3711E-08	-7.4722	0.0000	-7.4722
Fe(SO4)2-	3.0999E-08	-7.5086	-0.0849	-7.5935
VO2HPO4-	3.0676E-08	-7.5132	-0.0849	-7.5981
H2F2(aq)	2.7887E-08	-7.5546	0.0000	-7.5546
Fe(OH)2+	2.7659E-08	-7.5582	-0.0983	-7.6565
KHSO4(aq)	2.4867E-08	-7.6044	0.0000	-7.6044
CrOH++	2.2345E-08	-7.6508	-0.3761	-8.0269
AlSO4+	1.6284E-08	-7.7882	-0.0983	-7.8866
Al+++	1.3838E-08	-7.8589	-0.6676	-8.5265
FeF2+	1.3794E-08	-7.8603	-0.0983	-7.9586
MgF+	5.5957E-09	-8.2521	-0.0983	-8.3505
CaF+	5.3411E-09	-8.2724	-0.0983	-8.3707
CaCl+	4.8188E-09	-8.3171	-0.0983	-8.4154
MgCl+	3.9189E-09	-8.4068	-0.0983	-8.5052
VO2F2-	2.7729E-09	-8.5571	-0.0849	-8.6419
FeNO3++	2.3166E-09	-8.6352	-0.3761	-9.0113
PO3F--	1.5174E-09	-8.8189	-0.3602	-9.1791
HPO4--	1.3892E-09	-8.8572	-0.3602	-9.2175
NaF(aq)	1.1780E-09	-8.9289	0.0000	-8.9289
HCO3-	6.4802E-10	-9.1884	-0.0849	-9.2733
KCl(aq)	5.1294E-10	-9.2899	0.0000	-9.2899
MnHPO4(aq)	4.2954E-10	-9.3670	0.0000	-9.3670
VO++	2.7648E-10	-9.5583	-0.3761	-9.9344
CrCl++	2.3541E-10	-9.6282	-0.3761	-10.0043
HF2-	2.2585E-10	-9.6462	-0.0849	-9.7311
AlF4-	1.4988E-10	-9.8243	-0.0849	-9.9092
VOSO4(aq)	1.4980E-10	-9.8245	0.0000	-9.8245
Mn+++	1.1765E-10	-9.9294	-0.8157	-10.7452
Ti(OH)4(aq)	1.0028E-10	-9.9988	0.0000	-9.9988
Cs+	1.0002E-10	-9.9999	-0.1077	-10.1076

--- Summary of Instantaneously Precipitated Solid Phases ---
(defined by derivatives)

--- Theoretical Rock Composition ---
g/kg

--- Oxide Percentages ---

Oxide Theoretical rock

Total = 0.0000

	Phase/end-member	d mol/d zi	d grams/d zi	d vol (cc)/d zi
fix	CO2(g)	0.0000E+00	0.0000E+00	0.0000E+00
fix	O2(g)	0.0000E+00	0.0000E+00	0.0000E+00

--- Summary of Solid Phases (E.S.+P.R.S.) ---

	Phase/End-member	Log moles	Moles	Mass, g	Volume, cc
fix	CO2(g)	2.3010	2.0000E+02	8.8020E+03	0.0000E+00
fix	O2(g)	2.3010	2.0000E+02	6.3998E+03	0.0000E+00

	Mass, grams	Volume, cc
Created	1.520172E+04	0.000000E+00
Destroyed	2.058647E-08	0.000000E+00
Net	1.520172E+04	0.000000E+00

Warning-- these volume totals may be incomplete because
of missing partial molar volume data in the data base

--- Summary of Pure Mineral Saturation States ---

Mineral	Log Q/K	Aff, kcal	State
AlF3	-6.680	-9.113	
Anglesite	-4.894	-6.677	
Anhydrite	-1.995	-2.722	
BaZrO3	69.237	94.458	ssatd
Barite	-2.765	-3.772	
Bassanite	-2.640	-3.602	
Boric_acid	-4.749	-6.478	
CaSO4:0.5H2O(beta)	-2.809	-3.832	
CaZrO3	129.700	176.948	ssatd
Celestite	-7.194	-9.815	
Chalcedony	-0.271	-0.370	
Coesite	-0.810	-1.105	
CrO2	-0.909	-1.241	
Cristobalite(alpha)	-0.550	-0.751	
Cristobalite(beta)	-0.994	-1.356	
Crocoite	-4.591	-6.263	
Epsomite	-4.992	-6.811	
Fe(OH)3	-5.602	-7.642	
FeF3	-2.190	-2.988	
Fluorite	-4.136	-5.643	

Goethite	-0.480	-0.655	
Gypsum	-1.820	-2.483	
Hematite	0.000	0.000	ssatd
Hexahydrite	-5.227	-7.132	
Ice	-0.139	-0.190	
Jarosite	-5.336	-7.280	
Kieserite	-6.686	-9.121	
Manganite	-4.459	-6.084	
Mercallite	-6.979	-9.521	
Mirabilite	-6.855	-9.352	
MnHPO4	0.000	0.000	ssatd
MnO2(gamma)	-1.518	-2.071	
Morenosite	-2.696	-3.678	
NiSO4:6H2O(alpha)	-2.702	-3.687	
Nontronite-Ca	-3.756	-5.124	
Nontronite-H	-2.823	-3.851	
Nontronite-K	-4.147	-5.658	
Nontronite-Mg	-3.826	-5.219	
Nontronite-Na	-4.091	-5.581	
Pentahydrite	-5.567	-7.595	
Pyrolusite	0.000	0.000	ssatd
Quartz	0.000	0.000	ssatd
Rutile	-0.353	-0.481	
Sellaite	-5.439	-7.421	
Shcherbinaite	-2.888	-3.940	
SiO2(am)	-1.286	-1.754	
SrZrO3	106.096	144.745	ssatd
Starkeyite	-5.954	-8.123	
Strengite	-1.902	-2.594	
Tridymite	-0.171	-0.234	
fix CO2(g)	0.000	0.000	satd
fix O2(g)	0.000	0.000	satd

--- Summary of Solid Solutions ---

--- Carbonate-Calcite ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Calcite	5.6705E-03	-2.2464	0.0000	-2.2464
Magnesite	4.5525E-04	-3.3417	0.0000	-3.3417
Rhodochrosite	9.9387E-01	-0.0027	0.0000	-0.0027
Siderite	1.2691E-08	-7.8965	0.0000	-7.8965
Smithsonite	5.2900E-08	-7.2765	0.0000	-7.2765
Strontianite	2.2203E-07	-6.6536	0.0000	-6.6536

Mineral	Log Q/K	Aff, kcal	State
Carbonate-Calcite	-10.767	-14.689	
Calcite	-10.767	-14.689	
Magnesite	-10.767	-14.689	
Rhodochrosite	-10.767	-14.689	
Siderite	-10.767	-14.689	
Smithsonite	-10.767	-14.689	
Strontianite	-10.767	-14.689	

--- Clinoptilolite-hy-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-hy-Ca	9.9769E-01	-0.0010	0.0000	-0.0010
Clinoptilolite-hy-Cs	6.6777E-23	-22.1754	0.0000	-22.1754
Clinoptilolite-hy-K	7.3167E-04	-3.1357	0.0000	-3.1357
Clinoptilolite-hy-Na	1.5783E-03	-2.8018	0.0000	-2.8018
Clinoptilolite-hy-Sr	5.6081E-12	-11.2512	0.0000	-11.2512

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-hy-ss	-59.152	-80.700	
Clinoptilolite-hy-Ca	-59.152	-80.700	
Clinoptilolite-hy-Cs	-59.152	-80.700	
Clinoptilolite-hy-K	-59.152	-80.700	
Clinoptilolite-hy-Na	-59.152	-80.700	
Clinoptilolite-hy-Sr	-59.152	-80.700	

--- Clinoptilolite-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-Ca	7.8163E-01	-0.1070	-0.2632	-0.3702
Clinoptilolite-Cs	3.0398E-07	-6.5172	-16.0322	-22.5494
Clinoptilolite-K	9.6807E-02	-1.0141	-2.4947	-3.5088
Clinoptilolite-NH4	1.0307E-51	-50.9869	-125.4277	-176.4146
Clinoptilolite-Na	1.2112E-01	-0.9168	-2.2553	-3.1721
Clinoptilolite-Sr	4.3842E-04	-3.3581	-8.2609	-11.6190

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-ss	-58.784	-80.198	
Clinoptilolite-Ca	-58.784	-80.198	
Clinoptilolite-Cs	-58.784	-80.198	
Clinoptilolite-K	-58.784	-80.198	
Clinoptilolite-NH4	-58.784	-80.198	
Clinoptilolite-Na	-58.784	-80.198	
Clinoptilolite-Sr	-58.784	-80.198	

--- Saponite-tri ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Saponite-Ca	1.4821E-03	-2.8291	1.8955	-0.9336
Saponite-H	9.9737E-01	-0.0011	0.0008	-0.0004
Saponite-K	9.6726E-05	-4.0145	2.6897	-1.3248
Saponite-Mg	9.1179E-04	-3.0401	2.0369	-1.0032
Saponite-Na	1.4347E-04	-3.8432	2.5750	-1.2683

Mineral	Log Q/K	Aff, kcal	State

Saponite-tri	-42.307	-57.719
Saponite-Ca	-42.307	-57.719
Saponite-H	-42.307	-57.719
Saponite-K	-42.307	-57.719
Saponite-Mg	-42.307	-57.719
Saponite-Na	-42.307	-57.719

--- Smectite-di ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Beidellite-Ca	6.3607E-68	-67.1965	45.0217	-22.1748
Beidellite-K	4.1539E-69	-68.3815	45.8156	-22.5659
Beidellite-Mg	3.9130E-68	-67.4075	45.1630	-22.2445
Beidellite-Na	6.1572E-69	-68.2106	45.7011	-22.5095
Montmor-Ca	3.1299E-58	-57.5045	38.5280	-18.9765
Montmor-K	3.3383E-59	-58.4765	39.1792	-19.2972
Montmor-Mg	3.1293E-58	-57.5045	38.5280	-18.9765
Montmor-Na	4.8255E-59	-58.3165	39.0720	-19.2444
Nontronite-Ca	5.6252E-01	-0.2499	0.1674	-0.0825
Nontronite-K	3.6736E-02	-1.4349	0.9614	-0.4735
Nontronite-Mg	3.4629E-01	-0.4606	0.3086	-0.1520
Nontronite-Na	5.4453E-02	-1.2640	0.8469	-0.4171

Mineral	Log Q/K	Aff, kcal	State
Smectite-di	-3.674	-5.012	
Beidellite-Ca	-3.674	-5.012	
Beidellite-K	-3.674	-5.012	
Beidellite-Mg	-3.674	-5.012	
Beidellite-Na	-3.674	-5.012	
Montmor-Ca	-3.674	-5.012	
Montmor-K	-3.674	-5.012	
Montmor-Mg	-3.674	-5.012	
Montmor-Na	-3.674	-5.012	
Nontronite-Ca	-3.674	-5.012	
Nontronite-K	-3.674	-5.012	
Nontronite-Mg	-3.674	-5.012	
Nontronite-Na	-3.674	-5.012	

--- Lanthanide hydroxide ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
La(OH)3	1.2829E-05	-4.8918	0.0000	-4.8918
Ce(OH)3	3.7099E-15	-14.4306	0.0000	-14.4306
Nd(OH)3(c)	3.4718E-01	-0.4594	0.0000	-0.4594
Gd(OH)3	5.8550E-01	-0.2325	0.0000	-0.2325
Sm(OH)3	6.7308E-02	-1.1719	0.0000	-1.1719

Mineral	Log Q/K	Aff, kcal	State

Lanthanide hydroxide	-24.639	-33.614
La(OH)3	-24.639	-33.614
Ce(OH)3	-24.639	-33.614
Nd(OH)3(c)	-24.639	-33.614
Gd(OH)3	-24.639	-33.614
Sm(OH)3	-24.639	-33.614

--- Rhabdophane-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaPO4:H2O	4.1201E-01	-0.3851	0.0000	-0.3851
CePO4:H2O	3.7677E-11	-10.4239	0.0000	-10.4239
NdPO4:H2O	2.2247E-01	-0.6527	0.0000	-0.6527
GdPO4:H2O	1.4936E-01	-0.8258	0.0000	-0.8258
SmPO4:H2O	2.1616E-01	-0.6652	0.0000	-0.6652

Mineral	Log Q/K	Aff, kcal	State
Rhabdophane-ss	-9.764	-13.321	
LaPO4:H2O	-9.764	-13.321	
CePO4:H2O	-9.764	-13.321	
NdPO4:H2O	-9.764	-13.321	
GdPO4:H2O	-9.764	-13.321	
SmPO4:H2O	-9.764	-13.321	

--- Lanthanide fluoride ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaF3:0.5H2O	5.7252E-01	-0.2422	0.0000	-0.2422
CeF3:0.5H2O	8.2978E-11	-10.0810	0.0000	-10.0810
NdF3:0.5H2O	3.8918E-01	-0.4099	0.0000	-0.4099
GdF3:0.5H2O	8.2628E-03	-2.0829	0.0000	-2.0829
SmF3:0.5H2O	3.0037E-02	-1.5223	0.0000	-1.5223

Mineral	Log Q/K	Aff, kcal	State
Lanthanide fluoride	-11.742	-16.019	
LaF3:0.5H2O	-11.742	-16.019	
CeF3:0.5H2O	-11.742	-16.019	
NdF3:0.5H2O	-11.742	-16.019	
GdF3:0.5H2O	-11.742	-16.019	
SmF3:0.5H2O	-11.742	-16.019	

--- Summary of Gases ---

Gas	Fugacity	Log fugacity
Al(g)	4.4787-201	-200.3488

B(g)	8.5659-204	-203.0672
BF3(g)	3.7725E-24	-23.4234
C(g)	3.0917-190	-189.5098
CH4(g)	3.5240-146	-145.4530
CO(g)	6.0395E-49	-48.2190
CO2(g)	3.1623E-04	-3.5000
Ca(g)	7.2342-164	-163.1406
Chlorine	3.5847E-17	-16.4455
Cs(g)	3.5180E-89	-88.4537
Cu(g)	7.5962E-93	-92.1194
Fluorine	1.4789E-72	-71.8301
H2(g)	6.1104E-42	-41.2139
H2O(g)	2.5958E-02	-1.5857
H2S(g)	2.2902-130	-129.6401
HCl(g)	7.3419E-13	-12.1342
HF(g)	5.3223E-09	-8.2739
K(g)	2.2169E-83	-82.6543
Li(g)	7.8245-103	-102.1065
Mg(g)	1.0897-141	-140.9627
Nitrogen	2.6192E-08	-7.5818
NH3(g)	1.8638E-63	-62.7296
NO(g)	5.0961E-20	-19.2928
NO2(g)	3.4845E-14	-13.4579
Na(g)	1.8194E-81	-80.7401
O2(g)	2.0999E-01	-0.6778
Pb(g)	7.6389E-81	-80.1170
S2(g)	3.1322-203	-202.5042
SO2(g)	4.0579E-43	-42.3917
Si(g)	4.2257-221	-220.3741
SiF4(g)	3.5422E-18	-17.4507
Ti(g)	1.6869-231	-230.7729
TiCl4(g)	4.3250E-62	-61.3640
U(g)	1.0090-304	-303.9961
U2Cl10(g)	4.7266-202	-201.3255
U2Cl8(g)	4.0878-216	-215.3885
U2F10(g)	2.5082-120	-119.6006
UCl(g)	6.6042-255	-254.1802
UCl2(g)	1.2931-203	-202.8884
UCl3(g)	5.5459-150	-149.2560
UCl4(g)	1.2879-113	-112.8901
UCl5(g)	1.5389-114	-113.8128
UCl6(g)	3.4162-110	-109.4665
UF(g)	1.0175-240	-239.9925
UF2(g)	7.6091-195	-194.1187
UF3(g)	1.4004-142	-141.8538
UF4(g)	3.8042E-87	-86.4197
UF5(g)	4.7335E-73	-72.3248
UF6(g)	5.7996E-73	-72.2366
UO(g)	7.9689-220	-219.0986
UO2(g)	1.4764-135	-134.8308
UO2Cl2(g)	2.3107E-71	-70.6363
UO2F2(g)	9.8635E-61	-60.0060
UO3(g)	1.0859E-82	-81.9642
UOF4(g)	1.1336E-64	-63.9455
Zn(g)	1.2815E-90	-89.8923

- -

Stepping to zi= 1.5849E-09, delzi= 5.8489E-10, nord= 0

```
  time =  1.5286E-05 d, dltime =  5.6413E-06 d
Steps completed =     3, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Ti(OH)4(aq)             ) =     -9.9983

- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -


                    Reaction progress        =  1.58489319246110E-09
                    Log of reaction progress =      -8.8000000



                    Time =  1.321E+00 sec
                         =  1.529E-05 days
                         =  4.185E-08 years

                    Log sec =        0.121
                    Log days =      -4.816
                    Log years =     -7.378

                    Temperature    =     25.000 degrees C
                    total pressure =      1.013 bars


Step size is limited by the print requirement


                              --- Reactant Summary ---


    Reactant                  Moles     Delta moles    Mass, g    Delta Mass, g

 Tuff                       1.0000E+02   1.5849E-09   2.0586E+03   3.2627E-08


               Current total mass =  2.05865E+03 grams
               Delta total mass   =  3.26274E-08 grams
               Delta total volume =      0.00000 cc


    Reactant                Rel. Rate      Rate         Rate
                             mol/mol       mol/s      mol/s/cm2

 Tuff                       1.0000E+00   1.2000E-09   2.5000E-15


    Reactant                  Affinity   Surface Area
                              kcal/mol     mol/s/cm2

 Tuff                        999.00000   4.8000E+05


    Reactant                Rate Constants, mol/s/cm2

 Tuff
                   Forward    2.5000E-15


         Affinity of the overall irreversible reaction=     0.000 kcal
         Contributions from irreversible reactions
         with no thermodynamic data are not included
```

--- Element Totals for the Aqueous Solution ---

Element	mg/kg soln.	Molality	Moles
O	8.865404E+05	5.561111E+01	5.559508E+01
Al	3.986978E-02	1.483009E-06	1.482582E-06
B	1.334829E-01	1.239157E-05	1.238800E-05
Ba	1.368719E-05	1.000288E-10	1.000000E-10
Ca	1.295702E+01	3.244636E-04	3.243700E-04
Ce	1.396507E-19	1.000288E-24	1.000000E-24
Cl	7.116513E+00	2.014581E-04	2.014000E-04
Cr	2.996352E+02	5.783475E-03	5.781807E-03
Cs	1.324650E-05	1.000288E-10	1.000000E-10
Cu	6.650220E-10	1.050303E-14	1.050000E-14
F	2.172842E+00	1.147831E-04	1.147500E-04
Fe	8.881072E-01	1.595998E-05	1.595538E-05
Gd	1.567289E-09	1.000288E-14	1.000000E-14
H	1.115156E+05	1.110370E+02	1.110050E+02
C	1.267583E-01	1.059166E-05	1.058861E-05
P	7.325643E+00	2.373660E-04	2.372976E-04
K	5.023461E+00	1.289472E-04	1.289100E-04
La	1.384452E-09	1.000288E-14	1.000000E-14
Li	6.917999E-07	1.000288E-10	1.000000E-10
Mg	2.003339E+00	8.272285E-05	8.269900E-05
Mn	3.250700E+01	5.938413E-04	5.936700E-04
Mo	2.179386E+02	2.279823E-03	2.279166E-03
N	1.982366E+00	1.420410E-04	1.420000E-04
Na	4.564845E+01	1.992775E-03	1.992200E-03
Nd	1.437620E-09	1.000288E-14	1.000000E-14
Ni	7.502088E+02	1.282876E-02	1.282506E-02
Pb	2.065134E-05	1.000288E-10	1.000000E-10
Pu	2.431914E-09	1.000288E-14	1.000000E-14
S	5.507393E+02	1.723725E-02	1.723228E-02
Si	2.802962E+00	1.001617E-04	1.001329E-04
Sm	1.498617E-09	1.000288E-14	1.000000E-14
Sr	8.732965E-06	1.000288E-10	1.000000E-10
Ti	4.791269E-06	1.004299E-10	1.004010E-10
U	2.372401E-09	1.000288E-14	1.000000E-14
V	4.768069E+00	9.393719E-05	9.391010E-05
Zn	6.517332E-06	1.000288E-10	1.000000E-10
Zr	9.092171E-16	1.000288E-20	1.000000E-20

Single ion activities and activity coefficients are here defined
with respect to the modified NBS pH scale

	pH	Eh	pe
modified NBS pH scale	2.0406	1.0983	1.8566E+01
rational pH scale	1.9641	1.1028	1.8643E+01

pHCl = 5.8287

Oxygen fugacity = 2.09991E-01
Log oxygen fugacity = -0.67780

Activity of water = 0.99924
Log activity of water = -0.00033

Ionic strength = 5.880049E-02 molal
Sum of molalities = 0.0494650123353
Osmotic coefficient = 0.85806

Mass of solution = 1.003325 kg
Mass of solutes = 0.003613 kg
Conc. of solutes = 0.360110 per cent (w/w)

Moles of solvent H2O = 5.54924E+01
Mass of solvent H2O = 9.99712E-01 kg

Species	Molality	Log molality	Log gamma	Log activity
H+	1.0861E-02	-1.9641	-0.0765	-2.0406
Ni++	1.0209E-02	-1.9910	-0.3466	-2.3376
SO4--	9.7761E-03	-2.0098	-0.3602	-2.3701
HSO4-	4.5008E-03	-2.3467	-0.0849	-2.4316
HCrO4-	4.0507E-03	-2.3925	-0.0849	-2.4774
NiSO4(aq)	2.6184E-03	-2.5820	0.0000	-2.5820
MoO4--	2.2798E-03	-2.6421	-0.3492	-2.9913
Na+	1.9397E-03	-2.7123	-0.0983	-2.8106
Cr2O7--	8.6348E-04	-3.0637	-0.3602	-3.4240
Mn++	4.1403E-04	-3.3830	-0.3466	-3.7295
O2(aq)	2.6166E-04	-3.5823	0.0062	-3.5761
Ca++	2.5991E-04	-3.5852	-0.3466	-3.9317
Cl-	2.0085E-04	-3.6971	-0.0909	-3.7881
MnSO4(aq)	1.7918E-04	-3.7467	0.0000	-3.7467
NO3-	1.4021E-04	-3.8532	-0.0909	-3.9441
K+	1.2506E-04	-3.9029	-0.1044	-4.0073
H3PO4(aq)	1.1923E-04	-3.9236	0.0000	-3.9236
H2PO4-	1.0769E-04	-3.9678	-0.0849	-4.0527
HF(aq)	1.0158E-04	-3.9932	0.0000	-3.9932
SiO2(aq)	1.0016E-04	-3.9993	0.0000	-3.9993
VO2+	7.7218E-05	-4.1123	-0.0983	-4.2106
CaSO4(aq)	6.4460E-05	-4.1907	0.0000	-4.1907
Mg++	5.3912E-05	-4.2683	-0.3139	-4.5822
NaSO4-	5.2994E-05	-4.2758	-0.0849	-4.3607
MgSO4(aq)	2.8802E-05	-4.5406	0.0000	-4.5406
B(OH)3(aq)	1.2392E-05	-4.9069	0.0000	-4.9069
VO2SO4-	1.2140E-05	-4.9158	-0.0849	-5.0007
CO2(aq)	1.0591E-05	-4.9751	0.0062	-4.9689
FeHPO4+	9.8576E-06	-5.0062	-0.0983	-5.1046
F-	9.2716E-06	-5.0328	-0.0878	-5.1207
Fe+++	3.9853E-06	-5.3995	-0.6676	-6.0671
Cr+++	3.9843E-06	-5.3996	-0.6676	-6.0672
KSO4-	3.8649E-06	-5.4129	-0.0849	-5.4977
VO(OH)3(aq)	3.3834E-06	-5.4706	0.0000	-5.4706
NiNO3+	1.6466E-06	-5.7834	-0.0983	-5.8817
H2CrO4(aq)	1.4542E-06	-5.8374	0.0000	-5.8374
FeOH++	1.4431E-06	-5.8407	-0.3761	-6.2168
VO2F(aq)	1.0440E-06	-5.9813	0.0000	-5.9813
AlF2+	8.5215E-07	-6.0695	-0.0983	-6.1678
AlF++	5.3573E-07	-6.2711	-0.3761	-6.6472
MnH2PO4+	4.6356E-07	-6.3339	-0.0983	-6.4322
FeSO4+	3.8794E-07	-6.4112	-0.0983	-6.5096
HCl(aq)	3.1718E-07	-6.4987	0.0000	-6.4987
CrO4--	2.6860E-07	-6.5709	-0.3602	-6.9311
FeF++	2.1127E-07	-6.6752	-0.3761	-7.0513

NiCl+	9.4729E-08	-7.0235	-0.0983	-7.1219
HPO3F-	9.2177E-08	-7.0354	-0.0849	-7.1203
CaNO3+	8.3647E-08	-7.0775	-0.0983	-7.1759
MnCl+	7.6216E-08	-7.1180	-0.0983	-7.2163
H2VO4-	7.2891E-08	-7.1373	-0.0849	-7.2222
CrO3Cl-	6.4830E-08	-7.1882	-0.0849	-7.2731
AlF3(aq)	6.4791E-08	-7.1885	0.0000	-7.1885
HNO3(aq)	5.1609E-08	-7.2873	0.0000	-7.2873
MnF+	4.7658E-08	-7.3219	-0.0983	-7.4202
VO2(OH)2-	4.5172E-08	-7.3451	-0.0849	-7.4300
MnNO3+	4.2136E-08	-7.3753	-0.0983	-7.4737
NaCl(aq)	4.2106E-08	-7.3757	0.0000	-7.3757
H2SO4(aq)	3.3711E-08	-7.4722	0.0000	-7.4722
Fe(SO4)2-	3.0999E-08	-7.5086	-0.0849	-7.5935
VO2HPO4-	3.0676E-08	-7.5132	-0.0849	-7.5981
H2F2(aq)	2.7887E-08	-7.5546	0.0000	-7.5546
Fe(OH)2+	2.7659E-08	-7.5582	-0.0983	-7.6565
KHSO4(aq)	2.4867E-08	-7.6044	0.0000	-7.6044
CrOH++	2.2345E-08	-7.6508	-0.3761	-8.0269
AlSO4+	1.6285E-08	-7.7882	-0.0983	-7.8866
Al+++	1.3838E-08	-7.8589	-0.6676	-8.5265
FeF2+	1.3794E-08	-7.8603	-0.0983	-7.9586
MgF+	5.5957E-09	-8.2521	-0.0983	-8.3505
CaF+	5.3411E-09	-8.2724	-0.0983	-8.3707
CaCl+	4.8188E-09	-8.3171	-0.0983	-8.4154
MgCl+	3.9189E-09	-8.4068	-0.0983	-8.5052
VO2F2-	2.7729E-09	-8.5571	-0.0849	-8.6419
FeNO3++	2.3166E-09	-8.6352	-0.3761	-9.0113
PO3F--	1.5174E-09	-8.8189	-0.3602	-9.1791
HPO4--	1.3892E-09	-8.8572	-0.3602	-9.2175
NaF(aq)	1.1780E-09	-8.9289	0.0000	-8.9289
HCO3-	6.4802E-10	-9.1884	-0.0849	-9.2733
KCl(aq)	5.1294E-10	-9.2899	0.0000	-9.2899
MnHPO4(aq)	4.2954E-10	-9.3670	0.0000	-9.3670
VO++	2.7648E-10	-9.5583	-0.3761	-9.9344
CrCl++	2.3541E-10	-9.6282	-0.3761	-10.0043
HF2-	2.2585E-10	-9.6462	-0.0849	-9.7311
AlF4-	1.4988E-10	-9.8243	-0.0849	-9.9091
VOSO4(aq)	1.4980E-10	-9.8245	0.0000	-9.8245
Mn+++	1.1765E-10	-9.9294	-0.8157	-10.7452
Ti(OH)4(aq)	1.0043E-10	-9.9981	0.0000	-9.9981
Cs+	1.0002E-10	-9.9999	-0.1077	-10.1076

--- Summary of Instantaneously Precipitated Solid Phases ---
(defined by derivatives)

--- Theoretical Rock Composition ---
g/kg

--- Oxide Percentages ---

Oxide Theoretical rock

Total = 0.0000

Phase/end-member		d mol/d zi	d grams/d zi	d vol (cc)/d zi
fix	CO2(g)	0.0000E+00	0.0000E+00	0.0000E+00
fix	O2(g)	0.0000E+00	0.0000E+00	0.0000E+00

--- Summary of Solid Phases (E.S.+P.R.S.) ---

	Phase/End-member	Log moles	Moles	Mass, g	Volume, cc
fix	CO2(g)	2.3010	2.0000E+02	8.8020E+03	0.0000E+00
fix	O2(g)	2.3010	2.0000E+02	6.3998E+03	0.0000E+00

	Mass, grams	Volume, cc
Created	1.520172E+04	0.000000E+00
Destroyed	3.262735E-08	0.000000E+00
Net	1.520172E+04	0.000000E+00

Warning-- these volume totals may be incomplete because
of missing partial molar volume data in the data base

--- Summary of Pure Mineral Saturation States ---

Mineral	Log Q/K	Aff, kcal	State
AlF3	-6.680	-9.113	
Anglesite	-4.894	-6.677	
Anhydrite	-1.995	-2.722	
BaZrO3	69.237	94.458	ssatd
Barite	-2.765	-3.772	
Bassanite	-2.640	-3.602	
Boric_acid	-4.749	-6.478	
CaSO4:0.5H2O(beta)	-2.809	-3.832	
CaZrO3	129.700	176.948	ssatd
Celestite	-7.194	-9.815	
Chalcedony	-0.271	-0.370	
Coesite	-0.810	-1.105	
CrO2	-0.909	-1.241	
Cristobalite(alpha)	-0.550	-0.751	
Cristobalite(beta)	-0.994	-1.356	
Crocoite	-4.591	-6.263	
Epsomite	-4.992	-6.811	
Fe(OH)3	-5.602	-7.642	
FeF3	-2.190	-2.988	
Fluorite	-4.136	-5.643	
Goethite	-0.480	-0.655	
Gypsum	-1.820	-2.483	
Hematite	0.000	0.000	ssatd
Hexahydrite	-5.227	-7.132	
Ice	-0.139	-0.190	
Jarosite	-5.336	-7.280	
Kieserite	-6.686	-9.121	
Manganite	-4.459	-6.084	
Mercallite	-6.979	-9.521	
Mirabilite	-6.855	-9.352	
MnHPO4	0.000	0.000	ssatd
MnO2(gamma)	-1.518	-2.071	
Morenosite	-2.696	-3.678	
NiSO4:6H2O(alpha)	-2.702	-3.687	
Nontronite-Ca	-3.756	-5.124	
Nontronite-H	-2.823	-3.851	
Nontronite-K	-4.147	-5.658	

Nontronite-Mg	-3.826	-5.219	
Nontronite-Na	-4.091	-5.581	
Pentahydrite	-5.567	-7.595	
Pyrolusite	0.000	0.000	ssatd
Quartz	0.000	0.000	ssatd
Rutile	-0.352	-0.481	
Sellaite	-5.439	-7.421	
Shcherbinaite	-2.888	-3.940	
SiO2(am)	-1.286	-1.754	
SrZrO3	106.096	144.745	ssatd
Starkeyite	-5.954	-8.123	
Strengite	-1.902	-2.594	
Tridymite	-0.171	-0.234	
fix CO2(g)	0.000	0.000	satd
fix O2(g)	0.000	0.000	satd

--- Summary of Solid Solutions ---

--- Carbonate-Calcite ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Calcite	5.6705E-03	-2.2464	0.0000	-2.2464
Magnesite	4.5525E-04	-3.3417	0.0000	-3.3417
Rhodochrosite	9.9387E-01	-0.0027	0.0000	-0.0027
Siderite	1.2691E-08	-7.8965	0.0000	-7.8965
Smithsonite	5.2900E-08	-7.2765	0.0000	-7.2765
Strontianite	2.2203E-07	-6.6536	0.0000	-6.6536

Mineral	Log Q/K	Aff, kcal	State
Carbonate-Calcite	-10.767	-14.689	
Calcite	-10.767	-14.689	
Magnesite	-10.767	-14.689	
Rhodochrosite	-10.767	-14.689	
Siderite	-10.767	-14.689	
Smithsonite	-10.767	-14.689	
Strontianite	-10.767	-14.689	

--- Clinoptilolite-hy-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-hy-Ca	9.9769E-01	-0.0010	0.0000	-0.0010
Clinoptilolite-hy-Cs	6.6777E-23	-22.1754	0.0000	-22.1754
Clinoptilolite-hy-K	7.3167E-04	-3.1357	0.0000	-3.1357
Clinoptilolite-hy-Na	1.5783E-03	-2.8018	0.0000	-2.8018
Clinoptilolite-hy-Sr	5.6081E-12	-11.2512	0.0000	-11.2512

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-hy-ss	-59.152	-80.700	
Clinoptilolite-hy-Ca	-59.152	-80.700	
Clinoptilolite-hy-Cs	-59.152	-80.700	

Clinoptilolite-hy-K	-59.152	-80.700
Clinoptilolite-hy-Na	-59.152	-80.700
Clinoptilolite-hy-Sr	-59.152	-80.700

--- Clinoptilolite-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-Ca	7.8163E-01	-0.1070	-0.2632	-0.3702
Clinoptilolite-Cs	3.0398E-07	-6.5172	-16.0322	-22.5494
Clinoptilolite-K	9.6807E-02	-1.0141	-2.4947	-3.5088
Clinoptilolite-NH4	1.0307E-51	-50.9869	-125.4277	-176.4146
Clinoptilolite-Na	1.2112E-01	-0.9168	-2.2553	-3.1721
Clinoptilolite-Sr	4.3842E-04	-3.3581	-8.2609	-11.6190

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-ss	-58.784	-80.198	
Clinoptilolite-Ca	-58.784	-80.198	
Clinoptilolite-Cs	-58.784	-80.198	
Clinoptilolite-K	-58.784	-80.198	
Clinoptilolite-NH4	-58.784	-80.198	
Clinoptilolite-Na	-58.784	-80.198	
Clinoptilolite-Sr	-58.784	-80.198	

--- Saponite-tri ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Saponite-Ca	1.4821E-03	-2.8291	1.8955	-0.9336
Saponite-H	9.9737E-01	-0.0011	0.0008	-0.0004
Saponite-K	9.6726E-05	-4.0145	2.6897	-1.3248
Saponite-Mg	9.1179E-04	-3.0401	2.0369	-1.0032
Saponite-Na	1.4347E-04	-3.8432	2.5750	-1.2683

Mineral	Log Q/K	Aff, kcal	State
Saponite-tri	-42.307	-57.719	
Saponite-Ca	-42.307	-57.719	
Saponite-H	-42.307	-57.719	
Saponite-K	-42.307	-57.719	
Saponite-Mg	-42.307	-57.719	
Saponite-Na	-42.307	-57.719	

--- Smectite-di ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Beidellite-Ca	6.3615E-68	-67.1964	45.0216	-22.1748

Beidellite-K	4.1544E-69	-68.3815	45.8156	-22.5659
Beidellite-Mg	3.9135E-68	-67.4074	45.1630	-22.2445
Beidellite-Na	6.1580E-69	-68.2106	45.7011	-22.5095
Montmor-Ca	3.1302E-58	-57.5044	38.5280	-18.9765
Montmor-K	3.3386E-59	-58.4764	39.1792	-19.2972
Montmor-Mg	3.1296E-58	-57.5045	38.5280	-18.9765
Montmor-Na	4.8259E-59	-58.3164	39.0720	-19.2444
Nontronite-Ca	5.6252E-01	-0.2499	0.1674	-0.0825
Nontronite-K	3.6736E-02	-1.4349	0.9614	-0.4735
Nontronite-Mg	3.4629E-01	-0.4606	0.3086	-0.1520
Nontronite-Na	5.4453E-02	-1.2640	0.8469	-0.4171

Mineral	Log Q/K	Aff, kcal	State
Smectite-di	-3.674	-5.012	
Beidellite-Ca	-3.674	-5.012	
Beidellite-K	-3.674	-5.012	
Beidellite-Mg	-3.674	-5.012	
Beidellite-Na	-3.674	-5.012	
Montmor-Ca	-3.674	-5.012	
Montmor-K	-3.674	-5.012	
Montmor-Mg	-3.674	-5.012	
Montmor-Na	-3.674	-5.012	
Nontronite-Ca	-3.674	-5.012	
Nontronite-K	-3.674	-5.012	
Nontronite-Mg	-3.674	-5.012	
Nontronite-Na	-3.674	-5.012	

--- Lanthanide hydroxide ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
La(OH)3	1.2829E-05	-4.8918	0.0000	-4.8918
Ce(OH)3	3.7099E-15	-14.4306	0.0000	-14.4306
Nd(OH)3(c)	3.4718E-01	-0.4594	0.0000	-0.4594
Gd(OH)3	5.8550E-01	-0.2325	0.0000	-0.2325
Sm(OH)3	6.7308E-02	-1.1719	0.0000	-1.1719

Mineral	Log Q/K	Aff, kcal	State
Lanthanide hydroxide	-24.639	-33.614	
La(OH)3	-24.639	-33.614	
Ce(OH)3	-24.639	-33.614	
Nd(OH)3(c)	-24.639	-33.614	
Gd(OH)3	-24.639	-33.614	
Sm(OH)3	-24.639	-33.614	

--- Rhabdophane-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaPO4:H2O	4.1201E-01	-0.3851	0.0000	-0.3851
CePO4:H2O	3.7677E-11	-10.4239	0.0000	-10.4239

NdPO4:H2O	2.2247E-01	-0.6527	0.0000	-0.6527
GdPO4:H2O	1.4936E-01	-0.8258	0.0000	-0.8258
SmPO4:H2O	2.1616E-01	-0.6652	0.0000	-0.6652

Mineral	Log Q/K	Aff, kcal	State
Rhabdophane-ss	-9.764	-13.321	
LaPO4:H2O	-9.764	-13.321	
CePO4:H2O	-9.764	-13.321	
NdPO4:H2O	-9.764	-13.321	
GdPO4:H2O	-9.764	-13.321	
SmPO4:H2O	-9.764	-13.321	

--- Lanthanide fluoride ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaF3:0.5H2O	5.7252E-01	-0.2422	0.0000	-0.2422
CeF3:0.5H2O	8.2978E-11	-10.0810	0.0000	-10.0810
NdF3:0.5H2O	3.8918E-01	-0.4099	0.0000	-0.4099
GdF3:0.5H2O	8.2628E-03	-2.0829	0.0000	-2.0829
SmF3:0.5H2O	3.0037E-02	-1.5223	0.0000	-1.5223

Mineral	Log Q/K	Aff, kcal	State
Lanthanide fluoride	-11.742	-16.019	
LaF3:0.5H2O	-11.742	-16.019	
CeF3:0.5H2O	-11.742	-16.019	
NdF3:0.5H2O	-11.742	-16.019	
GdF3:0.5H2O	-11.742	-16.019	
SmF3:0.5H2O	-11.742	-16.019	

--- Summary of Gases ---

Gas	Fugacity	Log fugacity
Al(g)	4.4788-201	-200.3488
B(g)	8.5659-204	-203.0672
BF3(g)	3.7725E-24	-23.4234
C(g)	3.0917-190	-189.5098
CH4(g)	3.5240-146	-145.4530
CO(g)	6.0395E-49	-48.2190
CO2(g)	3.1623E-04	-3.5000
Ca(g)	7.2342-164	-163.1406
Chlorine	3.5847E-17	-16.4455
Cs(g)	3.5180E-89	-88.4537
Cu(g)	7.5962E-93	-92.1194
Fluorine	1.4789E-72	-71.8301
H2(g)	6.1104E-42	-41.2139
H2O(g)	2.5958E-02	-1.5857
H2S(g)	2.2902-130	-129.6401
HCl(g)	7.3419E-13	-12.1342
HF(g)	5.3223E-09	-8.2739
K(g)	2.2169E-83	-82.6543

```
Li(g)                       7.8245-103   -102.1065
Mg(g)                       1.0897-141   -140.9627
Nitrogen                    2.6192E-08     -7.5818
NH3(g)                      1.8638E-63    -62.7296
NO(g)                       5.0961E-20    -19.2928
NO2(g)                      3.4845E-14    -13.4579
Na(g)                       1.8194E-81    -80.7401
O2(g)                       2.0999E-01     -0.6778
Pb(g)                       7.6389E-81    -80.1170
S2(g)                       3.1322-203   -202.5042
SO2(g)                      4.0579E-43    -42.3917
Si(g)                       4.2257-221   -220.3741
SiF4(g)                     3.5422E-18    -17.4507
Ti(g)                       1.6894-231   -230.7723
TiCl4(g)                    4.3314E-62    -61.3634
U(g)                        1.0090-304   -303.9961
U2Cl10(g)                   4.7266-202   -201.3255
U2Cl8(g)                    4.0878-216   -215.3885
U2F10(g)                    2.5082-120   -119.6006
UCl(g)                      6.6042-255   -254.1802
UCl2(g)                     1.2931-203   -202.8884
UCl3(g)                     5.5459-150   -149.2560
UCl4(g)                     1.2879-113   -112.8901
UCl5(g)                     1.5389-114   -113.8128
UCl6(g)                     3.4162-110   -109.4665
UF(g)                       1.0175-240   -239.9925
UF2(g)                      7.6091-195   -194.1187
UF3(g)                      1.4004-142   -141.8538
UF4(g)                      3.8042E-87    -86.4197
UF5(g)                      4.7335E-73    -72.3248
UF6(g)                      5.7996E-73    -72.2366
UO(g)                       7.9689-220   -219.0986
UO2(g)                      1.4764-135   -134.8308
UO2Cl2(g)                   2.3107E-71    -70.6363
UO2F2(g)                    9.8635E-61    -60.0060
UO3(g)                      1.0859E-82    -81.9642
UOF4(g)                     1.1336E-64    -63.9455
Zn(g)                       1.2815E-90    -89.8923



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Stepping to zi=  2.5119E-09, delzi=  9.2699E-10, nord= 0
  time =  2.4227E-05 d, dltime =  8.9409E-06 d
Steps completed =     4, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Ti(OH)4(aq)             ) =     -9.9972

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                     Reaction progress        =  2.51188643150955E-09
                     Log of reaction progress =      -8.6000000



                     Time =  2.093E+00 sec
                          =  2.423E-05 days
                          =  6.633E-08 years

                     Log sec =        0.321
```

```
Log days =      -4.616
Log years =     -7.178

Temperature    =     25.000 degrees C
total pressure =      1.013 bars
```

Step size is limited by the print requirement

--- Reactant Summary ---

Reactant	Moles	Delta moles	Mass, g	Delta Mass, g
Tuff	1.0000E+02	2.5119E-09	2.0586E+03	5.1711E-08

```
Current total mass =  2.05865E+03 grams
Delta total mass   =  5.17109E-08 grams
Delta total volume =      0.00000 cc
```

Reactant	Rel. Rate mol/mol	Rate mol/s	Rate mol/s/cm2
Tuff	1.0000E+00	1.2000E-09	2.5000E-15

Reactant	Affinity kcal/mol	Surface Area mol/s/cm2
Tuff	999.00000	4.8000E+05

Reactant	Rate Constants, mol/s/cm2	
Tuff		
	Forward	2.5000E-15

```
Affinity of the overall irreversible reaction=     0.000 kcal
Contributions from irreversible reactions
with no thermodynamic data are not included
```

--- Element Totals for the Aqueous Solution ---

Element	mg/kg soln.	Molality	Moles
O	8.865404E+05	5.561111E+01	5.559508E+01
Al	3.987106E-02	1.483057E-06	1.482629E-06
B	1.334829E-01	1.239157E-05	1.238800E-05
Ba	1.368719E-05	1.000288E-10	1.000000E-10
Ca	1.295702E+01	3.244636E-04	3.243700E-04
Ce	1.396507E-19	1.000288E-24	1.000000E-24
Cl	7.116513E+00	2.014581E-04	2.014000E-04
Cr	2.996352E+02	5.783475E-03	5.781807E-03
Cs	1.324650E-05	1.000288E-10	1.000000E-10
Cu	6.650220E-10	1.050303E-14	1.050000E-14
F	2.172842E+00	1.147831E-04	1.147500E-04

Fe	8.881073E-01	1.595998E-05	1.595538E-05
Gd	1.567289E-09	1.000288E-14	1.000000E-14
H	1.115156E+05	1.110370E+02	1.110050E+02
C	1.267583E-01	1.059166E-05	1.058861E-05
P	7.325643E+00	2.373660E-04	2.372976E-04
K	5.023462E+00	1.289472E-04	1.289101E-04
La	1.384452E-09	1.000288E-14	1.000000E-14
Li	6.917999E-07	1.000288E-10	1.000000E-10
Mg	2.003339E+00	8.272285E-05	8.269900E-05
Mn	3.250700E+01	5.938413E-04	5.936700E-04
Mo	2.179386E+02	2.279823E-03	2.279166E-03
N	1.982366E+00	1.420410E-04	1.420000E-04
Na	4.564845E+01	1.992775E-03	1.992200E-03
Nd	1.437620E-09	1.000288E-14	1.000000E-14
Ni	7.502088E+02	1.282876E-02	1.282506E-02
Pb	2.065134E-05	1.000288E-10	1.000000E-10
Pu	2.431914E-09	1.000288E-14	1.000000E-14
S	5.507393E+02	1.723725E-02	1.723228E-02
Si	2.802969E+00	1.001620E-04	1.001331E-04
Sm	1.498617E-09	1.000288E-14	1.000000E-14
Sr	8.732965E-06	1.000288E-10	1.000000E-10
Ti	4.802461E-06	1.006645E-10	1.006355E-10
U	2.372401E-09	1.000288E-14	1.000000E-14
V	4.768069E+00	9.393719E-05	9.391010E-05
Zn	6.517332E-06	1.000288E-10	1.000000E-10
Zr	9.092171E-16	1.000288E-20	1.000000E-20

Single ion activities and activity coefficients are here defined
with respect to the modified NBS pH scale

	pH	Eh	pe
modified NBS pH scale	2.0406	1.0983	1.8566E+01
rational pH scale	1.9641	1.1028	1.8643E+01

pHCl = 5.8287

Oxygen fugacity = 2.09991E-01
Log oxygen fugacity = -0.67780

Activity of water = 0.99924
Log activity of water = -0.00033

Ionic strength = 5.880049E-02 molal
Sum of molalities = 0.0494650124954
Osmotic coefficient = 0.85806

Mass of solution = 1.003325 kg
Mass of solutes = 0.003613 kg
Conc. of solutes = 0.360110 per cent (w/w)

Moles of solvent H2O = 5.54924E+01
Mass of solvent H2O = 9.99712E-01 kg

Species	Molality	Log molality	Log gamma	Log activity

H+	1.0861E-02	-1.9641	-0.0765	-2.0406
Ni++	1.0209E-02	-1.9910	-0.3466	-2.3376
SO4--	9.7761E-03	-2.0098	-0.3602	-2.3701
HSO4-	4.5008E-03	-2.3467	-0.0849	-2.4316
HCrO4-	4.0507E-03	-2.3925	-0.0849	-2.4774
NiSO4(aq)	2.6184E-03	-2.5820	0.0000	-2.5820
MoO4--	2.2798E-03	-2.6421	-0.3492	-2.9913
Na+	1.9397E-03	-2.7123	-0.0983	-2.8106
Cr2O7--	8.6348E-04	-3.0637	-0.3602	-3.4240
Mn++	4.1403E-04	-3.3830	-0.3466	-3.7295
O2(aq)	2.6166E-04	-3.5823	0.0062	-3.5761
Ca++	2.5991E-04	-3.5852	-0.3466	-3.9317
Cl-	2.0085E-04	-3.6971	-0.0909	-3.7881
MnSO4(aq)	1.7918E-04	-3.7467	0.0000	-3.7467
NO3-	1.4021E-04	-3.8532	-0.0909	-3.9441
K+	1.2506E-04	-3.9029	-0.1044	-4.0073
H3PO4(aq)	1.1923E-04	-3.9236	0.0000	-3.9236
H2PO4-	1.0769E-04	-3.9678	-0.0849	-4.0527
HF(aq)	1.0158E-04	-3.9932	0.0000	-3.9932
SiO2(aq)	1.0016E-04	-3.9993	0.0000	-3.9993
VO2+	7.7218E-05	-4.1123	-0.0983	-4.2106
CaSO4(aq)	6.4460E-05	-4.1907	0.0000	-4.1907
Mg++	5.3912E-05	-4.2683	-0.3139	-4.5822
NaSO4-	5.2994E-05	-4.2758	-0.0849	-4.3607
MgSO4(aq)	2.8802E-05	-4.5406	0.0000	-4.5406
B(OH)3(aq)	1.2392E-05	-4.9069	0.0000	-4.9069
VO2SO4-	1.2140E-05	-4.9158	-0.0849	-5.0007
CO2(aq)	1.0591E-05	-4.9751	0.0062	-4.9689
FeHPO4+	9.8576E-06	-5.0062	-0.0983	-5.1046
F-	9.2715E-06	-5.0328	-0.0878	-5.1207
Fe+++	3.9853E-06	-5.3995	-0.6676	-6.0671
Cr+++	3.9843E-06	-5.3996	-0.6676	-6.0672
KSO4-	3.8649E-06	-5.4129	-0.0849	-5.4977
VO(OH)3(aq)	3.3834E-06	-5.4706	0.0000	-5.4706
NiNO3+	1.6466E-06	-5.7834	-0.0983	-5.8817
H2CrO4(aq)	1.4542E-06	-5.8374	0.0000	-5.8374
FeOH++	1.4431E-06	-5.8407	-0.3761	-6.2168
VO2F(aq)	1.0440E-06	-5.9813	0.0000	-5.9813
AlF2+	8.5218E-07	-6.0695	-0.0983	-6.1678
AlF++	5.3574E-07	-6.2710	-0.3761	-6.6471
MnH2PO4+	4.6356E-07	-6.3339	-0.0983	-6.4322
FeSO4+	3.8794E-07	-6.4112	-0.0983	-6.5096
HCl(aq)	3.1718E-07	-6.4987	0.0000	-6.4987
CrO4--	2.6860E-07	-6.5709	-0.3602	-6.9311
FeF++	2.1126E-07	-6.6752	-0.3761	-7.0513
NiCl+	9.4729E-08	-7.0235	-0.0983	-7.1219
HPO3F-	9.2177E-08	-7.0354	-0.0849	-7.1203
CaNO3+	8.3647E-08	-7.0775	-0.0983	-7.1759
MnCl+	7.6216E-08	-7.1180	-0.0983	-7.2163
H2VO4-	7.2891E-08	-7.1373	-0.0849	-7.2222
CrO3Cl-	6.4830E-08	-7.1882	-0.0849	-7.2731
AlF3(aq)	6.4793E-08	-7.1885	0.0000	-7.1885
HNO3(aq)	5.1609E-08	-7.2873	0.0000	-7.2873
MnF+	4.7658E-08	-7.3219	-0.0983	-7.4202
VO2(OH)2-	4.5172E-08	-7.3451	-0.0849	-7.4300
MnNO3+	4.2136E-08	-7.3753	-0.0983	-7.4737
NaCl(aq)	4.2106E-08	-7.3757	0.0000	-7.3757
H2SO4(aq)	3.3711E-08	-7.4722	0.0000	-7.4722
Fe(SO4)2-	3.0999E-08	-7.5086	-0.0849	-7.5935
VO2HPO4-	3.0676E-08	-7.5132	-0.0849	-7.5981
H2F2(aq)	2.7887E-08	-7.5546	0.0000	-7.5546
Fe(OH)2+	2.7659E-08	-7.5582	-0.0983	-7.6565

KHSO4(aq)	2.4867E-08	-7.6044	0.0000	-7.6044
CrOH++	2.2345E-08	-7.6508	-0.3761	-8.0269
AlSO4+	1.6285E-08	-7.7882	-0.0983	-7.8865
Al+++	1.3838E-08	-7.8589	-0.6676	-8.5265
FeF2+	1.3794E-08	-7.8603	-0.0983	-7.9586
MgF+	5.5957E-09	-8.2521	-0.0983	-8.3505
CaF+	5.3411E-09	-8.2724	-0.0983	-8.3707
CaCl+	4.8188E-09	-8.3171	-0.0983	-8.4154
MgCl+	3.9189E-09	-8.4068	-0.0983	-8.5052
VO2F2-	2.7729E-09	-8.5571	-0.0849	-8.6419
FeNO3++	2.3166E-09	-8.6352	-0.3761	-9.0113
PO3F--	1.5174E-09	-8.8189	-0.3602	-9.1791
HPO4--	1.3892E-09	-8.8572	-0.3602	-9.2175
NaF(aq)	1.1780E-09	-8.9289	0.0000	-8.9289
HCO3-	6.4802E-10	-9.1884	-0.0849	-9.2733
KCl(aq)	5.1294E-10	-9.2899	0.0000	-9.2899
MnHPO4(aq)	4.2954E-10	-9.3670	0.0000	-9.3670
VO++	2.7648E-10	-9.5583	-0.3761	-9.9344
CrCl++	2.3541E-10	-9.6282	-0.3761	-10.0043
HF2-	2.2585E-10	-9.6462	-0.0849	-9.7311
AlF4-	1.4988E-10	-9.8242	-0.0849	-9.9091
VOSO4(aq)	1.4980E-10	-9.8245	0.0000	-9.8245
Mn+++	1.1765E-10	-9.9294	-0.8157	-10.7452
Ti(OH)4(aq)	1.0066E-10	-9.9971	0.0000	-9.9971
Cs+	1.0002E-10	-9.9999	-0.1077	-10.1076

--- Summary of Instantaneously Precipitated Solid Phases ---
(defined by derivatives)

--- Theoretical Rock Composition ---
g/kg

--- Oxide Percentages ---

Oxide Theoretical rock

Total = 0.0000

Phase/end-member		d mol/d zi	d grams/d zi	d vol (cc)/d zi
fix	CO2(g)	0.0000E+00	0.0000E+00	0.0000E+00
fix	O2(g)	0.0000E+00	0.0000E+00	0.0000E+00

--- Summary of Solid Phases (E.S.+P.R.S.) ---

Phase/End-member		Log moles	Moles	Mass, g	Volume, cc
fix	CO2(g)	2.3010	2.0000E+02	8.8020E+03	0.0000E+00
fix	O2(g)	2.3010	2.0000E+02	6.3998E+03	0.0000E+00

	Mass, grams	Volume, cc
Created	1.520172E+04	0.000000E+00
Destroyed	5.171087E-08	0.000000E+00
Net	1.520172E+04	0.000000E+00

Warning-- these volume totals may be incomplete because

of missing partial molar volume data in the data base

--- Summary of Pure Mineral Saturation States ---

Mineral	Log Q/K	Aff, kcal	State
AlF3	-6.680	-9.113	
Anglesite	-4.894	-6.677	
Anhydrite	-1.995	-2.722	
BaZrO3	69.237	94.458	ssatd
Barite	-2.765	-3.772	
Bassanite	-2.640	-3.602	
Boric_acid	-4.749	-6.478	
CaSO4:0.5H2O(beta)	-2.809	-3.832	
CaZrO3	129.700	176.948	ssatd
Celestite	-7.194	-9.815	
Chalcedony	-0.271	-0.370	
Coesite	-0.810	-1.105	
CrO2	-0.909	-1.241	
Cristobalite(alpha)	-0.550	-0.751	
Cristobalite(beta)	-0.994	-1.356	
Crocoite	-4.591	-6.263	
Epsomite	-4.992	-6.811	
Fe(OH)3	-5.602	-7.642	
FeF3	-2.190	-2.988	
Fluorite	-4.136	-5.643	
Goethite	-0.480	-0.655	
Gypsum	-1.820	-2.483	
Hematite	0.000	0.000	ssatd
Hexahydrite	-5.227	-7.132	
Ice	-0.139	-0.190	
Jarosite	-5.336	-7.280	
Kieserite	-6.686	-9.121	
Manganite	-4.459	-6.084	
Mercallite	-6.979	-9.521	
Mirabilite	-6.855	-9.352	
MnHPO4	0.000	0.000	ssatd
MnO2(gamma)	-1.518	-2.071	
Morenosite	-2.696	-3.678	
NiSO4:6H2O(alpha)	-2.702	-3.687	
Nontronite-Ca	-3.756	-5.124	
Nontronite-H	-2.823	-3.851	
Nontronite-K	-4.147	-5.658	
Nontronite-Mg	-3.826	-5.219	
Nontronite-Na	-4.091	-5.581	
Pentahydrite	-5.567	-7.595	
Pyrolusite	0.000	0.000	ssatd
Quartz	0.000	0.000	ssatd
Rutile	-0.351	-0.479	
Sellaite	-5.439	-7.421	
Shcherbinaite	-2.888	-3.940	
SiO2(am)	-1.286	-1.754	
SrZrO3	106.096	144.745	ssatd
Starkeyite	-5.954	-8.123	
Strengite	-1.902	-2.594	
Tridymite	-0.171	-0.234	
fix CO2(g)	0.000	0.000	satd
fix O2(g)	0.000	0.000	satd

--- Summary of Solid Solutions ---

--- Carbonate-Calcite ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Calcite	5.6705E-03	-2.2464	0.0000	-2.2464
Magnesite	4.5525E-04	-3.3417	0.0000	-3.3417
Rhodochrosite	9.9387E-01	-0.0027	0.0000	-0.0027
Siderite	1.2691E-08	-7.8965	0.0000	-7.8965
Smithsonite	5.2900E-08	-7.2765	0.0000	-7.2765
Strontianite	2.2203E-07	-6.6536	0.0000	-6.6536

Mineral	Log Q/K	Aff, kcal	State
Carbonate-Calcite	-10.767	-14.689	
Calcite	-10.767	-14.689	
Magnesite	-10.767	-14.689	
Rhodochrosite	-10.767	-14.689	
Siderite	-10.767	-14.689	
Smithsonite	-10.767	-14.689	
Strontianite	-10.767	-14.689	

--- Clinoptilolite-hy-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-hy-Ca	9.9769E-01	-0.0010	0.0000	-0.0010
Clinoptilolite-hy-Cs	6.6777E-23	-22.1754	0.0000	-22.1754
Clinoptilolite-hy-K	7.3167E-04	-3.1357	0.0000	-3.1357
Clinoptilolite-hy-Na	1.5783E-03	-2.8018	0.0000	-2.8018
Clinoptilolite-hy-Sr	5.6081E-12	-11.2512	0.0000	-11.2512

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-hy-ss	-59.152	-80.700	
Clinoptilolite-hy-Ca	-59.152	-80.700	
Clinoptilolite-hy-Cs	-59.152	-80.700	
Clinoptilolite-hy-K	-59.152	-80.700	
Clinoptilolite-hy-Na	-59.152	-80.700	
Clinoptilolite-hy-Sr	-59.152	-80.700	

--- Clinoptilolite-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-Ca	7.8163E-01	-0.1070	-0.2632	-0.3702
Clinoptilolite-Cs	3.0398E-07	-6.5172	-16.0322	-22.5494
Clinoptilolite-K	9.6807E-02	-1.0141	-2.4947	-3.5088
Clinoptilolite-NH4	1.0307E-51	-50.9869	-125.4277	-176.4146
Clinoptilolite-Na	1.2112E-01	-0.9168	-2.2553	-3.1721

Clinoptilolite-Sr	4.3842E-04	-3.3581	-8.2609	-11.6190

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-ss	-58.784	-80.198	
Clinoptilolite-Ca	-58.784	-80.198	
Clinoptilolite-Cs	-58.784	-80.198	
Clinoptilolite-K	-58.784	-80.198	
Clinoptilolite-NH4	-58.784	-80.198	
Clinoptilolite-Na	-58.784	-80.198	
Clinoptilolite-Sr	-58.784	-80.198	

--- Saponite-tri ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Saponite-Ca	1.4821E-03	-2.8291	1.8955	-0.9336
Saponite-H	9.9737E-01	-0.0011	0.0008	-0.0004
Saponite-K	9.6726E-05	-4.0145	2.6897	-1.3248
Saponite-Mg	9.1179E-04	-3.0401	2.0369	-1.0032
Saponite-Na	1.4347E-04	-3.8432	2.5750	-1.2683

Mineral	Log Q/K	Aff, kcal	State
Saponite-tri	-42.307	-57.719	
Saponite-Ca	-42.307	-57.719	
Saponite-H	-42.307	-57.719	
Saponite-K	-42.307	-57.719	
Saponite-Mg	-42.307	-57.719	
Saponite-Na	-42.307	-57.719	

--- Smectite-di ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Beidellite-Ca	6.3627E-68	-67.1964	45.0216	-22.1748
Beidellite-K	4.1553E-69	-68.3814	45.8155	-22.5659
Beidellite-Mg	3.9143E-68	-67.4074	45.1629	-22.2444
Beidellite-Na	6.1592E-69	-68.2105	45.7010	-22.5095
Montmor-Ca	3.1306E-58	-57.5044	38.5279	-18.9764
Montmor-K	3.3390E-59	-58.4764	39.1792	-19.2972
Montmor-Mg	3.1300E-58	-57.5045	38.5280	-18.9765
Montmor-Na	4.8266E-59	-58.3164	39.0720	-19.2444
Nontronite-Ca	5.6252E-01	-0.2499	0.1674	-0.0825
Nontronite-K	3.6736E-02	-1.4349	0.9614	-0.4735
Nontronite-Mg	3.4629E-01	-0.4606	0.3086	-0.1520
Nontronite-Na	5.4453E-02	-1.2640	0.8469	-0.4171

Mineral	Log Q/K	Aff, kcal	State
Smectite-di	-3.674	-5.012	
Beidellite-Ca	-3.674	-5.012	

Beidellite-K	-3.674	-5.012
Beidellite-Mg	-3.674	-5.012
Beidellite-Na	-3.674	-5.012
Montmor-Ca	-3.674	-5.012
Montmor-K	-3.674	-5.012
Montmor-Mg	-3.674	-5.012
Montmor-Na	-3.674	-5.012
Nontronite-Ca	-3.674	-5.012
Nontronite-K	-3.674	-5.012
Nontronite-Mg	-3.674	-5.012
Nontronite-Na	-3.674	-5.012

--- Lanthanide hydroxide ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
La(OH)3	1.2829E-05	-4.8918	0.0000	-4.8918
Ce(OH)3	3.7099E-15	-14.4306	0.0000	-14.4306
Nd(OH)3(c)	3.4718E-01	-0.4594	0.0000	-0.4594
Gd(OH)3	5.8550E-01	-0.2325	0.0000	-0.2325
Sm(OH)3	6.7308E-02	-1.1719	0.0000	-1.1719

Mineral	Log Q/K	Aff, kcal	State
Lanthanide hydroxide	-24.639	-33.614	
La(OH)3	-24.639	-33.614	
Ce(OH)3	-24.639	-33.614	
Nd(OH)3(c)	-24.639	-33.614	
Gd(OH)3	-24.639	-33.614	
Sm(OH)3	-24.639	-33.614	

--- Rhabdophane-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaPO4:H2O	4.1201E-01	-0.3851	0.0000	-0.3851
CePO4:H2O	3.7677E-11	-10.4239	0.0000	-10.4239
NdPO4:H2O	2.2247E-01	-0.6527	0.0000	-0.6527
GdPO4:H2O	1.4936E-01	-0.8258	0.0000	-0.8258
SmPO4:H2O	2.1616E-01	-0.6652	0.0000	-0.6652

Mineral	Log Q/K	Aff, kcal	State
Rhabdophane-ss	-9.764	-13.321	
LaPO4:H2O	-9.764	-13.321	
CePO4:H2O	-9.764	-13.321	
NdPO4:H2O	-9.764	-13.321	
GdPO4:H2O	-9.764	-13.321	
SmPO4:H2O	-9.764	-13.321	

--- Lanthanide fluoride ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaF3:0.5H2O	5.7252E-01	-0.2422	0.0000	-0.2422
CeF3:0.5H2O	8.2978E-11	-10.0810	0.0000	-10.0810
NdF3:0.5H2O	3.8918E-01	-0.4099	0.0000	-0.4099
GdF3:0.5H2O	8.2628E-03	-2.0829	0.0000	-2.0829
SmF3:0.5H2O	3.0037E-02	-1.5223	0.0000	-1.5223

Mineral	Log Q/K	Aff, kcal	State
Lanthanide fluoride	-11.742	-16.019	
LaF3:0.5H2O	-11.742	-16.019	
CeF3:0.5H2O	-11.742	-16.019	
NdF3:0.5H2O	-11.742	-16.019	
GdF3:0.5H2O	-11.742	-16.019	
SmF3:0.5H2O	-11.742	-16.019	

--- Summary of Gases ---

Gas	Fugacity	Log fugacity
Al(g)	4.4790-201	-200.3488
B(g)	8.5659-204	-203.0672
BF3(g)	3.7725E-24	-23.4234
C(g)	3.0917-190	-189.5098
CH4(g)	3.5240-146	-145.4530
CO(g)	6.0395E-49	-48.2190
CO2(g)	3.1623E-04	-3.5000
Ca(g)	7.2342-164	-163.1406
Chlorine	3.5847E-17	-16.4455
Cs(g)	3.5180E-89	-88.4537
Cu(g)	7.5962E-93	-92.1194
Fluorine	1.4789E-72	-71.8301
H2(g)	6.1104E-42	-41.2139
H2O(g)	2.5958E-02	-1.5857
H2S(g)	2.2902-130	-129.6401
HCl(g)	7.3419E-13	-12.1342
HF(g)	5.3223E-09	-8.2739
K(g)	2.2169E-83	-82.6543
Li(g)	7.8245-103	-102.1065
Mg(g)	1.0897-141	-140.9627
Nitrogen	2.6192E-08	-7.5818
NH3(g)	1.8638E-63	-62.7296
NO(g)	5.0961E-20	-19.2928
NO2(g)	3.4845E-14	-13.4579
Na(g)	1.8194E-81	-80.7401
O2(g)	2.0999E-01	-0.6778
Pb(g)	7.6389E-81	-80.1170
S2(g)	3.1322-203	-202.5042
SO2(g)	4.0579E-43	-42.3917
Si(g)	4.2257-221	-220.3741
SiF4(g)	3.5422E-18	-17.4507
Ti(g)	1.6933-231	-230.7713
TiCl4(g)	4.3415E-62	-61.3624
U(g)	1.0090-304	-303.9961
U2Cl10(g)	4.7266-202	-201.3255

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U2Cl8(g)                    4.0878-216   -215.3885
U2F10(g)                    2.5082-120   -119.6006
UCl(g)                      6.6042-255   -254.1802
UCl2(g)                     1.2931-203   -202.8884
UCl3(g)                     5.5459-150   -149.2560
UCl4(g)                     1.2879-113   -112.8901
UCl5(g)                     1.5389-114   -113.8128
UCl6(g)                     3.4162-110   -109.4665
UF(g)                       1.0175-240   -239.9925
UF2(g)                      7.6091-195   -194.1187
UF3(g)                      1.4004-142   -141.8538
UF4(g)                      3.8042E-87    -86.4197
UF5(g)                      4.7335E-73    -72.3248
UF6(g)                      5.7996E-73    -72.2366
UO(g)                       7.9689-220   -219.0986
UO2(g)                      1.4764-135   -134.8308
UO2Cl2(g)                   2.3107E-71    -70.6363
UO2F2(g)                    9.8635E-61    -60.0060
UO3(g)                      1.0859E-82    -81.9642
UOF4(g)                     1.1336E-64    -63.9455
Zn(g)                       1.2815E-90    -89.8923



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Stepping to zi=  3.9811E-09, delzi=  1.4692E-09, nord= 2
  time =  3.8398E-05 d, dltime =  1.4170E-05 d
Steps completed =     5, iter =  1, ncorr = 0
Most rapidly changing is zvclg1(Ti(OH)4(aq)             ) =     -9.9956

- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -


                    Reaction progress        =  3.98107170553490E-09
                    Log of reaction progress =      -8.4000000



                    Time =  3.318E+00 sec
                         =  3.840E-05 days
                         =  1.051E-07 years

                    Log sec =        0.521
                    Log days =      -4.416
                    Log years =     -6.978

                    Temperature    =     25.000 degrees C
                    total pressure =      1.013 bars


Step size is limited by the print requirement


                              --- Reactant Summary ---


    Reactant                  Moles     Delta moles    Mass, g    Delta Mass, g

 Tuff                       1.0000E+02   3.9811E-09   2.0586E+03   8.1956E-08
```

```
Current total mass =  2.05865E+03 grams
Delta total mass   =  8.19562E-08 grams
Delta total volume =      0.00000 cc
```

Reactant	Rel. Rate mol/mol	Rate mol/s	Rate mol/s/cm2
Tuff	1.0000E+00	1.2000E-09	2.5000E-15

Reactant	Affinity kcal/mol	Surface Area mol/s/cm2
Tuff	999.00000	4.8000E+05

Reactant	Rate Constants, mol/s/cm2	
Tuff		
	Forward	2.5000E-15

```
Affinity of the overall irreversible reaction=     0.000 kcal
Contributions from irreversible reactions
with no thermodynamic data are not included
```

--- Element Totals for the Aqueous Solution ---

Element	mg/kg soln.	Molality	Moles
O	8.865404E+05	5.561111E+01	5.559508E+01
Al	3.987309E-02	1.483133E-06	1.482705E-06
B	1.334829E-01	1.239157E-05	1.238800E-05
Ba	1.368719E-05	1.000288E-10	1.000000E-10
Ca	1.295702E+01	3.244636E-04	3.243700E-04
Ce	1.396507E-19	1.000288E-24	1.000000E-24
Cl	7.116513E+00	2.014581E-04	2.014000E-04
Cr	2.996352E+02	5.783475E-03	5.781807E-03
Cs	1.324650E-05	1.000288E-10	1.000000E-10
Cu	6.650220E-10	1.050303E-14	1.050000E-14
F	2.172842E+00	1.147831E-04	1.147500E-04
Fe	8.881075E-01	1.595998E-05	1.595538E-05
Gd	1.567289E-09	1.000288E-14	1.000000E-14
H	1.115156E+05	1.110370E+02	1.110050E+02
C	1.267583E-01	1.059166E-05	1.058861E-05
P	7.325643E+00	2.373660E-04	2.372976E-04
K	5.023463E+00	1.289473E-04	1.289101E-04
La	1.384452E-09	1.000288E-14	1.000000E-14
Li	6.917999E-07	1.000288E-10	1.000000E-10
Mg	2.003339E+00	8.272286E-05	8.269900E-05
Mn	3.250700E+01	5.938413E-04	5.936700E-04
Mo	2.179386E+02	2.279823E-03	2.279166E-03
N	1.982366E+00	1.420410E-04	1.420000E-04
Na	4.564845E+01	1.992775E-03	1.992200E-03
Nd	1.437620E-09	1.000288E-14	1.000000E-14
Ni	7.502088E+02	1.282876E-02	1.282506E-02
Pb	2.065134E-05	1.000288E-10	1.000000E-10
Pu	2.431914E-09	1.000288E-14	1.000000E-14

S	5.507393E+02	1.723725E-02	1.723228E-02
Si	2.802980E+00	1.001624E-04	1.001335E-04
Sm	1.498617E-09	1.000288E-14	1.000000E-14
Sr	8.732965E-06	1.000288E-10	1.000000E-10
Ti	4.820199E-06	1.010363E-10	1.010072E-10
U	2.372401E-09	1.000288E-14	1.000000E-14
V	4.768069E+00	9.393719E-05	9.391010E-05
Zn	6.517332E-06	1.000288E-10	1.000000E-10
Zr	9.092171E-16	1.000288E-20	1.000000E-20

Single ion activities and activity coefficients are here defined
with respect to the modified NBS pH scale

	pH	Eh	pe
modified NBS pH scale	2.0406	1.0983	1.8566E+01
rational pH scale	1.9641	1.1028	1.8643E+01

pHCl = 5.8287

Oxygen fugacity = 2.09991E-01
Log oxygen fugacity = -0.67780

Activity of water = 0.99924
Log activity of water = -0.00033

Ionic strength = 5.880049E-02 molal
Sum of molalities = 0.0494650127408
Osmotic coefficient = 0.85806

Mass of solution = 1.003325 kg
Mass of solutes = 0.003613 kg
Conc. of solutes = 0.360110 per cent (w/w)

Moles of solvent H2O = 5.54924E+01
Mass of solvent H2O = 9.99712E-01 kg

Species	Molality	Log molality	Log gamma	Log activity
H+	1.0861E-02	-1.9641	-0.0765	-2.0406
Ni++	1.0209E-02	-1.9910	-0.3466	-2.3376
SO4--	9.7761E-03	-2.0098	-0.3602	-2.3701
HSO4-	4.5008E-03	-2.3467	-0.0849	-2.4316
HCrO4-	4.0507E-03	-2.3925	-0.0849	-2.4774
NiSO4(aq)	2.6184E-03	-2.5820	0.0000	-2.5820
MoO4--	2.2798E-03	-2.6421	-0.3492	-2.9913
Na+	1.9397E-03	-2.7123	-0.0983	-2.8106
Cr2O7--	8.6348E-04	-3.0637	-0.3602	-3.4240
Mn++	4.1403E-04	-3.3830	-0.3466	-3.7295
O2(aq)	2.6166E-04	-3.5823	0.0062	-3.5761
Ca++	2.5991E-04	-3.5852	-0.3466	-3.9317
Cl-	2.0085E-04	-3.6971	-0.0909	-3.7881
MnSO4(aq)	1.7918E-04	-3.7467	0.0000	-3.7467
NO3-	1.4021E-04	-3.8532	-0.0909	-3.9441
K+	1.2506E-04	-3.9029	-0.1044	-4.0073

H3PO4(aq)	1.1923E-04	-3.9236	0.0000	-3.9236
H2PO4-	1.0769E-04	-3.9678	-0.0849	-4.0527
HF(aq)	1.0158E-04	-3.9932	0.0000	-3.9932
SiO2(aq)	1.0016E-04	-3.9993	0.0000	-3.9993
VO2+	7.7218E-05	-4.1123	-0.0983	-4.2106
CaSO4(aq)	6.4460E-05	-4.1907	0.0000	-4.1907
Mg++	5.3912E-05	-4.2683	-0.3139	-4.5822
NaSO4-	5.2994E-05	-4.2758	-0.0849	-4.3607
MgSO4(aq)	2.8802E-05	-4.5406	0.0000	-4.5406
B(OH)3(aq)	1.2392E-05	-4.9069	0.0000	-4.9069
VO2SO4-	1.2140E-05	-4.9158	-0.0849	-5.0007
CO2(aq)	1.0591E-05	-4.9751	0.0062	-4.9689
FeHPO4+	9.8576E-06	-5.0062	-0.0983	-5.1046
F-	9.2715E-06	-5.0328	-0.0878	-5.1207
Fe+++	3.9853E-06	-5.3995	-0.6676	-6.0671
Cr+++	3.9843E-06	-5.3996	-0.6676	-6.0672
KSO4-	3.8649E-06	-5.4129	-0.0849	-5.4977
VO(OH)3(aq)	3.3834E-06	-5.4706	0.0000	-5.4706
NiNO3+	1.6466E-06	-5.7834	-0.0983	-5.8817
H2CrO4(aq)	1.4542E-06	-5.8374	0.0000	-5.8374
FeOH++	1.4431E-06	-5.8407	-0.3761	-6.2168
VO2F(aq)	1.0440E-06	-5.9813	0.0000	-5.9813
AlF2+	8.5222E-07	-6.0694	-0.0983	-6.1678
AlF++	5.3577E-07	-6.2710	-0.3761	-6.6471
MnH2PO4+	4.6356E-07	-6.3339	-0.0983	-6.4322
FeSO4+	3.8794E-07	-6.4112	-0.0983	-6.5096
HCl(aq)	3.1718E-07	-6.4987	0.0000	-6.4987
CrO4--	2.6860E-07	-6.5709	-0.3602	-6.9311
FeF++	2.1126E-07	-6.6752	-0.3761	-7.0513
NiCl+	9.4729E-08	-7.0235	-0.0983	-7.1219
HPO3F-	9.2177E-08	-7.0354	-0.0849	-7.1203
CaNO3+	8.3647E-08	-7.0775	-0.0983	-7.1759
MnCl+	7.6216E-08	-7.1180	-0.0983	-7.2163
H2VO4-	7.2891E-08	-7.1373	-0.0849	-7.2222
CrO3Cl-	6.4830E-08	-7.1882	-0.0849	-7.2731
AlF3(aq)	6.4797E-08	-7.1884	0.0000	-7.1884
HNO3(aq)	5.1609E-08	-7.2873	0.0000	-7.2873
MnF+	4.7658E-08	-7.3219	-0.0983	-7.4202
VO2(OH)2-	4.5172E-08	-7.3451	-0.0849	-7.4300
MnNO3+	4.2136E-08	-7.3753	-0.0983	-7.4737
NaCl(aq)	4.2106E-08	-7.3757	0.0000	-7.3757
H2SO4(aq)	3.3711E-08	-7.4722	0.0000	-7.4722
Fe(SO4)2-	3.0999E-08	-7.5086	-0.0849	-7.5935
VO2HPO4-	3.0676E-08	-7.5132	-0.0849	-7.5981
H2F2(aq)	2.7887E-08	-7.5546	0.0000	-7.5546
Fe(OH)2+	2.7659E-08	-7.5582	-0.0983	-7.6565
KHSO4(aq)	2.4867E-08	-7.6044	0.0000	-7.6044
CrOH++	2.2345E-08	-7.6508	-0.3761	-8.0269
AlSO4+	1.6286E-08	-7.7882	-0.0983	-7.8865
Al+++	1.3839E-08	-7.8589	-0.6676	-8.5265
FeF2+	1.3794E-08	-7.8603	-0.0983	-7.9586
MgF+	5.5957E-09	-8.2521	-0.0983	-8.3505
CaF+	5.3411E-09	-8.2724	-0.0983	-8.3707
CaCl+	4.8188E-09	-8.3171	-0.0983	-8.4154
MgCl+	3.9189E-09	-8.4068	-0.0983	-8.5052
VO2F2-	2.7729E-09	-8.5571	-0.0849	-8.6419
FeNO3++	2.3166E-09	-8.6352	-0.3761	-9.0113
PO3F--	1.5174E-09	-8.8189	-0.3602	-9.1791
HPO4--	1.3892E-09	-8.8572	-0.3602	-9.2175
NaF(aq)	1.1780E-09	-8.9289	0.0000	-8.9289
HCO3-	6.4802E-10	-9.1884	-0.0849	-9.2733
KCl(aq)	5.1294E-10	-9.2899	0.0000	-9.2899
MnHPO4(aq)	4.2954E-10	-9.3670	0.0000	-9.3670

VO++	2.7648E-10	-9.5583	-0.3761	-9.9344
CrCl++	2.3541E-10	-9.6282	-0.3761	-10.0043
HF2-	2.2585E-10	-9.6462	-0.0849	-9.7311
AlF4-	1.4989E-10	-9.8242	-0.0849	-9.9091
VOSO4(aq)	1.4980E-10	-9.8245	0.0000	-9.8245
Mn+++	1.1765E-10	-9.9294	-0.8157	-10.7452
Ti(OH)4(aq)	1.0104E-10	-9.9955	0.0000	-9.9955
Cs+	1.0002E-10	-9.9999	-0.1077	-10.1076

--- Summary of Instantaneously Precipitated Solid Phases ---
(defined by derivatives)

--- Theoretical Rock Composition ---
g/kg

--- Oxide Percentages ---

Oxide Theoretical rock

Total = 0.0000

	Phase/end-member	d mol/d zi	d grams/d zi	d vol (cc)/d zi
fix	CO2(g)	0.0000E+00	0.0000E+00	0.0000E+00
fix	O2(g)	-3.6571E-04	-1.1702E-02	0.0000E+00

--- Summary of Solid Phases (E.S.+P.R.S.) ---

	Phase/End-member	Log moles	Moles	Mass, g	Volume, cc
fix	CO2(g)	2.3010	2.0000E+02	8.8020E+03	0.0000E+00
fix	O2(g)	2.3010	2.0000E+02	6.3998E+03	0.0000E+00

	Mass, grams	Volume, cc
Created	1.520172E+04	0.000000E+00
Destroyed	8.195620E-08	0.000000E+00
Net	1.520172E+04	0.000000E+00

Warning-- these volume totals may be incomplete because
of missing partial molar volume data in the data base

--- Summary of Pure Mineral Saturation States ---

Mineral	Log Q/K	Aff, kcal	State
AlF3	-6.680	-9.113	
Anglesite	-4.894	-6.677	
Anhydrite	-1.995	-2.722	
BaZrO3	69.237	94.458	ssatd
Barite	-2.765	-3.772	
Bassanite	-2.640	-3.602	
Boric_acid	-4.749	-6.478	
CaSO4:0.5H2O(beta)	-2.809	-3.832	

CaZrO3	129.700	176.948	ssatd
Celestite	-7.194	-9.815	
Chalcedony	-0.271	-0.370	
Coesite	-0.810	-1.105	
CrO2	-0.909	-1.241	
Cristobalite(alpha)	-0.550	-0.751	
Cristobalite(beta)	-0.994	-1.356	
Crocoite	-4.591	-6.263	
Epsomite	-4.992	-6.811	
Fe(OH)3	-5.602	-7.642	
FeF3	-2.190	-2.988	
Fluorite	-4.136	-5.643	
Goethite	-0.480	-0.655	
Gypsum	-1.820	-2.483	
Hematite	0.000	0.000	ssatd
Hexahydrite	-5.227	-7.132	
Ice	-0.139	-0.190	
Jarosite	-5.336	-7.280	
Kieserite	-6.686	-9.121	
Manganite	-4.459	-6.084	
Mercallite	-6.979	-9.521	
Mirabilite	-6.855	-9.352	
MnHPO4	0.000	0.000	ssatd
MnO2(gamma)	-1.518	-2.071	
Morenosite	-2.696	-3.678	
NiSO4:6H2O(alpha)	-2.702	-3.687	
Nontronite-Ca	-3.756	-5.124	
Nontronite-H	-2.823	-3.851	
Nontronite-K	-4.147	-5.658	
Nontronite-Mg	-3.826	-5.219	
Nontronite-Na	-4.091	-5.581	
Pentahydrite	-5.567	-7.595	
Pyrolusite	0.000	0.000	ssatd
Quartz	0.000	0.000	ssatd
Rutile	-0.350	-0.477	
Sellaite	-5.439	-7.421	
Shcherbinaite	-2.888	-3.940	
SiO2(am)	-1.286	-1.754	
SrZrO3	106.096	144.745	ssatd
Starkeyite	-5.954	-8.123	
Strengite	-1.902	-2.594	
Tridymite	-0.171	-0.234	
fix CO2(g)	0.000	0.000	satd
fix O2(g)	0.000	0.000	satd

--- Summary of Solid Solutions ---

--- Carbonate-Calcite ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Calcite	5.6705E-03	-2.2464	0.0000	-2.2464
Magnesite	4.5525E-04	-3.3417	0.0000	-3.3417
Rhodochrosite	9.9387E-01	-0.0027	0.0000	-0.0027
Siderite	1.2691E-08	-7.8965	0.0000	-7.8965
Smithsonite	5.2900E-08	-7.2765	0.0000	-7.2765
Strontianite	2.2203E-07	-6.6536	0.0000	-6.6536

Mineral	Log Q/K	Aff, kcal	State

Carbonate-Calcite	-10.767	-14.689
Calcite	-10.767	-14.689
Magnesite	-10.767	-14.689
Rhodochrosite	-10.767	-14.689
Siderite	-10.767	-14.689
Smithsonite	-10.767	-14.689
Strontianite	-10.767	-14.689

--- Clinoptilolite-hy-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-hy-Ca	9.9769E-01	-0.0010	0.0000	-0.0010
Clinoptilolite-hy-Cs	6.6777E-23	-22.1754	0.0000	-22.1754
Clinoptilolite-hy-K	7.3167E-04	-3.1357	0.0000	-3.1357
Clinoptilolite-hy-Na	1.5783E-03	-2.8018	0.0000	-2.8018
Clinoptilolite-hy-Sr	5.6081E-12	-11.2512	0.0000	-11.2512

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-hy-ss	-59.152	-80.700	
Clinoptilolite-hy-Ca	-59.152	-80.700	
Clinoptilolite-hy-Cs	-59.152	-80.700	
Clinoptilolite-hy-K	-59.152	-80.700	
Clinoptilolite-hy-Na	-59.152	-80.700	
Clinoptilolite-hy-Sr	-59.152	-80.700	

--- Clinoptilolite-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-Ca	7.8163E-01	-0.1070	-0.2632	-0.3702
Clinoptilolite-Cs	3.0398E-07	-6.5172	-16.0322	-22.5494
Clinoptilolite-K	9.6807E-02	-1.0141	-2.4947	-3.5088
Clinoptilolite-NH4	1.0307E-51	-50.9869	-125.4277	-176.4146
Clinoptilolite-Na	1.2112E-01	-0.9168	-2.2553	-3.1721
Clinoptilolite-Sr	4.3842E-04	-3.3581	-8.2609	-11.6190

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-ss	-58.784	-80.198	
Clinoptilolite-Ca	-58.784	-80.198	
Clinoptilolite-Cs	-58.784	-80.198	
Clinoptilolite-K	-58.784	-80.198	
Clinoptilolite-NH4	-58.784	-80.198	
Clinoptilolite-Na	-58.784	-80.198	
Clinoptilolite-Sr	-58.784	-80.198	

--- Saponite-tri ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Saponite-Ca	1.4821E-03	-2.8291	1.8955	-0.9336
Saponite-H	9.9737E-01	-0.0011	0.0008	-0.0004
Saponite-K	9.6726E-05	-4.0145	2.6897	-1.3248
Saponite-Mg	9.1179E-04	-3.0401	2.0369	-1.0032
Saponite-Na	1.4347E-04	-3.8432	2.5750	-1.2683

Mineral	Log Q/K	Aff, kcal	State
Saponite-tri	-42.307	-57.719	
Saponite-Ca	-42.307	-57.719	
Saponite-H	-42.307	-57.719	
Saponite-K	-42.307	-57.719	
Saponite-Mg	-42.307	-57.719	
Saponite-Na	-42.307	-57.719	

--- Smectite-di ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Beidellite-Ca	6.3648E-68	-67.1962	45.0215	-22.1748
Beidellite-K	4.1566E-69	-68.3813	45.8154	-22.5658
Beidellite-Mg	3.9155E-68	-67.4072	45.1628	-22.2444
Beidellite-Na	6.1612E-69	-68.2103	45.7009	-22.5094
Montmor-Ca	3.1313E-58	-57.5043	38.5279	-18.9764
Montmor-K	3.3397E-59	-58.4763	39.1791	-19.2972
Montmor-Mg	3.1307E-58	-57.5044	38.5279	-18.9764
Montmor-Na	4.8276E-59	-58.3163	39.0719	-19.2444
Nontronite-Ca	5.6252E-01	-0.2499	0.1674	-0.0825
Nontronite-K	3.6736E-02	-1.4349	0.9614	-0.4735
Nontronite-Mg	3.4629E-01	-0.4606	0.3086	-0.1520
Nontronite-Na	5.4453E-02	-1.2640	0.8469	-0.4171

Mineral	Log Q/K	Aff, kcal	State
Smectite-di	-3.674	-5.012	
Beidellite-Ca	-3.674	-5.012	
Beidellite-K	-3.674	-5.012	
Beidellite-Mg	-3.674	-5.012	
Beidellite-Na	-3.674	-5.012	
Montmor-Ca	-3.674	-5.012	
Montmor-K	-3.674	-5.012	
Montmor-Mg	-3.674	-5.012	
Montmor-Na	-3.674	-5.012	
Nontronite-Ca	-3.674	-5.012	
Nontronite-K	-3.674	-5.012	
Nontronite-Mg	-3.674	-5.012	
Nontronite-Na	-3.674	-5.012	

--- Lanthanide hydroxide ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
La(OH)3	1.2829E-05	-4.8918	0.0000	-4.8918
Ce(OH)3	3.7099E-15	-14.4306	0.0000	-14.4306
Nd(OH)3(c)	3.4718E-01	-0.4594	0.0000	-0.4594
Gd(OH)3	5.8550E-01	-0.2325	0.0000	-0.2325
Sm(OH)3	6.7308E-02	-1.1719	0.0000	-1.1719

Mineral	Log Q/K	Aff, kcal	State
Lanthanide hydroxide	-24.639	-33.614	
La(OH)3	-24.639	-33.614	
Ce(OH)3	-24.639	-33.614	
Nd(OH)3(c)	-24.639	-33.614	
Gd(OH)3	-24.639	-33.614	
Sm(OH)3	-24.639	-33.614	

--- Rhabdophane-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaPO4:H2O	4.1201E-01	-0.3851	0.0000	-0.3851
CePO4:H2O	3.7677E-11	-10.4239	0.0000	-10.4239
NdPO4:H2O	2.2247E-01	-0.6527	0.0000	-0.6527
GdPO4:H2O	1.4936E-01	-0.8258	0.0000	-0.8258
SmPO4:H2O	2.1616E-01	-0.6652	0.0000	-0.6652

Mineral	Log Q/K	Aff, kcal	State
Rhabdophane-ss	-9.764	-13.321	
LaPO4:H2O	-9.764	-13.321	
CePO4:H2O	-9.764	-13.321	
NdPO4:H2O	-9.764	-13.321	
GdPO4:H2O	-9.764	-13.321	
SmPO4:H2O	-9.764	-13.321	

--- Lanthanide fluoride ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaF3:0.5H2O	5.7252E-01	-0.2422	0.0000	-0.2422
CeF3:0.5H2O	8.2978E-11	-10.0810	0.0000	-10.0810
NdF3:0.5H2O	3.8918E-01	-0.4099	0.0000	-0.4099
GdF3:0.5H2O	8.2628E-03	-2.0829	0.0000	-2.0829
SmF3:0.5H2O	3.0037E-02	-1.5223	0.0000	-1.5223

Mineral	Log Q/K	Aff, kcal	State
Lanthanide fluoride	-11.742	-16.019	
LaF3:0.5H2O	-11.742	-16.019	
CeF3:0.5H2O	-11.742	-16.019	

NdF3:0.5H2O	-11.742	-16.019
GdF3:0.5H2O	-11.742	-16.019
SmF3:0.5H2O	-11.742	-16.019

--- Summary of Gases ---

Gas	Fugacity	Log fugacity
Al(g)	4.4792-201	-200.3488
B(g)	8.5659-204	-203.0672
BF3(g)	3.7725E-24	-23.4234
C(g)	3.0917-190	-189.5098
CH4(g)	3.5240-146	-145.4530
CO(g)	6.0395E-49	-48.2190
CO2(g)	3.1623E-04	-3.5000
Ca(g)	7.2342-164	-163.1406
Chlorine	3.5847E-17	-16.4455
Cs(g)	3.5180E-89	-88.4537
Cu(g)	7.5962E-93	-92.1194
Fluorine	1.4789E-72	-71.8301
H2(g)	6.1104E-42	-41.2139
H2O(g)	2.5958E-02	-1.5857
H2S(g)	2.2902-130	-129.6401
HCl(g)	7.3419E-13	-12.1342
HF(g)	5.3223E-09	-8.2739
K(g)	2.2169E-83	-82.6543
Li(g)	7.8245-103	-102.1065
Mg(g)	1.0897-141	-140.9627
Nitrogen	2.6192E-08	-7.5818
NH3(g)	1.8638E-63	-62.7296
NO(g)	5.0961E-20	-19.2928
NO2(g)	3.4845E-14	-13.4579
Na(g)	1.8194E-81	-80.7401
O2(g)	2.0999E-01	-0.6778
Pb(g)	7.6389E-81	-80.1170
S2(g)	3.1322-203	-202.5042
SO2(g)	4.0579E-43	-42.3917
Si(g)	4.2258-221	-220.3741
SiF4(g)	3.5422E-18	-17.4507
Ti(g)	1.6996-231	-230.7697
TiCl4(g)	4.3576E-62	-61.3608
U(g)	1.0090-304	-303.9961
U2Cl10(g)	4.7266-202	-201.3255
U2Cl8(g)	4.0878-216	-215.3885
U2F10(g)	2.5082-120	-119.6006
UCl(g)	6.6042-255	-254.1802
UCl2(g)	1.2931-203	-202.8884
UCl3(g)	5.5459-150	-149.2560
UCl4(g)	1.2879-113	-112.8901
UCl5(g)	1.5389-114	-113.8128
UCl6(g)	3.4162-110	-109.4665
UF(g)	1.0174-240	-239.9925
UF2(g)	7.6090-195	-194.1187
UF3(g)	1.4004-142	-141.8538
UF4(g)	3.8042E-87	-86.4197
UF5(g)	4.7335E-73	-72.3248
UF6(g)	5.7996E-73	-72.2366
UO(g)	7.9689-220	-219.0986
UO2(g)	1.4764-135	-134.8308
UO2Cl2(g)	2.3107E-71	-70.6363

```
UO2F2(g)                    9.8635E-61    -60.0060
UO3(g)                      1.0859E-82    -81.9642
UOF4(g)                     1.1336E-64    -63.9455
Zn(g)                       1.2815E-90    -89.8923



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Stepping to zi=  6.3096E-09, delzi=  2.3285E-09, nord= 2
  time =  6.0856E-05 d, dltime =  2.2459E-05 d
Steps completed =     6, iter =  1, ncorr = 0
Most rapidly changing is zvclg1(Ti(OH)4(aq)             ) =     -9.9931

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                    Reaction progress        =  6.30957344480180E-09
                    Log of reaction progress =      -8.2000000



                    Time =  5.258E+00 sec
                         =  6.086E-05 days
                         =  1.666E-07 years

                    Log sec =        0.721
                    Log days =      -4.216
                    Log years =     -6.778

                    Temperature    =     25.000 degrees C
                    total pressure =      1.013 bars


Step size is limited by the print requirement


                              --- Reactant Summary ---


    Reactant                  Moles     Delta moles    Mass, g    Delta Mass, g

 Tuff                       1.0000E+02   6.3096E-09   2.0586E+03   1.2989E-07


               Current total mass =  2.05865E+03 grams
               Delta total mass   =  1.29892E-07 grams
               Delta total volume =      0.00000 cc


    Reactant                Rel. Rate      Rate         Rate
                             mol/mol       mol/s      mol/s/cm2

 Tuff                       1.0000E+00   1.2000E-09   2.5000E-15


    Reactant                  Affinity   Surface Area
                              kcal/mol     mol/s/cm2

 Tuff                        999.00000   4.8000E+05
```

Reactant Rate Constants, mol/s/cm2

Tuff
Forward 2.5000E-15

Affinity of the overall irreversible reaction= 0.000 kcal
Contributions from irreversible reactions
with no thermodynamic data are not included

--- Element Totals for the Aqueous Solution ---

Element	mg/kg soln.	Molality	Moles
O	8.865404E+05	5.561111E+01	5.559508E+01
Al	3.987632E-02	1.483252E-06	1.482825E-06
B	1.334829E-01	1.239157E-05	1.238800E-05
Ba	1.368719E-05	1.000288E-10	1.000000E-10
Ca	1.295702E+01	3.244636E-04	3.243700E-04
Ce	1.396507E-19	1.000288E-24	1.000000E-24
Cl	7.116513E+00	2.014581E-04	2.014000E-04
Cr	2.996352E+02	5.783475E-03	5.781807E-03
Cs	1.324650E-05	1.000288E-10	1.000000E-10
Cu	6.650220E-10	1.050303E-14	1.050000E-14
F	2.172842E+00	1.147831E-04	1.147500E-04
Fe	8.881078E-01	1.595999E-05	1.595539E-05
Gd	1.567289E-09	1.000288E-14	1.000000E-14
H	1.115156E+05	1.110370E+02	1.110050E+02
C	1.267583E-01	1.059166E-05	1.058861E-05
P	7.325643E+00	2.373660E-04	2.372976E-04
K	5.023465E+00	1.289473E-04	1.289101E-04
La	1.384452E-09	1.000288E-14	1.000000E-14
Li	6.917999E-07	1.000288E-10	1.000000E-10
Mg	2.003339E+00	8.272286E-05	8.269901E-05
Mn	3.250700E+01	5.938413E-04	5.936700E-04
Mo	2.179386E+02	2.279823E-03	2.279166E-03
N	1.982366E+00	1.420410E-04	1.420000E-04
Na	4.564845E+01	1.992775E-03	1.992200E-03
Nd	1.437620E-09	1.000288E-14	1.000000E-14
Ni	7.502088E+02	1.282876E-02	1.282506E-02
Pb	2.065134E-05	1.000288E-10	1.000000E-10
Pu	2.431914E-09	1.000288E-14	9.999999E-15
S	5.507393E+02	1.723725E-02	1.723228E-02
Si	2.802997E+00	1.001630E-04	1.001341E-04
Sm	1.498617E-09	1.000288E-14	1.000000E-14
Sr	8.732965E-06	1.000288E-10	1.000000E-10
Ti	4.848312E-06	1.016256E-10	1.015963E-10
U	2.372401E-09	1.000288E-14	1.000000E-14
V	4.768069E+00	9.393719E-05	9.391010E-05
Zn	6.517332E-06	1.000288E-10	1.000000E-10
Zr	9.092171E-16	1.000288E-20	1.000000E-20

Single ion activities and activity coefficients are here defined
with respect to the modified NBS pH scale

pH Eh pe

```
  modified NBS pH scale          2.0406        1.0983    1.8566E+01
  rational pH scale              1.9641        1.1028    1.8643E+01

pHCl =      5.8287


          Oxygen fugacity =  2.09991E-01
      Log oxygen fugacity =  -0.67780


              Activity of water =   0.99924
           Log activity of water =  -0.00033

               Ionic strength =  5.880049E-02 molal
             Sum of molalities =    0.0494650131370
           Osmotic coefficient =    0.85806

                    Mass of solution =   1.003325 kg
                    Mass of solutes  =   0.003613 kg
                    Conc. of solutes  =   0.360110 per cent (w/w)

               Moles of solvent H2O =  5.54924E+01
               Mass of solvent H2O  =  9.99712E-01 kg
```

Species	Molality	Log molality	Log gamma	Log activity
H+	1.0861E-02	-1.9641	-0.0765	-2.0406
Ni++	1.0209E-02	-1.9910	-0.3466	-2.3376
SO4--	9.7761E-03	-2.0098	-0.3602	-2.3701
HSO4-	4.5008E-03	-2.3467	-0.0849	-2.4316
HCrO4-	4.0507E-03	-2.3925	-0.0849	-2.4774
NiSO4(aq)	2.6184E-03	-2.5820	0.0000	-2.5820
MoO4--	2.2798E-03	-2.6421	-0.3492	-2.9913
Na+	1.9397E-03	-2.7123	-0.0983	-2.8106
Cr2O7--	8.6348E-04	-3.0637	-0.3602	-3.4240
Mn++	4.1403E-04	-3.3830	-0.3466	-3.7295
O2(aq)	2.6166E-04	-3.5823	0.0062	-3.5761
Ca++	2.5991E-04	-3.5852	-0.3466	-3.9317
Cl-	2.0085E-04	-3.6971	-0.0909	-3.7881
MnSO4(aq)	1.7918E-04	-3.7467	0.0000	-3.7467
NO3-	1.4021E-04	-3.8532	-0.0909	-3.9441
K+	1.2506E-04	-3.9029	-0.1044	-4.0073
H3PO4(aq)	1.1923E-04	-3.9236	0.0000	-3.9236
H2PO4-	1.0769E-04	-3.9678	-0.0849	-4.0527
HF(aq)	1.0158E-04	-3.9932	0.0000	-3.9932
SiO2(aq)	1.0016E-04	-3.9993	0.0000	-3.9993
VO2+	7.7218E-05	-4.1123	-0.0983	-4.2106
CaSO4(aq)	6.4460E-05	-4.1907	0.0000	-4.1907
Mg++	5.3912E-05	-4.2683	-0.3139	-4.5822
NaSO4-	5.2994E-05	-4.2758	-0.0849	-4.3607
MgSO4(aq)	2.8802E-05	-4.5406	0.0000	-4.5406
B(OH)3(aq)	1.2392E-05	-4.9069	0.0000	-4.9069
VO2SO4-	1.2140E-05	-4.9158	-0.0849	-5.0007
CO2(aq)	1.0591E-05	-4.9751	0.0062	-4.9689
FeHPO4+	9.8576E-06	-5.0062	-0.0983	-5.1046
F-	9.2715E-06	-5.0328	-0.0878	-5.1207
Fe+++	3.9853E-06	-5.3995	-0.6676	-6.0671
Cr+++	3.9843E-06	-5.3996	-0.6676	-6.0672
KSO4-	3.8649E-06	-5.4129	-0.0849	-5.4977

VO(OH)3(aq)	3.3834E-06	-5.4706	0.0000	-5.4706
NiNO3+	1.6466E-06	-5.7834	-0.0983	-5.8817
H2CrO4(aq)	1.4542E-06	-5.8374	0.0000	-5.8374
FeOH++	1.4431E-06	-5.8407	-0.3761	-6.2168
VO2F(aq)	1.0440E-06	-5.9813	0.0000	-5.9813
AlF2+	8.5229E-07	-6.0694	-0.0983	-6.1678
AlF++	5.3581E-07	-6.2710	-0.3761	-6.6471
MnH2PO4+	4.6356E-07	-6.3339	-0.0983	-6.4322
FeSO4+	3.8794E-07	-6.4112	-0.0983	-6.5096
HCl(aq)	3.1718E-07	-6.4987	0.0000	-6.4987
CrO4--	2.6860E-07	-6.5709	-0.3602	-6.9311
FeF++	2.1126E-07	-6.6752	-0.3761	-7.0513
NiCl+	9.4729E-08	-7.0235	-0.0983	-7.1219
HPO3F-	9.2177E-08	-7.0354	-0.0849	-7.1203
CaNO3+	8.3647E-08	-7.0775	-0.0983	-7.1759
MnCl+	7.6216E-08	-7.1180	-0.0983	-7.2163
H2VO4-	7.2891E-08	-7.1373	-0.0849	-7.2222
CrO3Cl-	6.4830E-08	-7.1882	-0.0849	-7.2731
AlF3(aq)	6.4802E-08	-7.1884	0.0000	-7.1884
HNO3(aq)	5.1609E-08	-7.2873	0.0000	-7.2873
MnF+	4.7658E-08	-7.3219	-0.0983	-7.4202
VO2(OH)2-	4.5172E-08	-7.3451	-0.0849	-7.4300
MnNO3+	4.2136E-08	-7.3753	-0.0983	-7.4737
NaCl(aq)	4.2106E-08	-7.3757	0.0000	-7.3757
H2SO4(aq)	3.3711E-08	-7.4722	0.0000	-7.4722
Fe(SO4)2-	3.0999E-08	-7.5086	-0.0849	-7.5935
VO2HPO4-	3.0676E-08	-7.5132	-0.0849	-7.5981
H2F2(aq)	2.7887E-08	-7.5546	0.0000	-7.5546
Fe(OH)2+	2.7659E-08	-7.5582	-0.0983	-7.6565
KHSO4(aq)	2.4867E-08	-7.6044	0.0000	-7.6044
CrOH++	2.2345E-08	-7.6508	-0.3761	-8.0269
AlSO4+	1.6288E-08	-7.7881	-0.0983	-7.8865
Al+++	1.3840E-08	-7.8589	-0.6676	-8.5264
FeF2+	1.3794E-08	-7.8603	-0.0983	-7.9586
MgF+	5.5957E-09	-8.2521	-0.0983	-8.3505
CaF+	5.3411E-09	-8.2724	-0.0983	-8.3707
CaCl+	4.8188E-09	-8.3171	-0.0983	-8.4154
MgCl+	3.9189E-09	-8.4068	-0.0983	-8.5052
VO2F2-	2.7729E-09	-8.5571	-0.0849	-8.6419
FeNO3++	2.3166E-09	-8.6352	-0.3761	-9.0113
PO3F--	1.5174E-09	-8.8189	-0.3602	-9.1791
HPO4--	1.3892E-09	-8.8572	-0.3602	-9.2175
NaF(aq)	1.1780E-09	-8.9289	0.0000	-8.9289
HCO3-	6.4802E-10	-9.1884	-0.0849	-9.2733
KCl(aq)	5.1294E-10	-9.2899	0.0000	-9.2899
MnHPO4(aq)	4.2954E-10	-9.3670	0.0000	-9.3670
VO++	2.7648E-10	-9.5583	-0.3761	-9.9344
CrCl++	2.3541E-10	-9.6282	-0.3761	-10.0043
HF2-	2.2585E-10	-9.6462	-0.0849	-9.7311
AlF4-	1.4990E-10	-9.8242	-0.0849	-9.9091
VOSO4(aq)	1.4980E-10	-9.8245	0.0000	-9.8245
Mn+++	1.1765E-10	-9.9294	-0.8157	-10.7452
Ti(OH)4(aq)	1.0163E-10	-9.9930	0.0000	-9.9930
Cs+	1.0002E-10	-9.9999	-0.1077	-10.1076

--- Summary of Instantaneously Precipitated Solid Phases ---
(defined by derivatives)

--- Theoretical Rock Composition ---
g/kg

--- Oxide Percentages ---

Oxide	Theoretical rock

Total = 0.0000

Phase/end-member		d mol/d zi	d grams/d zi	d vol (cc)/d zi
fix	CO2(g)	0.0000E+00	0.0000E+00	0.0000E+00
fix	O2(g)	-1.7325E-04	-5.5438E-03	0.0000E+00

--- Summary of Solid Phases (E.S.+P.R.S.) ---

Phase/End-member		Log moles	Moles	Mass, g	Volume, cc
fix	CO2(g)	2.3010	2.0000E+02	8.8020E+03	0.0000E+00
fix	O2(g)	2.3010	2.0000E+02	6.3998E+03	0.0000E+00

	Mass, grams	Volume, cc
Created	1.520172E+04	0.000000E+00
Destroyed	1.298918E-07	0.000000E+00
Net	1.520172E+04	0.000000E+00

Warning-- these volume totals may be incomplete because of missing partial molar volume data in the data base

--- Summary of Pure Mineral Saturation States ---

Mineral	Log Q/K	Aff, kcal	State
AlF3	-6.680	-9.113	
Anglesite	-4.894	-6.677	
Anhydrite	-1.995	-2.722	
BaZrO3	69.237	94.458	ssatd
Barite	-2.765	-3.772	
Bassanite	-2.640	-3.602	
Boric_acid	-4.749	-6.478	
CaSO4:0.5H2O(beta)	-2.809	-3.832	
CaZrO3	129.700	176.948	ssatd
Celestite	-7.194	-9.815	
Chalcedony	-0.271	-0.370	
Coesite	-0.810	-1.105	
CrO2	-0.909	-1.241	
Cristobalite(alpha)	-0.550	-0.751	
Cristobalite(beta)	-0.994	-1.356	
Crocoite	-4.591	-6.263	
Epsomite	-4.992	-6.811	
Fe(OH)3	-5.602	-7.642	
FeF3	-2.190	-2.988	
Fluorite	-4.136	-5.643	
Goethite	-0.480	-0.655	
Gypsum	-1.820	-2.483	
Hematite	0.000	0.000	ssatd
Hexahydrite	-5.227	-7.132	
Ice	-0.139	-0.190	

Jarosite	-5.336	-7.280	
Kieserite	-6.686	-9.121	
Manganite	-4.459	-6.084	
Mercallite	-6.979	-9.521	
Mirabilite	-6.855	-9.352	
MnHPO4	0.000	0.000	ssatd
MnO2(gamma)	-1.518	-2.071	
Morenosite	-2.696	-3.678	
NiSO4:6H2O(alpha)	-2.702	-3.687	
Nontronite-Ca	-3.756	-5.124	
Nontronite-H	-2.823	-3.851	
Nontronite-K	-4.147	-5.658	
Nontronite-Mg	-3.826	-5.219	
Nontronite-Na	-4.091	-5.581	
Pentahydrite	-5.567	-7.595	
Pyrolusite	0.000	0.000	ssatd
Quartz	0.000	0.000	ssatd
Rutile	-0.347	-0.474	
Sellaite	-5.439	-7.421	
Shcherbinaite	-2.888	-3.940	
SiO2(am)	-1.286	-1.754	
SrZrO3	106.096	144.745	ssatd
Starkeyite	-5.954	-8.123	
Strengite	-1.902	-2.594	
Tridymite	-0.171	-0.234	
fix CO2(g)	0.000	0.000	satd
fix O2(g)	0.000	0.000	satd

--- Summary of Solid Solutions ---

--- Carbonate-Calcite ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Calcite	5.6705E-03	-2.2464	0.0000	-2.2464
Magnesite	4.5525E-04	-3.3417	0.0000	-3.3417
Rhodochrosite	9.9387E-01	-0.0027	0.0000	-0.0027
Siderite	1.2691E-08	-7.8965	0.0000	-7.8965
Smithsonite	5.2900E-08	-7.2765	0.0000	-7.2765
Strontianite	2.2203E-07	-6.6536	0.0000	-6.6536

Mineral	Log Q/K	Aff, kcal	State
Carbonate-Calcite	-10.767	-14.689	
Calcite	-10.767	-14.689	
Magnesite	-10.767	-14.689	
Rhodochrosite	-10.767	-14.689	
Siderite	-10.767	-14.689	
Smithsonite	-10.767	-14.689	
Strontianite	-10.767	-14.689	

--- Clinoptilolite-hy-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity

Clinoptilolite-hy-Ca	9.9769E-01	-0.0010	0.0000	-0.0010
Clinoptilolite-hy-Cs	6.6777E-23	-22.1754	0.0000	-22.1754
Clinoptilolite-hy-K	7.3167E-04	-3.1357	0.0000	-3.1357
Clinoptilolite-hy-Na	1.5783E-03	-2.8018	0.0000	-2.8018
Clinoptilolite-hy-Sr	5.6081E-12	-11.2512	0.0000	-11.2512

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-hy-ss	-59.152	-80.700	
Clinoptilolite-hy-Ca	-59.152	-80.700	
Clinoptilolite-hy-Cs	-59.152	-80.700	
Clinoptilolite-hy-K	-59.152	-80.700	
Clinoptilolite-hy-Na	-59.152	-80.700	
Clinoptilolite-hy-Sr	-59.152	-80.700	

--- Clinoptilolite-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-Ca	7.8163E-01	-0.1070	-0.2632	-0.3702
Clinoptilolite-Cs	3.0398E-07	-6.5172	-16.0322	-22.5494
Clinoptilolite-K	9.6807E-02	-1.0141	-2.4947	-3.5088
Clinoptilolite-NH4	1.0307E-51	-50.9869	-125.4277	-176.4146
Clinoptilolite-Na	1.2112E-01	-0.9168	-2.2553	-3.1721
Clinoptilolite-Sr	4.3842E-04	-3.3581	-8.2609	-11.6190

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-ss	-58.783	-80.197	
Clinoptilolite-Ca	-58.783	-80.197	
Clinoptilolite-Cs	-58.783	-80.197	
Clinoptilolite-K	-58.783	-80.197	
Clinoptilolite-NH4	-58.783	-80.197	
Clinoptilolite-Na	-58.783	-80.197	
Clinoptilolite-Sr	-58.783	-80.197	

--- Saponite-tri ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Saponite-Ca	1.4821E-03	-2.8291	1.8955	-0.9336
Saponite-H	9.9737E-01	-0.0011	0.0008	-0.0004
Saponite-K	9.6726E-05	-4.0145	2.6897	-1.3248
Saponite-Mg	9.1179E-04	-3.0401	2.0369	-1.0032
Saponite-Na	1.4347E-04	-3.8432	2.5750	-1.2683

Mineral	Log Q/K	Aff, kcal	State
Saponite-tri	-42.307	-57.719	
Saponite-Ca	-42.307	-57.719	
Saponite-H	-42.307	-57.719	
Saponite-K	-42.307	-57.719	

Saponite-Mg	-42.307	-57.719
Saponite-Na	-42.307	-57.719

--- Smectite-di ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Beidellite-Ca	6.3680E-68	-67.1960	45.0213	-22.1747
Beidellite-K	4.1587E-69	-68.3810	45.8153	-22.5657
Beidellite-Mg	3.9175E-68	-67.4070	45.1627	-22.2443
Beidellite-Na	6.1643E-69	-68.2101	45.7008	-22.5093
Montmor-Ca	3.1324E-58	-57.5041	38.5278	-18.9764
Montmor-K	3.3409E-59	-58.4761	39.1790	-19.2971
Montmor-Mg	3.1318E-58	-57.5042	38.5278	-18.9764
Montmor-Na	4.8293E-59	-58.3161	39.0718	-19.2443
Nontronite-Ca	5.6252E-01	-0.2499	0.1674	-0.0825
Nontronite-K	3.6736E-02	-1.4349	0.9614	-0.4735
Nontronite-Mg	3.4629E-01	-0.4606	0.3086	-0.1520
Nontronite-Na	5.4453E-02	-1.2640	0.8469	-0.4171

Mineral	Log Q/K	Aff, kcal	State
Smectite-di	-3.674	-5.012	
Beidellite-Ca	-3.674	-5.012	
Beidellite-K	-3.674	-5.012	
Beidellite-Mg	-3.674	-5.012	
Beidellite-Na	-3.674	-5.012	
Montmor-Ca	-3.674	-5.012	
Montmor-K	-3.674	-5.012	
Montmor-Mg	-3.674	-5.012	
Montmor-Na	-3.674	-5.012	
Nontronite-Ca	-3.674	-5.012	
Nontronite-K	-3.674	-5.012	
Nontronite-Mg	-3.674	-5.012	
Nontronite-Na	-3.674	-5.012	

--- Lanthanide hydroxide ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
La(OH)3	1.2829E-05	-4.8918	0.0000	-4.8918
Ce(OH)3	3.7099E-15	-14.4306	0.0000	-14.4306
Nd(OH)3(c)	3.4718E-01	-0.4594	0.0000	-0.4594
Gd(OH)3	5.8550E-01	-0.2325	0.0000	-0.2325
Sm(OH)3	6.7308E-02	-1.1719	0.0000	-1.1719

Mineral	Log Q/K	Aff, kcal	State
Lanthanide hydroxide	-24.639	-33.614	
La(OH)3	-24.639	-33.614	
Ce(OH)3	-24.639	-33.614	
Nd(OH)3(c)	-24.639	-33.614	
Gd(OH)3	-24.639	-33.614	

Sm(OH)3	-24.639	-33.614

--- Rhabdophane-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaPO4:H2O	4.1201E-01	-0.3851	0.0000	-0.3851
CePO4:H2O	3.7677E-11	-10.4239	0.0000	-10.4239
NdPO4:H2O	2.2247E-01	-0.6527	0.0000	-0.6527
GdPO4:H2O	1.4936E-01	-0.8258	0.0000	-0.8258
SmPO4:H2O	2.1616E-01	-0.6652	0.0000	-0.6652

Mineral	Log Q/K	Aff, kcal	State
Rhabdophane-ss	-9.764	-13.321	
LaPO4:H2O	-9.764	-13.321	
CePO4:H2O	-9.764	-13.321	
NdPO4:H2O	-9.764	-13.321	
GdPO4:H2O	-9.764	-13.321	
SmPO4:H2O	-9.764	-13.321	

--- Lanthanide fluoride ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaF3:0.5H2O	5.7252E-01	-0.2422	0.0000	-0.2422
CeF3:0.5H2O	8.2978E-11	-10.0810	0.0000	-10.0810
NdF3:0.5H2O	3.8918E-01	-0.4099	0.0000	-0.4099
GdF3:0.5H2O	8.2628E-03	-2.0829	0.0000	-2.0829
SmF3:0.5H2O	3.0037E-02	-1.5223	0.0000	-1.5223

Mineral	Log Q/K	Aff, kcal	State
Lanthanide fluoride	-11.742	-16.019	
LaF3:0.5H2O	-11.742	-16.019	
CeF3:0.5H2O	-11.742	-16.019	
NdF3:0.5H2O	-11.742	-16.019	
GdF3:0.5H2O	-11.742	-16.019	
SmF3:0.5H2O	-11.742	-16.019	

--- Summary of Gases ---

Gas	Fugacity	Log fugacity
Al(g)	4.4796-201	-200.3488
B(g)	8.5659-204	-203.0672
BF3(g)	3.7724E-24	-23.4234
C(g)	3.0917-190	-189.5098
CH4(g)	3.5240-146	-145.4530
CO(g)	6.0395E-49	-48.2190

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CO2(g)                      3.1623E-04     -3.5000
Ca(g)                       7.2342-164   -163.1406
Chlorine                    3.5847E-17    -16.4455
Cs(g)                       3.5180E-89    -88.4537
Cu(g)                       7.5962E-93    -92.1194
Fluorine                    1.4789E-72    -71.8301
H2(g)                       6.1104E-42    -41.2139
H2O(g)                      2.5958E-02     -1.5857
H2S(g)                      2.2902-130   -129.6401
HCl(g)                      7.3419E-13    -12.1342
HF(g)                       5.3223E-09     -8.2739
K(g)                        2.2169E-83    -82.6543
Li(g)                       7.8245-103   -102.1065
Mg(g)                       1.0897-141   -140.9627
Nitrogen                    2.6192E-08     -7.5818
NH3(g)                      1.8638E-63    -62.7296
NO(g)                       5.0961E-20    -19.2928
NO2(g)                      3.4845E-14    -13.4579
Na(g)                       1.8194E-81    -80.7401
O2(g)                       2.0999E-01     -0.6778
Pb(g)                       7.6389E-81    -80.1170
S2(g)                       3.1322-203   -202.5042
SO2(g)                      4.0579E-43    -42.3917
Si(g)                       4.2258-221   -220.3741
SiF4(g)                     3.5422E-18    -17.4507
Ti(g)                       1.7095-231   -230.7671
TiCl4(g)                    4.3830E-62    -61.3582
U(g)                        1.0090-304   -303.9961
U2Cl10(g)                   4.7266-202   -201.3255
U2Cl8(g)                    4.0878-216   -215.3885
U2F10(g)                    2.5081-120   -119.6006
UCl(g)                      6.6042-255   -254.1802
UCl2(g)                     1.2931-203   -202.8884
UCl3(g)                     5.5459-150   -149.2560
UCl4(g)                     1.2879-113   -112.8901
UCl5(g)                     1.5389-114   -113.8128
UCl6(g)                     3.4162-110   -109.4665
UF(g)                       1.0174-240   -239.9925
UF2(g)                      7.6090-195   -194.1187
UF3(g)                      1.4004-142   -141.8538
UF4(g)                      3.8042E-87    -86.4197
UF5(g)                      4.7334E-73    -72.3248
UF6(g)                      5.7995E-73    -72.2366
UO(g)                       7.9689-220   -219.0986
UO2(g)                      1.4764-135   -134.8308
UO2Cl2(g)                   2.3107E-71    -70.6363
UO2F2(g)                    9.8634E-61    -60.0060
UO3(g)                      1.0859E-82    -81.9642
UOF4(g)                     1.1336E-64    -63.9455
Zn(g)                       1.2815E-90    -89.8923



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Stepping to zi=  1.0000E-08, delzi=  3.6904E-09, nord= 2
  time =  9.6451E-05 d, dltime =  3.5594E-05 d
Steps completed =     7, iter =  1, ncorr = 0
Most rapidly changing is zvclg1(Ti(OH)4(aq)             ) =     -9.9891

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Reaction progress        =  9.99999999999973E-09
Log of reaction progress =      -8.0000000


Time =  8.333E+00 sec
     =  9.645E-05 days
     =  2.641E-07 years

Log sec =        0.921
Log days =      -4.016
Log years =     -6.578

Temperature    =     25.000 degrees C
total pressure =      1.013 bars


Step size is limited by the print requirement


                    --- Reactant Summary ---


   Reactant                  Moles     Delta moles    Mass, g    Delta Mass, g

 Tuff                      1.0000E+02   1.0000E-08   2.0586E+03   2.0586E-07


              Current total mass =  2.05865E+03 grams
              Delta total mass   =  2.05865E-07 grams
              Delta total volume =      0.00000 cc


   Reactant                Rel. Rate      Rate         Rate
                            mol/mol       mol/s      mol/s/cm2

 Tuff                      1.0000E+00   1.2000E-09   2.5000E-15


   Reactant                  Affinity   Surface Area
                             kcal/mol     mol/s/cm2

 Tuff                       999.00000   4.8000E+05


   Reactant                Rate Constants, mol/s/cm2

 Tuff
                  Forward    2.5000E-15


        Affinity of the overall irreversible reaction=     0.000 kcal
        Contributions from irreversible reactions
        with no thermodynamic data are not included


    --- Element Totals for the Aqueous Solution ---

  Element        mg/kg soln.          Molality             Moles
```

O	8.865404E+05	5.561111E+01	5.559508E+01
Al	3.988143E-02	1.483443E-06	1.483015E-06
B	1.334829E-01	1.239157E-05	1.238800E-05
Ba	1.368719E-05	1.000288E-10	1.000000E-10
Ca	1.295702E+01	3.244636E-04	3.243700E-04
Ce	1.396507E-19	1.000288E-24	1.000000E-24
Cl	7.116513E+00	2.014581E-04	2.014000E-04
Cr	2.996352E+02	5.783475E-03	5.781807E-03
Cs	1.324650E-05	1.000288E-10	1.000000E-10
Cu	6.650220E-10	1.050303E-14	1.050000E-14
F	2.172842E+00	1.147831E-04	1.147500E-04
Fe	8.881083E-01	1.596000E-05	1.595540E-05
Gd	1.567289E-09	1.000288E-14	1.000000E-14
H	1.115156E+05	1.110370E+02	1.110050E+02
C	1.267583E-01	1.059166E-05	1.058861E-05
P	7.325643E+00	2.373660E-04	2.372976E-04
K	5.023469E+00	1.289474E-04	1.289102E-04
La	1.384452E-09	1.000288E-14	1.000000E-14
Li	6.917999E-07	1.000288E-10	1.000000E-10
Mg	2.003339E+00	8.272286E-05	8.269901E-05
Mn	3.250700E+01	5.938413E-04	5.936700E-04
Mo	2.179386E+02	2.279823E-03	2.279166E-03
N	1.982366E+00	1.420410E-04	1.420000E-04
Na	4.564846E+01	1.992775E-03	1.992200E-03
Nd	1.437620E-09	1.000288E-14	1.000000E-14
Ni	7.502088E+02	1.282876E-02	1.282506E-02
Pb	2.065134E-05	1.000288E-10	1.000000E-10
Pu	2.431914E-09	1.000288E-14	9.999999E-15
S	5.507393E+02	1.723725E-02	1.723228E-02
Si	2.803024E+00	1.001639E-04	1.001351E-04
Sm	1.498617E-09	1.000288E-14	1.000000E-14
Sr	8.732965E-06	1.000288E-10	1.000000E-10
Ti	4.892869E-06	1.025596E-10	1.025300E-10
U	2.372401E-09	1.000288E-14	1.000000E-14
V	4.768069E+00	9.393719E-05	9.391010E-05
Zn	6.517332E-06	1.000288E-10	1.000000E-10
Zr	9.092171E-16	1.000288E-20	1.000000E-20

Single ion activities and activity coefficients are here defined
with respect to the modified NBS pH scale

	pH	Eh	pe
modified NBS pH scale	2.0406	1.0983	1.8566E+01
rational pH scale	1.9641	1.1028	1.8643E+01

pHCl = 5.8287

Oxygen fugacity = 2.09991E-01
Log oxygen fugacity = -0.67780

Activity of water = 0.99924
Log activity of water = -0.00033

Ionic strength = 5.880049E-02 molal

Sum of molalities = 0.0494650137656
Osmotic coefficient = 0.85806

Mass of solution = 1.003325 kg
Mass of solutes = 0.003613 kg
Conc. of solutes = 0.360110 per cent (w/w)

Moles of solvent H2O = 5.54924E+01
Mass of solvent H2O = 9.99712E-01 kg

Species	Molality	Log molality	Log gamma	Log activity
H+	1.0861E-02	-1.9641	-0.0765	-2.0406
Ni++	1.0209E-02	-1.9910	-0.3466	-2.3376
SO4--	9.7761E-03	-2.0098	-0.3602	-2.3701
HSO4-	4.5008E-03	-2.3467	-0.0849	-2.4316
HCrO4-	4.0507E-03	-2.3925	-0.0849	-2.4774
NiSO4(aq)	2.6184E-03	-2.5820	0.0000	-2.5820
MoO4--	2.2798E-03	-2.6421	-0.3492	-2.9913
Na+	1.9397E-03	-2.7123	-0.0983	-2.8106
Cr2O7--	8.6348E-04	-3.0637	-0.3602	-3.4240
Mn++	4.1403E-04	-3.3830	-0.3466	-3.7295
O2(aq)	2.6166E-04	-3.5823	0.0062	-3.5761
Ca++	2.5991E-04	-3.5852	-0.3466	-3.9317
Cl-	2.0085E-04	-3.6971	-0.0909	-3.7881
MnSO4(aq)	1.7918E-04	-3.7467	0.0000	-3.7467
NO3-	1.4021E-04	-3.8532	-0.0909	-3.9441
K+	1.2506E-04	-3.9029	-0.1044	-4.0073
H3PO4(aq)	1.1923E-04	-3.9236	0.0000	-3.9236
H2PO4-	1.0769E-04	-3.9678	-0.0849	-4.0527
HF(aq)	1.0158E-04	-3.9932	0.0000	-3.9932
SiO2(aq)	1.0016E-04	-3.9993	0.0000	-3.9993
VO2+	7.7218E-05	-4.1123	-0.0983	-4.2106
CaSO4(aq)	6.4460E-05	-4.1907	0.0000	-4.1907
Mg++	5.3912E-05	-4.2683	-0.3139	-4.5822
NaSO4-	5.2994E-05	-4.2758	-0.0849	-4.3607
MgSO4(aq)	2.8802E-05	-4.5406	0.0000	-4.5406
B(OH)3(aq)	1.2392E-05	-4.9069	0.0000	-4.9069
VO2SO4-	1.2140E-05	-4.9158	-0.0849	-5.0007
CO2(aq)	1.0591E-05	-4.9751	0.0062	-4.9689
FeHPO4+	9.8576E-06	-5.0062	-0.0983	-5.1046
F-	9.2715E-06	-5.0329	-0.0878	-5.1207
Fe+++	3.9853E-06	-5.3995	-0.6676	-6.0671
Cr+++	3.9843E-06	-5.3996	-0.6676	-6.0672
KSO4-	3.8650E-06	-5.4129	-0.0849	-5.4977
VO(OH)3(aq)	3.3834E-06	-5.4706	0.0000	-5.4706
NiNO3+	1.6466E-06	-5.7834	-0.0983	-5.8817
H2CrO4(aq)	1.4542E-06	-5.8374	0.0000	-5.8374
FeOH++	1.4431E-06	-5.8407	-0.3761	-6.2168
VO2F(aq)	1.0440E-06	-5.9813	0.0000	-5.9813
AlF2+	8.5240E-07	-6.0694	-0.0983	-6.1677
AlF++	5.3588E-07	-6.2709	-0.3761	-6.6470
MnH2PO4+	4.6356E-07	-6.3339	-0.0983	-6.4322
FeSO4+	3.8794E-07	-6.4112	-0.0983	-6.5096
HCl(aq)	3.1718E-07	-6.4987	0.0000	-6.4987
CrO4--	2.6860E-07	-6.5709	-0.3602	-6.9311
FeF++	2.1126E-07	-6.6752	-0.3761	-7.0513
NiCl+	9.4729E-08	-7.0235	-0.0983	-7.1219
HPO3F-	9.2176E-08	-7.0354	-0.0849	-7.1203
CaNO3+	8.3647E-08	-7.0775	-0.0983	-7.1759
MnCl+	7.6216E-08	-7.1180	-0.0983	-7.2163
H2VO4-	7.2891E-08	-7.1373	-0.0849	-7.2222

CrO3Cl-	6.4830E-08	-7.1882	-0.0849	-7.2731
AlF3(aq)	6.4810E-08	-7.1884	0.0000	-7.1884
HNO3(aq)	5.1609E-08	-7.2873	0.0000	-7.2873
MnF+	4.7658E-08	-7.3219	-0.0983	-7.4202
VO2(OH)2-	4.5172E-08	-7.3451	-0.0849	-7.4300
MnNO3+	4.2136E-08	-7.3753	-0.0983	-7.4737
NaCl(aq)	4.2106E-08	-7.3757	0.0000	-7.3757
H2SO4(aq)	3.3711E-08	-7.4722	0.0000	-7.4722
Fe(SO4)2-	3.0999E-08	-7.5086	-0.0849	-7.5935
VO2HPO4-	3.0676E-08	-7.5132	-0.0849	-7.5981
H2F2(aq)	2.7887E-08	-7.5546	0.0000	-7.5546
Fe(OH)2+	2.7659E-08	-7.5582	-0.0983	-7.6565
KHSO4(aq)	2.4867E-08	-7.6044	0.0000	-7.6044
CrOH++	2.2345E-08	-7.6508	-0.3761	-8.0269
AlSO4+	1.6290E-08	-7.7881	-0.0983	-7.8864
Al+++	1.3842E-08	-7.8588	-0.6676	-8.5264
FeF2+	1.3794E-08	-7.8603	-0.0983	-7.9586
MgF+	5.5957E-09	-8.2521	-0.0983	-8.3505
CaF+	5.3411E-09	-8.2724	-0.0983	-8.3707
CaCl+	4.8188E-09	-8.3171	-0.0983	-8.4154
MgCl+	3.9189E-09	-8.4068	-0.0983	-8.5052
VO2F2-	2.7729E-09	-8.5571	-0.0849	-8.6419
FeNO3++	2.3166E-09	-8.6352	-0.3761	-9.0113
PO3F--	1.5174E-09	-8.8189	-0.3602	-9.1791
HPO4--	1.3892E-09	-8.8572	-0.3602	-9.2175
NaF(aq)	1.1780E-09	-8.9289	0.0000	-8.9289
HCO3-	6.4802E-10	-9.1884	-0.0849	-9.2733
KCl(aq)	5.1294E-10	-9.2899	0.0000	-9.2899
MnHPO4(aq)	4.2954E-10	-9.3670	0.0000	-9.3670
VO++	2.7648E-10	-9.5583	-0.3761	-9.9344
CrCl++	2.3541E-10	-9.6282	-0.3761	-10.0043
HF2-	2.2585E-10	-9.6462	-0.0849	-9.7311
AlF4-	1.4992E-10	-9.8241	-0.0849	-9.9090
VOSO4(aq)	1.4980E-10	-9.8245	0.0000	-9.8245
Mn+++	1.1765E-10	-9.9294	-0.8157	-10.7452
Ti(OH)4(aq)	1.0256E-10	-9.9890	0.0000	-9.9890
Cs+	1.0002E-10	-9.9999	-0.1077	-10.1076

--- Summary of Instantaneously Precipitated Solid Phases ---
(defined by derivatives)

--- Theoretical Rock Composition ---
g/kg

--- Oxide Percentages ---

Oxide Theoretical rock

Total = 0.0000

Phase/end-member		d mol/d zi	d grams/d zi	d vol (cc)/d zi
fix	CO2(g)	0.0000E+00	0.0000E+00	0.0000E+00
fix	O2(g)	-1.1583E-03	-3.7066E-02	0.0000E+00

--- Summary of Solid Phases (E.S.+P.R.S.) ---

Phase/End-member	Log moles	Moles	Mass, g	Volume, cc

```
fix     CO2(g)                2.3010   2.0000E+02   8.8020E+03   0.0000E+00
fix     O2(g)                 2.3010   2.0000E+02   6.3998E+03   0.0000E+00
```

	Mass, grams	Volume, cc
Created	1.520172E+04	0.000000E+00
Destroyed	2.058647E-07	0.000000E+00
Net	1.520172E+04	0.000000E+00

Warning-- these volume totals may be incomplete because of missing partial molar volume data in the data base

--- Summary of Pure Mineral Saturation States ---

Mineral	Log Q/K	Aff, kcal	State
AlF3	-6.679	-9.113	
Anglesite	-4.894	-6.677	
Anhydrite	-1.995	-2.722	
BaZrO3	69.237	94.458	ssatd
Barite	-2.765	-3.772	
Bassanite	-2.640	-3.602	
Boric_acid	-4.749	-6.478	
CaSO4:0.5H2O(beta)	-2.809	-3.832	
CaZrO3	129.700	176.948	ssatd
Celestite	-7.194	-9.815	
Chalcedony	-0.271	-0.370	
Coesite	-0.810	-1.105	
CrO2	-0.909	-1.241	
Cristobalite(alpha)	-0.550	-0.751	
Cristobalite(beta)	-0.994	-1.356	
Crocoite	-4.591	-6.263	
Epsomite	-4.992	-6.811	
Fe(OH)3	-5.602	-7.642	
FeF3	-2.190	-2.988	
Fluorite	-4.136	-5.643	
Goethite	-0.480	-0.655	
Gypsum	-1.820	-2.483	
Hematite	0.000	0.000	ssatd
Hexahydrite	-5.227	-7.132	
Ice	-0.139	-0.190	
Jarosite	-5.336	-7.280	
Kieserite	-6.686	-9.121	
Manganite	-4.459	-6.084	
Mercallite	-6.979	-9.521	
Mirabilite	-6.855	-9.352	
MnHPO4	0.000	0.000	ssatd
MnO2(gamma)	-1.518	-2.071	
Morenosite	-2.696	-3.678	
NiSO4:6H2O(alpha)	-2.702	-3.687	
Nontronite-Ca	-3.756	-5.124	
Nontronite-H	-2.823	-3.851	
Nontronite-K	-4.147	-5.658	
Nontronite-Mg	-3.825	-5.219	
Nontronite-Na	-4.091	-5.581	
Pentahydrite	-5.567	-7.595	
Pyrolusite	0.000	0.000	ssatd
Quartz	0.000	0.000	ssatd

Rutile	-0.343	-0.468	
Sellaite	-5.439	-7.421	
Shcherbinaite	-2.888	-3.940	
SiO2(am)	-1.286	-1.754	
SrZrO3	106.096	144.745	ssatd
Starkeyite	-5.954	-8.123	
Strengite	-1.902	-2.594	
Tridymite	-0.171	-0.234	
fix CO2(g)	0.000	0.000	satd
fix O2(g)	0.000	0.000	satd

--- Summary of Solid Solutions ---

--- Carbonate-Calcite ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Calcite	5.6705E-03	-2.2464	0.0000	-2.2464
Magnesite	4.5525E-04	-3.3417	0.0000	-3.3417
Rhodochrosite	9.9387E-01	-0.0027	0.0000	-0.0027
Siderite	1.2691E-08	-7.8965	0.0000	-7.8965
Smithsonite	5.2900E-08	-7.2765	0.0000	-7.2765
Strontianite	2.2203E-07	-6.6536	0.0000	-6.6536

Mineral	Log Q/K	Aff, kcal	State
Carbonate-Calcite	-10.767	-14.689	
Calcite	-10.767	-14.689	
Magnesite	-10.767	-14.689	
Rhodochrosite	-10.767	-14.689	
Siderite	-10.767	-14.689	
Smithsonite	-10.767	-14.689	
Strontianite	-10.767	-14.689	

--- Clinoptilolite-hy-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-hy-Ca	9.9769E-01	-0.0010	0.0000	-0.0010
Clinoptilolite-hy-Cs	6.6777E-23	-22.1754	0.0000	-22.1754
Clinoptilolite-hy-K	7.3167E-04	-3.1357	0.0000	-3.1357
Clinoptilolite-hy-Na	1.5783E-03	-2.8018	0.0000	-2.8018
Clinoptilolite-hy-Sr	5.6081E-12	-11.2512	0.0000	-11.2512

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-hy-ss	-59.151	-80.699	
Clinoptilolite-hy-Ca	-59.151	-80.699	
Clinoptilolite-hy-Cs	-59.151	-80.699	
Clinoptilolite-hy-K	-59.151	-80.699	
Clinoptilolite-hy-Na	-59.151	-80.699	
Clinoptilolite-hy-Sr	-59.151	-80.699	

--- Clinoptilolite-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-Ca	7.8163E-01	-0.1070	-0.2632	-0.3702
Clinoptilolite-Cs	3.0398E-07	-6.5172	-16.0322	-22.5494
Clinoptilolite-K	9.6807E-02	-1.0141	-2.4947	-3.5088
Clinoptilolite-NH4	1.0307E-51	-50.9869	-125.4277	-176.4146
Clinoptilolite-Na	1.2112E-01	-0.9168	-2.2553	-3.1721
Clinoptilolite-Sr	4.3842E-04	-3.3581	-8.2609	-11.6190

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-ss	-58.783	-80.197	
Clinoptilolite-Ca	-58.783	-80.197	
Clinoptilolite-Cs	-58.783	-80.197	
Clinoptilolite-K	-58.783	-80.197	
Clinoptilolite-NH4	-58.783	-80.197	
Clinoptilolite-Na	-58.783	-80.197	
Clinoptilolite-Sr	-58.783	-80.197	

--- Saponite-tri ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Saponite-Ca	1.4821E-03	-2.8291	1.8955	-0.9336
Saponite-H	9.9737E-01	-0.0011	0.0008	-0.0004
Saponite-K	9.6726E-05	-4.0145	2.6897	-1.3248
Saponite-Mg	9.1179E-04	-3.0401	2.0369	-1.0032
Saponite-Na	1.4347E-04	-3.8432	2.5750	-1.2683

Mineral	Log Q/K	Aff, kcal	State
Saponite-tri	-42.307	-57.719	
Saponite-Ca	-42.307	-57.719	
Saponite-H	-42.307	-57.719	
Saponite-K	-42.307	-57.719	
Saponite-Mg	-42.307	-57.719	
Saponite-Na	-42.307	-57.719	

--- Smectite-di ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Beidellite-Ca	6.3731E-68	-67.1957	45.0211	-22.1746
Beidellite-K	4.1620E-69	-68.3807	45.8151	-22.5656
Beidellite-Mg	3.9206E-68	-67.4066	45.1625	-22.2442
Beidellite-Na	6.1693E-69	-68.2098	45.7005	-22.5092
Montmor-Ca	3.1341E-58	-57.5039	38.5276	-18.9763
Montmor-K	3.3427E-59	-58.4759	39.1789	-19.2970

Montmor-Mg	3.1335E-58	-57.5040	38.5277	-18.9763
Montmor-Na	4.8319E-59	-58.3159	39.0716	-19.2442
Nontronite-Ca	5.6252E-01	-0.2499	0.1674	-0.0825
Nontronite-K	3.6736E-02	-1.4349	0.9614	-0.4735
Nontronite-Mg	3.4629E-01	-0.4606	0.3086	-0.1520
Nontronite-Na	5.4453E-02	-1.2640	0.8469	-0.4171

Mineral	Log Q/K	Aff, kcal	State
Smectite-di	-3.673	-5.012	
Beidellite-Ca	-3.673	-5.012	
Beidellite-K	-3.673	-5.012	
Beidellite-Mg	-3.673	-5.012	
Beidellite-Na	-3.673	-5.012	
Montmor-Ca	-3.673	-5.012	
Montmor-K	-3.673	-5.012	
Montmor-Mg	-3.673	-5.012	
Montmor-Na	-3.673	-5.012	
Nontronite-Ca	-3.673	-5.012	
Nontronite-K	-3.673	-5.012	
Nontronite-Mg	-3.673	-5.012	
Nontronite-Na	-3.673	-5.012	

--- Lanthanide hydroxide ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
La(OH)3	1.2829E-05	-4.8918	0.0000	-4.8918
Ce(OH)3	3.7099E-15	-14.4306	0.0000	-14.4306
Nd(OH)3(c)	3.4718E-01	-0.4594	0.0000	-0.4594
Gd(OH)3	5.8550E-01	-0.2325	0.0000	-0.2325
Sm(OH)3	6.7308E-02	-1.1719	0.0000	-1.1719

Mineral	Log Q/K	Aff, kcal	State
Lanthanide hydroxide	-24.639	-33.614	
La(OH)3	-24.639	-33.614	
Ce(OH)3	-24.639	-33.614	
Nd(OH)3(c)	-24.639	-33.614	
Gd(OH)3	-24.639	-33.614	
Sm(OH)3	-24.639	-33.614	

--- Rhabdophane-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaPO4:H2O	4.1201E-01	-0.3851	0.0000	-0.3851
CePO4:H2O	3.7677E-11	-10.4239	0.0000	-10.4239
NdPO4:H2O	2.2247E-01	-0.6527	0.0000	-0.6527
GdPO4:H2O	1.4936E-01	-0.8258	0.0000	-0.8258
SmPO4:H2O	2.1616E-01	-0.6652	0.0000	-0.6652

Mineral	Log Q/K	Aff, kcal	State
Rhabdophane-ss	-9.764	-13.321	
LaPO4:H2O	-9.764	-13.321	
CePO4:H2O	-9.764	-13.321	
NdPO4:H2O	-9.764	-13.321	
GdPO4:H2O	-9.764	-13.321	
SmPO4:H2O	-9.764	-13.321	

--- Lanthanide fluoride ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaF3:0.5H2O	5.7252E-01	-0.2422	0.0000	-0.2422
CeF3:0.5H2O	8.2978E-11	-10.0810	0.0000	-10.0810
NdF3:0.5H2O	3.8918E-01	-0.4099	0.0000	-0.4099
GdF3:0.5H2O	8.2628E-03	-2.0829	0.0000	-2.0829
SmF3:0.5H2O	3.0037E-02	-1.5223	0.0000	-1.5223

Mineral	Log Q/K	Aff, kcal	State
Lanthanide fluoride	-11.742	-16.019	
LaF3:0.5H2O	-11.742	-16.019	
CeF3:0.5H2O	-11.742	-16.019	
NdF3:0.5H2O	-11.742	-16.019	
GdF3:0.5H2O	-11.742	-16.019	
SmF3:0.5H2O	-11.742	-16.019	

--- Summary of Gases ---

Gas	Fugacity	Log fugacity
Al(g)	4.4802-201	-200.3487
B(g)	8.5659-204	-203.0672
BF3(g)	3.7724E-24	-23.4234
C(g)	3.0917-190	-189.5098
CH4(g)	3.5240-146	-145.4530
CO(g)	6.0395E-49	-48.2190
CO2(g)	3.1623E-04	-3.5000
Ca(g)	7.2342-164	-163.1406
Chlorine	3.5847E-17	-16.4455
Cs(g)	3.5180E-89	-88.4537
Cu(g)	7.5962E-93	-92.1194
Fluorine	1.4789E-72	-71.8301
H2(g)	6.1104E-42	-41.2139
H2O(g)	2.5958E-02	-1.5857
H2S(g)	2.2902-130	-129.6401
HCl(g)	7.3419E-13	-12.1342
HF(g)	5.3223E-09	-8.2739
K(g)	2.2169E-83	-82.6543
Li(g)	7.8245-103	-102.1065
Mg(g)	1.0897-141	-140.9627
Nitrogen	2.6192E-08	-7.5818
NH3(g)	1.8638E-63	-62.7296
NO(g)	5.0961E-20	-19.2928

```
NO2(g)                    3.4845E-14    -13.4579
Na(g)                     1.8194E-81    -80.7401
O2(g)                     2.0999E-01     -0.6778
Pb(g)                     7.6389E-81    -80.1170
S2(g)                     3.1322-203   -202.5042
SO2(g)                    4.0579E-43    -42.3917
Si(g)                     4.2258-221   -220.3741
SiF4(g)                   3.5422E-18    -17.4507
Ti(g)                     1.7252-231   -230.7632
TiCl4(g)                  4.4232E-62    -61.3543
U(g)                      1.0090-304   -303.9961
U2Cl10(g)                 4.7266-202   -201.3255
U2Cl8(g)                  4.0878-216   -215.3885
U2F10(g)                  2.5081-120   -119.6007
UCl(g)                    6.6042-255   -254.1802
UCl2(g)                   1.2931-203   -202.8884
UCl3(g)                   5.5459-150   -149.2560
UCl4(g)                   1.2879-113   -112.8901
UCl5(g)                   1.5389-114   -113.8128
UCl6(g)                   3.4162-110   -109.4665
UF(g)                     1.0174-240   -239.9925
UF2(g)                    7.6090-195   -194.1187
UF3(g)                    1.4004-142   -141.8538
UF4(g)                    3.8041E-87    -86.4197
UF5(g)                    4.7334E-73    -72.3248
UF6(g)                    5.7994E-73    -72.2366
UO(g)                     7.9689-220   -219.0986
UO2(g)                    1.4764-135   -134.8308
UO2Cl2(g)                 2.3107E-71    -70.6363
UO2F2(g)                  9.8634E-61    -60.0060
UO3(g)                    1.0859E-82    -81.9642
UOF4(g)                   1.1336E-64    -63.9455
Zn(g)                     1.2815E-90    -89.8923



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Stepping to zi=  1.5849E-08, delzi=  5.8489E-09, nord= 2
  time =  1.5286E-04 d, dltime =  5.6413E-05 d
Steps completed =     8, iter =  1, ncorr = 0
Most rapidly changing is zvclg1(Ti(OH)4(aq)             ) =     -9.9829

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                    Reaction progress        =  1.58489319246107E-08
                    Log of reaction progress =      -7.8000000



                    Time =  1.321E+01 sec
                         =  1.529E-04 days
                         =  4.185E-07 years

                    Log sec =        1.121
                    Log days =      -3.816
                    Log years =     -6.378

                    Temperature    =     25.000 degrees C
                    total pressure =      1.013 bars
```

Step size is limited by the print requirement

--- Reactant Summary ---

Reactant	Moles	Delta moles	Mass, g	Delta Mass, g
Tuff	1.0000E+02	1.5849E-08	2.0586E+03	3.2627E-07

Current total mass = 2.05865E+03 grams
Delta total mass = 3.26274E-07 grams
Delta total volume = 0.00000 cc

Reactant	Rel. Rate mol/mol	Rate mol/s	Rate mol/s/cm2
Tuff	1.0000E+00	1.2000E-09	2.5000E-15

Reactant	Affinity kcal/mol	Surface Area mol/s/cm2
Tuff	999.00000	4.8000E+05

Reactant	Rate Constants, mol/s/cm2	
Tuff		
	Forward	2.5000E-15

Affinity of the overall irreversible reaction= 0.000 kcal
Contributions from irreversible reactions
with no thermodynamic data are not included

--- Element Totals for the Aqueous Solution ---

Element	mg/kg soln.	Molality	Moles
O	8.865404E+05	5.561111E+01	5.559508E+01
Al	3.988952E-02	1.483744E-06	1.483316E-06
B	1.334829E-01	1.239157E-05	1.238800E-05
Ba	1.368719E-05	1.000288E-10	1.000000E-10
Ca	1.295702E+01	3.244636E-04	3.243700E-04
Ce	1.396507E-19	1.000288E-24	1.000000E-24
Cl	7.116513E+00	2.014581E-04	2.014000E-04
Cr	2.996352E+02	5.783475E-03	5.781807E-03
Cs	1.324650E-05	1.000288E-10	1.000000E-10
Cu	6.650220E-10	1.050303E-14	1.050000E-14
F	2.172842E+00	1.147831E-04	1.147500E-04
Fe	8.881091E-01	1.596001E-05	1.595541E-05
Gd	1.567289E-09	1.000288E-14	1.000000E-14
H	1.115156E+05	1.110370E+02	1.110050E+02
C	1.267583E-01	1.059166E-05	1.058861E-05
P	7.325643E+00	2.373660E-04	2.372976E-04

K	5.023473E+00	1.289475E-04	1.289103E-04
La	1.384452E-09	1.000288E-14	1.000000E-14
Li	6.917999E-07	1.000288E-10	1.000000E-10
Mg	2.003339E+00	8.272287E-05	8.269902E-05
Mn	3.250700E+01	5.938413E-04	5.936700E-04
Mo	2.179386E+02	2.279823E-03	2.279166E-03
N	1.982366E+00	1.420410E-04	1.420000E-04
Na	4.564846E+01	1.992775E-03	1.992200E-03
Nd	1.437620E-09	1.000288E-14	1.000000E-14
Ni	7.502088E+02	1.282876E-02	1.282506E-02
Pb	2.065134E-05	1.000288E-10	1.000000E-10
Pu	2.431914E-09	1.000288E-14	9.999999E-15
S	5.507393E+02	1.723725E-02	1.723228E-02
Si	2.803067E+00	1.001655E-04	1.001366E-04
Sm	1.498617E-09	1.000288E-14	1.000000E-14
Sr	8.732965E-06	1.000288E-10	1.000000E-10
Ti	4.963486E-06	1.040398E-10	1.040098E-10
U	2.372401E-09	1.000288E-14	1.000000E-14
V	4.768069E+00	9.393719E-05	9.391010E-05
Zn	6.517332E-06	1.000288E-10	1.000000E-10
Zr	9.092171E-16	1.000288E-20	1.000000E-20

Single ion activities and activity coefficients are here defined
with respect to the modified NBS pH scale

	pH	Eh	pe
modified NBS pH scale	2.0406	1.0983	1.8566E+01
rational pH scale	1.9641	1.1028	1.8643E+01

pHCl = 5.8287

Oxygen fugacity = 2.09991E-01
Log oxygen fugacity = -0.67780

Activity of water = 0.99924
Log activity of water = -0.00033

Ionic strength = 5.880050E-02 molal
Sum of molalities = 0.0494650147619
Osmotic coefficient = 0.85806

Mass of solution = 1.003325 kg
Mass of solutes = 0.003613 kg
Conc. of solutes = 0.360110 per cent (w/w)

Moles of solvent H2O = 5.54924E+01
Mass of solvent H2O = 9.99712E-01 kg

Species	Molality	Log molality	Log gamma	Log activity
H+	1.0861E-02	-1.9641	-0.0765	-2.0406
Ni++	1.0209E-02	-1.9910	-0.3466	-2.3376
SO4--	9.7761E-03	-2.0098	-0.3602	-2.3701
HSO4-	4.5008E-03	-2.3467	-0.0849	-2.4316

HCrO4-	4.0507E-03	-2.3925	-0.0849	-2.4774
NiSO4(aq)	2.6184E-03	-2.5820	0.0000	-2.5820
MoO4--	2.2798E-03	-2.6421	-0.3492	-2.9913
Na+	1.9397E-03	-2.7123	-0.0983	-2.8106
Cr2O7--	8.6348E-04	-3.0637	-0.3602	-3.4240
Mn++	4.1403E-04	-3.3830	-0.3466	-3.7295
O2(aq)	2.6166E-04	-3.5823	0.0062	-3.5761
Ca++	2.5991E-04	-3.5852	-0.3466	-3.9317
Cl-	2.0085E-04	-3.6971	-0.0909	-3.7881
MnSO4(aq)	1.7918E-04	-3.7467	0.0000	-3.7467
NO3-	1.4021E-04	-3.8532	-0.0909	-3.9441
K+	1.2506E-04	-3.9029	-0.1044	-4.0073
H3PO4(aq)	1.1923E-04	-3.9236	0.0000	-3.9236
H2PO4-	1.0769E-04	-3.9678	-0.0849	-4.0527
HF(aq)	1.0158E-04	-3.9932	0.0000	-3.9932
SiO2(aq)	1.0017E-04	-3.9993	0.0000	-3.9993
VO2+	7.7218E-05	-4.1123	-0.0983	-4.2106
CaSO4(aq)	6.4460E-05	-4.1907	0.0000	-4.1907
Mg++	5.3912E-05	-4.2683	-0.3139	-4.5822
NaSO4-	5.2994E-05	-4.2758	-0.0849	-4.3607
MgSO4(aq)	2.8802E-05	-4.5406	0.0000	-4.5406
B(OH)3(aq)	1.2392E-05	-4.9069	0.0000	-4.9069
VO2SO4-	1.2140E-05	-4.9158	-0.0849	-5.0007
CO2(aq)	1.0591E-05	-4.9751	0.0062	-4.9689
FeHPO4+	9.8576E-06	-5.0062	-0.0983	-5.1046
F-	9.2715E-06	-5.0329	-0.0878	-5.1207
Fe+++	3.9853E-06	-5.3995	-0.6676	-6.0671
Cr+++	3.9843E-06	-5.3996	-0.6676	-6.0672
KSO4-	3.8650E-06	-5.4129	-0.0849	-5.4977
VO(OH)3(aq)	3.3834E-06	-5.4706	0.0000	-5.4706
NiNO3+	1.6466E-06	-5.7834	-0.0983	-5.8817
H2CrO4(aq)	1.4542E-06	-5.8374	0.0000	-5.8374
FeOH++	1.4431E-06	-5.8407	-0.3761	-6.2168
VO2F(aq)	1.0440E-06	-5.9813	0.0000	-5.9813
AlF2+	8.5257E-07	-6.0693	-0.0983	-6.1676
AlF++	5.3599E-07	-6.2708	-0.3761	-6.6469
MnH2PO4+	4.6356E-07	-6.3339	-0.0983	-6.4322
FeSO4+	3.8794E-07	-6.4112	-0.0983	-6.5096
HCl(aq)	3.1718E-07	-6.4987	0.0000	-6.4987
CrO4--	2.6860E-07	-6.5709	-0.3602	-6.9311
FeF++	2.1126E-07	-6.6752	-0.3761	-7.0513
NiCl+	9.4729E-08	-7.0235	-0.0983	-7.1219
HPO3F-	9.2176E-08	-7.0354	-0.0849	-7.1203
CaNO3+	8.3647E-08	-7.0775	-0.0983	-7.1759
MnCl+	7.6216E-08	-7.1180	-0.0983	-7.2163
H2VO4-	7.2891E-08	-7.1373	-0.0849	-7.2222
CrO3Cl-	6.4830E-08	-7.1882	-0.0849	-7.2731
AlF3(aq)	6.4822E-08	-7.1883	0.0000	-7.1883
HNO3(aq)	5.1609E-08	-7.2873	0.0000	-7.2873
MnF+	4.7658E-08	-7.3219	-0.0983	-7.4202
VO2(OH)2-	4.5172E-08	-7.3451	-0.0849	-7.4300
MnNO3+	4.2136E-08	-7.3753	-0.0983	-7.4737
NaCl(aq)	4.2106E-08	-7.3757	0.0000	-7.3757
H2SO4(aq)	3.3711E-08	-7.4722	0.0000	-7.4722
Fe(SO4)2-	3.1000E-08	-7.5086	-0.0849	-7.5935
VO2HPO4-	3.0676E-08	-7.5132	-0.0849	-7.5981
H2F2(aq)	2.7886E-08	-7.5546	0.0000	-7.5546
Fe(OH)2+	2.7659E-08	-7.5582	-0.0983	-7.6565
KHSO4(aq)	2.4867E-08	-7.6044	0.0000	-7.6044
CrOH++	2.2345E-08	-7.6508	-0.3761	-8.0269
AlSO4+	1.6293E-08	-7.7880	-0.0983	-7.8863
Al+++	1.3845E-08	-7.8587	-0.6676	-8.5263
FeF2+	1.3794E-08	-7.8603	-0.0983	-7.9586

MgF+	5.5957E-09	-8.2521	-0.0983	-8.3505
CaF+	5.3410E-09	-8.2724	-0.0983	-8.3707
CaCl+	4.8188E-09	-8.3171	-0.0983	-8.4154
MgCl+	3.9189E-09	-8.4068	-0.0983	-8.5052
VO2F2-	2.7729E-09	-8.5571	-0.0849	-8.6420
FeNO3++	2.3166E-09	-8.6352	-0.3761	-9.0113
PO3F--	1.5174E-09	-8.8189	-0.3602	-9.1791
HPO4--	1.3892E-09	-8.8572	-0.3602	-9.2175
NaF(aq)	1.1780E-09	-8.9289	0.0000	-8.9289
HCO3-	6.4802E-10	-9.1884	-0.0849	-9.2733
KCl(aq)	5.1294E-10	-9.2899	0.0000	-9.2899
MnHPO4(aq)	4.2954E-10	-9.3670	0.0000	-9.3670
VO++	2.7648E-10	-9.5583	-0.3761	-9.9344
CrCl++	2.3541E-10	-9.6282	-0.3761	-10.0043
HF2-	2.2585E-10	-9.6462	-0.0849	-9.7311
AlF4-	1.4995E-10	-9.8241	-0.0849	-9.9089
VOSO4(aq)	1.4980E-10	-9.8245	0.0000	-9.8245
Mn+++	1.1765E-10	-9.9294	-0.8157	-10.7452
Ti(OH)4(aq)	1.0404E-10	-9.9828	0.0000	-9.9828
Cs+	1.0002E-10	-9.9999	-0.1077	-10.1076

--- Summary of Instantaneously Precipitated Solid Phases ---
(defined by derivatives)

--- Theoretical Rock Composition ---
g/kg

--- Oxide Percentages ---

Oxide Theoretical rock

Total = 0.0000

Phase/end-member		d mol/d zi	d grams/d zi	d vol (cc)/d zi
fix	CO2(g)	0.0000E+00	0.0000E+00	0.0000E+00
fix	O2(g)	-6.3999E-04	-2.0479E-02	0.0000E+00

--- Summary of Solid Phases (E.S.+P.R.S.) ---

Phase/End-member		Log moles	Moles	Mass, g	Volume, cc
fix	CO2(g)	2.3010	2.0000E+02	8.8020E+03	0.0000E+00
fix	O2(g)	2.3010	2.0000E+02	6.3998E+03	0.0000E+00

	Mass, grams	Volume, cc
Created	1.520172E+04	0.000000E+00
Destroyed	3.262735E-07	0.000000E+00
Net	1.520172E+04	0.000000E+00

Warning-- these volume totals may be incomplete because
of missing partial molar volume data in the data base

--- Summary of Pure Mineral Saturation States ---

Mineral	Log Q/K	Aff, kcal	State
AlF3	-6.679	-9.113	
Anglesite	-4.894	-6.677	
Anhydrite	-1.995	-2.722	
BaZrO3	69.237	94.458	ssatd
Barite	-2.765	-3.772	
Bassanite	-2.640	-3.602	
Boric_acid	-4.749	-6.478	
CaSO4:0.5H2O(beta)	-2.809	-3.832	
CaZrO3	129.700	176.948	ssatd
Celestite	-7.194	-9.815	
Chalcedony	-0.271	-0.370	
Coesite	-0.810	-1.105	
CrO2	-0.909	-1.241	
Cristobalite(alpha)	-0.550	-0.751	
Cristobalite(beta)	-0.994	-1.356	
Crocoite	-4.591	-6.263	
Epsomite	-4.992	-6.811	
Fe(OH)3	-5.602	-7.642	
FeF3	-2.190	-2.988	
Fluorite	-4.136	-5.643	
Goethite	-0.480	-0.655	
Gypsum	-1.820	-2.483	
Hematite	0.000	0.000	ssatd
Hexahydrite	-5.227	-7.132	
Ice	-0.139	-0.190	
Jarosite	-5.336	-7.280	
Kieserite	-6.686	-9.121	
Manganite	-4.459	-6.084	
Mercallite	-6.979	-9.521	
Mirabilite	-6.855	-9.352	
MnHPO4	0.000	0.000	ssatd
MnO2(gamma)	-1.518	-2.071	
Morenosite	-2.696	-3.678	
NiSO4:6H2O(alpha)	-2.702	-3.687	
Nontronite-Ca	-3.756	-5.124	
Nontronite-H	-2.823	-3.851	
Nontronite-K	-4.147	-5.658	
Nontronite-Mg	-3.825	-5.219	
Nontronite-Na	-4.091	-5.581	
Pentahydrite	-5.567	-7.595	
Pyrolusite	0.000	0.000	ssatd
Quartz	0.000	0.000	ssatd
Rutile	-0.337	-0.460	
Sellaite	-5.439	-7.421	
Shcherbinaite	-2.888	-3.940	
SiO2(am)	-1.286	-1.754	
SrZrO3	106.096	144.745	ssatd
Starkeyite	-5.954	-8.123	
Strengite	-1.902	-2.594	
Tridymite	-0.171	-0.234	
fix CO2(g)	0.000	0.000	satd
fix O2(g)	0.000	0.000	satd

--- Summary of Solid Solutions ---

--- Carbonate-Calcite ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Calcite	5.6705E-03	-2.2464	0.0000	-2.2464
Magnesite	4.5525E-04	-3.3417	0.0000	-3.3417
Rhodochrosite	9.9387E-01	-0.0027	0.0000	-0.0027
Siderite	1.2691E-08	-7.8965	0.0000	-7.8965
Smithsonite	5.2900E-08	-7.2765	0.0000	-7.2765
Strontianite	2.2203E-07	-6.6536	0.0000	-6.6536

Mineral	Log Q/K	Aff, kcal	State
Carbonate-Calcite	-10.767	-14.689	
Calcite	-10.767	-14.689	
Magnesite	-10.767	-14.689	
Rhodochrosite	-10.767	-14.689	
Siderite	-10.767	-14.689	
Smithsonite	-10.767	-14.689	
Strontianite	-10.767	-14.689	

--- Clinoptilolite-hy-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-hy-Ca	9.9769E-01	-0.0010	0.0000	-0.0010
Clinoptilolite-hy-Cs	6.6777E-23	-22.1754	0.0000	-22.1754
Clinoptilolite-hy-K	7.3167E-04	-3.1357	0.0000	-3.1357
Clinoptilolite-hy-Na	1.5783E-03	-2.8018	0.0000	-2.8018
Clinoptilolite-hy-Sr	5.6081E-12	-11.2512	0.0000	-11.2512

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-hy-ss	-59.151	-80.699	
Clinoptilolite-hy-Ca	-59.151	-80.699	
Clinoptilolite-hy-Cs	-59.151	-80.699	
Clinoptilolite-hy-K	-59.151	-80.699	
Clinoptilolite-hy-Na	-59.151	-80.699	
Clinoptilolite-hy-Sr	-59.151	-80.699	

--- Clinoptilolite-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-Ca	7.8163E-01	-0.1070	-0.2632	-0.3702
Clinoptilolite-Cs	3.0398E-07	-6.5172	-16.0322	-22.5494
Clinoptilolite-K	9.6807E-02	-1.0141	-2.4947	-3.5088
Clinoptilolite-NH4	1.0307E-51	-50.9869	-125.4277	-176.4146
Clinoptilolite-Na	1.2112E-01	-0.9168	-2.2553	-3.1721
Clinoptilolite-Sr	4.3842E-04	-3.3581	-8.2609	-11.6190

Mineral	Log Q/K	Aff, kcal	State

Clinoptilolite-ss	-58.783	-80.196
Clinoptilolite-Ca	-58.783	-80.196
Clinoptilolite-Cs	-58.783	-80.196
Clinoptilolite-K	-58.783	-80.196
Clinoptilolite-NH4	-58.783	-80.196
Clinoptilolite-Na	-58.783	-80.196
Clinoptilolite-Sr	-58.783	-80.196

--- Saponite-tri ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Saponite-Ca	1.4821E-03	-2.8291	1.8955	-0.9336
Saponite-H	9.9737E-01	-0.0011	0.0008	-0.0004
Saponite-K	9.6726E-05	-4.0145	2.6897	-1.3248
Saponite-Mg	9.1179E-04	-3.0401	2.0369	-1.0032
Saponite-Na	1.4347E-04	-3.8432	2.5750	-1.2683

Mineral	Log Q/K	Aff, kcal	State
Saponite-tri	-42.307	-57.719	
Saponite-Ca	-42.307	-57.719	
Saponite-H	-42.307	-57.719	
Saponite-K	-42.307	-57.719	
Saponite-Mg	-42.307	-57.719	
Saponite-Na	-42.307	-57.719	

--- Smectite-di ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Beidellite-Ca	6.3812E-68	-67.1951	45.0207	-22.1744
Beidellite-K	4.1673E-69	-68.3801	45.8147	-22.5654
Beidellite-Mg	3.9256E-68	-67.4061	45.1621	-22.2440
Beidellite-Na	6.1771E-69	-68.2092	45.7002	-22.5090
Montmor-Ca	3.1368E-58	-57.5035	38.5274	-18.9762
Montmor-K	3.3456E-59	-58.4755	39.1786	-19.2969
Montmor-Mg	3.1362E-58	-57.5036	38.5274	-18.9762
Montmor-Na	4.8361E-59	-58.3155	39.0714	-19.2441
Nontronite-Ca	5.6252E-01	-0.2499	0.1674	-0.0825
Nontronite-K	3.6736E-02	-1.4349	0.9614	-0.4735
Nontronite-Mg	3.4629E-01	-0.4606	0.3086	-0.1520
Nontronite-Na	5.4453E-02	-1.2640	0.8469	-0.4171

Mineral	Log Q/K	Aff, kcal	State
Smectite-di	-3.673	-5.012	
Beidellite-Ca	-3.673	-5.012	
Beidellite-K	-3.673	-5.012	
Beidellite-Mg	-3.673	-5.012	
Beidellite-Na	-3.673	-5.012	
Montmor-Ca	-3.673	-5.012	
Montmor-K	-3.673	-5.012	

Montmor-Mg	-3.673	-5.012
Montmor-Na	-3.673	-5.012
Nontronite-Ca	-3.673	-5.012
Nontronite-K	-3.673	-5.012
Nontronite-Mg	-3.673	-5.012
Nontronite-Na	-3.673	-5.012

--- Lanthanide hydroxide ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
La(OH)3	1.2829E-05	-4.8918	0.0000	-4.8918
Ce(OH)3	3.7099E-15	-14.4306	0.0000	-14.4306
Nd(OH)3(c)	3.4718E-01	-0.4594	0.0000	-0.4594
Gd(OH)3	5.8550E-01	-0.2325	0.0000	-0.2325
Sm(OH)3	6.7308E-02	-1.1719	0.0000	-1.1719

Mineral	Log Q/K	Aff, kcal	State
Lanthanide hydroxide	-24.639	-33.614	
La(OH)3	-24.639	-33.614	
Ce(OH)3	-24.639	-33.614	
Nd(OH)3(c)	-24.639	-33.614	
Gd(OH)3	-24.639	-33.614	
Sm(OH)3	-24.639	-33.614	

--- Rhabdophane-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaPO4:H2O	4.1201E-01	-0.3851	0.0000	-0.3851
CePO4:H2O	3.7677E-11	-10.4239	0.0000	-10.4239
NdPO4:H2O	2.2247E-01	-0.6527	0.0000	-0.6527
GdPO4:H2O	1.4936E-01	-0.8258	0.0000	-0.8258
SmPO4:H2O	2.1616E-01	-0.6652	0.0000	-0.6652

Mineral	Log Q/K	Aff, kcal	State
Rhabdophane-ss	-9.764	-13.321	
LaPO4:H2O	-9.764	-13.321	
CePO4:H2O	-9.764	-13.321	
NdPO4:H2O	-9.764	-13.321	
GdPO4:H2O	-9.764	-13.321	
SmPO4:H2O	-9.764	-13.321	

--- Lanthanide fluoride ---

Ideal solution

Component	x	Log x	Log lambda	Log activity

LaF3:0.5H2O	5.7252E-01	-0.2422	0.0000	-0.2422
CeF3:0.5H2O	8.2978E-11	-10.0810	0.0000	-10.0810
NdF3:0.5H2O	3.8918E-01	-0.4099	0.0000	-0.4099
GdF3:0.5H2O	8.2628E-03	-2.0829	0.0000	-2.0829
SmF3:0.5H2O	3.0037E-02	-1.5223	0.0000	-1.5223

Mineral	Log Q/K	Aff, kcal	State
Lanthanide fluoride	-11.742	-16.019	
LaF3:0.5H2O	-11.742	-16.019	
CeF3:0.5H2O	-11.742	-16.019	
NdF3:0.5H2O	-11.742	-16.019	
GdF3:0.5H2O	-11.742	-16.019	
SmF3:0.5H2O	-11.742	-16.019	

--- Summary of Gases ---

Gas	Fugacity	Log fugacity
Al(g)	4.4811-201	-200.3486
B(g)	8.5659-204	-203.0672
BF3(g)	3.7724E-24	-23.4234
C(g)	3.0917-190	-189.5098
CH4(g)	3.5240-146	-145.4530
CO(g)	6.0395E-49	-48.2190
CO2(g)	3.1623E-04	-3.5000
Ca(g)	7.2342-164	-163.1406
Chlorine	3.5847E-17	-16.4455
Cs(g)	3.5180E-89	-88.4537
Cu(g)	7.5962E-93	-92.1194
Fluorine	1.4789E-72	-71.8301
H2(g)	6.1104E-42	-41.2139
H2O(g)	2.5958E-02	-1.5857
H2S(g)	2.2902-130	-129.6401
HCl(g)	7.3419E-13	-12.1342
HF(g)	5.3223E-09	-8.2739
K(g)	2.2169E-83	-82.6543
Li(g)	7.8245-103	-102.1065
Mg(g)	1.0897-141	-140.9627
Nitrogen	2.6192E-08	-7.5818
NH3(g)	1.8638E-63	-62.7296
NO(g)	5.0961E-20	-19.2928
NO2(g)	3.4845E-14	-13.4579
Na(g)	1.8194E-81	-80.7401
O2(g)	2.0999E-01	-0.6778
Pb(g)	7.6389E-81	-80.1170
S2(g)	3.1322-203	-202.5042
SO2(g)	4.0579E-43	-42.3917
Si(g)	4.2259-221	-220.3741
SiF4(g)	3.5422E-18	-17.4507
Ti(g)	1.7501-231	-230.7569
TiCl4(g)	4.4871E-62	-61.3480
U(g)	1.0090-304	-303.9961
U2Cl10(g)	4.7266-202	-201.3255
U2Cl8(g)	4.0879-216	-215.3885
U2F10(g)	2.5080-120	-119.6007
UCl(g)	6.6042-255	-254.1802
UCl2(g)	1.2931-203	-202.8884
UCl3(g)	5.5459-150	-149.2560

```
UCl4(g)                    1.2879-113   -112.8901
UCl5(g)                    1.5389-114   -113.8128
UCl6(g)                    3.4162-110   -109.4665
UF(g)                      1.0174-240   -239.9925
UF2(g)                     7.6089-195   -194.1187
UF3(g)                     1.4003-142   -141.8538
UF4(g)                     3.8041E-87    -86.4198
UF5(g)                     4.7333E-73    -72.3248
UF6(g)                     5.7993E-73    -72.2366
UO(g)                      7.9689-220   -219.0986
UO2(g)                     1.4764-135   -134.8308
UO2Cl2(g)                  2.3107E-71    -70.6363
UO2F2(g)                   9.8633E-61    -60.0060
UO3(g)                     1.0859E-82    -81.9642
UOF4(g)                    1.1336E-64    -63.9456
Zn(g)                      1.2815E-90    -89.8923



- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -


Stepping to zi=  2.5119E-08, delzi=  9.2699E-09, nord= 2
  time =  2.4227E-04 d, dltime =  8.9409E-05 d
Steps completed =     9, iter =  1, ncorr = 0
Most rapidly changing is zvclg1(Ti(OH)4(aq)            ) =     -9.9732

- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -


                    Reaction progress        =  2.51188643150950E-08
                    Log of reaction progress =      -7.6000000



                    Time =  2.093E+01 sec
                         =  2.423E-04 days
                         =  6.633E-07 years

                    Log sec =        1.321
                    Log days =      -3.616
                    Log years =     -6.178

                    Temperature    =     25.000 degrees C
                    total pressure =      1.013 bars


Step size is limited by the print requirement


                              --- Reactant Summary ---


    Reactant                  Moles     Delta moles    Mass, g    Delta Mass, g

 Tuff                      1.0000E+02   2.5119E-08   2.0586E+03   5.1711E-07


               Current total mass =  2.05865E+03 grams
               Delta total mass   =  5.17109E-07 grams
               Delta total volume =      0.00000 cc
```

Reactant	Rel. Rate mol/mol	Rate mol/s	Rate mol/s/cm2
Tuff	1.0000E+00	1.2000E-09	2.5000E-15

Reactant	Affinity kcal/mol	Surface Area mol/s/cm2
Tuff	999.00000	4.8000E+05

Reactant	Rate Constants, mol/s/cm2	
Tuff		
	Forward	2.5000E-15

Affinity of the overall irreversible reaction= 0.000 kcal
Contributions from irreversible reactions
with no thermodynamic data are not included

--- Element Totals for the Aqueous Solution ---

Element	mg/kg soln.	Molality	Moles
O	8.865404E+05	5.561111E+01	5.559508E+01
Al	3.990236E-02	1.484221E-06	1.483793E-06
B	1.334829E-01	1.239157E-05	1.238800E-05
Ba	1.368719E-05	1.000288E-10	1.000000E-10
Ca	1.295702E+01	3.244636E-04	3.243700E-04
Ce	1.396507E-19	1.000288E-24	1.000000E-24
Cl	7.116513E+00	2.014581E-04	2.014000E-04
Cr	2.996352E+02	5.783475E-03	5.781807E-03
Cs	1.324650E-05	1.000288E-10	1.000000E-10
Cu	6.650220E-10	1.050303E-14	1.050000E-14
F	2.172842E+00	1.147831E-04	1.147500E-04
Fe	8.881104E-01	1.596004E-05	1.595543E-05
Gd	1.567289E-09	1.000288E-14	1.000000E-14
H	1.115156E+05	1.110370E+02	1.110050E+02
C	1.267583E-01	1.059166E-05	1.058861E-05
P	7.325643E+00	2.373660E-04	2.372976E-04
K	5.023481E+00	1.289477E-04	1.289105E-04
La	1.384452E-09	1.000288E-14	1.000000E-14
Li	6.917999E-07	1.000288E-10	1.000000E-10
Mg	2.003339E+00	8.272288E-05	8.269903E-05
Mn	3.250700E+01	5.938413E-04	5.936700E-04
Mo	2.179386E+02	2.279823E-03	2.279166E-03
N	1.982366E+00	1.420410E-04	1.420000E-04
Na	4.564846E+01	1.992775E-03	1.992201E-03
Nd	1.437620E-09	1.000288E-14	1.000000E-14
Ni	7.502088E+02	1.282876E-02	1.282506E-02
Pb	2.065134E-05	1.000288E-10	1.000000E-10
Pu	2.431914E-09	1.000288E-14	9.999999E-15
S	5.507393E+02	1.723725E-02	1.723228E-02
Si	2.803136E+00	1.001679E-04	1.001391E-04
Sm	1.498617E-09	1.000288E-14	1.000000E-14
Sr	8.732965E-06	1.000288E-10	1.000000E-10
Ti	5.075406E-06	1.063857E-10	1.063551E-10

U	2.372401E-09	1.000288E-14	1.000000E-14
V	4.768069E+00	9.393719E-05	9.391010E-05
Zn	6.517332E-06	1.000288E-10	1.000000E-10
Zr	9.092171E-16	1.000288E-20	1.000000E-20

Single ion activities and activity coefficients are here defined
with respect to the modified NBS pH scale

	pH	Eh	pe
modified NBS pH scale	2.0406	1.0983	1.8566E+01
rational pH scale	1.9641	1.1028	1.8643E+01

pHCl = 5.8287

Oxygen fugacity = 2.09991E-01
Log oxygen fugacity = -0.67780

Activity of water = 0.99924
Log activity of water = -0.00033

Ionic strength = 5.880050E-02 molal
Sum of molalities = 0.0494650163409
Osmotic coefficient = 0.85806

Mass of solution = 1.003325 kg
Mass of solutes = 0.003613 kg
Conc. of solutes = 0.360110 per cent (w/w)

Moles of solvent H2O = 5.54924E+01
Mass of solvent H2O = 9.99712E-01 kg

Species	Molality	Log molality	Log gamma	Log activity
H+	1.0861E-02	-1.9641	-0.0765	-2.0406
Ni++	1.0209E-02	-1.9910	-0.3466	-2.3376
SO4--	9.7761E-03	-2.0098	-0.3602	-2.3701
HSO4-	4.5008E-03	-2.3467	-0.0849	-2.4316
HCrO4-	4.0507E-03	-2.3925	-0.0849	-2.4774
NiSO4(aq)	2.6184E-03	-2.5820	0.0000	-2.5820
MoO4--	2.2798E-03	-2.6421	-0.3492	-2.9913
Na+	1.9397E-03	-2.7123	-0.0983	-2.8106
Cr2O7--	8.6348E-04	-3.0637	-0.3602	-3.4240
Mn++	4.1403E-04	-3.3830	-0.3466	-3.7295
O2(aq)	2.6166E-04	-3.5823	0.0062	-3.5761
Ca++	2.5991E-04	-3.5852	-0.3466	-3.9317
Cl-	2.0085E-04	-3.6971	-0.0909	-3.7881
MnSO4(aq)	1.7918E-04	-3.7467	0.0000	-3.7467
NO3-	1.4021E-04	-3.8532	-0.0909	-3.9441
K+	1.2506E-04	-3.9029	-0.1044	-4.0073
H3PO4(aq)	1.1923E-04	-3.9236	0.0000	-3.9236
H2PO4-	1.0769E-04	-3.9678	-0.0849	-4.0527
HF(aq)	1.0158E-04	-3.9932	0.0000	-3.9932
SiO2(aq)	1.0017E-04	-3.9993	0.0000	-3.9993
VO2+	7.7218E-05	-4.1123	-0.0983	-4.2106

CaSO4(aq)	6.4460E-05	-4.1907	0.0000	-4.1907
Mg++	5.3912E-05	-4.2683	-0.3139	-4.5822
NaSO4-	5.2994E-05	-4.2758	-0.0849	-4.3607
MgSO4(aq)	2.8802E-05	-4.5406	0.0000	-4.5406
B(OH)3(aq)	1.2392E-05	-4.9069	0.0000	-4.9069
VO2SO4-	1.2140E-05	-4.9158	-0.0849	-5.0007
CO2(aq)	1.0591E-05	-4.9751	0.0062	-4.9689
FeHPO4+	9.8576E-06	-5.0062	-0.0983	-5.1046
F-	9.2714E-06	-5.0329	-0.0878	-5.1207
Fe+++	3.9853E-06	-5.3995	-0.6676	-6.0671
Cr+++	3.9843E-06	-5.3996	-0.6676	-6.0672
KSO4-	3.8650E-06	-5.4129	-0.0849	-5.4977
VO(OH)3(aq)	3.3834E-06	-5.4706	0.0000	-5.4706
NiNO3+	1.6466E-06	-5.7834	-0.0983	-5.8817
H2CrO4(aq)	1.4542E-06	-5.8374	0.0000	-5.8374
FeOH++	1.4431E-06	-5.8407	-0.3761	-6.2168
VO2F(aq)	1.0440E-06	-5.9813	0.0000	-5.9813
AlF2+	8.5285E-07	-6.0691	-0.0983	-6.1675
AlF++	5.3617E-07	-6.2707	-0.3761	-6.6468
MnH2PO4+	4.6356E-07	-6.3339	-0.0983	-6.4322
FeSO4+	3.8795E-07	-6.4112	-0.0983	-6.5096
HCl(aq)	3.1718E-07	-6.4987	0.0000	-6.4987
CrO4--	2.6860E-07	-6.5709	-0.3602	-6.9311
FeF++	2.1126E-07	-6.6752	-0.3761	-7.0513
NiCl+	9.4729E-08	-7.0235	-0.0983	-7.1219
HPO3F-	9.2175E-08	-7.0354	-0.0849	-7.1203
CaNO3+	8.3647E-08	-7.0775	-0.0983	-7.1759
MnCl+	7.6216E-08	-7.1180	-0.0983	-7.2163
H2VO4-	7.2891E-08	-7.1373	-0.0849	-7.2222
AlF3(aq)	6.4843E-08	-7.1881	0.0000	-7.1881
CrO3Cl-	6.4830E-08	-7.1882	-0.0849	-7.2731
HNO3(aq)	5.1609E-08	-7.2873	0.0000	-7.2873
MnF+	4.7657E-08	-7.3219	-0.0983	-7.4202
VO2(OH)2-	4.5172E-08	-7.3451	-0.0849	-7.4300
MnNO3+	4.2136E-08	-7.3753	-0.0983	-7.4737
NaCl(aq)	4.2107E-08	-7.3757	0.0000	-7.3757
H2SO4(aq)	3.3711E-08	-7.4722	0.0000	-7.4722
Fe(SO4)2-	3.1000E-08	-7.5086	-0.0849	-7.5935
VO2HPO4-	3.0676E-08	-7.5132	-0.0849	-7.5981
H2F2(aq)	2.7886E-08	-7.5546	0.0000	-7.5546
Fe(OH)2+	2.7659E-08	-7.5582	-0.0983	-7.6565
KHSO4(aq)	2.4867E-08	-7.6044	0.0000	-7.6044
CrOH++	2.2345E-08	-7.6508	-0.3761	-8.0269
AlSO4+	1.6299E-08	-7.7878	-0.0983	-7.8862
Al+++	1.3850E-08	-7.8586	-0.6676	-8.5261
FeF2+	1.3794E-08	-7.8603	-0.0983	-7.9586
MgF+	5.5956E-09	-8.2522	-0.0983	-8.3505
CaF+	5.3410E-09	-8.2724	-0.0983	-8.3707
CaCl+	4.8188E-09	-8.3171	-0.0983	-8.4154
MgCl+	3.9189E-09	-8.4068	-0.0983	-8.5052
VO2F2-	2.7728E-09	-8.5571	-0.0849	-8.6420
FeNO3++	2.3166E-09	-8.6351	-0.3761	-9.0113
PO3F--	1.5174E-09	-8.8189	-0.3602	-9.1791
HPO4--	1.3892E-09	-8.8572	-0.3602	-9.2175
NaF(aq)	1.1780E-09	-8.9289	0.0000	-8.9289
HCO3-	6.4802E-10	-9.1884	-0.0849	-9.2733
KCl(aq)	5.1294E-10	-9.2899	0.0000	-9.2899
MnHPO4(aq)	4.2954E-10	-9.3670	0.0000	-9.3670
VO++	2.7648E-10	-9.5583	-0.3761	-9.9344
CrCl++	2.3541E-10	-9.6282	-0.3761	-10.0043
HF2-	2.2584E-10	-9.6462	-0.0849	-9.7311
AlF4-	1.4999E-10	-9.8239	-0.0849	-9.9088
VOSO4(aq)	1.4980E-10	-9.8245	0.0000	-9.8245

Mn+++	1.1765E-10	-9.9294	-0.8157	-10.7452
Ti(OH)4(aq)	1.0639E-10	-9.9731	0.0000	-9.9731
Cs+	1.0002E-10	-9.9999	-0.1077	-10.1076

--- Summary of Instantaneously Precipitated Solid Phases ---
(defined by derivatives)

--- Theoretical Rock Composition ---
g/kg

--- Oxide Percentages ---

Oxide Theoretical rock

Total = 0.0000

Phase/end-member		d mol/d zi	d grams/d zi	d vol (cc)/d zi
fix	CO2(g)	0.0000E+00	0.0000E+00	0.0000E+00
fix	O2(g)	-7.4157E-04	-2.3729E-02	0.0000E+00

--- Summary of Solid Phases (E.S.+P.R.S.) ---

Phase/End-member		Log moles	Moles	Mass, g	Volume, cc
fix	CO2(g)	2.3010	2.0000E+02	8.8020E+03	0.0000E+00
fix	O2(g)	2.3010	2.0000E+02	6.3998E+03	0.0000E+00

	Mass, grams	Volume, cc
Created	1.520172E+04	0.000000E+00
Destroyed	5.171087E-07	0.000000E+00
Net	1.520172E+04	0.000000E+00

Warning-- these volume totals may be incomplete because
of missing partial molar volume data in the data base

--- Summary of Pure Mineral Saturation States ---

Mineral	Log Q/K	Aff, kcal	State
AlF3	-6.679	-9.112	
Anglesite	-4.894	-6.677	
Anhydrite	-1.995	-2.722	
BaZrO3	69.237	94.458	ssatd
Barite	-2.765	-3.772	
Bassanite	-2.640	-3.602	
Boric_acid	-4.749	-6.478	
CaSO4:0.5H2O(beta)	-2.809	-3.832	
CaZrO3	129.700	176.948	ssatd
Celestite	-7.194	-9.815	
Chalcedony	-0.271	-0.370	
Coesite	-0.810	-1.105	
CrO2	-0.909	-1.241	

Cristobalite(alpha)	-0.550	-0.751	
Cristobalite(beta)	-0.994	-1.356	
Crocoite	-4.591	-6.263	
Epsomite	-4.992	-6.811	
Fe(OH)3	-5.602	-7.642	
FeF3	-2.190	-2.988	
Fluorite	-4.136	-5.643	
Goethite	-0.480	-0.655	
Gypsum	-1.820	-2.483	
Hematite	0.000	0.000	ssatd
Hexahydrite	-5.227	-7.132	
Ice	-0.139	-0.190	
Jarosite	-5.336	-7.280	
Kieserite	-6.686	-9.121	
Manganite	-4.459	-6.084	
Mercallite	-6.979	-9.521	
Mirabilite	-6.855	-9.352	
MnHPO4	0.000	0.000	ssatd
MnO2(gamma)	-1.518	-2.071	
Morenosite	-2.696	-3.678	
NiSO4:6H2O(alpha)	-2.702	-3.687	
Nontronite-Ca	-3.756	-5.124	
Nontronite-H	-2.823	-3.851	
Nontronite-K	-4.147	-5.657	
Nontronite-Mg	-3.825	-5.219	
Nontronite-Na	-4.090	-5.581	
Pentahydrite	-5.567	-7.595	
Pyrolusite	0.000	0.000	ssatd
Quartz	0.000	0.000	ssatd
Rutile	-0.327	-0.446	
Sellaite	-5.439	-7.421	
Shcherbinaite	-2.888	-3.940	
SiO2(am)	-1.286	-1.754	
SrZrO3	106.096	144.745	ssatd
Starkeyite	-5.954	-8.123	
Strengite	-1.902	-2.594	
Tridymite	-0.171	-0.234	
fix CO2(g)	0.000	0.000	satd
fix O2(g)	0.000	0.000	satd

--- Summary of Solid Solutions ---

--- Carbonate-Calcite ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Calcite	5.6705E-03	-2.2464	0.0000	-2.2464
Magnesite	4.5525E-04	-3.3417	0.0000	-3.3417
Rhodochrosite	9.9387E-01	-0.0027	0.0000	-0.0027
Siderite	1.2691E-08	-7.8965	0.0000	-7.8965
Smithsonite	5.2900E-08	-7.2765	0.0000	-7.2765
Strontianite	2.2203E-07	-6.6536	0.0000	-6.6536

Mineral	Log Q/K	Aff, kcal	State
Carbonate-Calcite	-10.767	-14.689	
Calcite	-10.767	-14.689	
Magnesite	-10.767	-14.689	
Rhodochrosite	-10.767	-14.689	

Siderite	-10.767	-14.689
Smithsonite	-10.767	-14.689
Strontianite	-10.767	-14.689

--- Clinoptilolite-hy-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-hy-Ca	9.9769E-01	-0.0010	0.0000	-0.0010
Clinoptilolite-hy-Cs	6.6777E-23	-22.1754	0.0000	-22.1754
Clinoptilolite-hy-K	7.3168E-04	-3.1357	0.0000	-3.1357
Clinoptilolite-hy-Na	1.5783E-03	-2.8018	0.0000	-2.8018
Clinoptilolite-hy-Sr	5.6081E-12	-11.2512	0.0000	-11.2512

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-hy-ss	-59.150	-80.698	
Clinoptilolite-hy-Ca	-59.150	-80.698	
Clinoptilolite-hy-Cs	-59.150	-80.698	
Clinoptilolite-hy-K	-59.150	-80.698	
Clinoptilolite-hy-Na	-59.150	-80.698	
Clinoptilolite-hy-Sr	-59.150	-80.698	

--- Clinoptilolite-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-Ca	7.8163E-01	-0.1070	-0.2632	-0.3702
Clinoptilolite-Cs	3.0398E-07	-6.5172	-16.0322	-22.5494
Clinoptilolite-K	9.6807E-02	-1.0141	-2.4947	-3.5088
Clinoptilolite-NH4	1.0307E-51	-50.9869	-125.4277	-176.4146
Clinoptilolite-Na	1.2112E-01	-0.9168	-2.2553	-3.1721
Clinoptilolite-Sr	4.3842E-04	-3.3581	-8.2609	-11.6190

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-ss	-58.782	-80.195	
Clinoptilolite-Ca	-58.782	-80.195	
Clinoptilolite-Cs	-58.782	-80.195	
Clinoptilolite-K	-58.782	-80.195	
Clinoptilolite-NH4	-58.782	-80.195	
Clinoptilolite-Na	-58.782	-80.195	
Clinoptilolite-Sr	-58.782	-80.195	

--- Saponite-tri ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Saponite-Ca	1.4821E-03	-2.8291	1.8955	-0.9336

Saponite-H	9.9737E-01	-0.0011	0.0008	-0.0004
Saponite-K	9.6726E-05	-4.0145	2.6897	-1.3248
Saponite-Mg	9.1179E-04	-3.0401	2.0369	-1.0032
Saponite-Na	1.4347E-04	-3.8432	2.5750	-1.2683

Mineral	Log Q/K	Aff, kcal	State
Saponite-tri	-42.307	-57.719	
Saponite-Ca	-42.307	-57.719	
Saponite-H	-42.307	-57.719	
Saponite-K	-42.307	-57.719	
Saponite-Mg	-42.307	-57.719	
Saponite-Na	-42.307	-57.719	

--- Smectite-di ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Beidellite-Ca	6.3940E-68	-67.1942	45.0201	-22.1741
Beidellite-K	4.1757E-69	-68.3793	45.8141	-22.5652
Beidellite-Mg	3.9335E-68	-67.4052	45.1615	-22.2437
Beidellite-Na	6.1895E-69	-68.2083	45.6996	-22.5088
Montmor-Ca	3.1411E-58	-57.5029	38.5270	-18.9760
Montmor-K	3.3502E-59	-58.4749	39.1782	-19.2967
Montmor-Mg	3.1405E-58	-57.5030	38.5270	-18.9760
Montmor-Na	4.8427E-59	-58.3149	39.0710	-19.2439
Nontronite-Ca	5.6252E-01	-0.2499	0.1674	-0.0825
Nontronite-K	3.6736E-02	-1.4349	0.9614	-0.4735
Nontronite-Mg	3.4629E-01	-0.4606	0.3086	-0.1520
Nontronite-Na	5.4453E-02	-1.2640	0.8469	-0.4171

Mineral	Log Q/K	Aff, kcal	State
Smectite-di	-3.673	-5.011	
Beidellite-Ca	-3.673	-5.011	
Beidellite-K	-3.673	-5.011	
Beidellite-Mg	-3.673	-5.011	
Beidellite-Na	-3.673	-5.011	
Montmor-Ca	-3.673	-5.011	
Montmor-K	-3.673	-5.011	
Montmor-Mg	-3.673	-5.011	
Montmor-Na	-3.673	-5.011	
Nontronite-Ca	-3.673	-5.011	
Nontronite-K	-3.673	-5.011	
Nontronite-Mg	-3.673	-5.011	
Nontronite-Na	-3.673	-5.011	

--- Lanthanide hydroxide ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
La(OH)3	1.2829E-05	-4.8918	0.0000	-4.8918
Ce(OH)3	3.7099E-15	-14.4306	0.0000	-14.4306

Nd(OH)3(c)	3.4718E-01	-0.4594	0.0000	-0.4594
Gd(OH)3	5.8550E-01	-0.2325	0.0000	-0.2325
Sm(OH)3	6.7308E-02	-1.1719	0.0000	-1.1719

Mineral	Log Q/K	Aff, kcal	State
Lanthanide hydroxide	-24.639	-33.614	
La(OH)3	-24.639	-33.614	
Ce(OH)3	-24.639	-33.614	
Nd(OH)3(c)	-24.639	-33.614	
Gd(OH)3	-24.639	-33.614	
Sm(OH)3	-24.639	-33.614	

--- Rhabdophane-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaPO4:H2O	4.1201E-01	-0.3851	0.0000	-0.3851
CePO4:H2O	3.7677E-11	-10.4239	0.0000	-10.4239
NdPO4:H2O	2.2247E-01	-0.6527	0.0000	-0.6527
GdPO4:H2O	1.4936E-01	-0.8258	0.0000	-0.8258
SmPO4:H2O	2.1616E-01	-0.6652	0.0000	-0.6652

Mineral	Log Q/K	Aff, kcal	State
Rhabdophane-ss	-9.764	-13.321	
LaPO4:H2O	-9.764	-13.321	
CePO4:H2O	-9.764	-13.321	
NdPO4:H2O	-9.764	-13.321	
GdPO4:H2O	-9.764	-13.321	
SmPO4:H2O	-9.764	-13.321	

--- Lanthanide fluoride ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaF3:0.5H2O	5.7252E-01	-0.2422	0.0000	-0.2422
CeF3:0.5H2O	8.2978E-11	-10.0810	0.0000	-10.0810
NdF3:0.5H2O	3.8918E-01	-0.4099	0.0000	-0.4099
GdF3:0.5H2O	8.2628E-03	-2.0829	0.0000	-2.0829
SmF3:0.5H2O	3.0037E-02	-1.5223	0.0000	-1.5223

Mineral	Log Q/K	Aff, kcal	State
Lanthanide fluoride	-11.742	-16.019	
LaF3:0.5H2O	-11.742	-16.019	
CeF3:0.5H2O	-11.742	-16.019	
NdF3:0.5H2O	-11.742	-16.019	
GdF3:0.5H2O	-11.742	-16.019	
SmF3:0.5H2O	-11.742	-16.019	

--- Summary of Gases ---

Gas	Fugacity	Log fugacity
Al(g)	4.4826-201	-200.3485
B(g)	8.5659-204	-203.0672
BF3(g)	3.7723E-24	-23.4234
C(g)	3.0917-190	-189.5098
CH4(g)	3.5240-146	-145.4530
CO(g)	6.0395E-49	-48.2190
CO2(g)	3.1623E-04	-3.5000
Ca(g)	7.2342-164	-163.1406
Chlorine	3.5847E-17	-16.4455
Cs(g)	3.5180E-89	-88.4537
Cu(g)	7.5962E-93	-92.1194
Fluorine	1.4788E-72	-71.8301
H2(g)	6.1104E-42	-41.2139
H2O(g)	2.5958E-02	-1.5857
H2S(g)	2.2902-130	-129.6401
HCl(g)	7.3419E-13	-12.1342
HF(g)	5.3222E-09	-8.2739
K(g)	2.2169E-83	-82.6543
Li(g)	7.8245-103	-102.1065
Mg(g)	1.0897-141	-140.9627
Nitrogen	2.6192E-08	-7.5818
NH3(g)	1.8638E-63	-62.7296
NO(g)	5.0961E-20	-19.2928
NO2(g)	3.4845E-14	-13.4579
Na(g)	1.8194E-81	-80.7401
O2(g)	2.0999E-01	-0.6778
Pb(g)	7.6389E-81	-80.1170
S2(g)	3.1322-203	-202.5042
SO2(g)	4.0579E-43	-42.3917
Si(g)	4.2260-221	-220.3741
SiF4(g)	3.5422E-18	-17.4507
Ti(g)	1.7896-231	-230.7473
TiCl4(g)	4.5883E-62	-61.3384
U(g)	1.0090-304	-303.9961
U2Cl10(g)	4.7266-202	-201.3255
U2Cl8(g)	4.0879-216	-215.3885
U2F10(g)	2.5078-120	-119.6007
UCl(g)	6.6042-255	-254.1802
UCl2(g)	1.2931-203	-202.8884
UCl3(g)	5.5459-150	-149.2560
UCl4(g)	1.2879-113	-112.8901
UCl5(g)	1.5389-114	-113.8128
UCl6(g)	3.4162-110	-109.4665
UF(g)	1.0174-240	-239.9925
UF2(g)	7.6088-195	-194.1187
UF3(g)	1.4003-142	-141.8538
UF4(g)	3.8040E-87	-86.4198
UF5(g)	4.7331E-73	-72.3249
UF6(g)	5.7990E-73	-72.2366
UO(g)	7.9689-220	-219.0986
UO2(g)	1.4764-135	-134.8308
UO2Cl2(g)	2.3107E-71	-70.6363
UO2F2(g)	9.8632E-61	-60.0060
UO3(g)	1.0859E-82	-81.9642
UOF4(g)	1.1335E-64	-63.9456
Zn(g)	1.2815E-90	-89.8923

```
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -


Stepping to zi=  3.9811E-08, delzi=  1.4692E-08, nord= 2
  time =  3.8398E-04 d, dltime =  1.4170E-04 d
Steps completed =    10, iter =  1, ncorr = 0
Most rapidly changing is zvclg1(Ti(OH)4(aq)             ) =     -9.9583

- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -


                    Reaction progress        =  3.98107170553484E-08
                    Log of reaction progress =      -7.4000000



                    Time =  3.318E+01 sec
                         =  3.840E-04 days
                         =  1.051E-06 years

                    Log sec =        1.521
                    Log days =      -3.416
                    Log years =     -5.978

                    Temperature    =     25.000 degrees C
                    total pressure =      1.013 bars


Step size is limited by the print requirement


                              --- Reactant Summary ---


    Reactant                   Moles     Delta moles    Mass, g    Delta Mass, g

 Tuff                       1.0000E+02   3.9811E-08   2.0586E+03   8.1956E-07


               Current total mass =  2.05865E+03 grams
               Delta total mass   =  8.19562E-07 grams
               Delta total volume =      0.00000 cc


    Reactant                Rel. Rate      Rate         Rate
                             mol/mol       mol/s      mol/s/cm2

 Tuff                       1.0000E+00   1.2000E-09   2.5000E-15


    Reactant                   Affinity   Surface Area
                               kcal/mol     mol/s/cm2

 Tuff                        999.00000   4.8000E+05


    Reactant                Rate Constants, mol/s/cm2

 Tuff
```

Forward 2.5000E-15

Affinity of the overall irreversible reaction= 0.000 kcal
Contributions from irreversible reactions
with no thermodynamic data are not included

--- Element Totals for the Aqueous Solution ---

Element	mg/kg soln.	Molality	Moles
O	8.865404E+05	5.561111E+01	5.559508E+01
Al	3.992270E-02	1.484978E-06	1.484550E-06
B	1.334829E-01	1.239157E-05	1.238800E-05
Ba	1.368719E-05	1.000288E-10	1.000000E-10
Ca	1.295703E+01	3.244636E-04	3.243701E-04
Ce	1.396507E-19	1.000288E-24	1.000000E-24
Cl	7.116513E+00	2.014581E-04	2.014000E-04
Cr	2.996352E+02	5.783475E-03	5.781807E-03
Cs	1.324650E-05	1.000288E-10	1.000000E-10
Cu	6.650220E-10	1.050303E-14	1.050000E-14
F	2.172842E+00	1.147831E-04	1.147500E-04
Fe	8.881123E-01	1.596007E-05	1.595547E-05
Gd	1.567289E-09	1.000288E-14	1.000000E-14
H	1.115156E+05	1.110370E+02	1.110050E+02
C	1.267583E-01	1.059166E-05	1.058861E-05
P	7.325643E+00	2.373660E-04	2.372976E-04
K	5.023494E+00	1.289480E-04	1.289109E-04
La	1.384452E-09	1.000288E-14	1.000000E-14
Li	6.917999E-07	1.000288E-10	1.000000E-10
Mg	2.003340E+00	8.272290E-05	8.269905E-05
Mn	3.250700E+01	5.938413E-04	5.936700E-04
Mo	2.179386E+02	2.279823E-03	2.279166E-03
N	1.982366E+00	1.420410E-04	1.420000E-04
Na	4.564847E+01	1.992776E-03	1.992201E-03
Nd	1.437620E-09	1.000288E-14	1.000000E-14
Ni	7.502088E+02	1.282876E-02	1.282506E-02
Pb	2.065134E-05	1.000288E-10	1.000000E-10
Pu	2.431914E-09	1.000288E-14	9.999999E-15
S	5.507393E+02	1.723725E-02	1.723228E-02
Si	2.803244E+00	1.001718E-04	1.001429E-04
Sm	1.498617E-09	1.000288E-14	1.000000E-14
Sr	8.732965E-06	1.000288E-10	1.000000E-10
Ti	5.252788E-06	1.101039E-10	1.100721E-10
U	2.372401E-09	1.000288E-14	1.000000E-14
V	4.768069E+00	9.393719E-05	9.391010E-05
Zn	6.517332E-06	1.000288E-10	1.000000E-10
Zr	9.092171E-16	1.000288E-20	1.000000E-20

Single ion activities and activity coefficients are here defined
with respect to the modified NBS pH scale

	pH	Eh	pe
modified NBS pH scale	2.0406	1.0983	1.8566E+01
rational pH scale	1.9641	1.1028	1.8643E+01

pHCl = 5.8287

```
    Oxygen fugacity =  2.09991E-01
Log oxygen fugacity =  -0.67780


        Activity of water =   0.99924
     Log activity of water =  -0.00033

         Ionic strength =  5.880050E-02 molal
      Sum of molalities =    0.0494650188434
     Osmotic coefficient =    0.85806

              Mass of solution =   1.003325 kg
              Mass of solutes  =   0.003613 kg
              Conc. of solutes  =   0.360110 per cent (w/w)

         Moles of solvent H2O =  5.54924E+01
         Mass of solvent H2O  =  9.99712E-01 kg
```

Species	Molality	Log molality	Log gamma	Log activity
H+	1.0861E-02	-1.9641	-0.0765	-2.0406
Ni++	1.0209E-02	-1.9910	-0.3466	-2.3376
SO4--	9.7761E-03	-2.0098	-0.3602	-2.3701
HSO4-	4.5008E-03	-2.3467	-0.0849	-2.4316
HCrO4-	4.0507E-03	-2.3925	-0.0849	-2.4774
NiSO4(aq)	2.6184E-03	-2.5820	0.0000	-2.5820
MoO4--	2.2798E-03	-2.6421	-0.3492	-2.9913
Na+	1.9397E-03	-2.7123	-0.0983	-2.8106
Cr2O7--	8.6348E-04	-3.0637	-0.3602	-3.4240
Mn++	4.1403E-04	-3.3830	-0.3466	-3.7295
O2(aq)	2.6166E-04	-3.5823	0.0062	-3.5761
Ca++	2.5991E-04	-3.5852	-0.3466	-3.9317
Cl-	2.0085E-04	-3.6971	-0.0909	-3.7881
MnSO4(aq)	1.7918E-04	-3.7467	0.0000	-3.7467
NO3-	1.4021E-04	-3.8532	-0.0909	-3.9441
K+	1.2506E-04	-3.9029	-0.1044	-4.0073
H3PO4(aq)	1.1923E-04	-3.9236	0.0000	-3.9236
H2PO4-	1.0769E-04	-3.9678	-0.0849	-4.0527
HF(aq)	1.0158E-04	-3.9932	0.0000	-3.9932
SiO2(aq)	1.0017E-04	-3.9993	0.0000	-3.9993
VO2+	7.7218E-05	-4.1123	-0.0983	-4.2106
CaSO4(aq)	6.4460E-05	-4.1907	0.0000	-4.1907
Mg++	5.3912E-05	-4.2683	-0.3139	-4.5822
NaSO4-	5.2994E-05	-4.2758	-0.0849	-4.3607
MgSO4(aq)	2.8802E-05	-4.5406	0.0000	-4.5406
B(OH)3(aq)	1.2392E-05	-4.9069	0.0000	-4.9069
VO2SO4-	1.2140E-05	-4.9158	-0.0849	-5.0007
CO2(aq)	1.0591E-05	-4.9751	0.0062	-4.9689
FeHPO4+	9.8576E-06	-5.0062	-0.0983	-5.1046
F-	9.2713E-06	-5.0329	-0.0878	-5.1207
Fe+++	3.9853E-06	-5.3995	-0.6676	-6.0671
Cr+++	3.9843E-06	-5.3996	-0.6676	-6.0672
KSO4-	3.8650E-06	-5.4129	-0.0849	-5.4977
VO(OH)3(aq)	3.3834E-06	-5.4706	0.0000	-5.4706
NiNO3+	1.6466E-06	-5.7834	-0.0983	-5.8817
H2CrO4(aq)	1.4542E-06	-5.8374	0.0000	-5.8374
FeOH++	1.4431E-06	-5.8407	-0.3761	-6.2168
VO2F(aq)	1.0440E-06	-5.9813	0.0000	-5.9813

AlF2+	8.5328E-07	-6.0689	-0.0983	-6.1673
AlF++	5.3645E-07	-6.2705	-0.3761	-6.6466
MnH2PO4+	4.6356E-07	-6.3339	-0.0983	-6.4322
FeSO4+	3.8795E-07	-6.4112	-0.0983	-6.5096
HCl(aq)	3.1718E-07	-6.4987	0.0000	-6.4987
CrO4--	2.6860E-07	-6.5709	-0.3602	-6.9311
FeF++	2.1126E-07	-6.6752	-0.3761	-7.0513
NiCl+	9.4729E-08	-7.0235	-0.0983	-7.1219
HPO3F-	9.2174E-08	-7.0354	-0.0849	-7.1203
CaNO3+	8.3647E-08	-7.0775	-0.0983	-7.1759
MnCl+	7.6216E-08	-7.1180	-0.0983	-7.2163
H2VO4-	7.2891E-08	-7.1373	-0.0849	-7.2222
AlF3(aq)	6.4875E-08	-7.1879	0.0000	-7.1879
CrO3Cl-	6.4830E-08	-7.1882	-0.0849	-7.2731
HNO3(aq)	5.1609E-08	-7.2873	0.0000	-7.2873
MnF+	4.7657E-08	-7.3219	-0.0983	-7.4202
VO2(OH)2-	4.5172E-08	-7.3451	-0.0849	-7.4300
MnNO3+	4.2136E-08	-7.3753	-0.0983	-7.4737
NaCl(aq)	4.2107E-08	-7.3757	0.0000	-7.3757
H2SO4(aq)	3.3711E-08	-7.4722	0.0000	-7.4722
Fe(SO4)2-	3.1000E-08	-7.5086	-0.0849	-7.5935
VO2HPO4-	3.0676E-08	-7.5132	-0.0849	-7.5981
H2F2(aq)	2.7885E-08	-7.5546	0.0000	-7.5546
Fe(OH)2+	2.7659E-08	-7.5582	-0.0983	-7.6565
KHSO4(aq)	2.4867E-08	-7.6044	0.0000	-7.6044
CrOH++	2.2345E-08	-7.6508	-0.3761	-8.0269
AlSO4+	1.6307E-08	-7.7876	-0.0983	-7.8860
Al+++	1.3857E-08	-7.8583	-0.6676	-8.5259
FeF2+	1.3794E-08	-7.8603	-0.0983	-7.9587
MgF+	5.5956E-09	-8.2522	-0.0983	-8.3505
CaF+	5.3409E-09	-8.2724	-0.0983	-8.3707
CaCl+	4.8188E-09	-8.3171	-0.0983	-8.4154
MgCl+	3.9189E-09	-8.4068	-0.0983	-8.5052
VO2F2-	2.7728E-09	-8.5571	-0.0849	-8.6420
FeNO3++	2.3166E-09	-8.6351	-0.3761	-9.0113
PO3F--	1.5174E-09	-8.8189	-0.3602	-9.1791
HPO4--	1.3892E-09	-8.8572	-0.3602	-9.2175
NaF(aq)	1.1780E-09	-8.9289	0.0000	-8.9289
HCO3-	6.4802E-10	-9.1884	-0.0849	-9.2733
KCl(aq)	5.1294E-10	-9.2899	0.0000	-9.2899
MnHPO4(aq)	4.2954E-10	-9.3670	0.0000	-9.3670
VO++	2.7648E-10	-9.5583	-0.3761	-9.9344
CrCl++	2.3541E-10	-9.6282	-0.3761	-10.0043
HF2-	2.2584E-10	-9.6462	-0.0849	-9.7311
AlF4-	1.5007E-10	-9.8237	-0.0849	-9.9086
VOSO4(aq)	1.4980E-10	-9.8245	0.0000	-9.8245
Mn+++	1.1765E-10	-9.9294	-0.8157	-10.7452
Ti(OH)4(aq)	1.1010E-10	-9.9582	0.0000	-9.9582
Cs+	1.0002E-10	-9.9999	-0.1077	-10.1076

--- Summary of Instantaneously Precipitated Solid Phases ---
(defined by derivatives)

--- Theoretical Rock Composition ---
g/kg

--- Oxide Percentages ---

Oxide Theoretical rock

Total = 0.0000

Phase/end-member		d mol/d zi	d grams/d zi	d vol (cc)/d zi
fix	CO2(g)	0.0000E+00	0.0000E+00	0.0000E+00
fix	O2(g)	-6.5546E-04	-2.0974E-02	0.0000E+00

--- Summary of Solid Phases (E.S.+P.R.S.) ---

Phase/End-member		Log moles	Moles	Mass, g	Volume, cc
fix	CO2(g)	2.3010	2.0000E+02	8.8020E+03	0.0000E+00
fix	O2(g)	2.3010	2.0000E+02	6.3998E+03	0.0000E+00

	Mass, grams	Volume, cc
Created	1.520172E+04	0.000000E+00
Destroyed	8.195620E-07	0.000000E+00
Net	1.520172E+04	0.000000E+00

Warning-- these volume totals may be incomplete because of missing partial molar volume data in the data base

--- Summary of Pure Mineral Saturation States ---

Mineral	Log Q/K	Aff, kcal	State
AlF3	-6.679	-9.112	
Anglesite	-4.894	-6.677	
Anhydrite	-1.995	-2.722	
BaZrO3	69.237	94.458	ssatd
Barite	-2.765	-3.772	
Bassanite	-2.640	-3.602	
Boric_acid	-4.749	-6.478	
CaSO4:0.5H2O(beta)	-2.809	-3.832	
CaZrO3	129.700	176.948	ssatd
Celestite	-7.194	-9.815	
Chalcedony	-0.271	-0.370	
Coesite	-0.810	-1.105	
CrO2	-0.909	-1.241	
Cristobalite(alpha)	-0.550	-0.751	
Cristobalite(beta)	-0.994	-1.356	
Crocoite	-4.591	-6.263	
Epsomite	-4.992	-6.811	
Fe(OH)3	-5.602	-7.642	
FeF3	-2.190	-2.988	
Fluorite	-4.136	-5.643	
Goethite	-0.480	-0.655	
Gypsum	-1.820	-2.483	
Hematite	0.000	0.000	ssatd
Hexahydrite	-5.227	-7.132	
Ice	-0.139	-0.190	
Jarosite	-5.336	-7.280	
Kieserite	-6.686	-9.121	
Manganite	-4.459	-6.084	
Mercallite	-6.979	-9.521	
Mirabilite	-6.855	-9.352	

MnHPO4	0.000	0.000	ssatd
MnO2(gamma)	-1.518	-2.071	
Morenosite	-2.696	-3.678	
NiSO4:6H2O(alpha)	-2.702	-3.687	
Nontronite-Ca	-3.756	-5.124	
Nontronite-H	-2.822	-3.851	
Nontronite-K	-4.147	-5.657	
Nontronite-Mg	-3.825	-5.219	
Nontronite-Na	-4.090	-5.580	
Pentahydrite	-5.567	-7.595	
Pyrolusite	0.000	0.000	ssatd
Quartz	0.000	0.000	ssatd
Rutile	-0.312	-0.426	
Sellaite	-5.439	-7.421	
Shcherbinaite	-2.888	-3.940	
SiO2(am)	-1.286	-1.754	
SrZrO3	106.096	144.745	ssatd
Starkeyite	-5.954	-8.123	
Strengite	-1.902	-2.594	
Tridymite	-0.171	-0.234	
fix CO2(g)	0.000	0.000	satd
fix O2(g)	0.000	0.000	satd

--- Summary of Solid Solutions ---

--- Carbonate-Calcite ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Calcite	5.6705E-03	-2.2464	0.0000	-2.2464
Magnesite	4.5525E-04	-3.3417	0.0000	-3.3417
Rhodochrosite	9.9387E-01	-0.0027	0.0000	-0.0027
Siderite	1.2691E-08	-7.8965	0.0000	-7.8965
Smithsonite	5.2900E-08	-7.2765	0.0000	-7.2765
Strontianite	2.2203E-07	-6.6536	0.0000	-6.6536

Mineral	Log Q/K	Aff, kcal	State
Carbonate-Calcite	-10.767	-14.689	
Calcite	-10.767	-14.689	
Magnesite	-10.767	-14.689	
Rhodochrosite	-10.767	-14.689	
Siderite	-10.767	-14.689	
Smithsonite	-10.767	-14.689	
Strontianite	-10.767	-14.689	

--- Clinoptilolite-hy-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-hy-Ca	9.9769E-01	-0.0010	0.0000	-0.0010
Clinoptilolite-hy-Cs	6.6777E-23	-22.1754	0.0000	-22.1754
Clinoptilolite-hy-K	7.3168E-04	-3.1357	0.0000	-3.1357
Clinoptilolite-hy-Na	1.5783E-03	-2.8018	0.0000	-2.8018
Clinoptilolite-hy-Sr	5.6081E-12	-11.2512	0.0000	-11.2512

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-hy-ss	-59.149	-80.696	
Clinoptilolite-hy-Ca	-59.149	-80.696	
Clinoptilolite-hy-Cs	-59.149	-80.696	
Clinoptilolite-hy-K	-59.149	-80.696	
Clinoptilolite-hy-Na	-59.149	-80.696	
Clinoptilolite-hy-Sr	-59.149	-80.696	

--- Clinoptilolite-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-Ca	7.8163E-01	-0.1070	-0.2632	-0.3702
Clinoptilolite-Cs	3.0398E-07	-6.5172	-16.0322	-22.5494
Clinoptilolite-K	9.6807E-02	-1.0141	-2.4947	-3.5088
Clinoptilolite-NH4	1.0307E-51	-50.9869	-125.4277	-176.4146
Clinoptilolite-Na	1.2112E-01	-0.9168	-2.2553	-3.1721
Clinoptilolite-Sr	4.3842E-04	-3.3581	-8.2609	-11.6190

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-ss	-58.781	-80.194	
Clinoptilolite-Ca	-58.781	-80.194	
Clinoptilolite-Cs	-58.781	-80.194	
Clinoptilolite-K	-58.781	-80.194	
Clinoptilolite-NH4	-58.781	-80.194	
Clinoptilolite-Na	-58.781	-80.194	
Clinoptilolite-Sr	-58.781	-80.194	

--- Saponite-tri ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Saponite-Ca	1.4821E-03	-2.8291	1.8955	-0.9336
Saponite-H	9.9737E-01	-0.0011	0.0008	-0.0004
Saponite-K	9.6727E-05	-4.0145	2.6897	-1.3248
Saponite-Mg	9.1179E-04	-3.0401	2.0369	-1.0032
Saponite-Na	1.4347E-04	-3.8432	2.5750	-1.2683

Mineral	Log Q/K	Aff, kcal	State
Saponite-tri	-42.307	-57.718	
Saponite-Ca	-42.307	-57.718	
Saponite-H	-42.307	-57.718	
Saponite-K	-42.307	-57.718	
Saponite-Mg	-42.307	-57.718	
Saponite-Na	-42.307	-57.718	

--- Smectite-di ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Beidellite-Ca	6.4144E-68	-67.1928	45.0192	-22.1736
Beidellite-K	4.1890E-69	-68.3779	45.8132	-22.5647
Beidellite-Mg	3.9460E-68	-67.4038	45.1606	-22.2433
Beidellite-Na	6.2092E-69	-68.2070	45.6987	-22.5083
Montmor-Ca	3.1479E-58	-57.5020	38.5263	-18.9757
Montmor-K	3.3575E-59	-58.4740	39.1776	-19.2964
Montmor-Mg	3.1473E-58	-57.5021	38.5264	-18.9757
Montmor-Na	4.8532E-59	-58.3140	39.0704	-19.2436
Nontronite-Ca	5.6252E-01	-0.2499	0.1674	-0.0825
Nontronite-K	3.6736E-02	-1.4349	0.9614	-0.4735
Nontronite-Mg	3.4629E-01	-0.4606	0.3086	-0.1520
Nontronite-Na	5.4453E-02	-1.2640	0.8469	-0.4171

Mineral	Log Q/K	Aff, kcal	State
Smectite-di	-3.673	-5.011	
Beidellite-Ca	-3.673	-5.011	
Beidellite-K	-3.673	-5.011	
Beidellite-Mg	-3.673	-5.011	
Beidellite-Na	-3.673	-5.011	
Montmor-Ca	-3.673	-5.011	
Montmor-K	-3.673	-5.011	
Montmor-Mg	-3.673	-5.011	
Montmor-Na	-3.673	-5.011	
Nontronite-Ca	-3.673	-5.011	
Nontronite-K	-3.673	-5.011	
Nontronite-Mg	-3.673	-5.011	
Nontronite-Na	-3.673	-5.011	

--- Lanthanide hydroxide ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
La(OH)3	1.2829E-05	-4.8918	0.0000	-4.8918
Ce(OH)3	3.7099E-15	-14.4306	0.0000	-14.4306
Nd(OH)3(c)	3.4718E-01	-0.4594	0.0000	-0.4594
Gd(OH)3	5.8550E-01	-0.2325	0.0000	-0.2325
Sm(OH)3	6.7308E-02	-1.1719	0.0000	-1.1719

Mineral	Log Q/K	Aff, kcal	State
Lanthanide hydroxide	-24.639	-33.614	
La(OH)3	-24.639	-33.614	
Ce(OH)3	-24.639	-33.614	
Nd(OH)3(c)	-24.639	-33.614	
Gd(OH)3	-24.639	-33.614	
Sm(OH)3	-24.639	-33.614	

--- Rhabdophane-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaPO4:H2O	4.1201E-01	-0.3851	0.0000	-0.3851
CePO4:H2O	3.7677E-11	-10.4239	0.0000	-10.4239
NdPO4:H2O	2.2247E-01	-0.6527	0.0000	-0.6527
GdPO4:H2O	1.4936E-01	-0.8258	0.0000	-0.8258
SmPO4:H2O	2.1616E-01	-0.6652	0.0000	-0.6652

Mineral	Log Q/K	Aff, kcal	State
Rhabdophane-ss	-9.764	-13.321	
LaPO4:H2O	-9.764	-13.321	
CePO4:H2O	-9.764	-13.321	
NdPO4:H2O	-9.764	-13.321	
GdPO4:H2O	-9.764	-13.321	
SmPO4:H2O	-9.764	-13.321	

--- Lanthanide fluoride ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaF3:0.5H2O	5.7252E-01	-0.2422	0.0000	-0.2422
CeF3:0.5H2O	8.2978E-11	-10.0810	0.0000	-10.0810
NdF3:0.5H2O	3.8918E-01	-0.4099	0.0000	-0.4099
GdF3:0.5H2O	8.2628E-03	-2.0829	0.0000	-2.0829
SmF3:0.5H2O	3.0037E-02	-1.5223	0.0000	-1.5223

Mineral	Log Q/K	Aff, kcal	State
Lanthanide fluoride	-11.742	-16.019	
LaF3:0.5H2O	-11.742	-16.019	
CeF3:0.5H2O	-11.742	-16.019	
NdF3:0.5H2O	-11.742	-16.019	
GdF3:0.5H2O	-11.742	-16.019	
SmF3:0.5H2O	-11.742	-16.019	

--- Summary of Gases ---

Gas	Fugacity	Log fugacity
Al(g)	4.4850-201	-200.3482
B(g)	8.5659-204	-203.0672
BF3(g)	3.7722E-24	-23.4234
C(g)	3.0917-190	-189.5098
CH4(g)	3.5240-146	-145.4530
CO(g)	6.0395E-49	-48.2190
CO2(g)	3.1623E-04	-3.5000
Ca(g)	7.2343-164	-163.1406
Chlorine	3.5847E-17	-16.4455
Cs(g)	3.5180E-89	-88.4537
Cu(g)	7.5962E-93	-92.1194

Fluorine	1.4788E-72	-71.8301
H2(g)	6.1104E-42	-41.2139
H2O(g)	2.5958E-02	-1.5857
H2S(g)	2.2902-130	-129.6401
HCl(g)	7.3419E-13	-12.1342
HF(g)	5.3222E-09	-8.2739
K(g)	2.2169E-83	-82.6543
Li(g)	7.8245-103	-102.1065
Mg(g)	1.0897-141	-140.9627
Nitrogen	2.6192E-08	-7.5818
NH3(g)	1.8638E-63	-62.7296
NO(g)	5.0961E-20	-19.2928
NO2(g)	3.4845E-14	-13.4579
Na(g)	1.8194E-81	-80.7401
O2(g)	2.0999E-01	-0.6778
Pb(g)	7.6389E-81	-80.1170
S2(g)	3.1322-203	-202.5042
SO2(g)	4.0579E-43	-42.3917
Si(g)	4.2262-221	-220.3741
SiF4(g)	3.5421E-18	-17.4507
Ti(g)	1.8521-231	-230.7323
TiCl4(g)	4.7486E-62	-61.3234
U(g)	1.0090-304	-303.9961
U2Cl10(g)	4.7266-202	-201.3255
U2Cl8(g)	4.0879-216	-215.3885
U2F10(g)	2.5075-120	-119.6008
UCl(g)	6.6042-255	-254.1802
UCl2(g)	1.2931-203	-202.8884
UCl3(g)	5.5459-150	-149.2560
UCl4(g)	1.2879-113	-112.8901
UCl5(g)	1.5389-114	-113.8128
UCl6(g)	3.4162-110	-109.4665
UF(g)	1.0174-240	-239.9925
UF2(g)	7.6087-195	-194.1187
UF3(g)	1.4003-142	-141.8538
UF4(g)	3.8038E-87	-86.4198
UF5(g)	4.7328E-73	-72.3249
UF6(g)	5.7987E-73	-72.2367
UO(g)	7.9689-220	-219.0986
UO2(g)	1.4764-135	-134.8308
UO2Cl2(g)	2.3107E-71	-70.6363
UO2F2(g)	9.8630E-61	-60.0060
UO3(g)	1.0859E-82	-81.9642
UOF4(g)	1.1335E-64	-63.9456
Zn(g)	1.2815E-90	-89.8923

- -

```
Stepping to zi=  6.3096E-08, delzi=  2.3285E-08, nord= 2
  time =  6.0856E-04 d, dltime =  2.2459E-04 d
Steps completed =    11, iter =  1, ncorr = 0
Most rapidly changing is zvclg1(Ti(OH)4(aq)             ) =     -9.9357
```

- -

```
                    Reaction progress        =  6.30957344480172E-08
                    Log of reaction progress =      -7.2000000
```

```
Time =  5.258E+01 sec
     =  6.086E-04 days
     =  1.666E-06 years

Log sec =        1.721
Log days =      -3.216
Log years =     -5.778

Temperature    =     25.000 degrees C
total pressure =      1.013 bars


Step size is limited by the print requirement


                          --- Reactant Summary ---


   Reactant                  Moles     Delta moles    Mass, g    Delta Mass, g

 Tuff                      1.0000E+02   6.3096E-08   2.0586E+03   1.2989E-06


              Current total mass =  2.05865E+03 grams
              Delta total mass   =  1.29892E-06 grams
              Delta total volume =      0.00000 cc


   Reactant                Rel. Rate      Rate         Rate
                            mol/mol       mol/s      mol/s/cm2

 Tuff                      1.0000E+00   1.2000E-09   2.5000E-15


   Reactant                  Affinity   Surface Area
                             kcal/mol     mol/s/cm2

 Tuff                       999.00000   4.8000E+05


   Reactant                Rate Constants, mol/s/cm2

 Tuff
                  Forward    2.5000E-15


        Affinity of the overall irreversible reaction=     0.000 kcal
        Contributions from irreversible reactions
        with no thermodynamic data are not included


    --- Element Totals for the Aqueous Solution ---

 Element        mg/kg soln.          Molality             Moles

    O          8.865404E+05        5.561111E+01        5.559508E+01
    Al         3.995494E-02        1.486177E-06        1.485748E-06
    B          1.334829E-01        1.239157E-05        1.238800E-05
    Ba         1.368719E-05        1.000288E-10        1.000000E-10
```

Ca	1.295703E+01	3.244637E-04	3.243701E-04
Ce	1.396507E-19	1.000288E-24	1.000000E-24
Cl	7.116513E+00	2.014581E-04	2.014000E-04
Cr	2.996352E+02	5.783475E-03	5.781807E-03
Cs	1.324650E-05	1.000288E-10	1.000000E-10
Cu	6.650220E-10	1.050303E-14	1.050000E-14
F	2.172842E+00	1.147831E-04	1.147500E-04
Fe	8.881155E-01	1.596013E-05	1.595553E-05
Gd	1.567289E-09	1.000288E-14	1.000000E-14
H	1.115156E+05	1.110370E+02	1.110050E+02
C	1.267583E-01	1.059166E-05	1.058861E-05
P	7.325643E+00	2.373660E-04	2.372976E-04
K	5.023513E+00	1.289485E-04	1.289114E-04
La	1.384452E-09	1.000288E-14	1.000000E-14
Li	6.917999E-07	1.000288E-10	1.000000E-10
Mg	2.003340E+00	8.272293E-05	8.269908E-05
Mn	3.250700E+01	5.938413E-04	5.936700E-04
Mo	2.179386E+02	2.279823E-03	2.279166E-03
N	1.982366E+00	1.420410E-04	1.420000E-04
Na	4.564848E+01	1.992776E-03	1.992202E-03
Nd	1.437620E-09	1.000288E-14	1.000000E-14
Ni	7.502088E+02	1.282876E-02	1.282506E-02
Pb	2.065134E-05	1.000288E-10	1.000000E-10
Pu	2.431914E-09	1.000288E-14	9.999999E-15
S	5.507393E+02	1.723725E-02	1.723228E-02
Si	2.803416E+00	1.001779E-04	1.001491E-04
Sm	1.498617E-09	1.000288E-14	1.000000E-14
Sr	8.732965E-06	1.000288E-10	1.000000E-10
Ti	5.533920E-06	1.159967E-10	1.159632E-10
U	2.372401E-09	1.000288E-14	1.000000E-14
V	4.768069E+00	9.393719E-05	9.391010E-05
Zn	6.517332E-06	1.000288E-10	1.000000E-10
Zr	9.092171E-16	1.000288E-20	1.000000E-20

Single ion activities and activity coefficients are here defined
with respect to the modified NBS pH scale

	pH	Eh	pe
modified NBS pH scale	2.0406	1.0983	1.8566E+01
rational pH scale	1.9641	1.1028	1.8643E+01

pHCl = 5.8287

Oxygen fugacity = 2.09991E-01
Log oxygen fugacity = -0.67780

Activity of water = 0.99924
Log activity of water = -0.00033

Ionic strength = 5.880050E-02 molal
Sum of molalities = 0.0494650228097
Osmotic coefficient = 0.85806

Mass of solution = 1.003325 kg
Mass of solutes = 0.003613 kg

Conc. of solutes = 0.360110 per cent (w/w)

Moles of solvent H2O = 5.54924E+01
Mass of solvent H2O = 9.99712E-01 kg

Species	Molality	Log molality	Log gamma	Log activity
H+	1.0861E-02	-1.9641	-0.0765	-2.0406
Ni++	1.0209E-02	-1.9910	-0.3466	-2.3376
SO4--	9.7761E-03	-2.0098	-0.3602	-2.3701
HSO4-	4.5008E-03	-2.3467	-0.0849	-2.4316
HCrO4-	4.0507E-03	-2.3925	-0.0849	-2.4774
NiSO4(aq)	2.6184E-03	-2.5820	0.0000	-2.5820
MoO4--	2.2798E-03	-2.6421	-0.3492	-2.9913
Na+	1.9397E-03	-2.7123	-0.0983	-2.8106
Cr2O7--	8.6348E-04	-3.0637	-0.3602	-3.4240
Mn++	4.1403E-04	-3.3830	-0.3466	-3.7295
O2(aq)	2.6166E-04	-3.5823	0.0062	-3.5761
Ca++	2.5991E-04	-3.5852	-0.3466	-3.9317
Cl-	2.0085E-04	-3.6971	-0.0909	-3.7881
MnSO4(aq)	1.7918E-04	-3.7467	0.0000	-3.7467
NO3-	1.4021E-04	-3.8532	-0.0909	-3.9441
K+	1.2506E-04	-3.9029	-0.1044	-4.0073
H3PO4(aq)	1.1923E-04	-3.9236	0.0000	-3.9236
H2PO4-	1.0769E-04	-3.9678	-0.0849	-4.0527
HF(aq)	1.0157E-04	-3.9932	0.0000	-3.9932
SiO2(aq)	1.0018E-04	-3.9992	0.0000	-3.9992
VO2+	7.7218E-05	-4.1123	-0.0983	-4.2106
CaSO4(aq)	6.4460E-05	-4.1907	0.0000	-4.1907
Mg++	5.3912E-05	-4.2683	-0.3139	-4.5822
NaSO4-	5.2994E-05	-4.2758	-0.0849	-4.3607
MgSO4(aq)	2.8802E-05	-4.5406	0.0000	-4.5406
B(OH)3(aq)	1.2392E-05	-4.9069	0.0000	-4.9069
VO2SO4-	1.2140E-05	-4.9158	-0.0849	-5.0007
CO2(aq)	1.0591E-05	-4.9751	0.0062	-4.9689
FeHPO4+	9.8577E-06	-5.0062	-0.0983	-5.1046
F-	9.2711E-06	-5.0329	-0.0878	-5.1207
Fe+++	3.9853E-06	-5.3995	-0.6676	-6.0671
Cr+++	3.9843E-06	-5.3996	-0.6676	-6.0672
KSO4-	3.8650E-06	-5.4129	-0.0849	-5.4977
VO(OH)3(aq)	3.3834E-06	-5.4706	0.0000	-5.4706
NiNO3+	1.6466E-06	-5.7834	-0.0983	-5.8817
H2CrO4(aq)	1.4542E-06	-5.8374	0.0000	-5.8374
FeOH++	1.4431E-06	-5.8407	-0.3761	-6.2168
VO2F(aq)	1.0440E-06	-5.9813	0.0000	-5.9813
AlF2+	8.5396E-07	-6.0686	-0.0983	-6.1669
AlF++	5.3689E-07	-6.2701	-0.3761	-6.6462
MnH2PO4+	4.6356E-07	-6.3339	-0.0983	-6.4322
FeSO4+	3.8795E-07	-6.4112	-0.0983	-6.5096
HCl(aq)	3.1718E-07	-6.4987	0.0000	-6.4987
CrO4--	2.6860E-07	-6.5709	-0.3602	-6.9311
FeF++	2.1126E-07	-6.6752	-0.3761	-7.0513
NiCl+	9.4729E-08	-7.0235	-0.0983	-7.1219
HPO3F-	9.2173E-08	-7.0354	-0.0849	-7.1203
CaNO3+	8.3647E-08	-7.0775	-0.0983	-7.1759
MnCl+	7.6216E-08	-7.1180	-0.0983	-7.2163
H2VO4-	7.2891E-08	-7.1373	-0.0849	-7.2222
AlF3(aq)	6.4926E-08	-7.1876	0.0000	-7.1876
CrO3Cl-	6.4830E-08	-7.1882	-0.0849	-7.2731
HNO3(aq)	5.1609E-08	-7.2873	0.0000	-7.2873
MnF+	4.7656E-08	-7.3219	-0.0983	-7.4202
VO2(OH)2-	4.5172E-08	-7.3451	-0.0849	-7.4300

MnNO3+	4.2136E-08	-7.3753	-0.0983	-7.4737
NaCl(aq)	4.2107E-08	-7.3757	0.0000	-7.3757
H2SO4(aq)	3.3711E-08	-7.4722	0.0000	-7.4722
Fe(SO4)2-	3.1000E-08	-7.5086	-0.0849	-7.5935
VO2HPO4-	3.0676E-08	-7.5132	-0.0849	-7.5981
H2F2(aq)	2.7884E-08	-7.5546	0.0000	-7.5546
Fe(OH)2+	2.7659E-08	-7.5582	-0.0983	-7.6565
KHSO4(aq)	2.4867E-08	-7.6044	0.0000	-7.6044
CrOH++	2.2345E-08	-7.6508	-0.3761	-8.0269
AlSO4+	1.6321E-08	-7.7873	-0.0983	-7.8856
Al+++	1.3869E-08	-7.8580	-0.6676	-8.5255
FeF2+	1.3793E-08	-7.8603	-0.0983	-7.9587
MgF+	5.5955E-09	-8.2522	-0.0983	-8.3505
CaF+	5.3408E-09	-8.2724	-0.0983	-8.3707
CaCl+	4.8188E-09	-8.3171	-0.0983	-8.4154
MgCl+	3.9189E-09	-8.4068	-0.0983	-8.5052
VO2F2-	2.7727E-09	-8.5571	-0.0849	-8.6420
FeNO3++	2.3166E-09	-8.6351	-0.3761	-9.0112
PO3F--	1.5173E-09	-8.8189	-0.3602	-9.1791
HPO4--	1.3892E-09	-8.8572	-0.3602	-9.2175
NaF(aq)	1.1779E-09	-8.9289	0.0000	-8.9289
HCO3-	6.4802E-10	-9.1884	-0.0849	-9.2733
KCl(aq)	5.1294E-10	-9.2899	0.0000	-9.2899
MnHPO4(aq)	4.2954E-10	-9.3670	0.0000	-9.3670
VO++	2.7648E-10	-9.5583	-0.3761	-9.9344
CrCl++	2.3541E-10	-9.6282	-0.3761	-10.0043
HF2-	2.2583E-10	-9.6462	-0.0849	-9.7311
AlF4-	1.5018E-10	-9.8234	-0.0849	-9.9083
VOSO4(aq)	1.4980E-10	-9.8245	0.0000	-9.8245
Mn+++	1.1765E-10	-9.9294	-0.8157	-10.7452
Ti(OH)4(aq)	1.1600E-10	-9.9356	0.0000	-9.9356
Cs+	1.0002E-10	-9.9999	-0.1077	-10.1076

--- Summary of Instantaneously Precipitated Solid Phases ---
(defined by derivatives)

--- Theoretical Rock Composition ---
g/kg

--- Oxide Percentages ---

Oxide Theoretical rock

Total = 0.0000

Phase/end-member		d mol/d zi	d grams/d zi	d vol (cc)/d zi
fix	CO2(g)	0.0000E+00	0.0000E+00	0.0000E+00
fix	O2(g)	-7.6941E-04	-2.4620E-02	0.0000E+00

--- Summary of Solid Phases (E.S.+P.R.S.) ---

Phase/End-member		Log moles	Moles	Mass, g	Volume, cc
fix	CO2(g)	2.3010	2.0000E+02	8.8020E+03	0.0000E+00
fix	O2(g)	2.3010	2.0000E+02	6.3998E+03	0.0000E+00

	Mass, grams	Volume, cc
Created	1.520172E+04	0.000000E+00
Destroyed	1.298918E-06	0.000000E+00
Net	1.520172E+04	0.000000E+00

Warning-- these volume totals may be incomplete because of missing partial molar volume data in the data base

--- Summary of Pure Mineral Saturation States ---

Mineral	Log Q/K	Aff, kcal	State
AlF3	-6.679	-9.112	
Anglesite	-4.894	-6.677	
Anhydrite	-1.995	-2.722	
BaZrO3	69.237	94.458	ssatd
Barite	-2.765	-3.772	
Bassanite	-2.640	-3.602	
Boric_acid	-4.749	-6.478	
CaSO4:0.5H2O(beta)	-2.809	-3.832	
CaZrO3	129.700	176.948	ssatd
Celestite	-7.194	-9.815	
Chalcedony	-0.271	-0.370	
Coesite	-0.810	-1.105	
CrO2	-0.909	-1.241	
Cristobalite(alpha)	-0.550	-0.751	
Cristobalite(beta)	-0.994	-1.356	
Crocoite	-4.591	-6.263	
Epsomite	-4.992	-6.811	
Fe(OH)3	-5.602	-7.642	
FeF3	-2.190	-2.988	
Fluorite	-4.136	-5.643	
Goethite	-0.480	-0.655	
Gypsum	-1.820	-2.483	
Hematite	0.000	0.000	ssatd
Hexahydrite	-5.227	-7.132	
Ice	-0.139	-0.190	
Jarosite	-5.336	-7.280	
Kieserite	-6.686	-9.121	
Manganite	-4.459	-6.084	
Mercallite	-6.979	-9.521	
Mirabilite	-6.855	-9.352	
MnHPO4	0.000	0.000	ssatd
MnO2(gamma)	-1.518	-2.071	
Morenosite	-2.696	-3.678	
NiSO4:6H2O(alpha)	-2.702	-3.687	
Nontronite-Ca	-3.755	-5.123	
Nontronite-H	-2.822	-3.850	
Nontronite-K	-4.146	-5.657	
Nontronite-Mg	-3.825	-5.218	
Nontronite-Na	-4.090	-5.580	
Pentahydrite	-5.567	-7.595	
Pyrolusite	0.000	0.000	ssatd
Quartz	0.000	0.000	ssatd
Rutile	-0.290	-0.395	
Sellaite	-5.439	-7.421	
Shcherbinaite	-2.888	-3.940	
SiO2(am)	-1.286	-1.754	
SrZrO3	106.096	144.745	ssatd

Starkeyite	-5.954	-8.123	
Strengite	-1.902	-2.594	
Tridymite	-0.171	-0.234	
fix CO2(g)	0.000	0.000	satd
fix O2(g)	0.000	0.000	satd

--- Summary of Solid Solutions ---

--- Carbonate-Calcite ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Calcite	5.6705E-03	-2.2464	0.0000	-2.2464
Magnesite	4.5525E-04	-3.3417	0.0000	-3.3417
Rhodochrosite	9.9387E-01	-0.0027	0.0000	-0.0027
Siderite	1.2691E-08	-7.8965	0.0000	-7.8965
Smithsonite	5.2900E-08	-7.2765	0.0000	-7.2765
Strontianite	2.2203E-07	-6.6536	0.0000	-6.6536

Mineral	Log Q/K	Aff, kcal	State
Carbonate-Calcite	-10.767	-14.689	
Calcite	-10.767	-14.689	
Magnesite	-10.767	-14.689	
Rhodochrosite	-10.767	-14.689	
Siderite	-10.767	-14.689	
Smithsonite	-10.767	-14.689	
Strontianite	-10.767	-14.689	

--- Clinoptilolite-hy-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-hy-Ca	9.9769E-01	-0.0010	0.0000	-0.0010
Clinoptilolite-hy-Cs	6.6777E-23	-22.1754	0.0000	-22.1754
Clinoptilolite-hy-K	7.3169E-04	-3.1357	0.0000	-3.1357
Clinoptilolite-hy-Na	1.5783E-03	-2.8018	0.0000	-2.8018
Clinoptilolite-hy-Sr	5.6081E-12	-11.2512	0.0000	-11.2512

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-hy-ss	-59.148	-80.694	
Clinoptilolite-hy-Ca	-59.148	-80.694	
Clinoptilolite-hy-Cs	-59.148	-80.694	
Clinoptilolite-hy-K	-59.148	-80.694	
Clinoptilolite-hy-Na	-59.148	-80.694	
Clinoptilolite-hy-Sr	-59.148	-80.694	

--- Clinoptilolite-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-Ca	7.8163E-01	-0.1070	-0.2632	-0.3702
Clinoptilolite-Cs	3.0398E-07	-6.5172	-16.0322	-22.5494
Clinoptilolite-K	9.6808E-02	-1.0141	-2.4947	-3.5088
Clinoptilolite-NH4	1.0307E-51	-50.9869	-125.4277	-176.4146
Clinoptilolite-Na	1.2112E-01	-0.9168	-2.2553	-3.1721
Clinoptilolite-Sr	4.3842E-04	-3.3581	-8.2609	-11.6190

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-ss	-58.779	-80.192	
Clinoptilolite-Ca	-58.779	-80.192	
Clinoptilolite-Cs	-58.779	-80.192	
Clinoptilolite-K	-58.779	-80.192	
Clinoptilolite-NH4	-58.779	-80.192	
Clinoptilolite-Na	-58.779	-80.192	
Clinoptilolite-Sr	-58.779	-80.192	

--- Saponite-tri ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Saponite-Ca	1.4821E-03	-2.8291	1.8955	-0.9336
Saponite-H	9.9737E-01	-0.0011	0.0008	-0.0004
Saponite-K	9.6727E-05	-4.0145	2.6897	-1.3248
Saponite-Mg	9.1179E-04	-3.0401	2.0369	-1.0032
Saponite-Na	1.4347E-04	-3.8432	2.5750	-1.2683

Mineral	Log Q/K	Aff, kcal	State
Saponite-tri	-42.306	-57.718	
Saponite-Ca	-42.306	-57.718	
Saponite-H	-42.306	-57.718	
Saponite-K	-42.306	-57.718	
Saponite-Mg	-42.306	-57.718	
Saponite-Na	-42.306	-57.718	

--- Smectite-di ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Beidellite-Ca	6.4468E-68	-67.1907	45.0177	-22.1729
Beidellite-K	4.2102E-69	-68.3757	45.8117	-22.5640
Beidellite-Mg	3.9660E-68	-67.4017	45.1591	-22.2425
Beidellite-Na	6.2406E-69	-68.2048	45.6972	-22.5076
Montmor-Ca	3.1587E-58	-57.5005	38.5253	-18.9752
Montmor-K	3.3690E-59	-58.4725	39.1766	-19.2959
Montmor-Mg	3.1581E-58	-57.5006	38.5254	-18.9752
Montmor-Na	4.8699E-59	-58.3125	39.0694	-19.2431
Nontronite-Ca	5.6252E-01	-0.2499	0.1674	-0.0825
Nontronite-K	3.6736E-02	-1.4349	0.9614	-0.4735
Nontronite-Mg	3.4629E-01	-0.4606	0.3086	-0.1520

Nontronite-Na	5.4453E-02	-1.2640	0.8469	-0.4171

Mineral	Log Q/K	Aff, kcal	State
Smectite-di	-3.673	-5.011	
Beidellite-Ca	-3.673	-5.011	
Beidellite-K	-3.673	-5.011	
Beidellite-Mg	-3.673	-5.011	
Beidellite-Na	-3.673	-5.011	
Montmor-Ca	-3.673	-5.011	
Montmor-K	-3.673	-5.011	
Montmor-Mg	-3.673	-5.011	
Montmor-Na	-3.673	-5.011	
Nontronite-Ca	-3.673	-5.011	
Nontronite-K	-3.673	-5.011	
Nontronite-Mg	-3.673	-5.011	
Nontronite-Na	-3.673	-5.011	

--- Lanthanide hydroxide ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
La(OH)3	1.2829E-05	-4.8918	0.0000	-4.8918
Ce(OH)3	3.7099E-15	-14.4306	0.0000	-14.4306
Nd(OH)3(c)	3.4718E-01	-0.4594	0.0000	-0.4594
Gd(OH)3	5.8550E-01	-0.2325	0.0000	-0.2325
Sm(OH)3	6.7308E-02	-1.1719	0.0000	-1.1719

Mineral	Log Q/K	Aff, kcal	State
Lanthanide hydroxide	-24.639	-33.614	
La(OH)3	-24.639	-33.614	
Ce(OH)3	-24.639	-33.614	
Nd(OH)3(c)	-24.639	-33.614	
Gd(OH)3	-24.639	-33.614	
Sm(OH)3	-24.639	-33.614	

--- Rhabdophane-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaPO4:H2O	4.1201E-01	-0.3851	0.0000	-0.3851
CePO4:H2O	3.7677E-11	-10.4239	0.0000	-10.4239
NdPO4:H2O	2.2247E-01	-0.6527	0.0000	-0.6527
GdPO4:H2O	1.4936E-01	-0.8258	0.0000	-0.8258
SmPO4:H2O	2.1616E-01	-0.6652	0.0000	-0.6652

Mineral	Log Q/K	Aff, kcal	State
Rhabdophane-ss	-9.764	-13.321	
LaPO4:H2O	-9.764	-13.321	
CePO4:H2O	-9.764	-13.321	

NdPO4:H2O	-9.764	-13.321
GdPO4:H2O	-9.764	-13.321
SmPO4:H2O	-9.764	-13.321

--- Lanthanide fluoride ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaF3:0.5H2O	5.7252E-01	-0.2422	0.0000	-0.2422
CeF3:0.5H2O	8.2978E-11	-10.0810	0.0000	-10.0810
NdF3:0.5H2O	3.8918E-01	-0.4099	0.0000	-0.4099
GdF3:0.5H2O	8.2628E-03	-2.0829	0.0000	-2.0829
SmF3:0.5H2O	3.0037E-02	-1.5223	0.0000	-1.5223

Mineral	Log Q/K	Aff, kcal	State
Lanthanide fluoride	-11.742	-16.019	
LaF3:0.5H2O	-11.742	-16.019	
CeF3:0.5H2O	-11.742	-16.019	
NdF3:0.5H2O	-11.742	-16.019	
GdF3:0.5H2O	-11.742	-16.019	
SmF3:0.5H2O	-11.742	-16.019	

--- Summary of Gases ---

Gas	Fugacity	Log fugacity
Al(g)	4.4887-201	-200.3479
B(g)	8.5659-204	-203.0672
BF3(g)	3.7720E-24	-23.4234
C(g)	3.0917-190	-189.5098
CH4(g)	3.5240-146	-145.4530
CO(g)	6.0395E-49	-48.2190
CO2(g)	3.1623E-04	-3.5000
Ca(g)	7.2343-164	-163.1406
Chlorine	3.5847E-17	-16.4456
Cs(g)	3.5180E-89	-88.4537
Cu(g)	7.5962E-93	-92.1194
Fluorine	1.4787E-72	-71.8301
H2(g)	6.1104E-42	-41.2139
H2O(g)	2.5958E-02	-1.5857
H2S(g)	2.2902-130	-129.6401
HCl(g)	7.3419E-13	-12.1342
HF(g)	5.3221E-09	-8.2739
K(g)	2.2169E-83	-82.6543
Li(g)	7.8245-103	-102.1065
Mg(g)	1.0897-141	-140.9627
Nitrogen	2.6192E-08	-7.5818
NH3(g)	1.8638E-63	-62.7296
NO(g)	5.0961E-20	-19.2928
NO2(g)	3.4845E-14	-13.4579
Na(g)	1.8194E-81	-80.7401
O2(g)	2.0999E-01	-0.6778
Pb(g)	7.6389E-81	-80.1170
S2(g)	3.1322-203	-202.5042

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SO2(g)                    4.0579E-43    -42.3917
Si(g)                     4.2264-221   -220.3740
SiF4(g)                   3.5421E-18    -17.4507
Ti(g)                     1.9512-231   -230.7097
TiCl4(g)                  5.0028E-62    -61.3008
U(g)                      1.0090-304   -303.9961
U2Cl10(g)                 4.7266-202   -201.3255
U2Cl8(g)                  4.0879-216   -215.3885
U2F10(g)                  2.5071-120   -119.6008
UCl(g)                    6.6043-255   -254.1802
UCl2(g)                   1.2931-203   -202.8884
UCl3(g)                   5.5459-150   -149.2560
UCl4(g)                   1.2879-113   -112.8901
UCl5(g)                   1.5389-114   -113.8128
UCl6(g)                   3.4162-110   -109.4665
UF(g)                     1.0174-240   -239.9925
UF2(g)                    7.6084-195   -194.1187
UF3(g)                    1.4002-142   -141.8538
UF4(g)                    3.8035E-87    -86.4198
UF5(g)                    4.7324E-73    -72.3249
UF6(g)                    5.7981E-73    -72.2367
UO(g)                     7.9689-220   -219.0986
UO2(g)                    1.4764-135   -134.8308
UO2Cl2(g)                 2.3107E-71    -70.6363
UO2F2(g)                  9.8626E-61    -60.0060
UO3(g)                    1.0859E-82    -81.9642
UOF4(g)                   1.1334E-64    -63.9456
Zn(g)                     1.2815E-90    -89.8923



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--- Reactant Summary ---

Reactant	Moles	Delta moles	Mass, g	Delta Mass, g
Tuff	1.0000E+02	1.0000E-07	2.0586E+03	2.0586E-06

Current total mass = 2.05865E+03 grams
Delta total mass = 2.05865E-06 grams
Delta total volume = 0.00000 cc

Reactant	Rel. Rate mol/mol	Rate mol/s	Rate mol/s/cm2
Tuff	1.0000E+00	1.2000E-09	2.5000E-15

Reactant	Affinity kcal/mol	Surface Area mol/s/cm2
Tuff	999.00000	4.8000E+05

Reactant	Rate Constants, mol/s/cm2	
Tuff		
	Forward	2.5000E-15

Affinity of the overall irreversible reaction= 0.000 kcal
Contributions from irreversible reactions
with no thermodynamic data are not included

--- Element Totals for the Aqueous Solution ---

Element	mg/kg soln.	Molality	Moles
O	8.865404E+05	5.561111E+01	5.559508E+01
Al	4.000603E-02	1.488077E-06	1.487648E-06
B	1.334829E-01	1.239157E-05	1.238800E-05
Ba	1.368719E-05	1.000288E-10	1.000000E-10
Ca	1.295703E+01	3.244638E-04	3.243702E-04
Ce	1.396507E-19	1.000288E-24	1.000000E-24
Cl	7.116513E+00	2.014581E-04	2.014000E-04
Cr	2.996352E+02	5.783475E-03	5.781807E-03
Cs	1.324650E-05	1.000288E-10	1.000000E-10
Cu	6.650220E-10	1.050303E-14	1.050000E-14
F	2.172842E+00	1.147831E-04	1.147500E-04
Fe	8.881204E-01	1.596022E-05	1.595561E-05
Gd	1.567289E-09	1.000288E-14	1.000000E-14
H	1.115156E+05	1.110370E+02	1.110050E+02
C	1.267583E-01	1.059166E-05	1.058861E-05
P	7.325643E+00	2.373660E-04	2.372976E-04
K	5.023544E+00	1.289493E-04	1.289122E-04
La	1.384452E-09	1.000288E-14	1.000000E-14
Li	6.917999E-07	1.000288E-10	1.000000E-10
Mg	2.003342E+00	8.272298E-05	8.269912E-05
Mn	3.250700E+01	5.938413E-04	5.936700E-04

Mo	2.179386E+02	2.279823E-03	2.279166E-03
N	1.982366E+00	1.420410E-04	1.420000E-04
Na	4.564850E+01	1.992777E-03	1.992202E-03
Nd	1.437620E-09	1.000288E-14	1.000000E-14
Ni	7.502088E+02	1.282876E-02	1.282506E-02
Pb	2.065134E-05	1.000288E-10	1.000000E-10
Pu	2.431914E-09	1.000288E-14	9.999999E-15
S	5.507393E+02	1.723725E-02	1.723228E-02
Si	2.803688E+00	1.001877E-04	1.001588E-04
Sm	1.498617E-09	1.000288E-14	1.000000E-14
Sr	8.732965E-06	1.000288E-10	1.000000E-10
Ti	5.979484E-06	1.253361E-10	1.253000E-10
U	2.372401E-09	1.000288E-14	1.000000E-14
V	4.768069E+00	9.393719E-05	9.391010E-05
Zn	6.517332E-06	1.000288E-10	1.000000E-10
Zr	9.092171E-16	1.000288E-20	1.000000E-20

Single ion activities and activity coefficients are here defined
with respect to the modified NBS pH scale

	pH	Eh	pe
modified NBS pH scale	2.0406	1.0983	1.8566E+01
rational pH scale	1.9641	1.1028	1.8643E+01

pHCl = 5.8287

Oxygen fugacity = 2.09991E-01
Log oxygen fugacity = -0.67780

Activity of water = 0.99924
Log activity of water = -0.00033

Ionic strength = 5.880050E-02 molal
Sum of molalities = 0.0494650290957
Osmotic coefficient = 0.85806

Mass of solution = 1.003325 kg
Mass of solutes = 0.003613 kg
Conc. of solutes = 0.360110 per cent (w/w)

Moles of solvent H2O = 5.54924E+01
Mass of solvent H2O = 9.99712E-01 kg

Species	Molality	Log molality	Log gamma	Log activity
H+	1.0861E-02	-1.9641	-0.0765	-2.0406
Ni++	1.0209E-02	-1.9910	-0.3466	-2.3376
SO4--	9.7761E-03	-2.0098	-0.3602	-2.3701
HSO4-	4.5008E-03	-2.3467	-0.0849	-2.4316
HCrO4-	4.0507E-03	-2.3925	-0.0849	-2.4774
NiSO4(aq)	2.6184E-03	-2.5820	0.0000	-2.5820
MoO4--	2.2798E-03	-2.6421	-0.3492	-2.9913
Na+	1.9397E-03	-2.7123	-0.0983	-2.8106
Cr2O7--	8.6348E-04	-3.0637	-0.3602	-3.4240

Mn++	4.1403E-04	-3.3830	-0.3466	-3.7295
O2(aq)	2.6166E-04	-3.5823	0.0062	-3.5761
Ca++	2.5991E-04	-3.5852	-0.3466	-3.9317
Cl-	2.0085E-04	-3.6971	-0.0909	-3.7881
MnSO4(aq)	1.7918E-04	-3.7467	0.0000	-3.7467
NO3-	1.4021E-04	-3.8532	-0.0909	-3.9441
K+	1.2506E-04	-3.9029	-0.1044	-4.0073
H3PO4(aq)	1.1923E-04	-3.9236	0.0000	-3.9236
H2PO4-	1.0769E-04	-3.9678	-0.0849	-4.0527
HF(aq)	1.0157E-04	-3.9932	0.0000	-3.9932
SiO2(aq)	1.0019E-04	-3.9992	0.0000	-3.9992
VO2+	7.7218E-05	-4.1123	-0.0983	-4.2106
CaSO4(aq)	6.4460E-05	-4.1907	0.0000	-4.1907
Mg++	5.3912E-05	-4.2683	-0.3139	-4.5822
NaSO4-	5.2994E-05	-4.2758	-0.0849	-4.3607
MgSO4(aq)	2.8802E-05	-4.5406	0.0000	-4.5406
B(OH)3(aq)	1.2392E-05	-4.9069	0.0000	-4.9069
VO2SO4-	1.2140E-05	-4.9158	-0.0849	-5.0007
CO2(aq)	1.0591E-05	-4.9751	0.0062	-4.9689
FeHPO4+	9.8577E-06	-5.0062	-0.0983	-5.1046
F-	9.2709E-06	-5.0329	-0.0878	-5.1207
Fe+++	3.9854E-06	-5.3995	-0.6676	-6.0671
Cr+++	3.9843E-06	-5.3996	-0.6676	-6.0672
KSO4-	3.8650E-06	-5.4128	-0.0849	-5.4977
VO(OH)3(aq)	3.3834E-06	-5.4706	0.0000	-5.4706
NiNO3+	1.6466E-06	-5.7834	-0.0983	-5.8817
H2CrO4(aq)	1.4542E-06	-5.8374	0.0000	-5.8374
FeOH++	1.4431E-06	-5.8407	-0.3761	-6.2168
VO2F(aq)	1.0440E-06	-5.9813	0.0000	-5.9813
AlF2+	8.5504E-07	-6.0680	-0.0983	-6.1664
AlF++	5.3758E-07	-6.2696	-0.3761	-6.6457
MnH2PO4+	4.6356E-07	-6.3339	-0.0983	-6.4322
FeSO4+	3.8795E-07	-6.4112	-0.0983	-6.5096
HCl(aq)	3.1718E-07	-6.4987	0.0000	-6.4987
CrO4--	2.6860E-07	-6.5709	-0.3602	-6.9311
FeF++	2.1125E-07	-6.6752	-0.3761	-7.0513
NiCl+	9.4729E-08	-7.0235	-0.0983	-7.1219
HPO3F-	9.2170E-08	-7.0354	-0.0849	-7.1203
CaNO3+	8.3647E-08	-7.0775	-0.0983	-7.1759
MnCl+	7.6216E-08	-7.1180	-0.0983	-7.2163
H2VO4-	7.2891E-08	-7.1373	-0.0849	-7.2222
AlF3(aq)	6.5006E-08	-7.1870	0.0000	-7.1870
CrO3Cl-	6.4830E-08	-7.1882	-0.0849	-7.2731
HNO3(aq)	5.1609E-08	-7.2873	0.0000	-7.2873
MnF+	4.7655E-08	-7.3219	-0.0983	-7.4202
VO2(OH)2-	4.5173E-08	-7.3451	-0.0849	-7.4300
MnNO3+	4.2136E-08	-7.3753	-0.0983	-7.4737
NaCl(aq)	4.2107E-08	-7.3757	0.0000	-7.3757
H2SO4(aq)	3.3711E-08	-7.4722	0.0000	-7.4722
Fe(SO4)2-	3.1000E-08	-7.5086	-0.0849	-7.5935
VO2HPO4-	3.0677E-08	-7.5132	-0.0849	-7.5981
H2F2(aq)	2.7883E-08	-7.5547	0.0000	-7.5547
Fe(OH)2+	2.7660E-08	-7.5582	-0.0983	-7.6565
KHSO4(aq)	2.4867E-08	-7.6044	0.0000	-7.6044
CrOH++	2.2345E-08	-7.6508	-0.3761	-8.0269
AlSO4+	1.6342E-08	-7.7867	-0.0983	-7.8850
Al+++	1.3887E-08	-7.8574	-0.6676	-8.5250
FeF2+	1.3793E-08	-7.8604	-0.0983	-7.9587
MgF+	5.5953E-09	-8.2522	-0.0983	-8.3505
CaF+	5.3407E-09	-8.2724	-0.0983	-8.3707
CaCl+	4.8188E-09	-8.3171	-0.0983	-8.4154
MgCl+	3.9189E-09	-8.4068	-0.0983	-8.5052
VO2F2-	2.7725E-09	-8.5571	-0.0849	-8.6420

FeNO3++	2.3166E-09	-8.6351	-0.3761	-9.0112
PO3F--	1.5173E-09	-8.8189	-0.3602	-9.1792
HPO4--	1.3892E-09	-8.8572	-0.3602	-9.2175
NaF(aq)	1.1779E-09	-8.9289	0.0000	-8.9289
HCO3-	6.4802E-10	-9.1884	-0.0849	-9.2733
KCl(aq)	5.1295E-10	-9.2899	0.0000	-9.2899
MnHPO4(aq)	4.2954E-10	-9.3670	0.0000	-9.3670
VO++	2.7648E-10	-9.5583	-0.3761	-9.9344
CrCl++	2.3541E-10	-9.6282	-0.3761	-10.0043
HF2-	2.2582E-10	-9.6462	-0.0849	-9.7311
AlF4-	1.5036E-10	-9.8229	-0.0849	-9.9077
VOSO4(aq)	1.4980E-10	-9.8245	0.0000	-9.8245
Ti(OH)4(aq)	1.2534E-10	-9.9019	0.0000	-9.9019
Mn+++	1.1765E-10	-9.9294	-0.8157	-10.7452
Cs+	1.0002E-10	-9.9999	-0.1077	-10.1076

--- Summary of Instantaneously Precipitated Solid Phases ---
(defined by derivatives)

--- Theoretical Rock Composition ---
g/kg

--- Oxide Percentages ---

Oxide Theoretical rock

Total = 0.0000

	Phase/end-member	d mol/d zi	d grams/d zi	d vol (cc)/d zi
fix	CO2(g)	0.0000E+00	0.0000E+00	0.0000E+00
fix	O2(g)	-6.9794E-04	-2.2333E-02	0.0000E+00

--- Summary of Solid Phases (E.S.+P.R.S.) ---

	Phase/End-member	Log moles	Moles	Mass, g	Volume, cc
fix	CO2(g)	2.3010	2.0000E+02	8.8020E+03	0.0000E+00
fix	O2(g)	2.3010	2.0000E+02	6.3998E+03	0.0000E+00

	Mass, grams	Volume, cc
Created	1.520172E+04	0.000000E+00
Destroyed	2.058647E-06	0.000000E+00
Net	1.520172E+04	0.000000E+00

Warning-- these volume totals may be incomplete because
of missing partial molar volume data in the data base

--- Summary of Pure Mineral Saturation States ---

Mineral	Log Q/K	Aff, kcal	State
AlF3	-6.678	-9.111	

Anglesite	-4.894	-6.677	
Anhydrite	-1.995	-2.722	
BaZrO3	69.237	94.458	ssatd
Barite	-2.765	-3.772	
Bassanite	-2.640	-3.602	
Boric_acid	-4.749	-6.478	
CaSO4:0.5H2O(beta)	-2.809	-3.832	
CaZrO3	129.700	176.948	ssatd
Celestite	-7.194	-9.815	
Chalcedony	-0.271	-0.370	
Coesite	-0.810	-1.105	
CrO2	-0.909	-1.241	
Cristobalite(alpha)	-0.550	-0.751	
Cristobalite(beta)	-0.994	-1.356	
Crocoite	-4.591	-6.263	
Epsomite	-4.992	-6.811	
Fe(OH)3	-5.602	-7.642	
FeF3	-2.190	-2.988	
Fluorite	-4.136	-5.643	
Goethite	-0.480	-0.655	
Gypsum	-1.820	-2.483	
Hematite	0.000	0.000	ssatd
Hexahydrite	-5.227	-7.132	
Ice	-0.139	-0.190	
Jarosite	-5.336	-7.280	
Kieserite	-6.686	-9.121	
Manganite	-4.459	-6.084	
Mercallite	-6.979	-9.521	
Mirabilite	-6.855	-9.352	
MnHPO4	0.000	0.000	ssatd
MnO2(gamma)	-1.518	-2.071	
Morenosite	-2.696	-3.678	
NiSO4:6H2O(alpha)	-2.702	-3.687	
Nontronite-Ca	-3.755	-5.123	
Nontronite-H	-2.822	-3.850	
Nontronite-K	-4.146	-5.657	
Nontronite-Mg	-3.825	-5.218	
Nontronite-Na	-4.090	-5.580	
Pentahydrite	-5.567	-7.595	
Pyrolusite	0.000	0.000	ssatd
Quartz	0.000	0.000	ssatd
Rutile	-0.256	-0.349	
Sellaite	-5.439	-7.421	
Shcherbinaite	-2.888	-3.940	
SiO2(am)	-1.286	-1.754	
SrZrO3	106.096	144.745	ssatd
Starkeyite	-5.954	-8.123	
Strengite	-1.902	-2.594	
Tridymite	-0.171	-0.234	
fix CO2(g)	0.000	0.000	satd
fix O2(g)	0.000	0.000	satd

--- Summary of Solid Solutions ---

--- Carbonate-Calcite ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Calcite	5.6705E-03	-2.2464	0.0000	-2.2464
Magnesite	4.5525E-04	-3.3417	0.0000	-3.3417

Rhodochrosite	9.9387E-01	-0.0027	0.0000	-0.0027
Siderite	1.2691E-08	-7.8965	0.0000	-7.8965
Smithsonite	5.2900E-08	-7.2765	0.0000	-7.2765
Strontianite	2.2203E-07	-6.6536	0.0000	-6.6536

Mineral	Log Q/K	Aff, kcal	State
Carbonate-Calcite	-10.767	-14.689	
Calcite	-10.767	-14.689	
Magnesite	-10.767	-14.689	
Rhodochrosite	-10.767	-14.689	
Siderite	-10.767	-14.689	
Smithsonite	-10.767	-14.689	
Strontianite	-10.767	-14.689	

--- Clinoptilolite-hy-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-hy-Ca	9.9769E-01	-0.0010	0.0000	-0.0010
Clinoptilolite-hy-Cs	6.6777E-23	-22.1754	0.0000	-22.1754
Clinoptilolite-hy-K	7.3171E-04	-3.1357	0.0000	-3.1357
Clinoptilolite-hy-Na	1.5783E-03	-2.8018	0.0000	-2.8018
Clinoptilolite-hy-Sr	5.6081E-12	-11.2512	0.0000	-11.2512

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-hy-ss	-59.145	-80.691	
Clinoptilolite-hy-Ca	-59.145	-80.691	
Clinoptilolite-hy-Cs	-59.145	-80.691	
Clinoptilolite-hy-K	-59.145	-80.691	
Clinoptilolite-hy-Na	-59.145	-80.691	
Clinoptilolite-hy-Sr	-59.145	-80.691	

--- Clinoptilolite-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-Ca	7.8163E-01	-0.1070	-0.2632	-0.3702
Clinoptilolite-Cs	3.0398E-07	-6.5172	-16.0322	-22.5494
Clinoptilolite-K	9.6808E-02	-1.0141	-2.4947	-3.5087
Clinoptilolite-NH4	1.0307E-51	-50.9869	-125.4277	-176.4146
Clinoptilolite-Na	1.2112E-01	-0.9168	-2.2553	-3.1721
Clinoptilolite-Sr	4.3842E-04	-3.3581	-8.2609	-11.6190

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-ss	-58.777	-80.188	
Clinoptilolite-Ca	-58.777	-80.188	
Clinoptilolite-Cs	-58.777	-80.188	
Clinoptilolite-K	-58.777	-80.188	
Clinoptilolite-NH4	-58.777	-80.188	

Clinoptilolite-Na	-58.777	-80.188
Clinoptilolite-Sr	-58.777	-80.188

--- Saponite-tri ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Saponite-Ca	1.4821E-03	-2.8291	1.8955	-0.9336
Saponite-H	9.9737E-01	-0.0011	0.0008	-0.0004
Saponite-K	9.6728E-05	-4.0144	2.6897	-1.3248
Saponite-Mg	9.1179E-04	-3.0401	2.0369	-1.0032
Saponite-Na	1.4347E-04	-3.8432	2.5750	-1.2683

Mineral	Log Q/K	Aff, kcal	State
Saponite-tri	-42.306	-57.718	
Saponite-Ca	-42.306	-57.718	
Saponite-H	-42.306	-57.718	
Saponite-K	-42.306	-57.718	
Saponite-Mg	-42.306	-57.718	
Saponite-Na	-42.306	-57.718	

--- Smectite-di ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Beidellite-Ca	6.4985E-68	-67.1872	45.0154	-22.1718
Beidellite-K	4.2440E-69	-68.3722	45.8094	-22.5628
Beidellite-Mg	3.9978E-68	-67.3982	45.1568	-22.2414
Beidellite-Na	6.2906E-69	-68.2013	45.6949	-22.5064
Montmor-Ca	3.1759E-58	-57.4981	38.5237	-18.9744
Montmor-K	3.3874E-59	-58.4701	39.1750	-19.2951
Montmor-Mg	3.1753E-58	-57.4982	38.5238	-18.9744
Montmor-Na	4.8964E-59	-58.3101	39.0678	-19.2423
Nontronite-Ca	5.6252E-01	-0.2499	0.1674	-0.0825
Nontronite-K	3.6737E-02	-1.4349	0.9614	-0.4735
Nontronite-Mg	3.4629E-01	-0.4606	0.3086	-0.1520
Nontronite-Na	5.4453E-02	-1.2640	0.8469	-0.4171

Mineral	Log Q/K	Aff, kcal	State
Smectite-di	-3.673	-5.011	
Beidellite-Ca	-3.673	-5.011	
Beidellite-K	-3.673	-5.011	
Beidellite-Mg	-3.673	-5.011	
Beidellite-Na	-3.673	-5.011	
Montmor-Ca	-3.673	-5.011	
Montmor-K	-3.673	-5.011	
Montmor-Mg	-3.673	-5.011	
Montmor-Na	-3.673	-5.011	
Nontronite-Ca	-3.673	-5.011	
Nontronite-K	-3.673	-5.011	
Nontronite-Mg	-3.673	-5.011	

Nontronite-Na	-3.673	-5.011

--- Lanthanide hydroxide ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
La(OH)3	1.2829E-05	-4.8918	0.0000	-4.8918
Ce(OH)3	3.7099E-15	-14.4306	0.0000	-14.4306
Nd(OH)3(c)	3.4718E-01	-0.4594	0.0000	-0.4594
Gd(OH)3	5.8550E-01	-0.2325	0.0000	-0.2325
Sm(OH)3	6.7308E-02	-1.1719	0.0000	-1.1719

Mineral	Log Q/K	Aff, kcal	State
Lanthanide hydroxide	-24.639	-33.614	
La(OH)3	-24.639	-33.614	
Ce(OH)3	-24.639	-33.614	
Nd(OH)3(c)	-24.639	-33.614	
Gd(OH)3	-24.639	-33.614	
Sm(OH)3	-24.639	-33.614	

--- Rhabdophane-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaPO4:H2O	4.1201E-01	-0.3851	0.0000	-0.3851
CePO4:H2O	3.7677E-11	-10.4239	0.0000	-10.4239
NdPO4:H2O	2.2247E-01	-0.6527	0.0000	-0.6527
GdPO4:H2O	1.4936E-01	-0.8258	0.0000	-0.8258
SmPO4:H2O	2.1616E-01	-0.6652	0.0000	-0.6652

Mineral	Log Q/K	Aff, kcal	State
Rhabdophane-ss	-9.764	-13.321	
LaPO4:H2O	-9.764	-13.321	
CePO4:H2O	-9.764	-13.321	
NdPO4:H2O	-9.764	-13.321	
GdPO4:H2O	-9.764	-13.321	
SmPO4:H2O	-9.764	-13.321	

--- Lanthanide fluoride ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaF3:0.5H2O	5.7252E-01	-0.2422	0.0000	-0.2422
CeF3:0.5H2O	8.2978E-11	-10.0810	0.0000	-10.0810
NdF3:0.5H2O	3.8918E-01	-0.4099	0.0000	-0.4099
GdF3:0.5H2O	8.2628E-03	-2.0829	0.0000	-2.0829
SmF3:0.5H2O	3.0037E-02	-1.5223	0.0000	-1.5223

Mineral	Log Q/K	Aff, kcal	State
Lanthanide fluoride	-11.742	-16.019	
LaF3:0.5H2O	-11.742	-16.019	
CeF3:0.5H2O	-11.742	-16.019	
NdF3:0.5H2O	-11.742	-16.019	
GdF3:0.5H2O	-11.742	-16.019	
SmF3:0.5H2O	-11.742	-16.019	

--- Summary of Gases ---

Gas	Fugacity	Log fugacity
Al(g)	4.4947-201	-200.3473
B(g)	8.5659-204	-203.0672
BF3(g)	3.7716E-24	-23.4235
C(g)	3.0917-190	-189.5098
CH4(g)	3.5240-146	-145.4530
CO(g)	6.0395E-49	-48.2190
CO2(g)	3.1623E-04	-3.5000
Ca(g)	7.2343-164	-163.1406
Chlorine	3.5847E-17	-16.4456
Cs(g)	3.5180E-89	-88.4537
Cu(g)	7.5962E-93	-92.1194
Fluorine	1.4787E-72	-71.8301
H2(g)	6.1104E-42	-41.2139
H2O(g)	2.5958E-02	-1.5857
H2S(g)	2.2902-130	-129.6401
HCl(g)	7.3419E-13	-12.1342
HF(g)	5.3219E-09	-8.2739
K(g)	2.2169E-83	-82.6543
Li(g)	7.8245-103	-102.1065
Mg(g)	1.0897-141	-140.9627
Nitrogen	2.6192E-08	-7.5818
NH3(g)	1.8638E-63	-62.7296
NO(g)	5.0961E-20	-19.2928
NO2(g)	3.4845E-14	-13.4579
Na(g)	1.8194E-81	-80.7401
O2(g)	2.0999E-01	-0.6778
Pb(g)	7.6389E-81	-80.1170
S2(g)	3.1322-203	-202.5042
SO2(g)	4.0579E-43	-42.3917
Si(g)	4.2268-221	-220.3740
SiF4(g)	3.5421E-18	-17.4507
Ti(g)	2.1083-231	-230.6761
TiCl4(g)	5.4055E-62	-61.2672
U(g)	1.0090-304	-303.9961
U2Cl10(g)	4.7266-202	-201.3255
U2Cl8(g)	4.0879-216	-215.3885
U2F10(g)	2.5064-120	-119.6009
UCl(g)	6.6043-255	-254.1802
UCl2(g)	1.2932-203	-202.8884
UCl3(g)	5.5459-150	-149.2560
UCl4(g)	1.2880-113	-112.8901
UCl5(g)	1.5389-114	-113.8128
UCl6(g)	3.4162-110	-109.4665
UF(g)	1.0174-240	-239.9925
UF2(g)	7.6080-195	-194.1187

```
UF3(g)                      1.4001-142   -141.8538
UF4(g)                      3.8031E-87    -86.4199
UF5(g)                      4.7318E-73    -72.3250
UF6(g)                      5.7971E-73    -72.2368
UO(g)                       7.9689-220   -219.0986
UO2(g)                      1.4764-135   -134.8308
UO2Cl2(g)                   2.3107E-71    -70.6363
UO2F2(g)                    9.8621E-61    -60.0060
UO3(g)                      1.0859E-82    -81.9642
UOF4(g)                     1.1333E-64    -63.9457
Zn(g)                       1.2815E-90    -89.8923



- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -


Stepping to zi=  1.5849E-07, delzi=  5.8489E-08, nord= 2
  time =  1.5286E-03 d, dltime =  5.6413E-04 d
Steps completed =    13, iter =  1, ncorr = 0
Most rapidly changing is zvclg1(Ti(OH)4(aq)             ) =     -9.8536

- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -


                    Reaction progress        =  1.58489319246105E-07
                    Log of reaction progress =      -6.8000000



                    Time =  1.321E+02 sec
                         =  1.529E-03 days
                         =  4.185E-06 years

                    Log sec =        2.121
                    Log days =      -2.816
                    Log years =     -5.378

                    Temperature    =     25.000 degrees C
                    total pressure =      1.013 bars


Step size is limited by the print requirement


                              --- Reactant Summary ---


    Reactant                   Moles     Delta moles    Mass, g    Delta Mass, g

 Tuff                       1.0000E+02   1.5849E-07   2.0586E+03   3.2627E-06


               Current total mass =  2.05865E+03 grams
               Delta total mass   =  3.26274E-06 grams
               Delta total volume =      0.00000 cc


    Reactant                Rel. Rate      Rate         Rate
                             mol/mol       mol/s      mol/s/cm2
```

```
Tuff                        1.0000E+00   1.2000E-09   2.5000E-15


   Reactant                   Affinity   Surface Area
                              kcal/mol     mol/s/cm2

Tuff                         999.00000   4.8000E+05


   Reactant                 Rate Constants, mol/s/cm2

Tuff
                  Forward    2.5000E-15


        Affinity of the overall irreversible reaction=     0.000 kcal
        Contributions from irreversible reactions
        with no thermodynamic data are not included


    --- Element Totals for the Aqueous Solution ---

 Element        mg/kg soln.          Molality             Moles

    O          8.865404E+05        5.561111E+01        5.559508E+01
    Al         4.008700E-02        1.491089E-06        1.490659E-06
    B          1.334829E-01        1.239157E-05        1.238800E-05
    Ba         1.368719E-05        1.000288E-10        1.000000E-10
    Ca         1.295703E+01        3.244639E-04        3.243703E-04
    Ce         1.396507E-19        1.000288E-24        1.000000E-24
    Cl         7.116513E+00        2.014581E-04        2.014000E-04
    Cr         2.996352E+02        5.783475E-03        5.781807E-03
    Cs         1.324650E-05        1.000288E-10        1.000000E-10
    Cu         6.650220E-10        1.050303E-14        1.050000E-14
    F          2.172842E+00        1.147831E-04        1.147500E-04
    Fe         8.881283E-01        1.596036E-05        1.595576E-05
    Gd         1.567289E-09        1.000288E-14        9.999999E-15
    H          1.115156E+05        1.110370E+02        1.110050E+02
    C          1.267583E-01        1.059166E-05        1.058861E-05
    P          7.325643E+00        2.373660E-04        2.372976E-04
    K          5.023593E+00        1.289506E-04        1.289134E-04
    La         1.384452E-09        1.000288E-14        9.999999E-15
    Li         6.917999E-07        1.000288E-10        1.000000E-10
    Mg         2.003343E+00        8.272305E-05        8.269920E-05
    Mn         3.250700E+01        5.938413E-04        5.936701E-04
    Mo         2.179386E+02        2.279823E-03        2.279166E-03
    N          1.982366E+00        1.420410E-04        1.420000E-04
    Na         4.564854E+01        1.992778E-03        1.992204E-03
    Nd         1.437620E-09        1.000288E-14        9.999999E-15
    Ni         7.502088E+02        1.282876E-02        1.282506E-02
    Pb         2.065134E-05        1.000288E-10        1.000000E-10
    Pu         2.431914E-09        1.000288E-14        9.999999E-15
    S          5.507393E+02        1.723725E-02        1.723228E-02
    Si         2.804119E+00        1.002031E-04        1.001742E-04
    Sm         1.498617E-09        1.000288E-14        9.999999E-15
    Sr         8.732965E-06        1.000288E-10        1.000000E-10
    Ti         6.685654E-06        1.401382E-10        1.400978E-10
    U          2.372401E-09        1.000288E-14        1.000000E-14
    V          4.768069E+00        9.393718E-05        9.391010E-05
    Zn         6.517332E-06        1.000288E-10        1.000000E-10
    Zr         9.092171E-16        1.000288E-20        1.000000E-20
```

Single ion activities and activity coefficients are here defined
with respect to the modified NBS pH scale

	pH	Eh	pe
modified NBS pH scale	2.0406	1.0983	1.8566E+01
rational pH scale	1.9641	1.1028	1.8643E+01

pHCl = 5.8287

Oxygen fugacity = 2.09991E-01
Log oxygen fugacity = -0.67780

Activity of water = 0.99924
Log activity of water = -0.00033

Ionic strength = 5.880050E-02 molal
Sum of molalities = 0.0494650390585
Osmotic coefficient = 0.85806

Mass of solution = 1.003325 kg
Mass of solutes = 0.003613 kg
Conc. of solutes = 0.360111 per cent (w/w)

Moles of solvent H2O = 5.54924E+01
Mass of solvent H2O = 9.99712E-01 kg

Species	Molality	Log molality	Log gamma	Log activity
H+	1.0861E-02	-1.9641	-0.0765	-2.0406
Ni++	1.0209E-02	-1.9910	-0.3466	-2.3376
SO4--	9.7761E-03	-2.0098	-0.3602	-2.3701
HSO4-	4.5008E-03	-2.3467	-0.0849	-2.4316
HCrO4-	4.0507E-03	-2.3925	-0.0849	-2.4774
NiSO4(aq)	2.6184E-03	-2.5820	0.0000	-2.5820
MoO4--	2.2798E-03	-2.6421	-0.3492	-2.9913
Na+	1.9397E-03	-2.7123	-0.0983	-2.8106
Cr2O7--	8.6348E-04	-3.0637	-0.3602	-3.4240
Mn++	4.1403E-04	-3.3830	-0.3466	-3.7295
O2(aq)	2.6166E-04	-3.5823	0.0062	-3.5761
Ca++	2.5991E-04	-3.5852	-0.3466	-3.9317
Cl-	2.0085E-04	-3.6971	-0.0909	-3.7881
MnSO4(aq)	1.7918E-04	-3.7467	0.0000	-3.7467
NO3-	1.4021E-04	-3.8532	-0.0909	-3.9441
K+	1.2506E-04	-3.9029	-0.1044	-4.0073
H3PO4(aq)	1.1922E-04	-3.9236	0.0000	-3.9236
H2PO4-	1.0769E-04	-3.9678	-0.0849	-4.0527
HF(aq)	1.0157E-04	-3.9932	0.0000	-3.9932
SiO2(aq)	1.0020E-04	-3.9991	0.0000	-3.9991
VO2+	7.7218E-05	-4.1123	-0.0983	-4.2106
CaSO4(aq)	6.4460E-05	-4.1907	0.0000	-4.1907
Mg++	5.3912E-05	-4.2683	-0.3139	-4.5822
NaSO4-	5.2994E-05	-4.2758	-0.0849	-4.3607
MgSO4(aq)	2.8802E-05	-4.5406	0.0000	-4.5406
B(OH)3(aq)	1.2392E-05	-4.9069	0.0000	-4.9069

VO2SO4-	1.2140E-05	-4.9158	-0.0849	-5.0007
CO2(aq)	1.0591E-05	-4.9751	0.0062	-4.9689
FeHPO4+	9.8578E-06	-5.0062	-0.0983	-5.1046
F-	9.2705E-06	-5.0329	-0.0878	-5.1207
Fe+++	3.9854E-06	-5.3995	-0.6676	-6.0671
Cr+++	3.9843E-06	-5.3996	-0.6676	-6.0672
KSO4-	3.8650E-06	-5.4128	-0.0849	-5.4977
VO(OH)3(aq)	3.3834E-06	-5.4706	0.0000	-5.4706
NiNO3+	1.6466E-06	-5.7834	-0.0983	-5.8817
H2CrO4(aq)	1.4542E-06	-5.8374	0.0000	-5.8374
FeOH++	1.4431E-06	-5.8407	-0.3761	-6.2168
VO2F(aq)	1.0439E-06	-5.9813	0.0000	-5.9813
AlF2+	8.5676E-07	-6.0671	-0.0983	-6.1655
AlF++	5.3868E-07	-6.2687	-0.3761	-6.6448
MnH2PO4+	4.6356E-07	-6.3339	-0.0983	-6.4322
FeSO4+	3.8795E-07	-6.4112	-0.0983	-6.5096
HCl(aq)	3.1718E-07	-6.4987	0.0000	-6.4987
CrO4--	2.6860E-07	-6.5709	-0.3602	-6.9311
FeF++	2.1125E-07	-6.6752	-0.3761	-7.0513
NiCl+	9.4729E-08	-7.0235	-0.0983	-7.1219
HPO3F-	9.2166E-08	-7.0354	-0.0849	-7.1203
CaNO3+	8.3647E-08	-7.0775	-0.0983	-7.1759
MnCl+	7.6216E-08	-7.1180	-0.0983	-7.2163
H2VO4-	7.2891E-08	-7.1373	-0.0849	-7.2222
AlF3(aq)	6.5134E-08	-7.1862	0.0000	-7.1862
CrO3Cl-	6.4830E-08	-7.1882	-0.0849	-7.2731
HNO3(aq)	5.1609E-08	-7.2873	0.0000	-7.2873
MnF+	4.7653E-08	-7.3219	-0.0983	-7.4203
VO2(OH)2-	4.5173E-08	-7.3451	-0.0849	-7.4300
MnNO3+	4.2136E-08	-7.3753	-0.0983	-7.4737
NaCl(aq)	4.2107E-08	-7.3757	0.0000	-7.3757
H2SO4(aq)	3.3711E-08	-7.4722	0.0000	-7.4722
Fe(SO4)2-	3.1000E-08	-7.5086	-0.0849	-7.5935
VO2HPO4-	3.0677E-08	-7.5132	-0.0849	-7.5981
H2F2(aq)	2.7880E-08	-7.5547	0.0000	-7.5547
Fe(OH)2+	2.7660E-08	-7.5582	-0.0983	-7.6565
KHSO4(aq)	2.4868E-08	-7.6044	0.0000	-7.6044
CrOH++	2.2345E-08	-7.6508	-0.3761	-8.0269
AlSO4+	1.6377E-08	-7.7858	-0.0983	-7.8841
Al+++	1.3916E-08	-7.8565	-0.6676	-8.5241
FeF2+	1.3792E-08	-7.8604	-0.0983	-7.9587
MgF+	5.5951E-09	-8.2522	-0.0983	-8.3505
CaF+	5.3405E-09	-8.2724	-0.0983	-8.3708
CaCl+	4.8188E-09	-8.3171	-0.0983	-8.4154
MgCl+	3.9189E-09	-8.4068	-0.0983	-8.5052
VO2F2-	2.7723E-09	-8.5572	-0.0849	-8.6420
FeNO3++	2.3166E-09	-8.6351	-0.3761	-9.0112
PO3F--	1.5172E-09	-8.8190	-0.3602	-9.1792
HPO4--	1.3892E-09	-8.8572	-0.3602	-9.2175
NaF(aq)	1.1779E-09	-8.9289	0.0000	-8.9289
HCO3-	6.4802E-10	-9.1884	-0.0849	-9.2733
KCl(aq)	5.1295E-10	-9.2899	0.0000	-9.2899
MnHPO4(aq)	4.2954E-10	-9.3670	0.0000	-9.3670
VO++	2.7648E-10	-9.5583	-0.3761	-9.9344
CrCl++	2.3541E-10	-9.6282	-0.3761	-10.0043
HF2-	2.2580E-10	-9.6463	-0.0849	-9.7312
AlF4-	1.5065E-10	-9.8220	-0.0849	-9.9069
VOSO4(aq)	1.4980E-10	-9.8245	0.0000	-9.8245
Ti(OH)4(aq)	1.4014E-10	-9.8534	0.0000	-9.8534
Mn+++	1.1765E-10	-9.9294	-0.8157	-10.7452
Cs+	1.0002E-10	-9.9999	-0.1077	-10.1076

--- Summary of Instantaneously Precipitated Solid Phases ---
(defined by derivatives)

--- Theoretical Rock Composition ---
g/kg

--- Oxide Percentages ---

Oxide Theoretical rock

Total = 0.0000

	Phase/end-member	d mol/d zi	d grams/d zi	d vol (cc)/d zi
fix	CO2(g)	0.0000E+00	0.0000E+00	0.0000E+00
fix	O2(g)	-7.3164E-04	-2.3411E-02	0.0000E+00

--- Summary of Solid Phases (E.S.+P.R.S.) ---

	Phase/End-member	Log moles	Moles	Mass, g	Volume, cc
fix	CO2(g)	2.3010	2.0000E+02	8.8020E+03	0.0000E+00
fix	O2(g)	2.3010	2.0000E+02	6.3998E+03	0.0000E+00

	Mass, grams	Volume, cc
Created	1.520172E+04	0.000000E+00
Destroyed	3.262735E-06	0.000000E+00
Net	1.520172E+04	0.000000E+00

Warning-- these volume totals may be incomplete because
of missing partial molar volume data in the data base

--- Summary of Pure Mineral Saturation States ---

Mineral	Log Q/K	Aff, kcal	State
AlF3	-6.677	-9.110	
Anglesite	-4.894	-6.677	
Anhydrite	-1.995	-2.722	
BaZrO3	69.237	94.458	ssatd
Barite	-2.765	-3.772	
Bassanite	-2.640	-3.602	
Boric_acid	-4.749	-6.478	
CaSO4:0.5H2O(beta)	-2.809	-3.832	
CaZrO3	129.701	176.949	ssatd
Celestite	-7.194	-9.815	
Chalcedony	-0.271	-0.370	
Coesite	-0.810	-1.105	
CrO2	-0.909	-1.241	
Cristobalite(alpha)	-0.550	-0.751	
Cristobalite(beta)	-0.994	-1.356	
Crocoite	-4.591	-6.263	
Epsomite	-4.992	-6.811	
Fe(OH)3	-5.602	-7.642	

FeF3	-2.190	-2.988	
Fluorite	-4.136	-5.643	
Goethite	-0.480	-0.655	
Gypsum	-1.820	-2.483	
Hematite	0.000	0.000	ssatd
Hexahydrite	-5.227	-7.132	
Ice	-0.139	-0.190	
Jarosite	-5.336	-7.280	
Kieserite	-6.686	-9.121	
Manganite	-4.459	-6.084	
Mercallite	-6.979	-9.521	
Mirabilite	-6.855	-9.352	
MnHPO4	0.000	0.000	ssatd
MnO2(gamma)	-1.518	-2.071	
Morenosite	-2.696	-3.678	
NiSO4:6H2O(alpha)	-2.702	-3.687	
Nontronite-Ca	-3.755	-5.122	
Nontronite-H	-2.821	-3.849	
Nontronite-K	-4.146	-5.656	
Nontronite-Mg	-3.824	-5.217	
Nontronite-Na	-4.089	-5.579	
Pentahydrite	-5.567	-7.595	
Pyrolusite	0.000	0.000	ssatd
Quartz	0.000	0.000	ssatd
Rutile	-0.208	-0.283	
Sellaite	-5.439	-7.421	
Shcherbinaite	-2.888	-3.940	
SiO2(am)	-1.286	-1.754	
SrZrO3	106.096	144.745	ssatd
Starkeyite	-5.954	-8.123	
Strengite	-1.902	-2.594	
Tridymite	-0.171	-0.234	
fix CO2(g)	0.000	0.000	satd
fix O2(g)	0.000	0.000	satd

--- Summary of Solid Solutions ---

--- Carbonate-Calcite ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Calcite	5.6705E-03	-2.2464	0.0000	-2.2464
Magnesite	4.5525E-04	-3.3417	0.0000	-3.3417
Rhodochrosite	9.9387E-01	-0.0027	0.0000	-0.0027
Siderite	1.2691E-08	-7.8965	0.0000	-7.8965
Smithsonite	5.2900E-08	-7.2765	0.0000	-7.2765
Strontianite	2.2203E-07	-6.6536	0.0000	-6.6536

Mineral	Log Q/K	Aff, kcal	State
Carbonate-Calcite	-10.767	-14.689	
Calcite	-10.767	-14.689	
Magnesite	-10.767	-14.689	
Rhodochrosite	-10.767	-14.689	
Siderite	-10.767	-14.689	
Smithsonite	-10.767	-14.689	
Strontianite	-10.767	-14.689	

--- Clinoptilolite-hy-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-hy-Ca	9.9769E-01	-0.0010	0.0000	-0.0010
Clinoptilolite-hy-Cs	6.6777E-23	-22.1754	0.0000	-22.1754
Clinoptilolite-hy-K	7.3173E-04	-3.1356	0.0000	-3.1356
Clinoptilolite-hy-Na	1.5783E-03	-2.8018	0.0000	-2.8018
Clinoptilolite-hy-Sr	5.6081E-12	-11.2512	0.0000	-11.2512

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-hy-ss	-59.141	-80.685	
Clinoptilolite-hy-Ca	-59.141	-80.685	
Clinoptilolite-hy-Cs	-59.141	-80.685	
Clinoptilolite-hy-K	-59.141	-80.685	
Clinoptilolite-hy-Na	-59.141	-80.685	
Clinoptilolite-hy-Sr	-59.141	-80.685	

--- Clinoptilolite-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-Ca	7.8163E-01	-0.1070	-0.2632	-0.3702
Clinoptilolite-Cs	3.0397E-07	-6.5172	-16.0322	-22.5494
Clinoptilolite-K	9.6809E-02	-1.0141	-2.4946	-3.5087
Clinoptilolite-NH4	1.0307E-51	-50.9869	-125.4277	-176.4146
Clinoptilolite-Na	1.2112E-01	-0.9168	-2.2553	-3.1721
Clinoptilolite-Sr	4.3842E-04	-3.3581	-8.2609	-11.6190

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-ss	-58.773	-80.183	
Clinoptilolite-Ca	-58.773	-80.183	
Clinoptilolite-Cs	-58.773	-80.183	
Clinoptilolite-K	-58.773	-80.183	
Clinoptilolite-NH4	-58.773	-80.183	
Clinoptilolite-Na	-58.773	-80.183	
Clinoptilolite-Sr	-58.773	-80.183	

--- Saponite-tri ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Saponite-Ca	1.4821E-03	-2.8291	1.8955	-0.9336
Saponite-H	9.9737E-01	-0.0011	0.0008	-0.0004
Saponite-K	9.6729E-05	-4.0144	2.6897	-1.3248
Saponite-Mg	9.1179E-04	-3.0401	2.0369	-1.0032
Saponite-Na	1.4347E-04	-3.8432	2.5750	-1.2683

Mineral	Log Q/K	Aff, kcal	State
Saponite-tri	-42.306	-57.717	
Saponite-Ca	-42.306	-57.717	
Saponite-H	-42.306	-57.717	
Saponite-K	-42.306	-57.717	
Saponite-Mg	-42.306	-57.717	
Saponite-Na	-42.306	-57.717	

--- Smectite-di ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Beidellite-Ca	6.5811E-68	-67.1817	45.0117	-22.1700
Beidellite-K	4.2980E-69	-68.3667	45.8057	-22.5610
Beidellite-Mg	4.0486E-68	-67.3927	45.1531	-22.2396
Beidellite-Na	6.3706E-69	-68.1958	45.6912	-22.5046
Montmor-Ca	3.2034E-58	-57.4944	38.5212	-18.9732
Montmor-K	3.4167E-59	-58.4664	39.1725	-19.2939
Montmor-Mg	3.2027E-58	-57.4945	38.5213	-18.9732
Montmor-Na	4.9387E-59	-58.3064	39.0653	-19.2411
Nontronite-Ca	5.6252E-01	-0.2499	0.1674	-0.0825
Nontronite-K	3.6737E-02	-1.4349	0.9614	-0.4735
Nontronite-Mg	3.4629E-01	-0.4606	0.3086	-0.1520
Nontronite-Na	5.4453E-02	-1.2640	0.8469	-0.4171

Mineral	Log Q/K	Aff, kcal	State
Smectite-di	-3.672	-5.010	
Beidellite-Ca	-3.672	-5.010	
Beidellite-K	-3.672	-5.010	
Beidellite-Mg	-3.672	-5.010	
Beidellite-Na	-3.672	-5.010	
Montmor-Ca	-3.672	-5.010	
Montmor-K	-3.672	-5.010	
Montmor-Mg	-3.672	-5.010	
Montmor-Na	-3.672	-5.010	
Nontronite-Ca	-3.672	-5.010	
Nontronite-K	-3.672	-5.010	
Nontronite-Mg	-3.672	-5.010	
Nontronite-Na	-3.672	-5.010	

--- Lanthanide hydroxide ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
La(OH)3	1.2829E-05	-4.8918	0.0000	-4.8918
Ce(OH)3	3.7099E-15	-14.4306	0.0000	-14.4306
Nd(OH)3(c)	3.4718E-01	-0.4595	0.0000	-0.4595
Gd(OH)3	5.8550E-01	-0.2325	0.0000	-0.2325
Sm(OH)3	6.7308E-02	-1.1719	0.0000	-1.1719

Mineral	Log Q/K	Aff, kcal	State
Lanthanide hydroxide	-24.639	-33.614	
La(OH)3	-24.639	-33.614	
Ce(OH)3	-24.639	-33.614	
Nd(OH)3(c)	-24.639	-33.614	
Gd(OH)3	-24.639	-33.614	
Sm(OH)3	-24.639	-33.614	

--- Rhabdophane-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaPO4:H2O	4.1201E-01	-0.3851	0.0000	-0.3851
CePO4:H2O	3.7677E-11	-10.4239	0.0000	-10.4239
NdPO4:H2O	2.2247E-01	-0.6527	0.0000	-0.6527
GdPO4:H2O	1.4936E-01	-0.8258	0.0000	-0.8258
SmPO4:H2O	2.1616E-01	-0.6652	0.0000	-0.6652

Mineral	Log Q/K	Aff, kcal	State
Rhabdophane-ss	-9.764	-13.321	
LaPO4:H2O	-9.764	-13.321	
CePO4:H2O	-9.764	-13.321	
NdPO4:H2O	-9.764	-13.321	
GdPO4:H2O	-9.764	-13.321	
SmPO4:H2O	-9.764	-13.321	

--- Lanthanide fluoride ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaF3:0.5H2O	5.7252E-01	-0.2422	0.0000	-0.2422
CeF3:0.5H2O	8.2978E-11	-10.0810	0.0000	-10.0810
NdF3:0.5H2O	3.8918E-01	-0.4099	0.0000	-0.4099
GdF3:0.5H2O	8.2628E-03	-2.0829	0.0000	-2.0829
SmF3:0.5H2O	3.0037E-02	-1.5223	0.0000	-1.5223

Mineral	Log Q/K	Aff, kcal	State
Lanthanide fluoride	-11.742	-16.019	
LaF3:0.5H2O	-11.742	-16.019	
CeF3:0.5H2O	-11.742	-16.019	
NdF3:0.5H2O	-11.742	-16.019	
GdF3:0.5H2O	-11.742	-16.019	
SmF3:0.5H2O	-11.742	-16.019	

--- Summary of Gases ---

Gas	Fugacity	Log fugacity

Al(g)	4.5041-201	-200.3464
B(g)	8.5659-204	-203.0672
BF3(g)	3.7711E-24	-23.4235
C(g)	3.0917-190	-189.5098
CH4(g)	3.5240-146	-145.4530
CO(g)	6.0395E-49	-48.2190
CO2(g)	3.1623E-04	-3.5000
Ca(g)	7.2343-164	-163.1406
Chlorine	3.5847E-17	-16.4456
Cs(g)	3.5180E-89	-88.4537
Cu(g)	7.5962E-93	-92.1194
Fluorine	1.4785E-72	-71.8302
H2(g)	6.1104E-42	-41.2139
H2O(g)	2.5958E-02	-1.5857
H2S(g)	2.2902-130	-129.6401
HCl(g)	7.3419E-13	-12.1342
HF(g)	5.3217E-09	-8.2739
K(g)	2.2169E-83	-82.6542
Li(g)	7.8245-103	-102.1065
Mg(g)	1.0897-141	-140.9627
Nitrogen	2.6192E-08	-7.5818
NH3(g)	1.8638E-63	-62.7296
NO(g)	5.0961E-20	-19.2928
NO2(g)	3.4845E-14	-13.4579
Na(g)	1.8194E-81	-80.7401
O2(g)	2.0999E-01	-0.6778
Pb(g)	7.6389E-81	-80.1170
S2(g)	3.1322-203	-202.5042
SO2(g)	4.0579E-43	-42.3917
Si(g)	4.2275-221	-220.3739
SiF4(g)	3.5420E-18	-17.4508
Ti(g)	2.3573-231	-230.6276
TiCl4(g)	6.0439E-62	-61.2187
U(g)	1.0090-304	-303.9961
U2Cl10(g)	4.7266-202	-201.3255
U2Cl8(g)	4.0879-216	-215.3885
U2F10(g)	2.5053-120	-119.6011
UCl(g)	6.6043-255	-254.1802
UCl2(g)	1.2932-203	-202.8883
UCl3(g)	5.5459-150	-149.2560
UCl4(g)	1.2880-113	-112.8901
UCl5(g)	1.5390-114	-113.8128
UCl6(g)	3.4162-110	-109.4665
UF(g)	1.0173-240	-239.9925
UF2(g)	7.6074-195	-194.1188
UF3(g)	1.3999-142	-141.8539
UF4(g)	3.8025E-87	-86.4199
UF5(g)	4.7308E-73	-72.3251
UF6(g)	5.7956E-73	-72.2369
UO(g)	7.9690-220	-219.0986
UO2(g)	1.4764-135	-134.8308
UO2Cl2(g)	2.3107E-71	-70.6362
UO2F2(g)	9.8613E-61	-60.0061
UO3(g)	1.0859E-82	-81.9642
UOF4(g)	1.1331E-64	-63.9457
Zn(g)	1.2815E-90	-89.8923

- -

```
Stepping to zi=  2.5119E-07, delzi=  9.2699E-08, nord= 2
  time =  2.4227E-03 d, dltime =  8.9409E-04 d
Steps completed =    14, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Ti(OH)4(aq)            ) =     -9.7863

- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -


                    Reaction progress        =  2.51188643150948E-07
                    Log of reaction progress =      -6.6000000



                    Time =  2.093E+02 sec
                         =  2.423E-03 days
                         =  6.633E-06 years

                    Log sec =        2.321
                    Log days =      -2.616
                    Log years =     -5.178

                    Temperature    =     25.000 degrees C
                    total pressure =      1.013 bars


Step size is limited by the print requirement


                              --- Reactant Summary ---


    Reactant                   Moles     Delta moles    Mass, g    Delta Mass, g

 Tuff                       1.0000E+02   2.5119E-07   2.0586E+03   5.1711E-06


               Current total mass =  2.05865E+03 grams
               Delta total mass   =  5.17109E-06 grams
               Delta total volume =      0.00000 cc


    Reactant                Rel. Rate      Rate         Rate
                             mol/mol       mol/s      mol/s/cm2

 Tuff                       1.0000E+00   1.2000E-09   2.5000E-15


    Reactant                   Affinity   Surface Area
                               kcal/mol     mol/s/cm2

 Tuff                        999.00000   4.8000E+05


    Reactant                Rate Constants, mol/s/cm2

 Tuff
                   Forward    2.5000E-15


         Affinity of the overall irreversible reaction=     0.000 kcal
         Contributions from irreversible reactions
```

with no thermodynamic data are not included

--- Element Totals for the Aqueous Solution ---

Element	mg/kg soln.	Molality	Moles
O	8.865404E+05	5.561111E+01	5.559508E+01
Al	4.021534E-02	1.495863E-06	1.495432E-06
B	1.334829E-01	1.239157E-05	1.238800E-05
Ba	1.368719E-05	1.000288E-10	1.000000E-10
Ca	1.295704E+01	3.244641E-04	3.243705E-04
Ce	1.396507E-19	1.000288E-24	1.000000E-24
Cl	7.116513E+00	2.014581E-04	2.014000E-04
Cr	2.996352E+02	5.783475E-03	5.781807E-03
Cs	1.324650E-05	1.000288E-10	1.000000E-10
Cu	6.650220E-10	1.050303E-14	1.050000E-14
F	2.172842E+00	1.147831E-04	1.147500E-04
Fe	8.881407E-01	1.596058E-05	1.595598E-05
Gd	1.567289E-09	1.000288E-14	1.000000E-14
H	1.115156E+05	1.110370E+02	1.110050E+02
C	1.267583E-01	1.059166E-05	1.058861E-05
P	7.325643E+00	2.373660E-04	2.372976E-04
K	5.023671E+00	1.289526E-04	1.289154E-04
La	1.384452E-09	1.000288E-14	1.000000E-14
Li	6.917999E-07	1.000288E-10	1.000000E-10
Mg	2.003346E+00	8.272317E-05	8.269931E-05
Mn	3.250700E+01	5.938413E-04	5.936701E-04
Mo	2.179386E+02	2.279823E-03	2.279166E-03
N	1.982366E+00	1.420410E-04	1.420000E-04
Na	4.564859E+01	1.992781E-03	1.992206E-03
Nd	1.437620E-09	1.000288E-14	1.000000E-14
Ni	7.502088E+02	1.282876E-02	1.282506E-02
Pb	2.065134E-05	1.000288E-10	1.000000E-10
Pu	2.431914E-09	1.000288E-14	1.000000E-14
S	5.507393E+02	1.723725E-02	1.723228E-02
Si	2.804803E+00	1.002275E-04	1.001986E-04
Sm	1.498617E-09	1.000288E-14	1.000000E-14
Sr	8.732965E-06	1.000288E-10	1.000000E-10
Ti	7.804860E-06	1.635979E-10	1.635507E-10
U	2.372401E-09	1.000288E-14	1.000000E-14
V	4.768069E+00	9.393719E-05	9.391010E-05
Zn	6.517331E-06	1.000288E-10	1.000000E-10
Zr	9.092171E-16	1.000288E-20	1.000000E-20

Single ion activities and activity coefficients are here defined
with respect to the modified NBS pH scale

	pH	Eh	pe
modified NBS pH scale	2.0406	1.0983	1.8566E+01
rational pH scale	1.9641	1.1028	1.8643E+01

pHCl = 5.8287

Oxygen fugacity = 2.09991E-01
Log oxygen fugacity = -0.67780

```
    Activity of water =   0.99924
Log activity of water =  -0.00033

     Ionic strength =  5.880051E-02 molal
  Sum of molalities =    0.0494650553698
Osmotic coefficient =    0.85806

          Mass of solution =   1.003325 kg
          Mass of solutes  =   0.003613 kg
          Conc. of solutes  =   0.360111 per cent (w/w)

     Moles of solvent H2O =  5.54924E+01
     Mass of solvent H2O  =  9.99712E-01 kg
```

Species	Molality	Log molality	Log gamma	Log activity
H+	1.0861E-02	-1.9641	-0.0765	-2.0406
Ni++	1.0209E-02	-1.9910	-0.3466	-2.3376
SO4--	9.7761E-03	-2.0098	-0.3602	-2.3701
HSO4-	4.5008E-03	-2.3467	-0.0849	-2.4316
HCrO4-	4.0507E-03	-2.3925	-0.0849	-2.4774
NiSO4(aq)	2.6184E-03	-2.5820	0.0000	-2.5820
MoO4--	2.2798E-03	-2.6421	-0.3492	-2.9913
Na+	1.9397E-03	-2.7123	-0.0983	-2.8106
Cr2O7--	8.6348E-04	-3.0637	-0.3602	-3.4240
Mn++	4.1403E-04	-3.3830	-0.3466	-3.7295
O2(aq)	2.6166E-04	-3.5823	0.0062	-3.5761
Ca++	2.5991E-04	-3.5852	-0.3466	-3.9317
Cl-	2.0085E-04	-3.6971	-0.0909	-3.7881
MnSO4(aq)	1.7918E-04	-3.7467	0.0000	-3.7467
NO3-	1.4021E-04	-3.8532	-0.0909	-3.9441
K+	1.2506E-04	-3.9029	-0.1044	-4.0073
H3PO4(aq)	1.1922E-04	-3.9236	0.0000	-3.9236
H2PO4-	1.0769E-04	-3.9678	-0.0849	-4.0527
HF(aq)	1.0156E-04	-3.9933	0.0000	-3.9933
SiO2(aq)	1.0023E-04	-3.9990	0.0000	-3.9990
VO2+	7.7218E-05	-4.1123	-0.0983	-4.2106
CaSO4(aq)	6.4461E-05	-4.1907	0.0000	-4.1907
Mg++	5.3912E-05	-4.2683	-0.3139	-4.5822
NaSO4-	5.2994E-05	-4.2758	-0.0849	-4.3607
MgSO4(aq)	2.8802E-05	-4.5406	0.0000	-4.5406
B(OH)3(aq)	1.2392E-05	-4.9069	0.0000	-4.9069
VO2SO4-	1.2140E-05	-4.9158	-0.0849	-5.0007
CO2(aq)	1.0591E-05	-4.9751	0.0062	-4.9689
FeHPO4+	9.8580E-06	-5.0062	-0.0983	-5.1046
F-	9.2698E-06	-5.0329	-0.0878	-5.1207
Fe+++	3.9854E-06	-5.3995	-0.6676	-6.0671
Cr+++	3.9843E-06	-5.3997	-0.6676	-6.0672
KSO4-	3.8651E-06	-5.4128	-0.0849	-5.4977
VO(OH)3(aq)	3.3834E-06	-5.4706	0.0000	-5.4706
NiNO3+	1.6466E-06	-5.7834	-0.0983	-5.8817
H2CrO4(aq)	1.4542E-06	-5.8374	0.0000	-5.8374
FeOH++	1.4432E-06	-5.8407	-0.3761	-6.2168
VO2F(aq)	1.0439E-06	-5.9814	0.0000	-5.9814
AlF2+	8.5948E-07	-6.0658	-0.0983	-6.1641
AlF++	5.4043E-07	-6.2673	-0.3761	-6.6434
MnH2PO4+	4.6356E-07	-6.3339	-0.0983	-6.4322
FeSO4+	3.8796E-07	-6.4112	-0.0983	-6.5096
HCl(aq)	3.1718E-07	-6.4987	0.0000	-6.4987

CrO4--	2.6860E-07	-6.5709	-0.3602	-6.9311
FeF++	2.1123E-07	-6.6752	-0.3761	-7.0513
NiCl+	9.4729E-08	-7.0235	-0.0983	-7.1219
HPO3F-	9.2160E-08	-7.0355	-0.0849	-7.1203
CaNO3+	8.3647E-08	-7.0775	-0.0983	-7.1759
MnCl+	7.6216E-08	-7.1180	-0.0983	-7.2163
H2VO4-	7.2891E-08	-7.1373	-0.0849	-7.2222
AlF3(aq)	6.5336E-08	-7.1848	0.0000	-7.1848
CrO3Cl-	6.4829E-08	-7.1882	-0.0849	-7.2731
HNO3(aq)	5.1609E-08	-7.2873	0.0000	-7.2873
MnF+	4.7649E-08	-7.3219	-0.0983	-7.4203
VO2(OH)2-	4.5173E-08	-7.3451	-0.0849	-7.4300
MnNO3+	4.2136E-08	-7.3753	-0.0983	-7.4737
NaCl(aq)	4.2107E-08	-7.3756	0.0000	-7.3756
H2SO4(aq)	3.3711E-08	-7.4722	0.0000	-7.4722
Fe(SO4)2-	3.1001E-08	-7.5086	-0.0849	-7.5935
VO2HPO4-	3.0677E-08	-7.5132	-0.0849	-7.5981
H2F2(aq)	2.7877E-08	-7.5548	0.0000	-7.5548
Fe(OH)2+	2.7660E-08	-7.5581	-0.0983	-7.6565
KHSO4(aq)	2.4868E-08	-7.6044	0.0000	-7.6044
CrOH++	2.2345E-08	-7.6508	-0.3761	-8.0269
AlSO4+	1.6431E-08	-7.7843	-0.0983	-7.8827
Al+++	1.3962E-08	-7.8550	-0.6676	-8.5226
FeF2+	1.3790E-08	-7.8604	-0.0983	-7.9588
MgF+	5.5947E-09	-8.2522	-0.0983	-8.3506
CaF+	5.3401E-09	-8.2724	-0.0983	-8.3708
CaCl+	4.8188E-09	-8.3171	-0.0983	-8.4154
MgCl+	3.9189E-09	-8.4068	-0.0983	-8.5052
VO2F2-	2.7719E-09	-8.5572	-0.0849	-8.6421
FeNO3++	2.3167E-09	-8.6351	-0.3761	-9.0112
PO3F--	1.5171E-09	-8.8190	-0.3602	-9.1792
HPO4--	1.3892E-09	-8.8572	-0.3602	-9.2175
NaF(aq)	1.1778E-09	-8.9289	0.0000	-8.9289
HCO3-	6.4802E-10	-9.1884	-0.0849	-9.2733
KCl(aq)	5.1296E-10	-9.2899	0.0000	-9.2899
MnHPO4(aq)	4.2954E-10	-9.3670	0.0000	-9.3670
VO++	2.7648E-10	-9.5583	-0.3761	-9.9344
CrCl++	2.3541E-10	-9.6282	-0.3761	-10.0043
HF2-	2.2577E-10	-9.6463	-0.0849	-9.7312
Ti(OH)4(aq)	1.6360E-10	-9.7862	0.0000	-9.7862
AlF4-	1.5111E-10	-9.8207	-0.0849	-9.9056
VOSO4(aq)	1.4980E-10	-9.8245	0.0000	-9.8245
Mn+++	1.1765E-10	-9.9294	-0.8157	-10.7452
Cs+	1.0002E-10	-9.9999	-0.1077	-10.1076

--- Summary of Instantaneously Precipitated Solid Phases ---
(defined by derivatives)

--- Theoretical Rock Composition ---
g/kg

--- Oxide Percentages ---

Oxide Theoretical rock

Total = 0.0000

Phase/end-member d mol/d zi d grams/d zi d vol (cc)/d zi

fix	CO2(g)	0.0000E+00	0.0000E+00	0.0000E+00
fix	O2(g)	-7.1637E-04	-2.2923E-02	0.0000E+00

--- Summary of Solid Phases (E.S.+P.R.S.) ---

Phase/End-member		Log moles	Moles	Mass, g	Volume, cc
fix	CO2(g)	2.3010	2.0000E+02	8.8020E+03	0.0000E+00
fix	O2(g)	2.3010	2.0000E+02	6.3998E+03	0.0000E+00

	Mass, grams	Volume, cc
Created	1.520172E+04	0.000000E+00
Destroyed	5.171087E-06	0.000000E+00
Net	1.520172E+04	0.000000E+00

Warning-- these volume totals may be incomplete because of missing partial molar volume data in the data base

--- Summary of Pure Mineral Saturation States ---

Mineral	Log Q/K	Aff, kcal	State
AlF3	-6.676	-9.108	
Anglesite	-4.894	-6.677	
Anhydrite	-1.995	-2.722	
BaZrO3	69.237	94.458	ssatd
Barite	-2.765	-3.772	
Bassanite	-2.640	-3.602	
Boric_acid	-4.749	-6.478	
CaSO4:0.5H2O(beta)	-2.809	-3.832	
CaZrO3	129.701	176.949	ssatd
Celestite	-7.194	-9.815	
Chalcedony	-0.271	-0.370	
Coesite	-0.810	-1.105	
CrO2	-0.909	-1.241	
Cristobalite(alpha)	-0.550	-0.751	
Cristobalite(beta)	-0.994	-1.356	
Crocoite	-4.591	-6.263	
Epsomite	-4.992	-6.811	
Fe(OH)3	-5.602	-7.642	
FeF3	-2.191	-2.988	
Fluorite	-4.136	-5.643	
Goethite	-0.480	-0.655	
Gypsum	-1.820	-2.483	
Hematite	0.000	0.000	ssatd
Hexahydrite	-5.227	-7.132	
Ice	-0.139	-0.190	
Jarosite	-5.336	-7.280	
Kieserite	-6.686	-9.121	
Manganite	-4.459	-6.084	
Mercallite	-6.979	-9.521	
Mirabilite	-6.855	-9.352	
MnHPO4	0.000	0.000	ssatd
MnO2(gamma)	-1.518	-2.071	
Morenosite	-2.696	-3.678	
NiSO4:6H2O(alpha)	-2.702	-3.687	
Nontronite-Ca	-3.754	-5.121	

Nontronite-H	-2.820	-3.848	
Nontronite-K	-4.145	-5.655	
Nontronite-Mg	-3.823	-5.216	
Nontronite-Na	-4.088	-5.578	
Pentahydrite	-5.567	-7.595	
Pyrolusite	0.000	0.000	ssatd
Quartz	0.000	0.000	ssatd
Rutile	-0.140	-0.191	
Sellaite	-5.439	-7.421	
Shcherbinaite	-2.888	-3.940	
SiO2(am)	-1.285	-1.754	
SrZrO3	106.096	144.745	ssatd
Starkeyite	-5.954	-8.123	
Strengite	-1.902	-2.594	
Tridymite	-0.171	-0.234	
fix CO2(g)	0.000	0.000	satd
fix O2(g)	0.000	0.000	satd

--- Summary of Solid Solutions ---

--- Carbonate-Calcite ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Calcite	5.6706E-03	-2.2464	0.0000	-2.2464
Magnesite	4.5525E-04	-3.3417	0.0000	-3.3417
Rhodochrosite	9.9387E-01	-0.0027	0.0000	-0.0027
Siderite	1.2691E-08	-7.8965	0.0000	-7.8965
Smithsonite	5.2900E-08	-7.2765	0.0000	-7.2765
Strontianite	2.2203E-07	-6.6536	0.0000	-6.6536

Mineral	Log Q/K	Aff, kcal	State
Carbonate-Calcite	-10.767	-14.689	
Calcite	-10.767	-14.689	
Magnesite	-10.767	-14.689	
Rhodochrosite	-10.767	-14.689	
Siderite	-10.767	-14.689	
Smithsonite	-10.767	-14.689	
Strontianite	-10.767	-14.689	

--- Clinoptilolite-hy-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-hy-Ca	9.9769E-01	-0.0010	0.0000	-0.0010
Clinoptilolite-hy-Cs	6.6776E-23	-22.1754	0.0000	-22.1754
Clinoptilolite-hy-K	7.3177E-04	-3.1356	0.0000	-3.1356
Clinoptilolite-hy-Na	1.5783E-03	-2.8018	0.0000	-2.8018
Clinoptilolite-hy-Sr	5.6081E-12	-11.2512	0.0000	-11.2512

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-hy-ss	-59.134	-80.676	

Clinoptilolite-hy-Ca	-59.134	-80.676
Clinoptilolite-hy-Cs	-59.134	-80.676
Clinoptilolite-hy-K	-59.134	-80.676
Clinoptilolite-hy-Na	-59.134	-80.676
Clinoptilolite-hy-Sr	-59.134	-80.676

--- Clinoptilolite-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-Ca	7.8163E-01	-0.1070	-0.2632	-0.3702
Clinoptilolite-Cs	3.0397E-07	-6.5172	-16.0322	-22.5494
Clinoptilolite-K	9.6810E-02	-1.0141	-2.4946	-3.5087
Clinoptilolite-NH4	1.0307E-51	-50.9869	-125.4277	-176.4146
Clinoptilolite-Na	1.2112E-01	-0.9168	-2.2553	-3.1721
Clinoptilolite-Sr	4.3842E-04	-3.3581	-8.2609	-11.6191

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-ss	-58.766	-80.174	
Clinoptilolite-Ca	-58.766	-80.174	
Clinoptilolite-Cs	-58.766	-80.174	
Clinoptilolite-K	-58.766	-80.174	
Clinoptilolite-NH4	-58.766	-80.174	
Clinoptilolite-Na	-58.766	-80.174	
Clinoptilolite-Sr	-58.766	-80.174	

--- Saponite-tri ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Saponite-Ca	1.4821E-03	-2.8291	1.8955	-0.9336
Saponite-H	9.9737E-01	-0.0011	0.0008	-0.0004
Saponite-K	9.6730E-05	-4.0144	2.6897	-1.3248
Saponite-Mg	9.1180E-04	-3.0401	2.0369	-1.0032
Saponite-Na	1.4347E-04	-3.8432	2.5750	-1.2683

Mineral	Log Q/K	Aff, kcal	State
Saponite-tri	-42.305	-57.716	
Saponite-Ca	-42.305	-57.716	
Saponite-H	-42.305	-57.716	
Saponite-K	-42.305	-57.716	
Saponite-Mg	-42.305	-57.716	
Saponite-Na	-42.305	-57.716	

--- Smectite-di ---

Ideal solution

Component	x	Log x	Log lambda	Log activity

Beidellite-Ca	6.7138E-68	-67.1730	45.0059	-22.1671
Beidellite-K	4.3847E-69	-68.3581	45.7999	-22.5582
Beidellite-Mg	4.1302E-68	-67.3840	45.1473	-22.2367
Beidellite-Na	6.4991E-69	-68.1871	45.6854	-22.5018
Montmor-Ca	3.2472E-58	-57.4885	38.5173	-18.9712
Montmor-K	3.4635E-59	-58.4605	39.1685	-19.2920
Montmor-Mg	3.2465E-58	-57.4886	38.5173	-18.9712
Montmor-Na	5.0062E-59	-58.3005	39.0613	-19.2392
Nontronite-Ca	5.6252E-01	-0.2499	0.1674	-0.0825
Nontronite-K	3.6737E-02	-1.4349	0.9614	-0.4735
Nontronite-Mg	3.4629E-01	-0.4606	0.3086	-0.1520
Nontronite-Na	5.4453E-02	-1.2640	0.8469	-0.4171

Mineral	Log Q/K	Aff, kcal	State
Smectite-di	-3.671	-5.009	
Beidellite-Ca	-3.671	-5.009	
Beidellite-K	-3.671	-5.009	
Beidellite-Mg	-3.671	-5.009	
Beidellite-Na	-3.671	-5.009	
Montmor-Ca	-3.671	-5.009	
Montmor-K	-3.671	-5.009	
Montmor-Mg	-3.671	-5.009	
Montmor-Na	-3.671	-5.009	
Nontronite-Ca	-3.671	-5.009	
Nontronite-K	-3.671	-5.009	
Nontronite-Mg	-3.671	-5.009	
Nontronite-Na	-3.671	-5.009	

--- Lanthanide hydroxide ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
La(OH)3	1.2829E-05	-4.8918	0.0000	-4.8918
Ce(OH)3	3.7099E-15	-14.4306	0.0000	-14.4306
Nd(OH)3(c)	3.4718E-01	-0.4595	0.0000	-0.4595
Gd(OH)3	5.8550E-01	-0.2325	0.0000	-0.2325
Sm(OH)3	6.7307E-02	-1.1719	0.0000	-1.1719

Mineral	Log Q/K	Aff, kcal	State
Lanthanide hydroxide	-24.639	-33.614	
La(OH)3	-24.639	-33.614	
Ce(OH)3	-24.639	-33.614	
Nd(OH)3(c)	-24.639	-33.614	
Gd(OH)3	-24.639	-33.614	
Sm(OH)3	-24.639	-33.614	

--- Rhabdophane-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity

LaPO4:H2O	4.1201E-01	-0.3851	0.0000	-0.3851
CePO4:H2O	3.7677E-11	-10.4239	0.0000	-10.4239
NdPO4:H2O	2.2247E-01	-0.6527	0.0000	-0.6527
GdPO4:H2O	1.4936E-01	-0.8258	0.0000	-0.8258
SmPO4:H2O	2.1616E-01	-0.6652	0.0000	-0.6652

Mineral	Log Q/K	Aff, kcal	State
Rhabdophane-ss	-9.764	-13.321	
LaPO4:H2O	-9.764	-13.321	
CePO4:H2O	-9.764	-13.321	
NdPO4:H2O	-9.764	-13.321	
GdPO4:H2O	-9.764	-13.321	
SmPO4:H2O	-9.764	-13.321	

--- Lanthanide fluoride ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaF3:0.5H2O	5.7252E-01	-0.2422	0.0000	-0.2422
CeF3:0.5H2O	8.2978E-11	-10.0810	0.0000	-10.0810
NdF3:0.5H2O	3.8918E-01	-0.4099	0.0000	-0.4099
GdF3:0.5H2O	8.2628E-03	-2.0829	0.0000	-2.0829
SmF3:0.5H2O	3.0037E-02	-1.5223	0.0000	-1.5223

Mineral	Log Q/K	Aff, kcal	State
Lanthanide fluoride	-11.742	-16.019	
LaF3:0.5H2O	-11.742	-16.019	
CeF3:0.5H2O	-11.742	-16.019	
NdF3:0.5H2O	-11.742	-16.019	
GdF3:0.5H2O	-11.742	-16.019	
SmF3:0.5H2O	-11.742	-16.019	

--- Summary of Gases ---

Gas	Fugacity	Log fugacity
Al(g)	4.5191-201	-200.3450
B(g)	8.5659-204	-203.0672
BF3(g)	3.7704E-24	-23.4236
C(g)	3.0917-190	-189.5098
CH4(g)	3.5240-146	-145.4530
CO(g)	6.0395E-49	-48.2190
CO2(g)	3.1623E-04	-3.5000
Ca(g)	7.2343-164	-163.1406
Chlorine	3.5847E-17	-16.4456
Cs(g)	3.5180E-89	-88.4537
Cu(g)	7.5962E-93	-92.1194
Fluorine	1.4783E-72	-71.8302
H2(g)	6.1104E-42	-41.2139
H2O(g)	2.5958E-02	-1.5857
H2S(g)	2.2902-130	-129.6401
HCl(g)	7.3419E-13	-12.1342

```
HF(g)                       5.3213E-09     -8.2740
K(g)                        2.2170E-83    -82.6542
Li(g)                       7.8245-103   -102.1065
Mg(g)                       1.0897-141   -140.9627
Nitrogen                    2.6192E-08     -7.5818
NH3(g)                      1.8638E-63    -62.7296
NO(g)                       5.0961E-20    -19.2928
NO2(g)                      3.4845E-14    -13.4579
Na(g)                       1.8194E-81    -80.7401
O2(g)                       2.0999E-01     -0.6778
Pb(g)                       7.6390E-81    -80.1170
S2(g)                       3.1322-203   -202.5042
SO2(g)                      4.0579E-43    -42.3917
Si(g)                       4.2285-221   -220.3738
SiF4(g)                     3.5419E-18    -17.4508
Ti(g)                       2.7520-231   -230.5604
TiCl4(g)                    7.0557E-62    -61.1515
U(g)                        1.0090-304   -303.9961
U2Cl10(g)                   4.7266-202   -201.3254
U2Cl8(g)                    4.0879-216   -215.3885
U2F10(g)                    2.5036-120   -119.6014
UCl(g)                      6.6043-255   -254.1802
UCl2(g)                     1.2932-203   -202.8883
UCl3(g)                     5.5460-150   -149.2560
UCl4(g)                     1.2880-113   -112.8901
UCl5(g)                     1.5390-114   -113.8128
UCl6(g)                     3.4163-110   -109.4664
UF(g)                       1.0173-240   -239.9926
UF2(g)                      7.6064-195   -194.1188
UF3(g)                      1.3996-142   -141.8540
UF4(g)                      3.8015E-87    -86.4201
UF5(g)                      4.7292E-73    -72.3252
UF6(g)                      5.7932E-73    -72.2371
UO(g)                       7.9690-220   -219.0986
UO2(g)                      1.4764-135   -134.8308
UO2Cl2(g)                   2.3108E-71    -70.6362
UO2F2(g)                    9.8600E-61    -60.0061
UO3(g)                      1.0859E-82    -81.9642
UOF4(g)                     1.1328E-64    -63.9459
Zn(g)                       1.2815E-90    -89.8923



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Stepping to zi=  3.9811E-07, delzi=  1.4692E-07, nord= 2
  time =  3.8398E-03 d, dltime =  1.4170E-03 d
Steps completed =    15, iter =  1, ncorr = 0
Most rapidly changing is zvclg1(Ti(OH)4(aq)             ) =     -9.6974

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                    Reaction progress        =  3.98107170553481E-07
                    Log of reaction progress =      -6.4000000


                    Time =  3.318E+02 sec
                         =  3.840E-03 days
                         =  1.051E-05 years
```

```
Log sec =        2.521
Log days =      -2.416
Log years =     -4.978

Temperature    =     25.000 degrees C
total pressure =      1.013 bars
```

Step size is limited by the print requirement

--- Reactant Summary ---

Reactant	Moles	Delta moles	Mass, g	Delta Mass, g
Tuff	1.0000E+02	3.9811E-07	2.0586E+03	8.1956E-06

```
Current total mass =  2.05865E+03 grams
Delta total mass   =  8.19562E-06 grams
Delta total volume =      0.00000 cc
```

Reactant	Rel. Rate mol/mol	Rate mol/s	Rate mol/s/cm2
Tuff	1.0000E+00	1.2000E-09	2.5000E-15

Reactant	Affinity kcal/mol	Surface Area mol/s/cm2
Tuff	999.00000	4.8000E+05

Reactant	Rate Constants, mol/s/cm2	
Tuff		
	Forward	2.5000E-15

```
Affinity of the overall irreversible reaction=     0.000 kcal
Contributions from irreversible reactions
with no thermodynamic data are not included
```

--- Element Totals for the Aqueous Solution ---

Element	mg/kg soln.	Molality	Moles
O	8.865404E+05	5.561111E+01	5.559508E+01
Al	4.041874E-02	1.503429E-06	1.502995E-06
B	1.334829E-01	1.239157E-05	1.238800E-05
Ba	1.368719E-05	1.000288E-10	1.000000E-10
Ca	1.295705E+01	3.244644E-04	3.243708E-04
Ce	1.396507E-19	1.000288E-24	9.999999E-25
Cl	7.116513E+00	2.014581E-04	2.014000E-04
Cr	2.996352E+02	5.783475E-03	5.781807E-03
Cs	1.324650E-05	1.000288E-10	1.000000E-10

Cu	6.650220E-10	1.050303E-14	1.050000E-14
F	2.172842E+00	1.147831E-04	1.147500E-04
Fe	8.881604E-01	1.596094E-05	1.595633E-05
Gd	1.567289E-09	1.000288E-14	9.999999E-15
H	1.115156E+05	1.110370E+02	1.110050E+02
C	1.267583E-01	1.059166E-05	1.058861E-05
P	7.325643E+00	2.373660E-04	2.372976E-04
K	5.023795E+00	1.289558E-04	1.289186E-04
La	1.384452E-09	1.000288E-14	9.999999E-15
Li	6.917999E-07	1.000288E-10	1.000000E-10
Mg	2.003351E+00	8.272335E-05	8.269950E-05
Mn	3.250700E+01	5.938413E-04	5.936701E-04
Mo	2.179386E+02	2.279823E-03	2.279166E-03
N	1.982366E+00	1.420410E-04	1.420000E-04
Na	4.564867E+01	1.992784E-03	1.992210E-03
Nd	1.437620E-09	1.000288E-14	9.999999E-15
Ni	7.502088E+02	1.282876E-02	1.282506E-02
Pb	2.065134E-05	1.000288E-10	1.000000E-10
Pu	2.431914E-09	1.000288E-14	9.999998E-15
S	5.507393E+02	1.723725E-02	1.723228E-02
Si	2.805886E+00	1.002662E-04	1.002373E-04
Sm	1.498617E-09	1.000288E-14	9.999999E-15
Sr	8.732965E-06	1.000288E-10	1.000000E-10
Ti	9.578680E-06	2.007790E-10	2.007211E-10
U	2.372401E-09	1.000288E-14	9.999999E-15
V	4.768069E+00	9.393718E-05	9.391010E-05
Zn	6.517331E-06	1.000288E-10	1.000000E-10
Zr	9.092170E-16	1.000288E-20	1.000000E-20

Single ion activities and activity coefficients are here defined
with respect to the modified NBS pH scale

	pH	Eh	pe
modified NBS pH scale	2.0406	1.0983	1.8566E+01
rational pH scale	1.9641	1.1028	1.8643E+01

pHCl = 5.8287

Oxygen fugacity = 2.09991E-01
Log oxygen fugacity = -0.67780

Activity of water = 0.99924
Log activity of water = -0.00033

Ionic strength = 5.880052E-02 molal
Sum of molalities = 0.0494650799180
Osmotic coefficient = 0.85806

Mass of solution = 1.003325 kg
Mass of solutes = 0.003613 kg
Conc. of solutes = 0.360111 per cent (w/w)

Moles of solvent H2O = 5.54924E+01
Mass of solvent H2O = 9.99712E-01 kg

Species	Molality	Log molality	Log gamma	Log activity
H+	1.0861E-02	-1.9641	-0.0765	-2.0406
Ni++	1.0209E-02	-1.9910	-0.3466	-2.3376
SO4--	9.7761E-03	-2.0098	-0.3602	-2.3701
HSO4-	4.5008E-03	-2.3467	-0.0849	-2.4316
HCrO4-	4.0507E-03	-2.3925	-0.0849	-2.4774
NiSO4(aq)	2.6184E-03	-2.5820	0.0000	-2.5820
MoO4--	2.2798E-03	-2.6421	-0.3492	-2.9913
Na+	1.9397E-03	-2.7123	-0.0983	-2.8106
Cr2O7--	8.6348E-04	-3.0637	-0.3602	-3.4240
Mn++	4.1403E-04	-3.3830	-0.3466	-3.7295
O2(aq)	2.6166E-04	-3.5823	0.0062	-3.5761
Ca++	2.5991E-04	-3.5852	-0.3466	-3.9317
Cl-	2.0085E-04	-3.6971	-0.0909	-3.7881
MnSO4(aq)	1.7918E-04	-3.7467	0.0000	-3.7467
NO3-	1.4021E-04	-3.8532	-0.0909	-3.9441
K+	1.2507E-04	-3.9029	-0.1044	-4.0073
H3PO4(aq)	1.1922E-04	-3.9236	0.0000	-3.9236
H2PO4-	1.0769E-04	-3.9678	-0.0849	-4.0527
HF(aq)	1.0155E-04	-3.9933	0.0000	-3.9933
SiO2(aq)	1.0027E-04	-3.9988	0.0000	-3.9988
VO2+	7.7218E-05	-4.1123	-0.0983	-4.2106
CaSO4(aq)	6.4461E-05	-4.1907	0.0000	-4.1907
Mg++	5.3912E-05	-4.2683	-0.3139	-4.5822
NaSO4-	5.2994E-05	-4.2758	-0.0849	-4.3607
MgSO4(aq)	2.8802E-05	-4.5406	0.0000	-4.5406
B(OH)3(aq)	1.2392E-05	-4.9069	0.0000	-4.9069
VO2SO4-	1.2140E-05	-4.9158	-0.0849	-5.0007
CO2(aq)	1.0591E-05	-4.9751	0.0062	-4.9689
FeHPO4+	9.8582E-06	-5.0062	-0.0983	-5.1045
F-	9.2688E-06	-5.0330	-0.0878	-5.1208
Fe+++	3.9855E-06	-5.3995	-0.6676	-6.0671
Cr+++	3.9843E-06	-5.3997	-0.6676	-6.0672
KSO4-	3.8652E-06	-5.4128	-0.0849	-5.4977
VO(OH)3(aq)	3.3834E-06	-5.4706	0.0000	-5.4706
NiNO3+	1.6466E-06	-5.7834	-0.0983	-5.8817
H2CrO4(aq)	1.4542E-06	-5.8374	0.0000	-5.8374
FeOH++	1.4432E-06	-5.8407	-0.3761	-6.2168
VO2F(aq)	1.0437E-06	-5.9814	0.0000	-5.9814
AlF2+	8.6380E-07	-6.0636	-0.0983	-6.1619
AlF++	5.4320E-07	-6.2650	-0.3761	-6.6411
MnH2PO4+	4.6356E-07	-6.3339	-0.0983	-6.4322
FeSO4+	3.8797E-07	-6.4112	-0.0983	-6.5095
HCl(aq)	3.1718E-07	-6.4987	0.0000	-6.4987
CrO4--	2.6860E-07	-6.5709	-0.3602	-6.9311
FeF++	2.1122E-07	-6.6753	-0.3761	-7.0514
NiCl+	9.4729E-08	-7.0235	-0.0983	-7.1219
HPO3F-	9.2149E-08	-7.0355	-0.0849	-7.1204
CaNO3+	8.3647E-08	-7.0775	-0.0983	-7.1759
MnCl+	7.6216E-08	-7.1180	-0.0983	-7.2163
H2VO4-	7.2892E-08	-7.1373	-0.0849	-7.2222
AlF3(aq)	6.5657E-08	-7.1827	0.0000	-7.1827
CrO3Cl-	6.4829E-08	-7.1882	-0.0849	-7.2731
HNO3(aq)	5.1608E-08	-7.2873	0.0000	-7.2873
MnF+	4.7644E-08	-7.3220	-0.0983	-7.4203
VO2(OH)2-	4.5173E-08	-7.3451	-0.0849	-7.4300
MnNO3+	4.2136E-08	-7.3753	-0.0983	-7.4737
NaCl(aq)	4.2107E-08	-7.3756	0.0000	-7.3756
H2SO4(aq)	3.3710E-08	-7.4722	0.0000	-7.4722
Fe(SO4)2-	3.1001E-08	-7.5086	-0.0849	-7.5935
VO2HPO4-	3.0677E-08	-7.5132	-0.0849	-7.5981

H2F2(aq)	2.7870E-08	-7.5549	0.0000	-7.5549
Fe(OH)2+	2.7661E-08	-7.5581	-0.0983	-7.6565
KHSO4(aq)	2.4869E-08	-7.6043	0.0000	-7.6043
CrOH++	2.2345E-08	-7.6508	-0.3761	-8.0269
AlSO4+	1.6517E-08	-7.7821	-0.0983	-7.8804
Al+++	1.4035E-08	-7.8528	-0.6676	-8.5204
FeF2+	1.3787E-08	-7.8605	-0.0983	-7.9589
MgF+	5.5941E-09	-8.2523	-0.0983	-8.3506
CaF+	5.3395E-09	-8.2725	-0.0983	-8.3708
CaCl+	4.8188E-09	-8.3171	-0.0983	-8.4154
MgCl+	3.9189E-09	-8.4068	-0.0983	-8.5052
VO2F2-	2.7713E-09	-8.5573	-0.0849	-8.6422
FeNO3++	2.3167E-09	-8.6351	-0.3761	-9.0112
PO3F--	1.5169E-09	-8.8190	-0.3602	-9.1793
HPO4--	1.3892E-09	-8.8572	-0.3602	-9.2175
NaF(aq)	1.1776E-09	-8.9290	0.0000	-8.9290
HCO3-	6.4802E-10	-9.1884	-0.0849	-9.2733
KCl(aq)	5.1297E-10	-9.2899	0.0000	-9.2899
MnHPO4(aq)	4.2954E-10	-9.3670	0.0000	-9.3670
VO++	2.7648E-10	-9.5583	-0.3761	-9.9344
CrCl++	2.3541E-10	-9.6282	-0.3761	-10.0043
HF2-	2.2572E-10	-9.6464	-0.0849	-9.7313
Ti(OH)4(aq)	2.0078E-10	-9.6973	0.0000	-9.6973
AlF4-	1.5184E-10	-9.8186	-0.0849	-9.9035
VOSO4(aq)	1.4980E-10	-9.8245	0.0000	-9.8245
Mn+++	1.1765E-10	-9.9294	-0.8157	-10.7452
Cs+	1.0002E-10	-9.9999	-0.1077	-10.1076

--- Summary of Instantaneously Precipitated Solid Phases ---
(defined by derivatives)

--- Theoretical Rock Composition ---
g/kg

--- Oxide Percentages ---

Oxide Theoretical rock

Total = 0.0000

	Phase/end-member	d mol/d zi	d grams/d zi	d vol (cc)/d zi
fix	CO2(g)	0.0000E+00	0.0000E+00	0.0000E+00
fix	O2(g)	-7.0727E-04	-2.2632E-02	0.0000E+00

--- Summary of Solid Phases (E.S.+P.R.S.) ---

	Phase/End-member	Log moles	Moles	Mass, g	Volume, cc
fix	CO2(g)	2.3010	2.0000E+02	8.8020E+03	0.0000E+00
fix	O2(g)	2.3010	2.0000E+02	6.3998E+03	0.0000E+00

	Mass, grams	Volume, cc
Created	1.520172E+04	0.000000E+00
Destroyed	8.195620E-06	0.000000E+00
Net	1.520172E+04	0.000000E+00

Warning-- these volume totals may be incomplete because
of missing partial molar volume data in the data base

--- Summary of Pure Mineral Saturation States ---

Mineral	Log Q/K	Aff, kcal	State
AlF3	-6.674	-9.105	
Anglesite	-4.894	-6.677	
Anhydrite	-1.995	-2.722	
BaZrO3	69.237	94.459	ssatd
Barite	-2.765	-3.772	
Bassanite	-2.640	-3.602	
Boric_acid	-4.749	-6.478	
CaSO4:0.5H2O(beta)	-2.809	-3.832	
CaZrO3	129.701	176.949	ssatd
Celestite	-7.194	-9.815	
Chalcedony	-0.271	-0.369	
Coesite	-0.810	-1.104	
CrO2	-0.909	-1.241	
Cristobalite(alpha)	-0.550	-0.750	
Cristobalite(beta)	-0.994	-1.355	
Crocoite	-4.591	-6.263	
Epsomite	-4.992	-6.811	
Fe(OH)3	-5.602	-7.642	
FeF3	-2.191	-2.989	
Fluorite	-4.136	-5.643	
Goethite	-0.480	-0.655	
Gypsum	-1.820	-2.483	
Hematite	0.000	0.000	ssatd
Hexahydrite	-5.227	-7.132	
Ice	-0.139	-0.190	
Jarosite	-5.336	-7.280	
Kieserite	-6.686	-9.121	
Manganite	-4.459	-6.084	
Mercallite	-6.979	-9.521	
Mirabilite	-6.855	-9.352	
MnHPO4	0.000	0.000	ssatd
MnO2(gamma)	-1.518	-2.071	
Morenosite	-2.696	-3.678	
NiSO4:6H2O(alpha)	-2.702	-3.687	
Nontronite-Ca	-3.752	-5.119	
Nontronite-H	-2.819	-3.846	
Nontronite-K	-4.143	-5.653	
Nontronite-Mg	-3.822	-5.214	
Nontronite-Na	-4.087	-5.576	
Pentahydrite	-5.567	-7.595	
Pyrolusite	0.000	0.000	ssatd
Quartz	0.000	0.001	ssatd
Rutile	-0.051	-0.070	
Sellaite	-5.439	-7.421	
Shcherbinaite	-2.888	-3.940	
SiO2(am)	-1.285	-1.753	
SrZrO3	106.096	144.745	ssatd
Starkeyite	-5.954	-8.123	
Strengite	-1.902	-2.594	
Tridymite	-0.171	-0.233	
fix CO2(g)	0.000	0.000	satd
fix O2(g)	0.000	0.000	satd

--- Summary of Solid Solutions ---

--- Carbonate-Calcite ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Calcite	5.6706E-03	-2.2464	0.0000	-2.2464
Magnesite	4.5525E-04	-3.3417	0.0000	-3.3417
Rhodochrosite	9.9387E-01	-0.0027	0.0000	-0.0027
Siderite	1.2691E-08	-7.8965	0.0000	-7.8965
Smithsonite	5.2900E-08	-7.2765	0.0000	-7.2765
Strontianite	2.2203E-07	-6.6536	0.0000	-6.6536

Mineral	Log Q/K	Aff, kcal	State
Carbonate-Calcite	-10.767	-14.689	
Calcite	-10.767	-14.689	
Magnesite	-10.767	-14.689	
Rhodochrosite	-10.767	-14.689	
Siderite	-10.767	-14.689	
Smithsonite	-10.767	-14.689	
Strontianite	-10.767	-14.689	

--- Clinoptilolite-hy-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-hy-Ca	9.9769E-01	-0.0010	0.0000	-0.0010
Clinoptilolite-hy-Cs	6.6776E-23	-22.1754	0.0000	-22.1754
Clinoptilolite-hy-K	7.3183E-04	-3.1356	0.0000	-3.1356
Clinoptilolite-hy-Na	1.5783E-03	-2.8018	0.0000	-2.8018
Clinoptilolite-hy-Sr	5.6081E-12	-11.2512	0.0000	-11.2512

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-hy-ss	-59.124	-80.662	
Clinoptilolite-hy-Ca	-59.124	-80.662	
Clinoptilolite-hy-Cs	-59.124	-80.662	
Clinoptilolite-hy-K	-59.124	-80.662	
Clinoptilolite-hy-Na	-59.124	-80.662	
Clinoptilolite-hy-Sr	-59.124	-80.662	

--- Clinoptilolite-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-Ca	7.8163E-01	-0.1070	-0.2632	-0.3702
Clinoptilolite-Cs	3.0397E-07	-6.5172	-16.0322	-22.5494
Clinoptilolite-K	9.6812E-02	-1.0141	-2.4946	-3.5087

Clinoptilolite-NH4	1.0307E-51	-50.9869	-125.4277	-176.4146
Clinoptilolite-Na	1.2112E-01	-0.9168	-2.2553	-3.1721
Clinoptilolite-Sr	4.3842E-04	-3.3581	-8.2609	-11.6191

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-ss	-58.756	-80.160	
Clinoptilolite-Ca	-58.756	-80.160	
Clinoptilolite-Cs	-58.756	-80.160	
Clinoptilolite-K	-58.756	-80.160	
Clinoptilolite-NH4	-58.756	-80.160	
Clinoptilolite-Na	-58.756	-80.160	
Clinoptilolite-Sr	-58.756	-80.160	

--- Saponite-tri ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Saponite-Ca	1.4821E-03	-2.8291	1.8955	-0.9336
Saponite-H	9.9737E-01	-0.0011	0.0008	-0.0004
Saponite-K	9.6733E-05	-4.0144	2.6897	-1.3248
Saponite-Mg	9.1180E-04	-3.0401	2.0369	-1.0032
Saponite-Na	1.4348E-04	-3.8432	2.5750	-1.2683

Mineral	Log Q/K	Aff, kcal	State
Saponite-tri	-42.303	-57.714	
Saponite-Ca	-42.303	-57.714	
Saponite-H	-42.303	-57.714	
Saponite-K	-42.303	-57.714	
Saponite-Mg	-42.303	-57.714	
Saponite-Na	-42.303	-57.714	

--- Smectite-di ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Beidellite-Ca	6.9287E-68	-67.1593	44.9968	-22.1626
Beidellite-K	4.5252E-69	-68.3444	45.7907	-22.5536
Beidellite-Mg	4.2625E-68	-67.3703	45.1381	-22.2322
Beidellite-Na	6.7072E-69	-68.1735	45.6762	-22.4972
Montmor-Ca	3.3176E-58	-57.4792	38.5110	-18.9681
Montmor-K	3.5387E-59	-58.4512	39.1623	-19.2889
Montmor-Mg	3.3170E-58	-57.4793	38.5111	-18.9682
Montmor-Na	5.1148E-59	-58.2912	39.0551	-19.2361
Nontronite-Ca	5.6252E-01	-0.2499	0.1674	-0.0825
Nontronite-K	3.6738E-02	-1.4349	0.9614	-0.4735
Nontronite-Mg	3.4629E-01	-0.4606	0.3086	-0.1520
Nontronite-Na	5.4453E-02	-1.2640	0.8469	-0.4171

Mineral	Log Q/K	Aff, kcal	State

Smectite-di	-3.670	-5.007
Beidellite-Ca	-3.670	-5.007
Beidellite-K	-3.670	-5.007
Beidellite-Mg	-3.670	-5.007
Beidellite-Na	-3.670	-5.007
Montmor-Ca	-3.670	-5.007
Montmor-K	-3.670	-5.007
Montmor-Mg	-3.670	-5.007
Montmor-Na	-3.670	-5.007
Nontronite-Ca	-3.670	-5.007
Nontronite-K	-3.670	-5.007
Nontronite-Mg	-3.670	-5.007
Nontronite-Na	-3.670	-5.007

--- Lanthanide hydroxide ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
La(OH)3	1.2829E-05	-4.8918	0.0000	-4.8918
Ce(OH)3	3.7099E-15	-14.4306	0.0000	-14.4306
Nd(OH)3(c)	3.4718E-01	-0.4595	0.0000	-0.4595
Gd(OH)3	5.8550E-01	-0.2325	0.0000	-0.2325
Sm(OH)3	6.7307E-02	-1.1719	0.0000	-1.1719

Mineral	Log Q/K	Aff, kcal	State
Lanthanide hydroxide	-24.639	-33.614	
La(OH)3	-24.639	-33.614	
Ce(OH)3	-24.639	-33.614	
Nd(OH)3(c)	-24.639	-33.614	
Gd(OH)3	-24.639	-33.614	
Sm(OH)3	-24.639	-33.614	

--- Rhabdophane-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaPO4:H2O	4.1201E-01	-0.3851	0.0000	-0.3851
CePO4:H2O	3.7677E-11	-10.4239	0.0000	-10.4239
NdPO4:H2O	2.2247E-01	-0.6527	0.0000	-0.6527
GdPO4:H2O	1.4936E-01	-0.8258	0.0000	-0.8258
SmPO4:H2O	2.1616E-01	-0.6652	0.0000	-0.6652

Mineral	Log Q/K	Aff, kcal	State
Rhabdophane-ss	-9.764	-13.321	
LaPO4:H2O	-9.764	-13.321	
CePO4:H2O	-9.764	-13.321	
NdPO4:H2O	-9.764	-13.321	
GdPO4:H2O	-9.764	-13.321	
SmPO4:H2O	-9.764	-13.321	

--- Lanthanide fluoride ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaF3:0.5H2O	5.7252E-01	-0.2422	0.0000	-0.2422
CeF3:0.5H2O	8.2978E-11	-10.0810	0.0000	-10.0810
NdF3:0.5H2O	3.8918E-01	-0.4098	0.0000	-0.4098
GdF3:0.5H2O	8.2629E-03	-2.0829	0.0000	-2.0829
SmF3:0.5H2O	3.0037E-02	-1.5223	0.0000	-1.5223

Mineral	Log Q/K	Aff, kcal	State
Lanthanide fluoride	-11.742	-16.020	
LaF3:0.5H2O	-11.742	-16.020	
CeF3:0.5H2O	-11.742	-16.020	
NdF3:0.5H2O	-11.742	-16.020	
GdF3:0.5H2O	-11.742	-16.020	
SmF3:0.5H2O	-11.742	-16.020	

--- Summary of Gases ---

Gas	Fugacity	Log fugacity
Al(g)	4.5427-201	-200.3427
B(g)	8.5659-204	-203.0672
BF3(g)	3.7691E-24	-23.4238
C(g)	3.0917-190	-189.5098
CH4(g)	3.5240-146	-145.4530
CO(g)	6.0395E-49	-48.2190
CO2(g)	3.1623E-04	-3.5000
Ca(g)	7.2343-164	-163.1406
Chlorine	3.5847E-17	-16.4456
Cs(g)	3.5180E-89	-88.4537
Cu(g)	7.5963E-93	-92.1194
Fluorine	1.4780E-72	-71.8303
H2(g)	6.1104E-42	-41.2139
H2O(g)	2.5958E-02	-1.5857
H2S(g)	2.2902-130	-129.6401
HCl(g)	7.3419E-13	-12.1342
HF(g)	5.3207E-09	-8.2740
K(g)	2.2170E-83	-82.6542
Li(g)	7.8245-103	-102.1065
Mg(g)	1.0897-141	-140.9627
Nitrogen	2.6192E-08	-7.5818
NH3(g)	1.8638E-63	-62.7296
NO(g)	5.0961E-20	-19.2928
NO2(g)	3.4845E-14	-13.4579
Na(g)	1.8194E-81	-80.7401
O2(g)	2.0999E-01	-0.6778
Pb(g)	7.6390E-81	-80.1170
S2(g)	3.1322-203	-202.5042
SO2(g)	4.0579E-43	-42.3917
Si(g)	4.2301-221	-220.3736
SiF4(g)	3.5417E-18	-17.4508
Ti(g)	3.3774-231	-230.4714
TiCl4(g)	8.6592E-62	-61.0625

U(g)	1.0090-304	-303.9961
U2Cl10(g)	4.7267-202	-201.3254
U2Cl8(g)	4.0880-216	-215.3885
U2F10(g)	2.5009-120	-119.6019
UCl(g)	6.6044-255	-254.1802
UCl2(g)	1.2932-203	-202.8883
UCl3(g)	5.5460-150	-149.2560
UCl4(g)	1.2880-113	-112.8901
UCl5(g)	1.5390-114	-113.8128
UCl6(g)	3.4163-110	-109.4664
UF(g)	1.0172-240	-239.9926
UF2(g)	7.6048-195	-194.1189
UF3(g)	1.3992-142	-141.8541
UF4(g)	3.7998E-87	-86.4202
UF5(g)	4.7266E-73	-72.3254
UF6(g)	5.7895E-73	-72.2374
UO(g)	7.9691-220	-219.0986
UO2(g)	1.4764-135	-134.8308
UO2Cl2(g)	2.3108E-71	-70.6362
UO2F2(g)	9.8580E-61	-60.0062
UO3(g)	1.0860E-82	-81.9642
UOF4(g)	1.1323E-64	-63.9460
Zn(g)	1.2815E-90	-89.8923

- -

```
Stepping to zi=  5.0967E-07, delzi=  1.1156E-07, nord= 2
  time =  4.9158E-03 d, dltime =  1.0760E-03 d
iter =    1
      1 supersaturated pure minerals
      0 supersaturated solid solutions

               The most supersaturated phases           Affinity, kcal

                 1     482   Rutile                        0.00780716


  Attempted species assemblage no.   2

             1      1  H2O
             2      3  Al+++
             3      7  B(OH)3(aq)
             4      8  Ba++
             5     11  Ca++
             6     13  Ce+++
             7     14  Cl-
             8     16  CrO4--
             9     17  Cs+
            10     18  Cu++
            11     22  F-
            12     23  Fe++
            13     25  Gd+++
            14     26  H+
            15     28  HCO3-
            16     29  HPO4--
            17     35  K+
            18     37  La+++
            19     38  Li+
            20     40  Mg++
```

```
21     41  Mn++
22     42  MoO4--
23     43  NO3-
24     44  Na+
25     45  Nd+++
26     47  Ni++
27     49  Pb++
28     52  Pu++++
29     58  SO4--
30     62  SiO2(aq)
31     63  Sm+++
32     65  Sr++
33     69  Ti(OH)4(aq)
34     72  UO2++
35     73  VO++
36     78  Zn++
37     79  Zr(OH)2++
38     80  O2(g)
39    482  Rutile
40    689  fix     CO2(g)
41    690  fix     O2(g)

Steps completed =    16, iter = 13, ncorr = 0

- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -


                    Reaction progress        =  5.09668125270115E-07
                    Log of reaction progress =      -6.2927125



                    Time =  4.247E+02 sec
                         =  4.916E-03 days
                         =  1.346E-05 years

                    Log sec =        2.628
                    Log days =      -2.308
                    Log years =     -4.871

                    Temperature    =     25.000 degrees C
                    total pressure =      1.013 bars


Change in the product phase assemblage


                              --- Reactant Summary ---


    Reactant                   Moles     Delta moles    Mass, g    Delta Mass, g

 Tuff                       1.0000E+02   5.0967E-07   2.0586E+03   1.0492E-05


               Current total mass =  2.05865E+03 grams
               Delta total mass   =  1.04923E-05 grams
               Delta total volume =      0.00000 cc


    Reactant                Rel. Rate      Rate         Rate
                             mol/mol       mol/s      mol/s/cm2
```

```
Tuff                        1.0000E+00   1.2000E-09   2.5000E-15


   Reactant                   Affinity   Surface Area
                              kcal/mol     mol/s/cm2

Tuff                         999.00000   4.8000E+05


   Reactant                 Rate Constants, mol/s/cm2

Tuff
                  Forward    2.5000E-15


        Affinity of the overall irreversible reaction=     0.000 kcal
        Contributions from irreversible reactions
        with no thermodynamic data are not included


    --- Element Totals for the Aqueous Solution ---

 Element        mg/kg soln.          Molality             Moles

    O          8.865404E+05        5.561111E+01        5.559508E+01
    Al         4.057320E-02        1.509174E-06        1.508739E-06
    B          1.334829E-01        1.239157E-05        1.238800E-05
    Ba         1.368719E-05        1.000288E-10        1.000000E-10
    Ca         1.295706E+01        3.244646E-04        3.243710E-04
    Ce         1.396506E-19        1.000288E-24        9.999994E-25
    Cl         7.116513E+00        2.014581E-04        2.014000E-04
    Cr         2.996352E+02        5.783475E-03        5.781807E-03
    Cs         1.324650E-05        1.000288E-10        1.000000E-10
    Cu         6.650220E-10        1.050303E-14        1.050000E-14
    F          2.172842E+00        1.147831E-04        1.147500E-04
    Fe         8.881754E-01        1.596120E-05        1.595660E-05
    Gd         1.567289E-09        1.000288E-14        1.000000E-14
    H          1.115156E+05        1.110370E+02        1.110050E+02
    C          1.267583E-01        1.059166E-05        1.058861E-05
    P          7.325643E+00        2.373660E-04        2.372976E-04
    K          5.023888E+00        1.289582E-04        1.289210E-04
    La         1.384452E-09        1.000288E-14        1.000000E-14
    Li         6.917999E-07        1.000288E-10        1.000000E-10
    Mg         2.003354E+00        8.272349E-05        8.269964E-05
    Mn         3.250700E+01        5.938414E-04        5.936701E-04
    Mo         2.179386E+02        2.279823E-03        2.279166E-03
    N          1.982366E+00        1.420410E-04        1.420000E-04
    Na         4.564873E+01        1.992787E-03        1.992212E-03
    Nd         1.437620E-09        1.000288E-14        1.000000E-14
    Ni         7.502088E+02        1.282876E-02        1.282506E-02
    Pb         2.065134E-05        1.000288E-10        1.000000E-10
    Pu         2.431914E-09        1.000288E-14        1.000000E-14
    S          5.507393E+02        1.723725E-02        1.723228E-02
    Si         2.806709E+00        1.002956E-04        1.002667E-04
    Sm         1.498617E-09        1.000288E-14        1.000000E-14
    Sr         8.732965E-06        1.000288E-10        1.000000E-10
    Ti         1.078259E-05        2.260143E-10        2.259491E-10
    U          2.372401E-09        1.000288E-14        1.000000E-14
    V          4.768069E+00        9.393719E-05        9.391010E-05
    Zn         6.517331E-06        1.000288E-10        1.000000E-10
    Zr         9.092171E-16        1.000288E-20        1.000000E-20
```

Single ion activities and activity coefficients are here defined
with respect to the modified NBS pH scale

	pH	Eh	pe
modified NBS pH scale	2.0406	1.0983	1.8566E+01
rational pH scale	1.9641	1.1028	1.8643E+01

pHCl = 5.8287

Oxygen fugacity = 2.09991E-01
Log oxygen fugacity = -0.67780

Activity of water = 0.99924
Log activity of water = -0.00033

Ionic strength = 5.880052E-02 molal
Sum of molalities = 0.0494650999393
Osmotic coefficient = 0.85806

Mass of solution = 1.003325 kg
Mass of solutes = 0.003613 kg
Conc. of solutes = 0.360111 per cent (w/w)

Moles of solvent H2O = 5.54924E+01
Mass of solvent H2O = 9.99712E-01 kg

Species	Molality	Log molality	Log gamma	Log activity
H+	1.0861E-02	-1.9641	-0.0765	-2.0406
Ni++	1.0209E-02	-1.9910	-0.3466	-2.3376
SO4--	9.7761E-03	-2.0098	-0.3602	-2.3701
HSO4-	4.5008E-03	-2.3467	-0.0849	-2.4316
HCrO4-	4.0507E-03	-2.3925	-0.0849	-2.4774
NiSO4(aq)	2.6184E-03	-2.5820	0.0000	-2.5820
MoO4--	2.2798E-03	-2.6421	-0.3492	-2.9913
Na+	1.9397E-03	-2.7123	-0.0983	-2.8106
Cr2O7--	8.6348E-04	-3.0637	-0.3602	-3.4240
Mn++	4.1403E-04	-3.3830	-0.3466	-3.7295
O2(aq)	2.6166E-04	-3.5823	0.0062	-3.5761
Ca++	2.5991E-04	-3.5852	-0.3466	-3.9317
Cl-	2.0085E-04	-3.6971	-0.0909	-3.7881
MnSO4(aq)	1.7918E-04	-3.7467	0.0000	-3.7467
NO3-	1.4021E-04	-3.8532	-0.0909	-3.9441
K+	1.2507E-04	-3.9029	-0.1044	-4.0072
H3PO4(aq)	1.1922E-04	-3.9236	0.0000	-3.9236
H2PO4-	1.0769E-04	-3.9678	-0.0849	-4.0527
HF(aq)	1.0154E-04	-3.9934	0.0000	-3.9934
SiO2(aq)	1.0030E-04	-3.9987	0.0000	-3.9987
VO2+	7.7218E-05	-4.1123	-0.0983	-4.2106
CaSO4(aq)	6.4461E-05	-4.1907	0.0000	-4.1907
Mg++	5.3912E-05	-4.2683	-0.3139	-4.5822
NaSO4-	5.2995E-05	-4.2758	-0.0849	-4.3607
MgSO4(aq)	2.8802E-05	-4.5406	0.0000	-4.5406

B(OH)3(aq)	1.2392E-05	-4.9069	0.0000	-4.9069
VO2SO4-	1.2140E-05	-4.9158	-0.0849	-5.0007
CO2(aq)	1.0591E-05	-4.9751	0.0062	-4.9689
FeHPO4+	9.8584E-06	-5.0062	-0.0983	-5.1045
F-	9.2681E-06	-5.0330	-0.0878	-5.1208
Fe+++	3.9856E-06	-5.3995	-0.6676	-6.0671
Cr+++	3.9842E-06	-5.3997	-0.6676	-6.0672
KSO4-	3.8653E-06	-5.4128	-0.0849	-5.4977
VO(OH)3(aq)	3.3834E-06	-5.4706	0.0000	-5.4706
NiNO3+	1.6466E-06	-5.7834	-0.0983	-5.8817
H2CrO4(aq)	1.4542E-06	-5.8374	0.0000	-5.8374
FeOH++	1.4432E-06	-5.8407	-0.3761	-6.2168
VO2F(aq)	1.0437E-06	-5.9814	0.0000	-5.9814
AlF2+	8.6707E-07	-6.0619	-0.0983	-6.1603
AlF++	5.4531E-07	-6.2634	-0.3761	-6.6395
MnH2PO4+	4.6356E-07	-6.3339	-0.0983	-6.4322
FeSO4+	3.8798E-07	-6.4112	-0.0983	-6.5095
HCl(aq)	3.1718E-07	-6.4987	0.0000	-6.4987
CrO4--	2.6860E-07	-6.5709	-0.3602	-6.9311
FeF++	2.1120E-07	-6.6753	-0.3761	-7.0514
NiCl+	9.4729E-08	-7.0235	-0.0983	-7.1219
HPO3F-	9.2142E-08	-7.0355	-0.0849	-7.1204
CaNO3+	8.3647E-08	-7.0775	-0.0983	-7.1759
MnCl+	7.6216E-08	-7.1180	-0.0983	-7.2163
H2VO4-	7.2892E-08	-7.1373	-0.0849	-7.2222
AlF3(aq)	6.5901E-08	-7.1811	0.0000	-7.1811
CrO3Cl-	6.4829E-08	-7.1882	-0.0849	-7.2731
HNO3(aq)	5.1608E-08	-7.2873	0.0000	-7.2873
MnF+	4.7640E-08	-7.3220	-0.0983	-7.4204
VO2(OH)2-	4.5173E-08	-7.3451	-0.0849	-7.4300
MnNO3+	4.2136E-08	-7.3753	-0.0983	-7.4737
NaCl(aq)	4.2107E-08	-7.3756	0.0000	-7.3756
H2SO4(aq)	3.3710E-08	-7.4722	0.0000	-7.4722
Fe(SO4)2-	3.1002E-08	-7.5086	-0.0849	-7.5935
VO2HPO4-	3.0677E-08	-7.5132	-0.0849	-7.5981
H2F2(aq)	2.7866E-08	-7.5549	0.0000	-7.5549
Fe(OH)2+	2.7662E-08	-7.5581	-0.0983	-7.6565
KHSO4(aq)	2.4869E-08	-7.6043	0.0000	-7.6043
CrOH++	2.2345E-08	-7.6508	-0.3761	-8.0269
AlSO4+	1.6582E-08	-7.7804	-0.0983	-7.8787
Al+++	1.4091E-08	-7.8511	-0.6676	-8.5186
FeF2+	1.3785E-08	-7.8606	-0.0983	-7.9589
MgF+	5.5937E-09	-8.2523	-0.0983	-8.3506
CaF+	5.3391E-09	-8.2725	-0.0983	-8.3709
CaCl+	4.8188E-09	-8.3171	-0.0983	-8.4154
MgCl+	3.9189E-09	-8.4068	-0.0983	-8.5052
VO2F2-	2.7709E-09	-8.5574	-0.0849	-8.6423
FeNO3++	2.3168E-09	-8.6351	-0.3761	-9.0112
PO3F--	1.5168E-09	-8.8191	-0.3602	-9.1793
HPO4--	1.3892E-09	-8.8572	-0.3602	-9.2175
NaF(aq)	1.1776E-09	-8.9290	0.0000	-8.9290
HCO3-	6.4802E-10	-9.1884	-0.0849	-9.2733
KCl(aq)	5.1298E-10	-9.2899	0.0000	-9.2899
MnHPO4(aq)	4.2954E-10	-9.3670	0.0000	-9.3670
VO++	2.7648E-10	-9.5583	-0.3761	-9.9344
CrCl++	2.3541E-10	-9.6282	-0.3761	-10.0043
Ti(OH)4(aq)	2.2601E-10	-9.6459	0.0000	-9.6459
HF2-	2.2568E-10	-9.6465	-0.0849	-9.7314
AlF4-	1.5239E-10	-9.8171	-0.0849	-9.9019
VOSO4(aq)	1.4980E-10	-9.8245	0.0000	-9.8245
Mn+++	1.1765E-10	-9.9294	-0.8157	-10.7452
Cs+	1.0002E-10	-9.9999	-0.1077	-10.1076

--- Summary of Instantaneously Precipitated Solid Phases ---
(defined by derivatives)

--- Theoretical Rock Composition ---
g/kg

--- Oxide Percentages ---

Oxide Theoretical rock

Total = 0.0000

Phase/end-member		d mol/d zi	d grams/d zi	d vol (cc)/d zi
Rutile		0.0000E+00	0.0000E+00	0.0000E+00
fix	CO2(g)	-7.3331E-04	-3.2273E-02	0.0000E+00
fix	O2(g)	0.0000E+00	0.0000E+00	0.0000E+00

--- Summary of Solid Phases (E.S.+P.R.S.) ---

Phase/End-member		Log moles	Moles	Mass, g	Volume, cc
Rutile		-11.5233	2.9969E-12	2.3939E-10	5.6402E-11
fix	CO2(g)	2.3010	2.0000E+02	8.8020E+03	0.0000E+00
fix	O2(g)	2.3010	2.0000E+02	6.3998E+03	0.0000E+00

	Mass, grams	Volume, cc
Created	1.520172E+04	5.640245E-11
Destroyed	1.049227E-05	0.000000E+00
Net	1.520172E+04	5.640245E-11

Warning-- these volume totals may be incomplete because
of missing partial molar volume data in the data base

--- Summary of Pure Mineral Saturation States ---

Mineral	Log Q/K	Aff, kcal	State
AlF3	-6.672	-9.103	
Anglesite	-4.894	-6.677	
Anhydrite	-1.995	-2.722	
BaZrO3	69.237	94.459	ssatd
Barite	-2.765	-3.772	
Bassanite	-2.640	-3.602	
Boric_acid	-4.749	-6.478	
CaSO4:0.5H2O(beta)	-2.809	-3.832	
CaZrO3	129.701	176.949	ssatd
Celestite	-7.194	-9.815	
Chalcedony	-0.271	-0.369	
Coesite	-0.809	-1.104	
CrO2	-0.909	-1.241	
Cristobalite(alpha)	-0.550	-0.750	
Cristobalite(beta)	-0.993	-1.355	

Crocoite	-4.591	-6.263	
Epsomite	-4.992	-6.811	
Fe(OH)3	-5.602	-7.642	
FeF3	-2.191	-2.989	
Fluorite	-4.136	-5.643	
Goethite	-0.480	-0.655	
Gypsum	-1.820	-2.483	
Hematite	0.000	0.000	ssatd
Hexahydrite	-5.227	-7.132	
Ice	-0.139	-0.190	
Jarosite	-5.336	-7.280	
Kieserite	-6.686	-9.121	
Manganite	-4.459	-6.084	
Mercallite	-6.979	-9.521	
Mirabilite	-6.855	-9.352	
MnHPO4	0.000	0.000	ssatd
MnO2(gamma)	-1.518	-2.071	
Morenosite	-2.696	-3.678	
NiSO4:6H2O(alpha)	-2.702	-3.687	
Nontronite-Ca	-3.751	-5.118	
Nontronite-H	-2.818	-3.845	
Nontronite-K	-4.142	-5.651	
Nontronite-Mg	-3.821	-5.213	
Nontronite-Na	-4.086	-5.574	
Pentahydrite	-5.567	-7.595	
Pyrolusite	0.000	0.000	ssatd
Quartz	0.001	0.001	ssatd
Rutile	0.000	0.000	satd
Sellaite	-5.440	-7.421	
Shcherbinaite	-2.888	-3.940	
SiO2(am)	-1.285	-1.753	
SrZrO3	106.096	144.745	ssatd
Starkeyite	-5.954	-8.123	
Strengite	-1.902	-2.594	
Tridymite	-0.171	-0.233	
fix CO2(g)	0.000	0.000	satd
fix O2(g)	0.000	0.000	satd

--- Summary of Solid Solutions ---

--- Carbonate-Calcite ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Calcite	5.6706E-03	-2.2464	0.0000	-2.2464
Magnesite	4.5525E-04	-3.3417	0.0000	-3.3417
Rhodochrosite	9.9387E-01	-0.0027	0.0000	-0.0027
Siderite	1.2692E-08	-7.8965	0.0000	-7.8965
Smithsonite	5.2900E-08	-7.2765	0.0000	-7.2765
Strontianite	2.2203E-07	-6.6536	0.0000	-6.6536

Mineral	Log Q/K	Aff, kcal	State
Carbonate-Calcite	-10.767	-14.689	
Calcite	-10.767	-14.689	
Magnesite	-10.767	-14.689	
Rhodochrosite	-10.767	-14.689	
Siderite	-10.767	-14.689	
Smithsonite	-10.767	-14.689	

Strontianite	-10.767	-14.689

--- Clinoptilolite-hy-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-hy-Ca	9.9769E-01	-0.0010	0.0000	-0.0010
Clinoptilolite-hy-Cs	6.6776E-23	-22.1754	0.0000	-22.1754
Clinoptilolite-hy-K	7.3188E-04	-3.1356	0.0000	-3.1356
Clinoptilolite-hy-Na	1.5784E-03	-2.8018	0.0000	-2.8018
Clinoptilolite-hy-Sr	5.6080E-12	-11.2512	0.0000	-11.2512

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-hy-ss	-59.116	-80.651	
Clinoptilolite-hy-Ca	-59.116	-80.651	
Clinoptilolite-hy-Cs	-59.116	-80.651	
Clinoptilolite-hy-K	-59.116	-80.651	
Clinoptilolite-hy-Na	-59.116	-80.651	
Clinoptilolite-hy-Sr	-59.116	-80.651	

--- Clinoptilolite-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-Ca	7.8163E-01	-0.1070	-0.2632	-0.3702
Clinoptilolite-Cs	3.0397E-07	-6.5172	-16.0322	-22.5494
Clinoptilolite-K	9.6814E-02	-1.0141	-2.4946	-3.5087
Clinoptilolite-NH4	1.0307E-51	-50.9869	-125.4277	-176.4146
Clinoptilolite-Na	1.2112E-01	-0.9168	-2.2553	-3.1721
Clinoptilolite-Sr	4.3842E-04	-3.3581	-8.2609	-11.6191

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-ss	-58.748	-80.149	
Clinoptilolite-Ca	-58.748	-80.149	
Clinoptilolite-Cs	-58.748	-80.149	
Clinoptilolite-K	-58.748	-80.149	
Clinoptilolite-NH4	-58.748	-80.149	
Clinoptilolite-Na	-58.748	-80.149	
Clinoptilolite-Sr	-58.748	-80.149	

--- Saponite-tri ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Saponite-Ca	1.4822E-03	-2.8291	1.8955	-0.9336
Saponite-H	9.9737E-01	-0.0011	0.0008	-0.0004
Saponite-K	9.6735E-05	-4.0144	2.6897	-1.3248

Saponite-Mg	9.1180E-04	-3.0401	2.0369	-1.0032
Saponite-Na	1.4348E-04	-3.8432	2.5750	-1.2683

Mineral	Log Q/K	Aff, kcal	State
Saponite-tri	-42.302	-57.712	
Saponite-Ca	-42.302	-57.712	
Saponite-H	-42.302	-57.712	
Saponite-K	-42.302	-57.712	
Saponite-Mg	-42.302	-57.712	
Saponite-Na	-42.302	-57.712	

--- Smectite-di ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Beidellite-Ca	7.0958E-68	-67.1490	44.9898	-22.1592
Beidellite-K	4.6344E-69	-68.3340	45.7838	-22.5502
Beidellite-Mg	4.3653E-68	-67.3600	45.1312	-22.2288
Beidellite-Na	6.8689E-69	-68.1631	45.6693	-22.4938
Montmor-Ca	3.3719E-58	-57.4721	38.5063	-18.9658
Montmor-K	3.5966E-59	-58.4441	39.1576	-19.2866
Montmor-Mg	3.3712E-58	-57.4722	38.5064	-18.9658
Montmor-Na	5.1985E-59	-58.2841	39.0504	-19.2338
Nontronite-Ca	5.6252E-01	-0.2499	0.1674	-0.0825
Nontronite-K	3.6739E-02	-1.4349	0.9614	-0.4735
Nontronite-Mg	3.4629E-01	-0.4606	0.3086	-0.1520
Nontronite-Na	5.4453E-02	-1.2640	0.8469	-0.4171

Mineral	Log Q/K	Aff, kcal	State
Smectite-di	-3.669	-5.005	
Beidellite-Ca	-3.669	-5.005	
Beidellite-K	-3.669	-5.005	
Beidellite-Mg	-3.669	-5.005	
Beidellite-Na	-3.669	-5.005	
Montmor-Ca	-3.669	-5.005	
Montmor-K	-3.669	-5.005	
Montmor-Mg	-3.669	-5.005	
Montmor-Na	-3.669	-5.005	
Nontronite-Ca	-3.669	-5.005	
Nontronite-K	-3.669	-5.005	
Nontronite-Mg	-3.669	-5.005	
Nontronite-Na	-3.669	-5.005	

--- Lanthanide hydroxide ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
La(OH)3	1.2829E-05	-4.8918	0.0000	-4.8918
Ce(OH)3	3.7099E-15	-14.4306	0.0000	-14.4306
Nd(OH)3(c)	3.4718E-01	-0.4595	0.0000	-0.4595
Gd(OH)3	5.8550E-01	-0.2325	0.0000	-0.2325

Sm(OH)3	6.7307E-02	-1.1719	0.0000	-1.1719

Mineral	Log Q/K	Aff, kcal	State
Lanthanide hydroxide	-24.639	-33.614	
La(OH)3	-24.639	-33.614	
Ce(OH)3	-24.639	-33.614	
Nd(OH)3(c)	-24.639	-33.614	
Gd(OH)3	-24.639	-33.614	
Sm(OH)3	-24.639	-33.614	

--- Rhabdophane-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaPO4:H2O	4.1201E-01	-0.3851	0.0000	-0.3851
CePO4:H2O	3.7677E-11	-10.4239	0.0000	-10.4239
NdPO4:H2O	2.2247E-01	-0.6527	0.0000	-0.6527
GdPO4:H2O	1.4936E-01	-0.8258	0.0000	-0.8258
SmPO4:H2O	2.1616E-01	-0.6652	0.0000	-0.6652

Mineral	Log Q/K	Aff, kcal	State
Rhabdophane-ss	-9.764	-13.321	
LaPO4:H2O	-9.764	-13.321	
CePO4:H2O	-9.764	-13.321	
NdPO4:H2O	-9.764	-13.321	
GdPO4:H2O	-9.764	-13.321	
SmPO4:H2O	-9.764	-13.321	

--- Lanthanide fluoride ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaF3:0.5H2O	5.7252E-01	-0.2422	0.0000	-0.2422
CeF3:0.5H2O	8.2978E-11	-10.0810	0.0000	-10.0810
NdF3:0.5H2O	3.8918E-01	-0.4098	0.0000	-0.4098
GdF3:0.5H2O	8.2629E-03	-2.0829	0.0000	-2.0829
SmF3:0.5H2O	3.0037E-02	-1.5223	0.0000	-1.5223

Mineral	Log Q/K	Aff, kcal	State
Lanthanide fluoride	-11.742	-16.020	
LaF3:0.5H2O	-11.742	-16.020	
CeF3:0.5H2O	-11.742	-16.020	
NdF3:0.5H2O	-11.742	-16.020	
GdF3:0.5H2O	-11.742	-16.020	
SmF3:0.5H2O	-11.742	-16.020	

--- Summary of Gases ---

Gas	Fugacity	Log fugacity
Al(g)	4.5607-201	-200.3410
B(g)	8.5659-204	-203.0672
BF3(g)	3.7682E-24	-23.4239
C(g)	3.0917-190	-189.5098
CH4(g)	3.5240-146	-145.4530
CO(g)	6.0395E-49	-48.2190
CO2(g)	3.1623E-04	-3.5000
Ca(g)	7.2343-164	-163.1406
Chlorine	3.5846E-17	-16.4456
Cs(g)	3.5180E-89	-88.4537
Cu(g)	7.5963E-93	-92.1194
Fluorine	1.4778E-72	-71.8304
H2(g)	6.1104E-42	-41.2139
H2O(g)	2.5958E-02	-1.5857
H2S(g)	2.2901-130	-129.6401
HCl(g)	7.3419E-13	-12.1342
HF(g)	5.3203E-09	-8.2741
K(g)	2.2171E-83	-82.6542
Li(g)	7.8245-103	-102.1065
Mg(g)	1.0898-141	-140.9627
Nitrogen	2.6192E-08	-7.5818
NH3(g)	1.8638E-63	-62.7296
NO(g)	5.0961E-20	-19.2928
NO2(g)	3.4845E-14	-13.4579
Na(g)	1.8194E-81	-80.7401
O2(g)	2.0999E-01	-0.6778
Pb(g)	7.6390E-81	-80.1170
S2(g)	3.1321-203	-202.5042
SO2(g)	4.0578E-43	-42.3917
Si(g)	4.2314-221	-220.3735
SiF4(g)	3.5415E-18	-17.4508
Ti(g)	3.8019-231	-230.4200
TiCl4(g)	9.7475E-62	-61.0111
U(g)	1.0091-304	-303.9961
U2Cl10(g)	4.7267-202	-201.3254
U2Cl8(g)	4.0880-216	-215.3885
U2F10(g)	2.4989-120	-119.6023
UCl(g)	6.6045-255	-254.1802
UCl2(g)	1.2932-203	-202.8883
UCl3(g)	5.5461-150	-149.2560
UCl4(g)	1.2880-113	-112.8901
UCl5(g)	1.5390-114	-113.8128
UCl6(g)	3.4163-110	-109.4664
UF(g)	1.0171-240	-239.9926
UF2(g)	7.6036-195	-194.1190
UF3(g)	1.3988-142	-141.8542
UF4(g)	3.7986E-87	-86.4204
UF5(g)	4.7247E-73	-72.3256
UF6(g)	5.7866E-73	-72.2376
UO(g)	7.9692-220	-219.0986
UO2(g)	1.4764-135	-134.8308
UO2Cl2(g)	2.3108E-71	-70.6362
UO2F2(g)	9.8564E-61	-60.0063
UO3(g)	1.0860E-82	-81.9642
UOF4(g)	1.1319E-64	-63.9462
Zn(g)	1.2815E-90	-89.8923

```
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--- shifting e.s. solid(s) to the p.r.s. (shftz) ---

  not shifted -- Rutile
              - mass=  2.99694E-12

Stepping to zi=  5.1067E-07, delzi=  1.0000E-09, nord= 0
  time =  4.9254E-03 d, dltime =  9.6451E-06 d
Steps completed =    17, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Rutile                  ) =    -11.4881

Stepping to zi=  5.1167E-07, delzi=  1.0000E-09, nord= 0
  time =  4.9351E-03 d, dltime =  9.6451E-06 d
Steps completed =    18, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Rutile                  ) =    -11.4556

Stepping to zi=  5.1267E-07, delzi=  1.0000E-09, nord= 0
  time =  4.9447E-03 d, dltime =  9.6451E-06 d
Steps completed =    19, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Rutile                  ) =    -11.4253

Stepping to zi=  5.1550E-07, delzi=  2.8300E-09, nord= 1
  time =  4.9720E-03 d, dltime =  2.7296E-05 d
Steps completed =    20, iter =  6, ncorr = 0
Most rapidly changing is zvclg1(Rutile                  ) =    -11.3495

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                    Reaction progress        =  5.15498172926563E-07
                    Log of reaction progress =      -6.2877729



                    Time =  4.296E+02 sec
                         =  4.972E-03 days
                         =  1.361E-05 years

                    Log sec =        2.633
                    Log days =      -2.303
                    Log years =     -4.866

                    Temperature    =     25.000 degrees C
                    total pressure =      1.013 bars


Flow-through system print following a discontinuity


     --- Summary of Instantaneously Precipitated Solid Phases ---
                  (defined by derivatives)

     --- Theoretical Rock Composition ---
                   g/kg

      Ti     3.155378E+02

      --- Oxide Percentages ---

   Oxide   Theoretical rock
```

```
    Total =     0.0000

   Phase/end-member     d mol/d zi    d grams/d zi   d vol (cc)/d zi

Rutile                     2.5300E-04   2.0209E-02   4.7615E-03
fix     CO2(g)             0.0000E+00   0.0000E+00   0.0000E+00
fix     O2(g)             -5.1159E-04  -1.6370E-02   0.0000E+00


               --- Summary of Solid Phases (E.S.+P.R.S.) ---

   Phase/End-member        Log moles     Moles       Mass, g     Volume, cc

Rutile                      -11.3495   4.4719E-12   3.5721E-10   8.4162E-11
fix     CO2(g)                2.3010   2.0000E+02   8.8020E+03   0.0000E+00
fix     O2(g)                 2.3010   2.0000E+02   6.3998E+03   0.0000E+00


                           Mass, grams        Volume, cc

          Created         1.520172E+04       8.416199E-11
          Destroyed       0.000000E+00       0.000000E+00
          Net             1.520172E+04       8.416199E-11

         Warning-- these volume totals may be incomplete because
         of missing partial molar volume data in the data base




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Stepping to zi=  5.4380E-07, delzi=  2.8300E-08, nord= 2
  time =  5.2450E-03 d, dltime =  2.7296E-04 d
Steps completed =    21, iter =  6, ncorr = 0
Most rapidly changing is zvclg1(Rutile                  ) =    -10.9343

Stepping to zi=  6.3096E-07, delzi=  8.7159E-08, nord= 2
  time =  6.0856E-03 d, dltime =  8.4065E-04 d
Steps completed =    22, iter =  7, ncorr = 0
Most rapidly changing is zvclg1(Rutile                  ) =    -10.4726

- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -


                     Reaction progress        =  6.30957344480167E-07
                     Log of reaction progress =      -6.2000000



                     Time =  5.258E+02 sec
                          =  6.086E-03 days
                          =  1.666E-05 years

                     Log sec =        2.721
                     Log days =      -2.216
                     Log years =     -4.778

                     Temperature    =     25.000 degrees C
```

total pressure = 1.013 bars

Step size is limited by the print requirement

--- Reactant Summary ---

Reactant	Moles	Delta moles	Mass, g	Delta Mass, g
Tuff	1.0000E+02	6.3096E-07	2.0586E+03	1.2989E-05

Current total mass = 2.05865E+03 grams
Delta total mass = 1.29892E-05 grams
Delta total volume = 0.00000 cc

Reactant	Rel. Rate mol/mol	Rate mol/s	Rate mol/s/cm2
Tuff	1.0000E+00	1.2000E-09	2.5000E-15

Reactant	Affinity kcal/mol	Surface Area mol/s/cm2
Tuff	999.00000	4.8000E+05

Reactant	Rate Constants, mol/s/cm2	
Tuff		
	Forward	2.5000E-15

Affinity of the overall irreversible reaction= 0.000 kcal
Contributions from irreversible reactions
with no thermodynamic data are not included

--- Element Totals for the Aqueous Solution ---

Element	mg/kg soln.	Molality	Moles
O	8.865404E+05	5.561111E+01	5.559508E+01
Al	4.074112E-02	1.515420E-06	1.514983E-06
B	1.334829E-01	1.239157E-05	1.238800E-05
Ba	1.368719E-05	1.000288E-10	1.000000E-10
Ca	1.295707E+01	3.244648E-04	3.243713E-04
Ce	1.396506E-19	1.000288E-24	9.999994E-25
Cl	7.116513E+00	2.014581E-04	2.014000E-04
Cr	2.996352E+02	5.783475E-03	5.781807E-03
Cs	1.324650E-05	1.000288E-10	1.000000E-10
Cu	6.650220E-10	1.050303E-14	1.050000E-14
F	2.172842E+00	1.147831E-04	1.147500E-04
Fe	8.881917E-01	1.596150E-05	1.595690E-05
Gd	1.567289E-09	1.000288E-14	1.000000E-14
H	1.115156E+05	1.110370E+02	1.110050E+02
C	1.267583E-01	1.059166E-05	1.058861E-05

P	7.325643E+00	2.373661E-04	2.372976E-04
K	5.023990E+00	1.289608E-04	1.289236E-04
La	1.384452E-09	1.000288E-14	1.000000E-14
Li	6.917999E-07	1.000288E-10	1.000000E-10
Mg	2.003358E+00	8.272364E-05	8.269979E-05
Mn	3.250700E+01	5.938414E-04	5.936702E-04
Mo	2.179386E+02	2.279823E-03	2.279166E-03
N	1.982366E+00	1.420410E-04	1.420000E-04
Na	4.564879E+01	1.992790E-03	1.992215E-03
Nd	1.437620E-09	1.000288E-14	1.000000E-14
Ni	7.502088E+02	1.282876E-02	1.282506E-02
Pb	2.065134E-05	1.000288E-10	1.000000E-10
Pu	2.431914E-09	1.000288E-14	1.000000E-14
S	5.507393E+02	1.723725E-02	1.723228E-02
Si	2.807604E+00	1.003276E-04	1.002987E-04
Sm	1.498617E-09	1.000288E-14	1.000000E-14
Sr	8.732965E-06	1.000288E-10	1.000000E-10
Ti	1.078259E-05	2.260143E-10	2.259491E-10
U	2.372401E-09	1.000288E-14	1.000000E-14
V	4.768069E+00	9.393719E-05	9.391010E-05
Zn	6.517331E-06	1.000288E-10	1.000000E-10
Zr	9.092171E-16	1.000288E-20	1.000000E-20

Single ion activities and activity coefficients are here defined
with respect to the modified NBS pH scale

	pH	Eh	pe
modified NBS pH scale	2.0406	1.0983	1.8566E+01
rational pH scale	1.9641	1.1028	1.8643E+01

pHCl = 5.8287

Oxygen fugacity = 2.09991E-01
Log oxygen fugacity = -0.67780

Activity of water = 0.99924
Log activity of water = -0.00033

Ionic strength = 5.880053E-02 molal
Sum of molalities = 0.0494651208222
Osmotic coefficient = 0.85806

Mass of solution = 1.003325 kg
Mass of solutes = 0.003613 kg
Conc. of solutes = 0.360111 per cent (w/w)

Moles of solvent H2O = 5.54924E+01
Mass of solvent H2O = 9.99712E-01 kg

Species	Molality	Log molality	Log gamma	Log activity
H+	1.0861E-02	-1.9641	-0.0765	-2.0406
Ni++	1.0209E-02	-1.9910	-0.3466	-2.3376
SO4--	9.7761E-03	-2.0098	-0.3602	-2.3701

HSO4-	4.5008E-03	-2.3467	-0.0849	-2.4316
HCrO4-	4.0507E-03	-2.3925	-0.0849	-2.4774
NiSO4(aq)	2.6184E-03	-2.5820	0.0000	-2.5820
MoO4--	2.2798E-03	-2.6421	-0.3492	-2.9913
Na+	1.9398E-03	-2.7123	-0.0983	-2.8106
Cr2O7--	8.6348E-04	-3.0637	-0.3602	-3.4240
Mn++	4.1403E-04	-3.3830	-0.3466	-3.7295
O2(aq)	2.6166E-04	-3.5823	0.0062	-3.5761
Ca++	2.5991E-04	-3.5852	-0.3466	-3.9317
Cl-	2.0085E-04	-3.6971	-0.0909	-3.7881
MnSO4(aq)	1.7918E-04	-3.7467	0.0000	-3.7467
NO3-	1.4021E-04	-3.8532	-0.0909	-3.9441
K+	1.2507E-04	-3.9028	-0.1044	-4.0072
H3PO4(aq)	1.1922E-04	-3.9236	0.0000	-3.9236
H2PO4-	1.0769E-04	-3.9678	-0.0849	-4.0527
HF(aq)	1.0153E-04	-3.9934	0.0000	-3.9934
SiO2(aq)	1.0033E-04	-3.9986	0.0000	-3.9986
VO2+	7.7219E-05	-4.1123	-0.0983	-4.2106
CaSO4(aq)	6.4461E-05	-4.1907	0.0000	-4.1907
Mg++	5.3912E-05	-4.2683	-0.3139	-4.5822
NaSO4-	5.2995E-05	-4.2758	-0.0849	-4.3607
MgSO4(aq)	2.8802E-05	-4.5406	0.0000	-4.5406
B(OH)3(aq)	1.2392E-05	-4.9069	0.0000	-4.9069
VO2SO4-	1.2140E-05	-4.9158	-0.0849	-5.0007
CO2(aq)	1.0591E-05	-4.9751	0.0062	-4.9689
FeHPO4+	9.8586E-06	-5.0062	-0.0983	-5.1045
F-	9.2672E-06	-5.0330	-0.0878	-5.1209
Fe+++	3.9857E-06	-5.3995	-0.6676	-6.0671
Cr+++	3.9842E-06	-5.3997	-0.6676	-6.0672
KSO4-	3.8654E-06	-5.4128	-0.0849	-5.4977
VO(OH)3(aq)	3.3834E-06	-5.4706	0.0000	-5.4706
NiNO3+	1.6466E-06	-5.7834	-0.0983	-5.8817
H2CrO4(aq)	1.4541E-06	-5.8374	0.0000	-5.8374
FeOH++	1.4432E-06	-5.8407	-0.3761	-6.2168
VO2F(aq)	1.0436E-06	-5.9815	0.0000	-5.9815
AlF2+	8.7063E-07	-6.0602	-0.0983	-6.1585
AlF++	5.4760E-07	-6.2615	-0.3761	-6.6376
MnH2PO4+	4.6356E-07	-6.3339	-0.0983	-6.4322
FeSO4+	3.8798E-07	-6.4112	-0.0983	-6.5095
HCl(aq)	3.1718E-07	-6.4987	0.0000	-6.4987
CrO4--	2.6860E-07	-6.5709	-0.3602	-6.9311
FeF++	2.1119E-07	-6.6753	-0.3761	-7.0514
NiCl+	9.4729E-08	-7.0235	-0.0983	-7.1219
HPO3F-	9.2133E-08	-7.0356	-0.0849	-7.1205
CaNO3+	8.3647E-08	-7.0775	-0.0983	-7.1759
MnCl+	7.6216E-08	-7.1180	-0.0983	-7.2163
H2VO4-	7.2892E-08	-7.1373	-0.0849	-7.2222
AlF3(aq)	6.6165E-08	-7.1794	0.0000	-7.1794
CrO3Cl-	6.4829E-08	-7.1882	-0.0849	-7.2731
HNO3(aq)	5.1608E-08	-7.2873	0.0000	-7.2873
MnF+	4.7636E-08	-7.3221	-0.0983	-7.4204
VO2(OH)2-	4.5173E-08	-7.3451	-0.0849	-7.4300
MnNO3+	4.2136E-08	-7.3753	-0.0983	-7.4737
NaCl(aq)	4.2107E-08	-7.3756	0.0000	-7.3756
H2SO4(aq)	3.3710E-08	-7.4722	0.0000	-7.4722
Fe(SO4)2-	3.1003E-08	-7.5086	-0.0849	-7.5935
VO2HPO4-	3.0677E-08	-7.5132	-0.0849	-7.5981
H2F2(aq)	2.7861E-08	-7.5550	0.0000	-7.5550
Fe(OH)2+	2.7662E-08	-7.5581	-0.0983	-7.6565
KHSO4(aq)	2.4869E-08	-7.6043	0.0000	-7.6043
CrOH++	2.2345E-08	-7.6508	-0.3761	-8.0269
AlSO4+	1.6653E-08	-7.7785	-0.0983	-7.8768
Al+++	1.4151E-08	-7.8492	-0.6676	-8.5168

FeF2+	1.3783E-08	-7.8607	-0.0983	-7.9590
MgF+	5.5932E-09	-8.2523	-0.0983	-8.3507
CaF+	5.3386E-09	-8.2726	-0.0983	-8.3709
CaCl+	4.8188E-09	-8.3171	-0.0983	-8.4154
MgCl+	3.9189E-09	-8.4068	-0.0983	-8.5052
VO2F2-	2.7704E-09	-8.5575	-0.0849	-8.6423
FeNO3++	2.3168E-09	-8.6351	-0.3761	-9.0112
PO3F--	1.5167E-09	-8.8191	-0.3602	-9.1793
HPO4--	1.3892E-09	-8.8572	-0.3602	-9.2175
NaF(aq)	1.1774E-09	-8.9291	0.0000	-8.9291
HCO3-	6.4802E-10	-9.1884	-0.0849	-9.2733
KCl(aq)	5.1299E-10	-9.2899	0.0000	-9.2899
MnHPO4(aq)	4.2954E-10	-9.3670	0.0000	-9.3670
VO++	2.7648E-10	-9.5583	-0.3761	-9.9344
CrCl++	2.3541E-10	-9.6282	-0.3761	-10.0043
Ti(OH)4(aq)	2.2601E-10	-9.6459	0.0000	-9.6459
HF2-	2.2564E-10	-9.6466	-0.0849	-9.7315
AlF4-	1.5299E-10	-9.8153	-0.0849	-9.9002
VOSO4(aq)	1.4980E-10	-9.8245	0.0000	-9.8245
Mn+++	1.1765E-10	-9.9294	-0.8157	-10.7452
Cs+	1.0002E-10	-9.9999	-0.1077	-10.1076

--- Summary of Instantaneously Precipitated Solid Phases ---
(defined by derivatives)

--- Theoretical Rock Composition ---
g/kg

O	3.441534E+01
Ti	6.558466E+01

--- Oxide Percentages ---

Oxide Theoretical rock

Total = 0.0000

Phase/end-member		d mol/d zi	d grams/d zi	d vol (cc)/d zi
Rutile		2.5300E-04	2.0209E-02	4.7615E-03
fix	CO2(g)	0.0000E+00	0.0000E+00	0.0000E+00
fix	O2(g)	-5.4349E-05	-1.7391E-03	0.0000E+00

--- Summary of Solid Phases (E.S.+P.R.S.) ---

Phase/End-member		Log moles	Moles	Mass, g	Volume, cc
Rutile		-10.4726	3.3683E-11	2.6906E-09	6.3392E-10
fix	CO2(g)	2.3010	2.0000E+02	8.8020E+03	0.0000E+00
fix	O2(g)	2.3010	2.0000E+02	6.3998E+03	0.0000E+00

	Mass, grams	Volume, cc
Created	1.520172E+04	6.339162E-10
Destroyed	1.298918E-05	0.000000E+00
Net	1.520172E+04	6.339162E-10

Warning-- these volume totals may be incomplete because

of missing partial molar volume data in the data base

--- Summary of Pure Mineral Saturation States ---

Mineral	Log Q/K	Aff, kcal	State
AlF3	-6.670	-9.100	
Anglesite	-4.894	-6.677	
Anhydrite	-1.995	-2.722	
BaZrO3	69.237	94.459	ssatd
Barite	-2.765	-3.772	
Bassanite	-2.640	-3.602	
Boric_acid	-4.749	-6.478	
CaSO4:0.5H2O(beta)	-2.809	-3.832	
CaZrO3	129.701	176.949	ssatd
Celestite	-7.194	-9.815	
Chalcedony	-0.270	-0.369	
Coesite	-0.809	-1.104	
CrO2	-0.909	-1.241	
Cristobalite(alpha)	-0.550	-0.750	
Cristobalite(beta)	-0.993	-1.355	
Crocoite	-4.591	-6.263	
Epsomite	-4.992	-6.811	
Fe(OH)3	-5.602	-7.642	
FeF3	-2.191	-2.989	
Fluorite	-4.136	-5.643	
Goethite	-0.480	-0.655	
Gypsum	-1.820	-2.483	
Hematite	0.000	0.000	ssatd
Hexahydrite	-5.227	-7.132	
Ice	-0.139	-0.190	
Jarosite	-5.336	-7.280	
Kieserite	-6.686	-9.121	
Manganite	-4.459	-6.084	
Mercallite	-6.979	-9.521	
Mirabilite	-6.855	-9.352	
MnHPO4	0.000	0.000	ssatd
MnO2(gamma)	-1.518	-2.071	
Morenosite	-2.696	-3.678	
NiSO4:6H2O(alpha)	-2.702	-3.687	
Nontronite-Ca	-3.750	-5.116	
Nontronite-H	-2.817	-3.843	
Nontronite-K	-4.141	-5.650	
Nontronite-Mg	-3.820	-5.211	
Nontronite-Na	-4.085	-5.573	
Pentahydrite	-5.567	-7.595	
Pyrolusite	0.000	0.000	ssatd
Quartz	0.001	0.001	ssatd
Rutile	0.000	0.000	satd
Sellaite	-5.440	-7.421	
Shcherbinaite	-2.888	-3.940	
SiO2(am)	-1.285	-1.753	
SrZrO3	106.096	144.745	ssatd
Starkeyite	-5.954	-8.123	
Strengite	-1.902	-2.594	
Tridymite	-0.171	-0.233	
fix CO2(g)	0.000	0.000	satd
fix O2(g)	0.000	0.000	satd

--- Summary of Solid Solutions ---

--- Carbonate-Calcite ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Calcite	5.6706E-03	-2.2464	0.0000	-2.2464
Magnesite	4.5526E-04	-3.3417	0.0000	-3.3417
Rhodochrosite	9.9387E-01	-0.0027	0.0000	-0.0027
Siderite	1.2692E-08	-7.8965	0.0000	-7.8965
Smithsonite	5.2900E-08	-7.2765	0.0000	-7.2765
Strontianite	2.2203E-07	-6.6536	0.0000	-6.6536

Mineral	Log Q/K	Aff, kcal	State
Carbonate-Calcite	-10.767	-14.689	
Calcite	-10.767	-14.689	
Magnesite	-10.767	-14.689	
Rhodochrosite	-10.767	-14.689	
Siderite	-10.767	-14.689	
Smithsonite	-10.767	-14.689	
Strontianite	-10.767	-14.689	

--- Clinoptilolite-hy-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-hy-Ca	9.9769E-01	-0.0010	0.0000	-0.0010
Clinoptilolite-hy-Cs	6.6776E-23	-22.1754	0.0000	-22.1754
Clinoptilolite-hy-K	7.3193E-04	-3.1355	0.0000	-3.1355
Clinoptilolite-hy-Na	1.5784E-03	-2.8018	0.0000	-2.8018
Clinoptilolite-hy-Sr	5.6080E-12	-11.2512	0.0000	-11.2512

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-hy-ss	-59.108	-80.640	
Clinoptilolite-hy-Ca	-59.108	-80.640	
Clinoptilolite-hy-Cs	-59.108	-80.640	
Clinoptilolite-hy-K	-59.108	-80.640	
Clinoptilolite-hy-Na	-59.108	-80.640	
Clinoptilolite-hy-Sr	-59.108	-80.640	

--- Clinoptilolite-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-Ca	7.8163E-01	-0.1070	-0.2632	-0.3702
Clinoptilolite-Cs	3.0397E-07	-6.5172	-16.0322	-22.5494
Clinoptilolite-K	9.6816E-02	-1.0141	-2.4946	-3.5086
Clinoptilolite-NH4	1.0307E-51	-50.9869	-125.4277	-176.4146
Clinoptilolite-Na	1.2112E-01	-0.9168	-2.2553	-3.1721

Clinoptilolite-Sr	4.3842E-04	-3.3581	-8.2610	-11.6191

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-ss	-58.740	-80.138	
Clinoptilolite-Ca	-58.740	-80.138	
Clinoptilolite-Cs	-58.740	-80.138	
Clinoptilolite-K	-58.740	-80.138	
Clinoptilolite-NH4	-58.740	-80.138	
Clinoptilolite-Na	-58.740	-80.138	
Clinoptilolite-Sr	-58.740	-80.138	

--- Saponite-tri ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Saponite-Ca	1.4822E-03	-2.8291	1.8955	-0.9336
Saponite-H	9.9737E-01	-0.0011	0.0008	-0.0004
Saponite-K	9.6737E-05	-4.0144	2.6897	-1.3248
Saponite-Mg	9.1180E-04	-3.0401	2.0369	-1.0032
Saponite-Na	1.4348E-04	-3.8432	2.5750	-1.2683

Mineral	Log Q/K	Aff, kcal	State
Saponite-tri	-42.301	-57.711	
Saponite-Ca	-42.301	-57.711	
Saponite-H	-42.301	-57.711	
Saponite-K	-42.301	-57.711	
Saponite-Mg	-42.301	-57.711	
Saponite-Na	-42.301	-57.711	

--- Smectite-di ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Beidellite-Ca	7.2814E-68	-67.1378	44.9823	-22.1555
Beidellite-K	4.7557E-69	-68.3228	45.7763	-22.5465
Beidellite-Mg	4.4794E-68	-67.3488	45.1237	-22.2251
Beidellite-Na	7.0485E-69	-68.1519	45.6618	-22.4901
Montmor-Ca	3.4316E-58	-57.4645	38.5012	-18.9633
Montmor-K	3.6604E-59	-58.4365	39.1524	-19.2840
Montmor-Mg	3.4310E-58	-57.4646	38.5013	-18.9633
Montmor-Na	5.2906E-59	-58.2765	39.0453	-19.2312
Nontronite-Ca	5.6251E-01	-0.2499	0.1674	-0.0825
Nontronite-K	3.6740E-02	-1.4349	0.9614	-0.4735
Nontronite-Mg	3.4629E-01	-0.4606	0.3086	-0.1520
Nontronite-Na	5.4453E-02	-1.2640	0.8469	-0.4171

Mineral	Log Q/K	Aff, kcal	State
Smectite-di	-3.668	-5.004	
Beidellite-Ca	-3.668	-5.004	

Beidellite-K	-3.668	-5.004
Beidellite-Mg	-3.668	-5.004
Beidellite-Na	-3.668	-5.004
Montmor-Ca	-3.668	-5.004
Montmor-K	-3.668	-5.004
Montmor-Mg	-3.668	-5.004
Montmor-Na	-3.668	-5.004
Nontronite-Ca	-3.668	-5.004
Nontronite-K	-3.668	-5.004
Nontronite-Mg	-3.668	-5.004
Nontronite-Na	-3.668	-5.004

--- Lanthanide hydroxide ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
La(OH)3	1.2829E-05	-4.8918	0.0000	-4.8918
Ce(OH)3	3.7099E-15	-14.4306	0.0000	-14.4306
Nd(OH)3(c)	3.4718E-01	-0.4595	0.0000	-0.4595
Gd(OH)3	5.8550E-01	-0.2325	0.0000	-0.2325
Sm(OH)3	6.7307E-02	-1.1719	0.0000	-1.1719

Mineral	Log Q/K	Aff, kcal	State
Lanthanide hydroxide	-24.639	-33.614	
La(OH)3	-24.639	-33.614	
Ce(OH)3	-24.639	-33.614	
Nd(OH)3(c)	-24.639	-33.614	
Gd(OH)3	-24.639	-33.614	
Sm(OH)3	-24.639	-33.614	

--- Rhabdophane-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaPO4:H2O	4.1201E-01	-0.3851	0.0000	-0.3851
CePO4:H2O	3.7677E-11	-10.4239	0.0000	-10.4239
NdPO4:H2O	2.2247E-01	-0.6527	0.0000	-0.6527
GdPO4:H2O	1.4936E-01	-0.8258	0.0000	-0.8258
SmPO4:H2O	2.1616E-01	-0.6652	0.0000	-0.6652

Mineral	Log Q/K	Aff, kcal	State
Rhabdophane-ss	-9.764	-13.321	
LaPO4:H2O	-9.764	-13.321	
CePO4:H2O	-9.764	-13.321	
NdPO4:H2O	-9.764	-13.321	
GdPO4:H2O	-9.764	-13.321	
SmPO4:H2O	-9.764	-13.321	

--- Lanthanide fluoride ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaF3:0.5H2O	5.7252E-01	-0.2422	0.0000	-0.2422
CeF3:0.5H2O	8.2978E-11	-10.0810	0.0000	-10.0810
NdF3:0.5H2O	3.8918E-01	-0.4098	0.0000	-0.4098
GdF3:0.5H2O	8.2629E-03	-2.0829	0.0000	-2.0829
SmF3:0.5H2O	3.0037E-02	-1.5223	0.0000	-1.5223

Mineral	Log Q/K	Aff, kcal	State
Lanthanide fluoride	-11.742	-16.020	
LaF3:0.5H2O	-11.742	-16.020	
CeF3:0.5H2O	-11.742	-16.020	
NdF3:0.5H2O	-11.742	-16.020	
GdF3:0.5H2O	-11.742	-16.020	
SmF3:0.5H2O	-11.742	-16.020	

--- Summary of Gases ---

Gas	Fugacity	Log fugacity
Al(g)	4.5803-201	-200.3391
B(g)	8.5659-204	-203.0672
BF3(g)	3.7671E-24	-23.4240
C(g)	3.0917-190	-189.5098
CH4(g)	3.5240-146	-145.4530
CO(g)	6.0395E-49	-48.2190
CO2(g)	3.1623E-04	-3.5000
Ca(g)	7.2344-164	-163.1406
Chlorine	3.5846E-17	-16.4456
Cs(g)	3.5180E-89	-88.4537
Cu(g)	7.5963E-93	-92.1194
Fluorine	1.4775E-72	-71.8305
H2(g)	6.1104E-42	-41.2139
H2O(g)	2.5958E-02	-1.5857
H2S(g)	2.2901-130	-129.6401
HCl(g)	7.3419E-13	-12.1342
HF(g)	5.3198E-09	-8.2741
K(g)	2.2171E-83	-82.6542
Li(g)	7.8245-103	-102.1065
Mg(g)	1.0898-141	-140.9627
Nitrogen	2.6192E-08	-7.5818
NH3(g)	1.8638E-63	-62.7296
NO(g)	5.0961E-20	-19.2928
NO2(g)	3.4845E-14	-13.4579
Na(g)	1.8194E-81	-80.7401
O2(g)	2.0999E-01	-0.6778
Pb(g)	7.6390E-81	-80.1170
S2(g)	3.1321-203	-202.5042
SO2(g)	4.0578E-43	-42.3917
Si(g)	4.2327-221	-220.3734
SiF4(g)	3.5414E-18	-17.4508
Ti(g)	3.8019-231	-230.4200
TiCl4(g)	9.7474E-62	-61.0111
U(g)	1.0091-304	-303.9961
U2Cl10(g)	4.7268-202	-201.3254

U2Cl8(g)	4.0881-216	-215.3885
U2F10(g)	2.4967-120	-119.6026
UCl(g)	6.6045-255	-254.1802
UCl2(g)	1.2932-203	-202.8883
UCl3(g)	5.5461-150	-149.2560
UCl4(g)	1.2880-113	-112.8901
UCl5(g)	1.5390-114	-113.8128
UCl6(g)	3.4163-110	-109.4664
UF(g)	1.0170-240	-239.9927
UF2(g)	7.6023-195	-194.1191
UF3(g)	1.3985-142	-141.8543
UF4(g)	3.7972E-87	-86.4205
UF5(g)	4.7226E-73	-72.3258
UF6(g)	5.7835E-73	-72.2378
UO(g)	7.9693-220	-219.0986
UO2(g)	1.4765-135	-134.8308
UO2Cl2(g)	2.3108E-71	-70.6362
UO2F2(g)	9.8547E-61	-60.0064
UO3(g)	1.0860E-82	-81.9642
UOF4(g)	1.1315E-64	-63.9463
Zn(g)	1.2815E-90	-89.8923

- -

```
Stepping to zi=  1.0000E-06, delzi=  3.6904E-07, nord= 2
  time =  9.6451E-03 d, dltime =  3.5594E-03 d
Steps completed =    23, iter =  7, ncorr = 0
Most rapidly changing is zvclg1(Rutile                  ) =     -9.8960
```

- -

```
                    Reaction progress        =  9.99999999999958E-07
                    Log of reaction progress =      -6.0000000


                    Time =  8.333E+02 sec
                         =  9.645E-03 days
                         =  2.641E-05 years

                    Log sec =        2.921
                    Log days =      -2.016
                    Log years =     -4.578

                    Temperature    =     25.000 degrees C
                    total pressure =      1.013 bars

Step size is limited by the print requirement
```

--- Reactant Summary ---

Reactant	Moles	Delta moles	Mass, g	Delta Mass, g
Tuff	1.0000E+02	1.0000E-06	2.0586E+03	2.0586E-05

```
Current total mass =  2.05865E+03 grams
Delta total mass   =  2.05865E-05 grams
Delta total volume =      0.00000 cc
```

Reactant	Rel. Rate mol/mol	Rate mol/s	Rate mol/s/cm2
Tuff	1.0000E+00	1.2000E-09	2.5000E-15

Reactant	Affinity kcal/mol	Surface Area mol/s/cm2
Tuff	999.00000	4.8000E+05

Reactant	Rate Constants, mol/s/cm2	
Tuff		
	Forward	2.5000E-15

```
Affinity of the overall irreversible reaction=     0.000 kcal
Contributions from irreversible reactions
with no thermodynamic data are not included
```

--- Element Totals for the Aqueous Solution ---

Element	mg/kg soln.	Molality	Moles
O	8.865403E+05	5.561111E+01	5.559508E+01
Al	4.125204E-02	1.534424E-06	1.533982E-06
B	1.334829E-01	1.239157E-05	1.238800E-05
Ba	1.368719E-05	1.000288E-10	1.000000E-10
Ca	1.295710E+01	3.244656E-04	3.243721E-04
Ce	1.396506E-19	1.000288E-24	9.999994E-25
Cl	7.116513E+00	2.014581E-04	2.014000E-04
Cr	2.996352E+02	5.783475E-03	5.781807E-03
Cs	1.324650E-05	1.000288E-10	1.000000E-10
Cu	6.650220E-10	1.050303E-14	1.050000E-14
F	2.172842E+00	1.147831E-04	1.147500E-04
Fe	8.882413E-01	1.596239E-05	1.595779E-05
Gd	1.567289E-09	1.000288E-14	1.000000E-14
H	1.115156E+05	1.110370E+02	1.110050E+02
C	1.267583E-01	1.059166E-05	1.058861E-05
P	7.325644E+00	2.373661E-04	2.372976E-04
K	5.024300E+00	1.289687E-04	1.289316E-04
La	1.384452E-09	1.000288E-14	1.000000E-14
Li	6.917999E-07	1.000288E-10	1.000000E-10
Mg	2.003369E+00	8.272410E-05	8.270025E-05
Mn	3.250701E+01	5.938414E-04	5.936702E-04
Mo	2.179386E+02	2.279823E-03	2.279166E-03
N	1.982366E+00	1.420410E-04	1.420000E-04
Na	4.564900E+01	1.992798E-03	1.992224E-03
Nd	1.437620E-09	1.000288E-14	1.000000E-14
Ni	7.502088E+02	1.282876E-02	1.282506E-02
Pb	2.065134E-05	1.000288E-10	1.000000E-10
Pu	2.431914E-09	1.000288E-14	1.000000E-14

S	5.507393E+02	1.723725E-02	1.723228E-02
Si	2.810325E+00	1.004249E-04	1.003959E-04
Sm	1.498617E-09	1.000288E-14	1.000000E-14
Sr	8.732965E-06	1.000288E-10	1.000000E-10
Ti	1.078259E-05	2.260143E-10	2.259491E-10
U	2.372401E-09	1.000288E-14	1.000000E-14
V	4.768069E+00	9.393719E-05	9.391010E-05
Zn	6.517331E-06	1.000288E-10	1.000000E-10
Zr	9.092171E-16	1.000288E-20	1.000000E-20

Single ion activities and activity coefficients are here defined
with respect to the modified NBS pH scale

	pH	Eh	pe
modified NBS pH scale	2.0406	1.0983	1.8566E+01
rational pH scale	1.9641	1.1028	1.8643E+01

pHCl = 5.8287

Oxygen fugacity = 2.09991E-01
Log oxygen fugacity = -0.67780

Activity of water = 0.99924
Log activity of water = -0.00033

Ionic strength = 5.880055E-02 molal
Sum of molalities = 0.0494651843627
Osmotic coefficient = 0.85806

Mass of solution = 1.003325 kg
Mass of solutes = 0.003613 kg
Conc. of solutes = 0.360112 per cent (w/w)

Moles of solvent H2O = 5.54924E+01
Mass of solvent H2O = 9.99712E-01 kg

Species	Molality	Log molality	Log gamma	Log activity
H+	1.0861E-02	-1.9641	-0.0765	-2.0406
Ni++	1.0209E-02	-1.9910	-0.3466	-2.3376
SO4--	9.7761E-03	-2.0098	-0.3602	-2.3701
HSO4-	4.5008E-03	-2.3467	-0.0849	-2.4316
HCrO4-	4.0507E-03	-2.3925	-0.0849	-2.4774
NiSO4(aq)	2.6184E-03	-2.5820	0.0000	-2.5820
MoO4--	2.2798E-03	-2.6421	-0.3492	-2.9913
Na+	1.9398E-03	-2.7123	-0.0983	-2.8106
Cr2O7--	8.6348E-04	-3.0637	-0.3602	-3.4240
Mn++	4.1403E-04	-3.3830	-0.3466	-3.7295
O2(aq)	2.6166E-04	-3.5823	0.0062	-3.5761
Ca++	2.5991E-04	-3.5852	-0.3466	-3.9317
Cl-	2.0085E-04	-3.6971	-0.0909	-3.7881
MnSO4(aq)	1.7918E-04	-3.7467	0.0000	-3.7467
NO3-	1.4021E-04	-3.8532	-0.0909	-3.9441
K+	1.2508E-04	-3.9028	-0.1044	-4.0072

H3PO4(aq)	1.1922E-04	-3.9236	0.0000	-3.9236
H2PO4-	1.0769E-04	-3.9678	-0.0849	-4.0527
HF(aq)	1.0150E-04	-3.9935	0.0000	-3.9935
SiO2(aq)	1.0042E-04	-3.9982	0.0000	-3.9982
VO2+	7.7219E-05	-4.1123	-0.0983	-4.2106
CaSO4(aq)	6.4461E-05	-4.1907	0.0000	-4.1907
Mg++	5.3912E-05	-4.2683	-0.3139	-4.5822
NaSO4-	5.2995E-05	-4.2758	-0.0849	-4.3606
MgSO4(aq)	2.8802E-05	-4.5406	0.0000	-4.5406
B(OH)3(aq)	1.2392E-05	-4.9069	0.0000	-4.9069
VO2SO4-	1.2140E-05	-4.9158	-0.0849	-5.0007
CO2(aq)	1.0591E-05	-4.9751	0.0062	-4.9689
FeHPO4+	9.8592E-06	-5.0062	-0.0983	-5.1045
F-	9.2647E-06	-5.0332	-0.0878	-5.1210
Fe+++	3.9859E-06	-5.3995	-0.6676	-6.0670
Cr+++	3.9842E-06	-5.3997	-0.6676	-6.0672
KSO4-	3.8656E-06	-5.4128	-0.0849	-5.4977
VO(OH)3(aq)	3.3835E-06	-5.4706	0.0000	-5.4706
NiNO3+	1.6466E-06	-5.7834	-0.0983	-5.8817
H2CrO4(aq)	1.4541E-06	-5.8374	0.0000	-5.8374
FeOH++	1.4433E-06	-5.8406	-0.3761	-6.2167
VO2F(aq)	1.0433E-06	-5.9816	0.0000	-5.9816
AlF2+	8.8146E-07	-6.0548	-0.0983	-6.1531
AlF++	5.5456E-07	-6.2561	-0.3761	-6.6322
MnH2PO4+	4.6356E-07	-6.3339	-0.0983	-6.4322
FeSO4+	3.8801E-07	-6.4112	-0.0983	-6.5095
HCl(aq)	3.1718E-07	-6.4987	0.0000	-6.4987
CrO4--	2.6860E-07	-6.5709	-0.3602	-6.9311
FeF++	2.1114E-07	-6.6754	-0.3761	-7.0515
NiCl+	9.4729E-08	-7.0235	-0.0983	-7.1219
HPO3F-	9.2108E-08	-7.0357	-0.0849	-7.1206
CaNO3+	8.3648E-08	-7.0775	-0.0983	-7.1759
MnCl+	7.6216E-08	-7.1180	-0.0983	-7.2163
H2VO4-	7.2893E-08	-7.1373	-0.0849	-7.2222
AlF3(aq)	6.6970E-08	-7.1741	0.0000	-7.1741
CrO3Cl-	6.4829E-08	-7.1882	-0.0849	-7.2731
HNO3(aq)	5.1608E-08	-7.2873	0.0000	-7.2873
MnF+	4.7623E-08	-7.3222	-0.0983	-7.4205
VO2(OH)2-	4.5174E-08	-7.3451	-0.0849	-7.4300
MnNO3+	4.2136E-08	-7.3753	-0.0983	-7.4737
NaCl(aq)	4.2107E-08	-7.3756	0.0000	-7.3756
H2SO4(aq)	3.3710E-08	-7.4722	0.0000	-7.4722
Fe(SO4)2-	3.1004E-08	-7.5086	-0.0849	-7.5935
VO2HPO4-	3.0677E-08	-7.5132	-0.0849	-7.5981
H2F2(aq)	2.7845E-08	-7.5552	0.0000	-7.5552
Fe(OH)2+	2.7664E-08	-7.5581	-0.0983	-7.6564
KHSO4(aq)	2.4871E-08	-7.6043	0.0000	-7.6043
CrOH++	2.2345E-08	-7.6508	-0.3761	-8.0269
AlSO4+	1.6870E-08	-7.7729	-0.0983	-7.8712
Al+++	1.4335E-08	-7.8436	-0.6676	-8.5112
FeF2+	1.3776E-08	-7.8609	-0.0983	-7.9592
MgF+	5.5917E-09	-8.2525	-0.0983	-8.3508
CaF+	5.3372E-09	-8.2727	-0.0983	-8.3710
CaCl+	4.8188E-09	-8.3171	-0.0983	-8.4154
MgCl+	3.9190E-09	-8.4068	-0.0983	-8.5052
VO2F2-	2.7689E-09	-8.5577	-0.0849	-8.6426
FeNO3++	2.3170E-09	-8.6351	-0.3761	-9.0112
PO3F--	1.5163E-09	-8.8192	-0.3602	-9.1794
HPO4--	1.3892E-09	-8.8572	-0.3602	-9.2175
NaF(aq)	1.1771E-09	-8.9292	0.0000	-8.9292
HCO3-	6.4803E-10	-9.1884	-0.0849	-9.2733
KCl(aq)	5.1302E-10	-9.2899	0.0000	-9.2899
MnHPO4(aq)	4.2954E-10	-9.3670	0.0000	-9.3670

VO++	2.7648E-10	-9.5583	-0.3761	-9.9344
CrCl++	2.3540E-10	-9.6282	-0.3761	-10.0043
Ti(OH)4(aq)	2.2601E-10	-9.6459	0.0000	-9.6459
HF2-	2.2552E-10	-9.6468	-0.0849	-9.7317
AlF4-	1.5480E-10	-9.8102	-0.0849	-9.8951
VOSO4(aq)	1.4980E-10	-9.8245	0.0000	-9.8245
Mn+++	1.1764E-10	-9.9294	-0.8157	-10.7452
Cs+	1.0002E-10	-9.9999	-0.1077	-10.1076

--- Summary of Instantaneously Precipitated Solid Phases ---
(defined by derivatives)

--- Theoretical Rock Composition ---
g/kg

Ti 1.211364E-02

--- Oxide Percentages ---

Oxide Theoretical rock

Total = 0.0000

Phase/end-member		d mol/d zi	d grams/d zi	d vol (cc)/d zi
Rutile		2.5300E-04	2.0209E-02	4.7615E-03
fix	CO2(g)	0.0000E+00	0.0000E+00	0.0000E+00
fix	O2(g)	-6.9114E-04	-2.2116E-02	0.0000E+00

--- Summary of Solid Phases (E.S.+P.R.S.) ---

Phase/End-member		Log moles	Moles	Mass, g	Volume, cc
Rutile		-9.8960	1.2705E-10	1.0149E-08	2.3911E-09
fix	CO2(g)	2.3010	2.0000E+02	8.8020E+03	0.0000E+00
fix	O2(g)	2.3010	2.0000E+02	6.3998E+03	0.0000E+00

	Mass, grams	Volume, cc
Created	1.520172E+04	2.391098E-09
Destroyed	2.058647E-05	0.000000E+00
Net	1.520172E+04	2.391098E-09

Warning-- these volume totals may be incomplete because
of missing partial molar volume data in the data base

--- Summary of Pure Mineral Saturation States ---

Mineral	Log Q/K	Aff, kcal	State
AlF3	-6.665	-9.093	
Anglesite	-4.894	-6.677	
Anhydrite	-1.995	-2.722	
BaZrO3	69.237	94.459	ssatd
Barite	-2.765	-3.772	

Bassanite	-2.640	-3.602	
Boric_acid	-4.749	-6.478	
CaSO4:0.5H2O(beta)	-2.809	-3.832	
CaZrO3	129.701	176.949	ssatd
Celestite	-7.194	-9.815	
Chalcedony	-0.270	-0.368	
Coesite	-0.809	-1.104	
CrO2	-0.909	-1.241	
Cristobalite(alpha)	-0.549	-0.749	
Cristobalite(beta)	-0.993	-1.355	
Crocoite	-4.591	-6.263	
Epsomite	-4.992	-6.811	
Fe(OH)3	-5.602	-7.642	
FeF3	-2.191	-2.989	
Fluorite	-4.137	-5.644	
Goethite	-0.480	-0.655	
Gypsum	-1.820	-2.483	
Hematite	0.000	0.000	ssatd
Hexahydrite	-5.227	-7.132	
Ice	-0.139	-0.190	
Jarosite	-5.336	-7.280	
Kieserite	-6.686	-9.121	
Manganite	-4.459	-6.084	
Mercallite	-6.979	-9.521	
Mirabilite	-6.855	-9.352	
MnHPO4	0.000	0.000	ssatd
MnO2(gamma)	-1.518	-2.071	
Morenosite	-2.696	-3.678	
NiSO4:6H2O(alpha)	-2.702	-3.687	
Nontronite-Ca	-3.747	-5.111	
Nontronite-H	-2.813	-3.838	
Nontronite-K	-4.138	-5.645	
Nontronite-Mg	-3.816	-5.206	
Nontronite-Na	-4.081	-5.568	
Pentahydrite	-5.567	-7.595	
Pyrolusite	0.000	0.000	ssatd
Quartz	0.001	0.002	ssatd
Rutile	0.000	0.000	satd
Sellaite	-5.440	-7.422	
Shcherbinaite	-2.888	-3.940	
SiO2(am)	-1.285	-1.753	
SrZrO3	106.096	144.745	ssatd
Starkeyite	-5.954	-8.123	
Strengite	-1.902	-2.594	
Tridymite	-0.170	-0.232	
fix CO2(g)	0.000	0.000	satd
fix O2(g)	0.000	0.000	satd

--- Summary of Solid Solutions ---

--- Carbonate-Calcite ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Calcite	5.6706E-03	-2.2464	0.0000	-2.2464
Magnesite	4.5526E-04	-3.3417	0.0000	-3.3417
Rhodochrosite	9.9387E-01	-0.0027	0.0000	-0.0027
Siderite	1.2693E-08	-7.8964	0.0000	-7.8964
Smithsonite	5.2900E-08	-7.2765	0.0000	-7.2765
Strontianite	2.2203E-07	-6.6536	0.0000	-6.6536

Mineral	Log Q/K	Aff, kcal	State
Carbonate-Calcite	-10.767	-14.689	
Calcite	-10.767	-14.689	
Magnesite	-10.767	-14.689	
Rhodochrosite	-10.767	-14.689	
Siderite	-10.767	-14.689	
Smithsonite	-10.767	-14.689	
Strontianite	-10.767	-14.689	

--- Clinoptilolite-hy-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-hy-Ca	9.9769E-01	-0.0010	0.0000	-0.0010
Clinoptilolite-hy-Cs	6.6776E-23	-22.1754	0.0000	-22.1754
Clinoptilolite-hy-K	7.3208E-04	-3.1354	0.0000	-3.1354
Clinoptilolite-hy-Na	1.5784E-03	-2.8018	0.0000	-2.8018
Clinoptilolite-hy-Sr	5.6080E-12	-11.2512	0.0000	-11.2512

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-hy-ss	-59.082	-80.605	
Clinoptilolite-hy-Ca	-59.082	-80.605	
Clinoptilolite-hy-Cs	-59.082	-80.605	
Clinoptilolite-hy-K	-59.082	-80.605	
Clinoptilolite-hy-Na	-59.082	-80.605	
Clinoptilolite-hy-Sr	-59.082	-80.605	

--- Clinoptilolite-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-Ca	7.8162E-01	-0.1070	-0.2632	-0.3702
Clinoptilolite-Cs	3.0397E-07	-6.5172	-16.0322	-22.5494
Clinoptilolite-K	9.6821E-02	-1.0140	-2.4945	-3.5085
Clinoptilolite-NH4	1.0307E-51	-50.9869	-125.4277	-176.4146
Clinoptilolite-Na	1.2112E-01	-0.9168	-2.2553	-3.1721
Clinoptilolite-Sr	4.3842E-04	-3.3581	-8.2610	-11.6191

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-ss	-58.714	-80.103	
Clinoptilolite-Ca	-58.714	-80.103	
Clinoptilolite-Cs	-58.714	-80.103	
Clinoptilolite-K	-58.714	-80.103	
Clinoptilolite-NH4	-58.714	-80.103	
Clinoptilolite-Na	-58.714	-80.103	
Clinoptilolite-Sr	-58.714	-80.103	

--- Saponite-tri ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Saponite-Ca	1.4822E-03	-2.8291	1.8955	-0.9336
Saponite-H	9.9737E-01	-0.0011	0.0008	-0.0004
Saponite-K	9.6743E-05	-4.0144	2.6896	-1.3247
Saponite-Mg	9.1181E-04	-3.0401	2.0369	-1.0032
Saponite-Na	1.4348E-04	-3.8432	2.5750	-1.2683

Mineral	Log Q/K	Aff, kcal	State
Saponite-tri	-42.298	-57.706	
Saponite-Ca	-42.298	-57.706	
Saponite-H	-42.298	-57.706	
Saponite-K	-42.298	-57.706	
Saponite-Mg	-42.298	-57.706	
Saponite-Na	-42.298	-57.706	

--- Smectite-di ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Beidellite-Ca	7.8713E-68	-67.1040	44.9597	-22.1443
Beidellite-K	5.1413E-69	-68.2889	45.7536	-22.5353
Beidellite-Mg	4.8423E-68	-67.3149	45.1010	-22.2139
Beidellite-Na	7.6196E-69	-68.1181	45.6391	-22.4790
Montmor-Ca	3.6185E-58	-57.4415	38.4858	-18.9557
Montmor-K	3.8600E-59	-58.4134	39.1370	-19.2764
Montmor-Mg	3.6178E-58	-57.4416	38.4858	-18.9557
Montmor-Na	5.5788E-59	-58.2535	39.0298	-19.2236
Nontronite-Ca	5.6251E-01	-0.2499	0.1674	-0.0825
Nontronite-K	3.6742E-02	-1.4348	0.9613	-0.4735
Nontronite-Mg	3.4629E-01	-0.4606	0.3086	-0.1520
Nontronite-Na	5.4453E-02	-1.2640	0.8469	-0.4171

Mineral	Log Q/K	Aff, kcal	State
Smectite-di	-3.664	-4.999	
Beidellite-Ca	-3.664	-4.999	
Beidellite-K	-3.664	-4.999	
Beidellite-Mg	-3.664	-4.999	
Beidellite-Na	-3.664	-4.999	
Montmor-Ca	-3.664	-4.999	
Montmor-K	-3.664	-4.999	
Montmor-Mg	-3.664	-4.999	
Montmor-Na	-3.664	-4.999	
Nontronite-Ca	-3.664	-4.999	
Nontronite-K	-3.664	-4.999	
Nontronite-Mg	-3.664	-4.999	
Nontronite-Na	-3.664	-4.999	

--- Lanthanide hydroxide ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
La(OH)3	1.2829E-05	-4.8918	0.0000	-4.8918
Ce(OH)3	3.7099E-15	-14.4306	0.0000	-14.4306
Nd(OH)3(c)	3.4718E-01	-0.4595	0.0000	-0.4595
Gd(OH)3	5.8550E-01	-0.2325	0.0000	-0.2325
Sm(OH)3	6.7307E-02	-1.1719	0.0000	-1.1719

Mineral	Log Q/K	Aff, kcal	State
Lanthanide hydroxide	-24.639	-33.614	
La(OH)3	-24.639	-33.614	
Ce(OH)3	-24.639	-33.614	
Nd(OH)3(c)	-24.639	-33.614	
Gd(OH)3	-24.639	-33.614	
Sm(OH)3	-24.639	-33.614	

--- Rhabdophane-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaPO4:H2O	4.1201E-01	-0.3851	0.0000	-0.3851
CePO4:H2O	3.7677E-11	-10.4239	0.0000	-10.4239
NdPO4:H2O	2.2247E-01	-0.6527	0.0000	-0.6527
GdPO4:H2O	1.4936E-01	-0.8258	0.0000	-0.8258
SmPO4:H2O	2.1616E-01	-0.6652	0.0000	-0.6652

Mineral	Log Q/K	Aff, kcal	State
Rhabdophane-ss	-9.764	-13.321	
LaPO4:H2O	-9.764	-13.321	
CePO4:H2O	-9.764	-13.321	
NdPO4:H2O	-9.764	-13.321	
GdPO4:H2O	-9.764	-13.321	
SmPO4:H2O	-9.764	-13.321	

--- Lanthanide fluoride ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaF3:0.5H2O	5.7252E-01	-0.2422	0.0000	-0.2422
CeF3:0.5H2O	8.2978E-11	-10.0810	0.0000	-10.0810
NdF3:0.5H2O	3.8918E-01	-0.4098	0.0000	-0.4098
GdF3:0.5H2O	8.2629E-03	-2.0829	0.0000	-2.0829
SmF3:0.5H2O	3.0038E-02	-1.5223	0.0000	-1.5223

Mineral	Log Q/K	Aff, kcal	State

Lanthanide fluoride	-11.743	-16.020
LaF3:0.5H2O	-11.743	-16.020
CeF3:0.5H2O	-11.743	-16.020
NdF3:0.5H2O	-11.743	-16.020
GdF3:0.5H2O	-11.743	-16.020
SmF3:0.5H2O	-11.743	-16.020

--- Summary of Gases ---

Gas	Fugacity	Log fugacity
Al(g)	4.6399-201	-200.3335
B(g)	8.5659-204	-203.0672
BF3(g)	3.7640E-24	-23.4243
C(g)	3.0917-190	-189.5098
CH4(g)	3.5240-146	-145.4530
CO(g)	6.0395E-49	-48.2190
CO2(g)	3.1623E-04	-3.5000
Ca(g)	7.2344-164	-163.1406
Chlorine	3.5846E-17	-16.4456
Cs(g)	3.5180E-89	-88.4537
Cu(g)	7.5963E-93	-92.1194
Fluorine	1.4767E-72	-71.8307
H2(g)	6.1104E-42	-41.2139
H2O(g)	2.5958E-02	-1.5857
H2S(g)	2.2901-130	-129.6401
HCl(g)	7.3418E-13	-12.1342
HF(g)	5.3183E-09	-8.2742
K(g)	2.2173E-83	-82.6542
Li(g)	7.8245-103	-102.1065
Mg(g)	1.0898-141	-140.9627
Nitrogen	2.6192E-08	-7.5818
NH3(g)	1.8637E-63	-62.7296
NO(g)	5.0961E-20	-19.2928
NO2(g)	3.4845E-14	-13.4579
Na(g)	1.8194E-81	-80.7401
O2(g)	2.0999E-01	-0.6778
Pb(g)	7.6391E-81	-80.1170
S2(g)	3.1321-203	-202.5042
SO2(g)	4.0578E-43	-42.3917
Si(g)	4.2368-221	-220.3730
SiF4(g)	3.5409E-18	-17.4509
Ti(g)	3.8019-231	-230.4200
TiCl4(g)	9.7473E-62	-61.0111
U(g)	1.0091-304	-303.9961
U2Cl10(g)	4.7269-202	-201.3254
U2Cl8(g)	4.0882-216	-215.3885
U2F10(g)	2.4899-120	-119.6038
UCl(g)	6.6047-255	-254.1801
UCl2(g)	1.2932-203	-202.8883
UCl3(g)	5.5462-150	-149.2560
UCl4(g)	1.2880-113	-112.8901
UCl5(g)	1.5390-114	-113.8128
UCl6(g)	3.4163-110	-109.4664
UF(g)	1.0168-240	-239.9928
UF2(g)	7.5983-195	-194.1193
UF3(g)	1.3974-142	-141.8547
UF4(g)	3.7932E-87	-86.4210
UF5(g)	4.7162E-73	-72.3264
UF6(g)	5.7741E-73	-72.2385

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UO(g)                      7.9695-220   -219.0986
UO2(g)                     1.4765-135   -134.8308
UO2Cl2(g)                  2.3109E-71    -70.6362
UO2F2(g)                   9.8496E-61    -60.0066
UO3(g)                     1.0860E-82    -81.9642
UOF4(g)                    1.1303E-64    -63.9468
Zn(g)                      1.2815E-90    -89.8923



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Stepping to zi=  1.5849E-06, delzi=  5.8489E-07, nord= 3
  time =  1.5286E-02 d, dltime =  5.6413E-03 d
Steps completed =    24, iter =  6, ncorr = 0
Most rapidly changing is zvclg1(Rutile                  ) =     -9.5606

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                    Reaction progress        =  1.58489319246104E-06
                    Log of reaction progress =      -5.8000000



                    Time =  1.321E+03 sec
                         =  1.529E-02 days
                         =  4.185E-05 years

                    Log sec =        3.121
                    Log days =      -1.816
                    Log years =     -4.378

                    Temperature    =     25.000 degrees C
                    total pressure =      1.013 bars


Step size is limited by the print requirement


                              --- Reactant Summary ---


    Reactant                   Moles     Delta moles    Mass, g    Delta Mass, g

 Tuff                       1.0000E+02   1.5849E-06   2.0586E+03   3.2627E-05


               Current total mass =  2.05865E+03 grams
               Delta total mass   =  3.26274E-05 grams
               Delta total volume =      0.00000 cc


    Reactant                Rel. Rate      Rate         Rate
                             mol/mol       mol/s      mol/s/cm2

 Tuff                       1.0000E+00   1.2000E-09   2.5000E-15


    Reactant                   Affinity   Surface Area
```

	kcal/mol	mol/s/cm2
Tuff	999.00000	4.8000E+05

Reactant	Rate Constants, mol/s/cm2	
Tuff		
	Forward	2.5000E-15

Affinity of the overall irreversible reaction= 0.000 kcal
Contributions from irreversible reactions
with no thermodynamic data are not included

--- Element Totals for the Aqueous Solution ---

Element	mg/kg soln.	Molality	Moles
O	8.865403E+05	5.561111E+01	5.559508E+01
Al	4.206180E-02	1.564545E-06	1.564093E-06
B	1.334829E-01	1.239157E-05	1.238800E-05
Ba	1.368719E-05	1.000288E-10	1.000000E-10
Ca	1.295715E+01	3.244668E-04	3.243733E-04
Ce	1.396506E-19	1.000288E-24	9.999994E-25
Cl	7.116513E+00	2.014581E-04	2.014000E-04
Cr	2.996352E+02	5.783475E-03	5.781807E-03
Cs	1.324650E-05	1.000288E-10	1.000000E-10
Cu	6.650219E-10	1.050303E-14	1.050000E-14
F	2.172842E+00	1.147831E-04	1.147500E-04
Fe	8.883198E-01	1.596380E-05	1.595920E-05
Gd	1.567289E-09	1.000288E-14	1.000000E-14
H	1.115156E+05	1.110370E+02	1.110050E+02
C	1.267583E-01	1.059166E-05	1.058861E-05
P	7.325644E+00	2.373661E-04	2.372977E-04
K	5.024792E+00	1.289814E-04	1.289442E-04
La	1.384452E-09	1.000288E-14	1.000000E-14
Li	6.917999E-07	1.000288E-10	1.000000E-10
Mg	2.003387E+00	8.272484E-05	8.270098E-05
Mn	3.250701E+01	5.938416E-04	5.936703E-04
Mo	2.179386E+02	2.279823E-03	2.279166E-03
N	1.982366E+00	1.420410E-04	1.420000E-04
Na	4.564932E+01	1.992812E-03	1.992238E-03
Nd	1.437620E-09	1.000288E-14	1.000000E-14
Ni	7.502088E+02	1.282876E-02	1.282506E-02
Pb	2.065134E-05	1.000288E-10	1.000000E-10
Pu	2.431914E-09	1.000288E-14	1.000000E-14
S	5.507393E+02	1.723725E-02	1.723228E-02
Si	2.814639E+00	1.005790E-04	1.005500E-04
Sm	1.498617E-09	1.000288E-14	1.000000E-14
Sr	8.732965E-06	1.000288E-10	1.000000E-10
Ti	1.078259E-05	2.260143E-10	2.259491E-10
U	2.372401E-09	1.000288E-14	1.000000E-14
V	4.768069E+00	9.393719E-05	9.391010E-05
Zn	6.517331E-06	1.000288E-10	1.000000E-10
Zr	9.092170E-16	1.000288E-20	1.000000E-20

Single ion activities and activity coefficients are here defined
with respect to the modified NBS pH scale

	pH	Eh	pe
modified NBS pH scale	2.0406	1.0983	1.8566E+01
rational pH scale	1.9641	1.1028	1.8643E+01

pHCl = 5.8287

Oxygen fugacity = 2.09991E-01
Log oxygen fugacity = -0.67780

Activity of water = 0.99924
Log activity of water = -0.00033

Ionic strength = 5.880058E-02 molal
Sum of molalities = 0.0494652850694
Osmotic coefficient = 0.85806

Mass of solution = 1.003325 kg
Mass of solutes = 0.003613 kg
Conc. of solutes = 0.360113 per cent (w/w)

Moles of solvent H2O = 5.54924E+01
Mass of solvent H2O = 9.99712E-01 kg

Species	Molality	Log molality	Log gamma	Log activity
H+	1.0861E-02	-1.9641	-0.0765	-2.0406
Ni++	1.0209E-02	-1.9910	-0.3466	-2.3376
SO4--	9.7761E-03	-2.0098	-0.3602	-2.3701
HSO4-	4.5007E-03	-2.3467	-0.0849	-2.4316
HCrO4-	4.0507E-03	-2.3925	-0.0849	-2.4774
NiSO4(aq)	2.6184E-03	-2.5820	0.0000	-2.5820
MoO4--	2.2798E-03	-2.6421	-0.3492	-2.9913
Na+	1.9398E-03	-2.7122	-0.0983	-2.8106
Cr2O7--	8.6348E-04	-3.0637	-0.3602	-3.4240
Mn++	4.1403E-04	-3.3830	-0.3466	-3.7295
O2(aq)	2.6166E-04	-3.5823	0.0062	-3.5761
Ca++	2.5991E-04	-3.5852	-0.3466	-3.9317
Cl-	2.0085E-04	-3.6971	-0.0909	-3.7881
MnSO4(aq)	1.7918E-04	-3.7467	0.0000	-3.7467
NO3-	1.4021E-04	-3.8532	-0.0909	-3.9441
K+	1.2509E-04	-3.9028	-0.1044	-4.0072
H3PO4(aq)	1.1922E-04	-3.9236	0.0000	-3.9236
H2PO4-	1.0769E-04	-3.9678	-0.0849	-4.0527
HF(aq)	1.0146E-04	-3.9937	0.0000	-3.9937
SiO2(aq)	1.0058E-04	-3.9975	0.0000	-3.9975
VO2+	7.7219E-05	-4.1123	-0.0983	-4.2106
CaSO4(aq)	6.4461E-05	-4.1907	0.0000	-4.1907
Mg++	5.3913E-05	-4.2683	-0.3139	-4.5822
NaSO4-	5.2995E-05	-4.2758	-0.0849	-4.3606
MgSO4(aq)	2.8803E-05	-4.5406	0.0000	-4.5406
B(OH)3(aq)	1.2392E-05	-4.9069	0.0000	-4.9069
VO2SO4-	1.2140E-05	-4.9158	-0.0849	-5.0007
CO2(aq)	1.0591E-05	-4.9751	0.0062	-4.9689
FeHPO4+	9.8601E-06	-5.0061	-0.0983	-5.1045
F-	9.2607E-06	-5.0334	-0.0878	-5.1212

Fe+++	3.9863E-06	-5.3994	-0.6676	-6.0670
Cr+++	3.9841E-06	-5.3997	-0.6676	-6.0672
KSO4-	3.8660E-06	-5.4127	-0.0849	-5.4976
VO(OH)3(aq)	3.3835E-06	-5.4706	0.0000	-5.4706
NiNO3+	1.6466E-06	-5.7834	-0.0983	-5.8817
H2CrO4(aq)	1.4541E-06	-5.8374	0.0000	-5.8374
FeOH++	1.4435E-06	-5.8406	-0.3761	-6.2167
VO2F(aq)	1.0428E-06	-5.9818	0.0000	-5.9818
AlF2+	8.9863E-07	-6.0464	-0.0983	-6.1448
AlF++	5.6560E-07	-6.2475	-0.3761	-6.6236
MnH2PO4+	4.6356E-07	-6.3339	-0.0983	-6.4322
FeSO4+	3.8804E-07	-6.4111	-0.0983	-6.5095
HCl(aq)	3.1718E-07	-6.4987	0.0000	-6.4987
CrO4--	2.6861E-07	-6.5709	-0.3602	-6.9311
FeF++	2.1107E-07	-6.6756	-0.3761	-7.0517
NiCl+	9.4729E-08	-7.0235	-0.0983	-7.1219
HPO3F-	9.2067E-08	-7.0359	-0.0849	-7.1208
CaNO3+	8.3648E-08	-7.0775	-0.0983	-7.1759
MnCl+	7.6216E-08	-7.1180	-0.0983	-7.2163
H2VO4-	7.2894E-08	-7.1373	-0.0849	-7.2222
AlF3(aq)	6.8245E-08	-7.1659	0.0000	-7.1659
CrO3Cl-	6.4829E-08	-7.1882	-0.0849	-7.2731
HNO3(aq)	5.1608E-08	-7.2873	0.0000	-7.2873
MnF+	4.7602E-08	-7.3224	-0.0983	-7.4207
VO2(OH)2-	4.5174E-08	-7.3451	-0.0849	-7.4300
MnNO3+	4.2136E-08	-7.3753	-0.0983	-7.4737
NaCl(aq)	4.2107E-08	-7.3756	0.0000	-7.3756
H2SO4(aq)	3.3710E-08	-7.4722	0.0000	-7.4722
Fe(SO4)2-	3.1007E-08	-7.5085	-0.0849	-7.5934
VO2HPO4-	3.0677E-08	-7.5132	-0.0849	-7.5981
H2F2(aq)	2.7821E-08	-7.5556	0.0000	-7.5556
Fe(OH)2+	2.7667E-08	-7.5580	-0.0983	-7.6564
KHSO4(aq)	2.4873E-08	-7.6043	0.0000	-7.6043
CrOH++	2.2344E-08	-7.6508	-0.3761	-8.0269
AlSO4+	1.7213E-08	-7.7641	-0.0983	-7.8625
Al+++	1.4627E-08	-7.8348	-0.6676	-8.5024
FeF2+	1.3766E-08	-7.8612	-0.0983	-7.9595
MgF+	5.5893E-09	-8.2526	-0.0983	-8.3510
CaF+	5.3349E-09	-8.2729	-0.0983	-8.3712
CaCl+	4.8188E-09	-8.3171	-0.0983	-8.4154
MgCl+	3.9190E-09	-8.4068	-0.0983	-8.5052
VO2F2-	2.7665E-09	-8.5581	-0.0849	-8.6430
FeNO3++	2.3172E-09	-8.6350	-0.3761	-9.0111
PO3F--	1.5156E-09	-8.8194	-0.3602	-9.1796
HPO4--	1.3892E-09	-8.8572	-0.3602	-9.2175
NaF(aq)	1.1766E-09	-8.9294	0.0000	-8.9294
HCO3-	6.4803E-10	-9.1884	-0.0849	-9.2733
KCl(aq)	5.1307E-10	-9.2898	0.0000	-9.2898
MnHPO4(aq)	4.2954E-10	-9.3670	0.0000	-9.3670
VO++	2.7648E-10	-9.5583	-0.3761	-9.9344
CrCl++	2.3540E-10	-9.6282	-0.3761	-10.0043
Ti(OH)4(aq)	2.2601E-10	-9.6459	0.0000	-9.6459
HF2-	2.2532E-10	-9.6472	-0.0849	-9.7321
AlF4-	1.5768E-10	-9.8022	-0.0849	-9.8871
VOSO4(aq)	1.4980E-10	-9.8245	0.0000	-9.8245
Mn+++	1.1764E-10	-9.9294	-0.8157	-10.7452
Cs+	1.0002E-10	-9.9999	-0.1077	-10.1076

--- Summary of Instantaneously Precipitated Solid Phases ---
(defined by derivatives)

--- Theoretical Rock Composition ---

```
                    g/kg

      Ti     1.211364E-02

      --- Oxide Percentages ---

   Oxide   Theoretical rock


    Total =     0.0000


   Phase/end-member     d mol/d zi    d grams/d zi   d vol (cc)/d zi

Rutile                     2.5300E-04   2.0209E-02   4.7615E-03
fix     CO2(g)             0.0000E+00   0.0000E+00   0.0000E+00
fix     O2(g)             -8.8421E-04  -2.8294E-02   0.0000E+00


               --- Summary of Solid Phases (E.S.+P.R.S.) ---

   Phase/End-member        Log moles     Moles       Mass, g     Volume, cc

Rutile                       -9.5606   2.7503E-10   2.1969E-08   5.1760E-09
fix     CO2(g)                2.3010   2.0000E+02   8.8020E+03   0.0000E+00
fix     O2(g)                 2.3010   2.0000E+02   6.3998E+03   0.0000E+00


                           Mass, grams        Volume, cc

          Created         1.520172E+04       5.176044E-09
          Destroyed       3.262735E-05       0.000000E+00
          Net             1.520172E+04       5.176044E-09

         Warning-- these volume totals may be incomplete because
         of missing partial molar volume data in the data base


          --- Summary of Pure Mineral Saturation States ---


   Mineral                      Log Q/K     Aff, kcal  State

AlF3                             -6.657      -9.082
Anglesite                        -4.894      -6.677
Anhydrite                        -1.995      -2.722
BaZrO3                           69.237      94.459   ssatd
Barite                           -2.765      -3.772
Bassanite                        -2.640      -3.602
Boric_acid                       -4.749      -6.478
CaSO4:0.5H2O(beta)               -2.809      -3.832
CaZrO3                          129.701     176.949   ssatd
Celestite                        -7.194      -9.815
Chalcedony                       -0.269      -0.368
Coesite                          -0.808      -1.103
CrO2                             -0.909      -1.241
Cristobalite(alpha)              -0.549      -0.749
Cristobalite(beta)               -0.992      -1.354
Crocoite                         -4.591      -6.263
Epsomite                         -4.992      -6.811
Fe(OH)3                          -5.602      -7.642
FeF3                             -2.192      -2.990
```

Fluorite	-4.137	-5.644	
Goethite	-0.480	-0.655	
Gypsum	-1.820	-2.483	
Hematite	0.000	0.000	ssatd
Hexahydrite	-5.227	-7.132	
Ice	-0.139	-0.190	
Jarosite	-5.336	-7.280	
Kieserite	-6.686	-9.121	
Manganite	-4.459	-6.084	
Mercallite	-6.979	-9.521	
Mirabilite	-6.855	-9.352	
MnHPO4	0.000	0.000	ssatd
MnO2(gamma)	-1.518	-2.071	
Morenosite	-2.696	-3.678	
NiSO4:6H2O(alpha)	-2.702	-3.687	
Nontronite-Ca	-3.741	-5.104	
Nontronite-H	-2.808	-3.831	
Nontronite-K	-4.132	-5.638	
Nontronite-Mg	-3.811	-5.199	
Nontronite-Na	-4.076	-5.561	
Pentahydrite	-5.567	-7.595	
Pyrolusite	0.000	0.000	ssatd
Quartz	0.002	0.002	ssatd
Rutile	0.000	0.000	satd
Sellaite	-5.440	-7.422	
Shcherbinaite	-2.888	-3.940	
SiO2(am)	-1.284	-1.752	
SrZrO3	106.096	144.745	ssatd
Starkeyite	-5.954	-8.123	
Strengite	-1.902	-2.594	
Tridymite	-0.170	-0.232	
fix CO2(g)	0.000	0.000	satd
fix O2(g)	0.000	0.000	satd

--- Summary of Solid Solutions ---

--- Carbonate-Calcite ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Calcite	5.6706E-03	-2.2464	0.0000	-2.2464
Magnesite	4.5526E-04	-3.3417	0.0000	-3.3417
Rhodochrosite	9.9387E-01	-0.0027	0.0000	-0.0027
Siderite	1.2694E-08	-7.8964	0.0000	-7.8964
Smithsonite	5.2900E-08	-7.2765	0.0000	-7.2765
Strontianite	2.2203E-07	-6.6536	0.0000	-6.6536

Mineral	Log Q/K	Aff, kcal	State
Carbonate-Calcite	-10.767	-14.689	
Calcite	-10.767	-14.689	
Magnesite	-10.767	-14.689	
Rhodochrosite	-10.767	-14.689	
Siderite	-10.767	-14.689	
Smithsonite	-10.767	-14.689	
Strontianite	-10.767	-14.689	

--- Clinoptilolite-hy-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-hy-Ca	9.9769E-01	-0.0010	0.0000	-0.0010
Clinoptilolite-hy-Cs	6.6775E-23	-22.1754	0.0000	-22.1754
Clinoptilolite-hy-K	7.3232E-04	-3.1353	0.0000	-3.1353
Clinoptilolite-hy-Na	1.5784E-03	-2.8018	0.0000	-2.8018
Clinoptilolite-hy-Sr	5.6080E-12	-11.2512	0.0000	-11.2512

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-hy-ss	-59.042	-80.551	
Clinoptilolite-hy-Ca	-59.042	-80.551	
Clinoptilolite-hy-Cs	-59.042	-80.551	
Clinoptilolite-hy-K	-59.042	-80.551	
Clinoptilolite-hy-Na	-59.042	-80.551	
Clinoptilolite-hy-Sr	-59.042	-80.551	

--- Clinoptilolite-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-Ca	7.8161E-01	-0.1070	-0.2632	-0.3702
Clinoptilolite-Cs	3.0397E-07	-6.5172	-16.0323	-22.5494
Clinoptilolite-K	9.6829E-02	-1.0140	-2.4944	-3.5084
Clinoptilolite-NH4	1.0306E-51	-50.9869	-125.4278	-176.4146
Clinoptilolite-Na	1.2112E-01	-0.9168	-2.2553	-3.1721
Clinoptilolite-Sr	4.3841E-04	-3.3581	-8.2610	-11.6191

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-ss	-58.674	-80.048	
Clinoptilolite-Ca	-58.674	-80.048	
Clinoptilolite-Cs	-58.674	-80.048	
Clinoptilolite-K	-58.674	-80.048	
Clinoptilolite-NH4	-58.674	-80.048	
Clinoptilolite-Na	-58.674	-80.048	
Clinoptilolite-Sr	-58.674	-80.048	

--- Saponite-tri ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Saponite-Ca	1.4822E-03	-2.8291	1.8955	-0.9336
Saponite-H	9.9737E-01	-0.0011	0.0008	-0.0004
Saponite-K	9.6753E-05	-4.0143	2.6896	-1.3247
Saponite-Mg	9.1182E-04	-3.0401	2.0369	-1.0032
Saponite-Na	1.4348E-04	-3.8432	2.5750	-1.2683

Mineral	Log Q/K	Aff, kcal	State
Saponite-tri	-42.292	-57.699	
Saponite-Ca	-42.292	-57.699	
Saponite-H	-42.292	-57.699	
Saponite-K	-42.292	-57.699	
Saponite-Mg	-42.292	-57.699	
Saponite-Na	-42.292	-57.699	

--- Smectite-di ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Beidellite-Ca	8.8887E-68	-67.0512	44.9243	-22.1269
Beidellite-K	5.8064E-69	-68.2361	45.7182	-22.5179
Beidellite-Mg	5.4682E-68	-67.2622	45.0656	-22.1965
Beidellite-Na	8.6046E-69	-68.0653	45.6037	-22.4615
Montmor-Ca	3.9308E-58	-57.4055	38.4617	-18.9438
Montmor-K	4.1936E-59	-58.3774	39.1129	-19.2645
Montmor-Mg	3.9301E-58	-57.4056	38.4617	-18.9438
Montmor-Na	6.0603E-59	-58.2175	39.0057	-19.2118
Nontronite-Ca	5.6251E-01	-0.2499	0.1674	-0.0825
Nontronite-K	3.6745E-02	-1.4348	0.9613	-0.4735
Nontronite-Mg	3.4629E-01	-0.4606	0.3086	-0.1520
Nontronite-Na	5.4453E-02	-1.2640	0.8469	-0.4171

Mineral	Log Q/K	Aff, kcal	State
Smectite-di	-3.659	-4.992	
Beidellite-Ca	-3.659	-4.992	
Beidellite-K	-3.659	-4.992	
Beidellite-Mg	-3.659	-4.992	
Beidellite-Na	-3.659	-4.992	
Montmor-Ca	-3.659	-4.992	
Montmor-K	-3.659	-4.992	
Montmor-Mg	-3.659	-4.992	
Montmor-Na	-3.659	-4.992	
Nontronite-Ca	-3.659	-4.992	
Nontronite-K	-3.659	-4.992	
Nontronite-Mg	-3.659	-4.992	
Nontronite-Na	-3.659	-4.992	

--- Lanthanide hydroxide ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
La(OH)3	1.2829E-05	-4.8918	0.0000	-4.8918
Ce(OH)3	3.7099E-15	-14.4306	0.0000	-14.4306
Nd(OH)3(c)	3.4718E-01	-0.4595	0.0000	-0.4595
Gd(OH)3	5.8550E-01	-0.2325	0.0000	-0.2325
Sm(OH)3	6.7307E-02	-1.1719	0.0000	-1.1719

Mineral	Log Q/K	Aff, kcal	State

Lanthanide hydroxide	-24.638	-33.614
La(OH)3	-24.638	-33.614
Ce(OH)3	-24.638	-33.614
Nd(OH)3(c)	-24.638	-33.614
Gd(OH)3	-24.638	-33.614
Sm(OH)3	-24.638	-33.614

--- Rhabdophane-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaPO4:H2O	4.1201E-01	-0.3851	0.0000	-0.3851
CePO4:H2O	3.7677E-11	-10.4239	0.0000	-10.4239
NdPO4:H2O	2.2247E-01	-0.6527	0.0000	-0.6527
GdPO4:H2O	1.4936E-01	-0.8258	0.0000	-0.8258
SmPO4:H2O	2.1616E-01	-0.6652	0.0000	-0.6652

Mineral	Log Q/K	Aff, kcal	State
Rhabdophane-ss	-9.764	-13.321	
LaPO4:H2O	-9.764	-13.321	
CePO4:H2O	-9.764	-13.321	
NdPO4:H2O	-9.764	-13.321	
GdPO4:H2O	-9.764	-13.321	
SmPO4:H2O	-9.764	-13.321	

--- Lanthanide fluoride ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaF3:0.5H2O	5.7252E-01	-0.2422	0.0000	-0.2422
CeF3:0.5H2O	8.2979E-11	-10.0810	0.0000	-10.0810
NdF3:0.5H2O	3.8918E-01	-0.4098	0.0000	-0.4098
GdF3:0.5H2O	8.2629E-03	-2.0829	0.0000	-2.0829
SmF3:0.5H2O	3.0038E-02	-1.5223	0.0000	-1.5223

Mineral	Log Q/K	Aff, kcal	State
Lanthanide fluoride	-11.743	-16.021	
LaF3:0.5H2O	-11.743	-16.021	
CeF3:0.5H2O	-11.743	-16.021	
NdF3:0.5H2O	-11.743	-16.021	
GdF3:0.5H2O	-11.743	-16.021	
SmF3:0.5H2O	-11.743	-16.021	

--- Summary of Gases ---

Gas	Fugacity	Log fugacity

Al(g)	4.7344-201	-200.3247
B(g)	8.5659-204	-203.0672
BF3(g)	3.7591E-24	-23.4249
C(g)	3.0917-190	-189.5098
CH4(g)	3.5240-146	-145.4530
CO(g)	6.0395E-49	-48.2190
CO2(g)	3.1623E-04	-3.5000
Ca(g)	7.2345-164	-163.1406
Chlorine	3.5846E-17	-16.4456
Cs(g)	3.5180E-89	-88.4537
Cu(g)	7.5964E-93	-92.1194
Fluorine	1.4754E-72	-71.8311
H2(g)	6.1104E-42	-41.2139
H2O(g)	2.5958E-02	-1.5857
H2S(g)	2.2901-130	-129.6401
HCl(g)	7.3418E-13	-12.1342
HF(g)	5.3160E-09	-8.2744
K(g)	2.2175E-83	-82.6541
Li(g)	7.8246-103	-102.1065
Mg(g)	1.0898-141	-140.9627
Nitrogen	2.6192E-08	-7.5818
NH3(g)	1.8637E-63	-62.7296
NO(g)	5.0960E-20	-19.2928
NO2(g)	3.4844E-14	-13.4579
Na(g)	1.8194E-81	-80.7401
O2(g)	2.0999E-01	-0.6778
Pb(g)	7.6391E-81	-80.1170
S2(g)	3.1320-203	-202.5042
SO2(g)	4.0578E-43	-42.3917
Si(g)	4.2433-221	-220.3723
SiF4(g)	3.5401E-18	-17.4510
Ti(g)	3.8019-231	-230.4200
TiCl4(g)	9.7471E-62	-61.0111
U(g)	1.0091-304	-303.9960
U2Cl10(g)	4.7271-202	-201.3254
U2Cl8(g)	4.0884-216	-215.3884
U2F10(g)	2.4793-120	-119.6057
UCl(g)	6.6050-255	-254.1801
UCl2(g)	1.2933-203	-202.8883
UCl3(g)	5.5464-150	-149.2560
UCl4(g)	1.2880-113	-112.8901
UCl5(g)	1.5390-114	-113.8128
UCl6(g)	3.4164-110	-109.4664
UF(g)	1.0164-240	-239.9929
UF2(g)	7.5920-195	-194.1196
UF3(g)	1.3956-142	-141.8552
UF4(g)	3.7867E-87	-86.4217
UF5(g)	4.7061E-73	-72.3273
UF6(g)	5.7592E-73	-72.2396
UO(g)	7.9699-220	-219.0985
UO2(g)	1.4766-135	-134.8307
UO2Cl2(g)	2.3110E-71	-70.6362
UO2F2(g)	9.8414E-61	-60.0069
UO3(g)	1.0861E-82	-81.9641
UOF4(g)	1.1284E-64	-63.9475
Zn(g)	1.2815E-90	-89.8923

- -

```
Stepping to zi=  2.5119E-06, delzi=  9.2699E-07, nord= 3
  time =  2.4227E-02 d, dltime =  8.9409E-03 d
Steps completed =    25, iter =  6, ncorr = 0
Most rapidly changing is zvclg1(Rutile                  ) =     -9.2928

- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -


                    Reaction progress        =  2.51188643150946E-06
                    Log of reaction progress =      -5.6000000



                    Time =  2.093E+03 sec
                         =  2.423E-02 days
                         =  6.633E-05 years

                    Log sec =        3.321
                    Log days =      -1.616
                    Log years =     -4.178

                    Temperature    =     25.000 degrees C
                    total pressure =      1.013 bars


Step size is limited by the print requirement


                              --- Reactant Summary ---


    Reactant                  Moles     Delta moles    Mass, g    Delta Mass, g

 Tuff                       1.0000E+02   2.5119E-06   2.0586E+03   5.1711E-05


               Current total mass =  2.05865E+03 grams
               Delta total mass   =  5.17109E-05 grams
               Delta total volume =      0.00000 cc


    Reactant                Rel. Rate      Rate         Rate
                             mol/mol       mol/s      mol/s/cm2

 Tuff                       1.0000E+00   1.2000E-09   2.5000E-15


    Reactant                  Affinity   Surface Area
                              kcal/mol     mol/s/cm2

 Tuff                        999.00000   4.8000E+05


    Reactant                Rate Constants, mol/s/cm2

 Tuff
                   Forward    2.5000E-15


        Affinity of the overall irreversible reaction=     0.000 kcal
        Contributions from irreversible reactions
        with no thermodynamic data are not included
```

--- Element Totals for the Aqueous Solution ---

Element	mg/kg soln.	Molality	Moles
O	8.865403E+05	5.561111E+01	5.559508E+01
Al	4.334519E-02	1.612282E-06	1.611817E-06
B	1.334829E-01	1.239157E-05	1.238800E-05
Ba	1.368719E-05	1.000288E-10	1.000000E-10
Ca	1.295723E+01	3.244687E-04	3.243752E-04
Ce	1.396506E-19	1.000288E-24	9.999994E-25
Cl	7.116513E+00	2.014581E-04	2.014000E-04
Cr	2.996352E+02	5.783475E-03	5.781807E-03
Cs	1.324650E-05	1.000288E-10	1.000000E-10
Cu	6.650219E-10	1.050303E-14	1.050000E-14
F	2.172842E+00	1.147831E-04	1.147500E-04
Fe	8.884443E-01	1.596604E-05	1.596143E-05
Gd	1.567289E-09	1.000288E-14	1.000000E-14
H	1.115156E+05	1.110370E+02	1.110050E+02
C	1.267583E-01	1.059166E-05	1.058861E-05
P	7.325646E+00	2.373661E-04	2.372977E-04
K	5.025570E+00	1.290014E-04	1.289642E-04
La	1.384452E-09	1.000288E-14	1.000000E-14
Li	6.917999E-07	1.000288E-10	1.000000E-10
Mg	2.003415E+00	8.272600E-05	8.270214E-05
Mn	3.250702E+01	5.938417E-04	5.936705E-04
Mo	2.179386E+02	2.279823E-03	2.279166E-03
N	1.982366E+00	1.420410E-04	1.420000E-04
Na	4.564982E+01	1.992835E-03	1.992260E-03
Nd	1.437620E-09	1.000288E-14	1.000000E-14
Ni	7.502088E+02	1.282876E-02	1.282506E-02
Pb	2.065134E-05	1.000288E-10	1.000000E-10
Pu	2.431914E-09	1.000288E-14	1.000000E-14
S	5.507393E+02	1.723725E-02	1.723228E-02
Si	2.821476E+00	1.008233E-04	1.007942E-04
Sm	1.498617E-09	1.000288E-14	1.000000E-14
Sr	8.732965E-06	1.000288E-10	1.000000E-10
Ti	1.078259E-05	2.260143E-10	2.259491E-10
U	2.372401E-09	1.000288E-14	1.000000E-14
V	4.768069E+00	9.393719E-05	9.391010E-05
Zn	6.517331E-06	1.000288E-10	1.000000E-10
Zr	9.092170E-16	1.000288E-20	1.000000E-20

Single ion activities and activity coefficients are here defined
with respect to the modified NBS pH scale

	pH	Eh	pe
modified NBS pH scale	2.0406	1.0983	1.8566E+01
rational pH scale	1.9641	1.1028	1.8643E+01

pHCl = 5.8287

Oxygen fugacity = 2.09991E-01
Log oxygen fugacity = -0.67780

Activity of water = 0.99924
Log activity of water = -0.00033

Ionic strength = 5.880064E-02 molal
Sum of molalities = 0.0494654446837
Osmotic coefficient = 0.85806

Mass of solution = 1.003325 kg
Mass of solutes = 0.003613 kg
Conc. of solutes = 0.360115 per cent (w/w)

Moles of solvent H2O = 5.54924E+01
Mass of solvent H2O = 9.99712E-01 kg

Species	Molality	Log molality	Log gamma	Log activity
H+	1.0861E-02	-1.9641	-0.0765	-2.0406
Ni++	1.0209E-02	-1.9910	-0.3466	-2.3376
SO4--	9.7762E-03	-2.0098	-0.3602	-2.3701
HSO4-	4.5007E-03	-2.3467	-0.0849	-2.4316
HCrO4-	4.0507E-03	-2.3925	-0.0849	-2.4774
NiSO4(aq)	2.6184E-03	-2.5820	0.0000	-2.5820
MoO4--	2.2798E-03	-2.6421	-0.3492	-2.9913
Na+	1.9398E-03	-2.7122	-0.0983	-2.8106
Cr2O7--	8.6348E-04	-3.0637	-0.3602	-3.4240
Mn++	4.1403E-04	-3.3830	-0.3466	-3.7295
O2(aq)	2.6166E-04	-3.5823	0.0062	-3.5761
Ca++	2.5991E-04	-3.5852	-0.3466	-3.9317
Cl-	2.0085E-04	-3.6971	-0.0909	-3.7881
MnSO4(aq)	1.7918E-04	-3.7467	0.0000	-3.7467
NO3-	1.4021E-04	-3.8532	-0.0909	-3.9441
K+	1.2511E-04	-3.9027	-0.1044	-4.0071
H3PO4(aq)	1.1922E-04	-3.9236	0.0000	-3.9236
H2PO4-	1.0769E-04	-3.9678	-0.0849	-4.0527
HF(aq)	1.0139E-04	-3.9940	0.0000	-3.9940
SiO2(aq)	1.0082E-04	-3.9964	0.0000	-3.9964
VO2+	7.7220E-05	-4.1123	-0.0983	-4.2106
CaSO4(aq)	6.4462E-05	-4.1907	0.0000	-4.1907
Mg++	5.3913E-05	-4.2683	-0.3139	-4.5822
NaSO4-	5.2996E-05	-4.2758	-0.0849	-4.3606
MgSO4(aq)	2.8803E-05	-4.5406	0.0000	-4.5406
B(OH)3(aq)	1.2392E-05	-4.9069	0.0000	-4.9069
VO2SO4-	1.2140E-05	-4.9158	-0.0849	-5.0007
CO2(aq)	1.0591E-05	-4.9751	0.0062	-4.9689
FeHPO4+	9.8616E-06	-5.0061	-0.0983	-5.1044
F-	9.2543E-06	-5.0337	-0.0878	-5.1215
Fe+++	3.9869E-06	-5.3994	-0.6676	-6.0669
Cr+++	3.9839E-06	-5.3997	-0.6676	-6.0673
KSO4-	3.8666E-06	-5.4127	-0.0849	-5.4976
VO(OH)3(aq)	3.3835E-06	-5.4706	0.0000	-5.4706
NiNO3+	1.6466E-06	-5.7834	-0.0983	-5.8817
H2CrO4(aq)	1.4541E-06	-5.8374	0.0000	-5.8374
FeOH++	1.4437E-06	-5.8405	-0.3761	-6.2166
VO2F(aq)	1.0421E-06	-5.9821	0.0000	-5.9821
AlF2+	9.2582E-07	-6.0335	-0.0983	-6.1318
AlF++	5.8312E-07	-6.2342	-0.3761	-6.6103
MnH2PO4+	4.6355E-07	-6.3339	-0.0983	-6.4322
FeSO4+	3.8810E-07	-6.4111	-0.0983	-6.5094
HCl(aq)	3.1717E-07	-6.4987	0.0000	-6.4987
CrO4--	2.6861E-07	-6.5709	-0.3602	-6.9311

FeF++	2.1096E-07	-6.6758	-0.3761	-7.0519
NiCl+	9.4729E-08	-7.0235	-0.0983	-7.1219
HPO3F-	9.2003E-08	-7.0362	-0.0849	-7.1211
CaNO3+	8.3648E-08	-7.0775	-0.0983	-7.1759
MnCl+	7.6216E-08	-7.1180	-0.0983	-7.2163
H2VO4-	7.2896E-08	-7.1373	-0.0849	-7.2222
AlF3(aq)	7.0261E-08	-7.1533	0.0000	-7.1533
CrO3Cl-	6.4828E-08	-7.1882	-0.0849	-7.2731
HNO3(aq)	5.1607E-08	-7.2873	0.0000	-7.2873
MnF+	4.7569E-08	-7.3227	-0.0983	-7.4210
VO2(OH)2-	4.5175E-08	-7.3451	-0.0849	-7.4300
MnNO3+	4.2136E-08	-7.3753	-0.0983	-7.4737
NaCl(aq)	4.2108E-08	-7.3756	0.0000	-7.3756
H2SO4(aq)	3.3709E-08	-7.4723	0.0000	-7.4723
Fe(SO4)2-	3.1012E-08	-7.5085	-0.0849	-7.5934
VO2HPO4-	3.0678E-08	-7.5132	-0.0849	-7.5981
H2F2(aq)	2.7782E-08	-7.5562	0.0000	-7.5562
Fe(OH)2+	2.7671E-08	-7.5580	-0.0983	-7.6563
KHSO4(aq)	2.4877E-08	-7.6042	0.0000	-7.6042
CrOH++	2.2344E-08	-7.6508	-0.3761	-8.0269
AlSO4+	1.7759E-08	-7.7506	-0.0983	-7.8489
Al+++	1.5090E-08	-7.8213	-0.6676	-8.4889
FeF2+	1.3749E-08	-7.8617	-0.0983	-7.9601
MgF+	5.5855E-09	-8.2529	-0.0983	-8.3513
CaF+	5.3312E-09	-8.2732	-0.0983	-8.3715
CaCl+	4.8189E-09	-8.3171	-0.0983	-8.4154
MgCl+	3.9190E-09	-8.4068	-0.0983	-8.5052
VO2F2-	2.7627E-09	-8.5587	-0.0849	-8.6436
FeNO3++	2.3175E-09	-8.6350	-0.3761	-9.0111
PO3F--	1.5146E-09	-8.8197	-0.3602	-9.1799
HPO4--	1.3892E-09	-8.8572	-0.3602	-9.2174
NaF(aq)	1.1758E-09	-8.9297	0.0000	-8.9297
HCO3-	6.4804E-10	-9.1884	-0.0849	-9.2733
KCl(aq)	5.1315E-10	-9.2898	0.0000	-9.2898
MnHPO4(aq)	4.2954E-10	-9.3670	0.0000	-9.3670
VO++	2.7648E-10	-9.5583	-0.3761	-9.9344
CrCl++	2.3539E-10	-9.6282	-0.3761	-10.0043
Ti(OH)4(aq)	2.2601E-10	-9.6459	0.0000	-9.6459
HF2-	2.2501E-10	-9.6478	-0.0849	-9.7327
AlF4-	1.6223E-10	-9.7899	-0.0849	-9.8748
VOSO4(aq)	1.4980E-10	-9.8245	0.0000	-9.8245
Mn+++	1.1764E-10	-9.9294	-0.8157	-10.7452
Cs+	1.0002E-10	-9.9999	-0.1077	-10.1076

--- Summary of Instantaneously Precipitated Solid Phases ---
(defined by derivatives)

--- Theoretical Rock Composition ---
g/kg

C 3.357239E-05
Ti 1.211364E-02

--- Oxide Percentages ---

Oxide Theoretical rock

Total = 0.0000

Phase/end-member d mol/d zi d grams/d zi d vol (cc)/d zi

Rutile		2.5300E-04	2.0209E-02	4.7615E-03
fix	CO2(g)	2.7951E-06	1.2301E-04	0.0000E+00
fix	O2(g)	-6.9428E-04	-2.2216E-02	0.0000E+00

--- Summary of Solid Phases (E.S.+P.R.S.) ---

Phase/End-member		Log moles	Moles	Mass, g	Volume, cc
Rutile		-9.2928	5.0956E-10	4.0703E-08	9.5899E-09
fix	CO2(g)	2.3010	2.0000E+02	8.8020E+03	0.0000E+00
fix	O2(g)	2.3010	2.0000E+02	6.3998E+03	0.0000E+00

	Mass, grams	Volume, cc
Created	1.520172E+04	9.589885E-09
Destroyed	5.171087E-05	0.000000E+00
Net	1.520172E+04	9.589885E-09

Warning-- these volume totals may be incomplete because
of missing partial molar volume data in the data base

--- Summary of Pure Mineral Saturation States ---

Mineral	Log Q/K	Aff, kcal	State
AlF3	-6.644	-9.065	
Anglesite	-4.894	-6.677	
Anhydrite	-1.995	-2.722	
BaZrO3	69.237	94.459	ssatd
Barite	-2.765	-3.772	
Bassanite	-2.640	-3.602	
Boric_acid	-4.749	-6.478	
CaSO4:0.5H2O(beta)	-2.809	-3.832	
CaZrO3	129.701	176.949	ssatd
Celestite	-7.194	-9.815	
Chalcedony	-0.268	-0.366	
Coesite	-0.807	-1.101	
CrO2	-0.909	-1.241	
Cristobalite(alpha)	-0.548	-0.747	
Cristobalite(beta)	-0.991	-1.352	
Crocoite	-4.591	-6.263	
Epsomite	-4.992	-6.811	
Fe(OH)3	-5.602	-7.642	
FeF3	-2.193	-2.991	
Fluorite	-4.138	-5.645	
Goethite	-0.480	-0.655	
Gypsum	-1.820	-2.483	
Hematite	0.000	0.001	ssatd
Hexahydrite	-5.227	-7.132	
Ice	-0.139	-0.190	
Jarosite	-5.336	-7.279	
Kieserite	-6.686	-9.121	
Manganite	-4.459	-6.084	
Mercallite	-6.979	-9.521	
Mirabilite	-6.855	-9.352	
MnHPO4	0.000	0.000	ssatd
MnO2(gamma)	-1.518	-2.071	

Morenosite	-2.696	-3.678	
NiSO4:6H2O(alpha)	-2.702	-3.687	
Nontronite-Ca	-3.733	-5.092	
Nontronite-H	-2.799	-3.819	
Nontronite-K	-4.124	-5.626	
Nontronite-Mg	-3.802	-5.187	
Nontronite-Na	-4.067	-5.549	
Pentahydrite	-5.567	-7.595	
Pyrolusite	0.000	0.000	ssatd
Quartz	0.003	0.004	ssatd
Rutile	0.000	0.000	satd
Sellaite	-5.441	-7.423	
Shcherbinaite	-2.888	-3.940	
SiO2(am)	-1.283	-1.750	
SrZrO3	106.096	144.746	ssatd
Starkeyite	-5.954	-8.123	
Strengite	-1.902	-2.594	
Tridymite	-0.169	-0.230	
fix CO2(g)	0.000	0.000	satd
fix O2(g)	0.000	0.000	satd

--- Summary of Solid Solutions ---

--- Carbonate-Calcite ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Calcite	5.6706E-03	-2.2464	0.0000	-2.2464
Magnesite	4.5527E-04	-3.3417	0.0000	-3.3417
Rhodochrosite	9.9387E-01	-0.0027	0.0000	-0.0027
Siderite	1.2696E-08	-7.8963	0.0000	-7.8963
Smithsonite	5.2900E-08	-7.2765	0.0000	-7.2765
Strontianite	2.2203E-07	-6.6536	0.0000	-6.6536

Mineral	Log Q/K	Aff, kcal	State
Carbonate-Calcite	-10.767	-14.689	
Calcite	-10.767	-14.689	
Magnesite	-10.767	-14.689	
Rhodochrosite	-10.767	-14.689	
Siderite	-10.767	-14.689	
Smithsonite	-10.767	-14.689	
Strontianite	-10.767	-14.689	

--- Clinoptilolite-hy-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-hy-Ca	9.9769E-01	-0.0010	0.0000	-0.0010
Clinoptilolite-hy-Cs	6.6775E-23	-22.1754	0.0000	-22.1754
Clinoptilolite-hy-K	7.3271E-04	-3.1351	0.0000	-3.1351
Clinoptilolite-hy-Na	1.5784E-03	-2.8018	0.0000	-2.8018
Clinoptilolite-hy-Sr	5.6079E-12	-11.2512	0.0000	-11.2512

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-hy-ss	-58.980	-80.466	
Clinoptilolite-hy-Ca	-58.980	-80.466	
Clinoptilolite-hy-Cs	-58.980	-80.466	
Clinoptilolite-hy-K	-58.980	-80.466	
Clinoptilolite-hy-Na	-58.980	-80.466	
Clinoptilolite-hy-Sr	-58.980	-80.466	

--- Clinoptilolite-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-Ca	7.8160E-01	-0.1070	-0.2633	-0.3703
Clinoptilolite-Cs	3.0396E-07	-6.5172	-16.0323	-22.5495
Clinoptilolite-K	9.6842E-02	-1.0139	-2.4943	-3.5082
Clinoptilolite-NH4	1.0306E-51	-50.9869	-125.4278	-176.4147
Clinoptilolite-Na	1.2112E-01	-0.9168	-2.2553	-3.1721
Clinoptilolite-Sr	4.3840E-04	-3.3581	-8.2610	-11.6191

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-ss	-58.612	-79.964	
Clinoptilolite-Ca	-58.612	-79.964	
Clinoptilolite-Cs	-58.612	-79.964	
Clinoptilolite-K	-58.612	-79.964	
Clinoptilolite-NH4	-58.612	-79.964	
Clinoptilolite-Na	-58.612	-79.964	
Clinoptilolite-Sr	-58.612	-79.964	

--- Saponite-tri ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Saponite-Ca	1.4822E-03	-2.8291	1.8955	-0.9336
Saponite-H	9.9737E-01	-0.0011	0.0008	-0.0004
Saponite-K	9.6769E-05	-4.0143	2.6896	-1.3247
Saponite-Mg	9.1183E-04	-3.0401	2.0369	-1.0032
Saponite-Na	1.4348E-04	-3.8432	2.5749	-1.2683

Mineral	Log Q/K	Aff, kcal	State
Saponite-tri	-42.284	-57.687	
Saponite-Ca	-42.284	-57.687	
Saponite-H	-42.284	-57.687	
Saponite-K	-42.284	-57.687	
Saponite-Mg	-42.284	-57.687	
Saponite-Na	-42.284	-57.687	

--- Smectite-di ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Beidellite-Ca	1.0728E-67	-66.9695	44.8695	-22.0999
Beidellite-K	7.0092E-69	-68.1543	45.6634	-22.4909
Beidellite-Mg	6.6000E-68	-67.1805	45.0109	-22.1696
Beidellite-Na	1.0385E-68	-67.9836	45.5490	-22.4346
Montmor-Ca	4.4682E-58	-57.3499	38.4244	-18.9255
Montmor-K	4.7676E-59	-58.3217	39.0755	-19.2462
Montmor-Mg	4.4674E-58	-57.3499	38.4245	-18.9255
Montmor-Na	6.8889E-59	-58.1618	38.9684	-19.1934
Nontronite-Ca	5.6251E-01	-0.2499	0.1674	-0.0825
Nontronite-K	3.6750E-02	-1.4347	0.9613	-0.4735
Nontronite-Mg	3.4629E-01	-0.4606	0.3086	-0.1520
Nontronite-Na	5.4453E-02	-1.2640	0.8469	-0.4171

Mineral	Log Q/K	Aff, kcal	State
Smectite-di	-3.650	-4.980	
Beidellite-Ca	-3.650	-4.980	
Beidellite-K	-3.650	-4.980	
Beidellite-Mg	-3.650	-4.980	
Beidellite-Na	-3.650	-4.980	
Montmor-Ca	-3.650	-4.980	
Montmor-K	-3.650	-4.980	
Montmor-Mg	-3.650	-4.980	
Montmor-Na	-3.650	-4.980	
Nontronite-Ca	-3.650	-4.980	
Nontronite-K	-3.650	-4.980	
Nontronite-Mg	-3.650	-4.980	
Nontronite-Na	-3.650	-4.980	

--- Lanthanide hydroxide ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
La(OH)3	1.2829E-05	-4.8918	0.0000	-4.8918
Ce(OH)3	3.7099E-15	-14.4306	0.0000	-14.4306
Nd(OH)3(c)	3.4717E-01	-0.4595	0.0000	-0.4595
Gd(OH)3	5.8551E-01	-0.2325	0.0000	-0.2325
Sm(OH)3	6.7307E-02	-1.1719	0.0000	-1.1719

Mineral	Log Q/K	Aff, kcal	State
Lanthanide hydroxide	-24.638	-33.614	
La(OH)3	-24.638	-33.614	
Ce(OH)3	-24.638	-33.614	
Nd(OH)3(c)	-24.638	-33.614	
Gd(OH)3	-24.638	-33.614	
Sm(OH)3	-24.638	-33.614	

--- Rhabdophane-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaPO4:H2O	4.1201E-01	-0.3851	0.0000	-0.3851
CePO4:H2O	3.7677E-11	-10.4239	0.0000	-10.4239
NdPO4:H2O	2.2247E-01	-0.6527	0.0000	-0.6527
GdPO4:H2O	1.4936E-01	-0.8258	0.0000	-0.8258
SmPO4:H2O	2.1616E-01	-0.6652	0.0000	-0.6652

Mineral	Log Q/K	Aff, kcal	State
Rhabdophane-ss	-9.764	-13.321	
LaPO4:H2O	-9.764	-13.321	
CePO4:H2O	-9.764	-13.321	
NdPO4:H2O	-9.764	-13.321	
GdPO4:H2O	-9.764	-13.321	
SmPO4:H2O	-9.764	-13.321	

--- Lanthanide fluoride ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaF3:0.5H2O	5.7252E-01	-0.2422	0.0000	-0.2422
CeF3:0.5H2O	8.2979E-11	-10.0810	0.0000	-10.0810
NdF3:0.5H2O	3.8918E-01	-0.4098	0.0000	-0.4098
GdF3:0.5H2O	8.2629E-03	-2.0829	0.0000	-2.0829
SmF3:0.5H2O	3.0038E-02	-1.5223	0.0000	-1.5223

Mineral	Log Q/K	Aff, kcal	State
Lanthanide fluoride	-11.744	-16.022	
LaF3:0.5H2O	-11.744	-16.022	
CeF3:0.5H2O	-11.744	-16.022	
NdF3:0.5H2O	-11.744	-16.022	
GdF3:0.5H2O	-11.744	-16.022	
SmF3:0.5H2O	-11.744	-16.022	

--- Summary of Gases ---

Gas	Fugacity	Log fugacity
Al(g)	4.8845-201	-200.3112
B(g)	8.5659-204	-203.0672
BF3(g)	3.7512E-24	-23.4258
C(g)	3.0917-190	-189.5098
CH4(g)	3.5240-146	-145.4530
CO(g)	6.0395E-49	-48.2190
CO2(g)	3.1623E-04	-3.5000
Ca(g)	7.2347-164	-163.1406
Chlorine	3.5845E-17	-16.4456
Cs(g)	3.5180E-89	-88.4537
Cu(g)	7.5966E-93	-92.1194
Fluorine	1.4733E-72	-71.8317
H2(g)	6.1104E-42	-41.2139

H2O(g)	2.5958E-02	-1.5857
H2S(g)	2.2901-130	-129.6402
HCl(g)	7.3417E-13	-12.1342
HF(g)	5.3123E-09	-8.2747
K(g)	2.2178E-83	-82.6541
Li(g)	7.8246-103	-102.1065
Mg(g)	1.0898-141	-140.9626
Nitrogen	2.6191E-08	-7.5818
NH3(g)	1.8637E-63	-62.7296
NO(g)	5.0960E-20	-19.2928
NO2(g)	3.4844E-14	-13.4579
Na(g)	1.8195E-81	-80.7401
O2(g)	2.0999E-01	-0.6778
Pb(g)	7.6393E-81	-80.1169
S2(g)	3.1319-203	-202.5042
SO2(g)	4.0577E-43	-42.3917
Si(g)	4.2536-221	-220.3712
SiF4(g)	3.5388E-18	-17.4511
Ti(g)	3.8019-231	-230.4200
TiCl4(g)	9.7467E-62	-61.0111
U(g)	1.0092-304	-303.9960
U2Cl10(g)	4.7274-202	-201.3254
U2Cl8(g)	4.0888-216	-215.3884
U2F10(g)	2.4625-120	-119.6086
UCl(g)	6.6055-255	-254.1801
UCl2(g)	1.2934-203	-202.8883
UCl3(g)	5.5467-150	-149.2560
UCl4(g)	1.2881-113	-112.8901
UCl5(g)	1.5391-114	-113.8127
UCl6(g)	3.4165-110	-109.4664
UF(g)	1.0158-240	-239.9932
UF2(g)	7.5820-195	-194.1202
UF3(g)	1.3928-142	-141.8561
UF4(g)	3.7765E-87	-86.4229
UF5(g)	4.6901E-73	-72.3288
UF6(g)	5.7357E-73	-72.2414
UO(g)	7.9705-220	-219.0985
UO2(g)	1.4767-135	-134.8307
UO2Cl2(g)	2.3111E-71	-70.6362
UO2F2(g)	9.8285E-61	-60.0075
UO3(g)	1.0861E-82	-81.9641
UOF4(g)	1.1253E-64	-63.9487
Zn(g)	1.2816E-90	-89.8923

- -

```
Stepping to zi=  3.9811E-06, delzi=  1.4692E-06, nord= 3
  time =  3.8398E-02 d, dltime =  1.4170E-02 d
iter =   10
      1 supersaturated pure minerals
      0 supersaturated solid solutions

               The most supersaturated phases           Affinity, kcal

                 1     475   Quartz                         0.00617420


  Attempted species assemblage no.   2
```

```
  1      1  H2O
  2      3  Al+++
  3      7  B(OH)3(aq)
  4      8  Ba++
  5     11  Ca++
  6     13  Ce+++
  7     14  Cl-
  8     16  CrO4--
  9     17  Cs+
 10     18  Cu++
 11     22  F-
 12     23  Fe++
 13     25  Gd+++
 14     26  H+
 15     28  HCO3-
 16     29  HPO4--
 17     35  K+
 18     37  La+++
 19     38  Li+
 20     40  Mg++
 21     41  Mn++
 22     42  MoO4--
 23     43  NO3-
 24     44  Na+
 25     45  Nd+++
 26     47  Ni++
 27     49  Pb++
 28     52  Pu++++
 29     58  SO4--
 30     62  SiO2(aq)
 31     63  Sm+++
 32     65  Sr++
 33     69  Ti(OH)4(aq)
 34     72  UO2++
 35     73  VO++
 36     78  Zn++
 37     79  Zr(OH)2++
 38     80  O2(g)
 39    475  Quartz
 40    482  Rutile
 41    689  fix     CO2(g)
 42    690  fix     O2(g)

Steps completed =    26, iter = 17, ncorr = 0

- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -


                    Reaction progress        =  3.98107170553479E-06
                    Log of reaction progress =      -5.4000000



                    Time =  3.318E+03 sec
                         =  3.840E-02 days
                         =  1.051E-04 years

                    Log sec =        3.521
                    Log days =      -1.416
                    Log years =     -3.978

                    Temperature    =     25.000 degrees C
                    total pressure =      1.013 bars
```

Step size is limited by the print requirement

Change in the product phase assemblage

--- Reactant Summary ---

Reactant	Moles	Delta moles	Mass, g	Delta Mass, g
Tuff	1.0000E+02	3.9811E-06	2.0586E+03	8.1956E-05

Current total mass = 2.05865E+03 grams
Delta total mass = 8.19562E-05 grams
Delta total volume = 0.00000 cc

Reactant	Rel. Rate mol/mol	Rate mol/s	Rate mol/s/cm2
Tuff	1.0000E+00	1.2000E-09	2.5000E-15

Reactant	Affinity kcal/mol	Surface Area mol/s/cm2
Tuff	999.00000	4.8000E+05

Reactant	Rate Constants, mol/s/cm2	
Tuff		
	Forward	2.5000E-15

Affinity of the overall irreversible reaction= 0.000 kcal
Contributions from irreversible reactions
with no thermodynamic data are not included

--- Element Totals for the Aqueous Solution ---

Element	mg/kg soln.	Molality	Moles
O	8.865403E+05	5.561111E+01	5.559508E+01
Al	4.537922E-02	1.687940E-06	1.687454E-06
B	1.334829E-01	1.239157E-05	1.238800E-05
Ba	1.368719E-05	1.000288E-10	1.000000E-10
Ca	1.295735E+01	3.244717E-04	3.243782E-04
Ce	1.396506E-19	1.000288E-24	9.999994E-25
Cl	7.116513E+00	2.014581E-04	2.014000E-04
Cr	2.996352E+02	5.783475E-03	5.781807E-03
Cs	1.324650E-05	1.000288E-10	1.000000E-10
Cu	6.650220E-10	1.050303E-14	1.050000E-14
F	2.172842E+00	1.147831E-04	1.147500E-04
Fe	8.886417E-01	1.596958E-05	1.596498E-05
Gd	1.567289E-09	1.000288E-14	1.000000E-14
H	1.115156E+05	1.110370E+02	1.110050E+02

C	1.267583E-01	1.059166E-05	1.058861E-05
P	7.325648E+00	2.373662E-04	2.372978E-04
K	5.026805E+00	1.290330E-04	1.289958E-04
La	1.384452E-09	1.000288E-14	1.000000E-14
Li	6.917999E-07	1.000288E-10	1.000000E-10
Mg	2.003459E+00	8.272784E-05	8.270398E-05
Mn	3.250704E+01	5.938420E-04	5.936708E-04
Mo	2.179386E+02	2.279823E-03	2.279166E-03
N	1.982366E+00	1.420410E-04	1.420000E-04
Na	4.565063E+01	1.992870E-03	1.992295E-03
Nd	1.437620E-09	1.000288E-14	1.000000E-14
Ni	7.502088E+02	1.282876E-02	1.282506E-02
Pb	2.065134E-05	1.000288E-10	1.000000E-10
Pu	2.431914E-09	1.000288E-14	1.000000E-14
S	5.507393E+02	1.723725E-02	1.723228E-02
Si	2.802950E+00	1.001613E-04	1.001324E-04
Sm	1.498617E-09	1.000288E-14	1.000000E-14
Sr	8.732965E-06	1.000288E-10	1.000000E-10
Ti	1.078259E-05	2.260143E-10	2.259491E-10
U	2.372401E-09	1.000288E-14	1.000000E-14
V	4.768069E+00	9.393719E-05	9.391010E-05
Zn	6.517331E-06	1.000288E-10	1.000000E-10
Zr	9.092171E-16	1.000288E-20	1.000000E-20

Single ion activities and activity coefficients are here defined
with respect to the modified NBS pH scale

	pH	Eh	pe
modified NBS pH scale	2.0407	1.0983	1.8566E+01
rational pH scale	1.9641	1.1028	1.8643E+01

pHCl = 5.8287

Oxygen fugacity = 2.09991E-01
Log oxygen fugacity = -0.67780

Activity of water = 0.99924
Log activity of water = -0.00033

Ionic strength = 5.880072E-02 molal
Sum of molalities = 0.0494646484818
Osmotic coefficient = 0.85806

Mass of solution = 1.003325 kg
Mass of solutes = 0.003613 kg
Conc. of solutes = 0.360111 per cent (w/w)

Moles of solvent H2O = 5.54924E+01
Mass of solvent H2O = 9.99712E-01 kg

Species	Molality	Log molality	Log gamma	Log activity
H+	1.0861E-02	-1.9641	-0.0765	-2.0407
Ni++	1.0209E-02	-1.9910	-0.3466	-2.3376

SO4--	9.7762E-03	-2.0098	-0.3602	-2.3701
HSO4-	4.5007E-03	-2.3467	-0.0849	-2.4316
HCrO4-	4.0507E-03	-2.3925	-0.0849	-2.4774
NiSO4(aq)	2.6184E-03	-2.5820	0.0000	-2.5820
MoO4--	2.2798E-03	-2.6421	-0.3492	-2.9913
Na+	1.9398E-03	-2.7122	-0.0983	-2.8106
Cr2O7--	8.6348E-04	-3.0637	-0.3602	-3.4240
Mn++	4.1403E-04	-3.3830	-0.3466	-3.7295
O2(aq)	2.6166E-04	-3.5823	0.0062	-3.5761
Ca++	2.5992E-04	-3.5852	-0.3466	-3.9317
Cl-	2.0085E-04	-3.6971	-0.0909	-3.7881
MnSO4(aq)	1.7919E-04	-3.7467	0.0000	-3.7467
NO3-	1.4021E-04	-3.8532	-0.0909	-3.9441
K+	1.2514E-04	-3.9026	-0.1044	-4.0070
H3PO4(aq)	1.1922E-04	-3.9237	0.0000	-3.9237
H2PO4-	1.0769E-04	-3.9678	-0.0849	-4.0527
HF(aq)	1.0128E-04	-3.9945	0.0000	-3.9945
SiO2(aq)	1.0016E-04	-3.9993	0.0000	-3.9993
VO2+	7.7221E-05	-4.1123	-0.0983	-4.2106
CaSO4(aq)	6.4462E-05	-4.1907	0.0000	-4.1907
Mg++	5.3915E-05	-4.2683	-0.3139	-4.5822
NaSO4-	5.2997E-05	-4.2757	-0.0849	-4.3606
MgSO4(aq)	2.8804E-05	-4.5406	0.0000	-4.5406
B(OH)3(aq)	1.2392E-05	-4.9069	0.0000	-4.9069
VO2SO4-	1.2140E-05	-4.9158	-0.0849	-5.0007
CO2(aq)	1.0591E-05	-4.9751	0.0062	-4.9689
FeHPO4+	9.8640E-06	-5.0059	-0.0983	-5.1043
F-	9.2443E-06	-5.0341	-0.0878	-5.1219
Fe+++	3.9878E-06	-5.3993	-0.6676	-6.0668
Cr+++	3.9837E-06	-5.3997	-0.6676	-6.0673
KSO4-	3.8676E-06	-5.4126	-0.0849	-5.4974
VO(OH)3(aq)	3.3836E-06	-5.4706	0.0000	-5.4706
NiNO3+	1.6466E-06	-5.7834	-0.0983	-5.8817
H2CrO4(aq)	1.4541E-06	-5.8374	0.0000	-5.8374
FeOH++	1.4440E-06	-5.8404	-0.3761	-6.2165
VO2F(aq)	1.0410E-06	-5.9825	0.0000	-5.9825
AlF2+	9.6888E-07	-6.0137	-0.0983	-6.1121
AlF++	6.1091E-07	-6.2140	-0.3761	-6.5901
MnH2PO4+	4.6355E-07	-6.3339	-0.0983	-6.4322
FeSO4+	3.8819E-07	-6.4110	-0.0983	-6.5093
HCl(aq)	3.1717E-07	-6.4987	0.0000	-6.4987
CrO4--	2.6861E-07	-6.5709	-0.3602	-6.9311
FeF++	2.1077E-07	-6.6762	-0.3761	-7.0523
NiCl+	9.4729E-08	-7.0235	-0.0983	-7.1219
HPO3F-	9.1901E-08	-7.0367	-0.0849	-7.1216
CaNO3+	8.3649E-08	-7.0775	-0.0983	-7.1759
MnCl+	7.6216E-08	-7.1180	-0.0983	-7.2163
AlF3(aq)	7.3450E-08	-7.1340	0.0000	-7.1340
H2VO4-	7.2899E-08	-7.1373	-0.0849	-7.2222
CrO3Cl-	6.4827E-08	-7.1882	-0.0849	-7.2731
HNO3(aq)	5.1607E-08	-7.2873	0.0000	-7.2873
MnF+	4.7518E-08	-7.3231	-0.0983	-7.4215
VO2(OH)2-	4.5177E-08	-7.3451	-0.0849	-7.4300
MnNO3+	4.2136E-08	-7.3753	-0.0983	-7.4737
NaCl(aq)	4.2108E-08	-7.3756	0.0000	-7.3756
H2SO4(aq)	3.3708E-08	-7.4723	0.0000	-7.4723
Fe(SO4)2-	3.1019E-08	-7.5084	-0.0849	-7.5933
VO2HPO4-	3.0678E-08	-7.5132	-0.0849	-7.5981
H2F2(aq)	2.7721E-08	-7.5572	0.0000	-7.5572
Fe(OH)2+	2.7678E-08	-7.5579	-0.0983	-7.6562
KHSO4(aq)	2.4883E-08	-7.6041	0.0000	-7.6041
CrOH++	2.2343E-08	-7.6509	-0.3761	-8.0270
AlSO4+	1.8625E-08	-7.7299	-0.0983	-7.8282

Al+++	1.5827E-08	-7.8006	-0.6676	-8.4682
FeF2+	1.3722E-08	-7.8626	-0.0983	-7.9609
MgF+	5.5796E-09	-8.2534	-0.0983	-8.3517
CaF+	5.3255E-09	-8.2736	-0.0983	-8.3720
CaCl+	4.8189E-09	-8.3171	-0.0983	-8.4154
MgCl+	3.9191E-09	-8.4068	-0.0983	-8.5052
VO2F2-	2.7567E-09	-8.5596	-0.0849	-8.6445
FeNO3++	2.3180E-09	-8.6349	-0.3761	-9.0110
PO3F--	1.5129E-09	-8.8202	-0.3602	-9.1804
HPO4--	1.3892E-09	-8.8572	-0.3602	-9.2174
NaF(aq)	1.1746E-09	-8.9301	0.0000	-8.9301
HCO3-	6.4804E-10	-9.1884	-0.0849	-9.2733
KCl(aq)	5.1328E-10	-9.2896	0.0000	-9.2896
MnHPO4(aq)	4.2955E-10	-9.3670	0.0000	-9.3670
VO++	2.7648E-10	-9.5583	-0.3761	-9.9344
CrCl++	2.3538E-10	-9.6282	-0.3761	-10.0043
Ti(OH)4(aq)	2.2601E-10	-9.6459	0.0000	-9.6459
HF2-	2.2452E-10	-9.6488	-0.0849	-9.7336
AlF4-	1.6941E-10	-9.7711	-0.0849	-9.8560
VOSO4(aq)	1.4980E-10	-9.8245	0.0000	-9.8245
Mn+++	1.1764E-10	-9.9294	-0.8157	-10.7452
Cs+	1.0002E-10	-9.9999	-0.1077	-10.1076

--- Summary of Instantaneously Precipitated Solid Phases ---
(defined by derivatives)

--- Theoretical Rock Composition ---
g/kg

Ti 1.211364E-02

--- Oxide Percentages ---

Oxide Theoretical rock

Total = 0.0000

Phase/end-member	d mol/d zi	d grams/d zi	d vol (cc)/d zi
Quartz	2.5300E-04	1.5201E-02	5.7401E-03
Rutile	-4.7322E-06	-3.7800E-04	-8.9060E-05
fix CO2(g)	-7.2206E-04	-3.1778E-02	0.0000E+00
fix O2(g)	0.0000E+00	0.0000E+00	0.0000E+00

--- Summary of Solid Phases (E.S.+P.R.S.) ---

Phase/End-member	Log moles	Moles	Mass, g	Volume, cc
Quartz	-5.9793	1.0489E-06	6.3022E-05	2.3797E-05
Rutile	-9.0549	8.8126E-10	7.0394E-08	1.6585E-08
fix CO2(g)	2.3010	2.0000E+02	8.8020E+03	0.0000E+00
fix O2(g)	2.3010	2.0000E+02	6.3998E+03	0.0000E+00

	Mass, grams	Volume, cc
Created	1.520172E+04	2.381385E-05
Destroyed	8.195620E-05	0.000000E+00
Net	1.520172E+04	2.381385E-05

Warning-- these volume totals may be incomplete because
of missing partial molar volume data in the data base

--- Summary of Pure Mineral Saturation States ---

Mineral	Log Q/K	Aff, kcal	State
AlF3	-6.625	-9.039	
Anglesite	-4.894	-6.677	
Anhydrite	-1.995	-2.722	
BaZrO3	69.238	94.460	ssatd
Barite	-2.765	-3.772	
Bassanite	-2.640	-3.602	
Boric_acid	-4.749	-6.478	
CaSO4:0.5H2O(beta)	-2.809	-3.832	
CaZrO3	129.702	176.950	ssatd
Celestite	-7.194	-9.815	
Chalcedony	-0.271	-0.370	
Coesite	-0.810	-1.105	
CrO2	-0.909	-1.241	
Cristobalite(alpha)	-0.551	-0.751	
Cristobalite(beta)	-0.994	-1.356	
Crocoite	-4.591	-6.263	
Epsomite	-4.992	-6.811	
Fe(OH)3	-5.601	-7.642	
FeF3	-2.194	-2.993	
Fluorite	-4.139	-5.646	
Goethite	-0.480	-0.655	
Gypsum	-1.820	-2.483	
Hematite	0.001	0.001	ssatd
Hexahydrite	-5.227	-7.132	
Ice	-0.139	-0.190	
Jarosite	-5.335	-7.279	
Kieserite	-6.686	-9.121	
Manganite	-4.459	-6.084	
Mercallite	-6.979	-9.521	
Mirabilite	-6.855	-9.352	
MnHPO4	0.000	0.000	ssatd
MnO2(gamma)	-1.518	-2.071	
Morenosite	-2.696	-3.678	
NiSO4:6H2O(alpha)	-2.702	-3.687	
Nontronite-Ca	-3.736	-5.097	
Nontronite-H	-2.803	-3.824	
Nontronite-K	-4.127	-5.631	
Nontronite-Mg	-3.806	-5.192	
Nontronite-Na	-4.071	-5.554	
Pentahydrite	-5.567	-7.595	
Pyrolusite	0.000	0.000	ssatd
Quartz	0.000	0.000	satd
Rutile	0.000	0.000	satd
Sellaite	-5.442	-7.424	
Shcherbinaite	-2.888	-3.940	
SiO2(am)	-1.286	-1.754	
SrZrO3	106.097	144.746	ssatd
Starkeyite	-5.954	-8.123	
Strengite	-1.901	-2.594	
Tridymite	-0.172	-0.234	
fix CO2(g)	0.000	0.000	satd
fix O2(g)	0.000	0.000	satd

--- Summary of Solid Solutions ---

--- Carbonate-Calcite ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Calcite	5.6707E-03	-2.2464	0.0000	-2.2464
Magnesite	4.5528E-04	-3.3417	0.0000	-3.3417
Rhodochrosite	9.9387E-01	-0.0027	0.0000	-0.0027
Siderite	1.2699E-08	-7.8962	0.0000	-7.8962
Smithsonite	5.2900E-08	-7.2765	0.0000	-7.2765
Strontianite	2.2203E-07	-6.6536	0.0000	-6.6536

Mineral	Log Q/K	Aff, kcal	State
Carbonate-Calcite	-10.767	-14.689	
Calcite	-10.767	-14.689	
Magnesite	-10.767	-14.689	
Rhodochrosite	-10.767	-14.689	
Siderite	-10.767	-14.689	
Smithsonite	-10.767	-14.689	
Strontianite	-10.767	-14.689	

--- Clinoptilolite-hy-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-hy-Ca	9.9769E-01	-0.0010	0.0000	-0.0010
Clinoptilolite-hy-Cs	6.6774E-23	-22.1754	0.0000	-22.1754
Clinoptilolite-hy-K	7.3332E-04	-3.1347	0.0000	-3.1347
Clinoptilolite-hy-Na	1.5785E-03	-2.8018	0.0000	-2.8018
Clinoptilolite-hy-Sr	5.6078E-12	-11.2512	0.0000	-11.2512

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-hy-ss	-58.950	-80.425	
Clinoptilolite-hy-Ca	-58.950	-80.425	
Clinoptilolite-hy-Cs	-58.950	-80.425	
Clinoptilolite-hy-K	-58.950	-80.425	
Clinoptilolite-hy-Na	-58.950	-80.425	
Clinoptilolite-hy-Sr	-58.950	-80.425	

--- Clinoptilolite-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-Ca	7.8158E-01	-0.1070	-0.2633	-0.3703
Clinoptilolite-Cs	3.0395E-07	-6.5172	-16.0323	-22.5495
Clinoptilolite-K	9.6863E-02	-1.0138	-2.4940	-3.5079

Clinoptilolite-NH4	1.0305E-51	-50.9869	-125.4279	-176.4148
Clinoptilolite-Na	1.2112E-01	-0.9168	-2.2553	-3.1721
Clinoptilolite-Sr	4.3839E-04	-3.3581	-8.2610	-11.6192

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-ss	-58.582	-79.923	
Clinoptilolite-Ca	-58.582	-79.923	
Clinoptilolite-Cs	-58.582	-79.923	
Clinoptilolite-K	-58.582	-79.923	
Clinoptilolite-NH4	-58.582	-79.923	
Clinoptilolite-Na	-58.582	-79.923	
Clinoptilolite-Sr	-58.582	-79.923	

--- Saponite-tri ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Saponite-Ca	1.4822E-03	-2.8291	1.8955	-0.9336
Saponite-H	9.9737E-01	-0.0011	0.0008	-0.0004
Saponite-K	9.6794E-05	-4.0142	2.6895	-1.3247
Saponite-Mg	9.1185E-04	-3.0401	2.0369	-1.0032
Saponite-Na	1.4349E-04	-3.8432	2.5749	-1.2683

Mineral	Log Q/K	Aff, kcal	State
Saponite-tri	-42.288	-57.692	
Saponite-Ca	-42.288	-57.692	
Saponite-H	-42.288	-57.692	
Saponite-K	-42.288	-57.692	
Saponite-Mg	-42.288	-57.692	
Saponite-Na	-42.288	-57.692	

--- Smectite-di ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Beidellite-Ca	1.4300E-67	-66.8447	44.7859	-22.0587
Beidellite-K	9.3448E-69	-68.0294	45.5797	-22.4497
Beidellite-Mg	8.7972E-68	-67.0557	44.9273	-22.1284
Beidellite-Na	1.3843E-68	-67.8588	45.4654	-22.3934
Montmor-Ca	5.3787E-58	-57.2693	38.3704	-18.8989
Montmor-K	5.7404E-59	-58.2411	39.0215	-19.2195
Montmor-Mg	5.3777E-58	-57.2694	38.3705	-18.8989
Montmor-Na	8.2927E-59	-58.0813	38.9145	-19.1668
Nontronite-Ca	5.6250E-01	-0.2499	0.1674	-0.0825
Nontronite-K	3.6759E-02	-1.4346	0.9612	-0.4734
Nontronite-Mg	3.4629E-01	-0.4606	0.3086	-0.1520
Nontronite-Na	5.4453E-02	-1.2640	0.8469	-0.4171

Mineral	Log Q/K	Aff, kcal	State

Smectite-di	-3.654	-4.985
Beidellite-Ca	-3.654	-4.985
Beidellite-K	-3.654	-4.985
Beidellite-Mg	-3.654	-4.985
Beidellite-Na	-3.654	-4.985
Montmor-Ca	-3.654	-4.985
Montmor-K	-3.654	-4.985
Montmor-Mg	-3.654	-4.985
Montmor-Na	-3.654	-4.985
Nontronite-Ca	-3.654	-4.985
Nontronite-K	-3.654	-4.985
Nontronite-Mg	-3.654	-4.985
Nontronite-Na	-3.654	-4.985

--- Lanthanide hydroxide ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
La(OH)3	1.2829E-05	-4.8918	0.0000	-4.8918
Ce(OH)3	3.7099E-15	-14.4306	0.0000	-14.4306
Nd(OH)3(c)	3.4717E-01	-0.4595	0.0000	-0.4595
Gd(OH)3	5.8551E-01	-0.2325	0.0000	-0.2325
Sm(OH)3	6.7307E-02	-1.1719	0.0000	-1.1719

Mineral	Log Q/K	Aff, kcal	State
Lanthanide hydroxide	-24.638	-33.614	
La(OH)3	-24.638	-33.614	
Ce(OH)3	-24.638	-33.614	
Nd(OH)3(c)	-24.638	-33.614	
Gd(OH)3	-24.638	-33.614	
Sm(OH)3	-24.638	-33.614	

--- Rhabdophane-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaPO4:H2O	4.1201E-01	-0.3851	0.0000	-0.3851
CePO4:H2O	3.7677E-11	-10.4239	0.0000	-10.4239
NdPO4:H2O	2.2247E-01	-0.6527	0.0000	-0.6527
GdPO4:H2O	1.4937E-01	-0.8257	0.0000	-0.8257
SmPO4:H2O	2.1616E-01	-0.6652	0.0000	-0.6652

Mineral	Log Q/K	Aff, kcal	State
Rhabdophane-ss	-9.764	-13.321	
LaPO4:H2O	-9.764	-13.321	
CePO4:H2O	-9.764	-13.321	
NdPO4:H2O	-9.764	-13.321	
GdPO4:H2O	-9.764	-13.321	
SmPO4:H2O	-9.764	-13.321	

--- Lanthanide fluoride ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaF3:0.5H2O	5.7252E-01	-0.2422	0.0000	-0.2422
CeF3:0.5H2O	8.2979E-11	-10.0810	0.0000	-10.0810
NdF3:0.5H2O	3.8918E-01	-0.4098	0.0000	-0.4098
GdF3:0.5H2O	8.2630E-03	-2.0829	0.0000	-2.0829
SmF3:0.5H2O	3.0038E-02	-1.5223	0.0000	-1.5223

Mineral	Log Q/K	Aff, kcal	State
Lanthanide fluoride	-11.746	-16.024	
LaF3:0.5H2O	-11.746	-16.024	
CeF3:0.5H2O	-11.746	-16.024	
NdF3:0.5H2O	-11.746	-16.024	
GdF3:0.5H2O	-11.746	-16.024	
SmF3:0.5H2O	-11.746	-16.024	

--- Summary of Gases ---

Gas	Fugacity	Log fugacity
Al(g)	5.1230-201	-200.2905
B(g)	8.5659-204	-203.0672
BF3(g)	3.7388E-24	-23.4273
C(g)	3.0917-190	-189.5098
CH4(g)	3.5240-146	-145.4530
CO(g)	6.0395E-49	-48.2190
CO2(g)	3.1623E-04	-3.5000
Ca(g)	7.2350-164	-163.1406
Chlorine	3.5844E-17	-16.4456
Cs(g)	3.5181E-89	-88.4537
Cu(g)	7.5968E-93	-92.1194
Fluorine	1.4701E-72	-71.8327
H2(g)	6.1104E-42	-41.2139
H2O(g)	2.5958E-02	-1.5857
H2S(g)	2.2900-130	-129.6402
HCl(g)	7.3416E-13	-12.1342
HF(g)	5.3065E-09	-8.2752
K(g)	2.2184E-83	-82.6540
Li(g)	7.8247-103	-102.1065
Mg(g)	1.0899-141	-140.9626
Nitrogen	2.6191E-08	-7.5819
NH3(g)	1.8637E-63	-62.7296
NO(g)	5.0959E-20	-19.2928
NO2(g)	3.4844E-14	-13.4579
Na(g)	1.8195E-81	-80.7400
O2(g)	2.0999E-01	-0.6778
Pb(g)	7.6395E-81	-80.1169
S2(g)	3.1318-203	-202.5042
SO2(g)	4.0576E-43	-42.3917
Si(g)	4.2257-221	-220.3741
SiF4(g)	3.5001E-18	-17.4559
Ti(g)	3.8019-231	-230.4200
TiCl4(g)	9.7462E-62	-61.0112

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U(g)                        1.0093-304   -303.9960
U2Cl10(g)                   4.7279-202   -201.3253
U2Cl8(g)                    4.0893-216   -215.3883
U2F10(g)                    2.4360-120   -119.6133
UCl(g)                      6.6062-255   -254.1801
UCl2(g)                     1.2935-203   -202.8882
UCl3(g)                     5.5471-150   -149.2559
UCl4(g)                     1.2882-113   -112.8900
UCl5(g)                     1.5392-114   -113.8127
UCl6(g)                     3.4166-110   -109.4664
UF(g)                       1.0148-240   -239.9936
UF2(g)                      7.5663-195   -194.1211
UF3(g)                      1.3884-142   -141.8575
UF4(g)                      3.7603E-87    -86.4248
UF5(g)                      4.6649E-73    -72.3312
UF6(g)                      5.6985E-73    -72.2442
UO(g)                       7.9715-220   -219.0985
UO2(g)                      1.4769-135   -134.8307
UO2Cl2(g)                   2.3113E-71    -70.6361
UO2F2(g)                    9.8080E-61    -60.0084
UO3(g)                      1.0863E-82    -81.9641
UOF4(g)                     1.1205E-64    -63.9506
Zn(g)                       1.2816E-90    -89.8922



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--- shifting e.s. solid(s) to the p.r.s. (shftz) ---

      shifted -- Quartz
              - old mass=  1.04889E-06, new mass=  8.00000E-07
  not shifted -- Rutile
              - mass=  8.81262E-10

Stepping to zi=  3.9821E-06, delzi=  1.0000E-09, nord= 0
  time =  3.8407E-02 d, dltime =  9.6451E-06 d
Steps completed =    27, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -6.0968

Stepping to zi=  3.9831E-06, delzi=  1.0000E-09, nord= 0
  time =  3.8417E-02 d, dltime =  9.6451E-06 d
Steps completed =    28, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -6.0966

Stepping to zi=  3.9841E-06, delzi=  1.0000E-09, nord= 0
  time =  3.8427E-02 d, dltime =  9.6451E-06 d
Steps completed =    29, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -6.0965

Stepping to zi=  3.9872E-06, delzi=  3.1523E-09, nord= 1
  time =  3.8457E-02 d, dltime =  3.0404E-05 d
Steps completed =    30, iter =  6, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -6.0960

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                    Reaction progress        =  3.98722398680742E-06
                    Log of reaction progress =      -5.3993294
```

```
                    Time =  3.323E+03 sec
                         =  3.846E-02 days
                         =  1.053E-04 years

                    Log sec =        3.521
                    Log days =      -1.415
                    Log years =     -3.978

                    Temperature    =     25.000 degrees C
                    total pressure =      1.013 bars


Flow-through system print following a discontinuity


     --- Summary of Instantaneously Precipitated Solid Phases ---
                 (defined by derivatives)

     --- Theoretical Rock Composition ---
                  g/kg

      O      5.317251E+01
      Si     4.675096E+01
      Ti     7.653360E-02

      --- Oxide Percentages ---

   Oxide   Theoretical rock


    Total =     0.0000


   Phase/end-member     d mol/d zi    d grams/d zi   d vol (cc)/d zi

Quartz                     2.6347E-01   1.5830E+01   5.9776E+00
Rutile                     2.5300E-04   2.0209E-02   4.7615E-03
fix     CO2(g)             0.0000E+00   0.0000E+00   0.0000E+00
fix     O2(g)             -7.1054E-04  -2.2737E-02   0.0000E+00


               --- Summary of Solid Phases (E.S.+P.R.S.) ---

   Phase/End-member        Log moles     Moles       Mass, g     Volume, cc

Quartz                       -5.9786   1.0505E-06   6.3119E-05   2.3834E-05
Rutile                       -9.0541   8.8282E-10   7.0518E-08   1.6615E-08
fix     CO2(g)                2.3010   2.0000E+02   8.8020E+03   0.0000E+00
fix     O2(g)                 2.3010   2.0000E+02   6.3998E+03   0.0000E+00


                            Mass, grams        Volume, cc

          Created         1.520172E+04       2.385066E-05
          Destroyed       0.000000E+00       0.000000E+00
          Net             1.520172E+04       2.385066E-05

         Warning-- these volume totals may be incomplete because
         of missing partial molar volume data in the data base
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Stepping to zi=  4.0187E-06, delzi=  3.1523E-08, nord= 2
  time =  3.8761E-02 d, dltime =  3.0404E-04 d
Steps completed =    31, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -6.0916

Stepping to zi=  4.3340E-06, delzi=  3.1523E-07, nord= 2
  time =  4.1801E-02 d, dltime =  3.0404E-03 d
Steps completed =    32, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -6.0492

Stepping to zi=  6.3096E-06, delzi=  1.9756E-06, nord= 3
  time =  6.0856E-02 d, dltime =  1.9055E-02 d
Steps completed =    33, iter = 18, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -5.8497

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                    Reaction progress        =  6.30957344480164E-06
                    Log of reaction progress =      -5.2000000



                    Time =  5.258E+03 sec
                         =  6.086E-02 days
                         =  1.666E-04 years

                    Log sec =        3.721
                    Log days =      -1.216
                    Log years =     -3.778

                    Temperature    =     25.000 degrees C
                    total pressure =      1.013 bars


Step size is limited by the print requirement


                              --- Reactant Summary ---


    Reactant                   Moles     Delta moles    Mass, g    Delta Mass, g

 Tuff                       1.0000E+02   6.3096E-06   2.0586E+03   1.2989E-04


               Current total mass =  2.05865E+03 grams
               Delta total mass   =  1.29892E-04 grams
               Delta total volume =      0.00000 cc


    Reactant                Rel. Rate      Rate         Rate
                             mol/mol       mol/s      mol/s/cm2

 Tuff                       1.0000E+00   1.2000E-09   2.5000E-15
```

Reactant	Affinity kcal/mol	Surface Area mol/s/cm2
Tuff	999.00000	4.8000E+05

Reactant		Rate Constants, mol/s/cm2
Tuff		
	Forward	2.5000E-15

Affinity of the overall irreversible reaction= 0.000 kcal
Contributions from irreversible reactions
with no thermodynamic data are not included

--- Element Totals for the Aqueous Solution ---

Element	mg/kg soln.	Molality	Moles
O	8.865403E+05	5.561111E+01	5.559508E+01
Al	4.860294E-02	1.807851E-06	1.807329E-06
B	1.334829E-01	1.239157E-05	1.238800E-05
Ba	1.368719E-05	1.000288E-10	1.000000E-10
Ca	1.295754E+01	3.244765E-04	3.243830E-04
Ce	1.396506E-19	1.000288E-24	9.999994E-25
Cl	7.116513E+00	2.014581E-04	2.014000E-04
Cr	2.996352E+02	5.783475E-03	5.781807E-03
Cs	1.324650E-05	1.000288E-10	1.000000E-10
Cu	6.650220E-10	1.050303E-14	1.050000E-14
F	2.172842E+00	1.147831E-04	1.147500E-04
Fe	8.889544E-01	1.597520E-05	1.597060E-05
Gd	1.567289E-09	1.000288E-14	1.000000E-14
H	1.115156E+05	1.110370E+02	1.110050E+02
C	1.267583E-01	1.059166E-05	1.058861E-05
P	7.325651E+00	2.373663E-04	2.372979E-04
K	5.028761E+00	1.290833E-04	1.290460E-04
La	1.384452E-09	1.000288E-14	1.000000E-14
Li	6.917999E-07	1.000288E-10	1.000000E-10
Mg	2.003530E+00	8.273075E-05	8.270690E-05
Mn	3.250706E+01	5.938425E-04	5.936713E-04
Mo	2.179386E+02	2.279823E-03	2.279166E-03
N	1.982366E+00	1.420410E-04	1.420000E-04
Na	4.565190E+01	1.992925E-03	1.992351E-03
Nd	1.437620E-09	1.000288E-14	1.000000E-14
Ni	7.502088E+02	1.282876E-02	1.282506E-02
Pb	2.065134E-05	1.000288E-10	1.000000E-10
Pu	2.431914E-09	1.000288E-14	1.000000E-14
S	5.507393E+02	1.723725E-02	1.723228E-02
Si	2.802950E+00	1.001613E-04	1.001324E-04
Sm	1.498617E-09	1.000288E-14	1.000000E-14
Sr	8.732965E-06	1.000288E-10	1.000000E-10
Ti	1.078259E-05	2.260143E-10	2.259491E-10
U	2.372401E-09	1.000288E-14	1.000000E-14
V	4.768069E+00	9.393718E-05	9.391010E-05
Zn	6.517331E-06	1.000288E-10	1.000000E-10
Zr	9.092170E-16	1.000288E-20	1.000000E-20

Single ion activities and activity coefficients are here defined
with respect to the modified NBS pH scale

	pH	Eh	pe
modified NBS pH scale	2.0407	1.0983	1.8566E+01
rational pH scale	1.9641	1.1028	1.8643E+01

pHCl = 5.8287

Oxygen fugacity = 2.09991E-01
Log oxygen fugacity = -0.67780

Activity of water = 0.99924
Log activity of water = -0.00033

Ionic strength = 5.880085E-02 molal
Sum of molalities = 0.0494644358030
Osmotic coefficient = 0.85806

Mass of solution = 1.003325 kg
Mass of solutes = 0.003613 kg
Conc. of solutes = 0.360112 per cent (w/w)

Moles of solvent H2O = 5.54924E+01
Mass of solvent H2O = 9.99712E-01 kg

Species	Molality	Log molality	Log gamma	Log activity
H+	1.0861E-02	-1.9641	-0.0765	-2.0407
Ni++	1.0209E-02	-1.9910	-0.3466	-2.3376
SO4--	9.7762E-03	-2.0098	-0.3602	-2.3701
HSO4-	4.5006E-03	-2.3467	-0.0849	-2.4316
HCrO4-	4.0507E-03	-2.3925	-0.0849	-2.4774
NiSO4(aq)	2.6184E-03	-2.5820	0.0000	-2.5820
MoO4--	2.2798E-03	-2.6421	-0.3492	-2.9913
Na+	1.9399E-03	-2.7122	-0.0983	-2.8106
Cr2O7--	8.6348E-04	-3.0637	-0.3602	-3.4240
Mn++	4.1403E-04	-3.3830	-0.3466	-3.7295
O2(aq)	2.6166E-04	-3.5823	0.0062	-3.5761
Ca++	2.5992E-04	-3.5852	-0.3466	-3.9317
Cl-	2.0085E-04	-3.6971	-0.0909	-3.7881
MnSO4(aq)	1.7919E-04	-3.7467	0.0000	-3.7467
NO3-	1.4021E-04	-3.8532	-0.0909	-3.9441
K+	1.2519E-04	-3.9024	-0.1044	-4.0068
H3PO4(aq)	1.1922E-04	-3.9237	0.0000	-3.9237
H2PO4-	1.0769E-04	-3.9678	-0.0849	-4.0527
HF(aq)	1.0110E-04	-3.9953	0.0000	-3.9953
SiO2(aq)	1.0016E-04	-3.9993	0.0000	-3.9993
VO2+	7.7222E-05	-4.1123	-0.0983	-4.2106
CaSO4(aq)	6.4464E-05	-4.1907	0.0000	-4.1907
Mg++	5.3916E-05	-4.2683	-0.3139	-4.5822
NaSO4-	5.2999E-05	-4.2757	-0.0849	-4.3606
MgSO4(aq)	2.8805E-05	-4.5405	0.0000	-4.5405
B(OH)3(aq)	1.2392E-05	-4.9069	0.0000	-4.9069
VO2SO4-	1.2140E-05	-4.9158	-0.0849	-5.0007
CO2(aq)	1.0591E-05	-4.9751	0.0062	-4.9689
FeHPO4+	9.8678E-06	-5.0058	-0.0983	-5.1041

F-	9.2283E-06	-5.0349	-0.0878	-5.1227
Fe+++	3.9892E-06	-5.3991	-0.6676	-6.0667
Cr+++	3.9834E-06	-5.3997	-0.6676	-6.0673
KSO4-	3.8691E-06	-5.4124	-0.0849	-5.4973
VO(OH)3(aq)	3.3838E-06	-5.4706	0.0000	-5.4706
NiNO3+	1.6466E-06	-5.7834	-0.0983	-5.8817
H2CrO4(aq)	1.4541E-06	-5.8374	0.0000	-5.8374
FeOH++	1.4446E-06	-5.8403	-0.3761	-6.2164
VO2F(aq)	1.0392E-06	-5.9833	0.0000	-5.9833
AlF2+	1.0371E-06	-5.9842	-0.0983	-6.0825
AlF++	6.5503E-07	-6.1837	-0.3761	-6.5598
MnH2PO4+	4.6355E-07	-6.3339	-0.0983	-6.4322
FeSO4+	3.8833E-07	-6.4108	-0.0983	-6.5091
HCl(aq)	3.1716E-07	-6.4987	0.0000	-6.4987
CrO4--	2.6862E-07	-6.5709	-0.3602	-6.9311
FeF++	2.1049E-07	-6.6768	-0.3761	-7.0529
NiCl+	9.4728E-08	-7.0235	-0.0983	-7.1219
HPO3F-	9.1740E-08	-7.0374	-0.0849	-7.1223
CaNO3+	8.3650E-08	-7.0775	-0.0983	-7.1759
AlF3(aq)	7.8483E-08	-7.1052	0.0000	-7.1052
MnCl+	7.6215E-08	-7.1180	-0.0983	-7.2163
H2VO4-	7.2903E-08	-7.1373	-0.0849	-7.2221
CrO3Cl-	6.4826E-08	-7.1883	-0.0849	-7.2731
HNO3(aq)	5.1606E-08	-7.2873	0.0000	-7.2873
MnF+	4.7436E-08	-7.3239	-0.0983	-7.4222
VO2(OH)2-	4.5180E-08	-7.3451	-0.0849	-7.4299
MnNO3+	4.2136E-08	-7.3753	-0.0983	-7.4737
NaCl(aq)	4.2110E-08	-7.3756	0.0000	-7.3756
H2SO4(aq)	3.3707E-08	-7.4723	0.0000	-7.4723
Fe(SO4)2-	3.1031E-08	-7.5082	-0.0849	-7.5931
VO2HPO4-	3.0679E-08	-7.5132	-0.0849	-7.5980
Fe(OH)2+	2.7690E-08	-7.5577	-0.0983	-7.6560
H2F2(aq)	2.7624E-08	-7.5587	0.0000	-7.5587
KHSO4(aq)	2.4892E-08	-7.6039	0.0000	-7.6039
CrOH++	2.2341E-08	-7.6509	-0.3761	-8.0270
AlSO4+	2.0005E-08	-7.6989	-0.0983	-7.7972
Al+++	1.6999E-08	-7.7696	-0.6676	-8.4371
FeF2+	1.3680E-08	-7.8639	-0.0983	-7.9623
MgF+	5.5701E-09	-8.2541	-0.0983	-8.3525
CaF+	5.3164E-09	-8.2744	-0.0983	-8.3727
CaCl+	4.8190E-09	-8.3170	-0.0983	-8.4154
MgCl+	3.9193E-09	-8.4068	-0.0983	-8.5051
VO2F2-	2.7473E-09	-8.5611	-0.0849	-8.6460
FeNO3++	2.3189E-09	-8.6347	-0.3761	-9.0108
PO3F--	1.5103E-09	-8.8209	-0.3602	-9.1812
HPO4--	1.3893E-09	-8.8572	-0.3602	-9.2174
NaF(aq)	1.1726E-09	-8.9309	0.0000	-8.9309
HCO3-	6.4806E-10	-9.1884	-0.0849	-9.2733
KCl(aq)	5.1348E-10	-9.2895	0.0000	-9.2895
MnHPO4(aq)	4.2956E-10	-9.3670	0.0000	-9.3670
VO++	2.7648E-10	-9.5583	-0.3761	-9.9344
CrCl++	2.3536E-10	-9.6283	-0.3761	-10.0044
Ti(OH)4(aq)	2.2601E-10	-9.6459	0.0000	-9.6459
HF2-	2.2374E-10	-9.6503	-0.0849	-9.7351
AlF4-	1.8070E-10	-9.7430	-0.0849	-9.8279
VOSO4(aq)	1.4980E-10	-9.8245	0.0000	-9.8245
Mn+++	1.1764E-10	-9.9294	-0.8157	-10.7452
Cs+	1.0002E-10	-9.9999	-0.1077	-10.1076

--- Summary of Instantaneously Precipitated Solid Phases ---
(defined by derivatives)

--- Theoretical Rock Composition ---
g/kg

O	5.020245E+01
Si	4.971616E+01
Ti	8.138777E-02

--- Oxide Percentages ---

Oxide	Theoretical rock

Total = 0.0000

Phase/end-member		d mol/d zi	d grams/d zi	d vol (cc)/d zi
Quartz		2.6347E-01	1.5830E+01	5.9776E+00
Rutile		2.5300E-04	2.0209E-02	4.7615E-03
fix	CO2(g)	0.0000E+00	0.0000E+00	0.0000E+00
fix	O2(g)	-3.0212E-02	-9.6675E-01	0.0000E+00

--- Summary of Solid Phases (E.S.+P.R.S.) ---

Phase/End-member		Log moles	Moles	Mass, g	Volume, cc
Quartz		-5.7793	1.6624E-06	9.9883E-05	3.7716E-05
Rutile		-8.8326	1.4704E-09	1.1745E-07	2.7672E-08
fix	CO2(g)	2.3010	2.0000E+02	8.8020E+03	0.0000E+00
fix	O2(g)	2.3010	2.0000E+02	6.3998E+03	0.0000E+00

	Mass, grams	Volume, cc
Created	1.520172E+04	3.774380E-05
Destroyed	1.298918E-04	0.000000E+00
Net	1.520172E+04	3.774380E-05

Warning-- these volume totals may be incomplete because
of missing partial molar volume data in the data base

--- Summary of Pure Mineral Saturation States ---

Mineral	Log Q/K	Aff, kcal	State
AlF3	-6.596	-8.999	
Anglesite	-4.894	-6.677	
Anhydrite	-1.995	-2.722	
BaZrO3	69.238	94.461	ssatd
Barite	-2.765	-3.772	
Bassanite	-2.640	-3.602	
Boric_acid	-4.749	-6.478	
CaSO4:0.5H2O(beta)	-2.809	-3.832	
CaZrO3	129.702	176.951	ssatd
Celestite	-7.194	-9.815	
Chalcedony	-0.271	-0.370	
Coesite	-0.810	-1.105	
CrO2	-0.909	-1.241	
Cristobalite(alpha)	-0.551	-0.751	

Cristobalite(beta)	-0.994	-1.356	
Crocoite	-4.590	-6.263	
Epsomite	-4.992	-6.811	
Fe(OH)3	-5.601	-7.642	
FeF3	-2.196	-2.996	
Fluorite	-4.140	-5.648	
Goethite	-0.480	-0.655	
Gypsum	-1.820	-2.483	
Hematite	0.001	0.001	ssatd
Hexahydrite	-5.227	-7.132	
Ice	-0.139	-0.190	
Jarosite	-5.334	-7.278	
Kieserite	-6.686	-9.121	
Manganite	-4.459	-6.084	
Mercallite	-6.979	-9.521	
Mirabilite	-6.855	-9.352	
MnHPO4	0.000	0.000	ssatd
MnO2(gamma)	-1.518	-2.071	
Morenosite	-2.696	-3.678	
NiSO4:6H2O(alpha)	-2.702	-3.687	
Nontronite-Ca	-3.725	-5.083	
Nontronite-H	-2.792	-3.809	
Nontronite-K	-4.116	-5.616	
Nontronite-Mg	-3.795	-5.177	
Nontronite-Na	-4.060	-5.539	
Pentahydrite	-5.567	-7.595	
Pyrolusite	0.000	0.000	ssatd
Quartz	0.000	0.000	satd
Rutile	0.000	0.000	satd
Sellaite	-5.443	-7.426	
Shcherbinaite	-2.888	-3.940	
SiO2(am)	-1.286	-1.754	
SrZrO3	106.097	144.747	ssatd
Starkeyite	-5.954	-8.122	
Strengite	-1.901	-2.594	
Tridymite	-0.172	-0.234	
fix CO2(g)	0.000	0.000	satd
fix O2(g)	0.000	0.000	satd

--- Summary of Solid Solutions ---

--- Carbonate-Calcite ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Calcite	5.6708E-03	-2.2464	0.0000	-2.2464
Magnesite	4.5529E-04	-3.3417	0.0000	-3.3417
Rhodochrosite	9.9387E-01	-0.0027	0.0000	-0.0027
Siderite	1.2704E-08	-7.8961	0.0000	-7.8961
Smithsonite	5.2900E-08	-7.2765	0.0000	-7.2765
Strontianite	2.2203E-07	-6.6536	0.0000	-6.6536

Mineral	Log Q/K	Aff, kcal	State
Carbonate-Calcite	-10.767	-14.689	
Calcite	-10.767	-14.689	
Magnesite	-10.767	-14.689	
Rhodochrosite	-10.767	-14.689	
Siderite	-10.767	-14.689	

Smithsonite	-10.767	-14.689
Strontianite	-10.767	-14.689

--- Clinoptilolite-hy-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-hy-Ca	9.9769E-01	-0.0010	0.0000	-0.0010
Clinoptilolite-hy-Cs	6.6772E-23	-22.1754	0.0000	-22.1754
Clinoptilolite-hy-K	7.3429E-04	-3.1341	0.0000	-3.1341
Clinoptilolite-hy-Na	1.5786E-03	-2.8017	0.0000	-2.8017
Clinoptilolite-hy-Sr	5.6077E-12	-11.2512	0.0000	-11.2512

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-hy-ss	-58.843	-80.279	
Clinoptilolite-hy-Ca	-58.843	-80.279	
Clinoptilolite-hy-Cs	-58.843	-80.279	
Clinoptilolite-hy-K	-58.843	-80.279	
Clinoptilolite-hy-Na	-58.843	-80.279	
Clinoptilolite-hy-Sr	-58.843	-80.279	

--- Clinoptilolite-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-Ca	7.8155E-01	-0.1070	-0.2633	-0.3704
Clinoptilolite-Cs	3.0394E-07	-6.5172	-16.0324	-22.5496
Clinoptilolite-K	9.6897E-02	-1.0137	-2.4937	-3.5074
Clinoptilolite-NH4	1.0305E-51	-50.9870	-125.4280	-176.4149
Clinoptilolite-Na	1.2111E-01	-0.9168	-2.2553	-3.1721
Clinoptilolite-Sr	4.3837E-04	-3.3582	-8.2611	-11.6192

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-ss	-58.475	-79.776	
Clinoptilolite-Ca	-58.475	-79.776	
Clinoptilolite-Cs	-58.475	-79.776	
Clinoptilolite-K	-58.475	-79.776	
Clinoptilolite-NH4	-58.475	-79.776	
Clinoptilolite-Na	-58.475	-79.776	
Clinoptilolite-Sr	-58.475	-79.776	

--- Saponite-tri ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Saponite-Ca	1.4823E-03	-2.8291	1.8955	-0.9336
Saponite-H	9.9737E-01	-0.0011	0.0008	-0.0004

Saponite-K	9.6834E-05	-4.0140	2.6894	-1.3246
Saponite-Mg	9.1189E-04	-3.0401	2.0368	-1.0032
Saponite-Na	1.4349E-04	-3.8432	2.5749	-1.2682

Mineral	Log Q/K	Aff, kcal	State
Saponite-tri	-42.277	-57.678	
Saponite-Ca	-42.277	-57.678	
Saponite-H	-42.277	-57.678	
Saponite-K	-42.277	-57.678	
Saponite-Mg	-42.277	-57.678	
Saponite-Na	-42.277	-57.678	

--- Smectite-di ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Beidellite-Ca	2.2002E-67	-66.6575	44.6606	-21.9970
Beidellite-K	1.4384E-68	-67.8421	45.4542	-22.3879
Beidellite-Mg	1.3536E-67	-66.8685	44.8019	-22.0666
Beidellite-Na	2.1300E-68	-67.6716	45.3400	-22.3316
Montmor-Ca	7.1732E-58	-57.1443	38.2867	-18.8576
Montmor-K	7.6586E-59	-58.1159	38.9376	-19.1782
Montmor-Mg	7.1719E-58	-57.1444	38.2867	-18.8576
Montmor-Na	1.1060E-58	-57.9563	38.8307	-19.1256
Nontronite-Ca	5.6249E-01	-0.2499	0.1674	-0.0825
Nontronite-K	3.6772E-02	-1.4345	0.9611	-0.4734
Nontronite-Mg	3.4629E-01	-0.4606	0.3086	-0.1520
Nontronite-Na	5.4453E-02	-1.2640	0.8469	-0.4171

Mineral	Log Q/K	Aff, kcal	State
Smectite-di	-3.643	-4.970	
Beidellite-Ca	-3.643	-4.970	
Beidellite-K	-3.643	-4.970	
Beidellite-Mg	-3.643	-4.970	
Beidellite-Na	-3.643	-4.970	
Montmor-Ca	-3.643	-4.970	
Montmor-K	-3.643	-4.970	
Montmor-Mg	-3.643	-4.970	
Montmor-Na	-3.643	-4.970	
Nontronite-Ca	-3.643	-4.970	
Nontronite-K	-3.643	-4.970	
Nontronite-Mg	-3.643	-4.970	
Nontronite-Na	-3.643	-4.970	

--- Lanthanide hydroxide ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
La(OH)3	1.2829E-05	-4.8918	0.0000	-4.8918
Ce(OH)3	3.7099E-15	-14.4306	0.0000	-14.4306
Nd(OH)3(c)	3.4717E-01	-0.4595	0.0000	-0.4595

Gd(OH)3	5.8551E-01	-0.2325	0.0000	-0.2325
Sm(OH)3	6.7307E-02	-1.1719	0.0000	-1.1719

Mineral	Log Q/K	Aff, kcal	State
Lanthanide hydroxide	-24.638	-33.614	
La(OH)3	-24.638	-33.614	
Ce(OH)3	-24.638	-33.614	
Nd(OH)3(c)	-24.638	-33.614	
Gd(OH)3	-24.638	-33.614	
Sm(OH)3	-24.638	-33.614	

--- Rhabdophane-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaPO4:H2O	4.1200E-01	-0.3851	0.0000	-0.3851
CePO4:H2O	3.7677E-11	-10.4239	0.0000	-10.4239
NdPO4:H2O	2.2247E-01	-0.6527	0.0000	-0.6527
GdPO4:H2O	1.4937E-01	-0.8257	0.0000	-0.8257
SmPO4:H2O	2.1616E-01	-0.6652	0.0000	-0.6652

Mineral	Log Q/K	Aff, kcal	State
Rhabdophane-ss	-9.764	-13.321	
LaPO4:H2O	-9.764	-13.321	
CePO4:H2O	-9.764	-13.321	
NdPO4:H2O	-9.764	-13.321	
GdPO4:H2O	-9.764	-13.321	
SmPO4:H2O	-9.764	-13.321	

--- Lanthanide fluoride ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaF3:0.5H2O	5.7252E-01	-0.2422	0.0000	-0.2422
CeF3:0.5H2O	8.2979E-11	-10.0810	0.0000	-10.0810
NdF3:0.5H2O	3.8918E-01	-0.4098	0.0000	-0.4098
GdF3:0.5H2O	8.2631E-03	-2.0829	0.0000	-2.0829
SmF3:0.5H2O	3.0038E-02	-1.5223	0.0000	-1.5223

Mineral	Log Q/K	Aff, kcal	State
Lanthanide fluoride	-11.748	-16.027	
LaF3:0.5H2O	-11.748	-16.027	
CeF3:0.5H2O	-11.748	-16.027	
NdF3:0.5H2O	-11.748	-16.027	
GdF3:0.5H2O	-11.748	-16.027	
SmF3:0.5H2O	-11.748	-16.027	

--- Summary of Gases ---

Gas	Fugacity	Log fugacity
Al(g)	5.5029-201	-200.2594
B(g)	8.5659-204	-203.0672
BF3(g)	3.7193E-24	-23.4295
C(g)	3.0917-190	-189.5098
CH4(g)	3.5240-146	-145.4530
CO(g)	6.0395E-49	-48.2190
CO2(g)	3.1623E-04	-3.5000
Ca(g)	7.2354-164	-163.1405
Chlorine	3.5843E-17	-16.4456
Cs(g)	3.5182E-89	-88.4537
Cu(g)	7.5971E-93	-92.1194
Fluorine	1.4649E-72	-71.8342
H2(g)	6.1104E-42	-41.2139
H2O(g)	2.5958E-02	-1.5857
H2S(g)	2.2899-130	-129.6402
HCl(g)	7.3415E-13	-12.1342
HF(g)	5.2972E-09	-8.2760
K(g)	2.2193E-83	-82.6538
Li(g)	7.8249-103	-102.1065
Mg(g)	1.0900-141	-140.9626
Nitrogen	2.6189E-08	-7.5819
NH3(g)	1.8636E-63	-62.7296
NO(g)	5.0958E-20	-19.2928
NO2(g)	3.4843E-14	-13.4579
Na(g)	1.8196E-81	-80.7400
O2(g)	2.0999E-01	-0.6778
Pb(g)	7.6398E-81	-80.1169
S2(g)	3.1315-203	-202.5042
SO2(g)	4.0575E-43	-42.3917
Si(g)	4.2257-221	-220.3741
SiF4(g)	3.4757E-18	-17.4590
Ti(g)	3.8019-231	-230.4200
TiCl4(g)	9.7453E-62	-61.0112
U(g)	1.0095-304	-303.9959
U2Cl10(g)	4.7287-202	-201.3253
U2Cl8(g)	4.0902-216	-215.3883
U2F10(g)	2.3947-120	-119.6207
UCl(g)	6.6073-255	-254.1800
UCl2(g)	1.2937-203	-202.8882
UCl3(g)	5.5478-150	-149.2559
UCl4(g)	1.2883-113	-112.8900
UCl5(g)	1.5393-114	-113.8127
UCl6(g)	3.4168-110	-109.4664
UF(g)	1.0132-240	-239.9943
UF2(g)	7.5413-195	-194.1226
UF3(g)	1.3814-142	-141.8597
UF4(g)	3.7348E-87	-86.4277
UF5(g)	4.6252E-73	-72.3349
UF6(g)	5.6401E-73	-72.2487
UO(g)	7.9731-220	-219.0984
UO2(g)	1.4772-135	-134.8306
UO2Cl2(g)	2.3117E-71	-70.6361
UO2F2(g)	9.7757E-61	-60.0099
UO3(g)	1.0865E-82	-81.9640
UOF4(g)	1.1129E-64	-63.9535
Zn(g)	1.2817E-90	-89.8922

```
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -


Stepping to zi=  1.0000E-05, delzi=  3.6904E-06, nord= 3
  time =  9.6451E-02 d, dltime =  3.5594E-02 d
Steps completed =    34, iter =  6, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -5.6224

- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -


                    Reaction progress        =  9.99999999999954E-06
                    Log of reaction progress =      -5.0000000



                    Time =  8.333E+03 sec
                         =  9.645E-02 days
                         =  2.641E-04 years

                    Log sec =        3.921
                    Log days =      -1.016
                    Log years =     -3.578

                    Temperature    =     25.000 degrees C
                    total pressure =      1.013 bars


Step size is limited by the print requirement


                              --- Reactant Summary ---


    Reactant                   Moles     Delta moles    Mass, g    Delta Mass, g

 Tuff                       1.0000E+02   1.0000E-05   2.0586E+03   2.0586E-04


               Current total mass =  2.05865E+03 grams
               Delta total mass   =  2.05865E-04 grams
               Delta total volume =      0.00000 cc


    Reactant                Rel. Rate      Rate         Rate
                             mol/mol       mol/s      mol/s/cm2

 Tuff                       1.0000E+00   1.2000E-09   2.5000E-15


    Reactant                   Affinity   Surface Area
                               kcal/mol     mol/s/cm2

 Tuff                        999.00000   4.8000E+05


    Reactant                Rate Constants, mol/s/cm2

 Tuff
                   Forward    2.5000E-15
```

```
Affinity of the overall irreversible reaction=     0.000 kcal
Contributions from irreversible reactions
with no thermodynamic data are not included


   --- Element Totals for the Aqueous Solution ---
```

Element	mg/kg soln.	Molality	Moles
O	8.865403E+05	5.561111E+01	5.559508E+01
Al	5.371219E-02	1.997896E-06	1.997320E-06
B	1.334829E-01	1.239157E-05	1.238800E-05
Ba	1.368719E-05	1.000288E-10	1.000000E-10
Ca	1.295784E+01	3.244841E-04	3.243906E-04
Ce	1.396506E-19	1.000288E-24	9.999994E-25
Cl	7.116513E+00	2.014581E-04	2.014000E-04
Cr	2.996352E+02	5.783475E-03	5.781807E-03
Cs	1.324650E-05	1.000288E-10	1.000000E-10
Cu	6.650219E-10	1.050303E-14	1.050000E-14
F	2.172842E+00	1.147831E-04	1.147500E-04
Fe	8.894501E-01	1.598411E-05	1.597950E-05
Gd	1.567289E-09	1.000288E-14	1.000000E-14
H	1.115156E+05	1.110370E+02	1.110050E+02
C	1.267583E-01	1.059166E-05	1.058860E-05
P	7.325656E+00	2.373665E-04	2.372980E-04
K	5.031862E+00	1.291628E-04	1.291256E-04
La	1.384452E-09	1.000288E-14	1.000000E-14
Li	6.917999E-07	1.000288E-10	1.000000E-10
Mg	2.003642E+00	8.273537E-05	8.271152E-05
Mn	3.250710E+01	5.938432E-04	5.936720E-04
Mo	2.179386E+02	2.279823E-03	2.279166E-03
N	1.982366E+00	1.420410E-04	1.420000E-04
Na	4.565392E+01	1.993013E-03	1.992439E-03
Nd	1.437620E-09	1.000288E-14	1.000000E-14
Ni	7.502088E+02	1.282876E-02	1.282506E-02
Pb	2.065134E-05	1.000288E-10	1.000000E-10
Pu	2.431914E-09	1.000288E-14	1.000000E-14
S	5.507393E+02	1.723725E-02	1.723228E-02
Si	2.802950E+00	1.001613E-04	1.001324E-04
Sm	1.498617E-09	1.000288E-14	1.000000E-14
Sr	8.732965E-06	1.000288E-10	1.000000E-10
Ti	1.078259E-05	2.260143E-10	2.259491E-10
U	2.372401E-09	1.000288E-14	1.000000E-14
V	4.768069E+00	9.393718E-05	9.391010E-05
Zn	6.517331E-06	1.000288E-10	1.000000E-10
Zr	9.092170E-16	1.000288E-20	1.000000E-20

Single ion activities and activity coefficients are here defined
with respect to the modified NBS pH scale

	pH	Eh	pe
modified NBS pH scale	2.0407	1.0983	1.8566E+01
rational pH scale	1.9642	1.1028	1.8643E+01

pHCl = 5.8287

Oxygen fugacity = 2.09991E-01
Log oxygen fugacity = -0.67780

Activity of water = 0.99924
Log activity of water = -0.00033

Ionic strength = 5.880106E-02 molal
Sum of molalities = 0.0494640988065
Osmotic coefficient = 0.85806

Mass of solution = 1.003325 kg
Mass of solutes = 0.003613 kg
Conc. of solutes = 0.360113 per cent (w/w)

Moles of solvent H2O = 5.54924E+01
Mass of solvent H2O = 9.99712E-01 kg

Species	Molality	Log molality	Log gamma	Log activity
H+	1.0860E-02	-1.9642	-0.0765	-2.0407
Ni++	1.0209E-02	-1.9910	-0.3466	-2.3376
SO4--	9.7763E-03	-2.0098	-0.3602	-2.3700
HSO4-	4.5005E-03	-2.3467	-0.0849	-2.4316
HCrO4-	4.0507E-03	-2.3925	-0.0849	-2.4774
NiSO4(aq)	2.6185E-03	-2.5820	0.0000	-2.5820
MoO4--	2.2798E-03	-2.6421	-0.3492	-2.9913
Na+	1.9400E-03	-2.7122	-0.0983	-2.8105
Cr2O7--	8.6348E-04	-3.0637	-0.3602	-3.4240
Mn++	4.1403E-04	-3.3830	-0.3466	-3.7295
O2(aq)	2.6166E-04	-3.5823	0.0062	-3.5761
Ca++	2.5992E-04	-3.5852	-0.3466	-3.9317
Cl-	2.0085E-04	-3.6971	-0.0909	-3.7881
MnSO4(aq)	1.7919E-04	-3.7467	0.0000	-3.7467
NO3-	1.4021E-04	-3.8532	-0.0909	-3.9441
K+	1.2527E-04	-3.9022	-0.1044	-4.0066
H3PO4(aq)	1.1921E-04	-3.9237	0.0000	-3.9237
H2PO4-	1.0769E-04	-3.9678	-0.0849	-4.0527
HF(aq)	1.0082E-04	-3.9965	0.0000	-3.9965
SiO2(aq)	1.0016E-04	-3.9993	0.0000	-3.9993
VO2+	7.7224E-05	-4.1122	-0.0983	-4.2106
CaSO4(aq)	6.4465E-05	-4.1907	0.0000	-4.1907
Mg++	5.3919E-05	-4.2683	-0.3139	-4.5822
NaSO4-	5.3002E-05	-4.2757	-0.0849	-4.3606
MgSO4(aq)	2.8807E-05	-4.5405	0.0000	-4.5405
B(OH)3(aq)	1.2392E-05	-4.9069	0.0000	-4.9069
VO2SO4-	1.2141E-05	-4.9158	-0.0849	-5.0006
CO2(aq)	1.0591E-05	-4.9751	0.0062	-4.9689
FeHPO4+	9.8737E-06	-5.0055	-0.0983	-5.1039
F-	9.2030E-06	-5.0361	-0.0878	-5.1239
Fe+++	3.9915E-06	-5.3989	-0.6676	-6.0664
Cr+++	3.9828E-06	-5.3998	-0.6676	-6.0674
KSO4-	3.8715E-06	-5.4121	-0.0849	-5.4970
VO(OH)3(aq)	3.3840E-06	-5.4706	0.0000	-5.4706
NiNO3+	1.6466E-06	-5.7834	-0.0983	-5.8817
H2CrO4(aq)	1.4540E-06	-5.8374	0.0000	-5.8374
FeOH++	1.4455E-06	-5.8400	-0.3761	-6.2161
AlF2+	1.1450E-06	-5.9412	-0.0983	-6.0396
VO2F(aq)	1.0364E-06	-5.9845	0.0000	-5.9845

AlF++	7.2516E-07	-6.1396	-0.3761	-6.5157
MnH2PO4+	4.6355E-07	-6.3339	-0.0983	-6.4322
FeSO4+	3.8856E-07	-6.4105	-0.0983	-6.5089
HCl(aq)	3.1715E-07	-6.4987	0.0000	-6.4987
CrO4--	2.6863E-07	-6.5708	-0.3602	-6.9311
FeF++	2.1003E-07	-6.6777	-0.3761	-7.0538
NiCl+	9.4728E-08	-7.0235	-0.0983	-7.1219
HPO3F-	9.1485E-08	-7.0386	-0.0849	-7.1235
AlF3(aq)	8.6410E-08	-7.0634	0.0000	-7.0634
CaNO3+	8.3652E-08	-7.0775	-0.0983	-7.1759
MnCl+	7.6215E-08	-7.1180	-0.0983	-7.2163
H2VO4-	7.2910E-08	-7.1372	-0.0849	-7.2221
CrO3Cl-	6.4823E-08	-7.1883	-0.0849	-7.2732
HNO3(aq)	5.1604E-08	-7.2873	0.0000	-7.2873
MnF+	4.7306E-08	-7.3251	-0.0983	-7.4234
VO2(OH)2-	4.5184E-08	-7.3450	-0.0849	-7.4299
MnNO3+	4.2136E-08	-7.3753	-0.0983	-7.4737
NaCl(aq)	4.2111E-08	-7.3756	0.0000	-7.3756
H2SO4(aq)	3.3705E-08	-7.4723	0.0000	-7.4723
Fe(SO4)2-	3.1049E-08	-7.5079	-0.0849	-7.5928
VO2HPO4-	3.0681E-08	-7.5131	-0.0849	-7.5980
Fe(OH)2+	2.7708E-08	-7.5574	-0.0983	-7.6557
H2F2(aq)	2.7471E-08	-7.5611	0.0000	-7.5611
KHSO4(aq)	2.4907E-08	-7.6037	0.0000	-7.6037
CrOH++	2.2339E-08	-7.6509	-0.3761	-8.0270
AlSO4+	2.2208E-08	-7.6535	-0.0983	-7.7518
Al+++	1.8871E-08	-7.7242	-0.6676	-8.3918
FeF2+	1.3613E-08	-7.8661	-0.0983	-7.9644
MgF+	5.5552E-09	-8.2553	-0.0983	-8.3536
CaF+	5.3019E-09	-8.2756	-0.0983	-8.3739
CaCl+	4.8191E-09	-8.3170	-0.0983	-8.4154
MgCl+	3.9195E-09	-8.4068	-0.0983	-8.5051
VO2F2-	2.7323E-09	-8.5635	-0.0849	-8.6484
FeNO3++	2.3202E-09	-8.6345	-0.3761	-9.0106
PO3F--	1.5062E-09	-8.8221	-0.3602	-9.1824
HPO4--	1.3893E-09	-8.8572	-0.3602	-9.2174
NaF(aq)	1.1694E-09	-8.9320	0.0000	-8.9320
HCO3-	6.4808E-10	-9.1884	-0.0849	-9.2733
KCl(aq)	5.1379E-10	-9.2892	0.0000	-9.2892
MnHPO4(aq)	4.2957E-10	-9.3670	0.0000	-9.3670
VO++	2.7647E-10	-9.5583	-0.3761	-9.9344
CrCl++	2.3532E-10	-9.6283	-0.3761	-10.0044
Ti(OH)4(aq)	2.2601E-10	-9.6459	0.0000	-9.6459
HF2-	2.2250E-10	-9.6527	-0.0849	-9.7375
AlF4-	1.9841E-10	-9.7024	-0.0849	-9.7873
VOSO4(aq)	1.4980E-10	-9.8245	0.0000	-9.8245
Mn+++	1.1764E-10	-9.9295	-0.8157	-10.7452
Cs+	1.0002E-10	-9.9999	-0.1077	-10.1076

--- Summary of Instantaneously Precipitated Solid Phases ---
(defined by derivatives)

--- Theoretical Rock Composition ---
g/kg

O	5.320852E+01
C	2.770156E-04
Si	4.671473E+01
Ti	7.647430E-02

--- Oxide Percentages ---

Oxide Theoretical rock

Total = 0.0000

Phase/end-member		d mol/d zi	d grams/d zi	d vol (cc)/d zi
Quartz		2.6347E-01	1.5830E+01	5.9776E+00
Rutile		2.5300E-04	2.0209E-02	4.7615E-03
fix	CO2(g)	3.6533E-06	1.6078E-04	0.0000E+00
fix	O2(g)	-3.3202E-04	-1.0624E-02	0.0000E+00

--- Summary of Solid Phases (E.S.+P.R.S.) ---

Phase/End-member		Log moles	Moles	Mass, g	Volume, cc
Quartz		-5.5793	2.6347E-06	1.5830E-04	5.9776E-05
Rutile		-8.6191	2.4041E-09	1.9203E-07	4.5244E-08
fix	CO2(g)	2.3010	2.0000E+02	8.8020E+03	0.0000E+00
fix	O2(g)	2.3010	2.0000E+02	6.3998E+03	0.0000E+00

	Mass, grams	Volume, cc
Created	1.520172E+04	5.982127E-05
Destroyed	2.058647E-04	0.000000E+00
Net	1.520172E+04	5.982127E-05

Warning-- these volume totals may be incomplete because of missing partial molar volume data in the data base

--- Summary of Pure Mineral Saturation States ---

Mineral	Log Q/K	Aff, kcal	State
AlF3	-6.555	-8.942	
Anglesite	-4.894	-6.677	
Anhydrite	-1.995	-2.722	
BaZrO3	69.239	94.462	ssatd
Barite	-2.765	-3.772	
Bassanite	-2.640	-3.602	
Boric_acid	-4.749	-6.478	
CaSO4:0.5H2O(beta)	-2.809	-3.832	
CaZrO3	129.703	176.952	ssatd
Celestite	-7.194	-9.815	
Chalcedony	-0.271	-0.370	
Coesite	-0.810	-1.105	
CrO2	-0.909	-1.241	
Cristobalite(alpha)	-0.551	-0.751	
Cristobalite(beta)	-0.994	-1.356	
Crocoite	-4.590	-6.263	
Epsomite	-4.992	-6.811	
Fe(OH)3	-5.601	-7.641	
FeF3	-2.199	-3.000	
Fluorite	-4.142	-5.652	
Goethite	-0.480	-0.654	
Gypsum	-1.820	-2.483	
Hematite	0.002	0.002	ssatd

Hexahydrite	-5.227	-7.132	
Ice	-0.139	-0.190	
Jarosite	-5.333	-7.276	
Kieserite	-6.686	-9.121	
Manganite	-4.459	-6.084	
Mercallite	-6.978	-9.521	
Mirabilite	-6.855	-9.352	
MnHPO4	0.000	0.000	ssatd
MnO2(gamma)	-1.518	-2.071	
Morenosite	-2.696	-3.678	
NiSO4:6H2O(alpha)	-2.702	-3.687	
Nontronite-Ca	-3.710	-5.061	
Nontronite-H	-2.777	-3.788	
Nontronite-K	-4.101	-5.595	
Nontronite-Mg	-3.779	-5.156	
Nontronite-Na	-4.045	-5.518	
Pentahydrite	-5.567	-7.595	
Pyrolusite	0.000	0.000	ssatd
Quartz	0.000	0.000	satd
Rutile	0.000	0.000	satd
Sellaite	-5.446	-7.429	
Shcherbinaite	-2.888	-3.940	
SiO2(am)	-1.286	-1.754	
SrZrO3	106.098	144.749	ssatd
Starkeyite	-5.954	-8.122	
Strengite	-1.901	-2.593	
Tridymite	-0.171	-0.234	
fix CO2(g)	0.000	0.000	satd
fix O2(g)	0.000	0.000	satd

--- Summary of Solid Solutions ---

--- Carbonate-Calcite ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Calcite	5.6709E-03	-2.2463	0.0000	-2.2463
Magnesite	4.5532E-04	-3.3417	0.0000	-3.3417
Rhodochrosite	9.9387E-01	-0.0027	0.0000	-0.0027
Siderite	1.2712E-08	-7.8958	0.0000	-7.8958
Smithsonite	5.2900E-08	-7.2765	0.0000	-7.2765
Strontianite	2.2203E-07	-6.6536	0.0000	-6.6536

Mineral	Log Q/K	Aff, kcal	State
Carbonate-Calcite	-10.767	-14.689	
Calcite	-10.767	-14.689	
Magnesite	-10.767	-14.689	
Rhodochrosite	-10.767	-14.689	
Siderite	-10.767	-14.689	
Smithsonite	-10.767	-14.689	
Strontianite	-10.767	-14.689	

--- Clinoptilolite-hy-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-hy-Ca	9.9769E-01	-0.0010	0.0000	-0.0010
Clinoptilolite-hy-Cs	6.6769E-23	-22.1754	0.0000	-22.1754
Clinoptilolite-hy-K	7.3584E-04	-3.1332	0.0000	-3.1332
Clinoptilolite-hy-Na	1.5788E-03	-2.8017	0.0000	-2.8017
Clinoptilolite-hy-Sr	5.6074E-12	-11.2512	0.0000	-11.2512

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-hy-ss	-58.686	-80.065	
Clinoptilolite-hy-Ca	-58.686	-80.065	
Clinoptilolite-hy-Cs	-58.686	-80.065	
Clinoptilolite-hy-K	-58.686	-80.065	
Clinoptilolite-hy-Na	-58.686	-80.065	
Clinoptilolite-hy-Sr	-58.686	-80.065	

--- Clinoptilolite-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-Ca	7.8150E-01	-0.1071	-0.2634	-0.3705
Clinoptilolite-Cs	3.0391E-07	-6.5172	-16.0324	-22.5497
Clinoptilolite-K	9.6949E-02	-1.0135	-2.4931	-3.5066
Clinoptilolite-NH4	1.0303E-51	-50.9870	-125.4281	-176.4151
Clinoptilolite-Na	1.2111E-01	-0.9168	-2.2554	-3.1722
Clinoptilolite-Sr	4.3834E-04	-3.3582	-8.2612	-11.6193

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-ss	-58.318	-79.563	
Clinoptilolite-Ca	-58.318	-79.563	
Clinoptilolite-Cs	-58.318	-79.563	
Clinoptilolite-K	-58.318	-79.563	
Clinoptilolite-NH4	-58.318	-79.563	
Clinoptilolite-Na	-58.318	-79.563	
Clinoptilolite-Sr	-58.318	-79.563	

--- Saponite-tri ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Saponite-Ca	1.4823E-03	-2.8291	1.8955	-0.9336
Saponite-H	9.9737E-01	-0.0011	0.0008	-0.0004
Saponite-K	9.6897E-05	-4.0137	2.6892	-1.3245
Saponite-Mg	9.1194E-04	-3.0400	2.0368	-1.0032
Saponite-Na	1.4350E-04	-3.8431	2.5749	-1.2682

Mineral	Log Q/K	Aff, kcal	State
Saponite-tri	-42.262	-57.658	
Saponite-Ca	-42.262	-57.658	

Saponite-H	-42.262	-57.658
Saponite-K	-42.262	-57.658
Saponite-Mg	-42.262	-57.658
Saponite-Na	-42.262	-57.658

--- Smectite-di ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Beidellite-Ca	4.1291E-67	-66.3841	44.4774	-21.9068
Beidellite-K	2.7010E-68	-67.5685	45.2709	-22.2976
Beidellite-Mg	2.5403E-67	-66.5951	44.6187	-21.9764
Beidellite-Na	3.9974E-68	-67.3982	45.1568	-22.2414
Montmor-Ca	1.0923E-57	-56.9617	38.1643	-18.7973
Montmor-K	1.1669E-58	-57.9330	38.8151	-19.1179
Montmor-Mg	1.0921E-57	-56.9617	38.1644	-18.7974
Montmor-Na	1.6842E-58	-57.7736	38.7083	-19.0653
Nontronite-Ca	5.6247E-01	-0.2499	0.1674	-0.0825
Nontronite-K	3.6793E-02	-1.4342	0.9609	-0.4733
Nontronite-Mg	3.4628E-01	-0.4606	0.3086	-0.1520
Nontronite-Na	5.4453E-02	-1.2640	0.8469	-0.4171

Mineral	Log Q/K	Aff, kcal	State
Smectite-di	-3.627	-4.949	
Beidellite-Ca	-3.627	-4.949	
Beidellite-K	-3.627	-4.949	
Beidellite-Mg	-3.627	-4.949	
Beidellite-Na	-3.627	-4.949	
Montmor-Ca	-3.627	-4.949	
Montmor-K	-3.627	-4.949	
Montmor-Mg	-3.627	-4.949	
Montmor-Na	-3.627	-4.949	
Nontronite-Ca	-3.627	-4.949	
Nontronite-K	-3.627	-4.949	
Nontronite-Mg	-3.627	-4.949	
Nontronite-Na	-3.627	-4.949	

--- Lanthanide hydroxide ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
La(OH)3	1.2828E-05	-4.8918	0.0000	-4.8918
Ce(OH)3	3.7098E-15	-14.4306	0.0000	-14.4306
Nd(OH)3(c)	3.4717E-01	-0.4595	0.0000	-0.4595
Gd(OH)3	5.8551E-01	-0.2325	0.0000	-0.2325
Sm(OH)3	6.7306E-02	-1.1719	0.0000	-1.1719

Mineral	Log Q/K	Aff, kcal	State
Lanthanide hydroxide	-24.638	-33.614	
La(OH)3	-24.638	-33.614	
Ce(OH)3	-24.638	-33.614	

Nd(OH)3(c)	-24.638	-33.614
Gd(OH)3	-24.638	-33.614
Sm(OH)3	-24.638	-33.614

--- Rhabdophane-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaPO4:H2O	4.1200E-01	-0.3851	0.0000	-0.3851
CePO4:H2O	3.7677E-11	-10.4239	0.0000	-10.4239
NdPO4:H2O	2.2247E-01	-0.6527	0.0000	-0.6527
GdPO4:H2O	1.4937E-01	-0.8257	0.0000	-0.8257
SmPO4:H2O	2.1616E-01	-0.6652	0.0000	-0.6652

Mineral	Log Q/K	Aff, kcal	State
Rhabdophane-ss	-9.764	-13.320	
LaPO4:H2O	-9.764	-13.320	
CePO4:H2O	-9.764	-13.320	
NdPO4:H2O	-9.764	-13.320	
GdPO4:H2O	-9.764	-13.320	
SmPO4:H2O	-9.764	-13.320	

--- Lanthanide fluoride ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaF3:0.5H2O	5.7252E-01	-0.2422	0.0000	-0.2422
CeF3:0.5H2O	8.2979E-11	-10.0810	0.0000	-10.0810
NdF3:0.5H2O	3.8918E-01	-0.4098	0.0000	-0.4098
GdF3:0.5H2O	8.2632E-03	-2.0828	0.0000	-2.0828
SmF3:0.5H2O	3.0038E-02	-1.5223	0.0000	-1.5223

Mineral	Log Q/K	Aff, kcal	State
Lanthanide fluoride	-11.751	-16.032	
LaF3:0.5H2O	-11.751	-16.032	
CeF3:0.5H2O	-11.751	-16.032	
NdF3:0.5H2O	-11.751	-16.032	
GdF3:0.5H2O	-11.751	-16.032	
SmF3:0.5H2O	-11.751	-16.032	

--- Summary of Gases ---

Gas	Fugacity	Log fugacity
Al(g)	6.1094-201	-200.2140
B(g)	8.5659-204	-203.0672
BF3(g)	3.6884E-24	-23.4332
C(g)	3.0917-190	-189.5098

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CH4(g)                      3.5240-146   -145.4530
CO(g)                       6.0395E-49    -48.2190
CO2(g)                      3.1623E-04     -3.5000
Ca(g)                       7.2360-164   -163.1405
Chlorine                    3.5840E-17    -16.4456
Cs(g)                       3.5183E-89    -88.4537
Cu(g)                       7.5976E-93    -92.1193
Fluorine                    1.4568E-72    -71.8366
H2(g)                       6.1104E-42    -41.2139
H2O(g)                      2.5958E-02     -1.5857
H2S(g)                      2.2898-130   -129.6402
HCl(g)                      7.3412E-13    -12.1342
HF(g)                       5.2825E-09     -8.2772
K(g)                        2.2208E-83    -82.6535
Li(g)                       7.8252-103   -102.1065
Mg(g)                       1.0901-141   -140.9625
Nitrogen                    2.6188E-08     -7.5819
NH3(g)                      1.8636E-63    -62.7297
NO(g)                       5.0956E-20    -19.2928
NO2(g)                      3.4842E-14    -13.4579
Na(g)                       1.8198E-81    -80.7400
O2(g)                       2.0999E-01     -0.6778
Pb(g)                       7.6403E-81    -80.1169
S2(g)                       3.1312-203   -202.5043
SO2(g)                      4.0572E-43    -42.3918
Si(g)                       4.2257-221   -220.3741
SiF4(g)                     3.4373E-18    -17.4638
Ti(g)                       3.8019-231   -230.4200
TiCl4(g)                    9.7440E-62    -61.0113
U(g)                        1.0099-304   -303.9957
U2Cl10(g)                   4.7300-202   -201.3251
U2Cl8(g)                    4.0916-216   -215.3881
U2F10(g)                    2.3306-120   -119.6325
UCl(g)                      6.6091-255   -254.1799
UCl2(g)                     1.2940-203   -202.8881
UCl3(g)                     5.5490-150   -149.2558
UCl4(g)                     1.2885-113   -112.8899
UCl5(g)                     1.5395-114   -113.8126
UCl6(g)                     3.4171-110   -109.4663
UF(g)                       1.0107-240   -239.9954
UF2(g)                      7.5019-195   -194.1248
UF3(g)                      1.3703-142   -141.8632
UF4(g)                      3.6947E-87    -86.4324
UF5(g)                      4.5628E-73    -72.3408
UF6(g)                      5.5486E-73    -72.2558
UO(g)                       7.9755-220   -219.0982
UO2(g)                      1.4776-135   -134.8304
UO2Cl2(g)                   2.3122E-71    -70.6360
UO2F2(g)                    9.7245E-61    -60.0121
UO3(g)                      1.0868E-82    -81.9638
UOF4(g)                     1.1010E-64    -63.9582
Zn(g)                       1.2817E-90    -89.8922



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Stepping to zi=  1.5849E-05, delzi=  5.8489E-06, nord= 4
  time =  1.5286E-01 d, dltime =  5.6413E-02 d
Steps completed =    35, iter =  7, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -5.4060
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                    Reaction progress        =  1.58489319246104E-05
                    Log of reaction progress =      -4.8000000



                    Time =  1.321E+04 sec
                         =  1.529E-01 days
                         =  4.185E-04 years

                    Log sec =        4.121
                    Log days =      -0.816
                    Log years =     -3.378

                    Temperature    =     25.000 degrees C
                    total pressure =      1.013 bars


Step size is limited by the print requirement


                              --- Reactant Summary ---


   Reactant                   Moles     Delta moles    Mass, g    Delta Mass, g

 Tuff                       1.0000E+02   1.5849E-05   2.0586E+03   3.2627E-04


               Current total mass =  2.05865E+03 grams
               Delta total mass   =  3.26274E-04 grams
               Delta total volume =      0.00000 cc


   Reactant                Rel. Rate      Rate         Rate
                            mol/mol       mol/s      mol/s/cm2

 Tuff                      1.0000E+00   1.2000E-09   2.5000E-15


   Reactant                  Affinity   Surface Area
                             kcal/mol     mol/s/cm2

 Tuff                       999.00000   4.8000E+05


   Reactant                Rate Constants, mol/s/cm2

 Tuff
                  Forward    2.5000E-15


        Affinity of the overall irreversible reaction=     0.000 kcal
        Contributions from irreversible reactions
        with no thermodynamic data are not included


    --- Element Totals for the Aqueous Solution ---
```

Element	mg/kg soln.	Molality	Moles
O	8.865403E+05	5.561111E+01	5.559508E+01
Al	6.180980E-02	2.299098E-06	2.298435E-06
B	1.334829E-01	1.239157E-05	1.238800E-05
Ba	1.368719E-05	1.000288E-10	1.000000E-10
Ca	1.295832E+01	3.244962E-04	3.244026E-04
Ce	1.396506E-19	1.000288E-24	9.999994E-25
Cl	7.116513E+00	2.014581E-04	2.014000E-04
Cr	2.996352E+02	5.783475E-03	5.781807E-03
Cs	1.324650E-05	1.000288E-10	1.000000E-10
Cu	6.650219E-10	1.050303E-14	1.050000E-14
F	2.172842E+00	1.147831E-04	1.147500E-04
Fe	8.902356E-01	1.599823E-05	1.599362E-05
Gd	1.567289E-09	1.000288E-14	1.000000E-14
H	1.115156E+05	1.110370E+02	1.110050E+02
C	1.267583E-01	1.059166E-05	1.058860E-05
P	7.325663E+00	2.373667E-04	2.372983E-04
K	5.036776E+00	1.292890E-04	1.292517E-04
La	1.384452E-09	1.000288E-14	1.000000E-14
Li	6.917999E-07	1.000288E-10	1.000000E-10
Mg	2.003819E+00	8.274270E-05	8.271884E-05
Mn	3.250716E+01	5.938443E-04	5.936731E-04
Mo	2.179386E+02	2.279823E-03	2.279166E-03
N	1.982366E+00	1.420410E-04	1.420000E-04
Na	4.565712E+01	1.993153E-03	1.992578E-03
Nd	1.437620E-09	1.000288E-14	1.000000E-14
Ni	7.502087E+02	1.282876E-02	1.282506E-02
Pb	2.065134E-05	1.000288E-10	1.000000E-10
Pu	2.431914E-09	1.000288E-14	1.000000E-14
S	5.507393E+02	1.723725E-02	1.723228E-02
Si	2.802950E+00	1.001613E-04	1.001324E-04
Sm	1.498617E-09	1.000288E-14	1.000000E-14
Sr	8.732964E-06	1.000288E-10	1.000000E-10
Ti	1.078259E-05	2.260143E-10	2.259491E-10
U	2.372401E-09	1.000288E-14	1.000000E-14
V	4.768068E+00	9.393718E-05	9.391010E-05
Zn	6.517331E-06	1.000288E-10	1.000000E-10
Zr	9.092170E-16	1.000288E-20	1.000000E-20

Single ion activities and activity coefficients are here defined
with respect to the modified NBS pH scale

	pH	Eh	pe
modified NBS pH scale	2.0407	1.0983	1.8566E+01
rational pH scale	1.9642	1.1028	1.8643E+01

pHCl = 5.8288

Oxygen fugacity = 2.09991E-01
Log oxygen fugacity = -0.67780

Activity of water = 0.99924
Log activity of water = -0.00033

Ionic strength = 5.880139E-02 molal
Sum of molalities = 0.0494635648964
Osmotic coefficient = 0.85805

Mass of solution = 1.003325 kg
Mass of solutes = 0.003613 kg
Conc. of solutes = 0.360115 per cent (w/w)

Moles of solvent H2O = 5.54924E+01
Mass of solvent H2O = 9.99712E-01 kg

Species	Molality	Log molality	Log gamma	Log activity
H+	1.0860E-02	-1.9642	-0.0765	-2.0407
Ni++	1.0209E-02	-1.9910	-0.3466	-2.3376
SO4--	9.7765E-03	-2.0098	-0.3602	-2.3700
HSO4-	4.5003E-03	-2.3468	-0.0849	-2.4316
HCrO4-	4.0507E-03	-2.3925	-0.0849	-2.4774
NiSO4(aq)	2.6185E-03	-2.5820	0.0000	-2.5820
MoO4--	2.2798E-03	-2.6421	-0.3492	-2.9913
Na+	1.9401E-03	-2.7122	-0.0983	-2.8105
Cr2O7--	8.6348E-04	-3.0637	-0.3602	-3.4240
Mn++	4.1403E-04	-3.3830	-0.3466	-3.7295
O2(aq)	2.6166E-04	-3.5823	0.0062	-3.5761
Ca++	2.5993E-04	-3.5851	-0.3466	-3.9317
Cl-	2.0085E-04	-3.6971	-0.0909	-3.7881
MnSO4(aq)	1.7919E-04	-3.7467	0.0000	-3.7467
NO3-	1.4021E-04	-3.8532	-0.0909	-3.9441
K+	1.2539E-04	-3.9017	-0.1044	-4.0061
H3PO4(aq)	1.1920E-04	-3.9237	0.0000	-3.9237
H2PO4-	1.0769E-04	-3.9678	-0.0849	-4.0527
HF(aq)	1.0037E-04	-3.9984	0.0000	-3.9984
SiO2(aq)	1.0016E-04	-3.9993	0.0000	-3.9993
VO2+	7.7227E-05	-4.1122	-0.0983	-4.2106
CaSO4(aq)	6.4468E-05	-4.1907	0.0000	-4.1907
Mg++	5.3924E-05	-4.2682	-0.3139	-4.5821
NaSO4-	5.3006E-05	-4.2757	-0.0849	-4.3606
MgSO4(aq)	2.8809E-05	-4.5405	0.0000	-4.5405
B(OH)3(aq)	1.2392E-05	-4.9069	0.0000	-4.9069
VO2SO4-	1.2141E-05	-4.9157	-0.0849	-5.0006
CO2(aq)	1.0591E-05	-4.9751	0.0062	-4.9689
FeHPO4+	9.8832E-06	-5.0051	-0.0983	-5.1034
F-	9.1631E-06	-5.0380	-0.0878	-5.1258
Fe+++	3.9952E-06	-5.3985	-0.6676	-6.0660
Cr+++	3.9820E-06	-5.3999	-0.6676	-6.0675
KSO4-	3.8753E-06	-5.4117	-0.0849	-5.4966
VO(OH)3(aq)	3.3843E-06	-5.4705	0.0000	-5.4705
NiNO3+	1.6466E-06	-5.7834	-0.0983	-5.8817
H2CrO4(aq)	1.4539E-06	-5.8375	0.0000	-5.8375
FeOH++	1.4469E-06	-5.8396	-0.3761	-6.2157
AlF2+	1.3155E-06	-5.8809	-0.0983	-5.9793
VO2F(aq)	1.0319E-06	-5.9863	0.0000	-5.9863
AlF++	8.3681E-07	-6.0774	-0.3761	-6.4535
MnH2PO4+	4.6354E-07	-6.3339	-0.0983	-6.4323
FeSO4+	3.8892E-07	-6.4101	-0.0983	-6.5085
HCl(aq)	3.1713E-07	-6.4988	0.0000	-6.4988
CrO4--	2.6864E-07	-6.5708	-0.3602	-6.9311
FeF++	2.0931E-07	-6.6792	-0.3761	-7.0553
AlF3(aq)	9.8850E-08	-7.0050	0.0000	-7.0050
NiCl+	9.4728E-08	-7.0235	-0.0983	-7.1219
HPO3F-	9.1082E-08	-7.0406	-0.0849	-7.1255

CaNO3+	8.3655E-08	-7.0775	-0.0983	-7.1759
MnCl+	7.6215E-08	-7.1180	-0.0983	-7.2163
H2VO4-	7.2921E-08	-7.1371	-0.0849	-7.2220
CrO3Cl-	6.4820E-08	-7.1883	-0.0849	-7.2732
HNO3(aq)	5.1601E-08	-7.2873	0.0000	-7.2873
MnF+	4.7100E-08	-7.3270	-0.0983	-7.4253
VO2(OH)2-	4.5191E-08	-7.3449	-0.0849	-7.4298
MnNO3+	4.2136E-08	-7.3753	-0.0983	-7.4737
NaCl(aq)	4.2114E-08	-7.3756	0.0000	-7.3756
H2SO4(aq)	3.3702E-08	-7.4723	0.0000	-7.4723
Fe(SO4)2-	3.1078E-08	-7.5075	-0.0849	-7.5924
VO2HPO4-	3.0684E-08	-7.5131	-0.0849	-7.5980
Fe(OH)2+	2.7736E-08	-7.5570	-0.0983	-7.6553
H2F2(aq)	2.7230E-08	-7.5650	0.0000	-7.5650
AlSO4+	2.5739E-08	-7.5894	-0.0983	-7.6877
KHSO4(aq)	2.4930E-08	-7.6033	0.0000	-7.6033
CrOH++	2.2335E-08	-7.6510	-0.3761	-8.0271
Al+++	2.1871E-08	-7.6601	-0.6676	-8.3277
FeF2+	1.3507E-08	-7.8694	-0.0983	-7.9678
MgF+	5.5315E-09	-8.2572	-0.0983	-8.3555
CaF+	5.2791E-09	-8.2774	-0.0983	-8.3758
CaCl+	4.8192E-09	-8.3170	-0.0983	-8.4154
MgCl+	3.9198E-09	-8.4067	-0.0983	-8.5051
VO2F2-	2.7087E-09	-8.5672	-0.0849	-8.6521
FeNO3++	2.3223E-09	-8.6341	-0.3761	-9.0102
PO3F--	1.4996E-09	-8.8240	-0.3602	-9.1842
HPO4--	1.3894E-09	-8.8572	-0.3602	-9.2174
NaF(aq)	1.1644E-09	-8.9339	0.0000	-8.9339
HCO3-	6.4812E-10	-9.1883	-0.0849	-9.2732
KCl(aq)	5.1430E-10	-9.2888	0.0000	-9.2888
MnHPO4(aq)	4.2959E-10	-9.3670	0.0000	-9.3670
VO++	2.7647E-10	-9.5584	-0.3761	-9.9345
CrCl++	2.3527E-10	-9.6284	-0.3761	-10.0045
Ti(OH)4(aq)	2.2601E-10	-9.6459	0.0000	-9.6459
AlF4-	2.2599E-10	-9.6459	-0.0849	-9.7308
HF2-	2.2056E-10	-9.6565	-0.0849	-9.7414
VOSO4(aq)	1.4980E-10	-9.8245	0.0000	-9.8245
Mn+++	1.1763E-10	-9.9295	-0.8157	-10.7452
Cs+	1.0002E-10	-9.9999	-0.1077	-10.1076

--- Summary of Instantaneously Precipitated Solid Phases ---
(defined by derivatives)

--- Theoretical Rock Composition ---
g/kg

O	5.289901E+01
Si	4.702654E+01
Ti	7.698474E-02

--- Oxide Percentages ---

Oxide	Theoretical rock

Total = 0.0000

Phase/end-member	d mol/d zi	d grams/d zi	d vol (cc)/d zi
Quartz	2.6347E-01	1.5830E+01	5.9776E+00
Rutile	2.5300E-04	2.0209E-02	4.7615E-03

fix	CO2(g)	-3.3160E-05	-1.4594E-03	0.0000E+00
fix	O2(g)	-3.5636E-03	-1.1403E-01	0.0000E+00

--- Summary of Solid Phases (E.S.+P.R.S.) ---

Phase/End-member		Log moles	Moles	Mass, g	Volume, cc
Quartz		-5.3793	4.1757E-06	2.5089E-04	9.4739E-05
Rutile		-8.4107	3.8838E-09	3.1024E-07	7.3094E-08
fix	CO2(g)	2.3010	2.0000E+02	8.8020E+03	0.0000E+00
fix	O2(g)	2.3010	2.0000E+02	6.3998E+03	0.0000E+00

	Mass, grams	Volume, cc
Created	1.520172E+04	9.481172E-05
Destroyed	3.262735E-04	0.000000E+00
Net	1.520172E+04	9.481172E-05

Warning-- these volume totals may be incomplete because
of missing partial molar volume data in the data base

--- Summary of Pure Mineral Saturation States ---

Mineral	Log Q/K	Aff, kcal	State
AlF3	-6.496	-8.863	
Anglesite	-4.894	-6.677	
Anhydrite	-1.995	-2.722	
BaZrO3	69.241	94.464	ssatd
Barite	-2.765	-3.772	
Bassanite	-2.640	-3.602	
Boric_acid	-4.749	-6.478	
CaSO4:0.5H2O(beta)	-2.809	-3.832	
CaZrO3	129.705	176.954	ssatd
Celestite	-7.194	-9.815	
Chalcedony	-0.271	-0.370	
Coesite	-0.810	-1.105	
CrO2	-0.910	-1.241	
Cristobalite(alpha)	-0.551	-0.751	
Cristobalite(beta)	-0.994	-1.356	
Crocoite	-4.590	-6.263	
Epsomite	-4.992	-6.811	
Fe(OH)3	-5.601	-7.641	
FeF3	-2.205	-3.008	
Fluorite	-4.146	-5.657	
Goethite	-0.479	-0.654	
Gypsum	-1.820	-2.483	
Hematite	0.003	0.003	ssatd
Hexahydrite	-5.227	-7.132	
Ice	-0.139	-0.190	
Jarosite	-5.332	-7.274	
Kieserite	-6.685	-9.121	
Manganite	-4.459	-6.084	
Mercallite	-6.978	-9.520	
Mirabilite	-6.855	-9.352	
MnHPO4	0.000	0.000	ssatd
MnO2(gamma)	-1.518	-2.071	
Morenosite	-2.696	-3.678	

NiSO4:6H2O(alpha)	-2.702	-3.687	
Nontronite-Ca	-3.688	-5.031	
Nontronite-H	-2.755	-3.758	
Nontronite-K	-4.078	-5.564	
Nontronite-Mg	-3.757	-5.126	
Nontronite-Na	-4.022	-5.488	
Pentahydrite	-5.567	-7.594	
Pyrolusite	0.000	0.000	ssatd
Quartz	0.000	0.000	satd
Rutile	0.000	0.000	satd
Sellaite	-5.449	-7.434	
Shcherbinaite	-2.888	-3.940	
SiO2(am)	-1.286	-1.754	
SrZrO3	106.100	144.751	ssatd
Starkeyite	-5.954	-8.122	
Strengite	-1.901	-2.593	
Tridymite	-0.171	-0.234	
fix CO2(g)	0.000	0.000	satd
fix O2(g)	0.000	0.000	satd

--- Summary of Solid Solutions ---

--- Carbonate-Calcite ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Calcite	5.6711E-03	-2.2463	0.0000	-2.2463
Magnesite	4.5536E-04	-3.3416	0.0000	-3.3416
Rhodochrosite	9.9387E-01	-0.0027	0.0000	-0.0027
Siderite	1.2724E-08	-7.8954	0.0000	-7.8954
Smithsonite	5.2900E-08	-7.2765	0.0000	-7.2765
Strontianite	2.2203E-07	-6.6536	0.0000	-6.6536

Mineral	Log Q/K	Aff, kcal	State
Carbonate-Calcite	-10.767	-14.689	
Calcite	-10.767	-14.689	
Magnesite	-10.767	-14.689	
Rhodochrosite	-10.767	-14.689	
Siderite	-10.767	-14.689	
Smithsonite	-10.767	-14.689	
Strontianite	-10.767	-14.689	

--- Clinoptilolite-hy-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-hy-Ca	9.9768E-01	-0.0010	0.0000	-0.0010
Clinoptilolite-hy-Cs	6.6765E-23	-22.1754	0.0000	-22.1754
Clinoptilolite-hy-K	7.3828E-04	-3.1318	0.0000	-3.1318
Clinoptilolite-hy-Na	1.5791E-03	-2.8016	0.0000	-2.8016
Clinoptilolite-hy-Sr	5.6070E-12	-11.2513	0.0000	-11.2513

Mineral	Log Q/K	Aff, kcal	State

Clinoptilolite-hy-ss	-58.465	-79.763
Clinoptilolite-hy-Ca	-58.465	-79.763
Clinoptilolite-hy-Cs	-58.465	-79.763
Clinoptilolite-hy-K	-58.465	-79.763
Clinoptilolite-hy-Na	-58.465	-79.763
Clinoptilolite-hy-Sr	-58.465	-79.763

--- Clinoptilolite-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-Ca	7.8142E-01	-0.1071	-0.2635	-0.3706
Clinoptilolite-Cs	3.0388E-07	-6.5173	-16.0326	-22.5499
Clinoptilolite-K	9.7033E-02	-1.0131	-2.4922	-3.5053
Clinoptilolite-NH4	1.0301E-51	-50.9871	-125.4283	-176.4155
Clinoptilolite-Na	1.2111E-01	-0.9168	-2.2554	-3.1723
Clinoptilolite-Sr	4.3828E-04	-3.3582	-8.2613	-11.6195

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-ss	-58.097	-79.260	
Clinoptilolite-Ca	-58.097	-79.260	
Clinoptilolite-Cs	-58.097	-79.260	
Clinoptilolite-K	-58.097	-79.260	
Clinoptilolite-NH4	-58.097	-79.260	
Clinoptilolite-Na	-58.097	-79.260	
Clinoptilolite-Sr	-58.097	-79.260	

--- Saponite-tri ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Saponite-Ca	1.4824E-03	-2.8290	1.8954	-0.9336
Saponite-H	9.9737E-01	-0.0011	0.0008	-0.0004
Saponite-K	9.6997E-05	-4.0132	2.6889	-1.3244
Saponite-Mg	9.1203E-04	-3.0400	2.0368	-1.0032
Saponite-Na	1.4352E-04	-3.8431	2.5749	-1.2682

Mineral	Log Q/K	Aff, kcal	State
Saponite-tri	-42.241	-57.628	
Saponite-Ca	-42.241	-57.628	
Saponite-H	-42.241	-57.628	
Saponite-K	-42.241	-57.628	
Saponite-Mg	-42.241	-57.628	
Saponite-Na	-42.241	-57.628	

--- Smectite-di ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Beidellite-Ca	1.0042E-66	-65.9982	44.2188	-21.7794
Beidellite-K	6.5750E-68	-67.1821	45.0120	-22.1701
Beidellite-Mg	6.1780E-67	-66.2092	44.3601	-21.8490
Beidellite-Na	9.7221E-68	-67.0122	44.8982	-22.1140
Montmor-Ca	1.9773E-57	-56.7039	37.9916	-18.7123
Montmor-K	2.1144E-58	-57.6748	38.6421	-19.0327
Montmor-Mg	1.9771E-57	-56.7040	37.9917	-18.7123
Montmor-Na	3.0489E-58	-57.5159	38.5356	-18.9802
Nontronite-Ca	5.6245E-01	-0.2499	0.1674	-0.0825
Nontronite-K	3.6827E-02	-1.4338	0.9607	-0.4732
Nontronite-Mg	3.4627E-01	-0.4606	0.3086	-0.1520
Nontronite-Na	5.4454E-02	-1.2640	0.8469	-0.4171

Mineral	Log Q/K	Aff, kcal	State
Smectite-di	-3.605	-4.919	
Beidellite-Ca	-3.605	-4.919	
Beidellite-K	-3.605	-4.919	
Beidellite-Mg	-3.605	-4.919	
Beidellite-Na	-3.605	-4.919	
Montmor-Ca	-3.605	-4.919	
Montmor-K	-3.605	-4.919	
Montmor-Mg	-3.605	-4.919	
Montmor-Na	-3.605	-4.919	
Nontronite-Ca	-3.605	-4.919	
Nontronite-K	-3.605	-4.919	
Nontronite-Mg	-3.605	-4.919	
Nontronite-Na	-3.605	-4.919	

--- Lanthanide hydroxide ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
La(OH)3	1.2828E-05	-4.8918	0.0000	-4.8918
Ce(OH)3	3.7098E-15	-14.4307	0.0000	-14.4307
Nd(OH)3(c)	3.4716E-01	-0.4595	0.0000	-0.4595
Gd(OH)3	5.8552E-01	-0.2325	0.0000	-0.2325
Sm(OH)3	6.7305E-02	-1.1720	0.0000	-1.1720

Mineral	Log Q/K	Aff, kcal	State
Lanthanide hydroxide	-24.638	-33.614	
La(OH)3	-24.638	-33.614	
Ce(OH)3	-24.638	-33.614	
Nd(OH)3(c)	-24.638	-33.614	
Gd(OH)3	-24.638	-33.614	
Sm(OH)3	-24.638	-33.614	

--- Rhabdophane-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaPO4:H2O	4.1200E-01	-0.3851	0.0000	-0.3851
CePO4:H2O	3.7677E-11	-10.4239	0.0000	-10.4239
NdPO4:H2O	2.2247E-01	-0.6527	0.0000	-0.6527
GdPO4:H2O	1.4937E-01	-0.8257	0.0000	-0.8257
SmPO4:H2O	2.1616E-01	-0.6652	0.0000	-0.6652

Mineral	Log Q/K	Aff, kcal	State
Rhabdophane-ss	-9.764	-13.320	
LaPO4:H2O	-9.764	-13.320	
CePO4:H2O	-9.764	-13.320	
NdPO4:H2O	-9.764	-13.320	
GdPO4:H2O	-9.764	-13.320	
SmPO4:H2O	-9.764	-13.320	

--- Lanthanide fluoride ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaF3:0.5H2O	5.7251E-01	-0.2422	0.0000	-0.2422
CeF3:0.5H2O	8.2979E-11	-10.0810	0.0000	-10.0810
NdF3:0.5H2O	3.8919E-01	-0.4098	0.0000	-0.4098
GdF3:0.5H2O	8.2635E-03	-2.0828	0.0000	-2.0828
SmF3:0.5H2O	3.0038E-02	-1.5223	0.0000	-1.5223

Mineral	Log Q/K	Aff, kcal	State
Lanthanide fluoride	-11.757	-16.040	
LaF3:0.5H2O	-11.757	-16.040	
CeF3:0.5H2O	-11.757	-16.040	
NdF3:0.5H2O	-11.757	-16.040	
GdF3:0.5H2O	-11.757	-16.040	
SmF3:0.5H2O	-11.757	-16.040	

--- Summary of Gases ---

Gas	Fugacity	Log fugacity
Al(g)	7.0820-201	-200.1498
B(g)	8.5659-204	-203.0672
BF3(g)	3.6399E-24	-23.4389
C(g)	3.0917-190	-189.5098
CH4(g)	3.5240-146	-145.4530
CO(g)	6.0395E-49	-48.2190
CO2(g)	3.1623E-04	-3.5000
Ca(g)	7.2371-164	-163.1404
Chlorine	3.5836E-17	-16.4457
Cs(g)	3.5185E-89	-88.4536
Cu(g)	7.5985E-93	-92.1193
Fluorine	1.4440E-72	-71.8404
H2(g)	6.1104E-42	-41.2139
H2O(g)	2.5958E-02	-1.5857

H2S(g)	2.2896-130	-129.6402
HCl(g)	7.3408E-13	-12.1343
HF(g)	5.2592E-09	-8.2791
K(g)	2.2231E-83	-82.6530
Li(g)	7.8256-103	-102.1065
Mg(g)	1.0903-141	-140.9625
Nitrogen	2.6185E-08	-7.5820
NH3(g)	1.8635E-63	-62.7297
NO(g)	5.0953E-20	-19.2928
NO2(g)	3.4840E-14	-13.4579
Na(g)	1.8200E-81	-80.7399
O2(g)	2.0999E-01	-0.6778
Pb(g)	7.6412E-81	-80.1168
S2(g)	3.1305-203	-202.5044
SO2(g)	4.0568E-43	-42.3918
Si(g)	4.2257-221	-220.3741
SiF4(g)	3.3772E-18	-17.4714
Ti(g)	3.8019-231	-230.4200
TiCl4(g)	9.7418E-62	-61.0114
U(g)	1.0103-304	-303.9955
U2Cl10(g)	4.7320-202	-201.3250
U2Cl8(g)	4.0937-216	-215.3879
U2F10(g)	2.2322-120	-119.6513
UCl(g)	6.6120-255	-254.1797
UCl2(g)	1.2945-203	-202.8879
UCl3(g)	5.5507-150	-149.2556
UCl4(g)	1.2889-113	-112.8898
UCl5(g)	1.5398-114	-113.8125
UCl6(g)	3.4177-110	-109.4663
UF(g)	1.0067-240	-239.9971
UF2(g)	7.4396-195	-194.1284
UF3(g)	1.3530-142	-141.8687
UF4(g)	3.6319E-87	-86.4399
UF5(g)	4.4655E-73	-72.3501
UF6(g)	5.4064E-73	-72.2671
UO(g)	7.9794-220	-219.0980
UO2(g)	1.4783-135	-134.8302
UO2Cl2(g)	2.3131E-71	-70.6358
UO2F2(g)	9.6438E-61	-60.0157
UO3(g)	1.0874E-82	-81.9636
UOF4(g)	1.0823E-64	-63.9657
Zn(g)	1.2819E-90	-89.8921

- -

```
Stepping to zi=  2.5119E-05, delzi=  9.2699E-06, nord= 4
  time =  2.4227E-01 d, dltime =  8.9409E-02 d
iter =    7
      1 supersaturated pure minerals
      0 supersaturated solid solutions

               The most supersaturated phases          Affinity, kcal

                 1     252   Hematite                      0.00548868


  Attempted species assemblage no.   2

             1      1  H2O
```

```
 2      3  Al+++
 3      7  B(OH)3(aq)
 4      8  Ba++
 5     11  Ca++
 6     13  Ce+++
 7     14  Cl-
 8     16  CrO4--
 9     17  Cs+
10     18  Cu++
11     22  F-
12     23  Fe++
13     25  Gd+++
14     26  H+
15     28  HCO3-
16     29  HPO4--
17     35  K+
18     37  La+++
19     38  Li+
20     40  Mg++
21     41  Mn++
22     42  MoO4--
23     43  NO3-
24     44  Na+
25     45  Nd+++
26     47  Ni++
27     49  Pb++
28     52  Pu++++
29     58  SO4--
30     62  SiO2(aq)
31     63  Sm+++
32     65  Sr++
33     69  Ti(OH)4(aq)
34     72  UO2++
35     73  VO++
36     78  Zn++
37     79  Zr(OH)2++
38     80  O2(g)
39    252  Hematite
40    475  Quartz
41    482  Rutile
42    689  fix     CO2(g)
43    690  fix     O2(g)

Steps completed =    36, iter = 19, ncorr = 0

- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -


                    Reaction progress        =  2.51188643150946E-05
                    Log of reaction progress =      -4.6000000



                    Time =  2.093E+04 sec
                         =  2.423E-01 days
                         =  6.633E-04 years

                    Log sec =        4.321
                    Log days =      -0.616
                    Log years =     -3.178

                    Temperature    =     25.000 degrees C
                    total pressure =      1.013 bars
```

Step size is limited by the print requirement

Change in the product phase assemblage

--- Reactant Summary ---

Reactant	Moles	Delta moles	Mass, g	Delta Mass, g
Tuff	1.0000E+02	2.5119E-05	2.0586E+03	5.1711E-04

Current total mass = 2.05865E+03 grams
Delta total mass = 5.17109E-04 grams
Delta total volume = 0.00000 cc

Reactant	Rel. Rate mol/mol	Rate mol/s	Rate mol/s/cm2
Tuff	1.0000E+00	1.2000E-09	2.5000E-15

Reactant	Affinity kcal/mol	Surface Area mol/s/cm2
Tuff	999.00000	4.8000E+05

Reactant	Rate Constants, mol/s/cm2	
Tuff		
	Forward	2.5000E-15

Affinity of the overall irreversible reaction= 0.000 kcal
Contributions from irreversible reactions
with no thermodynamic data are not included

--- Element Totals for the Aqueous Solution ---

Element	mg/kg soln.	Molality	Moles
O	8.865403E+05	5.561111E+01	5.559508E+01
Al	7.464365E-02	2.776470E-06	2.775669E-06
B	1.334829E-01	1.239157E-05	1.238800E-05
Ba	1.368719E-05	1.000288E-10	1.000000E-10
Ca	1.295908E+01	3.245152E-04	3.244217E-04
Ce	1.396506E-19	1.000288E-24	9.999994E-25
Cl	7.116512E+00	2.014581E-04	2.014000E-04
Cr	2.996352E+02	5.783475E-03	5.781807E-03
Cs	1.324650E-05	1.000288E-10	1.000000E-10
Cu	6.650219E-10	1.050303E-14	1.050000E-14
F	2.172842E+00	1.147831E-04	1.147500E-04
Fe	8.874833E-01	1.594877E-05	1.594417E-05
Gd	1.567289E-09	1.000288E-14	1.000000E-14
H	1.115156E+05	1.110370E+02	1.110050E+02

C	1.267583E-01	1.059166E-05	1.058860E-05
P	7.325675E+00	2.373671E-04	2.372987E-04
K	5.044565E+00	1.294889E-04	1.294516E-04
La	1.384452E-09	1.000288E-14	1.000000E-14
Li	6.917999E-07	1.000288E-10	1.000000E-10
Mg	2.004100E+00	8.275430E-05	8.273045E-05
Mn	3.250726E+01	5.938461E-04	5.936749E-04
Mo	2.179386E+02	2.279823E-03	2.279166E-03
N	1.982366E+00	1.420409E-04	1.420000E-04
Na	4.566219E+01	1.993374E-03	1.992800E-03
Nd	1.437620E-09	1.000288E-14	1.000000E-14
Ni	7.502087E+02	1.282876E-02	1.282506E-02
Pb	2.065134E-05	1.000288E-10	1.000000E-10
Pu	2.431914E-09	1.000288E-14	1.000000E-14
S	5.507393E+02	1.723725E-02	1.723228E-02
Si	2.802950E+00	1.001613E-04	1.001324E-04
Sm	1.498617E-09	1.000288E-14	1.000000E-14
Sr	8.732964E-06	1.000288E-10	1.000000E-10
Ti	1.078259E-05	2.260143E-10	2.259491E-10
U	2.372401E-09	1.000288E-14	1.000000E-14
V	4.768068E+00	9.393718E-05	9.391010E-05
Zn	6.517331E-06	1.000288E-10	1.000000E-10
Zr	9.092170E-16	1.000288E-20	1.000000E-20

Single ion activities and activity coefficients are here defined
with respect to the modified NBS pH scale

	pH	Eh	pe
modified NBS pH scale	2.0407	1.0983	1.8566E+01
rational pH scale	1.9642	1.1028	1.8643E+01

pHCl = 5.8288

Oxygen fugacity = 2.09991E-01
Log oxygen fugacity = -0.67780

Activity of water = 0.99924
Log activity of water = -0.00033

Ionic strength = 5.880183E-02 molal
Sum of molalities = 0.0494628050423
Osmotic coefficient = 0.85805

Mass of solution = 1.003325 kg
Mass of solutes = 0.003613 kg
Conc. of solutes = 0.360117 per cent (w/w)

Moles of solvent H2O = 5.54924E+01
Mass of solvent H2O = 9.99712E-01 kg

Species	Molality	Log molality	Log gamma	Log activity
H+	1.0859E-02	-1.9642	-0.0765	-2.0407
Ni++	1.0209E-02	-1.9910	-0.3466	-2.3376

SO4--	9.7767E-03	-2.0098	-0.3602	-2.3700
HSO4-	4.5000E-03	-2.3468	-0.0849	-2.4317
HCrO4-	4.0507E-03	-2.3925	-0.0849	-2.4774
NiSO4(aq)	2.6185E-03	-2.5819	0.0000	-2.5819
MoO4--	2.2798E-03	-2.6421	-0.3492	-2.9913
Na+	1.9403E-03	-2.7121	-0.0983	-2.8105
Cr2O7--	8.6348E-04	-3.0637	-0.3602	-3.4240
Mn++	4.1403E-04	-3.3830	-0.3466	-3.7295
O2(aq)	2.6166E-04	-3.5823	0.0062	-3.5761
Ca++	2.5995E-04	-3.5851	-0.3466	-3.9317
Cl-	2.0085E-04	-3.6971	-0.0909	-3.7881
MnSO4(aq)	1.7919E-04	-3.7467	0.0000	-3.7467
NO3-	1.4021E-04	-3.8532	-0.0909	-3.9441
K+	1.2558E-04	-3.9011	-0.1044	-4.0055
H3PO4(aq)	1.1922E-04	-3.9237	0.0000	-3.9237
H2PO4-	1.0771E-04	-3.9677	-0.0849	-4.0526
SiO2(aq)	1.0016E-04	-3.9993	0.0000	-3.9993
HF(aq)	9.9674E-05	-4.0014	0.0000	-4.0014
VO2+	7.7233E-05	-4.1122	-0.0983	-4.2105
CaSO4(aq)	6.4473E-05	-4.1906	0.0000	-4.1906
Mg++	5.3931E-05	-4.2682	-0.3139	-4.5821
NaSO4-	5.3013E-05	-4.2756	-0.0849	-4.3605
MgSO4(aq)	2.8814E-05	-4.5404	0.0000	-4.5404
B(OH)3(aq)	1.2392E-05	-4.9069	0.0000	-4.9069
VO2SO4-	1.2143E-05	-4.9157	-0.0849	-5.0006
CO2(aq)	1.0591E-05	-4.9751	0.0062	-4.9689
FeHPO4+	9.8545E-06	-5.0064	-0.0983	-5.1047
F-	9.0998E-06	-5.0410	-0.0878	-5.1288
Fe+++	3.9826E-06	-5.3998	-0.6676	-6.0674
Cr+++	3.9807E-06	-5.4000	-0.6676	-6.0676
KSO4-	3.8814E-06	-5.4110	-0.0849	-5.4959
VO(OH)3(aq)	3.3848E-06	-5.4705	0.0000	-5.4705
NiNO3+	1.6466E-06	-5.7834	-0.0983	-5.8818
AlF2+	1.5846E-06	-5.8001	-0.0983	-5.8984
H2CrO4(aq)	1.4538E-06	-5.8375	0.0000	-5.8375
FeOH++	1.4424E-06	-5.8409	-0.3761	-6.2170
VO2F(aq)	1.0249E-06	-5.9893	0.0000	-5.9893
AlF++	1.0150E-06	-5.9935	-0.3761	-6.3696
MnH2PO4+	4.6362E-07	-6.3338	-0.0983	-6.4322
FeSO4+	3.8770E-07	-6.4115	-0.0983	-6.5098
HCl(aq)	3.1711E-07	-6.4988	0.0000	-6.4988
CrO4--	2.6866E-07	-6.5708	-0.3602	-6.9310
FeF++	2.0721E-07	-6.6836	-0.3761	-7.0597
AlF3(aq)	1.1825E-07	-6.9272	0.0000	-6.9272
NiCl+	9.4727E-08	-7.0235	-0.0983	-7.1219
HPO3F-	9.0462E-08	-7.0435	-0.0849	-7.1284
CaNO3+	8.3659E-08	-7.0775	-0.0983	-7.1758
MnCl+	7.6215E-08	-7.1180	-0.0983	-7.2163
H2VO4-	7.2938E-08	-7.1370	-0.0849	-7.2219
CrO3Cl-	6.4815E-08	-7.1883	-0.0849	-7.2732
HNO3(aq)	5.1597E-08	-7.2874	0.0000	-7.2874
MnF+	4.6775E-08	-7.3300	-0.0983	-7.4283
VO2(OH)2-	4.5202E-08	-7.3448	-0.0849	-7.4297
MnNO3+	4.2136E-08	-7.3753	-0.0983	-7.4737
NaCl(aq)	4.2119E-08	-7.3755	0.0000	-7.3755
H2SO4(aq)	3.3697E-08	-7.4724	0.0000	-7.4724
AlSO4+	3.1438E-08	-7.5025	-0.0983	-7.6009
Fe(SO4)2-	3.0982E-08	-7.5089	-0.0849	-7.5938
VO2HPO4-	3.0694E-08	-7.5130	-0.0849	-7.5978
Fe(OH)2+	2.7653E-08	-7.5583	-0.0983	-7.6566
H2F2(aq)	2.6851E-08	-7.5710	0.0000	-7.5710
Al+++	2.6713E-08	-7.5733	-0.6676	-8.2408
KHSO4(aq)	2.4967E-08	-7.6026	0.0000	-7.6026

CrOH++	2.2330E-08	-7.6511	-0.3761	-8.0272
FeF2+	1.3279E-08	-7.8768	-0.0983	-7.9752
MgF+	5.4941E-09	-8.2601	-0.0983	-8.3584
CaF+	5.2429E-09	-8.2804	-0.0983	-8.3788
CaCl+	4.8195E-09	-8.3170	-0.0983	-8.4153
MgCl+	3.9203E-09	-8.4067	-0.0983	-8.5050
VO2F2-	2.6717E-09	-8.5732	-0.0849	-8.6581
FeNO3++	2.3150E-09	-8.6354	-0.3761	-9.0116
PO3F--	1.4895E-09	-8.8270	-0.3602	-9.1872
HPO4--	1.3897E-09	-8.8571	-0.3602	-9.2173
NaF(aq)	1.1565E-09	-8.9368	0.0000	-8.9368
HCO3-	6.4817E-10	-9.1883	-0.0849	-9.2732
KCl(aq)	5.1509E-10	-9.2881	0.0000	-9.2881
MnHPO4(aq)	4.2969E-10	-9.3668	0.0000	-9.3668
VO++	2.7647E-10	-9.5584	-0.3761	-9.9345
AlF4-	2.6848E-10	-9.5711	-0.0849	-9.6560
CrCl++	2.3520E-10	-9.6286	-0.3761	-10.0047
Ti(OH)4(aq)	2.2601E-10	-9.6459	0.0000	-9.6459
HF2-	2.1751E-10	-9.6625	-0.0849	-9.7474
VOSO4(aq)	1.4980E-10	-9.8245	0.0000	-9.8245
Mn+++	1.1762E-10	-9.9295	-0.8157	-10.7453
AlHPO4+	1.0970E-10	-9.9598	-0.0983	-10.0581
Cs+	1.0002E-10	-9.9999	-0.1077	-10.1076

--- Summary of Instantaneously Precipitated Solid Phases ---
(defined by derivatives)

--- Theoretical Rock Composition ---
g/kg

O	5.317249E+01
C	1.849367E-03
Si	4.674913E+01
Ti	7.653061E-02

--- Oxide Percentages ---

Oxide	Theoretical rock

Total = 0.0000

Phase/end-member	d mol/d zi	d grams/d zi	d vol (cc)/d zi
Hematite	2.6347E-01	4.2074E+01	7.9763E+00
Quartz	2.5300E-04	1.5201E-02	5.7401E-03
Rutile	2.4372E-05	1.9468E-03	4.5867E-04
fix CO2(g)	-7.2472E-04	-3.1895E-02	0.0000E+00
fix O2(g)	0.0000E+00	0.0000E+00	0.0000E+00

--- Summary of Solid Phases (E.S.+P.R.S.) ---

Phase/End-member	Log moles	Moles	Mass, g	Volume, cc
Hematite	-7.4448	3.5908E-08	5.7342E-06	1.0871E-06
Quartz	-5.1793	6.6181E-06	3.9764E-04	1.5015E-04
Rutile	-8.2056	6.2291E-09	4.9757E-07	1.1723E-07
fix CO2(g)	2.3010	2.0000E+02	8.8020E+03	0.0000E+00
fix O2(g)	2.3010	2.0000E+02	6.3998E+03	0.0000E+00

	Mass, grams	Volume, cc
Created	1.520172E+04	1.513549E-04
Destroyed	5.171087E-04	0.000000E+00
Net	1.520172E+04	1.513549E-04

Warning-- these volume totals may be incomplete because of missing partial molar volume data in the data base

--- Summary of Pure Mineral Saturation States ---

Mineral	Log Q/K	Aff, kcal	State
AlF3	-6.418	-8.756	
Anglesite	-4.894	-6.677	
Anhydrite	-1.995	-2.722	
BaZrO3	69.243	94.468	ssatd
Barite	-2.765	-3.772	
Bassanite	-2.640	-3.602	
Boric_acid	-4.749	-6.478	
CaSO4:0.5H2O(beta)	-2.808	-3.832	
CaZrO3	129.707	176.958	ssatd
Celestite	-7.194	-9.815	
Chalcedony	-0.271	-0.370	
Coesite	-0.810	-1.105	
CrO2	-0.910	-1.241	
Cristobalite(alpha)	-0.551	-0.751	
Cristobalite(beta)	-0.994	-1.356	
Crocoite	-4.590	-6.263	
Epsomite	-4.992	-6.811	
Fe(OH)3	-5.602	-7.642	
FeF3	-2.215	-3.022	
Fluorite	-4.152	-5.665	
Goethite	-0.480	-0.655	
Gypsum	-1.820	-2.483	
Hematite	0.000	0.000	satd
Hexahydrite	-5.227	-7.132	
Ice	-0.139	-0.190	
Jarosite	-5.335	-7.278	
Kieserite	-6.685	-9.121	
Manganite	-4.459	-6.084	
Mercallite	-6.977	-9.519	
Mirabilite	-6.854	-9.351	
MnHPO4	0.000	0.000	ssatd
MnO2(gamma)	-1.518	-2.070	
Morenosite	-2.696	-3.678	
NiSO4:6H2O(alpha)	-2.702	-3.687	
Nontronite-Ca	-3.662	-4.995	
Nontronite-H	-2.728	-3.722	
Nontronite-K	-4.052	-5.528	
Nontronite-Mg	-3.731	-5.090	
Nontronite-Na	-3.996	-5.452	
Pentahydrite	-5.567	-7.594	
Pyrolusite	0.000	0.000	ssatd
Quartz	0.000	0.000	satd
Rutile	0.000	0.000	satd
Sellaite	-5.455	-7.443	
Shcherbinaite	-2.888	-3.940	
SiO2(am)	-1.286	-1.754	

SrZrO3	106.103	144.754	ssatd
Starkeyite	-5.954	-8.122	
Strengite	-1.902	-2.595	
Tridymite	-0.172	-0.234	
fix CO2(g)	0.000	0.000	satd
fix O2(g)	0.000	0.000	satd

--- Summary of Solid Solutions ---

--- Carbonate-Calcite ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Calcite	5.6714E-03	-2.2463	0.0000	-2.2463
Magnesite	4.5542E-04	-3.3416	0.0000	-3.3416
Rhodochrosite	9.9387E-01	-0.0027	0.0000	-0.0027
Siderite	1.2685E-08	-7.8967	0.0000	-7.8967
Smithsonite	5.2900E-08	-7.2765	0.0000	-7.2765
Strontianite	2.2202E-07	-6.6536	0.0000	-6.6536

Mineral	Log Q/K	Aff, kcal	State
Carbonate-Calcite	-10.767	-14.689	
Calcite	-10.767	-14.689	
Magnesite	-10.767	-14.689	
Rhodochrosite	-10.767	-14.689	
Siderite	-10.767	-14.689	
Smithsonite	-10.767	-14.689	
Strontianite	-10.767	-14.689	

--- Clinoptilolite-hy-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-hy-Ca	9.9768E-01	-0.0010	0.0000	-0.0010
Clinoptilolite-hy-Cs	6.6759E-23	-22.1755	0.0000	-22.1755
Clinoptilolite-hy-K	7.4217E-04	-3.1295	0.0000	-3.1295
Clinoptilolite-hy-Na	1.5795E-03	-2.8015	0.0000	-2.8015
Clinoptilolite-hy-Sr	5.6064E-12	-11.2513	0.0000	-11.2513

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-hy-ss	-58.165	-79.354	
Clinoptilolite-hy-Ca	-58.165	-79.354	
Clinoptilolite-hy-Cs	-58.165	-79.354	
Clinoptilolite-hy-K	-58.165	-79.354	
Clinoptilolite-hy-Na	-58.165	-79.354	
Clinoptilolite-hy-Sr	-58.165	-79.354	

--- Clinoptilolite-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-Ca	7.8130E-01	-0.1072	-0.2637	-0.3709
Clinoptilolite-Cs	3.0382E-07	-6.5174	-16.0328	-22.5501
Clinoptilolite-K	9.7165E-02	-1.0125	-2.4907	-3.5032
Clinoptilolite-NH4	1.0297E-51	-50.9873	-125.4287	-176.4160
Clinoptilolite-Na	1.2110E-01	-0.9169	-2.2555	-3.1724
Clinoptilolite-Sr	4.3820E-04	-3.3583	-8.2615	-11.6198

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-ss	-57.796	-78.850	
Clinoptilolite-Ca	-57.796	-78.850	
Clinoptilolite-Cs	-57.796	-78.850	
Clinoptilolite-K	-57.796	-78.850	
Clinoptilolite-NH4	-57.796	-78.850	
Clinoptilolite-Na	-57.796	-78.850	
Clinoptilolite-Sr	-57.796	-78.850	

--- Saponite-tri ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Saponite-Ca	1.4826E-03	-2.8290	1.8954	-0.9336
Saponite-H	9.9736E-01	-0.0011	0.0008	-0.0004
Saponite-K	9.7154E-05	-4.0125	2.6884	-1.3241
Saponite-Mg	9.1216E-04	-3.0399	2.0368	-1.0032
Saponite-Na	1.4355E-04	-3.8430	2.5748	-1.2682

Mineral	Log Q/K	Aff, kcal	State
Saponite-tri	-42.212	-57.589	
Saponite-Ca	-42.212	-57.589	
Saponite-H	-42.212	-57.589	
Saponite-K	-42.212	-57.589	
Saponite-Mg	-42.212	-57.589	
Saponite-Na	-42.212	-57.589	

--- Smectite-di ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Beidellite-Ca	3.4394E-66	-65.4635	43.8606	-21.6030
Beidellite-K	2.2554E-67	-66.6468	44.6533	-21.9934
Beidellite-Mg	2.1161E-66	-65.6745	44.0019	-21.6726
Beidellite-Na	3.3302E-67	-66.4775	44.5399	-21.9376
Montmor-Ca	4.5390E-57	-56.3430	37.7498	-18.5932
Montmor-K	4.8611E-58	-57.3133	38.3999	-18.9134
Montmor-Mg	4.5386E-57	-56.3431	37.7499	-18.5932
Montmor-Na	6.9994E-58	-57.1549	38.2938	-18.8611
Nontronite-Ca	5.6240E-01	-0.2500	0.1675	-0.0825
Nontronite-K	3.6880E-02	-1.4332	0.9602	-0.4730

Nontronite-Mg	3.4626E-01	-0.4606	0.3086	-0.1520
Nontronite-Na	5.4454E-02	-1.2640	0.8469	-0.4171

Mineral	Log Q/K	Aff, kcal	State
Smectite-di	-3.579	-4.883	
Beidellite-Ca	-3.579	-4.883	
Beidellite-K	-3.579	-4.883	
Beidellite-Mg	-3.579	-4.883	
Beidellite-Na	-3.579	-4.883	
Montmor-Ca	-3.579	-4.883	
Montmor-K	-3.579	-4.883	
Montmor-Mg	-3.579	-4.883	
Montmor-Na	-3.579	-4.883	
Nontronite-Ca	-3.579	-4.883	
Nontronite-K	-3.579	-4.883	
Nontronite-Mg	-3.579	-4.883	
Nontronite-Na	-3.579	-4.883	

--- Lanthanide hydroxide ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
La(OH)3	1.2828E-05	-4.8919	0.0000	-4.8919
Ce(OH)3	3.7097E-15	-14.4307	0.0000	-14.4307
Nd(OH)3(c)	3.4716E-01	-0.4595	0.0000	-0.4595
Gd(OH)3	5.8553E-01	-0.2325	0.0000	-0.2325
Sm(OH)3	6.7304E-02	-1.1720	0.0000	-1.1720

Mineral	Log Q/K	Aff, kcal	State
Lanthanide hydroxide	-24.638	-33.614	
La(OH)3	-24.638	-33.614	
Ce(OH)3	-24.638	-33.614	
Nd(OH)3(c)	-24.638	-33.614	
Gd(OH)3	-24.638	-33.614	
Sm(OH)3	-24.638	-33.614	

--- Rhabdophane-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaPO4:H2O	4.1199E-01	-0.3851	0.0000	-0.3851
CePO4:H2O	3.7677E-11	-10.4239	0.0000	-10.4239
NdPO4:H2O	2.2247E-01	-0.6527	0.0000	-0.6527
GdPO4:H2O	1.4938E-01	-0.8257	0.0000	-0.8257
SmPO4:H2O	2.1616E-01	-0.6652	0.0000	-0.6652

Mineral	Log Q/K	Aff, kcal	State
Rhabdophane-ss	-9.764	-13.320	
LaPO4:H2O	-9.764	-13.320	

CePO4:H2O	-9.764	-13.320
NdPO4:H2O	-9.764	-13.320
GdPO4:H2O	-9.764	-13.320
SmPO4:H2O	-9.764	-13.320

--- Lanthanide fluoride ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaF3:0.5H2O	5.7251E-01	-0.2422	0.0000	-0.2422
CeF3:0.5H2O	8.2980E-11	-10.0810	0.0000	-10.0810
NdF3:0.5H2O	3.8919E-01	-0.4098	0.0000	-0.4098
GdF3:0.5H2O	8.2639E-03	-2.0828	0.0000	-2.0828
SmF3:0.5H2O	3.0038E-02	-1.5223	0.0000	-1.5223

Mineral	Log Q/K	Aff, kcal	State
Lanthanide fluoride	-11.766	-16.052	
LaF3:0.5H2O	-11.766	-16.052	
CeF3:0.5H2O	-11.766	-16.052	
NdF3:0.5H2O	-11.766	-16.052	
GdF3:0.5H2O	-11.766	-16.052	
SmF3:0.5H2O	-11.766	-16.052	

--- Summary of Gases ---

Gas	Fugacity	Log fugacity
Al(g)	8.6519-201	-200.0629
B(g)	8.5659-204	-203.0672
BF3(g)	3.5643E-24	-23.4480
C(g)	3.0917-190	-189.5098
CH4(g)	3.5240-146	-145.4530
CO(g)	6.0395E-49	-48.2190
CO2(g)	3.1623E-04	-3.5000
Ca(g)	7.2386-164	-163.1403
Chlorine	3.5830E-17	-16.4457
Cs(g)	3.5187E-89	-88.4536
Cu(g)	7.5996E-93	-92.1192
Fluorine	1.4240E-72	-71.8465
H2(g)	6.1104E-42	-41.2139
H2O(g)	2.5958E-02	-1.5857
H2S(g)	2.2892-130	-129.6403
HCl(g)	7.3402E-13	-12.1343
HF(g)	5.2226E-09	-8.2821
K(g)	2.2267E-83	-82.6523
Li(g)	7.8262-103	-102.1064
Mg(g)	1.0906-141	-140.9623
Nitrogen	2.6180E-08	-7.5820
NH3(g)	1.8633E-63	-62.7297
NO(g)	5.0949E-20	-19.2929
NO2(g)	3.4837E-14	-13.4580
Na(g)	1.8203E-81	-80.7398
O2(g)	2.0999E-01	-0.6778
Pb(g)	7.6423E-81	-80.1168

```
S2(g)                       3.1297-203   -202.5045
SO2(g)                      4.0563E-43    -42.3919
Si(g)                       4.2257-221   -220.3741
SiF4(g)                     3.2840E-18    -17.4836
Ti(g)                       3.8019-231   -230.4200
TiCl4(g)                    9.7387E-62    -61.0115
U(g)                        1.0111-304   -303.9952
U2Cl10(g)                   4.7348-202   -201.3247
U2Cl8(g)                    4.0969-216   -215.3875
U2F10(g)                    2.0842-120   -119.6811
UCl(g)                      6.6161-255   -254.1794
UCl2(g)                     1.2952-203   -202.8877
UCl3(g)                     5.5533-150   -149.2554
UCl4(g)                     1.2894-113   -112.8896
UCl5(g)                     1.5403-114   -113.8124
UCl6(g)                     3.4184-110   -109.4662
UF(g)                       1.0004-240   -239.9998
UF2(g)                      7.3413-195   -194.1342
UF3(g)                      1.3258-142   -141.8775
UF4(g)                      3.5340E-87    -86.4517
UF5(g)                      4.3149E-73    -72.3650
UF6(g)                      5.1876E-73    -72.2850
UO(g)                       7.9850-220   -219.0977
UO2(g)                      1.4794-135   -134.8299
UO2Cl2(g)                   2.3143E-71    -70.6356
UO2F2(g)                    9.5164E-61    -60.0215
UO3(g)                      1.0881E-82    -81.9633
UOF4(g)                     1.0531E-64    -63.9775
Zn(g)                       1.2821E-90    -89.8921



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--- shifting e.s. solid(s) to the p.r.s. (shftz) ---

  not shifted -- Hematite
              - mass=  3.59076E-08
      shifted -- Quartz
              - old mass=  6.36917E-06, new mass=  8.00000E-07
  not shifted -- Rutile
              - mass=  6.22912E-09

Stepping to zi=  2.5120E-05, delzi=  1.0000E-09, nord= 0
  time =  2.4228E-01 d, dltime =  9.6451E-06 d
Steps completed =    37, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -6.0968

Stepping to zi=  2.5121E-05, delzi=  1.0000E-09, nord= 0
  time =  2.4229E-01 d, dltime =  9.6451E-06 d
Steps completed =    38, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -6.0966

Stepping to zi=  2.5122E-05, delzi=  1.0000E-09, nord= 0
  time =  2.4230E-01 d, dltime =  9.6451E-06 d
Steps completed =    39, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -6.0965

Stepping to zi=  2.5127E-05, delzi=  5.0581E-09, nord= 1
  time =  2.4235E-01 d, dltime =  4.8785E-05 d
Steps completed =    40, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -6.0958
```

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```
                    Reaction progress        =  2.51269223772100E-05
                    Log of reaction progress =      -4.5998607


                    Time =  2.094E+04 sec
                         =  2.424E-01 days
                         =  6.635E-04 years

                    Log sec =        4.321
                    Log days =      -0.616
                    Log years =     -3.178

                    Temperature    =     25.000 degrees C
                    total pressure =      1.013 bars


Flow-through system print following a discontinuity


     --- Summary of Instantaneously Precipitated Solid Phases ---
                 (defined by derivatives)

     --- Theoretical Rock Composition ---
                  g/kg

      O      5.282789E+01
      Fe     9.945692E-01
      Si     4.610207E+01
      Ti     7.547134E-02

      --- Oxide Percentages ---

   Oxide   Theoretical rock


    Total =     0.0000


   Phase/end-member     d mol/d zi    d grams/d zi   d vol (cc)/d zi

Hematite                    1.4292E-03   2.2823E-01   4.3268E-02
Quartz                      2.6347E-01   1.5830E+01   5.9776E+00
Rutile                      2.5300E-04   2.0209E-02   4.7615E-03
fix     CO2(g)              0.0000E+00   0.0000E+00   0.0000E+00
fix     O2(g)              -8.8107E-04  -2.8193E-02   0.0000E+00


               --- Summary of Solid Phases (E.S.+P.R.S.) ---

   Phase/End-member        Log moles     Moles       Mass, g     Volume, cc

Hematite                      -7.4447   3.5919E-08   5.7360E-06   1.0874E-06
Quartz                        -5.1791   6.6202E-06   3.9777E-04   1.5020E-04
Rutile                        -8.2054   6.2312E-09   4.9774E-07   1.1727E-07
fix     CO2(g)                 2.3010   2.0000E+02   8.8020E+03   0.0000E+00
fix     O2(g)                  2.3010   2.0000E+02   6.3998E+03   0.0000E+00
```

```
                    Mass, grams        Volume, cc

 Created         1.520172E+04       1.514035E-04
 Destroyed       0.000000E+00       0.000000E+00
 Net             1.520172E+04       1.514035E-04

Warning-- these volume totals may be incomplete because
of missing partial molar volume data in the data base



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Stepping to zi=  2.5178E-05, delzi=  5.0581E-08, nord= 2
  time =  2.4284E-01 d, dltime =  4.8785E-04 d
Steps completed =    41, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -6.0886

Stepping to zi=  2.5683E-05, delzi=  5.0581E-07, nord= 2
  time =  2.4772E-01 d, dltime =  4.8785E-03 d
Steps completed =    42, iter =  6, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -6.0229

Stepping to zi=  3.0741E-05, delzi=  5.0581E-06, nord= 3
  time =  2.9650E-01 d, dltime =  4.8785E-02 d
Steps completed =    43, iter = 15, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -5.6418

Stepping to zi=  3.9811E-05, delzi=  9.0693E-06, nord= 3
  time =  3.8398E-01 d, dltime =  8.7474E-02 d
Steps completed =    44, iter =  6, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -5.3306

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                    Reaction progress        =  3.98107170553478E-05
                    Log of reaction progress =      -4.4000000



                    Time =  3.318E+04 sec
                         =  3.840E-01 days
                         =  1.051E-03 years

                    Log sec =        4.521
                    Log days =      -0.416
                    Log years =     -2.978

                    Temperature    =     25.000 degrees C
                    total pressure =      1.013 bars


Step size is limited by the print requirement


                              --- Reactant Summary ---
```

Reactant	Moles	Delta moles	Mass, g	Delta Mass, g
Tuff	1.0000E+02	3.9811E-05	2.0586E+03	8.1956E-04

Current total mass = 2.05865E+03 grams
Delta total mass = 8.19562E-04 grams
Delta total volume = 0.00000 cc

Reactant	Rel. Rate mol/mol	Rate mol/s	Rate mol/s/cm2
Tuff	1.0000E+00	1.2000E-09	2.5000E-15

Reactant	Affinity kcal/mol	Surface Area mol/s/cm2
Tuff	999.00000	4.8000E+05

Reactant	Rate Constants, mol/s/cm2	
Tuff		
	Forward	2.5000E-15

Affinity of the overall irreversible reaction= 0.000 kcal
Contributions from irreversible reactions
with no thermodynamic data are not included

--- Element Totals for the Aqueous Solution ---

Element	mg/kg soln.	Molality	Moles
O	8.865403E+05	5.561111E+01	5.559508E+01
Al	9.498394E-02	3.533054E-06	3.532035E-06
B	1.334828E-01	1.239157E-05	1.238800E-05
Ba	1.368719E-05	1.000288E-10	1.000000E-10
Ca	1.296029E+01	3.245454E-04	3.244519E-04
Ce	1.396506E-19	1.000288E-24	9.999994E-25
Cl	7.116512E+00	2.014581E-04	2.014000E-04
Cr	2.996352E+02	5.783474E-03	5.781807E-03
Cs	1.324650E-05	1.000288E-10	1.000000E-10
Cu	6.650219E-10	1.050303E-14	1.050000E-14
F	2.172842E+00	1.147831E-04	1.147500E-04
Fe	8.871190E-01	1.594222E-05	1.593763E-05
Gd	1.567289E-09	1.000288E-14	1.000000E-14
H	1.115156E+05	1.110370E+02	1.110050E+02
C	1.267582E-01	1.059165E-05	1.058860E-05
P	7.325695E+00	2.373677E-04	2.372993E-04
K	5.056908E+00	1.298058E-04	1.297684E-04
La	1.384452E-09	1.000288E-14	1.000000E-14
Li	6.917998E-07	1.000288E-10	1.000000E-10
Mg	2.004546E+00	8.277270E-05	8.274884E-05
Mn	3.250741E+01	5.938489E-04	5.936778E-04
Mo	2.179385E+02	2.279823E-03	2.279166E-03
N	1.982366E+00	1.420409E-04	1.420000E-04
Na	4.567022E+01	1.993725E-03	1.993151E-03
Nd	1.437620E-09	1.000288E-14	1.000000E-14

Ni	7.502087E+02	1.282876E-02	1.282506E-02
Pb	2.065134E-05	1.000288E-10	1.000000E-10
Pu	2.431914E-09	1.000288E-14	1.000000E-14
S	5.507392E+02	1.723725E-02	1.723228E-02
Si	2.802950E+00	1.001613E-04	1.001324E-04
Sm	1.498617E-09	1.000288E-14	1.000000E-14
Sr	8.732963E-06	1.000288E-10	1.000000E-10
Ti	1.078259E-05	2.260143E-10	2.259491E-10
U	2.372401E-09	1.000288E-14	1.000000E-14
V	4.768068E+00	9.393718E-05	9.391010E-05
Zn	6.517330E-06	1.000288E-10	1.000000E-10
Zr	9.092169E-16	1.000288E-20	1.000000E-20

Single ion activities and activity coefficients are here defined
with respect to the modified NBS pH scale

	pH	Eh	pe
modified NBS pH scale	2.0408	1.0983	1.8566E+01
rational pH scale	1.9643	1.1028	1.8643E+01

pHCl = 5.8288

Oxygen fugacity = 2.09991E-01
Log oxygen fugacity = -0.67780

Activity of water = 0.99924
Log activity of water = -0.00033

Ionic strength = 5.880262E-02 molal
Sum of molalities = 0.0494615161232
Osmotic coefficient = 0.85804

Mass of solution = 1.003325 kg
Mass of solutes = 0.003613 kg
Conc. of solutes = 0.360121 per cent (w/w)

Moles of solvent H2O = 5.54924E+01
Mass of solvent H2O = 9.99712E-01 kg

Species	Molality	Log molality	Log gamma	Log activity
H+	1.0857E-02	-1.9643	-0.0765	-2.0408
Ni++	1.0208E-02	-1.9910	-0.3466	-2.3376
SO4--	9.7770E-03	-2.0098	-0.3602	-2.3700
HSO4-	4.4996E-03	-2.3468	-0.0849	-2.4317
HCrO4-	4.0507E-03	-2.3925	-0.0849	-2.4774
NiSO4(aq)	2.6186E-03	-2.5819	0.0000	-2.5819
MoO4--	2.2798E-03	-2.6421	-0.3492	-2.9913
Na+	1.9407E-03	-2.7121	-0.0983	-2.8104
Cr2O7--	8.6348E-04	-3.0637	-0.3602	-3.4240
Mn++	4.1402E-04	-3.3830	-0.3466	-3.7295
O2(aq)	2.6166E-04	-3.5823	0.0062	-3.5761
Ca++	2.5997E-04	-3.5851	-0.3466	-3.9316
Cl-	2.0085E-04	-3.6971	-0.0909	-3.7881

MnSO4(aq)	1.7920E-04	-3.7467	0.0000	-3.7467
NO3-	1.4021E-04	-3.8532	-0.0909	-3.9441
K+	1.2589E-04	-3.9000	-0.1044	-4.0044
H3PO4(aq)	1.1921E-04	-3.9237	0.0000	-3.9237
H2PO4-	1.0772E-04	-3.9677	-0.0849	-4.0526
SiO2(aq)	1.0016E-04	-3.9993	0.0000	-3.9993
HF(aq)	9.8568E-05	-4.0063	0.0000	-4.0063
VO2+	7.7242E-05	-4.1121	-0.0983	-4.2105
CaSO4(aq)	6.4481E-05	-4.1906	0.0000	-4.1906
Mg++	5.3943E-05	-4.2681	-0.3139	-4.5820
NaSO4-	5.3024E-05	-4.2755	-0.0849	-4.3604
MgSO4(aq)	2.8821E-05	-4.5403	0.0000	-4.5403
B(OH)3(aq)	1.2392E-05	-4.9069	0.0000	-4.9069
VO2SO4-	1.2144E-05	-4.9156	-0.0849	-5.0005
CO2(aq)	1.0591E-05	-4.9751	0.0062	-4.9689
FeHPO4+	9.8527E-06	-5.0064	-0.0983	-5.1048
F-	9.0001E-06	-5.0458	-0.0878	-5.1336
Fe+++	3.9810E-06	-5.4000	-0.6676	-6.0676
Cr+++	3.9786E-06	-5.4003	-0.6676	-6.0678
KSO4-	3.8910E-06	-5.4099	-0.0849	-5.4948
VO(OH)3(aq)	3.3856E-06	-5.4704	0.0000	-5.4704
AlF2+	2.0083E-06	-5.6972	-0.0983	-5.7955
NiNO3+	1.6466E-06	-5.7834	-0.0983	-5.8818
H2CrO4(aq)	1.4536E-06	-5.8375	0.0000	-5.8375
FeOH++	1.4421E-06	-5.8410	-0.3761	-6.2171
AlF++	1.3007E-06	-5.8858	-0.3761	-6.2619
VO2F(aq)	1.0138E-06	-5.9941	0.0000	-5.9941
MnH2PO4+	4.6366E-07	-6.3338	-0.0983	-6.4321
FeSO4+	3.8756E-07	-6.4117	-0.0983	-6.5100
HCl(aq)	3.1707E-07	-6.4988	0.0000	-6.4988
CrO4--	2.6870E-07	-6.5707	-0.3602	-6.9310
FeF++	2.0486E-07	-6.6885	-0.3761	-7.0647
AlF3(aq)	1.4822E-07	-6.8291	0.0000	-6.8291
NiCl+	9.4727E-08	-7.0235	-0.0983	-7.1219
HPO3F-	8.9466E-08	-7.0483	-0.0849	-7.1332
CaNO3+	8.3666E-08	-7.0775	-0.0983	-7.1758
MnCl+	7.6214E-08	-7.1180	-0.0983	-7.2163
H2VO4-	7.2966E-08	-7.1369	-0.0849	-7.2218
CrO3Cl-	6.4806E-08	-7.1884	-0.0849	-7.2733
HNO3(aq)	5.1590E-08	-7.2874	0.0000	-7.2874
MnF+	4.6262E-08	-7.3348	-0.0983	-7.4331
VO2(OH)2-	4.5219E-08	-7.3447	-0.0849	-7.4296
MnNO3+	4.2136E-08	-7.3753	-0.0983	-7.4737
NaCl(aq)	4.2126E-08	-7.3754	0.0000	-7.3754
AlSO4+	4.0733E-08	-7.3900	-0.0983	-7.4884
Al+++	3.4611E-08	-7.4608	-0.6676	-8.1284
H2SO4(aq)	3.3689E-08	-7.4725	0.0000	-7.4725
Fe(SO4)2-	3.0971E-08	-7.5090	-0.0849	-7.5939
VO2HPO4-	3.0704E-08	-7.5128	-0.0849	-7.5977
Fe(OH)2+	2.7649E-08	-7.5583	-0.0983	-7.6567
H2F2(aq)	2.6259E-08	-7.5807	0.0000	-7.5807
KHSO4(aq)	2.5025E-08	-7.6016	0.0000	-7.6016
CrOH++	2.2321E-08	-7.6513	-0.3761	-8.0274
FeF2+	1.2984E-08	-7.8866	-0.0983	-7.9849
MgF+	5.4350E-09	-8.2648	-0.0983	-8.3631
CaF+	5.1859E-09	-8.2852	-0.0983	-8.3835
CaCl+	4.8199E-09	-8.3170	-0.0983	-8.4153
MgCl+	3.9211E-09	-8.4066	-0.0983	-8.5049
VO2F2-	2.6137E-09	-8.5827	-0.0849	-8.6676
FeNO3++	2.3141E-09	-8.6356	-0.3761	-9.0117
PO3F--	1.4733E-09	-8.8317	-0.3602	-9.1919
HPO4--	1.3900E-09	-8.8570	-0.3602	-9.2172
NaF(aq)	1.1440E-09	-8.9416	0.0000	-8.9416

HCO3-	6.4826E-10	-9.1883	-0.0849	-9.2731
KCl(aq)	5.1635E-10	-9.2871	0.0000	-9.2871
MnHPO4(aq)	4.2978E-10	-9.3668	0.0000	-9.3668
AlF4-	3.3284E-10	-9.4778	-0.0849	-9.5626
VO++	2.7646E-10	-9.5584	-0.3761	-9.9345
CrCl++	2.3507E-10	-9.6288	-0.3761	-10.0049
Ti(OH)4(aq)	2.2601E-10	-9.6459	0.0000	-9.6459
HF2-	2.1274E-10	-9.6721	-0.0849	-9.7570
VOSO4(aq)	1.4980E-10	-9.8245	0.0000	-9.8245
AlHPO4+	1.4216E-10	-9.8472	-0.0983	-9.9456
Mn+++	1.1760E-10	-9.9296	-0.8158	-10.7453
Cs+	1.0002E-10	-9.9999	-0.1077	-10.1076

--- Summary of Instantaneously Precipitated Solid Phases ---
(defined by derivatives)

--- Theoretical Rock Composition ---
g/kg

O	5.281880E+01
Fe	9.947620E-01
C	2.117248E-04
Si	4.611074E+01
Ti	7.548554E-02

--- Oxide Percentages ---

Oxide	Theoretical rock

Total = 0.0000

Phase/end-member		d mol/d zi	d grams/d zi	d vol (cc)/d zi
Hematite		1.4292E-03	2.2824E-01	4.3268E-02
Quartz		2.6347E-01	1.5830E+01	5.9776E+00
Rutile		2.5300E-04	2.0209E-02	4.7615E-03
fix	CO2(g)	2.8288E-06	1.2450E-04	0.0000E+00
fix	O2(g)	-9.7938E-04	-3.1339E-02	0.0000E+00

--- Summary of Solid Phases (E.S.+P.R.S.) ---

Phase/End-member		Log moles	Moles	Mass, g	Volume, cc
Hematite		-7.2448	5.6905E-08	9.0873E-06	1.7227E-06
Quartz		-4.9793	1.0489E-05	6.3022E-04	2.3797E-04
Rutile		-8.0023	9.9462E-09	7.9449E-07	1.8719E-07
fix	CO2(g)	2.3010	2.0000E+02	8.8020E+03	0.0000E+00
fix	O2(g)	2.3010	2.0000E+02	6.3998E+03	0.0000E+00

	Mass, grams	Volume, cc
Created	1.520172E+04	2.398826E-04
Destroyed	8.195620E-04	0.000000E+00
Net	1.520172E+04	2.398826E-04

Warning-- these volume totals may be incomplete because
of missing partial molar volume data in the data base

--- Summary of Pure Mineral Saturation States ---

Mineral	Log Q/K	Aff, kcal	State
AlF3	-6.320	-8.623	
Anglesite	-4.894	-6.677	
Anhydrite	-1.995	-2.722	
BaZrO3	69.247	94.473	ssatd
Barite	-2.765	-3.772	
Bassanite	-2.640	-3.602	
Boric_acid	-4.749	-6.478	
CaSO4:0.5H2O(beta)	-2.808	-3.832	
CaZrO3	129.711	176.963	ssatd
Celestite	-7.194	-9.815	
Chalcedony	-0.271	-0.370	
Coesite	-0.810	-1.105	
CrO2	-0.910	-1.241	
Cristobalite(alpha)	-0.551	-0.751	
Cristobalite(beta)	-0.994	-1.356	
Crocoite	-4.590	-6.263	
Epsomite	-4.992	-6.811	
Fe(OH)3	-5.602	-7.642	
FeF3	-2.229	-3.042	
Fluorite	-4.162	-5.678	
Goethite	-0.480	-0.655	
Gypsum	-1.820	-2.483	
Hematite	0.000	0.000	satd
Hexahydrite	-5.227	-7.131	
Ice	-0.139	-0.190	
Jarosite	-5.334	-7.277	
Kieserite	-6.685	-9.121	
Manganite	-4.459	-6.083	
Mercallite	-6.976	-9.518	
Mirabilite	-6.854	-9.351	
MnHPO4	0.000	0.000	ssatd
MnO2(gamma)	-1.517	-2.070	
Morenosite	-2.696	-3.678	
NiSO4:6H2O(alpha)	-2.702	-3.687	
Nontronite-Ca	-3.624	-4.945	
Nontronite-H	-2.691	-3.672	
Nontronite-K	-4.015	-5.477	
Nontronite-Mg	-3.694	-5.040	
Nontronite-Na	-3.959	-5.401	
Pentahydrite	-5.566	-7.594	
Pyrolusite	0.000	0.000	ssatd
Quartz	0.000	0.000	satd
Rutile	0.000	0.000	satd
Sellaite	-5.465	-7.456	
Shcherbinaite	-2.888	-3.940	
SiO2(am)	-1.286	-1.754	
SrZrO3	106.106	144.759	ssatd
Starkeyite	-5.953	-8.122	
Strengite	-1.902	-2.595	
Tridymite	-0.171	-0.234	
fix CO2(g)	0.000	0.000	satd
fix O2(g)	0.000	0.000	satd

--- Summary of Solid Solutions ---

--- Carbonate-Calcite ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Calcite	5.6719E-03	-2.2463	0.0000	-2.2463
Magnesite	4.5552E-04	-3.3415	0.0000	-3.3415
Rhodochrosite	9.9387E-01	-0.0027	0.0000	-0.0027
Siderite	1.2682E-08	-7.8968	0.0000	-7.8968
Smithsonite	5.2900E-08	-7.2765	0.0000	-7.2765
Strontianite	2.2202E-07	-6.6536	0.0000	-6.6536

Mineral	Log Q/K	Aff, kcal	State
Carbonate-Calcite	-10.766	-14.688	
Calcite	-10.766	-14.688	
Magnesite	-10.766	-14.688	
Rhodochrosite	-10.766	-14.688	
Siderite	-10.766	-14.688	
Smithsonite	-10.766	-14.688	
Strontianite	-10.766	-14.688	

--- Clinoptilolite-hy-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-hy-Ca	9.9767E-01	-0.0010	0.0000	-0.0010
Clinoptilolite-hy-Cs	6.6748E-23	-22.1756	0.0000	-22.1756
Clinoptilolite-hy-K	7.4837E-04	-3.1259	0.0000	-3.1259
Clinoptilolite-hy-Na	1.5803E-03	-2.8013	0.0000	-2.8013
Clinoptilolite-hy-Sr	5.6055E-12	-11.2514	0.0000	-11.2514

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-hy-ss	-57.776	-78.823	
Clinoptilolite-hy-Ca	-57.776	-78.823	
Clinoptilolite-hy-Cs	-57.776	-78.823	
Clinoptilolite-hy-K	-57.776	-78.823	
Clinoptilolite-hy-Na	-57.776	-78.823	
Clinoptilolite-hy-Sr	-57.776	-78.823	

--- Clinoptilolite-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-Ca	7.8110E-01	-0.1073	-0.2639	-0.3712
Clinoptilolite-Cs	3.0373E-07	-6.5175	-16.0331	-22.5506
Clinoptilolite-K	9.7375E-02	-1.0116	-2.4884	-3.5000
Clinoptilolite-NH4	1.0291E-51	-50.9875	-125.4293	-176.4168
Clinoptilolite-Na	1.2108E-01	-0.9169	-2.2556	-3.1725
Clinoptilolite-Sr	4.3807E-04	-3.3585	-8.2618	-11.6203

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-ss	-57.407	-78.319	
Clinoptilolite-Ca	-57.407	-78.319	
Clinoptilolite-Cs	-57.407	-78.319	
Clinoptilolite-K	-57.407	-78.319	
Clinoptilolite-NH4	-57.407	-78.319	
Clinoptilolite-Na	-57.407	-78.319	
Clinoptilolite-Sr	-57.407	-78.319	

--- Saponite-tri ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Saponite-Ca	1.4828E-03	-2.8289	1.8954	-0.9335
Saponite-H	9.9736E-01	-0.0011	0.0008	-0.0004
Saponite-K	9.7404E-05	-4.0114	2.6877	-1.3238
Saponite-Mg	9.1238E-04	-3.0398	2.0367	-1.0031
Saponite-Na	1.4359E-04	-3.8429	2.5747	-1.2681

Mineral	Log Q/K	Aff, kcal	State
Saponite-tri	-42.174	-57.537	
Saponite-Ca	-42.174	-57.537	
Saponite-H	-42.174	-57.537	
Saponite-K	-42.174	-57.537	
Saponite-Mg	-42.174	-57.537	
Saponite-Na	-42.174	-57.537	

--- Smectite-di ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Beidellite-Ca	1.6564E-65	-64.7808	43.4032	-21.3777
Beidellite-K	1.0888E-66	-65.9630	44.1952	-21.7678
Beidellite-Mg	1.0192E-65	-64.9917	43.5445	-21.4473
Beidellite-Na	1.6040E-66	-65.7948	44.0825	-21.7123
Montmor-Ca	1.3018E-56	-55.8854	37.4432	-18.4422
Montmor-K	1.3976E-57	-56.8546	38.0926	-18.7620
Montmor-Mg	1.3018E-56	-55.8855	37.4433	-18.4422
Montmor-Na	2.0078E-57	-56.6973	37.9872	-18.7101
Nontronite-Ca	5.6234E-01	-0.2500	0.1675	-0.0825
Nontronite-K	3.6964E-02	-1.4322	0.9596	-0.4726
Nontronite-Mg	3.4624E-01	-0.4606	0.3086	-0.1520
Nontronite-Na	5.4455E-02	-1.2640	0.8469	-0.4171

Mineral	Log Q/K	Aff, kcal	State
Smectite-di	-3.542	-4.832	
Beidellite-Ca	-3.542	-4.832	
Beidellite-K	-3.542	-4.832	
Beidellite-Mg	-3.542	-4.832	

Beidellite-Na	-3.542	-4.832
Montmor-Ca	-3.542	-4.832
Montmor-K	-3.542	-4.832
Montmor-Mg	-3.542	-4.832
Montmor-Na	-3.542	-4.832
Nontronite-Ca	-3.542	-4.832
Nontronite-K	-3.542	-4.832
Nontronite-Mg	-3.542	-4.832
Nontronite-Na	-3.542	-4.832

--- Lanthanide hydroxide ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
La(OH)3	1.2827E-05	-4.8919	0.0000	-4.8919
Ce(OH)3	3.7096E-15	-14.4307	0.0000	-14.4307
Nd(OH)3(c)	3.4715E-01	-0.4595	0.0000	-0.4595
Gd(OH)3	5.8554E-01	-0.2324	0.0000	-0.2324
Sm(OH)3	6.7301E-02	-1.1720	0.0000	-1.1720

Mineral	Log Q/K	Aff, kcal	State
Lanthanide hydroxide	-24.638	-33.613	
La(OH)3	-24.638	-33.613	
Ce(OH)3	-24.638	-33.613	
Nd(OH)3(c)	-24.638	-33.613	
Gd(OH)3	-24.638	-33.613	
Sm(OH)3	-24.638	-33.613	

--- Rhabdophane-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaPO4:H2O	4.1198E-01	-0.3851	0.0000	-0.3851
CePO4:H2O	3.7677E-11	-10.4239	0.0000	-10.4239
NdPO4:H2O	2.2247E-01	-0.6527	0.0000	-0.6527
GdPO4:H2O	1.4939E-01	-0.8257	0.0000	-0.8257
SmPO4:H2O	2.1616E-01	-0.6652	0.0000	-0.6652

Mineral	Log Q/K	Aff, kcal	State
Rhabdophane-ss	-9.763	-13.320	
LaPO4:H2O	-9.763	-13.320	
CePO4:H2O	-9.763	-13.320	
NdPO4:H2O	-9.763	-13.320	
GdPO4:H2O	-9.763	-13.320	
SmPO4:H2O	-9.763	-13.320	

--- Lanthanide fluoride ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaF3:0.5H2O	5.7250E-01	-0.2422	0.0000	-0.2422
CeF3:0.5H2O	8.2981E-11	-10.0810	0.0000	-10.0810
NdF3:0.5H2O	3.8920E-01	-0.4098	0.0000	-0.4098
GdF3:0.5H2O	8.2645E-03	-2.0828	0.0000	-2.0828
SmF3:0.5H2O	3.0039E-02	-1.5223	0.0000	-1.5223

Mineral	Log Q/K	Aff, kcal	State
Lanthanide fluoride	-11.781	-16.072	
LaF3:0.5H2O	-11.781	-16.072	
CeF3:0.5H2O	-11.781	-16.072	
NdF3:0.5H2O	-11.781	-16.072	
GdF3:0.5H2O	-11.781	-16.072	
SmF3:0.5H2O	-11.781	-16.072	

--- Summary of Gases ---

Gas	Fugacity	Log fugacity
Al(g)	1.1214-200	-199.9502
B(g)	8.5659-204	-203.0672
BF3(g)	3.4469E-24	-23.4626
C(g)	3.0917-190	-189.5098
CH4(g)	3.5240-146	-145.4530
CO(g)	6.0395E-49	-48.2190
CO2(g)	3.1623E-04	-3.5000
Ca(g)	7.2411-164	-163.1402
Chlorine	3.5821E-17	-16.4459
Cs(g)	3.5192E-89	-88.4536
Cu(g)	7.6016E-93	-92.1191
Fluorine	1.3925E-72	-71.8562
H2(g)	6.1104E-42	-41.2139
H2O(g)	2.5958E-02	-1.5857
H2S(g)	2.2887-130	-129.6404
HCl(g)	7.3392E-13	-12.1343
HF(g)	5.1646E-09	-8.2870
K(g)	2.2324E-83	-82.6512
Li(g)	7.8272-103	-102.1064
Mg(g)	1.0911-141	-140.9621
Nitrogen	2.6173E-08	-7.5821
NH3(g)	1.8631E-63	-62.7298
NO(g)	5.0943E-20	-19.2929
NO2(g)	3.4832E-14	-13.4580
Na(g)	1.8209E-81	-80.7397
O2(g)	2.0999E-01	-0.6778
Pb(g)	7.6444E-81	-80.1167
S2(g)	3.1282-203	-202.5047
SO2(g)	4.0553E-43	-42.3920
Si(g)	4.2257-221	-220.3741
SiF4(g)	3.1406E-18	-17.5030
Ti(g)	3.8019-231	-230.4200
TiCl4(g)	9.7335E-62	-61.0117
U(g)	1.0122-304	-303.9947
U2Cl10(g)	4.7396-202	-201.3243
U2Cl8(g)	4.1021-216	-215.3870
U2F10(g)	1.8685-120	-119.7285

UCl(g)	6.6230-255	-254.1789
UCl2(g)	1.2963-203	-202.8873
UCl3(g)	5.5576-150	-149.2551
UCl4(g)	1.2902-113	-112.8893
UCl5(g)	1.5411-114	-113.8122
UCl6(g)	3.4197-110	-109.4660
UF(g)	9.9046-241	-240.0042
UF2(g)	7.1877-195	-194.1434
UF3(g)	1.2836-142	-141.8916
UF4(g)	3.3837E-87	-86.4706
UF5(g)	4.0855E-73	-72.3888
UF6(g)	4.8573E-73	-72.3136
UO(g)	7.9944-220	-219.0972
UO2(g)	1.4811-135	-134.8294
UO2Cl2(g)	2.3164E-71	-70.6352
UO2F2(g)	9.3173E-61	-60.0307
UO3(g)	1.0894E-82	-81.9628
UOF4(g)	1.0083E-64	-63.9964
Zn(g)	1.2824E-90	-89.8920

- -

```
Stepping to zi=  6.3096E-05, delzi=  2.3285E-05, nord= 4
  time =  6.0856E-01 d, dltime =  2.2459E-01 d
Steps completed =    45, iter = 14, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -4.9663
```

- -

```
                    Reaction progress        =  6.30957344480163E-05
                    Log of reaction progress =      -4.2000000


                    Time =  5.258E+04 sec
                         =  6.086E-01 days
                         =  1.666E-03 years

                    Log sec =        4.721
                    Log days =      -0.216
                    Log years =     -2.778

                    Temperature    =     25.000 degrees C
                    total pressure =      1.013 bars

Step size is limited by the print requirement
```

--- Reactant Summary ---

Reactant	Moles	Delta moles	Mass, g	Delta Mass, g
Tuff	1.0000E+02	6.3096E-05	2.0586E+03	1.2989E-03

```
Current total mass =  2.05865E+03 grams
Delta total mass   =  1.29892E-03 grams
Delta total volume =      0.00000 cc
```

Reactant	Rel. Rate mol/mol	Rate mol/s	Rate mol/s/cm2
Tuff	1.0000E+00	1.2000E-09	2.5000E-15

Reactant	Affinity kcal/mol	Surface Area mol/s/cm2
Tuff	999.00000	4.8000E+05

Reactant	Rate Constants, mol/s/cm2	
Tuff		
	Forward	2.5000E-15

```
Affinity of the overall irreversible reaction=     0.000 kcal
Contributions from irreversible reactions
with no thermodynamic data are not included
```

--- Element Totals for the Aqueous Solution ---

Element	mg/kg soln.	Molality	Moles
O	8.865402E+05	5.561111E+01	5.559508E+01
Al	1.272211E-01	4.732158E-06	4.730795E-06
B	1.334828E-01	1.239157E-05	1.238800E-05
Ba	1.368719E-05	1.000288E-10	1.000000E-10
Ca	1.296220E+01	3.245933E-04	3.244998E-04
Ce	1.396506E-19	1.000288E-24	9.999994E-25
Cl	7.116511E+00	2.014581E-04	2.014000E-04
Cr	2.996351E+02	5.783474E-03	5.781807E-03
Cs	1.324650E-05	1.000288E-10	1.000000E-10
Cu	6.650218E-10	1.050303E-14	1.050000E-14
F	2.172842E+00	1.147831E-04	1.147500E-04
Fe	8.865423E-01	1.593186E-05	1.592727E-05
Gd	1.567289E-09	1.000288E-14	1.000000E-14
H	1.115156E+05	1.110370E+02	1.110050E+02
C	1.267582E-01	1.059165E-05	1.058860E-05
P	7.325725E+00	2.373687E-04	2.373003E-04
K	5.076472E+00	1.303080E-04	1.302704E-04
La	1.384452E-09	1.000288E-14	1.000000E-14
Li	6.917997E-07	1.000288E-10	1.000000E-10
Mg	2.005252E+00	8.280186E-05	8.277800E-05
Mn	3.250766E+01	5.938534E-04	5.936823E-04
Mo	2.179385E+02	2.279823E-03	2.279166E-03
N	1.982366E+00	1.420409E-04	1.420000E-04
Na	4.568296E+01	1.994281E-03	1.993707E-03
Nd	1.437620E-09	1.000288E-14	1.000000E-14
Ni	7.502086E+02	1.282876E-02	1.282506E-02
Pb	2.065133E-05	1.000288E-10	1.000000E-10
Pu	2.431914E-09	1.000288E-14	1.000000E-14
S	5.507392E+02	1.723725E-02	1.723228E-02
Si	2.802950E+00	1.001613E-04	1.001324E-04

Sm	1.498617E-09	1.000288E-14	1.000000E-14
Sr	8.732963E-06	1.000288E-10	1.000000E-10
Ti	1.078259E-05	2.260143E-10	2.259492E-10
U	2.372401E-09	1.000288E-14	1.000000E-14
V	4.768067E+00	9.393717E-05	9.391010E-05
Zn	6.517330E-06	1.000288E-10	1.000000E-10
Zr	9.092168E-16	1.000288E-20	1.000000E-20

Single ion activities and activity coefficients are here defined
with respect to the modified NBS pH scale

	pH	Eh	pe
modified NBS pH scale	2.0409	1.0983	1.8566E+01
rational pH scale	1.9644	1.1028	1.8643E+01

pHCl = 5.8289

Oxygen fugacity = 2.09991E-01
Log oxygen fugacity = -0.67780

Activity of water = 0.99924
Log activity of water = -0.00033

Ionic strength = 5.880389E-02 molal
Sum of molalities = 0.0494594764065
Osmotic coefficient = 0.85803

Mass of solution = 1.003325 kg
Mass of solutes = 0.003613 kg
Conc. of solutes = 0.360127 per cent (w/w)

Moles of solvent H2O = 5.54924E+01
Mass of solvent H2O = 9.99712E-01 kg

Species	Molality	Log molality	Log gamma	Log activity
H+	1.0855E-02	-1.9644	-0.0765	-2.0409
Ni++	1.0208E-02	-1.9910	-0.3466	-2.3376
SO4--	9.7776E-03	-2.0098	-0.3602	-2.3700
HSO4-	4.4988E-03	-2.3469	-0.0849	-2.4318
HCrO4-	4.0507E-03	-2.3925	-0.0849	-2.4774
NiSO4(aq)	2.6187E-03	-2.5819	0.0000	-2.5819
MoO4--	2.2798E-03	-2.6421	-0.3492	-2.9913
Na+	1.9412E-03	-2.7119	-0.0983	-2.8103
Cr2O7--	8.6349E-04	-3.0637	-0.3602	-3.4240
Mn++	4.1402E-04	-3.3830	-0.3466	-3.7296
O2(aq)	2.6166E-04	-3.5823	0.0062	-3.5761
Ca++	2.6001E-04	-3.5850	-0.3466	-3.9316
Cl-	2.0085E-04	-3.6971	-0.0909	-3.7881
MnSO4(aq)	1.7920E-04	-3.7467	0.0000	-3.7467
NO3-	1.4021E-04	-3.8532	-0.0909	-3.9441
K+	1.2638E-04	-3.8983	-0.1044	-4.0027
H3PO4(aq)	1.1920E-04	-3.9237	0.0000	-3.9237
H2PO4-	1.0773E-04	-3.9677	-0.0849	-4.0525

SiO2(aq)	1.0016E-04	-3.9993	0.0000	-3.9993
HF(aq)	9.6826E-05	-4.0140	0.0000	-4.0140
VO2+	7.7255E-05	-4.1121	-0.0983	-4.2104
CaSO4(aq)	6.4492E-05	-4.1905	0.0000	-4.1905
Mg++	5.3961E-05	-4.2679	-0.3139	-4.5818
NaSO4-	5.3041E-05	-4.2754	-0.0849	-4.3603
MgSO4(aq)	2.8832E-05	-4.5401	0.0000	-4.5401
B(OH)3(aq)	1.2392E-05	-4.9069	0.0000	-4.9069
VO2SO4-	1.2147E-05	-4.9155	-0.0849	-5.0004
CO2(aq)	1.0591E-05	-4.9751	0.0062	-4.9689
FeHPO4+	9.8499E-06	-5.0066	-0.0983	-5.1049
F-	8.8429E-06	-5.0534	-0.0878	-5.1412
Fe+++	3.9785E-06	-5.4003	-0.6676	-6.0679
Cr+++	3.9753E-06	-5.4006	-0.6676	-6.0682
KSO4-	3.9062E-06	-5.4082	-0.0849	-5.4931
VO(OH)3(aq)	3.3869E-06	-5.4702	0.0000	-5.4702
AlF2+	2.6724E-06	-5.5731	-0.0983	-5.6714
AlF++	1.7615E-06	-5.7541	-0.3761	-6.1302
NiNO3+	1.6466E-06	-5.7834	-0.0983	-5.8818
H2CrO4(aq)	1.4533E-06	-5.8376	0.0000	-5.8376
FeOH++	1.4415E-06	-5.8412	-0.3761	-6.2173
VO2F(aq)	9.9624E-07	-6.0016	0.0000	-6.0016
MnH2PO4+	4.6371E-07	-6.3337	-0.0983	-6.4321
FeSO4+	3.8733E-07	-6.4119	-0.0983	-6.5103
HCl(aq)	3.1700E-07	-6.4989	0.0000	-6.4989
CrO4--	2.6876E-07	-6.5706	-0.3602	-6.9309
FeF++	2.0115E-07	-6.6965	-0.3761	-7.0726
AlF3(aq)	1.9379E-07	-6.7127	0.0000	-6.7127
NiCl+	9.4725E-08	-7.0235	-0.0983	-7.1219
HPO3F-	8.7897E-08	-7.0560	-0.0849	-7.1409
CaNO3+	8.3677E-08	-7.0774	-0.0983	-7.1757
MnCl+	7.6214E-08	-7.1180	-0.0983	-7.2163
H2VO4-	7.3009E-08	-7.1366	-0.0849	-7.2215
CrO3Cl-	6.4792E-08	-7.1885	-0.0849	-7.2734
AlSO4+	5.6149E-08	-7.2507	-0.0983	-7.3490
HNO3(aq)	5.1579E-08	-7.2875	0.0000	-7.2875
Al+++	4.7707E-08	-7.3214	-0.6676	-7.9890
MnF+	4.5453E-08	-7.3424	-0.0983	-7.4408
VO2(OH)2-	4.5246E-08	-7.3444	-0.0849	-7.4293
NaCl(aq)	4.2138E-08	-7.3753	0.0000	-7.3753
MnNO3+	4.2135E-08	-7.3754	-0.0983	-7.4737
H2SO4(aq)	3.3677E-08	-7.4727	0.0000	-7.4727
Fe(SO4)2-	3.0955E-08	-7.5093	-0.0849	-7.5942
VO2HPO4-	3.0720E-08	-7.5126	-0.0849	-7.5975
Fe(OH)2+	2.7643E-08	-7.5584	-0.0983	-7.6568
H2F2(aq)	2.5339E-08	-7.5962	0.0000	-7.5962
KHSO4(aq)	2.5118E-08	-7.6000	0.0000	-7.6000
CrOH++	2.2307E-08	-7.6516	-0.3761	-8.0277
FeF2+	1.2527E-08	-7.9022	-0.0983	-8.0005
MgF+	5.3418E-09	-8.2723	-0.0983	-8.3707
CaF+	5.0960E-09	-8.2928	-0.0983	-8.3911
CaCl+	4.8205E-09	-8.3169	-0.0983	-8.4152
MgCl+	3.9224E-09	-8.4064	-0.0983	-8.5048
VO2F2-	2.5236E-09	-8.5980	-0.0849	-8.6829
FeNO3++	2.3126E-09	-8.6359	-0.3761	-9.0120
PO3F--	1.4478E-09	-8.8393	-0.3602	-9.1995
HPO4--	1.3905E-09	-8.8568	-0.3602	-9.2171
NaF(aq)	1.1244E-09	-8.9491	0.0000	-8.9491
HCO3-	6.4839E-10	-9.1882	-0.0849	-9.2730
KCl(aq)	5.1834E-10	-9.2854	0.0000	-9.2854
MnHPO4(aq)	4.2993E-10	-9.3666	0.0000	-9.3666
AlF4-	4.2756E-10	-9.3690	-0.0849	-9.4539
VO++	2.7646E-10	-9.5584	-0.3761	-9.9345

CrCl++	2.3487E-10	-9.6292	-0.3761	-10.0053
Ti(OH)4(aq)	2.2601E-10	-9.6459	0.0000	-9.6459
HF2-	2.0533E-10	-9.6875	-0.0849	-9.7724
AlHPO4+	1.9601E-10	-9.7077	-0.0983	-9.8061
VOSO4(aq)	1.4980E-10	-9.8245	0.0000	-9.8245
Mn+++	1.1758E-10	-9.9297	-0.8158	-10.7454
Cs+	1.0002E-10	-9.9999	-0.1077	-10.1076

--- Summary of Instantaneously Precipitated Solid Phases ---
(defined by derivatives)

--- Theoretical Rock Composition ---
g/kg

O	5.332742E+01
Fe	9.820584E-01
Si	4.562063E+01
Ti	7.468319E-02

--- Oxide Percentages ---

Oxide	Theoretical rock

Total = 0.0000

Phase/end-member	d mol/d zi	d grams/d zi	d vol (cc)/d zi
Hematite	1.4261E-03	2.2774E-01	4.3175E-02
Quartz	2.6347E-01	1.5830E+01	5.9776E+00
Rutile	2.5300E-04	2.0209E-02	4.7615E-03
fix CO2(g)	-6.4794E-05	-2.8516E-03	0.0000E+00
fix O2(g)	4.5169E-03	1.4453E-01	0.0000E+00

--- Summary of Solid Phases (E.S.+P.R.S.) ---

Phase/End-member	Log moles	Moles	Mass, g	Volume, cc
Hematite	-7.0449	9.0178E-08	1.4401E-05	2.7300E-06
Quartz	-4.7793	1.6624E-05	9.9883E-04	3.7716E-04
Rutile	-7.8003	1.5837E-08	1.2651E-06	2.9806E-07
fix CO2(g)	2.3010	2.0000E+02	8.8020E+03	0.0000E+00
fix O2(g)	2.3010	2.0000E+02	6.3998E+03	0.0000E+00

	Mass, grams	Volume, cc
Created	1.520172E+04	3.801894E-04
Destroyed	1.298918E-03	0.000000E+00
Net	1.520172E+04	3.801894E-04

Warning-- these volume totals may be incomplete because
of missing partial molar volume data in the data base

--- Summary of Pure Mineral Saturation States ---

Mineral	Log Q/K	Aff, kcal	State

AlF3	-6.204	-8.464	
Anglesite	-4.894	-6.677	
Anhydrite	-1.995	-2.722	
BaZrO3	69.253	94.481	ssatd
Barite	-2.765	-3.772	
Bassanite	-2.640	-3.602	
Boric_acid	-4.749	-6.478	
CaSO4:0.5H2O(beta)	-2.808	-3.831	
CaZrO3	129.717	176.971	ssatd
Celestite	-7.194	-9.815	
Chalcedony	-0.271	-0.370	
Coesite	-0.810	-1.105	
CrO2	-0.910	-1.241	
Cristobalite(alpha)	-0.551	-0.751	
Cristobalite(beta)	-0.994	-1.356	
Crocoite	-4.590	-6.262	
Epsomite	-4.992	-6.810	
Fe(OH)3	-5.602	-7.642	
FeF3	-2.253	-3.073	
Fluorite	-4.177	-5.699	
Goethite	-0.480	-0.655	
Gypsum	-1.820	-2.483	
Hematite	0.000	0.000	satd
Hexahydrite	-5.227	-7.131	
Ice	-0.139	-0.190	
Jarosite	-5.332	-7.275	
Kieserite	-6.685	-9.120	
Manganite	-4.459	-6.083	
Mercallite	-6.975	-9.515	
Mirabilite	-6.854	-9.351	
MnHPO4	0.000	0.001	ssatd
MnO2(gamma)	-1.517	-2.070	
Morenosite	-2.696	-3.678	
NiSO4:6H2O(alpha)	-2.702	-3.687	
Nontronite-Ca	-3.578	-4.882	
Nontronite-H	-2.645	-3.609	
Nontronite-K	-3.968	-5.413	
Nontronite-Mg	-3.648	-4.977	
Nontronite-Na	-3.913	-5.338	
Pentahydrite	-5.566	-7.594	
Pyrolusite	0.000	0.001	ssatd
Quartz	0.000	0.000	satd
Rutile	0.000	0.000	satd
Sellaite	-5.480	-7.476	
Shcherbinaite	-2.887	-3.939	
SiO2(am)	-1.286	-1.754	
SrZrO3	106.112	144.768	ssatd
Starkeyite	-5.953	-8.122	
Strengite	-1.902	-2.595	
Tridymite	-0.171	-0.234	
fix CO2(g)	0.000	0.000	satd
fix O2(g)	0.000	0.000	satd

--- Summary of Solid Solutions ---

--- Carbonate-Calcite ---

Ideal solution

Component	x	Log x	Log lambda	Log activity

Calcite	5.6727E-03	-2.2462	0.0000	-2.2462
Magnesite	4.5567E-04	-3.3413	0.0000	-3.3413
Rhodochrosite	9.9387E-01	-0.0027	0.0000	-0.0027
Siderite	1.2676E-08	-7.8970	0.0000	-7.8970
Smithsonite	5.2900E-08	-7.2765	0.0000	-7.2765
Strontianite	2.2202E-07	-6.6536	0.0000	-6.6536

Mineral	Log Q/K	Aff, kcal	State
Carbonate-Calcite	-10.766	-14.688	
Calcite	-10.766	-14.688	
Magnesite	-10.766	-14.688	
Rhodochrosite	-10.766	-14.688	
Siderite	-10.766	-14.688	
Smithsonite	-10.766	-14.688	
Strontianite	-10.766	-14.688	

--- Clinoptilolite-hy-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-hy-Ca	9.9766E-01	-0.0010	0.0000	-0.0010
Clinoptilolite-hy-Cs	6.6731E-23	-22.1757	0.0000	-22.1757
Clinoptilolite-hy-K	7.5826E-04	-3.1202	0.0000	-3.1202
Clinoptilolite-hy-Na	1.5814E-03	-2.8010	0.0000	-2.8010
Clinoptilolite-hy-Sr	5.6039E-12	-11.2515	0.0000	-11.2515

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-hy-ss	-57.294	-78.165	
Clinoptilolite-hy-Ca	-57.294	-78.165	
Clinoptilolite-hy-Cs	-57.294	-78.165	
Clinoptilolite-hy-K	-57.294	-78.165	
Clinoptilolite-hy-Na	-57.294	-78.165	
Clinoptilolite-hy-Sr	-57.294	-78.165	

--- Clinoptilolite-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-Ca	7.8080E-01	-0.1075	-0.2644	-0.3718
Clinoptilolite-Cs	3.0359E-07	-6.5177	-16.0336	-22.5513
Clinoptilolite-K	9.7707E-02	-1.0101	-2.4848	-3.4949
Clinoptilolite-NH4	1.0282E-51	-50.9879	-125.4303	-176.4182
Clinoptilolite-Na	1.2106E-01	-0.9170	-2.2558	-3.1728
Clinoptilolite-Sr	4.3786E-04	-3.3587	-8.2623	-11.6210

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-ss	-56.924	-77.661	
Clinoptilolite-Ca	-56.924	-77.661	
Clinoptilolite-Cs	-56.924	-77.661	

Clinoptilolite-K	-56.924	-77.661
Clinoptilolite-NH4	-56.924	-77.661
Clinoptilolite-Na	-56.924	-77.661
Clinoptilolite-Sr	-56.924	-77.661

--- Saponite-tri ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Saponite-Ca	1.4833E-03	-2.8288	1.8953	-0.9335
Saponite-H	9.9736E-01	-0.0011	0.0008	-0.0004
Saponite-K	9.7802E-05	-4.0097	2.6865	-1.3232
Saponite-Mg	9.1272E-04	-3.0397	2.0366	-1.0031
Saponite-Na	1.4366E-04	-3.8427	2.5746	-1.2681

Mineral	Log Q/K	Aff, kcal	State
Saponite-tri	-42.127	-57.473	
Saponite-Ca	-42.127	-57.473	
Saponite-H	-42.127	-57.473	
Saponite-K	-42.127	-57.473	
Saponite-Mg	-42.127	-57.473	
Saponite-Na	-42.127	-57.473	

--- Smectite-di ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Beidellite-Ca	1.1625E-64	-63.9346	42.8362	-21.0984
Beidellite-K	7.6708E-66	-65.1152	43.6272	-21.4880
Beidellite-Mg	7.1537E-65	-64.1455	42.9775	-21.1680
Beidellite-Na	1.1260E-65	-64.9485	43.5155	-21.4330
Montmor-Ca	4.8065E-56	-55.3182	37.0632	-18.2550
Montmor-K	5.1796E-57	-56.2857	37.7114	-18.5743
Montmor-Mg	4.8069E-56	-55.3181	37.0632	-18.2550
Montmor-Na	7.4145E-57	-56.1299	37.6070	-18.5229
Nontronite-Ca	5.6223E-01	-0.2501	0.1676	-0.0825
Nontronite-K	3.7098E-02	-1.4307	0.9585	-0.4721
Nontronite-Mg	3.4621E-01	-0.4607	0.3086	-0.1520
Nontronite-Na	5.4456E-02	-1.2640	0.8468	-0.4171

Mineral	Log Q/K	Aff, kcal	State
Smectite-di	-3.496	-4.769	
Beidellite-Ca	-3.496	-4.769	
Beidellite-K	-3.496	-4.769	
Beidellite-Mg	-3.496	-4.769	
Beidellite-Na	-3.496	-4.769	
Montmor-Ca	-3.496	-4.769	
Montmor-K	-3.496	-4.769	
Montmor-Mg	-3.496	-4.769	
Montmor-Na	-3.496	-4.769	
Nontronite-Ca	-3.496	-4.769	

Nontronite-K	-3.496	-4.769
Nontronite-Mg	-3.496	-4.769
Nontronite-Na	-3.496	-4.769

--- Lanthanide hydroxide ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
La(OH)3	1.2826E-05	-4.8919	0.0000	-4.8919
Ce(OH)3	3.7093E-15	-14.4307	0.0000	-14.4307
Nd(OH)3(c)	3.4713E-01	-0.4595	0.0000	-0.4595
Gd(OH)3	5.8556E-01	-0.2324	0.0000	-0.2324
Sm(OH)3	6.7297E-02	-1.1720	0.0000	-1.1720

Mineral	Log Q/K	Aff, kcal	State
Lanthanide hydroxide	-24.638	-33.613	
La(OH)3	-24.638	-33.613	
Ce(OH)3	-24.638	-33.613	
Nd(OH)3(c)	-24.638	-33.613	
Gd(OH)3	-24.638	-33.613	
Sm(OH)3	-24.638	-33.613	

--- Rhabdophane-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaPO4:H2O	4.1196E-01	-0.3851	0.0000	-0.3851
CePO4:H2O	3.7677E-11	-10.4239	0.0000	-10.4239
NdPO4:H2O	2.2247E-01	-0.6527	0.0000	-0.6527
GdPO4:H2O	1.4940E-01	-0.8256	0.0000	-0.8256
SmPO4:H2O	2.1616E-01	-0.6652	0.0000	-0.6652

Mineral	Log Q/K	Aff, kcal	State
Rhabdophane-ss	-9.763	-13.320	
LaPO4:H2O	-9.763	-13.320	
CePO4:H2O	-9.763	-13.320	
NdPO4:H2O	-9.763	-13.320	
GdPO4:H2O	-9.763	-13.320	
SmPO4:H2O	-9.763	-13.320	

--- Lanthanide fluoride ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaF3:0.5H2O	5.7249E-01	-0.2422	0.0000	-0.2422
CeF3:0.5H2O	8.2983E-11	-10.0810	0.0000	-10.0810
NdF3:0.5H2O	3.8921E-01	-0.4098	0.0000	-0.4098

GdF3:0.5H2O	8.2654E-03	-2.0827	0.0000	-2.0827
SmF3:0.5H2O	3.0039E-02	-1.5223	0.0000	-1.5223

Mineral	Log Q/K	Aff, kcal	State
Lanthanide fluoride	-11.803	-16.103	
LaF3:0.5H2O	-11.803	-16.103	
CeF3:0.5H2O	-11.803	-16.103	
NdF3:0.5H2O	-11.803	-16.103	
GdF3:0.5H2O	-11.803	-16.103	
SmF3:0.5H2O	-11.803	-16.103	

--- Summary of Gases ---

Gas	Fugacity	Log fugacity
Al(g)	1.5467-200	-199.8106
B(g)	8.5659-204	-203.0672
BF3(g)	3.2674E-24	-23.4858
C(g)	3.0917-190	-189.5098
CH4(g)	3.5240-146	-145.4530
CO(g)	6.0395E-49	-48.2190
CO2(g)	3.1623E-04	-3.5000
Ca(g)	7.2452-164	-163.1400
Chlorine	3.5805E-17	-16.4461
Cs(g)	3.5200E-89	-88.4535
Cu(g)	7.6048E-93	-92.1189
Fluorine	1.3437E-72	-71.8717
H2(g)	6.1104E-42	-41.2139
H2O(g)	2.5958E-02	-1.5857
H2S(g)	2.2879-130	-129.6406
HCl(g)	7.3377E-13	-12.1344
HF(g)	5.0733E-09	-8.2947
K(g)	2.2415E-83	-82.6495
Li(g)	7.8289-103	-102.1063
Mg(g)	1.0920-141	-140.9618
Nitrogen	2.6162E-08	-7.5823
NH3(g)	1.8627E-63	-62.7299
NO(g)	5.0932E-20	-19.2930
NO2(g)	3.4825E-14	-13.4581
Na(g)	1.8218E-81	-80.7395
O2(g)	2.0999E-01	-0.6778
Pb(g)	7.6476E-81	-80.1165
S2(g)	3.1259-203	-202.5050
SO2(g)	4.0538E-43	-42.3921
Si(g)	4.2257-221	-220.3741
SiF4(g)	2.9244E-18	-17.5340
Ti(g)	3.8019-231	-230.4200
TiCl4(g)	9.7252E-62	-61.0121
U(g)	1.0141-304	-303.9939
U2Cl10(g)	4.7471-202	-201.3236
U2Cl8(g)	4.1104-216	-215.3861
U2F10(g)	1.5691-120	-119.8043
UCl(g)	6.6339-255	-254.1782
UCl2(g)	1.2982-203	-202.8867
UCl3(g)	5.5644-150	-149.2546
UCl4(g)	1.2915-113	-112.8889
UCl5(g)	1.5423-114	-113.8118
UCl6(g)	3.4217-110	-109.4658

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UF(g)                      9.7476-241   -240.0111
UF2(g)                     6.9488-195   -194.1581
UF3(g)                     1.2190-142   -141.9140
UF4(g)                     3.1566E-87    -86.5008
UF5(g)                     3.7440E-73    -72.4267
UF6(g)                     4.3726E-73    -72.3593
UO(g)                      8.0092-220   -219.0964
UO2(g)                     1.4839-135   -134.8286
UO2Cl2(g)                  2.3197E-71    -70.6346
UO2F2(g)                   9.0076E-61    -60.0454
UO3(g)                     1.0914E-82    -81.9620
UOF4(g)                    9.4064E-65    -64.0266
Zn(g)                      1.2830E-90    -89.8918



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Stepping to zi=  1.0000E-04, delzi=  3.6904E-05, nord= 4
  time =  9.6451E-01 d, dltime =  3.5594E-01 d
Steps completed =    46, iter = 15, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -4.6876

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                    Reaction progress        =  9.99999999999949E-05
                    Log of reaction progress =      -4.0000000



                    Time =  8.333E+04 sec
                         =  9.645E-01 days
                         =  2.641E-03 years

                    Log sec =        4.921
                    Log days =      -0.016
                    Log years =     -2.578

                    Temperature    =     25.000 degrees C
                    total pressure =      1.013 bars


Step size is limited by the print requirement


                              --- Reactant Summary ---


    Reactant                  Moles     Delta moles    Mass, g    Delta Mass, g

 Tuff                      1.0000E+02   1.0000E-04   2.0586E+03   2.0586E-03


               Current total mass =  2.05864E+03 grams
               Delta total mass   =  2.05865E-03 grams
               Delta total volume =      0.00000 cc


    Reactant                Rel. Rate      Rate         Rate
```

	mol/mol	mol/s	mol/s/cm2
Tuff	1.0000E+00	1.2000E-09	2.5000E-15

Reactant	Affinity kcal/mol	Surface Area mol/s/cm2
Tuff	999.00000	4.8000E+05

Reactant	Rate Constants, mol/s/cm2	
Tuff		
	Forward	2.5000E-15

Affinity of the overall irreversible reaction= 0.000 kcal
Contributions from irreversible reactions
with no thermodynamic data are not included

--- Element Totals for the Aqueous Solution ---

Element	mg/kg soln.	Molality	Moles
O	8.865401E+05	5.561111E+01	5.559509E+01
Al	1.783136E-01	6.632611E-06	6.630700E-06
B	1.334828E-01	1.239157E-05	1.238800E-05
Ba	1.368719E-05	1.000288E-10	1.000000E-10
Ca	1.296523E+01	3.246693E-04	3.245757E-04
Ce	1.396505E-19	1.000288E-24	9.999994E-25
Cl	7.116510E+00	2.014580E-04	2.014000E-04
Cr	2.996351E+02	5.783474E-03	5.781807E-03
Cs	1.324650E-05	1.000288E-10	1.000000E-10
Cu	6.650217E-10	1.050303E-14	1.050000E-14
F	2.172841E+00	1.147831E-04	1.147500E-04
Fe	8.856302E-01	1.591547E-05	1.591088E-05
Gd	1.567288E-09	1.000288E-14	1.000000E-14
H	1.115156E+05	1.110370E+02	1.110050E+02
C	1.267581E-01	1.059165E-05	1.058859E-05
P	7.325774E+00	2.373703E-04	2.373019E-04
K	5.107478E+00	1.311039E-04	1.310661E-04
La	1.384451E-09	1.000288E-14	1.000000E-14
Li	6.917996E-07	1.000288E-10	1.000000E-10
Mg	2.006371E+00	8.284807E-05	8.282420E-05
Mn	3.250804E+01	5.938605E-04	5.936894E-04
Mo	2.179385E+02	2.279823E-03	2.279166E-03
N	1.982365E+00	1.420409E-04	1.420000E-04
Na	4.570314E+01	1.995163E-03	1.994588E-03
Nd	1.437620E-09	1.000288E-14	1.000000E-14
Ni	7.502085E+02	1.282876E-02	1.282506E-02
Pb	2.065133E-05	1.000288E-10	1.000000E-10
Pu	2.431913E-09	1.000288E-14	1.000000E-14
S	5.507391E+02	1.723725E-02	1.723228E-02
Si	2.802950E+00	1.001613E-04	1.001325E-04
Sm	1.498617E-09	1.000288E-14	1.000000E-14
Sr	8.732961E-06	1.000288E-10	1.000000E-10
Ti	1.078259E-05	2.260143E-10	2.259492E-10
U	2.372400E-09	1.000288E-14	1.000000E-14
V	4.768067E+00	9.393717E-05	9.391010E-05
Zn	6.517329E-06	1.000288E-10	1.000000E-10

Zr	9.092167E-16	1.000288E-20	1.000000E-20

Single ion activities and activity coefficients are here defined
with respect to the modified NBS pH scale

	pH	Eh	pe
modified NBS pH scale	2.0410	1.0983	1.8566E+01
rational pH scale	1.9645	1.1028	1.8642E+01

pHCl = 5.8291

Oxygen fugacity = 2.09991E-01
Log oxygen fugacity = -0.67780

Activity of water = 0.99924
Log activity of water = -0.00033

Ionic strength = 5.880593E-02 molal
Sum of molalities = 0.0494562515715
Osmotic coefficient = 0.85802

Mass of solution = 1.003325 kg
Mass of solutes = 0.003613 kg
Conc. of solutes = 0.360137 per cent (w/w)

Moles of solvent H2O = 5.54924E+01
Mass of solvent H2O = 9.99712E-01 kg

Species	Molality	Log molality	Log gamma	Log activity
H+	1.0851E-02	-1.9645	-0.0765	-2.0410
Ni++	1.0208E-02	-1.9911	-0.3466	-2.3376
SO4--	9.7785E-03	-2.0097	-0.3602	-2.3700
HSO4-	4.4977E-03	-2.3470	-0.0849	-2.4319
HCrO4-	4.0507E-03	-2.3925	-0.0849	-2.4774
NiSO4(aq)	2.6188E-03	-2.5819	0.0000	-2.5819
MoO4--	2.2798E-03	-2.6421	-0.3492	-2.9913
Na+	1.9421E-03	-2.7117	-0.0983	-2.8101
Cr2O7--	8.6349E-04	-3.0637	-0.3602	-3.4240
Mn++	4.1402E-04	-3.3830	-0.3466	-3.7296
O2(aq)	2.6166E-04	-3.5823	0.0062	-3.5761
Ca++	2.6006E-04	-3.5849	-0.3466	-3.9315
Cl-	2.0085E-04	-3.6971	-0.0909	-3.7881
MnSO4(aq)	1.7921E-04	-3.7466	0.0000	-3.7466
NO3-	1.4021E-04	-3.8532	-0.0909	-3.9441
K+	1.2715E-04	-3.8957	-0.1044	-4.0001
H3PO4(aq)	1.1919E-04	-3.9238	0.0000	-3.9238
H2PO4-	1.0776E-04	-3.9676	-0.0849	-4.0524
SiO2(aq)	1.0016E-04	-3.9993	0.0000	-3.9993
HF(aq)	9.4094E-05	-4.0264	0.0000	-4.0264
VO2+	7.7276E-05	-4.1120	-0.0983	-4.2103
CaSO4(aq)	6.4511E-05	-4.1904	0.0000	-4.1904
Mg++	5.3990E-05	-4.2677	-0.3139	-4.5816
NaSO4-	5.3069E-05	-4.2752	-0.0849	-4.3600

MgSO4(aq)	2.8849E-05	-4.5399	0.0000	-4.5399
B(OH)3(aq)	1.2392E-05	-4.9069	0.0000	-4.9069
VO2SO4-	1.2151E-05	-4.9154	-0.0849	-5.0003
CO2(aq)	1.0591E-05	-4.9751	0.0062	-4.9689
FeHPO4+	9.8453E-06	-5.0068	-0.0983	-5.1051
F-	8.5963E-06	-5.0657	-0.0878	-5.1535
Fe+++	3.9746E-06	-5.4007	-0.6676	-6.0683
Cr+++	3.9699E-06	-5.4012	-0.6676	-6.0688
KSO4-	3.9304E-06	-5.4056	-0.0849	-5.4905
AlF2+	3.7055E-06	-5.4312	-0.0983	-5.5295
VO(OH)3(aq)	3.3890E-06	-5.4699	0.0000	-5.4699
AlF++	2.5126E-06	-5.5999	-0.3761	-5.9760
NiNO3+	1.6465E-06	-5.7834	-0.0983	-5.8818
H2CrO4(aq)	1.4528E-06	-5.8378	0.0000	-5.8378
FeOH++	1.4405E-06	-5.8415	-0.3761	-6.2176
VO2F(aq)	9.6872E-07	-6.0138	0.0000	-6.0138
MnH2PO4+	4.6381E-07	-6.3337	-0.0983	-6.4320
FeSO4+	3.8697E-07	-6.4123	-0.0983	-6.5107
HCl(aq)	3.1689E-07	-6.4991	0.0000	-6.4991
CrO4--	2.6885E-07	-6.5705	-0.3602	-6.9307
AlF3(aq)	2.6122E-07	-6.5830	0.0000	-6.5830
FeF++	1.9535E-07	-6.7092	-0.3761	-7.0853
NiCl+	9.4723E-08	-7.0235	-0.0983	-7.1219
HPO3F-	8.5435E-08	-7.0684	-0.0849	-7.1532
CaNO3+	8.3695E-08	-7.0773	-0.0983	-7.1756
AlSO4+	8.2393E-08	-7.0841	-0.0983	-7.1825
MnCl+	7.6212E-08	-7.1180	-0.0983	-7.2163
H2VO4-	7.3079E-08	-7.1362	-0.0849	-7.2211
Al+++	7.0001E-08	-7.1549	-0.6676	-7.8225
CrO3Cl-	6.4770E-08	-7.1886	-0.0849	-7.2735
HNO3(aq)	5.1561E-08	-7.2877	0.0000	-7.2877
VO2(OH)2-	4.5289E-08	-7.3440	-0.0849	-7.4289
MnF+	4.4185E-08	-7.3547	-0.0983	-7.4531
NaCl(aq)	4.2156E-08	-7.3751	0.0000	-7.3751
MnNO3+	4.2135E-08	-7.3754	-0.0983	-7.4737
H2SO4(aq)	3.3656E-08	-7.4729	0.0000	-7.4729
Fe(SO4)2-	3.0928E-08	-7.5096	-0.0849	-7.5945
VO2HPO4-	3.0745E-08	-7.5122	-0.0849	-7.5971
Fe(OH)2+	2.7634E-08	-7.5586	-0.0983	-7.6569
KHSO4(aq)	2.5265E-08	-7.5975	0.0000	-7.5975
H2F2(aq)	2.3929E-08	-7.6211	0.0000	-7.6211
CrOH++	2.2285E-08	-7.6520	-0.3761	-8.0281
FeF2+	1.1826E-08	-7.9272	-0.0983	-8.0255
MgF+	5.1956E-09	-8.2844	-0.0983	-8.3827
CaF+	4.9550E-09	-8.3050	-0.0983	-8.4033
CaCl+	4.8216E-09	-8.3168	-0.0983	-8.4152
MgCl+	3.9245E-09	-8.4062	-0.0983	-8.5046
VO2F2-	2.3855E-09	-8.6224	-0.0849	-8.7073
FeNO3++	2.3103E-09	-8.6363	-0.3761	-9.0124
PO3F--	1.4077E-09	-8.8515	-0.3602	-9.2117
HPO4--	1.3913E-09	-8.8566	-0.3602	-9.2168
NaF(aq)	1.0935E-09	-8.9612	0.0000	-8.9612
HCO3-	6.4862E-10	-9.1880	-0.0849	-9.2729
AlF4-	5.6025E-10	-9.2516	-0.0849	-9.3365
KCl(aq)	5.2151E-10	-9.2827	0.0000	-9.2827
MnHPO4(aq)	4.3016E-10	-9.3664	0.0000	-9.3664
AlHPO4+	2.8777E-10	-9.5410	-0.0983	-9.6393
VO++	2.7644E-10	-9.5584	-0.3761	-9.9345
CrCl++	2.3456E-10	-9.6297	-0.3761	-10.0059
Ti(OH)4(aq)	2.2601E-10	-9.6459	0.0000	-9.6459
HF2-	1.9397E-10	-9.7123	-0.0849	-9.7971
VOSO4(aq)	1.4980E-10	-9.8245	0.0000	-9.8245
Mn+++	1.1754E-10	-9.9298	-0.8158	-10.7456

Cs+	1.0002E-10	-9.9999	-0.1077	-10.1076

--- Summary of Instantaneously Precipitated Solid Phases ---
(defined by derivatives)

--- Theoretical Rock Composition ---
g/kg

O	5.284250E+01
Fe	9.935281E-01
C	3.310764E-03
Si	4.608522E+01
Ti	7.544375E-02

--- Oxide Percentages ---

Oxide	Theoretical rock

Total = 0.0000

Phase/end-member		d mol/d zi	d grams/d zi	d vol (cc)/d zi
Hematite		1.4282E-03	2.2808E-01	4.3239E-02
Quartz		2.6347E-01	1.5830E+01	5.9776E+00
Rutile		2.5300E-04	2.0209E-02	4.7615E-03
fix	CO2(g)	4.4259E-05	1.9478E-03	0.0000E+00
fix	O2(g)	-7.5367E-04	-2.4116E-02	0.0000E+00

--- Summary of Solid Phases (E.S.+P.R.S.) ---

Phase/End-member		Log moles	Moles	Mass, g	Volume, cc
Hematite		-6.8450	1.4289E-07	2.2819E-05	4.3260E-06
Quartz		-4.5793	2.6347E-05	1.5830E-03	5.9776E-04
Rutile		-7.5990	2.5174E-08	2.0109E-06	4.7378E-07
fix	CO2(g)	2.3010	2.0000E+02	8.8020E+03	0.0000E+00
fix	O2(g)	2.3010	2.0000E+02	6.3998E+03	0.0000E+00

	Mass, grams	Volume, cc
Created	1.520172E+04	6.025601E-04
Destroyed	2.058647E-03	0.000000E+00
Net	1.520172E+04	6.025601E-04

Warning-- these volume totals may be incomplete because
of missing partial molar volume data in the data base

--- Summary of Pure Mineral Saturation States ---

Mineral	Log Q/K	Aff, kcal	State
AlF3	-6.074	-8.287	
Anglesite	-4.894	-6.677	
Anhydrite	-1.995	-2.722	
BaZrO3	69.262	94.494	ssatd

Barite	-2.765	-3.772	
Bassanite	-2.640	-3.602	
Boric_acid	-4.749	-6.478	
CaSO4:0.5H2O(beta)	-2.808	-3.831	
CaZrO3	129.727	176.984	ssatd
Celestite	-7.194	-9.815	
Chalcedony	-0.271	-0.370	
Coesite	-0.810	-1.105	
CrO2	-0.910	-1.241	
Cristobalite(alpha)	-0.551	-0.751	
Cristobalite(beta)	-0.994	-1.356	
Crocoite	-4.590	-6.262	
Epsomite	-4.992	-6.810	
Fe(OH)3	-5.602	-7.642	
FeF3	-2.290	-3.124	
Fluorite	-4.202	-5.732	
Goethite	-0.480	-0.655	
Gypsum	-1.820	-2.483	
Hematite	0.000	0.000	satd
Hexahydrite	-5.227	-7.131	
Ice	-0.139	-0.190	
Jarosite	-5.330	-7.272	
Kieserite	-6.685	-9.120	
Manganite	-4.459	-6.083	
Mercallite	-6.972	-9.512	
Mirabilite	-6.854	-9.350	
MnHPO4	0.001	0.001	ssatd
MnO2(gamma)	-1.517	-2.070	
Morenosite	-2.696	-3.678	
NiSO4:6H2O(alpha)	-2.702	-3.687	
Nontronite-Ca	-3.523	-4.807	
Nontronite-H	-2.590	-3.534	
Nontronite-K	-3.912	-5.337	
Nontronite-Mg	-3.593	-4.901	
Nontronite-Na	-3.858	-5.263	
Pentahydrite	-5.566	-7.594	
Pyrolusite	0.001	0.001	ssatd
Quartz	0.000	0.000	satd
Rutile	0.000	0.000	satd
Sellaite	-5.504	-7.509	
Shcherbinaite	-2.887	-3.939	
SiO2(am)	-1.286	-1.754	
SrZrO3	106.122	144.780	ssatd
Starkeyite	-5.953	-8.122	
Strengite	-1.902	-2.595	
Tridymite	-0.172	-0.234	
fix CO2(g)	0.000	0.000	satd
fix O2(g)	0.000	0.000	satd

--- Summary of Solid Solutions ---

--- Carbonate-Calcite ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Calcite	5.6740E-03	-2.2461	0.0000	-2.2461
Magnesite	4.5592E-04	-3.3411	0.0000	-3.3411
Rhodochrosite	9.9387E-01	-0.0027	0.0000	-0.0027
Siderite	1.2668E-08	-7.8973	0.0000	-7.8973
Smithsonite	5.2901E-08	-7.2765	0.0000	-7.2765

Strontianite	2.2202E-07	-6.6536	0.0000	-6.6536

Mineral	Log Q/K	Aff, kcal	State
Carbonate-Calcite	-10.766	-14.688	
Calcite	-10.766	-14.688	
Magnesite	-10.766	-14.688	
Rhodochrosite	-10.766	-14.688	
Siderite	-10.766	-14.688	
Smithsonite	-10.766	-14.688	
Strontianite	-10.766	-14.688	

--- Clinoptilolite-hy-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-hy-Ca	9.9764E-01	-0.0010	0.0000	-0.0010
Clinoptilolite-hy-Cs	6.6705E-23	-22.1758	0.0000	-22.1758
Clinoptilolite-hy-K	7.7413E-04	-3.1112	0.0000	-3.1112
Clinoptilolite-hy-Na	1.5832E-03	-2.8005	0.0000	-2.8005
Clinoptilolite-hy-Sr	5.6015E-12	-11.2517	0.0000	-11.2517

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-hy-ss	-56.717	-77.378	
Clinoptilolite-hy-Ca	-56.717	-77.378	
Clinoptilolite-hy-Cs	-56.717	-77.378	
Clinoptilolite-hy-K	-56.717	-77.378	
Clinoptilolite-hy-Na	-56.717	-77.378	
Clinoptilolite-hy-Sr	-56.717	-77.378	

--- Clinoptilolite-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-Ca	7.8031E-01	-0.1077	-0.2650	-0.3728
Clinoptilolite-Cs	3.0337E-07	-6.5180	-16.0343	-22.5524
Clinoptilolite-K	9.8232E-02	-1.0077	-2.4791	-3.4868
Clinoptilolite-NH4	1.0268E-51	-50.9885	-125.4318	-176.4203
Clinoptilolite-Na	1.2102E-01	-0.9171	-2.2561	-3.1733
Clinoptilolite-Sr	4.3754E-04	-3.3590	-8.2631	-11.6221

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-ss	-56.346	-76.873	
Clinoptilolite-Ca	-56.346	-76.873	
Clinoptilolite-Cs	-56.346	-76.873	
Clinoptilolite-K	-56.346	-76.873	
Clinoptilolite-NH4	-56.346	-76.873	
Clinoptilolite-Na	-56.346	-76.873	
Clinoptilolite-Sr	-56.346	-76.873	

--- Saponite-tri ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Saponite-Ca	1.4839E-03	-2.8286	1.8952	-0.9334
Saponite-H	9.9736E-01	-0.0011	0.0008	-0.0004
Saponite-K	9.8431E-05	-4.0069	2.6846	-1.3223
Saponite-Mg	9.1327E-04	-3.0394	2.0364	-1.0030
Saponite-Na	1.4377E-04	-3.8423	2.5744	-1.2680

Mineral	Log Q/K	Aff, kcal	State
Saponite-tri	-42.070	-57.396	
Saponite-Ca	-42.070	-57.396	
Saponite-H	-42.070	-57.396	
Saponite-K	-42.070	-57.396	
Saponite-Mg	-42.070	-57.396	
Saponite-Na	-42.070	-57.396	

--- Smectite-di ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Beidellite-Ca	1.1944E-63	-62.9229	42.1583	-20.7645
Beidellite-K	7.9282E-65	-64.1008	42.9476	-21.1533
Beidellite-Mg	7.3509E-64	-63.1337	42.2996	-20.8341
Beidellite-Na	1.1572E-64	-63.9366	42.8375	-21.0991
Montmor-Ca	2.2918E-55	-54.6398	36.6087	-18.0311
Montmor-K	2.4845E-56	-55.6048	37.2552	-18.3496
Montmor-Mg	2.2923E-55	-54.6397	36.6086	-18.0311
Montmor-Na	3.5365E-56	-55.4514	37.1525	-18.2990
Nontronite-Ca	5.6207E-01	-0.2502	0.1676	-0.0826
Nontronite-K	3.7309E-02	-1.4282	0.9569	-0.4713
Nontronite-Mg	3.4617E-01	-0.4607	0.3087	-0.1520
Nontronite-Na	5.4458E-02	-1.2639	0.8468	-0.4171

Mineral	Log Q/K	Aff, kcal	State
Smectite-di	-3.441	-4.694	
Beidellite-Ca	-3.441	-4.694	
Beidellite-K	-3.441	-4.694	
Beidellite-Mg	-3.441	-4.694	
Beidellite-Na	-3.441	-4.694	
Montmor-Ca	-3.441	-4.694	
Montmor-K	-3.441	-4.694	
Montmor-Mg	-3.441	-4.694	
Montmor-Na	-3.441	-4.694	
Nontronite-Ca	-3.441	-4.694	
Nontronite-K	-3.441	-4.694	
Nontronite-Mg	-3.441	-4.694	
Nontronite-Na	-3.441	-4.694	

--- Lanthanide hydroxide ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
La(OH)3	1.2824E-05	-4.8920	0.0000	-4.8920
Ce(OH)3	3.7090E-15	-14.4307	0.0000	-14.4307
Nd(OH)3(c)	3.4710E-01	-0.4595	0.0000	-0.4595
Gd(OH)3	5.8560E-01	-0.2324	0.0000	-0.2324
Sm(OH)3	6.7292E-02	-1.1720	0.0000	-1.1720

Mineral	Log Q/K	Aff, kcal	State
Lanthanide hydroxide	-24.637	-33.612	
La(OH)3	-24.637	-33.612	
Ce(OH)3	-24.637	-33.612	
Nd(OH)3(c)	-24.637	-33.612	
Gd(OH)3	-24.637	-33.612	
Sm(OH)3	-24.637	-33.612	

--- Rhabdophane-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaPO4:H2O	4.1194E-01	-0.3852	0.0000	-0.3852
CePO4:H2O	3.7677E-11	-10.4239	0.0000	-10.4239
NdPO4:H2O	2.2247E-01	-0.6527	0.0000	-0.6527
GdPO4:H2O	1.4942E-01	-0.8256	0.0000	-0.8256
SmPO4:H2O	2.1616E-01	-0.6652	0.0000	-0.6652

Mineral	Log Q/K	Aff, kcal	State
Rhabdophane-ss	-9.763	-13.319	
LaPO4:H2O	-9.763	-13.319	
CePO4:H2O	-9.763	-13.319	
NdPO4:H2O	-9.763	-13.319	
GdPO4:H2O	-9.763	-13.319	
SmPO4:H2O	-9.763	-13.319	

--- Lanthanide fluoride ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaF3:0.5H2O	5.7247E-01	-0.2422	0.0000	-0.2422
CeF3:0.5H2O	8.2985E-11	-10.0810	0.0000	-10.0810
NdF3:0.5H2O	3.8922E-01	-0.4098	0.0000	-0.4098
GdF3:0.5H2O	8.2669E-03	-2.0827	0.0000	-2.0827
SmF3:0.5H2O	3.0040E-02	-1.5223	0.0000	-1.5223

Mineral	Log Q/K	Aff, kcal	State

Lanthanide fluoride	-11.840	-16.154
LaF3:0.5H2O	-11.840	-16.154
CeF3:0.5H2O	-11.840	-16.154
NdF3:0.5H2O	-11.840	-16.154
GdF3:0.5H2O	-11.840	-16.154
SmF3:0.5H2O	-11.840	-16.154

--- Summary of Gases ---

Gas	Fugacity	Log fugacity
Al(g)	2.2718-200	-199.6436
B(g)	8.5659-204	-203.0672
BF3(g)	2.9985E-24	-23.5231
C(g)	3.0917-190	-189.5098
CH4(g)	3.5240-146	-145.4530
CO(g)	6.0395E-49	-48.2190
CO2(g)	3.1623E-04	-3.5000
Ca(g)	7.2516-164	-163.1396
Chlorine	3.5781E-17	-16.4463
Cs(g)	3.5211E-89	-88.4533
Cu(g)	7.6099E-93	-92.1186
Fluorine	1.2690E-72	-71.8965
H2(g)	6.1104E-42	-41.2139
H2O(g)	2.5958E-02	-1.5857
H2S(g)	2.2865-130	-129.6408
HCl(g)	7.3352E-13	-12.1346
HF(g)	4.9302E-09	-8.3071
K(g)	2.2560E-83	-82.6467
Li(g)	7.8315-103	-102.1062
Mg(g)	1.0933-141	-140.9613
Nitrogen	2.6144E-08	-7.5826
NH3(g)	1.8620E-63	-62.7300
NO(g)	5.0914E-20	-19.2932
NO2(g)	3.4813E-14	-13.4583
Na(g)	1.8232E-81	-80.7392
O2(g)	2.0999E-01	-0.6778
Pb(g)	7.6527E-81	-80.1162
S2(g)	3.1221-203	-202.5056
SO2(g)	4.0514E-43	-42.3924
Si(g)	4.2257-221	-220.3741
SiF4(g)	2.6080E-18	-17.5837
Ti(g)	3.8019-231	-230.4200
TiCl4(g)	9.7119E-62	-61.0127
U(g)	1.0171-304	-303.9926
U2Cl10(g)	4.7587-202	-201.3225
U2Cl8(g)	4.1232-216	-215.3848
U2F10(g)	1.1855-120	-119.9261
UCl(g)	6.6510-255	-254.1771
UCl2(g)	1.3011-203	-202.8857
UCl3(g)	5.5750-150	-149.2538
UCl4(g)	1.2935-113	-112.8882
UCl5(g)	1.5442-114	-113.8113
UCl6(g)	3.4247-110	-109.4654
UF(g)	9.5004-241	-240.0223
UF2(g)	6.5814-195	-194.1817
UF3(g)	1.1220-142	-141.9500
UF4(g)	2.8234E-87	-86.5492
UF5(g)	3.2543E-73	-72.4875

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UF6(g)                      3.6935E-73    -72.4326
UO(g)                       8.0327-220   -219.0951
UO2(g)                      1.4882-135   -134.8273
UO2Cl2(g)                   2.3250E-71    -70.6336
UO2F2(g)                    8.5314E-61    -60.0690
UO3(g)                      1.0946E-82    -81.9607
UOF4(g)                     8.4135E-65    -64.0750
Zn(g)                       1.2838E-90    -89.8915



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Stepping to zi=  1.5849E-04, delzi=  5.8489E-05, nord= 5
  time =  1.5286E+00 d, dltime =  5.6413E-01 d
Steps completed =    47, iter = 12, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -4.4444

- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -


                    Reaction progress        =  1.58489319246103E-04
                    Log of reaction progress =      -3.8000000



                    Time =  1.321E+05 sec
                         =  1.529E+00 days
                         =  4.185E-03 years

                    Log sec =        5.121
                    Log days =       0.184
                    Log years =     -2.378

                    Temperature    =     25.000 degrees C
                    total pressure =      1.013 bars


Step size is limited by the print requirement


                              --- Reactant Summary ---


    Reactant                   Moles     Delta moles    Mass, g    Delta Mass, g

 Tuff                       1.0000E+02   1.5849E-04   2.0586E+03   3.2627E-03


               Current total mass =  2.05864E+03 grams
               Delta total mass   =  3.26274E-03 grams
               Delta total volume =      0.00000 cc


    Reactant                Rel. Rate      Rate         Rate
                             mol/mol       mol/s      mol/s/cm2

 Tuff                       1.0000E+00   1.2000E-09   2.5000E-15
```

Reactant	Affinity kcal/mol	Surface Area mol/s/cm2
Tuff	999.00000	4.8000E+05

Reactant	Rate Constants, mol/s/cm2	
Tuff		
	Forward	2.5000E-15

Affinity of the overall irreversible reaction= 0.000 kcal
Contributions from irreversible reactions
with no thermodynamic data are not included

--- Element Totals for the Aqueous Solution ---

Element	mg/kg soln.	Molality	Moles
O	8.865400E+05	5.561111E+01	5.559509E+01
Al	2.592896E-01	9.644625E-06	9.641847E-06
B	1.334828E-01	1.239157E-05	1.238800E-05
Ba	1.368718E-05	1.000288E-10	1.000000E-10
Ca	1.297004E+01	3.247896E-04	3.246960E-04
Ce	1.396505E-19	1.000288E-24	9.999994E-25
Cl	7.116508E+00	2.014580E-04	2.014000E-04
Cr	2.996350E+02	5.783473E-03	5.781807E-03
Cs	1.324649E-05	1.000288E-10	1.000000E-10
Cu	6.650215E-10	1.050303E-14	1.050000E-14
F	2.172841E+00	1.147831E-04	1.147500E-04
Fe	8.841892E-01	1.588958E-05	1.588500E-05
Gd	1.567288E-09	1.000288E-14	1.000000E-14
H	1.115155E+05	1.110370E+02	1.110050E+02
C	1.267580E-01	1.059164E-05	1.058859E-05
P	7.325850E+00	2.373729E-04	2.373045E-04
K	5.156620E+00	1.323653E-04	1.323272E-04
La	1.384451E-09	1.000288E-14	1.000000E-14
Li	6.917994E-07	1.000288E-10	1.000000E-10
Mg	2.008144E+00	8.292131E-05	8.289743E-05
Mn	3.250866E+01	5.938718E-04	5.937008E-04
Mo	2.179384E+02	2.279823E-03	2.279166E-03
N	1.982365E+00	1.420409E-04	1.420000E-04
Na	4.573513E+01	1.996559E-03	1.995984E-03
Nd	1.437619E-09	1.000288E-14	1.000000E-14
Ni	7.502083E+02	1.282876E-02	1.282506E-02
Pb	2.065132E-05	1.000288E-10	1.000000E-10
Pu	2.431913E-09	1.000288E-14	1.000000E-14
S	5.507390E+02	1.723725E-02	1.723228E-02
Si	2.802949E+00	1.001613E-04	1.001325E-04
Sm	1.498616E-09	1.000288E-14	1.000000E-14
Sr	8.732959E-06	1.000288E-10	1.000000E-10
Ti	1.078259E-05	2.260144E-10	2.259493E-10
U	2.372400E-09	1.000288E-14	1.000000E-14
V	4.768065E+00	9.393716E-05	9.391010E-05
Zn	6.517327E-06	1.000288E-10	1.000000E-10
Zr	9.092164E-16	1.000288E-20	1.000000E-20

Single ion activities and activity coefficients are here defined
with respect to the modified NBS pH scale

	pH	Eh	pe
modified NBS pH scale	2.0413	1.0983	1.8566E+01
rational pH scale	1.9647	1.1028	1.8642E+01

pHCl = 5.8293

Oxygen fugacity = 2.09991E-01
Log oxygen fugacity = -0.67780

Activity of water = 0.99924
Log activity of water = -0.00033

Ionic strength = 5.880927E-02 molal
Sum of molalities = 0.0494511608264
Osmotic coefficient = 0.85799

Mass of solution = 1.003325 kg
Mass of solutes = 0.003614 kg
Conc. of solutes = 0.360152 per cent (w/w)

Moles of solvent H2O = 5.54924E+01
Mass of solvent H2O = 9.99712E-01 kg

Species	Molality	Log molality	Log gamma	Log activity
H+	1.0846E-02	-1.9647	-0.0765	-2.0413
Ni++	1.0208E-02	-1.9911	-0.3466	-2.3376
SO4--	9.7799E-03	-2.0097	-0.3602	-2.3699
HSO4-	4.4958E-03	-2.3472	-0.0849	-2.4321
HCrO4-	4.0507E-03	-2.3925	-0.0849	-2.4774
NiSO4(aq)	2.6190E-03	-2.5819	0.0000	-2.5819
MoO4--	2.2798E-03	-2.6421	-0.3492	-2.9913
Na+	1.9434E-03	-2.7114	-0.0983	-2.8098
Cr2O7--	8.6350E-04	-3.0637	-0.3602	-3.4240
Mn++	4.1401E-04	-3.3830	-0.3466	-3.7296
O2(aq)	2.6166E-04	-3.5823	0.0062	-3.5761
Ca++	2.6016E-04	-3.5848	-0.3466	-3.9314
Cl-	2.0085E-04	-3.6971	-0.0909	-3.7881
MnSO4(aq)	1.7923E-04	-3.7466	0.0000	-3.7466
NO3-	1.4021E-04	-3.8532	-0.0909	-3.9441
K+	1.2837E-04	-3.8915	-0.1044	-3.9959
H3PO4(aq)	1.1916E-04	-3.9239	0.0000	-3.9239
H2PO4-	1.0779E-04	-3.9674	-0.0849	-4.0523
SiO2(aq)	1.0016E-04	-3.9993	0.0000	-3.9993
HF(aq)	8.9840E-05	-4.0465	0.0000	-4.0465
VO2+	7.7309E-05	-4.1118	-0.0983	-4.2101
CaSO4(aq)	6.4541E-05	-4.1902	0.0000	-4.1902
Mg++	5.4036E-05	-4.2673	-0.3139	-4.5812
NaSO4-	5.3112E-05	-4.2748	-0.0849	-4.3597
MgSO4(aq)	2.8877E-05	-4.5394	0.0000	-4.5394
B(OH)3(aq)	1.2392E-05	-4.9069	0.0000	-4.9069
VO2SO4-	1.2158E-05	-4.9151	-0.0849	-5.0000
CO2(aq)	1.0591E-05	-4.9751	0.0062	-4.9689
FeHPO4+	9.8381E-06	-5.0071	-0.0983	-5.1054

F-	8.2122E-06	-5.0855	-0.0878	-5.1734
AlF2+	5.2921E-06	-5.2764	-0.0983	-5.3747
KSO4-	3.9687E-06	-5.4014	-0.0849	-5.4862
Fe+++	3.9682E-06	-5.4014	-0.6676	-6.0690
Cr+++	3.9614E-06	-5.4022	-0.6676	-6.0698
AlF++	3.7564E-06	-5.4252	-0.3761	-5.8014
VO(OH)3(aq)	3.3923E-06	-5.4695	0.0000	-5.4695
NiNO3+	1.6465E-06	-5.7834	-0.0983	-5.8818
H2CrO4(aq)	1.4520E-06	-5.8380	0.0000	-5.8380
FeOH++	1.4390E-06	-5.8419	-0.3761	-6.2181
VO2F(aq)	9.2582E-07	-6.0335	0.0000	-6.0335
MnH2PO4+	4.6396E-07	-6.3335	-0.0983	-6.4319
FeSO4+	3.8639E-07	-6.4130	-0.0983	-6.5113
AlF3(aq)	3.5639E-07	-6.4481	0.0000	-6.4481
HCl(aq)	3.1672E-07	-6.4993	0.0000	-6.4993
CrO4--	2.6900E-07	-6.5702	-0.3602	-6.9305
FeF++	1.8632E-07	-6.7297	-0.3761	-7.1059
AlSO4+	1.2896E-07	-6.8896	-0.0983	-6.9879
Al+++	1.0955E-07	-6.9604	-0.6676	-7.6280
NiCl+	9.4719E-08	-7.0236	-0.0983	-7.1219
CaNO3+	8.3723E-08	-7.0772	-0.0983	-7.1755
HPO3F-	8.1601E-08	-7.0883	-0.0849	-7.1732
MnCl+	7.6210E-08	-7.1180	-0.0983	-7.2163
H2VO4-	7.3189E-08	-7.1356	-0.0849	-7.2204
CrO3Cl-	6.4735E-08	-7.1889	-0.0849	-7.2738
HNO3(aq)	5.1533E-08	-7.2879	0.0000	-7.2879
VO2(OH)2-	4.5357E-08	-7.3434	-0.0849	-7.4282
MnF+	4.2210E-08	-7.3746	-0.0983	-7.4729
NaCl(aq)	4.2185E-08	-7.3748	0.0000	-7.3748
MnNO3+	4.2133E-08	-7.3754	-0.0983	-7.4737
H2SO4(aq)	3.3624E-08	-7.4733	0.0000	-7.4733
Fe(SO4)2-	3.0886E-08	-7.5102	-0.0849	-7.5951
VO2HPO4-	3.0786E-08	-7.5117	-0.0849	-7.5965
Fe(OH)2+	2.7619E-08	-7.5588	-0.0983	-7.6571
KHSO4(aq)	2.5497E-08	-7.5935	0.0000	-7.5935
CrOH++	2.2249E-08	-7.6527	-0.3761	-8.0288
H2F2(aq)	2.1814E-08	-7.6613	0.0000	-7.6613
FeF2+	1.0775E-08	-7.9676	-0.0983	-8.0659
MgF+	4.9676E-09	-8.3039	-0.0983	-8.4022
CaCl+	4.8232E-09	-8.3167	-0.0983	-8.4150
CaF+	4.7351E-09	-8.3247	-0.0983	-8.4230
MgCl+	3.9278E-09	-8.4059	-0.0983	-8.5042
FeNO3++	2.3066E-09	-8.6370	-0.3761	-9.0132
VO2F2-	2.1780E-09	-8.6619	-0.0849	-8.7468
HPO4--	1.3926E-09	-8.8562	-0.3602	-9.2164
PO3F--	1.3453E-09	-8.8712	-0.3602	-9.2314
NaF(aq)	1.0453E-09	-8.9807	0.0000	-8.9807
AlF4-	7.3022E-10	-9.1365	-0.0849	-9.2214
HCO3-	6.4897E-10	-9.1878	-0.0849	-9.2727
KCl(aq)	5.2652E-10	-9.2786	0.0000	-9.2786
AlHPO4+	4.5074E-10	-9.3461	-0.0983	-9.4444
MnHPO4(aq)	4.3053E-10	-9.3660	0.0000	-9.3660
VO++	2.7641E-10	-9.5584	-0.3761	-9.9346
CrCl++	2.3405E-10	-9.6307	-0.3761	-10.0068
Ti(OH)4(aq)	2.2601E-10	-9.6459	0.0000	-9.6459
HF2-	1.7693E-10	-9.7522	-0.0849	-9.8371
VOSO4(aq)	1.4980E-10	-9.8245	0.0000	-9.8245
Mn+++	1.1748E-10	-9.9300	-0.8158	-10.7458
Cs+	1.0002E-10	-9.9999	-0.1077	-10.1076

--- Summary of Instantaneously Precipitated Solid Phases ---
(defined by derivatives)

```
     --- Theoretical Rock Composition ---
                   g/kg

      O      5.285391E+01
      Fe     9.931796E-01
      Si     4.610904E+01
      Ti     7.548275E-02

      --- Oxide Percentages ---

   Oxide   Theoretical rock


    Total =     0.0000


   Phase/end-member     d mol/d zi    d grams/d zi   d vol (cc)/d zi

Hematite                    1.4270E-03   2.2788E-01   4.3201E-02
Quartz                      2.6347E-01   1.5830E+01   5.9776E+00
Rutile                      2.5300E-04   2.0209E-02   4.7615E-03
fix     CO2(g)             -4.2236E-04  -1.8588E-02   0.0000E+00
fix     O2(g)              -3.6497E-04  -1.1679E-02   0.0000E+00


               --- Summary of Solid Phases (E.S.+P.R.S.) ---

   Phase/End-member        Log moles     Moles       Mass, g     Volume, cc

Hematite                      -6.6451   2.2640E-07   3.6155E-05   6.8542E-06
Quartz                        -4.3793   4.1757E-05   2.5089E-03   9.4739E-04
Rutile                        -7.3982   3.9972E-08   3.1929E-06   7.5227E-07
fix     CO2(g)                 2.3010   2.0000E+02   8.8020E+03   0.0000E+00
fix     O2(g)                  2.3010   2.0000E+02   6.3998E+03   0.0000E+00


                           Mass, grams        Volume, cc

          Created         1.520172E+04       9.549927E-04
          Destroyed       3.262735E-03       0.000000E+00
          Net             1.520172E+04       9.549927E-04

         Warning-- these volume totals may be incomplete because
         of missing partial molar volume data in the data base


          --- Summary of Pure Mineral Saturation States ---


   Mineral                      Log Q/K     Aff, kcal  State

AlF3                             -5.939      -8.103
Anglesite                        -4.894      -6.677
Anhydrite                        -1.995      -2.722
BaZrO3                           69.276      94.512   ssatd
Barite                           -2.765      -3.772
Bassanite                        -2.640      -3.602
Boric_acid                       -4.749      -6.478
CaSO4:0.5H2O(beta)               -2.808      -3.831
CaZrO3                          129.740     177.003   ssatd
Celestite                        -7.194      -9.815
```

Chalcedony	-0.271	-0.370	
Coesite	-0.810	-1.105	
CrO2	-0.910	-1.242	
Cristobalite(alpha)	-0.551	-0.751	
Cristobalite(beta)	-0.994	-1.356	
Crocoite	-4.590	-6.262	
Epsomite	-4.991	-6.809	
Fe(OH)3	-5.602	-7.642	
FeF3	-2.350	-3.206	
Fluorite	-4.241	-5.786	
Goethite	-0.480	-0.655	
Gypsum	-1.820	-2.482	
Hematite	0.000	0.000	satd
Hexahydrite	-5.226	-7.130	
Ice	-0.139	-0.190	
Jarosite	-5.327	-7.267	
Kieserite	-6.684	-9.120	
Manganite	-4.458	-6.082	
Mercallite	-6.968	-9.507	
Mirabilite	-6.853	-9.349	
MnHPO4	0.001	0.001	ssatd
MnO2(gamma)	-1.517	-2.069	
Morenosite	-2.696	-3.678	
NiSO4:6H2O(alpha)	-2.702	-3.687	
Nontronite-Ca	-3.459	-4.719	
Nontronite-H	-2.526	-3.446	
Nontronite-K	-3.846	-5.247	
Nontronite-Mg	-3.528	-4.813	
Nontronite-Na	-3.793	-5.175	
Pentahydrite	-5.566	-7.593	
Pyrolusite	0.001	0.002	ssatd
Quartz	0.000	0.000	satd
Rutile	0.000	0.000	satd
Sellaite	-5.544	-7.563	
Shcherbinaite	-2.886	-3.937	
SiO2(am)	-1.286	-1.754	
SrZrO3	106.135	144.799	ssatd
Starkeyite	-5.953	-8.121	
Strengite	-1.902	-2.595	
Tridymite	-0.171	-0.234	
fix CO2(g)	0.000	0.000	satd
fix O2(g)	0.000	0.000	satd

--- Summary of Solid Solutions ---

--- Carbonate-Calcite ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Calcite	5.6760E-03	-2.2460	0.0000	-2.2460
Magnesite	4.5631E-04	-3.3407	0.0000	-3.3407
Rhodochrosite	9.9387E-01	-0.0027	0.0000	-0.0027
Siderite	1.2655E-08	-7.8978	0.0000	-7.8978
Smithsonite	5.2901E-08	-7.2765	0.0000	-7.2765
Strontianite	2.2201E-07	-6.6536	0.0000	-6.6536

Mineral	Log Q/K	Aff, kcal	State
Carbonate-Calcite	-10.765	-14.687	

Calcite	-10.765	-14.687
Magnesite	-10.765	-14.687
Rhodochrosite	-10.765	-14.687
Siderite	-10.765	-14.687
Smithsonite	-10.765	-14.687
Strontianite	-10.765	-14.687

--- Clinoptilolite-hy-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-hy-Ca	9.9761E-01	-0.0010	0.0000	-0.0010
Clinoptilolite-hy-Cs	6.6663E-23	-22.1761	0.0000	-22.1761
Clinoptilolite-hy-K	7.9975E-04	-3.0970	0.0000	-3.0970
Clinoptilolite-hy-Na	1.5860E-03	-2.7997	0.0000	-2.7997
Clinoptilolite-hy-Sr	5.5976E-12	-11.2520	0.0000	-11.2520

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-hy-ss	-56.043	-76.458	
Clinoptilolite-hy-Ca	-56.043	-76.458	
Clinoptilolite-hy-Cs	-56.043	-76.458	
Clinoptilolite-hy-K	-56.043	-76.458	
Clinoptilolite-hy-Na	-56.043	-76.458	
Clinoptilolite-hy-Sr	-56.043	-76.458	

--- Clinoptilolite-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-Ca	7.7953E-01	-0.1082	-0.2661	-0.3743
Clinoptilolite-Cs	3.0302E-07	-6.5185	-16.0356	-22.5541
Clinoptilolite-K	9.9063E-02	-1.0041	-2.4701	-3.4741
Clinoptilolite-NH4	1.0245E-51	-50.9895	-125.4342	-176.4237
Clinoptilolite-Na	1.2097E-01	-0.9173	-2.2566	-3.1740
Clinoptilolite-Sr	4.3702E-04	-3.3595	-8.2644	-11.6239

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-ss	-55.670	-75.950	
Clinoptilolite-Ca	-55.670	-75.950	
Clinoptilolite-Cs	-55.670	-75.950	
Clinoptilolite-K	-55.670	-75.950	
Clinoptilolite-NH4	-55.670	-75.950	
Clinoptilolite-Na	-55.670	-75.950	
Clinoptilolite-Sr	-55.670	-75.950	

--- Saponite-tri ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Saponite-Ca	1.4850E-03	-2.8283	1.8950	-0.9333
Saponite-H	9.9736E-01	-0.0011	0.0008	-0.0004
Saponite-K	9.9431E-05	-4.0025	2.6817	-1.3208
Saponite-Mg	9.1415E-04	-3.0390	2.0361	-1.0029
Saponite-Na	1.4395E-04	-3.8418	2.5740	-1.2678

Mineral	Log Q/K	Aff, kcal	State
Saponite-tri	-42.003	-57.304	
Saponite-Ca	-42.003	-57.304	
Saponite-H	-42.003	-57.304	
Saponite-K	-42.003	-57.304	
Saponite-Mg	-42.003	-57.304	
Saponite-Na	-42.003	-57.304	

--- Smectite-di ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Beidellite-Ca	1.8196E-62	-61.7400	41.3658	-20.3742
Beidellite-K	1.2192E-63	-62.9139	42.1523	-20.7616
Beidellite-Mg	1.1201E-62	-61.9507	41.5070	-20.4437
Beidellite-Na	1.7639E-63	-62.7535	42.0449	-20.7087
Montmor-Ca	1.4238E-54	-53.8466	36.0772	-17.7694
Montmor-K	1.5580E-55	-54.8074	36.7210	-18.0864
Montmor-Mg	1.4244E-54	-53.8464	36.0771	-17.7693
Montmor-Na	2.1982E-55	-54.6579	36.6208	-18.0371
Nontronite-Ca	5.6180E-01	-0.2504	0.1678	-0.0826
Nontronite-K	3.7644E-02	-1.4243	0.9543	-0.4700
Nontronite-Mg	3.4609E-01	-0.4608	0.3087	-0.1521
Nontronite-Na	5.4461E-02	-1.2639	0.8468	-0.4171

Mineral	Log Q/K	Aff, kcal	State
Smectite-di	-3.376	-4.606	
Beidellite-Ca	-3.376	-4.606	
Beidellite-K	-3.376	-4.606	
Beidellite-Mg	-3.376	-4.606	
Beidellite-Na	-3.376	-4.606	
Montmor-Ca	-3.376	-4.606	
Montmor-K	-3.376	-4.606	
Montmor-Mg	-3.376	-4.606	
Montmor-Na	-3.376	-4.606	
Nontronite-Ca	-3.376	-4.606	
Nontronite-K	-3.376	-4.606	
Nontronite-Mg	-3.376	-4.606	
Nontronite-Na	-3.376	-4.606	

--- Lanthanide hydroxide ---

Ideal solution

Component	x	Log x	Log lambda	Log activity

La(OH)3	1.2821E-05	-4.8921	0.0000	-4.8921
Ce(OH)3	3.7085E-15	-14.4308	0.0000	-14.4308
Nd(OH)3(c)	3.4706E-01	-0.4596	0.0000	-0.4596
Gd(OH)3	5.8565E-01	-0.2324	0.0000	-0.2324
Sm(OH)3	6.7283E-02	-1.1721	0.0000	-1.1721

Mineral	Log Q/K	Aff, kcal	State
Lanthanide hydroxide	-24.636	-33.611	
La(OH)3	-24.636	-33.611	
Ce(OH)3	-24.636	-33.611	
Nd(OH)3(c)	-24.636	-33.611	
Gd(OH)3	-24.636	-33.611	
Sm(OH)3	-24.636	-33.611	

--- Rhabdophane-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaPO4:H2O	4.1190E-01	-0.3852	0.0000	-0.3852
CePO4:H2O	3.7677E-11	-10.4239	0.0000	-10.4239
NdPO4:H2O	2.2248E-01	-0.6527	0.0000	-0.6527
GdPO4:H2O	1.4946E-01	-0.8255	0.0000	-0.8255
SmPO4:H2O	2.1617E-01	-0.6652	0.0000	-0.6652

Mineral	Log Q/K	Aff, kcal	State
Rhabdophane-ss	-9.762	-13.318	
LaPO4:H2O	-9.762	-13.318	
CePO4:H2O	-9.762	-13.318	
NdPO4:H2O	-9.762	-13.318	
GdPO4:H2O	-9.762	-13.318	
SmPO4:H2O	-9.762	-13.318	

--- Lanthanide fluoride ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaF3:0.5H2O	5.7244E-01	-0.2423	0.0000	-0.2423
CeF3:0.5H2O	8.2989E-11	-10.0810	0.0000	-10.0810
NdF3:0.5H2O	3.8925E-01	-0.4098	0.0000	-0.4098
GdF3:0.5H2O	8.2692E-03	-2.0825	0.0000	-2.0825
SmF3:0.5H2O	3.0042E-02	-1.5223	0.0000	-1.5223

Mineral	Log Q/K	Aff, kcal	State
Lanthanide fluoride	-11.900	-16.235	
LaF3:0.5H2O	-11.900	-16.235	
CeF3:0.5H2O	-11.900	-16.235	
NdF3:0.5H2O	-11.900	-16.235	
GdF3:0.5H2O	-11.900	-16.235	

SmF3:0.5H2O	-11.900	-16.235

--- Summary of Gases ---

Gas	Fugacity	Log fugacity
Al(g)	3.5609-200	-199.4484
B(g)	8.5659-204	-203.0672
BF3(g)	2.6100E-24	-23.5834
C(g)	3.0917-190	-189.5098
CH4(g)	3.5240-146	-145.4530
CO(g)	6.0395E-49	-48.2190
CO2(g)	3.1623E-04	-3.5000
Ca(g)	7.2619-164	-163.1389
Chlorine	3.5742E-17	-16.4468
Cs(g)	3.5230E-89	-88.4531
Cu(g)	7.6181E-93	-92.1182
Fluorine	1.1568E-72	-71.9367
H2(g)	6.1104E-42	-41.2139
H2O(g)	2.5958E-02	-1.5857
H2S(g)	2.2843-130	-129.6412
HCl(g)	7.3312E-13	-12.1348
HF(g)	4.7073E-09	-8.3272
K(g)	2.2789E-83	-82.6423
Li(g)	7.8357-103	-102.1059
Mg(g)	1.0954-141	-140.9604
Nitrogen	2.6116E-08	-7.5831
NH3(g)	1.8610E-63	-62.7302
NO(g)	5.0886E-20	-19.2934
NO2(g)	3.4794E-14	-13.4585
Na(g)	1.8255E-81	-80.7386
O2(g)	2.0999E-01	-0.6778
Pb(g)	7.6608E-81	-80.1157
S2(g)	3.1161-203	-202.5064
SO2(g)	4.0475E-43	-42.3928
Si(g)	4.2257-221	-220.3741
SiF4(g)	2.1674E-18	-17.6641
Ti(g)	3.8019-231	-230.4200
TiCl4(g)	9.6907E-62	-61.0136
U(g)	1.0218-304	-303.9906
U2Cl10(g)	4.7764-202	-201.3209
U2Cl8(g)	4.1431-216	-215.3827
U2F10(g)	7.5332-121	-120.1230
UCl(g)	6.6780-255	-254.1754
UCl2(g)	1.3057-203	-202.8842
UCl3(g)	5.5914-150	-149.2525
UCl4(g)	1.2966-113	-112.8872
UCl5(g)	1.5470-114	-113.8105
UCl6(g)	3.4292-110	-109.4648
UF(g)	9.1126-241	-240.0404
UF2(g)	6.0274-195	-194.2199
UF3(g)	9.8111-143	-142.0083
UF4(g)	2.3572E-87	-86.6276
UF5(g)	2.5941E-73	-72.5860
UF6(g)	2.8111E-73	-72.5511
UO(g)	8.0697-220	-219.0931
UO2(g)	1.4951-135	-134.8253
UO2Cl2(g)	2.3331E-71	-70.6321
UO2F2(g)	7.8132E-61	-60.1072
UO3(g)	1.0997E-82	-81.9587

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UOF4(g)                    7.0243E-65    -64.1534
Zn(g)                      1.2852E-90    -89.8910



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Stepping to zi=  2.5119E-04, delzi=  9.2699E-05, nord= 6
  time =  2.4227E+00 d, dltime =  8.9409E-01 d
Steps completed =    48, iter =  8, ncorr = 0
Most rapidly changing is zvclg1(Al+++                  ) =     -6.7344

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                    Reaction progress        =  2.51188643150945E-04
                    Log of reaction progress =      -3.6000000



                    Time =  2.093E+05 sec
                         =  2.423E+00 days
                         =  6.633E-03 years

                    Log sec =        5.321
                    Log days =       0.384
                    Log years =     -2.178

                    Temperature    =     25.000 degrees C
                    total pressure =      1.013 bars


Step size is limited by the print requirement


                              --- Reactant Summary ---


    Reactant                  Moles     Delta moles    Mass, g    Delta Mass, g

 Tuff                      1.0000E+02   2.5119E-04   2.0586E+03   5.1711E-03


               Current total mass =  2.05864E+03 grams
               Delta total mass   =  5.17109E-03 grams
               Delta total volume =      0.00000 cc


    Reactant                Rel. Rate      Rate         Rate
                             mol/mol       mol/s      mol/s/cm2

 Tuff                      1.0000E+00   1.2000E-09   2.5000E-15


    Reactant                  Affinity   Surface Area
                              kcal/mol     mol/s/cm2

 Tuff                       999.00000   4.8000E+05
```

Reactant Rate Constants, mol/s/cm2

Tuff

Forward 2.5000E-15

Affinity of the overall irreversible reaction= 0.000 kcal
Contributions from irreversible reactions
with no thermodynamic data are not included

--- Element Totals for the Aqueous Solution ---

Element	mg/kg soln.	Molality	Moles
O	8.865398E+05	5.561111E+01	5.559510E+01
Al	3.876279E-01	1.441834E-05	1.441419E-05
B	1.334827E-01	1.239157E-05	1.238800E-05
Ba	1.368718E-05	1.000288E-10	1.000000E-10
Ca	1.297765E+01	3.249802E-04	3.248867E-04
Ce	1.396505E-19	1.000287E-24	9.999994E-25
Cl	7.116505E+00	2.014580E-04	2.014000E-04
Cr	2.996349E+02	5.783472E-03	5.781807E-03
Cs	1.324649E-05	1.000288E-10	1.000000E-10
Cu	6.650212E-10	1.050302E-14	1.050000E-14
F	2.172840E+00	1.147830E-04	1.147500E-04
Fe	8.819163E-01	1.584873E-05	1.584417E-05
Gd	1.567287E-09	1.000288E-14	1.000000E-14
H	1.115155E+05	1.110370E+02	1.110050E+02
C	1.267578E-01	1.059163E-05	1.058858E-05
P	7.325972E+00	2.373768E-04	2.373085E-04
K	5.234504E+00	1.343646E-04	1.343259E-04
La	1.384450E-09	1.000288E-14	1.000000E-14
Li	6.917992E-07	1.000288E-10	1.000000E-10
Mg	2.010955E+00	8.303739E-05	8.301349E-05
Mn	3.250963E+01	5.938897E-04	5.937188E-04
Mo	2.179383E+02	2.279822E-03	2.279166E-03
N	1.982364E+00	1.420409E-04	1.420000E-04
Na	4.578583E+01	1.998773E-03	1.998198E-03
Nd	1.437619E-09	1.000288E-14	1.000000E-14
Ni	7.502080E+02	1.282876E-02	1.282506E-02
Pb	2.065132E-05	1.000288E-10	1.000000E-10
Pu	2.431912E-09	1.000288E-14	1.000000E-14
S	5.507387E+02	1.723725E-02	1.723228E-02
Si	2.802948E+00	1.001613E-04	1.001325E-04
Sm	1.498616E-09	1.000288E-14	1.000000E-14
Sr	8.732955E-06	1.000288E-10	1.000000E-10
Ti	1.078260E-05	2.260145E-10	2.259494E-10
U	2.372399E-09	1.000288E-14	1.000000E-14
V	4.768063E+00	9.393714E-05	9.391010E-05
Zn	6.517324E-06	1.000288E-10	1.000000E-10
Zr	9.092160E-16	1.000288E-20	1.000000E-20

Single ion activities and activity coefficients are here defined
with respect to the modified NBS pH scale

	pH	Eh	pe
modified NBS pH scale	2.0416	1.0983	1.8565E+01

rational pH scale 1.9651 1.1028 1.8642E+01

pHCl = 5.8297

Oxygen fugacity = 2.09991E-01
Log oxygen fugacity = -0.67780

Activity of water = 0.99924
Log activity of water = -0.00033

Ionic strength = 5.881480E-02 molal
Sum of molalities = 0.0494431452102
Osmotic coefficient = 0.85795

Mass of solution = 1.003326 kg
Mass of solutes = 0.003614 kg
Conc. of solutes = 0.360177 per cent (w/w)

Moles of solvent H2O = 5.54925E+01
Mass of solvent H2O = 9.99712E-01 kg

Species	Molality	Log molality	Log gamma	Log activity
H+	1.0836E-02	-1.9651	-0.0765	-2.0416
Ni++	1.0208E-02	-1.9911	-0.3466	-2.3377
SO4--	9.7821E-03	-2.0096	-0.3603	-2.3698
HSO4-	4.4928E-03	-2.3475	-0.0849	-2.4324
HCrO4-	4.0507E-03	-2.3925	-0.0849	-2.4774
NiSO4(aq)	2.6194E-03	-2.5818	0.0000	-2.5818
MoO4--	2.2798E-03	-2.6421	-0.3492	-2.9913
Na+	1.9455E-03	-2.7110	-0.0983	-2.8093
Cr2O7--	8.6351E-04	-3.0637	-0.3603	-3.4240
Mn++	4.1401E-04	-3.3830	-0.3466	-3.7296
O2(aq)	2.6166E-04	-3.5823	0.0062	-3.5761
Ca++	2.6030E-04	-3.5845	-0.3466	-3.9311
Cl-	2.0085E-04	-3.6971	-0.0909	-3.7881
MnSO4(aq)	1.7926E-04	-3.7465	0.0000	-3.7465
NO3-	1.4021E-04	-3.8532	-0.0909	-3.9441
K+	1.3031E-04	-3.8850	-0.1044	-3.9894
H3PO4(aq)	1.1912E-04	-3.9240	0.0000	-3.9240
H2PO4-	1.0785E-04	-3.9672	-0.0849	-4.0521
SiO2(aq)	1.0016E-04	-3.9993	0.0000	-3.9993
HF(aq)	8.3297E-05	-4.0794	0.0000	-4.0794
VO2+	7.7360E-05	-4.1115	-0.0983	-4.2098
CaSO4(aq)	6.4588E-05	-4.1898	0.0000	-4.1898
Mg++	5.4108E-05	-4.2667	-0.3139	-4.5807
NaSO4-	5.3182E-05	-4.2742	-0.0849	-4.3591
MgSO4(aq)	2.8921E-05	-4.5388	0.0000	-4.5388
B(OH)3(aq)	1.2392E-05	-4.9069	0.0000	-4.9069
VO2SO4-	1.2168E-05	-4.9148	-0.0849	-4.9997
CO2(aq)	1.0591E-05	-4.9751	0.0062	-4.9689
FeHPO4+	9.8263E-06	-5.0076	-0.0983	-5.1060
AlF2+	7.6694E-06	-5.1152	-0.0983	-5.2136
F-	7.6208E-06	-5.1180	-0.0878	-5.2058
AlF++	5.8664E-06	-5.2316	-0.3761	-5.6078
KSO4-	4.0294E-06	-5.3948	-0.0849	-5.4796
Fe+++	3.9580E-06	-5.4025	-0.6676	-6.0701
Cr+++	3.9477E-06	-5.4037	-0.6676	-6.0713

VO(OH)3(aq)	3.3974E-06	-5.4688	0.0000	-5.4688
NiNO3+	1.6464E-06	-5.7835	-0.0983	-5.8818
H2CrO4(aq)	1.4507E-06	-5.8384	0.0000	-5.8384
FeOH++	1.4365E-06	-5.8427	-0.3761	-6.2188
VO2F(aq)	8.5969E-07	-6.0657	0.0000	-6.0657
AlF3(aq)	4.7928E-07	-6.3194	0.0000	-6.3194
MnH2PO4+	4.6419E-07	-6.3333	-0.0983	-6.4317
FeSO4+	3.8546E-07	-6.4140	-0.0983	-6.5124
HCl(aq)	3.1644E-07	-6.4997	0.0000	-6.4997
CrO4--	2.6924E-07	-6.5699	-0.3603	-6.9301
AlSO4+	2.1706E-07	-6.6634	-0.0983	-6.7618
Al+++	1.8436E-07	-6.7343	-0.6676	-7.4019
FeF++	1.7245E-07	-6.7633	-0.3761	-7.1395
NiCl+	9.4714E-08	-7.0236	-0.0983	-7.1219
CaNO3+	8.3767E-08	-7.0769	-0.0983	-7.1753
MnCl+	7.6207E-08	-7.1180	-0.0983	-7.2164
HPO3F-	7.5700E-08	-7.1209	-0.0849	-7.2058
H2VO4-	7.3365E-08	-7.1345	-0.0849	-7.2194
CrO3Cl-	6.4677E-08	-7.1892	-0.0849	-7.2741
HNO3(aq)	5.1488E-08	-7.2883	0.0000	-7.2883
VO2(OH)2-	4.5466E-08	-7.3423	-0.0849	-7.4272
NaCl(aq)	4.2231E-08	-7.3744	0.0000	-7.3744
MnNO3+	4.2132E-08	-7.3754	-0.0983	-7.4737
MnF+	3.9168E-08	-7.4071	-0.0983	-7.5054
H2SO4(aq)	3.3572E-08	-7.4740	0.0000	-7.4740
VO2HPO4-	3.0849E-08	-7.5108	-0.0849	-7.5956
Fe(SO4)2-	3.0818E-08	-7.5112	-0.0849	-7.5961
Fe(OH)2+	2.7595E-08	-7.5592	-0.0983	-7.6575
KHSO4(aq)	2.5864E-08	-7.5873	0.0000	-7.5873
CrOH++	2.2191E-08	-7.6538	-0.3761	-8.0300
H2F2(aq)	1.8753E-08	-7.7269	0.0000	-7.7269
FeF2+	9.2546E-09	-8.0336	-0.0983	-8.1320
CaCl+	4.8257E-09	-8.3164	-0.0983	-8.4148
MgF+	4.6160E-09	-8.3357	-0.0983	-8.4341
CaF+	4.3964E-09	-8.3569	-0.0983	-8.4552
MgCl+	3.9330E-09	-8.4053	-0.0983	-8.5036
FeNO3++	2.3006E-09	-8.6382	-0.3761	-9.0143
VO2F2-	1.8768E-09	-8.7266	-0.0849	-8.8115
HPO4--	1.3946E-09	-8.8556	-0.3603	-9.2158
PO3F--	1.2491E-09	-8.9034	-0.3603	-9.2636
NaF(aq)	9.7112E-10	-9.0127	0.0000	-9.0127
AlF4-	9.1130E-10	-9.0403	-0.0849	-9.1252
AlHPO4+	7.5962E-10	-9.1194	-0.0983	-9.2178
HCO3-	6.4954E-10	-9.1874	-0.0849	-9.2723
KCl(aq)	5.3446E-10	-9.2721	0.0000	-9.2721
MnHPO4(aq)	4.3112E-10	-9.3654	0.0000	-9.3654
VO++	2.7636E-10	-9.5585	-0.3761	-9.9347
CrCl++	2.3324E-10	-9.6322	-0.3761	-10.0083
Ti(OH)4(aq)	2.2601E-10	-9.6459	0.0000	-9.6459
HF2-	1.5223E-10	-9.8175	-0.0849	-9.9024
VOSO4(aq)	1.4980E-10	-9.8245	0.0000	-9.8245
Mn+++	1.1738E-10	-9.9304	-0.8158	-10.7462
AlOH++	1.1440E-10	-9.9416	-0.3761	-10.3177
Cs+	1.0002E-10	-9.9999	-0.1077	-10.1076

--- Summary of Instantaneously Precipitated Solid Phases ---
(defined by derivatives)

--- Theoretical Rock Composition ---
g/kg

O 5.271534E+01

Fe	9.894386E-01
C	4.156803E-01
Si	4.580456E+01
Ti	7.498429E-02

--- Oxide Percentages ---

Oxide	Theoretical rock

Total = 0.0000

Phase/end-member		d mol/d zi	d grams/d zi	d vol (cc)/d zi
Hematite		1.4311E-03	2.2853E-01	4.3324E-02
Quartz		2.6347E-01	1.5830E+01	5.9776E+00
Rutile		2.5300E-04	2.0209E-02	4.7615E-03
fix	CO2(g)	5.5909E-03	2.4606E-01	0.0000E+00
fix	O2(g)	-5.3219E-03	-1.7029E-01	0.0000E+00

--- Summary of Solid Phases (E.S.+P.R.S.) ---

Phase/End-member		Log moles	Moles	Mass, g	Volume, cc
Hematite		-6.4453	3.5866E-07	5.7275E-05	1.0858E-05
Quartz		-4.1793	6.6181E-05	3.9764E-03	1.5015E-03
Rutile		-7.1977	6.3425E-08	5.0663E-06	1.1937E-06
fix	CO2(g)	2.3010	2.0000E+02	8.8020E+03	0.0000E+00
fix	O2(g)	2.3010	2.0000E+02	6.3998E+03	0.0000E+00

	Mass, grams	Volume, cc
Created	1.520172E+04	1.513558E-03
Destroyed	5.171087E-03	0.000000E+00
Net	1.520172E+04	1.513558E-03

Warning-- these volume totals may be incomplete because
of missing partial molar volume data in the data base

--- Summary of Pure Mineral Saturation States ---

Mineral	Log Q/K	Aff, kcal	State
AlF3	-5.811	-7.927	
Anglesite	-4.894	-6.677	
Anhydrite	-1.995	-2.721	
BaZrO3	69.295	94.539	ssatd
Barite	-2.765	-3.772	
Bassanite	-2.640	-3.601	
Boric_acid	-4.749	-6.478	
CaSO4:0.5H2O(beta)	-2.808	-3.831	
CaZrO3	129.760	177.030	ssatd
Celestite	-7.194	-9.815	
Chalcedony	-0.271	-0.370	
Coesite	-0.810	-1.105	
CrO2	-0.910	-1.242	
Cristobalite(alpha)	-0.551	-0.751	

Cristobalite(beta)	-0.994	-1.356	
Crocoite	-4.590	-6.261	
Epsomite	-4.991	-6.808	
Fe(OH)3	-5.602	-7.642	
FeF3	-2.449	-3.341	
Fluorite	-4.306	-5.874	
Goethite	-0.480	-0.655	
Gypsum	-1.819	-2.482	
Hematite	0.000	0.000	satd
Hexahydrite	-5.226	-7.129	
Ice	-0.139	-0.190	
Jarosite	-5.321	-7.259	
Kieserite	-6.684	-9.119	
Manganite	-4.457	-6.081	
Mercallite	-6.962	-9.498	
Mirabilite	-6.852	-9.348	
MnHPO4	0.002	0.002	ssatd
MnO2(gamma)	-1.516	-2.068	
Morenosite	-2.696	-3.678	
NiSO4:6H2O(alpha)	-2.702	-3.687	
Nontronite-Ca	-3.383	-4.616	
Nontronite-H	-2.451	-3.343	
Nontronite-K	-3.769	-5.142	
Nontronite-Mg	-3.453	-4.711	
Nontronite-Na	-3.718	-5.072	
Pentahydrite	-5.565	-7.592	
Pyrolusite	0.002	0.003	ssatd
Quartz	0.000	0.000	satd
Rutile	0.000	0.000	satd
Sellaite	-5.608	-7.651	
Shcherbinaite	-2.885	-3.936	
SiO2(am)	-1.286	-1.754	
SrZrO3	106.154	144.825	ssatd
Starkeyite	-5.952	-8.120	
Strengite	-1.902	-2.595	
Tridymite	-0.172	-0.234	
fix CO2(g)	0.000	0.000	satd
fix O2(g)	0.000	0.000	satd

--- Summary of Solid Solutions ---

--- Carbonate-Calcite ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Calcite	5.6793E-03	-2.2457	0.0000	-2.2457
Magnesite	4.5693E-04	-3.3401	0.0000	-3.3401
Rhodochrosite	9.9386E-01	-0.0027	0.0000	-0.0027
Siderite	1.2633E-08	-7.8985	0.0000	-7.8985
Smithsonite	5.2902E-08	-7.2765	0.0000	-7.2765
Strontianite	2.2201E-07	-6.6536	0.0000	-6.6536

Mineral	Log Q/K	Aff, kcal	State
Carbonate-Calcite	-10.765	-14.686	
Calcite	-10.765	-14.686	
Magnesite	-10.765	-14.686	
Rhodochrosite	-10.765	-14.686	
Siderite	-10.765	-14.686	

Smithsonite	-10.765	-14.686
Strontianite	-10.765	-14.686

--- Clinoptilolite-hy-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-hy-Ca	9.9757E-01	-0.0011	0.0000	-0.0011
Clinoptilolite-hy-Cs	6.6597E-23	-22.1765	0.0000	-22.1765
Clinoptilolite-hy-K	8.4156E-04	-3.0749	0.0000	-3.0749
Clinoptilolite-hy-Na	1.5905E-03	-2.7985	0.0000	-2.7985
Clinoptilolite-hy-Sr	5.5915E-12	-11.2525	0.0000	-11.2525

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-hy-ss	-55.257	-75.386	
Clinoptilolite-hy-Ca	-55.257	-75.386	
Clinoptilolite-hy-Cs	-55.257	-75.386	
Clinoptilolite-hy-K	-55.257	-75.386	
Clinoptilolite-hy-Na	-55.257	-75.386	
Clinoptilolite-hy-Sr	-55.257	-75.386	

--- Clinoptilolite-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-Ca	7.7831E-01	-0.1088	-0.2678	-0.3766
Clinoptilolite-Cs	3.0246E-07	-6.5193	-16.0376	-22.5569
Clinoptilolite-K	1.0038E-01	-0.9984	-2.4560	-3.4543
Clinoptilolite-NH4	1.0208E-51	-50.9911	-125.4380	-176.4291
Clinoptilolite-Na	1.2088E-01	-0.9177	-2.2574	-3.1751
Clinoptilolite-Sr	4.3620E-04	-3.3603	-8.2664	-11.6267

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-ss	-54.883	-74.875	
Clinoptilolite-Ca	-54.883	-74.875	
Clinoptilolite-Cs	-54.883	-74.875	
Clinoptilolite-K	-54.883	-74.875	
Clinoptilolite-NH4	-54.883	-74.875	
Clinoptilolite-Na	-54.883	-74.875	
Clinoptilolite-Sr	-54.883	-74.875	

--- Saponite-tri ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Saponite-Ca	1.4866E-03	-2.8278	1.8946	-0.9332
Saponite-H	9.9735E-01	-0.0012	0.0008	-0.0004

Saponite-K	1.0102E-04	-3.9956	2.6770	-1.3185
Saponite-Mg	9.1554E-04	-3.0383	2.0357	-1.0026
Saponite-Na	1.4423E-04	-3.8409	2.5734	-1.2675

Mineral	Log Q/K	Aff, kcal	State
Saponite-tri	-41.924	-57.197	
Saponite-Ca	-41.924	-57.197	
Saponite-H	-41.924	-57.197	
Saponite-K	-41.924	-57.197	
Saponite-Mg	-41.924	-57.197	
Saponite-Na	-41.924	-57.197	

--- Smectite-di ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Beidellite-Ca	4.3308E-61	-60.3634	40.4435	-19.9199
Beidellite-K	2.9449E-62	-61.5309	41.2257	-20.3052
Beidellite-Mg	2.6671E-61	-60.5740	40.5845	-19.9894
Beidellite-Na	4.2018E-62	-61.3766	41.1223	-20.2543
Montmor-Ca	1.1939E-53	-52.9230	35.4584	-17.4646
Montmor-K	1.3259E-54	-53.8775	36.0979	-17.7796
Montmor-Mg	1.1950E-53	-52.9226	35.4582	-17.4645
Montmor-Na	1.8449E-54	-53.7340	36.0018	-17.7322
Nontronite-Ca	5.6139E-01	-0.2507	0.1680	-0.0827
Nontronite-K	3.8174E-02	-1.4182	0.9502	-0.4680
Nontronite-Mg	3.4597E-01	-0.4610	0.3088	-0.1521
Nontronite-Na	5.4466E-02	-1.2639	0.8468	-0.4171

Mineral	Log Q/K	Aff, kcal	State
Smectite-di	-3.301	-4.503	
Beidellite-Ca	-3.301	-4.503	
Beidellite-K	-3.301	-4.503	
Beidellite-Mg	-3.301	-4.503	
Beidellite-Na	-3.301	-4.503	
Montmor-Ca	-3.301	-4.503	
Montmor-K	-3.301	-4.503	
Montmor-Mg	-3.301	-4.503	
Montmor-Na	-3.301	-4.503	
Nontronite-Ca	-3.301	-4.503	
Nontronite-K	-3.301	-4.503	
Nontronite-Mg	-3.301	-4.503	
Nontronite-Na	-3.301	-4.503	

--- Lanthanide hydroxide ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
La(OH)3	1.2816E-05	-4.8923	0.0000	-4.8923
Ce(OH)3	3.7077E-15	-14.4309	0.0000	-14.4309
Nd(OH)3(c)	3.4699E-01	-0.4597	0.0000	-0.4597

Gd(OH)3	5.8573E-01	-0.2323	0.0000	-0.2323
Sm(OH)3	6.7269E-02	-1.1722	0.0000	-1.1722

Mineral	Log Q/K	Aff, kcal	State
Lanthanide hydroxide	-24.635	-33.609	
La(OH)3	-24.635	-33.609	
Ce(OH)3	-24.635	-33.609	
Nd(OH)3(c)	-24.635	-33.609	
Gd(OH)3	-24.635	-33.609	
Sm(OH)3	-24.635	-33.609	

--- Rhabdophane-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaPO4:H2O	4.1184E-01	-0.3853	0.0000	-0.3853
CePO4:H2O	3.7677E-11	-10.4239	0.0000	-10.4239
NdPO4:H2O	2.2248E-01	-0.6527	0.0000	-0.6527
GdPO4:H2O	1.4951E-01	-0.8253	0.0000	-0.8253
SmPO4:H2O	2.1617E-01	-0.6652	0.0000	-0.6652

Mineral	Log Q/K	Aff, kcal	State
Rhabdophane-ss	-9.761	-13.317	
LaPO4:H2O	-9.761	-13.317	
CePO4:H2O	-9.761	-13.317	
NdPO4:H2O	-9.761	-13.317	
GdPO4:H2O	-9.761	-13.317	
SmPO4:H2O	-9.761	-13.317	

--- Lanthanide fluoride ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaF3:0.5H2O	5.7240E-01	-0.2423	0.0000	-0.2423
CeF3:0.5H2O	8.2995E-11	-10.0809	0.0000	-10.0809
NdF3:0.5H2O	3.8928E-01	-0.4097	0.0000	-0.4097
GdF3:0.5H2O	8.2727E-03	-2.0824	0.0000	-2.0824
SmF3:0.5H2O	3.0044E-02	-1.5222	0.0000	-1.5222

Mineral	Log Q/K	Aff, kcal	State
Lanthanide fluoride	-11.997	-16.368	
LaF3:0.5H2O	-11.997	-16.368	
CeF3:0.5H2O	-11.997	-16.368	
NdF3:0.5H2O	-11.997	-16.368	
GdF3:0.5H2O	-11.997	-16.368	
SmF3:0.5H2O	-11.997	-16.368	

--- Summary of Gases ---

Gas	Fugacity	Log fugacity
Al(g)	6.0084-200	-199.2212
B(g)	8.5659-204	-203.0672
BF3(g)	2.0802E-24	-23.6819
C(g)	3.0917-190	-189.5098
CH4(g)	3.5240-146	-145.4530
CO(g)	6.0395E-49	-48.2190
CO2(g)	3.1623E-04	-3.5000
Ca(g)	7.2785-164	-163.1380
Chlorine	3.5679E-17	-16.4476
Cs(g)	3.5261E-89	-88.4527
Cu(g)	7.6312E-93	-92.1174
Fluorine	9.9447E-73	-72.0024
H2(g)	6.1104E-42	-41.2139
H2O(g)	2.5958E-02	-1.5857
H2S(g)	2.2808-130	-129.6419
HCl(g)	7.3247E-13	-12.1352
HF(g)	4.3645E-09	-8.3601
K(g)	2.3153E-83	-82.6354
Li(g)	7.8425-103	-102.1055
Mg(g)	1.0988-141	-140.9591
Nitrogen	2.6070E-08	-7.5839
NH3(g)	1.8594E-63	-62.7306
NO(g)	5.0842E-20	-19.2938
NO2(g)	3.4763E-14	-13.4589
Na(g)	1.8291E-81	-80.7378
O2(g)	2.0999E-01	-0.6778
Pb(g)	7.6740E-81	-80.1150
S2(g)	3.1065-203	-202.5077
SO2(g)	4.0412E-43	-42.3935
Si(g)	4.2257-221	-220.3741
SiF4(g)	1.6017E-18	-17.7954
Ti(g)	3.8019-231	-230.4200
TiCl4(g)	9.6566E-62	-61.0152
U(g)	1.0291-304	-303.9875
U2Cl10(g)	4.8027-202	-201.3185
U2Cl8(g)	4.1732-216	-215.3795
U2F10(g)	3.5874-121	-120.4452
UCl(g)	6.7199-255	-254.1726
UCl2(g)	1.3127-203	-202.8818
UCl3(g)	5.6167-150	-149.2505
UCl4(g)	1.3013-113	-112.8856
UCl5(g)	1.5513-114	-113.8093
UCl6(g)	3.4356-110	-109.4640
UF(g)	8.5095-241	-240.0701
UF2(g)	5.2186-195	-194.2824
UF3(g)	7.8759-143	-142.1037
UF4(g)	1.7545E-87	-86.7559
UF5(g)	1.7901E-73	-72.7471
UF6(g)	1.7986E-73	-72.7451
UO(g)	8.1276-220	-219.0900
UO2(g)	1.5058-135	-134.8222
UO2Cl2(g)	2.3457E-71	-70.6297
UO2F2(g)	6.7647E-61	-60.1697
UO3(g)	1.1075E-82	-81.9556
UOF4(g)	5.2281E-65	-64.2817
Zn(g)	1.2874E-90	-89.8903

```
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -


Stepping to zi=  3.9811E-04, delzi=  1.4692E-04, nord= 6
  time =  3.8398E+00 d, dltime =  1.4170E+00 d
Steps completed =    49, iter = 13, ncorr = 0
Most rapidly changing is zvclg1(Al+++                   ) =     -6.4678

- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -


                    Reaction progress        =  3.98107170553477E-04
                    Log of reaction progress =      -3.4000000



                    Time =  3.318E+05 sec
                         =  3.840E+00 days
                         =  1.051E-02 years

                    Log sec =        5.521
                    Log days =       0.584
                    Log years =     -1.978

                    Temperature    =     25.000 degrees C
                    total pressure =      1.013 bars


Step size is limited by the print requirement


                              --- Reactant Summary ---


    Reactant                   Moles     Delta moles    Mass, g    Delta Mass, g

 Tuff                       1.0000E+02   3.9811E-04   2.0586E+03   8.1956E-03


               Current total mass =  2.05864E+03 grams
               Delta total mass   =  8.19562E-03 grams
               Delta total volume =      0.00000 cc


    Reactant                Rel. Rate      Rate         Rate
                             mol/mol       mol/s      mol/s/cm2

 Tuff                       1.0000E+00   1.2000E-09   2.5000E-15


    Reactant                   Affinity   Surface Area
                               kcal/mol     mol/s/cm2

 Tuff                        999.00000   4.8000E+05


    Reactant                Rate Constants, mol/s/cm2

 Tuff
                   Forward    2.5000E-15
```

```
     Affinity of the overall irreversible reaction=     0.000 kcal
     Contributions from irreversible reactions
     with no thermodynamic data are not included


   --- Element Totals for the Aqueous Solution ---
```

Element	mg/kg soln.	Molality	Moles
O	8.865394E+05	5.561111E+01	5.559512E+01
Al	5.910302E-01	2.198418E-05	2.197785E-05
B	1.334826E-01	1.239156E-05	1.238800E-05
Ba	1.368717E-05	1.000288E-10	1.000000E-10
Ca	1.298971E+01	3.252825E-04	3.251889E-04
Ce	1.396504E-19	1.000287E-24	9.999994E-25
Cl	7.116500E+00	2.014579E-04	2.014000E-04
Cr	2.996347E+02	5.783471E-03	5.781807E-03
Cs	1.324648E-05	1.000288E-10	1.000000E-10
Cu	6.650208E-10	1.050302E-14	1.050000E-14
F	2.172838E+00	1.147830E-04	1.147500E-04
Fe	8.783408E-01	1.578448E-05	1.577995E-05
Gd	1.567286E-09	1.000288E-14	1.000000E-14
H	1.115154E+05	1.110369E+02	1.110050E+02
C	1.267575E-01	1.059160E-05	1.058856E-05
P	7.326164E+00	2.373832E-04	2.373149E-04
K	5.357942E+00	1.375331E-04	1.374936E-04
La	1.384450E-09	1.000288E-14	1.000000E-14
Li	6.917987E-07	1.000288E-10	1.000000E-10
Mg	2.015409E+00	8.322136E-05	8.319743E-05
Mn	3.251117E+01	5.939181E-04	5.937473E-04
Mo	2.179382E+02	2.279822E-03	2.279166E-03
N	1.982363E+00	1.420409E-04	1.420000E-04
Na	4.586618E+01	2.002282E-03	2.001706E-03
Nd	1.437618E-09	1.000288E-14	1.000000E-14
Ni	7.502075E+02	1.282875E-02	1.282506E-02
Pb	2.065130E-05	1.000288E-10	1.000000E-10
Pu	2.431910E-09	1.000288E-14	1.000000E-14
S	5.507384E+02	1.723724E-02	1.723228E-02
Si	2.802947E+00	1.001613E-04	1.001325E-04
Sm	1.498615E-09	1.000288E-14	1.000000E-14
Sr	8.732949E-06	1.000288E-10	1.000000E-10
Ti	1.078260E-05	2.260146E-10	2.259496E-10
U	2.372397E-09	1.000288E-14	1.000000E-14
V	4.768060E+00	9.393712E-05	9.391010E-05
Zn	6.517320E-06	1.000288E-10	1.000000E-10
Zr	9.092154E-16	1.000288E-20	1.000000E-20

Single ion activities and activity coefficients are here defined
with respect to the modified NBS pH scale

	pH	Eh	pe
modified NBS pH scale	2.0423	1.0982	1.8565E+01
rational pH scale	1.9657	1.1027	1.8641E+01

pHCl = 5.8303

Oxygen fugacity = 2.09991E-01
Log oxygen fugacity = -0.67780

Activity of water = 0.99924
Log activity of water = -0.00033

Ionic strength = 5.882421E-02 molal
Sum of molalities = 0.0494305796583
Osmotic coefficient = 0.85789

Mass of solution = 1.003327 kg
Mass of solutes = 0.003614 kg
Conc. of solutes = 0.360216 per cent (w/w)

Moles of solvent H2O = 5.54925E+01
Mass of solvent H2O = 9.99712E-01 kg

Species	Molality	Log molality	Log gamma	Log activity
H+	1.0821E-02	-1.9657	-0.0765	-2.0423
Ni++	1.0207E-02	-1.9911	-0.3466	-2.3377
SO4--	9.7858E-03	-2.0094	-0.3603	-2.3697
HSO4-	4.4880E-03	-2.3480	-0.0849	-2.4328
HCrO4-	4.0507E-03	-2.3925	-0.0849	-2.4774
NiSO4(aq)	2.6200E-03	-2.5817	0.0000	-2.5817
MoO4--	2.2798E-03	-2.6421	-0.3492	-2.9913
Na+	1.9489E-03	-2.7102	-0.0984	-2.8086
Cr2O7--	8.6353E-04	-3.0637	-0.3603	-3.4240
Mn++	4.1399E-04	-3.3830	-0.3466	-3.7296
O2(aq)	2.6166E-04	-3.5823	0.0062	-3.5761
Ca++	2.6053E-04	-3.5841	-0.3466	-3.9308
Cl-	2.0085E-04	-3.6971	-0.0909	-3.7881
MnSO4(aq)	1.7931E-04	-3.7464	0.0000	-3.7464
NO3-	1.4021E-04	-3.8532	-0.0909	-3.9442
K+	1.3338E-04	-3.8749	-0.1044	-3.9793
H3PO4(aq)	1.1906E-04	-3.9242	0.0000	-3.9242
H2PO4-	1.0795E-04	-3.9668	-0.0849	-4.0517
SiO2(aq)	1.0016E-04	-3.9993	0.0000	-3.9993
VO2+	7.7435E-05	-4.1111	-0.0984	-4.2094
HF(aq)	7.3464E-05	-4.1339	0.0000	-4.1339
CaSO4(aq)	6.4663E-05	-4.1893	0.0000	-4.1893
Mg++	5.4223E-05	-4.2658	-0.3139	-4.5798
NaSO4-	5.3292E-05	-4.2733	-0.0849	-4.3582
MgSO4(aq)	2.8991E-05	-4.5377	0.0000	-4.5377
B(OH)3(aq)	1.2392E-05	-4.9069	0.0000	-4.9069
VO2SO4-	1.2184E-05	-4.9142	-0.0849	-4.9991
AlF2+	1.1055E-05	-4.9564	-0.0984	-5.0548
CO2(aq)	1.0591E-05	-4.9751	0.0062	-4.9689
FeHPO4+	9.8072E-06	-5.0085	-0.0984	-5.1068
AlF++	9.5746E-06	-5.0189	-0.3762	-5.3950
F-	6.7308E-06	-5.1719	-0.0878	-5.2598
KSO4-	4.1257E-06	-5.3845	-0.0849	-5.4694
Fe+++	3.9414E-06	-5.4044	-0.6677	-6.0720
Cr+++	3.9255E-06	-5.4061	-0.6677	-6.0738
VO(OH)3(aq)	3.4056E-06	-5.4678	0.0000	-5.4678
NiNO3+	1.6462E-06	-5.7835	-0.0984	-5.8819
H2CrO4(aq)	1.4487E-06	-5.8390	0.0000	-5.8390
FeOH++	1.4325E-06	-5.8439	-0.3762	-6.2201

VO2F(aq)	7.6002E-07	-6.1192	0.0000	-6.1192
AlF3(aq)	6.1015E-07	-6.2146	0.0000	-6.2146
MnH2PO4+	4.6458E-07	-6.3329	-0.0984	-6.4313
AlSO4+	4.0123E-07	-6.3966	-0.0984	-6.4950
FeSO4+	3.8395E-07	-6.4157	-0.0984	-6.5141
Al+++	3.4070E-07	-6.4676	-0.6677	-7.1353
HCl(aq)	3.1599E-07	-6.5003	0.0000	-6.5003
CrO4--	2.6964E-07	-6.5692	-0.3603	-6.9295
FeF++	1.5167E-07	-6.8191	-0.3762	-7.1953
NiCl+	9.4704E-08	-7.0236	-0.0984	-7.1220
CaNO3+	8.3837E-08	-7.0766	-0.0984	-7.1749
MnCl+	7.6202E-08	-7.1180	-0.0984	-7.2164
H2VO4-	7.3646E-08	-7.1328	-0.0849	-7.2177
HPO3F-	6.6823E-08	-7.1751	-0.0849	-7.2600
CrO3Cl-	6.4584E-08	-7.1899	-0.0849	-7.2748
HNO3(aq)	5.1414E-08	-7.2889	0.0000	-7.2889
VO2(OH)2-	4.5641E-08	-7.3406	-0.0849	-7.4255
NaCl(aq)	4.2304E-08	-7.3736	0.0000	-7.3736
MnNO3+	4.2129E-08	-7.3754	-0.0984	-7.4738
MnF+	3.4592E-08	-7.4610	-0.0984	-7.5594
H2SO4(aq)	3.3488E-08	-7.4751	0.0000	-7.4751
VO2HPO4-	3.0951E-08	-7.5093	-0.0849	-7.5942
Fe(SO4)2-	3.0707E-08	-7.5128	-0.0849	-7.5977
Fe(OH)2+	2.7556E-08	-7.5598	-0.0984	-7.6581
KHSO4(aq)	2.6445E-08	-7.5777	0.0000	-7.5777
CrOH++	2.2097E-08	-7.6557	-0.3762	-8.0318
H2F2(aq)	1.4586E-08	-7.8361	0.0000	-7.8361
FeF2+	7.1883E-09	-8.1434	-0.0984	-8.2417
CaCl+	4.8297E-09	-8.3161	-0.0984	-8.4144
MgF+	4.0854E-09	-8.3888	-0.0984	-8.4871
MgCl+	3.9412E-09	-8.4044	-0.0984	-8.5027
CaF+	3.8862E-09	-8.4105	-0.0984	-8.5088
FeNO3++	2.2909E-09	-8.6400	-0.3762	-9.0162
VO2F2-	1.4654E-09	-8.8340	-0.0849	-8.9189
AlHPO4+	1.4069E-09	-8.8517	-0.0984	-8.9501
HPO4--	1.3979E-09	-8.8545	-0.3603	-9.2148
PO3F--	1.1043E-09	-8.9569	-0.3603	-9.3172
AlF4-	1.0246E-09	-8.9894	-0.0849	-9.0743
NaF(aq)	8.5918E-10	-9.0659	0.0000	-9.0659
HCO3-	6.5048E-10	-9.1868	-0.0849	-9.2717
KCl(aq)	5.4704E-10	-9.2620	0.0000	-9.2620
MnHPO4(aq)	4.3209E-10	-9.3644	0.0000	-9.3644
VO++	2.7624E-10	-9.5587	-0.3762	-9.9349
CrCl++	2.3192E-10	-9.6347	-0.3762	-10.0108
Ti(OH)4(aq)	2.2601E-10	-9.6459	0.0000	-9.6459
AlOH++	2.1170E-10	-9.6743	-0.3762	-10.0504
VOSO4(aq)	1.4978E-10	-9.8245	0.0000	-9.8245
HF2-	1.1858E-10	-9.9260	-0.0849	-10.0109
Mn+++	1.1721E-10	-9.9310	-0.8159	-10.7469
Cs+	1.0002E-10	-9.9999	-0.1077	-10.1076

--- Summary of Instantaneously Precipitated Solid Phases ---
(defined by derivatives)

--- Theoretical Rock Composition ---
g/kg

O	5.280648E+01
Fe	9.905265E-01
Si	4.616262E+01
Ti	7.557046E-02

--- Oxide Percentages ---

Oxide Theoretical rock

Total = 0.0000

Phase/end-member	d mol/d zi	d grams/d zi	d vol (cc)/d zi
Hematite	1.4215E-03	2.2701E-01	4.3036E-02
Quartz	2.6347E-01	1.5830E+01	5.9776E+00
Rutile	2.5300E-04	2.0209E-02	4.7615E-03
fix CO2(g)	-4.6979E-04	-2.0675E-02	0.0000E+00
fix O2(g)	-8.5461E-04	-2.7346E-02	0.0000E+00

--- Summary of Solid Phases (E.S.+P.R.S.) ---

Phase/End-member	Log moles	Moles	Mass, g	Volume, cc
Hematite	-6.2456	5.6803E-07	9.0710E-05	1.7197E-05
Quartz	-3.9793	1.0489E-04	6.3022E-03	2.3797E-03
Rutile	-6.9974	1.0060E-07	8.0354E-06	1.8932E-06
fix CO2(g)	2.3010	2.0000E+02	8.8020E+03	0.0000E+00
fix O2(g)	2.3010	2.0000E+02	6.3998E+03	0.0000E+00

	Mass, grams	Volume, cc
Created	1.520173E+04	2.398816E-03
Destroyed	8.195620E-03	0.000000E+00
Net	1.520172E+04	2.398816E-03

Warning-- these volume totals may be incomplete because of missing partial molar volume data in the data base

--- Summary of Pure Mineral Saturation States ---

Mineral	Log Q/K	Aff, kcal	State
AlF3	-5.706	-7.784	
Anglesite	-4.894	-6.677	
Anhydrite	-1.994	-2.720	
BaZrO3	69.321	94.573	ssatd
Barite	-2.764	-3.771	
Bassanite	-2.639	-3.601	
Berlinite	-7.099	-9.685	
Boric_acid	-4.749	-6.478	
CaSO4:0.5H2O(beta)	-2.807	-3.830	
CaZrO3	129.786	177.065	ssatd
Celestite	-7.194	-9.815	
Chalcedony	-0.271	-0.370	
Coesite	-0.810	-1.105	
CrO2	-0.911	-1.243	
Cristobalite(alpha)	-0.551	-0.751	
Cristobalite(beta)	-0.994	-1.356	
Crocoite	-4.589	-6.261	
Epsomite	-4.989	-6.807	
Fe(OH)3	-5.602	-7.642	

FeF3	-2.612	-3.564	
Fluorite	-4.413	-6.021	
Goethite	-0.480	-0.655	
Gypsum	-1.819	-2.481	
Hematite	0.000	0.000	satd
Hexahydrite	-5.225	-7.128	
Ice	-0.139	-0.190	
Jarosite	-5.312	-7.248	
Kieserite	-6.683	-9.117	
Manganite	-4.456	-6.079	
Mercallite	-6.952	-9.485	
Mirabilite	-6.850	-9.346	
MnHPO4	0.003	0.004	ssatd
MnO2(gamma)	-1.515	-2.066	
Morenosite	-2.696	-3.678	
NiSO4:6H2O(alpha)	-2.702	-3.687	
Nontronite-Ca	-3.295	-4.495	
Nontronite-H	-2.362	-3.223	
Nontronite-K	-3.677	-5.016	
Nontronite-Mg	-3.364	-4.589	
Nontronite-Na	-3.629	-4.951	
Pentahydrite	-5.564	-7.591	
Pyrolusite	0.003	0.004	ssatd
Quartz	0.000	0.000	satd
Rutile	0.000	0.000	satd
Sellaite	-5.715	-7.797	
Shcherbinaite	-2.883	-3.933	
SiO2(am)	-1.286	-1.754	
SrZrO3	106.180	144.860	ssatd
Starkeyite	-5.951	-8.119	
Strengite	-1.902	-2.595	
Tridymite	-0.172	-0.234	
fix CO2(g)	0.000	0.000	satd
fix O2(g)	0.000	0.000	satd

--- Summary of Solid Solutions ---

--- Carbonate-Calcite ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Calcite	5.6844E-03	-2.2453	0.0000	-2.2453
Magnesite	4.5792E-04	-3.3392	0.0000	-3.3392
Rhodochrosite	9.9386E-01	-0.0027	0.0000	-0.0027
Siderite	1.2598E-08	-7.8997	0.0000	-7.8997
Smithsonite	5.2904E-08	-7.2765	0.0000	-7.2765
Strontianite	2.2199E-07	-6.6537	0.0000	-6.6537

Mineral	Log Q/K	Aff, kcal	State
Carbonate-Calcite	-10.764	-14.685	
Calcite	-10.764	-14.685	
Magnesite	-10.764	-14.685	
Rhodochrosite	-10.764	-14.685	
Siderite	-10.764	-14.685	
Smithsonite	-10.764	-14.685	
Strontianite	-10.764	-14.685	

--- Clinoptilolite-hy-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-hy-Ca	9.9749E-01	-0.0011	0.0000	-0.0011
Clinoptilolite-hy-Cs	6.6492E-23	-22.1772	0.0000	-22.1772
Clinoptilolite-hy-K	9.1093E-04	-3.0405	0.0000	-3.0405
Clinoptilolite-hy-Na	1.5977E-03	-2.7965	0.0000	-2.7965
Clinoptilolite-hy-Sr	5.5819E-12	-11.2532	0.0000	-11.2532

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-hy-ss	-54.328	-74.119	
Clinoptilolite-hy-Ca	-54.328	-74.119	
Clinoptilolite-hy-Cs	-54.328	-74.119	
Clinoptilolite-hy-K	-54.328	-74.119	
Clinoptilolite-hy-Na	-54.328	-74.119	
Clinoptilolite-hy-Sr	-54.328	-74.119	

--- Clinoptilolite-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-Ca	7.7638E-01	-0.1099	-0.2704	-0.3803
Clinoptilolite-Cs	3.0158E-07	-6.5206	-16.0407	-22.5613
Clinoptilolite-K	1.0245E-01	-0.9895	-2.4342	-3.4236
Clinoptilolite-NH4	1.0149E-51	-50.9936	-125.4442	-176.4377
Clinoptilolite-Na	1.2074E-01	-0.9182	-2.2587	-3.1768
Clinoptilolite-Sr	4.3491E-04	-3.3616	-8.2695	-11.6311

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-ss	-53.950	-73.603	
Clinoptilolite-Ca	-53.950	-73.603	
Clinoptilolite-Cs	-53.950	-73.603	
Clinoptilolite-K	-53.950	-73.603	
Clinoptilolite-NH4	-53.950	-73.603	
Clinoptilolite-Na	-53.950	-73.603	
Clinoptilolite-Sr	-53.950	-73.603	

--- Saponite-tri ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Saponite-Ca	1.4894E-03	-2.8270	1.8941	-0.9329
Saponite-H	9.9734E-01	-0.0012	0.0008	-0.0004
Saponite-K	1.0355E-04	-3.9849	2.6699	-1.3150
Saponite-Mg	9.1780E-04	-3.0373	2.0350	-1.0023
Saponite-Na	1.4469E-04	-3.8396	2.5725	-1.2671

Mineral	Log Q/K	Aff, kcal	State
Saponite-tri	-41.829	-57.067	
Saponite-Ca	-41.829	-57.067	
Saponite-H	-41.829	-57.067	
Saponite-K	-41.829	-57.067	
Saponite-Mg	-41.829	-57.067	
Saponite-Na	-41.829	-57.067	

--- Smectite-di ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Beidellite-Ca	1.8342E-59	-58.7365	39.3535	-19.3831
Beidellite-K	1.2761E-60	-59.8941	40.1291	-19.7651
Beidellite-Mg	1.1303E-59	-58.9468	39.4944	-19.4524
Beidellite-Na	1.7819E-60	-59.7491	40.0319	-19.7172
Montmor-Ca	1.4756E-52	-51.8310	34.7268	-17.1042
Montmor-K	1.6766E-53	-52.7756	35.3596	-17.4159
Montmor-Mg	1.4778E-52	-51.8304	34.7264	-17.1040
Montmor-Na	2.2831E-53	-52.6415	35.2698	-17.3717
Nontronite-Ca	5.6073E-01	-0.2512	0.1683	-0.0829
Nontronite-K	3.9011E-02	-1.4088	0.9439	-0.4649
Nontronite-Mg	3.4578E-01	-0.4612	0.3090	-0.1522
Nontronite-Na	5.4474E-02	-1.2638	0.8468	-0.4171

Mineral	Log Q/K	Aff, kcal	State
Smectite-di	-3.212	-4.382	
Beidellite-Ca	-3.212	-4.382	
Beidellite-K	-3.212	-4.382	
Beidellite-Mg	-3.212	-4.382	
Beidellite-Na	-3.212	-4.382	
Montmor-Ca	-3.212	-4.382	
Montmor-K	-3.212	-4.382	
Montmor-Mg	-3.212	-4.382	
Montmor-Na	-3.212	-4.382	
Nontronite-Ca	-3.212	-4.382	
Nontronite-K	-3.212	-4.382	
Nontronite-Mg	-3.212	-4.382	
Nontronite-Na	-3.212	-4.382	

--- Lanthanide hydroxide ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
La(OH)3	1.2809E-05	-4.8925	0.0000	-4.8925
Ce(OH)3	3.7065E-15	-14.4310	0.0000	-14.4310
Nd(OH)3(c)	3.4688E-01	-0.4598	0.0000	-0.4598
Gd(OH)3	5.8586E-01	-0.2322	0.0000	-0.2322
Sm(OH)3	6.7247E-02	-1.1723	0.0000	-1.1723

Mineral	Log Q/K	Aff, kcal	State
Lanthanide hydroxide	-24.633	-33.607	
La(OH)3	-24.633	-33.607	
Ce(OH)3	-24.633	-33.607	
Nd(OH)3(c)	-24.633	-33.607	
Gd(OH)3	-24.633	-33.607	
Sm(OH)3	-24.633	-33.607	

--- Rhabdophane-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaPO4:H2O	4.1175E-01	-0.3854	0.0000	-0.3854
CePO4:H2O	3.7677E-11	-10.4239	0.0000	-10.4239
NdPO4:H2O	2.2249E-01	-0.6527	0.0000	-0.6527
GdPO4:H2O	1.4959E-01	-0.8251	0.0000	-0.8251
SmPO4:H2O	2.1617E-01	-0.6652	0.0000	-0.6652

Mineral	Log Q/K	Aff, kcal	State
Rhabdophane-ss	-9.759	-13.315	
LaPO4:H2O	-9.759	-13.315	
CePO4:H2O	-9.759	-13.315	
NdPO4:H2O	-9.759	-13.315	
GdPO4:H2O	-9.759	-13.315	
SmPO4:H2O	-9.759	-13.315	

--- Lanthanide fluoride ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaF3:0.5H2O	5.7234E-01	-0.2423	0.0000	-0.2423
CeF3:0.5H2O	8.3004E-11	-10.0809	0.0000	-10.0809
NdF3:0.5H2O	3.8934E-01	-0.4097	0.0000	-0.4097
GdF3:0.5H2O	8.2781E-03	-2.0821	0.0000	-2.0821
SmF3:0.5H2O	3.0048E-02	-1.5222	0.0000	-1.5222

Mineral	Log Q/K	Aff, kcal	State
Lanthanide fluoride	-12.159	-16.588	
LaF3:0.5H2O	-12.159	-16.588	
CeF3:0.5H2O	-12.159	-16.588	
NdF3:0.5H2O	-12.159	-16.588	
GdF3:0.5H2O	-12.159	-16.588	
SmF3:0.5H2O	-12.159	-16.588	

--- Summary of Gases ---

Gas	Fugacity	Log fugacity

Al(g)	1.1150-199	-198.9527
B(g)	8.5659-204	-203.0672
BF3(g)	1.4270E-24	-23.8456
C(g)	3.0917-190	-189.5098
CH4(g)	3.5240-146	-145.4530
CO(g)	6.0395E-49	-48.2190
CO2(g)	3.1623E-04	-3.5000
Ca(g)	7.3053-164	-163.1364
Chlorine	3.5577E-17	-16.4488
Cs(g)	3.5310E-89	-88.4521
Cu(g)	7.6527E-93	-92.1162
Fluorine	7.7353E-73	-72.1115
H2(g)	6.1104E-42	-41.2139
H2O(g)	2.5958E-02	-1.5857
H2S(g)	2.2750-130	-129.6430
HCl(g)	7.3142E-13	-12.1358
HF(g)	3.8492E-09	-8.4146
K(g)	2.3732E-83	-82.6247
Li(g)	7.8535-103	-102.1049
Mg(g)	1.1042-141	-140.9570
Nitrogen	2.5995E-08	-7.5851
NH3(g)	1.8567E-63	-62.7313
NO(g)	5.0769E-20	-19.2944
NO2(g)	3.4713E-14	-13.4595
Na(g)	1.8348E-81	-80.7364
O2(g)	2.0999E-01	-0.6778
Pb(g)	7.6956E-81	-80.1138
S2(g)	3.0909-203	-202.5099
SO2(g)	4.0310E-43	-42.3946
Si(g)	4.2257-221	-220.3741
SiF4(g)	9.6906E-19	-18.0136
Ti(g)	3.8019-231	-230.4200
TiCl4(g)	9.6013E-62	-61.0177
U(g)	1.0405-304	-303.9828
U2Cl10(g)	4.8392-202	-201.3152
U2Cl8(g)	4.2171-216	-215.3750
U2F10(g)	1.0441-121	-120.9813
UCl(g)	6.7843-255	-254.1685
UCl2(g)	1.3234-203	-202.8783
UCl3(g)	5.6542-150	-149.2476
UCl4(g)	1.3081-113	-112.8833
UCl5(g)	1.5572-114	-113.8077
UCl6(g)	3.4437-110	-109.4630
UF(g)	7.5877-241	-240.1199
UF2(g)	4.1039-195	-194.3868
UF3(g)	5.4624-143	-142.2626
UF4(g)	1.0732E-87	-86.9693
UF5(g)	9.6574E-74	-73.0151
UF6(g)	8.5576E-74	-73.0677
UO(g)	8.2172-220	-219.0853
UO2(g)	1.5224-135	-134.8175
UO2Cl2(g)	2.3648E-71	-70.6262
UO2F2(g)	5.3198E-61	-60.2741
UO3(g)	1.1198E-82	-81.9509
UOF4(g)	3.1980E-65	-64.4951
Zn(g)	1.2910E-90	-89.8891

- -

```
Stepping to zi=  6.3096E-04, delzi=  2.3285E-04, nord= 6
  time =  6.0856E+00 d, dltime =  2.2459E+00 d
iter =   15
      2 supersaturated pure minerals
      0 supersaturated solid solutions

               The most supersaturated phases          Affinity, kcal

                 1     352   MnHPO4                       0.00569873
                 2     470   Pyrolusite                   0.00706294


  Attempted species assemblage no.   2

            1      1  H2O
            2      3  Al+++
            3      7  B(OH)3(aq)
            4      8  Ba++
            5     11  Ca++
            6     13  Ce+++
            7     14  Cl-
            8     16  CrO4--
            9     17  Cs+
           10     18  Cu++
           11     22  F-
           12     23  Fe++
           13     25  Gd+++
           14     26  H+
           15     28  HCO3-
           16     29  HPO4--
           17     35  K+
           18     37  La+++
           19     38  Li+
           20     40  Mg++
           21     41  Mn++
           22     42  MoO4--
           23     43  NO3-
           24     44  Na+
           25     45  Nd+++
           26     47  Ni++
           27     49  Pb++
           28     52  Pu++++
           29     58  SO4--
           30     62  SiO2(aq)
           31     63  Sm+++
           32     65  Sr++
           33     69  Ti(OH)4(aq)
           34     72  UO2++
           35     73  VO++
           36     78  Zn++
           37     79  Zr(OH)2++
           38     80  O2(g)
           39    252  Hematite
           40    352  MnHPO4
           41    475  Quartz
           42    482  Rutile
           43    689  fix     CO2(g)
           44    690  fix     O2(g)

iter =   13
      1 supersaturated pure minerals
      0 supersaturated solid solutions
```

```
              The most supersaturated phases          Affinity, kcal

                1     470   Pyrolusite                    0.00528975


  Attempted species assemblage no.   3

             1      1  H2O
             2      3  Al+++
             3      7  B(OH)3(aq)
             4      8  Ba++
             5     11  Ca++
             6     13  Ce+++
             7     14  Cl-
             8     16  CrO4--
             9     17  Cs+
            10     18  Cu++
            11     22  F-
            12     23  Fe++
            13     25  Gd+++
            14     26  H+
            15     28  HCO3-
            16     29  HPO4--
            17     35  K+
            18     37  La+++
            19     38  Li+
            20     40  Mg++
            21     41  Mn++
            22     42  MoO4--
            23     43  NO3-
            24     44  Na+
            25     45  Nd+++
            26     47  Ni++
            27     49  Pb++
            28     52  Pu++++
            29     58  SO4--
            30     62  SiO2(aq)
            31     63  Sm+++
            32     65  Sr++
            33     69  Ti(OH)4(aq)
            34     72  UO2++
            35     73  VO++
            36     78  Zn++
            37     79  Zr(OH)2++
            38     80  O2(g)
            39    252  Hematite
            40    352  MnHPO4
            41    470  Pyrolusite
            42    475  Quartz
            43    482  Rutile
            44    689  fix     CO2(g)
            45    690  fix     O2(g)

--- Iteration has gone sour (iter=  16) ---
     The phase to be dropped is MnHPO4                    (  352)


  Attempted species assemblage no.   4

             1      1  H2O
             2      3  Al+++
             3      7  B(OH)3(aq)
```

```
  4      8  Ba++
  5     11  Ca++
  6     13  Ce+++
  7     14  Cl-
  8     16  CrO4--
  9     17  Cs+
 10     18  Cu++
 11     22  F-
 12     23  Fe++
 13     25  Gd+++
 14     26  H+
 15     28  HCO3-
 16     29  HPO4--
 17     35  K+
 18     37  La+++
 19     38  Li+
 20     40  Mg++
 21     41  Mn++
 22     42  MoO4--
 23     43  NO3-
 24     44  Na+
 25     45  Nd+++
 26     47  Ni++
 27     49  Pb++
 28     52  Pu++++
 29     58  SO4--
 30     62  SiO2(aq)
 31     63  Sm+++
 32     65  Sr++
 33     69  Ti(OH)4(aq)
 34     72  UO2++
 35     73  VO++
 36     78  Zn++
 37     79  Zr(OH)2++
 38     80  O2(g)
 39    252  Hematite
 40    470  Pyrolusite
 41    475  Quartz
 42    482  Rutile
 43    689  fix     CO2(g)
 44    690  fix     O2(g)

Steps completed =    50, iter = 13, ncorr = 0

- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -


                    Reaction progress        =  6.30957344480161E-04
                    Log of reaction progress =      -3.2000000



                    Time =  5.258E+05 sec
                         =  6.086E+00 days
                         =  1.666E-02 years

                    Log sec =        5.721
                    Log days =       0.784
                    Log years =     -1.778

                    Temperature    =     25.000 degrees C
                    total pressure =      1.013 bars
```

Step size is limited by the print requirement

Change in the product phase assemblage

--- Reactant Summary ---

Reactant	Moles	Delta moles	Mass, g	Delta Mass, g
Tuff	9.9999E+01	6.3096E-04	2.0586E+03	1.2989E-02

Current total mass = 2.05863E+03 grams
Delta total mass = 1.29892E-02 grams
Delta total volume = 0.00000 cc

Reactant	Rel. Rate mol/mol	Rate mol/s	Rate mol/s/cm2
Tuff	1.0000E+00	1.2000E-09	2.5000E-15

Reactant	Affinity kcal/mol	Surface Area mol/s/cm2
Tuff	999.00000	4.8000E+05

Reactant	Rate Constants, mol/s/cm2	
Tuff		
	Forward	2.5000E-15

Affinity of the overall irreversible reaction= 0.000 kcal
Contributions from irreversible reactions
with no thermodynamic data are not included

--- Element Totals for the Aqueous Solution ---

Element	mg/kg soln.	Molality	Moles
O	8.865392E+05	5.561111E+01	5.559514E+01
Al	9.134010E-01	3.397521E-05	3.396545E-05
B	1.334825E-01	1.239156E-05	1.238800E-05
Ba	1.368716E-05	1.000287E-10	1.000000E-10
Ca	1.300883E+01	3.257615E-04	3.256679E-04
Ce	1.396503E-19	1.000287E-24	9.999994E-25
Cl	7.116496E+00	2.014579E-04	2.014000E-04
Cr	2.996345E+02	5.783469E-03	5.781807E-03
Cs	1.324647E-05	1.000287E-10	1.000000E-10
Cu	6.650204E-10	1.050302E-14	1.050000E-14
F	2.172837E+00	1.147830E-04	1.147500E-04
Fe	8.741040E-01	1.570835E-05	1.570384E-05
Gd	1.567285E-09	1.000287E-14	1.000000E-14
H	1.115154E+05	1.110369E+02	1.110050E+02
C	1.267571E-01	1.059157E-05	1.058853E-05

P	7.326472E+00	2.373932E-04	2.373250E-04
K	5.553580E+00	1.425550E-04	1.425141E-04
La	1.384449E-09	1.000287E-14	1.000000E-14
Li	6.917983E-07	1.000287E-10	1.000000E-10
Mg	2.022470E+00	8.351295E-05	8.348896E-05
Mn	3.217967E+01	5.878625E-04	5.876936E-04
Mo	2.179381E+02	2.279821E-03	2.279166E-03
N	1.982361E+00	1.420408E-04	1.420000E-04
Na	4.599356E+01	2.007843E-03	2.007266E-03
Nd	1.437617E-09	1.000287E-14	1.000000E-14
Ni	7.502070E+02	1.282875E-02	1.282506E-02
Pb	2.065129E-05	1.000287E-10	1.000000E-10
Pu	2.431908E-09	1.000287E-14	1.000000E-14
S	5.507380E+02	1.723724E-02	1.723228E-02
Si	2.802947E+00	1.001613E-04	1.001325E-04
Sm	1.498614E-09	1.000287E-14	1.000000E-14
Sr	8.732944E-06	1.000287E-10	1.000000E-10
Ti	1.078260E-05	2.260147E-10	2.259498E-10
U	2.372396E-09	1.000287E-14	1.000000E-14
V	4.768057E+00	9.393709E-05	9.391010E-05
Zn	6.517316E-06	1.000287E-10	1.000000E-10
Zr	9.092149E-16	1.000287E-20	1.000000E-20

Single ion activities and activity coefficients are here defined
with respect to the modified NBS pH scale

	pH	Eh	pe
modified NBS pH scale	2.0429	1.0982	1.8564E+01
rational pH scale	1.9664	1.1027	1.8641E+01

pHCl = 5.8310

Oxygen fugacity = 2.09991E-01
Log oxygen fugacity = -0.67780

Activity of water = 0.99924
Log activity of water = -0.00033

Ionic strength = 5.883644E-02 molal
Sum of molalities = 0.0494158114601
Osmotic coefficient = 0.85781

Mass of solution = 1.003327 kg
Mass of solutes = 0.003614 kg
Conc. of solutes = 0.360246 per cent (w/w)

Moles of solvent H2O = 5.54925E+01
Mass of solvent H2O = 9.99713E-01 kg

Species	Molality	Log molality	Log gamma	Log activity
H+	1.0804E-02	-1.9664	-0.0765	-2.0429
Ni++	1.0206E-02	-1.9911	-0.3466	-2.3378
SO4--	9.7907E-03	-2.0092	-0.3603	-2.3695

HSO4-	4.4830E-03	-2.3484	-0.0849	-2.4333
HCrO4-	4.0507E-03	-2.3925	-0.0849	-2.4774
NiSO4(aq)	2.6208E-03	-2.5816	0.0000	-2.5816
MoO4--	2.2798E-03	-2.6421	-0.3493	-2.9914
Na+	1.9543E-03	-2.7090	-0.0984	-2.8074
Cr2O7--	8.6355E-04	-3.0637	-0.3603	-3.4240
Mn++	4.0973E-04	-3.3875	-0.3466	-3.7341
O2(aq)	2.6166E-04	-3.5823	0.0062	-3.5761
Ca++	2.6089E-04	-3.5835	-0.3466	-3.9302
Cl-	2.0086E-04	-3.6971	-0.0910	-3.7881
MnSO4(aq)	1.7753E-04	-3.7507	0.0000	-3.7507
NO3-	1.4022E-04	-3.8532	-0.0910	-3.9442
K+	1.3825E-04	-3.8593	-0.1044	-3.9638
H3PO4(aq)	1.1899E-04	-3.9245	0.0000	-3.9245
H2PO4-	1.0806E-04	-3.9663	-0.0849	-4.0512
SiO2(aq)	1.0016E-04	-3.9993	0.0000	-3.9993
VO2+	7.7546E-05	-4.1104	-0.0984	-4.2088
CaSO4(aq)	6.4778E-05	-4.1886	0.0000	-4.1886
HF(aq)	5.9379E-05	-4.2264	0.0000	-4.2264
Mg++	5.4406E-05	-4.2644	-0.3140	-4.5783
NaSO4-	5.3462E-05	-4.2720	-0.0849	-4.3569
MgSO4(aq)	2.9100E-05	-4.5361	0.0000	-4.5361
AlF++	1.6394E-05	-4.7853	-0.3762	-5.1615
AlF2+	1.5323E-05	-4.8147	-0.0984	-4.9130
B(OH)3(aq)	1.2392E-05	-4.9069	0.0000	-4.9069
VO2SO4-	1.2207E-05	-4.9134	-0.0849	-4.9983
CO2(aq)	1.0591E-05	-4.9751	0.0062	-4.9689
FeHPO4+	9.7870E-06	-5.0094	-0.0984	-5.1077
F-	5.4488E-06	-5.2637	-0.0878	-5.3515
KSO4-	4.2782E-06	-5.3687	-0.0849	-5.4536
Fe+++	3.9235E-06	-5.4063	-0.6677	-6.0740
Cr+++	3.9016E-06	-5.4088	-0.6677	-6.0765
VO(OH)3(aq)	3.4156E-06	-5.4665	0.0000	-5.4665
NiNO3+	1.6460E-06	-5.7836	-0.0984	-5.8819
H2CrO4(aq)	1.4464E-06	-5.8397	0.0000	-5.8397
FeOH++	1.4282E-06	-5.8452	-0.3762	-6.2214
AlSO4+	8.4899E-07	-6.0711	-0.0984	-6.1695
Al+++	7.2065E-07	-6.1423	-0.6677	-6.8100
AlF3(aq)	6.8460E-07	-6.1646	0.0000	-6.1646
VO2F(aq)	6.1612E-07	-6.2103	0.0000	-6.2103
MnH2PO4+	4.6024E-07	-6.3370	-0.0984	-6.4354
FeSO4+	3.8234E-07	-6.4175	-0.0984	-6.5159
HCl(aq)	3.1549E-07	-6.5010	0.0000	-6.5010
CrO4--	2.7006E-07	-6.5685	-0.3603	-6.9288
FeF++	1.2222E-07	-6.9129	-0.3762	-7.2890
NiCl+	9.4692E-08	-7.0237	-0.0984	-7.1220
CaNO3+	8.3950E-08	-7.0760	-0.0984	-7.1743
MnCl+	7.5413E-08	-7.1226	-0.0984	-7.2209
H2VO4-	7.3980E-08	-7.1309	-0.0849	-7.2158
CrO3Cl-	6.4484E-08	-7.1905	-0.0849	-7.2755
HPO3F-	5.4067E-08	-7.2671	-0.0849	-7.3520
HNO3(aq)	5.1334E-08	-7.2896	0.0000	-7.2896
VO2(OH)2-	4.5847E-08	-7.3387	-0.0849	-7.4236
NaCl(aq)	4.2420E-08	-7.3724	0.0000	-7.3724
MnNO3+	4.1693E-08	-7.3799	-0.0984	-7.4783
H2SO4(aq)	3.3399E-08	-7.4763	0.0000	-7.4763
VO2HPO4-	3.1074E-08	-7.5076	-0.0849	-7.5925
Fe(SO4)2-	3.0592E-08	-7.5144	-0.0849	-7.5993
MnF+	2.7713E-08	-7.5573	-0.0984	-7.6557
Fe(OH)2+	2.7514E-08	-7.5604	-0.0984	-7.6588
KHSO4(aq)	2.7379E-08	-7.5626	0.0000	-7.5626
CrOH++	2.1996E-08	-7.6577	-0.3762	-8.0338
H2F2(aq)	9.5293E-09	-8.0209	0.0000	-8.0209

CaCl+	4.8363E-09	-8.3155	-0.0984	-8.4139
FeF2+	4.6890E-09	-8.3289	-0.0984	-8.4273
MgCl+	3.9543E-09	-8.4029	-0.0984	-8.5013
MgF+	3.3183E-09	-8.4791	-0.0984	-8.5774
CaF+	3.1503E-09	-8.5017	-0.0984	-8.6000
AlHPO4+	2.9833E-09	-8.5253	-0.0984	-8.6237
FeNO3++	2.2804E-09	-8.6420	-0.3762	-9.0182
HPO4--	1.4015E-09	-8.8534	-0.3603	-9.2137
VO2F2-	9.6170E-10	-9.0170	-0.0849	-9.1019
AlF4-	9.3070E-10	-9.0312	-0.0849	-9.1161
PO3F--	8.9489E-10	-9.0482	-0.3603	-9.4085
NaF(aq)	6.9744E-10	-9.1565	0.0000	-9.1565
HCO3-	6.5149E-10	-9.1861	-0.0849	-9.2710
KCl(aq)	5.6699E-10	-9.2464	0.0000	-9.2464
AlOH++	4.4846E-10	-9.3483	-0.3762	-9.7245
MnHPO4(aq)	4.2870E-10	-9.3678	0.0000	-9.3678
VO++	2.7622E-10	-9.5587	-0.3762	-9.9349
CrCl++	2.3050E-10	-9.6373	-0.3762	-10.0135
Ti(OH)4(aq)	2.2601E-10	-9.6459	0.0000	-9.6459
VOSO4(aq)	1.4982E-10	-9.8244	0.0000	-9.8244
Mn+++	1.1584E-10	-9.9361	-0.8159	-10.7521
Cs+	1.0002E-10	-9.9999	-0.1077	-10.1077

--- Summary of Instantaneously Precipitated Solid Phases ---
(defined by derivatives)

--- Theoretical Rock Composition ---
g/kg

O	5.284331E+01
Fe	9.894375E-01
C	5.054520E-03
Si	4.608675E+01
Ti	7.544627E-02

--- Oxide Percentages ---

Oxide	Theoretical rock

Total = 0.0000

Phase/end-member	d mol/d zi	d grams/d zi	d vol (cc)/d zi
Hematite	1.4223E-03	2.2713E-01	4.3059E-02
Pyrolusite	2.6347E-01	2.2905E+01	1.3173E+02
Quartz	2.5300E-04	1.5201E-02	5.7401E-03
Rutile	6.7567E-05	5.3972E-03	1.2716E-03
fix CO2(g)	-7.7290E-04	-3.4015E-02	0.0000E+00
fix O2(g)	0.0000E+00	0.0000E+00	0.0000E+00

--- Summary of Solid Phases (E.S.+P.R.S.) ---

Phase/End-member	Log moles	Moles	Mass, g	Volume, cc
Hematite	-6.0521	8.8702E-07	1.4165E-04	2.6854E-05
Pyrolusite	-5.2148	6.0988E-06	5.3021E-04	3.0494E-03
Quartz	-3.7793	1.6624E-04	9.9883E-03	3.7716E-03
Rutile	-6.7972	1.5951E-07	1.2741E-05	3.0019E-06
fix CO2(g)	2.3010	2.0000E+02	8.8020E+03	0.0000E+00

```
fix     O2(g)                  2.3010   2.0000E+02   6.3998E+03   0.0000E+00
```

	Mass, grams	Volume, cc
Created	1.520173E+04	6.850874E-03
Destroyed	1.298918E-02	0.000000E+00
Net	1.520172E+04	6.850874E-03

Warning-- these volume totals may be incomplete because of missing partial molar volume data in the data base

--- Summary of Pure Mineral Saturation States ---

Mineral	Log Q/K	Aff, kcal	State
AlF3	-5.656	-7.716	
Anglesite	-4.894	-6.677	
Anhydrite	-1.993	-2.719	
BaZrO3	69.349	94.612	ssatd
Barite	-2.764	-3.771	
Bassanite	-2.638	-3.599	
Berlinite	-6.772	-9.239	
Boric_acid	-4.749	-6.478	
CaSO4:0.5H2O(beta)	-2.806	-3.829	
CaZrO3	129.815	177.105	ssatd
Celestite	-7.194	-9.815	
Chalcedony	-0.271	-0.370	
Coesite	-0.810	-1.105	
CrO2	-0.912	-1.244	
Cristobalite(alpha)	-0.551	-0.751	
Cristobalite(beta)	-0.994	-1.356	
Crocoite	-4.588	-6.260	
Epsomite	-4.988	-6.805	
Fe(OH)3	-5.602	-7.642	
FeF3	-2.890	-3.943	
Fluorite	-4.596	-6.271	
Goethite	-0.480	-0.655	
Gypsum	-1.818	-2.480	
Hematite	0.000	0.000	satd
Hexahydrite	-5.223	-7.126	
Ice	-0.139	-0.190	
Jarosite	-5.299	-7.229	
Kieserite	-6.681	-9.115	
Manganite	-4.459	-6.084	
Mercallite	-6.937	-9.464	
Mirabilite	-6.848	-9.342	
MnHPO4	-0.001	-0.001	
MnO2(gamma)	-1.518	-2.071	
Morenosite	-2.696	-3.678	
NiSO4:6H2O(alpha)	-2.702	-3.686	
Nontronite-Ca	-3.186	-4.347	
Nontronite-H	-2.254	-3.075	
Nontronite-K	-3.563	-4.861	
Nontronite-Mg	-3.255	-4.441	
Nontronite-Na	-3.520	-4.802	
Pentahydrite	-5.562	-7.589	
Pyrolusite	0.000	0.000	satd
Quartz	0.000	0.000	satd
Rutile	0.000	0.000	satd

Sellaite	-5.897	-8.045	
Shcherbinaite	-2.880	-3.929	
SiO2(am)	-1.286	-1.754	
SrZrO3	106.208	144.899	ssatd
Starkeyite	-5.949	-8.116	
Strengite	-1.903	-2.596	
Tridymite	-0.172	-0.234	
fix CO2(g)	0.000	0.000	satd
fix O2(g)	0.000	0.000	satd

--- Summary of Solid Solutions ---

--- Carbonate-Calcite ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Calcite	5.7511E-03	-2.2402	0.0000	-2.2402
Magnesite	4.6421E-04	-3.3333	0.0000	-3.3333
Rhodochrosite	9.9378E-01	-0.0027	0.0000	-0.0027
Siderite	1.2689E-08	-7.8966	0.0000	-7.8966
Smithsonite	5.3451E-08	-7.2720	0.0000	-7.2720
Strontianite	2.2426E-07	-6.6492	0.0000	-6.6492

Mineral	Log Q/K	Aff, kcal	State
Carbonate-Calcite	-10.767	-14.689	
Calcite	-10.767	-14.689	
Magnesite	-10.767	-14.689	
Rhodochrosite	-10.767	-14.689	
Siderite	-10.767	-14.689	
Smithsonite	-10.767	-14.689	
Strontianite	-10.767	-14.689	

--- Clinoptilolite-hy-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-hy-Ca	9.9736E-01	-0.0011	0.0000	-0.0011
Clinoptilolite-hy-Cs	6.6324E-23	-22.1783	0.0000	-22.1783
Clinoptilolite-hy-K	1.0289E-03	-2.9876	0.0000	-2.9876
Clinoptilolite-hy-Na	1.6090E-03	-2.7934	0.0000	-2.7934
Clinoptilolite-hy-Sr	5.5666E-12	-11.2544	0.0000	-11.2544

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-hy-ss	-53.195	-72.573	
Clinoptilolite-hy-Ca	-53.195	-72.573	
Clinoptilolite-hy-Cs	-53.195	-72.573	
Clinoptilolite-hy-K	-53.195	-72.573	
Clinoptilolite-hy-Na	-53.195	-72.573	
Clinoptilolite-hy-Sr	-53.195	-72.573	

--- Clinoptilolite-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-Ca	7.7334E-01	-0.1116	-0.2746	-0.3862
Clinoptilolite-Cs	3.0019E-07	-6.5226	-16.0456	-22.5682
Clinoptilolite-K	1.0571E-01	-0.9759	-2.4007	-3.3766
Clinoptilolite-NH4	1.0071E-51	-50.9969	-125.4524	-176.4493
Clinoptilolite-Na	1.2052E-01	-0.9190	-2.2606	-3.1796
Clinoptilolite-Sr	4.3289E-04	-3.3636	-8.2745	-11.6381

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-ss	-52.811	-72.050	
Clinoptilolite-Ca	-52.811	-72.050	
Clinoptilolite-Cs	-52.811	-72.050	
Clinoptilolite-K	-52.811	-72.050	
Clinoptilolite-NH4	-52.811	-72.050	
Clinoptilolite-Na	-52.811	-72.050	
Clinoptilolite-Sr	-52.811	-72.050	

--- Saponite-tri ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Saponite-Ca	1.4927E-03	-2.8260	1.8934	-0.9326
Saponite-H	9.9733E-01	-0.0012	0.0008	-0.0004
Saponite-K	1.0749E-04	-3.9686	2.6590	-1.3097
Saponite-Mg	9.2074E-04	-3.0359	2.0340	-1.0018
Saponite-Na	1.4531E-04	-3.8377	2.5713	-1.2664

Mineral	Log Q/K	Aff, kcal	State
Saponite-tri	-41.713	-56.908	
Saponite-Ca	-41.713	-56.908	
Saponite-H	-41.713	-56.908	
Saponite-K	-41.713	-56.908	
Saponite-Mg	-41.713	-56.908	
Saponite-Na	-41.713	-56.908	

--- Smectite-di ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Beidellite-Ca	1.7637E-57	-56.7536	38.0249	-18.7287
Beidellite-K	1.2709E-58	-57.8959	38.7902	-19.1056
Beidellite-Mg	1.0879E-57	-56.9634	38.1655	-18.7979
Beidellite-Na	1.7169E-58	-57.7652	38.7027	-19.0625
Montmor-Ca	3.1628E-51	-50.4999	33.8349	-16.6650
Montmor-K	3.7223E-52	-51.4292	34.4576	-16.9716
Montmor-Mg	3.1707E-51	-50.4988	33.8342	-16.6646

Montmor-Na	4.9038E-52	-51.3095	34.3773	-16.9321
Nontronite-Ca	5.5970E-01	-0.2520	0.1689	-0.0832
Nontronite-K	4.0332E-02	-1.3943	0.9342	-0.4601
Nontronite-Mg	3.4549E-01	-0.4616	0.3093	-0.1523
Nontronite-Na	5.4486E-02	-1.2637	0.8467	-0.4170

Mineral	Log Q/K	Aff, kcal	State
Smectite-di	-3.103	-4.234	
Beidellite-Ca	-3.103	-4.234	
Beidellite-K	-3.103	-4.234	
Beidellite-Mg	-3.103	-4.234	
Beidellite-Na	-3.103	-4.234	
Montmor-Ca	-3.103	-4.234	
Montmor-K	-3.103	-4.234	
Montmor-Mg	-3.103	-4.234	
Montmor-Na	-3.103	-4.234	
Nontronite-Ca	-3.103	-4.234	
Nontronite-K	-3.103	-4.234	
Nontronite-Mg	-3.103	-4.234	
Nontronite-Na	-3.103	-4.234	

--- Lanthanide hydroxide ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
La(OH)3	1.2799E-05	-4.8928	0.0000	-4.8928
Ce(OH)3	3.7047E-15	-14.4312	0.0000	-14.4312
Nd(OH)3(c)	3.4674E-01	-0.4600	0.0000	-0.4600
Gd(OH)3	5.8603E-01	-0.2321	0.0000	-0.2321
Sm(OH)3	6.7217E-02	-1.1725	0.0000	-1.1725

Mineral	Log Q/K	Aff, kcal	State
Lanthanide hydroxide	-24.631	-33.603	
La(OH)3	-24.631	-33.603	
Ce(OH)3	-24.631	-33.603	
Nd(OH)3(c)	-24.631	-33.603	
Gd(OH)3	-24.631	-33.603	
Sm(OH)3	-24.631	-33.603	

--- Rhabdophane-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaPO4:H2O	4.1162E-01	-0.3855	0.0000	-0.3855
CePO4:H2O	3.7677E-11	-10.4239	0.0000	-10.4239
NdPO4:H2O	2.2250E-01	-0.6527	0.0000	-0.6527
GdPO4:H2O	1.4971E-01	-0.8248	0.0000	-0.8248
SmPO4:H2O	2.1617E-01	-0.6652	0.0000	-0.6652

Mineral	Log Q/K	Aff, kcal	State

Rhabdophane-ss	-9.758	-13.312
LaPO4:H2O	-9.758	-13.312
CePO4:H2O	-9.758	-13.312
NdPO4:H2O	-9.758	-13.312
GdPO4:H2O	-9.758	-13.312
SmPO4:H2O	-9.758	-13.312

--- Lanthanide fluoride ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaF3:0.5H2O	5.7225E-01	-0.2424	0.0000	-0.2424
CeF3:0.5H2O	8.3017E-11	-10.0808	0.0000	-10.0808
NdF3:0.5H2O	3.8941E-01	-0.4096	0.0000	-0.4096
GdF3:0.5H2O	8.2858E-03	-2.0817	0.0000	-2.0817
SmF3:0.5H2O	3.0053E-02	-1.5221	0.0000	-1.5221

Mineral	Log Q/K	Aff, kcal	State
Lanthanide fluoride	-12.434	-16.964	
LaF3:0.5H2O	-12.434	-16.964	
CeF3:0.5H2O	-12.434	-16.964	
NdF3:0.5H2O	-12.434	-16.964	
GdF3:0.5H2O	-12.434	-16.964	
SmF3:0.5H2O	-12.434	-16.964	

--- Summary of Gases ---

Gas	Fugacity	Log fugacity
Al(g)	2.3692-199	-198.6254
B(g)	8.5659-204	-203.0672
BF3(g)	7.5355E-25	-24.1229
C(g)	3.0917-190	-189.5098
CH4(g)	3.5240-146	-145.4530
CO(g)	6.0395E-49	-48.2190
CO2(g)	3.1623E-04	-3.5000
Ca(g)	7.3377-164	-163.1344
Chlorine	3.5466E-17	-16.4502
Cs(g)	3.5364E-89	-88.4514
Cu(g)	7.6760E-93	-92.1149
Fluorine	5.0535E-73	-72.2964
H2(g)	6.1104E-42	-41.2139
H2O(g)	2.5958E-02	-1.5857
H2S(g)	2.2690-130	-129.6442
HCl(g)	7.3028E-13	-12.1365
HF(g)	3.1112E-09	-8.5071
K(g)	2.4636E-83	-82.6084
Li(g)	7.8654-103	-102.1043
Mg(g)	1.1113-141	-140.9542
Nitrogen	2.5914E-08	-7.5865
NH3(g)	1.8538E-63	-62.7319
NO(g)	5.0690E-20	-19.2951
NO2(g)	3.4659E-14	-13.4602

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Na(g)                        1.8427E-81    -80.7345
O2(g)                        2.0999E-01     -0.6778
Pb(g)                        7.7189E-81    -80.1124
S2(g)                        3.0745-203   -202.5122
SO2(g)                       4.0204E-43    -42.3957
Si(g)                        4.2257-221   -220.3741
SiF4(g)                      4.1361E-19    -18.3834
Ti(g)                        3.8019-231   -230.4200
TiCl4(g)                     9.5418E-62    -61.0204
U(g)                         1.0561-304   -303.9763
U2Cl10(g)                    4.9092-202   -201.3090
U2Cl8(g)                     4.2914-216   -215.3674
U2F10(g)                     1.2803-122   -121.8927
UCl(g)                       6.8759-255   -254.1627
UCl2(g)                      1.3392-203   -202.8732
UCl3(g)                      5.7127-150   -149.2432
UCl4(g)                      1.3196-113   -112.8796
UCl5(g)                      1.5684-114   -113.8045
UCl6(g)                      3.4631-110   -109.4605
UF(g)                        6.2254-241   -240.2058
UF2(g)                       2.7215-195   -194.5652
UF3(g)                       2.9279-143   -142.5334
UF4(g)                       4.6495E-88    -87.3326
UF5(g)                       3.3818E-74    -73.4708
UF6(g)                       2.4221E-74    -73.6158
UO(g)                        8.3410-220   -219.0788
UO2(g)                       1.5453-135   -134.8110
UO2Cl2(g)                    2.3930E-71    -70.6211
UO2F2(g)                     3.5279E-61    -60.4525
UO3(g)                       1.1366E-82    -81.9444
UOF4(g)                      1.3855E-65    -64.8584
Zn(g)                        1.2950E-90    -89.8877



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--- shifting e.s. solid(s) to the p.r.s. (shftz) ---

      shifted -- Hematite
              - old mass=  8.87017E-07, new mass=  8.00000E-07
      shifted -- Pyrolusite
              - old mass=  6.09881E-06, new mass=  8.00000E-07
      shifted -- Quartz
              - old mass=  1.60420E-04, new mass=  1.60420E-06
  not shifted -- Rutile
              - mass=  1.59506E-07

Stepping to zi=  6.3096E-04, delzi=  1.0000E-09, nord= 0
  time =  6.0856E+00 d, dltime =  9.6451E-06 d
Steps completed =    51, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -5.7947

Stepping to zi=  6.3096E-04, delzi=  1.0000E-09, nord= 0
  time =  6.0856E+00 d, dltime =  9.6451E-06 d
Steps completed =    52, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -5.7946

Stepping to zi=  6.3096E-04, delzi=  1.0000E-09, nord= 0
  time =  6.0857E+00 d, dltime =  9.6451E-06 d
Steps completed =    53, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -5.7945
```

```
Stepping to zi=  6.3096E-04, delzi=  1.0000E-09, nord= 0
  time =  6.0857E+00 d, dltime =  9.6451E-06 d
Steps completed =    54, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Quartz                 ) =     -5.7945

Stepping to zi=  6.3097E-04, delzi=  1.0000E-08, nord= 2
  time =  6.0858E+00 d, dltime =  9.6451E-05 d
Steps completed =    55, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Quartz                 ) =     -5.7937

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                    Reaction progress        =  6.30971344479765E-04
                    Log of reaction progress =      -3.1999904



                    Time =  5.258E+05 sec
                         =  6.086E+00 days
                         =  1.666E-02 years

                    Log sec =        5.721
                    Log days =       0.784
                    Log years =     -1.778

                    Temperature    =     25.000 degrees C
                    total pressure =      1.013 bars


Flow-through system print following a discontinuity


     --- Summary of Instantaneously Precipitated Solid Phases ---
                 (defined by derivatives)

     --- Theoretical Rock Composition ---
                  g/kg

      O      5.188412E+01
      Fe     9.251351E-01
      Mn     3.361561E+00
      Si     4.375755E+01
      Ti     7.163324E-02

      --- Oxide Percentages ---

   Oxide   Theoretical rock


    Total =     0.0000


   Phase/end-member     d mol/d zi    d grams/d zi   d vol (cc)/d zi

Hematite                    1.4007E-03   2.2368E-01   4.2404E-02
Pyrolusite                  1.0347E-02   8.9956E-01   5.1737E+00
Quartz                      2.6347E-01   1.5830E+01   5.9776E+00
Rutile                      2.5300E-04   2.0209E-02   4.7615E-03
fix     CO2(g)              0.0000E+00   0.0000E+00   0.0000E+00
fix     O2(g)              -1.9753E-03  -6.3208E-02   0.0000E+00
```

--- Summary of Solid Phases (E.S.+P.R.S.) ---

Phase/End-member	Log moles	Moles	Mass, g	Volume, cc
Hematite	-6.0521	8.8704E-07	1.4165E-04	2.6854E-05
Pyrolusite	-5.2147	6.0990E-06	5.3022E-04	3.0495E-03
Quartz	-3.7793	1.6624E-04	9.9885E-03	3.7717E-03
Rutile	-6.7972	1.5951E-07	1.2741E-05	3.0020E-06
fix CO2(g)	2.3010	2.0000E+02	8.8020E+03	0.0000E+00
fix O2(g)	2.3010	2.0000E+02	6.3998E+03	0.0000E+00

	Mass, grams	Volume, cc
Created	1.520173E+04	6.851031E-03
Destroyed	0.000000E+00	0.000000E+00
Net	1.520173E+04	6.851031E-03

Warning-- these volume totals may be incomplete because
of missing partial molar volume data in the data base

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```
Stepping to zi=  6.3107E-04, delzi=  1.0000E-07, nord= 2
  time =  6.0867E+00 d, dltime =  9.6451E-04 d
Steps completed =    56, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -5.7867

Stepping to zi=  6.3207E-04, delzi=  1.0000E-06, nord= 2
  time =  6.0964E+00 d, dltime =  9.6451E-03 d
Steps completed =    57, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -5.7218

Stepping to zi=  6.4207E-04, delzi=  1.0000E-05, nord= 3
  time =  6.1928E+00 d, dltime =  9.6451E-02 d
Steps completed =    58, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -5.3437

Stepping to zi=  6.8026E-04, delzi=  3.8191E-05, nord= 3
  time =  6.5612E+00 d, dltime =  3.6835E-01 d
Steps completed =    59, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -4.8358

Stepping to zi=  7.2027E-04, delzi=  4.0009E-05, nord= 3
  time =  6.9471E+00 d, dltime =  3.8589E-01 d
Steps completed =    60, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -4.5997

Stepping to zi=  8.5234E-04, delzi=  1.3207E-04, nord= 4
  time =  8.2209E+00 d, dltime =  1.2738E+00 d
Steps completed =    61, iter = 21, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -4.2223

Stepping to zi=  1.0000E-03, delzi=  1.4766E-04, nord= 5
  time =  9.6451E+00 d, dltime =  1.4242E+00 d
Steps completed =    62, iter =  6, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -4.0051
```

```
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                    Reaction progress        =  9.99999999999948E-04
                    Log of reaction progress =      -3.0000000



                    Time =  8.333E+05 sec
                         =  9.645E+00 days
                         =  2.641E-02 years

                    Log sec =        5.921
                    Log days =       0.984
                    Log years =     -1.578

                    Temperature    =     25.000 degrees C
                    total pressure =      1.013 bars


Step size is limited by the print requirement


                              --- Reactant Summary ---


   Reactant                   Moles     Delta moles    Mass, g    Delta Mass, g

 Tuff                       9.9999E+01   1.0000E-03   2.0586E+03   2.0586E-02


               Current total mass =  2.05863E+03 grams
               Delta total mass   =  2.05865E-02 grams
               Delta total volume =      0.00000 cc


   Reactant                Rel. Rate      Rate         Rate
                            mol/mol       mol/s      mol/s/cm2

 Tuff                      1.0000E+00   1.2000E-09   2.5000E-15


   Reactant                  Affinity   Surface Area
                             kcal/mol     mol/s/cm2

 Tuff                       999.00000   4.8000E+05


   Reactant                Rate Constants, mol/s/cm2

 Tuff
                  Forward    2.5000E-15


        Affinity of the overall irreversible reaction=     0.000 kcal
        Contributions from irreversible reactions
        with no thermodynamic data are not included


    --- Element Totals for the Aqueous Solution ---
```

Element	mg/kg soln.	Molality	Moles
O	8.865385E+05	5.561111E+01	5.559517E+01
Al	1.424323E+00	5.297969E-05	5.296450E-05
B	1.334824E-01	1.239155E-05	1.238800E-05
Ba	1.368714E-05	1.000287E-10	1.000000E-10
Ca	1.303914E+01	3.265206E-04	3.264270E-04
Ce	1.396501E-19	1.000286E-24	9.999994E-25
Cl	7.116486E+00	2.014578E-04	2.014000E-04
Cr	2.996341E+02	5.783465E-03	5.781807E-03
Cs	1.324645E-05	1.000287E-10	1.000000E-10
Cu	6.650194E-10	1.050301E-14	1.050000E-14
F	2.172834E+00	1.147829E-04	1.147500E-04
Fe	8.662380E-01	1.556701E-05	1.556254E-05
Gd	1.567283E-09	1.000287E-14	1.000000E-14
H	1.115152E+05	1.110368E+02	1.110050E+02
C	1.267562E-01	1.059150E-05	1.058847E-05
P	7.326958E+00	2.374091E-04	2.373411E-04
K	5.863643E+00	1.505141E-04	1.504710E-04
La	1.384447E-09	1.000287E-14	1.000000E-14
Li	6.917973E-07	1.000287E-10	1.000000E-10
Mg	2.033660E+00	8.397507E-05	8.395100E-05
Mn	3.196532E+01	5.839472E-04	5.837798E-04
Mo	2.179378E+02	2.279819E-03	2.279166E-03
N	1.982359E+00	1.420407E-04	1.420000E-04
Na	4.619541E+01	2.016656E-03	2.016078E-03
Nd	1.437615E-09	1.000287E-14	1.000000E-14
Ni	7.502060E+02	1.282874E-02	1.282506E-02
Pb	2.065126E-05	1.000287E-10	1.000000E-10
Pu	2.431905E-09	1.000287E-14	1.000000E-14
S	5.507372E+02	1.723723E-02	1.723228E-02
Si	2.802944E+00	1.001613E-04	1.001326E-04
Sm	1.498612E-09	1.000287E-14	1.000000E-14
Sr	8.732932E-06	1.000287E-10	1.000000E-10
Ti	1.078260E-05	2.260150E-10	2.259502E-10
U	2.372392E-09	1.000287E-14	1.000000E-14
V	4.768051E+00	9.393703E-05	9.391010E-05
Zn	6.517307E-06	1.000287E-10	1.000000E-10
Zr	9.092136E-16	1.000287E-20	1.000000E-20

Single ion activities and activity coefficients are here defined
with respect to the modified NBS pH scale

	pH	Eh	pe
modified NBS pH scale	2.0445	1.0981	1.8562E+01
rational pH scale	1.9679	1.1026	1.8639E+01

pHCl = 5.8325

Oxygen fugacity = 2.09991E-01
Log oxygen fugacity = -0.67780

Activity of water = 0.99924
Log activity of water = -0.00033

Ionic strength = 5.886436E-02 molal
Sum of molalities = 0.0493888414827
Osmotic coefficient = 0.85764

Mass of solution = 1.003329 kg
Mass of solutes = 0.003615 kg
Conc. of solutes = 0.360324 per cent (w/w)

Moles of solvent H2O = 5.54925E+01
Mass of solvent H2O = 9.99713E-01 kg

Species	Molality	Log molality	Log gamma	Log activity
H+	1.0767E-02	-1.9679	-0.0765	-2.0445
Ni++	1.0205E-02	-1.9912	-0.3467	-2.3379
SO4--	9.8000E-03	-2.0088	-0.3604	-2.3691
HSO4-	4.4711E-03	-2.3496	-0.0849	-2.4345
HCrO4-	4.0506E-03	-2.3925	-0.0849	-2.4774
NiSO4(aq)	2.6222E-03	-2.5813	0.0000	-2.5813
MoO4--	2.2798E-03	-2.6421	-0.3493	-2.9914
Na+	1.9629E-03	-2.7071	-0.0984	-2.8055
Cr2O7--	8.6360E-04	-3.0637	-0.3604	-3.4241
Mn++	4.0692E-04	-3.3905	-0.3467	-3.7372
O2(aq)	2.6166E-04	-3.5823	0.0062	-3.5761
Ca++	2.6147E-04	-3.5826	-0.3467	-3.9293
Cl-	2.0086E-04	-3.6971	-0.0910	-3.7881
MnSO4(aq)	1.7643E-04	-3.7534	0.0000	-3.7534
K+	1.4596E-04	-3.8358	-0.1044	-3.9402
NO3-	1.4022E-04	-3.8532	-0.0910	-3.9442
H3PO4(aq)	1.1883E-04	-3.9251	0.0000	-3.9251
H2PO4-	1.0830E-04	-3.9654	-0.0849	-4.0503
SiO2(aq)	1.0016E-04	-3.9993	0.0000	-3.9993
VO2+	7.7682E-05	-4.1097	-0.0984	-4.2081
CaSO4(aq)	6.4964E-05	-4.1873	0.0000	-4.1873
Mg++	5.4694E-05	-4.2621	-0.3140	-4.5761
NaSO4-	5.3739E-05	-4.2697	-0.0849	-4.3546
HF(aq)	4.1206E-05	-4.3850	0.0000	-4.3850
AlF++	2.9288E-05	-4.5333	-0.3763	-4.9096
MgSO4(aq)	2.9275E-05	-4.5335	0.0000	-4.5335
AlF2+	1.9061E-05	-4.7199	-0.0984	-4.8182
B(OH)3(aq)	1.2392E-05	-4.9069	0.0000	-4.9069
VO2SO4-	1.2238E-05	-4.9123	-0.0849	-4.9972
CO2(aq)	1.0591E-05	-4.9751	0.0062	-4.9689
FeHPO4+	9.7400E-06	-5.0114	-0.0984	-5.1098
KSO4-	4.5205E-06	-5.3448	-0.0849	-5.4297
Fe+++	3.8834E-06	-5.4108	-0.6678	-6.0786
Cr+++	3.8480E-06	-5.4148	-0.6678	-6.0826
F-	3.7946E-06	-5.4208	-0.0878	-5.5087
VO(OH)3(aq)	3.4335E-06	-5.4643	0.0000	-5.4643
AlSO4+	2.1795E-06	-5.6616	-0.0984	-5.7600
Al+++	1.8489E-06	-5.7331	-0.6678	-6.4009
NiNO3+	1.6456E-06	-5.7837	-0.0984	-5.8821
H2CrO4(aq)	1.4413E-06	-5.8413	0.0000	-5.8413
FeOH++	1.4184E-06	-5.8482	-0.3763	-6.2245
AlF3(aq)	5.9304E-07	-6.2269	0.0000	-6.2269
MnH2PO4+	4.5803E-07	-6.3391	-0.0984	-6.4375
VO2F(aq)	4.2980E-07	-6.3667	0.0000	-6.3667
FeSO4+	3.7867E-07	-6.4217	-0.0984	-6.5201
HCl(aq)	3.1438E-07	-6.5025	0.0000	-6.5025
CrO4--	2.7104E-07	-6.5670	-0.3604	-6.9273
NiCl+	9.4668E-08	-7.0238	-0.0984	-7.1222

FeF++	8.4235E-08	-7.0745	-0.3763	-7.4508
CaNO3+	8.4124E-08	-7.0751	-0.0984	-7.1735
MnCl+	7.4888E-08	-7.1256	-0.0984	-7.2240
H2VO4-	7.4630E-08	-7.1271	-0.0849	-7.2120
CrO3Cl-	6.4256E-08	-7.1921	-0.0849	-7.2770
HNO3(aq)	5.1153E-08	-7.2911	0.0000	-7.2911
VO2(OH)2-	4.6250E-08	-7.3349	-0.0849	-7.4198
NaCl(aq)	4.2602E-08	-7.3706	0.0000	-7.3706
MnNO3+	4.1402E-08	-7.3830	-0.0984	-7.4814
HPO3F-	3.7602E-08	-7.4248	-0.0849	-7.5097
H2SO4(aq)	3.3193E-08	-7.4790	0.0000	-7.4790
VO2HPO4-	3.1305E-08	-7.5044	-0.0849	-7.5893
Fe(SO4)2-	3.0322E-08	-7.5182	-0.0849	-7.6032
KHSO4(aq)	2.8828E-08	-7.5402	0.0000	-7.5402
Fe(OH)2+	2.7419E-08	-7.5619	-0.0984	-7.6603
CrOH++	2.1769E-08	-7.6622	-0.3763	-8.0384
MnF+	1.9165E-08	-7.7175	-0.0984	-7.8159
AlHPO4+	7.6959E-09	-8.1137	-0.0984	-8.2121
CaCl+	4.8463E-09	-8.3146	-0.0984	-8.4130
H2F2(aq)	4.5891E-09	-8.3383	0.0000	-8.3383
MgCl+	3.9749E-09	-8.4007	-0.0984	-8.4991
MgF+	2.3229E-09	-8.6340	-0.0984	-8.7323
FeNO3++	2.2568E-09	-8.6465	-0.3763	-9.0228
FeF2+	2.2503E-09	-8.6478	-0.0984	-8.7461
CaF+	2.1984E-09	-8.6579	-0.0984	-8.7563
HPO4--	1.4097E-09	-8.8509	-0.3604	-9.2112
AlOH++	1.1545E-09	-8.9376	-0.3763	-9.3139
HCO3-	6.5380E-10	-9.1846	-0.0849	-9.2695
PO3F--	6.2463E-10	-9.2044	-0.3604	-9.5647
KCl(aq)	5.9859E-10	-9.2229	0.0000	-9.2229
AlF4-	5.6146E-10	-9.2507	-0.0849	-9.3356
NaF(aq)	4.8779E-10	-9.3118	0.0000	-9.3118
VO2F2-	4.6720E-10	-9.3305	-0.0849	-9.4154
MnHPO4(aq)	4.2813E-10	-9.3684	0.0000	-9.3684
VO++	2.7577E-10	-9.5594	-0.3763	-9.9357
CrCl++	2.2731E-10	-9.6434	-0.3763	-10.0196
Ti(OH)4(aq)	2.2601E-10	-9.6459	0.0000	-9.6459
VOSO4(aq)	1.4968E-10	-9.8248	0.0000	-9.8248
Mn+++	1.1466E-10	-9.9406	-0.8161	-10.7566
Cs+	1.0002E-10	-9.9999	-0.1078	-10.1077

--- Summary of Instantaneously Precipitated Solid Phases ---
(defined by derivatives)

--- Theoretical Rock Composition ---
g/kg

O	5.140616E+01
Fe	9.252790E-01
C	7.964622E-03
Mn	3.684575E+00
Si	4.390415E+01
Ti	7.187324E-02

--- Oxide Percentages ---

Oxide Theoretical rock

Total = 0.0000

Phase/end-member	d mol/d zi	d grams/d zi	d vol (cc)/d zi
Hematite	1.3962E-03	2.2296E-01	4.2269E-02
Pyrolusite	1.1304E-02	9.8271E-01	5.6519E+00
Quartz	2.6347E-01	1.5830E+01	5.9776E+00
Rutile	2.5300E-04	2.0209E-02	4.7615E-03
fix CO2(g)	1.1176E-04	4.9186E-03	0.0000E+00
fix O2(g)	-6.4699E-03	-2.0703E-01	0.0000E+00

--- Summary of Solid Phases (E.S.+P.R.S.) ---

Phase/End-member	Log moles	Moles	Mass, g	Volume, cc
Hematite	-5.8530	1.4029E-06	2.2403E-04	4.2472E-05
Pyrolusite	-4.9964	1.0084E-05	8.7669E-04	5.0421E-03
Quartz	-3.5793	2.6347E-04	1.5830E-02	5.9776E-03
Rutile	-6.5971	2.5287E-07	2.0199E-05	4.7591E-06
fix CO2(g)	2.3010	2.0000E+02	8.8020E+03	0.0000E+00
fix O2(g)	2.3010	2.0000E+02	6.3998E+03	0.0000E+00

	Mass, grams	Volume, cc
Created	1.520174E+04	1.106696E-02
Destroyed	2.058647E-02	0.000000E+00
Net	1.520172E+04	1.106696E-02

Warning-- these volume totals may be incomplete because of missing partial molar volume data in the data base

--- Summary of Pure Mineral Saturation States ---

Mineral	Log Q/K	Aff, kcal	State
AlF3	-5.718	-7.801	
Anglesite	-4.894	-6.676	
Anhydrite	-1.992	-2.718	
BaZrO3	69.375	94.648	ssatd
Barite	-2.764	-3.771	
Bassanite	-2.637	-3.598	
Berlinite	-6.359	-8.675	
Boric_acid	-4.749	-6.478	
CaSO4:0.5H2O(beta)	-2.805	-3.827	
CaZrO3	129.842	177.142	ssatd
Celestite	-7.194	-9.814	
Chalcedony	-0.271	-0.370	
Coesite	-0.810	-1.105	
CrO2	-0.913	-1.246	
Cristobalite(alpha)	-0.551	-0.751	
Cristobalite(beta)	-0.994	-1.356	
Crocoite	-4.587	-6.258	
Epsomite	-4.985	-6.801	
Fe(OH)3	-5.602	-7.642	
FeF3	-3.366	-4.592	
Fluorite	-4.910	-6.698	
Goethite	-0.480	-0.655	
Gypsum	-1.817	-2.479	
Hematite	0.000	0.000	satd
Hexahydrite	-5.220	-7.122	

Ice	-0.139	-0.190	
Jarosite	-5.279	-7.202	
Kieserite	-6.679	-9.111	
Manganite	-4.459	-6.084	
Mercallite	-6.915	-9.434	
Mirabilite	-6.844	-9.337	
MnHPO4	-0.001	-0.002	
MnO2(gamma)	-1.518	-2.071	
Morenosite	-2.695	-3.677	
NiSO4:6H2O(alpha)	-2.702	-3.686	
Nontronite-Ca	-3.049	-4.160	
Nontronite-H	-2.118	-2.889	
Nontronite-K	-3.418	-4.664	
Nontronite-Mg	-3.118	-4.254	
Nontronite-Na	-3.382	-4.615	
Pentahydrite	-5.560	-7.585	
Pyrolusite	0.000	0.000	satd
Quartz	0.000	0.000	satd
Rutile	0.000	0.000	satd
Sellaite	-6.209	-8.471	
Shcherbinaite	-2.876	-3.923	
SiO2(am)	-1.286	-1.754	
SrZrO3	106.235	144.934	ssatd
Starkeyite	-5.947	-8.113	
Strengite	-1.903	-2.596	
Tridymite	-0.172	-0.234	
fix CO2(g)	0.000	0.000	satd
fix O2(g)	0.000	0.000	satd

--- Summary of Solid Solutions ---

--- Carbonate-Calcite ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Calcite	5.8032E-03	-2.2363	0.0000	-2.2363
Magnesite	4.6988E-04	-3.3280	0.0000	-3.3280
Rhodochrosite	9.9373E-01	-0.0027	0.0000	-0.0027
Siderite	1.2689E-08	-7.8966	0.0000	-7.8966
Smithsonite	5.3817E-08	-7.2691	0.0000	-7.2691
Strontianite	2.2575E-07	-6.6464	0.0000	-6.6464

Mineral	Log Q/K	Aff, kcal	State
Carbonate-Calcite	-10.767	-14.689	
Calcite	-10.767	-14.689	
Magnesite	-10.767	-14.689	
Rhodochrosite	-10.767	-14.689	
Siderite	-10.767	-14.689	
Smithsonite	-10.767	-14.689	
Strontianite	-10.767	-14.689	

--- Clinoptilolite-hy-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity

Clinoptilolite-hy-Ca	9.9714E-01	-0.0012	0.0000	-0.0012
Clinoptilolite-hy-Cs	6.6060E-23	-22.1801	0.0000	-22.1801
Clinoptilolite-hy-K	1.2371E-03	-2.9076	0.0000	-2.9076
Clinoptilolite-hy-Na	1.6270E-03	-2.7886	0.0000	-2.7886
Clinoptilolite-hy-Sr	5.5424E-12	-11.2563	0.0000	-11.2563

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-hy-ss	-51.761	-70.617	
Clinoptilolite-hy-Ca	-51.761	-70.617	
Clinoptilolite-hy-Cs	-51.761	-70.617	
Clinoptilolite-hy-K	-51.761	-70.617	
Clinoptilolite-hy-Na	-51.761	-70.617	
Clinoptilolite-hy-Sr	-51.761	-70.617	

--- Clinoptilolite-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-Ca	7.6859E-01	-0.1143	-0.2812	-0.3955
Clinoptilolite-Cs	2.9802E-07	-6.5258	-16.0534	-22.5791
Clinoptilolite-K	1.1081E-01	-0.9554	-2.3503	-3.3057
Clinoptilolite-NH4	9.9288E-52	-51.0031	-125.4676	-176.4707
Clinoptilolite-Na	1.2017E-01	-0.9202	-2.2637	-3.1839
Clinoptilolite-Sr	4.2971E-04	-3.3668	-8.2824	-11.6492

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-ss	-51.368	-70.081	
Clinoptilolite-Ca	-51.368	-70.081	
Clinoptilolite-Cs	-51.368	-70.081	
Clinoptilolite-K	-51.368	-70.081	
Clinoptilolite-NH4	-51.368	-70.081	
Clinoptilolite-Na	-51.368	-70.081	
Clinoptilolite-Sr	-51.368	-70.081	

--- Saponite-tri ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Saponite-Ca	1.4994E-03	-2.8241	1.8921	-0.9319
Saponite-H	9.9731E-01	-0.0012	0.0008	-0.0004
Saponite-K	1.1388E-04	-3.9436	2.6422	-1.3014
Saponite-Mg	9.2634E-04	-3.0332	2.0323	-1.0010
Saponite-Na	1.4645E-04	-3.8343	2.5690	-1.2653

Mineral	Log Q/K	Aff, kcal	State
Saponite-tri	-41.560	-56.700	
Saponite-Ca	-41.560	-56.700	
Saponite-H	-41.560	-56.700	

Saponite-K	-41.560	-56.700
Saponite-Mg	-41.560	-56.700
Saponite-Na	-41.560	-56.700

--- Smectite-di ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Beidellite-Ca	5.6510E-55	-54.2479	36.3461	-17.9018
Beidellite-K	4.2948E-56	-55.3671	37.0959	-18.2711
Beidellite-Mg	3.4912E-55	-54.4570	36.4862	-17.9708
Beidellite-Na	5.5193E-56	-55.2581	37.0229	-18.2352
Montmor-Ca	1.5268E-49	-48.8162	32.7069	-16.1094
Montmor-K	1.8950E-50	-49.7224	33.3140	-16.4084
Montmor-Mg	1.5330E-49	-48.8145	32.7057	-16.1088
Montmor-Na	2.3749E-50	-49.6243	33.2483	-16.3760
Nontronite-Ca	5.5806E-01	-0.2533	0.1697	-0.0836
Nontronite-K	4.2413E-02	-1.3725	0.9196	-0.4529
Nontronite-Mg	3.4502E-01	-0.4622	0.3096	-0.1525
Nontronite-Na	5.4506E-02	-1.2636	0.8466	-0.4170

Mineral	Log Q/K	Aff, kcal	State
Smectite-di	-2.966	-4.046	
Beidellite-Ca	-2.966	-4.046	
Beidellite-K	-2.966	-4.046	
Beidellite-Mg	-2.966	-4.046	
Beidellite-Na	-2.966	-4.046	
Montmor-Ca	-2.966	-4.046	
Montmor-K	-2.966	-4.046	
Montmor-Mg	-2.966	-4.046	
Montmor-Na	-2.966	-4.046	
Nontronite-Ca	-2.966	-4.046	
Nontronite-K	-2.966	-4.046	
Nontronite-Mg	-2.966	-4.046	
Nontronite-Na	-2.966	-4.046	

--- Lanthanide hydroxide ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
La(OH)3	1.2786E-05	-4.8933	0.0000	-4.8933
Ce(OH)3	3.7026E-15	-14.4315	0.0000	-14.4315
Nd(OH)3(c)	3.4655E-01	-0.4602	0.0000	-0.4602
Gd(OH)3	5.8627E-01	-0.2319	0.0000	-0.2319
Sm(OH)3	6.7177E-02	-1.1728	0.0000	-1.1728

Mineral	Log Q/K	Aff, kcal	State
Lanthanide hydroxide	-24.626	-33.597	
La(OH)3	-24.626	-33.597	
Ce(OH)3	-24.626	-33.597	
Nd(OH)3(c)	-24.626	-33.597	

Gd(OH)3	-24.626	-33.597
Sm(OH)3	-24.626	-33.597

--- Rhabdophane-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaPO4:H2O	4.1145E-01	-0.3857	0.0000	-0.3857
CePO4:H2O	3.7679E-11	-10.4239	0.0000	-10.4239
NdPO4:H2O	2.2251E-01	-0.6527	0.0000	-0.6527
GdPO4:H2O	1.4986E-01	-0.8243	0.0000	-0.8243
SmPO4:H2O	2.1618E-01	-0.6652	0.0000	-0.6652

Mineral	Log Q/K	Aff, kcal	State
Rhabdophane-ss	-9.754	-13.307	
LaPO4:H2O	-9.754	-13.307	
CePO4:H2O	-9.754	-13.307	
NdPO4:H2O	-9.754	-13.307	
GdPO4:H2O	-9.754	-13.307	
SmPO4:H2O	-9.754	-13.307	

--- Lanthanide fluoride ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaF3:0.5H2O	5.7213E-01	-0.2425	0.0000	-0.2425
CeF3:0.5H2O	8.3037E-11	-10.0807	0.0000	-10.0807
NdF3:0.5H2O	3.8951E-01	-0.4095	0.0000	-0.4095
GdF3:0.5H2O	8.2958E-03	-2.0811	0.0000	-2.0811
SmF3:0.5H2O	3.0060E-02	-1.5220	0.0000	-1.5220

Mineral	Log Q/K	Aff, kcal	State
Lanthanide fluoride	-12.906	-17.607	
LaF3:0.5H2O	-12.906	-17.607	
CeF3:0.5H2O	-12.906	-17.607	
NdF3:0.5H2O	-12.906	-17.607	
GdF3:0.5H2O	-12.906	-17.607	
SmF3:0.5H2O	-12.906	-17.607	

--- Summary of Gases ---

Gas	Fugacity	Log fugacity
Al(g)	6.1411-199	-198.2118
B(g)	8.5659-204	-203.0672
BF3(g)	2.5183E-25	-24.5989
C(g)	3.0917-190	-189.5098
CH4(g)	3.5240-146	-145.4530

```
CO(g)                       6.0395E-49    -48.2190
CO2(g)                      3.1623E-04     -3.5000
Ca(g)                       7.4046-164   -163.1305
Chlorine                    3.5217E-17    -16.4533
Cs(g)                       3.5487E-89    -88.4499
Cu(g)                       7.7290E-93    -92.1119
Fluorine                    2.4336E-73    -72.6137
H2(g)                       6.1104E-42    -41.2139
H2O(g)                      2.5958E-02     -1.5857
H2S(g)                      2.2550-130   -129.6469
HCl(g)                      7.2771E-13    -12.1380
HF(g)                       2.1590E-09     -8.6657
K(g)                        2.6101E-83    -82.5833
Li(g)                       7.8926-103   -102.1028
Mg(g)                       1.1249-141   -140.9489
Nitrogen                    2.5732E-08     -7.5895
NH3(g)                      1.8473E-63    -62.7335
NO(g)                       5.0511E-20    -19.2966
NO2(g)                      3.4537E-14    -13.4617
Na(g)                       1.8572E-81    -80.7311
O2(g)                       2.0999E-01     -0.6778
Pb(g)                       7.7720E-81    -80.1095
S2(g)                       3.0367-203   -202.5176
SO2(g)                      3.9955E-43    -42.3984
Si(g)                       4.2257-221   -220.3741
SiF4(g)                     9.5921E-20    -19.0181
Ti(g)                       3.8019-231   -230.4200
TiCl4(g)                    9.4079E-62    -61.0265
U(g)                        1.0796-304   -303.9667
U2Cl10(g)                   4.9520-202   -201.3052
U2Cl8(g)                    4.3595-216   -215.3606
U2F10(g)                    3.4652-124   -123.4603
UCl(g)                      7.0040-255   -254.1547
UCl2(g)                     1.3593-203   -202.8667
UCl3(g)                     5.7782-150   -149.2382
UCl4(g)                     1.3301-113   -112.8761
UCl5(g)                     1.5752-114   -113.8027
UCl6(g)                     3.4659-110   -109.4602
UF(g)                       4.4162-241   -240.3549
UF2(g)                      1.3398-195   -194.8730
UF3(g)                      1.0002-143   -142.9999
UF4(g)                      1.1023E-88    -87.9577
UF5(g)                      5.5637E-75    -74.2546
UF6(g)                      2.7653E-75    -74.5583
UO(g)                       8.5266-220   -219.0692
UO2(g)                      1.5797-135   -134.8014
UO2Cl2(g)                   2.4290E-71    -70.6146
UO2F2(g)                    1.7367E-61    -60.7603
UO3(g)                      1.1619E-82    -81.9348
UOF4(g)                     3.2846E-66    -65.4835
Zn(g)                       1.3039E-90    -89.8847



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Stepping to zi=  1.2377E-03, delzi=  2.3772E-04, nord= 5
  time =  1.1938E+01 d, dltime =  2.2928E+00 d
Steps completed =    63, iter = 13, ncorr = 0
Most rapidly changing is zvclg1(Al+++                    ) =     -5.5108
```

```
Stepping to zi=  1.5849E-03, delzi=  3.4717E-04, nord= 6
  time =  1.5286E+01 d, dltime =  3.3485E+00 d
Steps completed =    64, iter =  7, ncorr = 0
Most rapidly changing is zvclg1(Al+++                  ) =     -5.2337

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                    Reaction progress        =  1.58489319246103E-03
                    Log of reaction progress =      -2.8000000



                    Time =  1.321E+06 sec
                         =  1.529E+01 days
                         =  4.185E-02 years

                    Log sec =        6.121
                    Log days =       1.184
                    Log years =     -1.378

                    Temperature    =     25.000 degrees C
                    total pressure =      1.013 bars


Step size is limited by the print requirement


                              --- Reactant Summary ---


    Reactant                  Moles     Delta moles    Mass, g    Delta Mass, g

 Tuff                       9.9998E+01   1.5849E-03   2.0586E+03   3.2627E-02


               Current total mass =  2.05861E+03 grams
               Delta total mass   =  3.26274E-02 grams
               Delta total volume =      0.00000 cc


    Reactant                Rel. Rate      Rate         Rate
                             mol/mol       mol/s      mol/s/cm2

 Tuff                       1.0000E+00   1.2000E-09   2.5000E-15


    Reactant                  Affinity   Surface Area
                              kcal/mol     mol/s/cm2

 Tuff                        999.00000   4.8000E+05


    Reactant                Rate Constants, mol/s/cm2

 Tuff
                   Forward    2.5000E-15


        Affinity of the overall irreversible reaction=     0.000 kcal
        Contributions from irreversible reactions
        with no thermodynamic data are not included
```

--- Element Totals for the Aqueous Solution ---

Element	mg/kg soln.	Molality	Moles
O	8.865374E+05	5.561111E+01	5.559522E+01
Al	2.234077E+00	8.309971E-05	8.307597E-05
B	1.334821E-01	1.239154E-05	1.238800E-05
Ba	1.368711E-05	1.000286E-10	1.000000E-10
Ca	1.308717E+01	3.277238E-04	3.276301E-04
Ce	1.396498E-19	1.000285E-24	9.999994E-25
Cl	7.116471E+00	2.014576E-04	2.014000E-04
Cr	2.996334E+02	5.783460E-03	5.781807E-03
Cs	1.324642E-05	1.000286E-10	1.000000E-10
Cu	6.650180E-10	1.050300E-14	1.050000E-14
F	2.172829E+00	1.147828E-04	1.147500E-04
Fe	8.541629E-01	1.535003E-05	1.534564E-05
Gd	1.567280E-09	1.000286E-14	1.000000E-14
H	1.115150E+05	1.110367E+02	1.110050E+02
C	1.267545E-01	1.059138E-05	1.058835E-05
P	7.327727E+00	2.374344E-04	2.373665E-04
K	6.355057E+00	1.631285E-04	1.630819E-04
La	1.384444E-09	1.000286E-14	1.000000E-14
Li	6.917958E-07	1.000286E-10	1.000000E-10
Mg	2.051395E+00	8.470749E-05	8.468329E-05
Mn	3.159007E+01	5.770926E-04	5.769277E-04
Mo	2.179373E+02	2.279817E-03	2.279166E-03
N	1.982354E+00	1.420406E-04	1.420000E-04
Na	4.651532E+01	2.030624E-03	2.030044E-03
Nd	1.437612E-09	1.000286E-14	1.000000E-14
Ni	7.502043E+02	1.282873E-02	1.282506E-02
Pb	2.065122E-05	1.000286E-10	1.000000E-10
Pu	2.431900E-09	1.000286E-14	1.000000E-14
S	5.507361E+02	1.723721E-02	1.723228E-02
Si	2.802941E+00	1.001613E-04	1.001327E-04
Sm	1.498609E-09	1.000286E-14	1.000000E-14
Sr	8.732913E-06	1.000286E-10	1.000000E-10
Ti	1.078261E-05	2.260154E-10	2.259508E-10
U	2.372387E-09	1.000286E-14	1.000000E-14
V	4.768040E+00	9.393694E-05	9.391010E-05
Zn	6.517293E-06	1.000286E-10	1.000000E-10
Zr	9.092117E-16	1.000286E-20	1.000000E-20

Single ion activities and activity coefficients are here defined
with respect to the modified NBS pH scale

	pH	Eh	pe
modified NBS pH scale	2.0471	1.0979	1.8560E+01
rational pH scale	1.9706	1.1025	1.8636E+01

pHCl = 5.8352

Oxygen fugacity = 2.09991E-01
Log oxygen fugacity = -0.67780

Activity of water = 0.99924
Log activity of water = -0.00033

Ionic strength = 5.891595E-02 molal
Sum of molalities = 0.0493480894684
Osmotic coefficient = 0.85737

Mass of solution = 1.003331 kg
Mass of solutes = 0.003616 kg
Conc. of solutes = 0.360443 per cent (w/w)

Moles of solvent H2O = 5.54926E+01
Mass of solvent H2O = 9.99714E-01 kg

Species	Molality	Log molality	Log gamma	Log activity
H+	1.0701E-02	-1.9706	-0.0766	-2.0471
Ni++	1.0203E-02	-1.9913	-0.3468	-2.3381
SO4--	9.8152E-03	-2.0081	-0.3605	-2.3686
HSO4-	4.4496E-03	-2.3517	-0.0849	-2.4366
HCrO4-	4.0505E-03	-2.3925	-0.0849	-2.4774
NiSO4(aq)	2.6244E-03	-2.5810	0.0000	-2.5810
MoO4--	2.2798E-03	-2.6421	-0.3494	-2.9915
Na+	1.9764E-03	-2.7041	-0.0984	-2.8025
Cr2O7--	8.6369E-04	-3.0636	-0.3605	-3.4241
Mn++	4.0202E-04	-3.3957	-0.3468	-3.7426
Ca++	2.6237E-04	-3.5811	-0.3468	-3.9279
O2(aq)	2.6165E-04	-3.5823	0.0062	-3.5761
Cl-	2.0086E-04	-3.6971	-0.0910	-3.7881
MnSO4(aq)	1.7449E-04	-3.7582	0.0000	-3.7582
K+	1.5819E-04	-3.8008	-0.1045	-3.9053
NO3-	1.4022E-04	-3.8532	-0.0910	-3.9442
H3PO4(aq)	1.1854E-04	-3.9261	0.0000	-3.9261
H2PO4-	1.0870E-04	-3.9638	-0.0849	-4.0487
SiO2(aq)	1.0016E-04	-3.9993	0.0000	-3.9993
VO2+	7.7809E-05	-4.1090	-0.0984	-4.2074
CaSO4(aq)	6.5258E-05	-4.1854	0.0000	-4.1854
Mg++	5.5151E-05	-4.2584	-0.3141	-4.5725
NaSO4-	5.4178E-05	-4.2662	-0.0849	-4.3511
AlF++	5.1420E-05	-4.2889	-0.3764	-4.6652
MgSO4(aq)	2.9551E-05	-4.5294	0.0000	-4.5294
HF(aq)	2.2765E-05	-4.6427	0.0000	-4.6427
AlF2+	1.8599E-05	-4.7305	-0.0984	-4.8289
B(OH)3(aq)	1.2392E-05	-4.9069	0.0000	-4.9069
VO2SO4-	1.2274E-05	-4.9110	-0.0849	-4.9960
CO2(aq)	1.0591E-05	-4.9751	0.0062	-4.9689
FeHPO4+	9.6568E-06	-5.0152	-0.0984	-5.1136
AlSO4+	6.8908E-06	-5.1617	-0.0984	-5.2601
Al+++	5.8399E-06	-5.2336	-0.6680	-5.9016
KSO4-	4.9053E-06	-5.3093	-0.0849	-5.3943
Fe+++	3.8136E-06	-5.4187	-0.6680	-6.0866
Cr+++	3.7553E-06	-5.4254	-0.6680	-6.0933
VO(OH)3(aq)	3.4602E-06	-5.4609	0.0000	-5.4609
F-	2.1096E-06	-5.6758	-0.0879	-5.7637
NiNO3+	1.6448E-06	-5.7839	-0.0984	-5.8823
H2CrO4(aq)	1.4323E-06	-5.8440	0.0000	-5.8440
FeOH++	1.4014E-06	-5.8534	-0.3764	-6.2298
MnH2PO4+	4.5412E-07	-6.3428	-0.0984	-6.4412
FeSO4+	3.7222E-07	-6.4292	-0.0984	-6.5276
AlF3(aq)	3.2166E-07	-6.4926	0.0000	-6.4926

HCl(aq)	3.1243E-07	-6.5052	0.0000	-6.5052
CrO4--	2.7277E-07	-6.5642	-0.3605	-6.9247
VO2F(aq)	2.3930E-07	-6.6211	0.0000	-6.6211
NiCl+	9.4627E-08	-7.0240	-0.0984	-7.1224
CaNO3+	8.4398E-08	-7.0737	-0.0984	-7.1721
H2VO4-	7.5680E-08	-7.1210	-0.0849	-7.2060
MnCl+	7.3970E-08	-7.1309	-0.0984	-7.2294
CrO3Cl-	6.3855E-08	-7.1948	-0.0849	-7.2797
HNO3(aq)	5.0835E-08	-7.2938	0.0000	-7.2938
VO2(OH)2-	4.6901E-08	-7.3288	-0.0849	-7.4138
FeF++	4.5980E-08	-7.3374	-0.3764	-7.7138
NaCl(aq)	4.2890E-08	-7.3676	0.0000	-7.3676
MnNO3+	4.0894E-08	-7.3883	-0.0984	-7.4868
H2SO4(aq)	3.2827E-08	-7.4838	0.0000	-7.4838
VO2HPO4-	3.1667E-08	-7.4994	-0.0849	-7.5843
KHSO4(aq)	3.1088E-08	-7.5074	0.0000	-7.5074
Fe(SO4)2-	2.9843E-08	-7.5252	-0.0849	-7.6101
Fe(OH)2+	2.7252E-08	-7.5646	-0.0984	-7.6630
AlHPO4+	2.4541E-08	-7.6101	-0.0984	-7.7085
CrOH++	2.1373E-08	-7.6701	-0.3764	-8.0465
HPO3F-	2.0852E-08	-7.6808	-0.0849	-7.7658
MnF+	1.0524E-08	-7.9778	-0.0984	-8.0762
CaCl+	4.8621E-09	-8.3132	-0.0984	-8.4116
MgCl+	4.0074E-09	-8.3971	-0.0984	-8.4956
AlOH++	3.6688E-09	-8.4355	-0.3764	-8.8119
FeNO3++	2.2159E-09	-8.6544	-0.3764	-9.0308
HPO4--	1.4241E-09	-8.8465	-0.3605	-9.2070
H2F2(aq)	1.4007E-09	-8.8536	0.0000	-8.8536
MgF+	1.3019E-09	-8.8854	-0.0984	-8.9838
CaF+	1.2262E-09	-8.9115	-0.0984	-9.0099
FeF2+	6.8268E-10	-9.1658	-0.0984	-9.2642
HCO3-	6.5789E-10	-9.1818	-0.0849	-9.2668
KCl(aq)	6.4864E-10	-9.1880	0.0000	-9.1880
MnHPO4(aq)	4.2707E-10	-9.3695	0.0000	-9.3695
PO3F--	3.4861E-10	-9.4577	-0.3605	-9.8181
VO++	2.7458E-10	-9.5613	-0.3764	-9.9377
NaF(aq)	2.7301E-10	-9.5638	0.0000	-9.5638
Ti(OH)4(aq)	2.2602E-10	-9.6459	0.0000	-9.6459
CrCl++	2.2180E-10	-9.6540	-0.3764	-10.0304
AlF4-	1.6930E-10	-9.7714	-0.0849	-9.8563
VOSO4(aq)	1.4918E-10	-9.8263	0.0000	-9.8263
VO2F2-	1.4461E-10	-9.8398	-0.0849	-9.9247
Mn+++	1.1263E-10	-9.9484	-0.8163	-10.7647
Cs+	1.0002E-10	-9.9999	-0.1078	-10.1077

--- Summary of Instantaneously Precipitated Solid Phases ---
(defined by derivatives)

--- Theoretical Rock Composition ---
g/kg

O	5.127917E+01
Fe	9.153871E-01
C	7.890988E-03
Mn	4.024550E+00
Si	4.370146E+01
Ti	7.154142E-02

--- Oxide Percentages ---

Oxide Theoretical rock

Total = 0.0000

Phase/end-member	d mol/d zi	d grams/d zi	d vol (cc)/d zi
Hematite	1.3877E-03	2.2160E-01	4.2011E-02
Pyrolusite	1.2404E-02	1.0784E+00	6.2020E+00
Quartz	2.6347E-01	1.5830E+01	5.9776E+00
Rutile	2.5300E-04	2.0209E-02	4.7615E-03
fix CO2(g)	1.1124E-04	4.8957E-03	0.0000E+00
fix O2(g)	-6.9730E-03	-2.2313E-01	0.0000E+00

--- Summary of Solid Phases (E.S.+P.R.S.) ---

Phase/End-member	Log moles	Moles	Mass, g	Volume, cc
Hematite	-5.6542	2.2170E-06	3.5404E-04	6.7119E-05
Pyrolusite	-4.7683	1.7050E-05	1.4823E-03	8.5249E-03
Quartz	-3.3793	4.1757E-04	2.5089E-02	9.4739E-03
Rutile	-6.3970	4.0085E-07	3.2020E-05	7.5440E-06
fix CO2(g)	2.3010	2.0000E+02	8.8020E+03	0.0000E+00
fix O2(g)	2.3010	2.0000E+02	6.3998E+03	0.0000E+00

	Mass, grams	Volume, cc
Created	1.520175E+04	1.807342E-02
Destroyed	3.262735E-02	0.000000E+00
Net	1.520171E+04	1.807342E-02

Warning-- these volume totals may be incomplete because of missing partial molar volume data in the data base

--- Summary of Pure Mineral Saturation States ---

Mineral	Log Q/K	Aff, kcal	State
AlF3	-5.984	-8.163	
Anglesite	-4.893	-6.676	
Anhydrite	-1.990	-2.715	
BaZrO3	69.393	94.672	ssatd
Barite	-2.764	-3.770	
Bassanite	-2.635	-3.595	
Berlinite	-5.853	-7.985	
Boehmite	-7.325	-9.993	
Boric_acid	-4.749	-6.478	
CaSO4:0.5H2O(beta)	-2.803	-3.824	
CaZrO3	129.861	177.168	ssatd
Celestite	-7.193	-9.814	
Chalcedony	-0.271	-0.370	
Coesite	-0.810	-1.105	
CrO2	-0.916	-1.250	
Cristobalite(alpha)	-0.551	-0.751	
Cristobalite(beta)	-0.994	-1.356	
Crocoite	-4.584	-6.254	
Diaspore	-6.921	-9.442	
Epsomite	-4.981	-6.796	
Fe(OH)3	-5.602	-7.642	

FeF3	-4.139	-5.647	
Fluorite	-5.418	-7.392	
Goethite	-0.480	-0.655	
Gypsum	-1.815	-2.476	
Hematite	0.000	0.000	satd
Hexahydrite	-5.216	-7.117	
Ice	-0.139	-0.190	
Jarosite	-5.251	-7.164	
Kieserite	-6.674	-9.106	
Manganite	-4.459	-6.084	
Mercallite	-6.882	-9.389	
Mirabilite	-6.837	-9.328	
MnHPO4	-0.003	-0.003	
MnO2(gamma)	-1.518	-2.071	
Morenosite	-2.695	-3.677	
NiSO4:6H2O(alpha)	-2.701	-3.686	
Nontronite-Ca	-2.881	-3.930	
Nontronite-H	-1.950	-2.661	
Nontronite-K	-3.239	-4.418	
Nontronite-Mg	-2.949	-4.023	
Nontronite-Na	-3.213	-4.384	
Pentahydrite	-5.556	-7.579	
Pyrolusite	0.000	0.000	satd
Quartz	0.000	0.000	satd
Rutile	0.000	0.000	satd
Sellaite	-6.716	-9.162	
Shcherbinaite	-2.869	-3.914	
SiO2(am)	-1.286	-1.754	
SrZrO3	106.252	144.958	ssatd
Starkeyite	-5.943	-8.107	
Strengite	-1.904	-2.598	
Tridymite	-0.172	-0.234	
fix CO2(g)	0.000	0.000	satd
fix O2(g)	0.000	0.000	satd

--- Summary of Solid Solutions ---

--- Carbonate-Calcite ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Calcite	5.8938E-03	-2.2296	0.0000	-2.2296
Magnesite	4.7955E-04	-3.3192	0.0000	-3.3192
Rhodochrosite	9.9363E-01	-0.0028	0.0000	-0.0028
Siderite	1.2687E-08	-7.8966	0.0000	-7.8966
Smithsonite	5.4468E-08	-7.2639	0.0000	-7.2639
Strontianite	2.2841E-07	-6.6413	0.0000	-6.6413

Mineral	Log Q/K	Aff, kcal	State
Carbonate-Calcite	-10.767	-14.689	
Calcite	-10.767	-14.689	
Magnesite	-10.767	-14.689	
Rhodochrosite	-10.767	-14.689	
Siderite	-10.767	-14.689	
Smithsonite	-10.767	-14.689	
Strontianite	-10.767	-14.689	

--- Clinoptilolite-hy-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-hy-Ca	9.9672E-01	-0.0014	0.0000	-0.0014
Clinoptilolite-hy-Cs	6.5642E-23	-22.1828	0.0000	-22.1828
Clinoptilolite-hy-K	1.6248E-03	-2.7892	0.0000	-2.7892
Clinoptilolite-hy-Na	1.6558E-03	-2.7810	0.0000	-2.7810
Clinoptilolite-hy-Sr	5.5040E-12	-11.2593	0.0000	-11.2593

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-hy-ss	-49.999	-68.213	
Clinoptilolite-hy-Ca	-49.999	-68.213	
Clinoptilolite-hy-Cs	-49.999	-68.213	
Clinoptilolite-hy-K	-49.999	-68.213	
Clinoptilolite-hy-Na	-49.999	-68.213	
Clinoptilolite-hy-Sr	-49.999	-68.213	

--- Clinoptilolite-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-Ca	7.6119E-01	-0.1185	-0.2915	-0.4100
Clinoptilolite-Cs	2.9465E-07	-6.5307	-16.0655	-22.5962
Clinoptilolite-K	1.1876E-01	-0.9253	-2.2763	-3.2017
Clinoptilolite-NH4	9.6960E-52	-51.0134	-125.4930	-176.5064
Clinoptilolite-Na	1.1963E-01	-0.9222	-2.2685	-3.1907
Clinoptilolite-Sr	4.2477E-04	-3.3718	-8.2947	-11.6666

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-ss	-49.591	-67.657	
Clinoptilolite-Ca	-49.591	-67.657	
Clinoptilolite-Cs	-49.591	-67.657	
Clinoptilolite-K	-49.591	-67.657	
Clinoptilolite-NH4	-49.591	-67.657	
Clinoptilolite-Na	-49.591	-67.657	
Clinoptilolite-Sr	-49.591	-67.657	

--- Saponite-tri ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Saponite-Ca	1.5111E-03	-2.8207	1.8899	-0.9308
Saponite-H	9.9728E-01	-0.0012	0.0008	-0.0004
Saponite-K	1.2417E-04	-3.9060	2.6170	-1.2890
Saponite-Mg	9.3584E-04	-3.0288	2.0293	-0.9995
Saponite-Na	1.4835E-04	-3.8287	2.5652	-1.2635

Mineral	Log Q/K	Aff, kcal	State
Saponite-tri	-41.366	-56.435	
Saponite-Ca	-41.366	-56.435	
Saponite-H	-41.366	-56.435	
Saponite-K	-41.366	-56.435	
Saponite-Mg	-41.366	-56.435	
Saponite-Na	-41.366	-56.435	

--- Smectite-di ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Beidellite-Ca	6.6849E-52	-51.1749	34.2872	-16.8877
Beidellite-K	5.4968E-53	-52.2599	35.0141	-17.2458
Beidellite-Mg	4.1401E-52	-51.3830	34.4266	-16.9564
Beidellite-Na	6.5631E-53	-52.1829	34.9625	-17.2204
Montmor-Ca	1.7820E-47	-46.7491	31.3219	-15.4272
Montmor-K	2.3930E-48	-47.6211	31.9061	-15.7149
Montmor-Mg	1.7936E-47	-46.7463	31.3200	-15.4263
Montmor-Na	2.7863E-48	-47.5550	31.8618	-15.6931
Nontronite-Ca	5.5551E-01	-0.2553	0.1711	-0.0843
Nontronite-K	4.5678E-02	-1.3403	0.8980	-0.4423
Nontronite-Mg	3.4428E-01	-0.4631	0.3103	-0.1528
Nontronite-Na	5.4538E-02	-1.2633	0.8464	-0.4169

Mineral	Log Q/K	Aff, kcal	State
Smectite-di	-2.796	-3.815	
Beidellite-Ca	-2.796	-3.815	
Beidellite-K	-2.796	-3.815	
Beidellite-Mg	-2.796	-3.815	
Beidellite-Na	-2.796	-3.815	
Montmor-Ca	-2.796	-3.815	
Montmor-K	-2.796	-3.815	
Montmor-Mg	-2.796	-3.815	
Montmor-Na	-2.796	-3.815	
Nontronite-Ca	-2.796	-3.815	
Nontronite-K	-2.796	-3.815	
Nontronite-Mg	-2.796	-3.815	
Nontronite-Na	-2.796	-3.815	

--- Lanthanide hydroxide ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
La(OH)3	1.2773E-05	-4.8937	0.0000	-4.8937
Ce(OH)3	3.7008E-15	-14.4317	0.0000	-14.4317
Nd(OH)3(c)	3.4635E-01	-0.4605	0.0000	-0.4605
Gd(OH)3	5.8650E-01	-0.2317	0.0000	-0.2317
Sm(OH)3	6.7135E-02	-1.1731	0.0000	-1.1731

Mineral	Log Q/K	Aff, kcal	State
Lanthanide hydroxide	-24.618	-33.586	
La(OH)3	-24.618	-33.586	
Ce(OH)3	-24.618	-33.586	
Nd(OH)3(c)	-24.618	-33.586	
Gd(OH)3	-24.618	-33.586	
Sm(OH)3	-24.618	-33.586	

--- Rhabdophane-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaPO4:H2O	4.1129E-01	-0.3859	0.0000	-0.3859
CePO4:H2O	3.7684E-11	-10.4238	0.0000	-10.4238
NdPO4:H2O	2.2252E-01	-0.6526	0.0000	-0.6526
GdPO4:H2O	1.5001E-01	-0.8239	0.0000	-0.8239
SmPO4:H2O	2.1618E-01	-0.6652	0.0000	-0.6652

Mineral	Log Q/K	Aff, kcal	State
Rhabdophane-ss	-9.747	-13.297	
LaPO4:H2O	-9.747	-13.297	
CePO4:H2O	-9.747	-13.297	
NdPO4:H2O	-9.747	-13.297	
GdPO4:H2O	-9.747	-13.297	
SmPO4:H2O	-9.747	-13.297	

--- Lanthanide fluoride ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaF3:0.5H2O	5.7201E-01	-0.2426	0.0000	-0.2426
CeF3:0.5H2O	8.3064E-11	-10.0806	0.0000	-10.0806
NdF3:0.5H2O	3.8961E-01	-0.4094	0.0000	-0.4094
GdF3:0.5H2O	8.3060E-03	-2.0806	0.0000	-2.0806
SmF3:0.5H2O	3.0066E-02	-1.5219	0.0000	-1.5219

Mineral	Log Q/K	Aff, kcal	State
Lanthanide fluoride	-13.671	-18.651	
LaF3:0.5H2O	-13.671	-18.651	
CeF3:0.5H2O	-13.671	-18.651	
NdF3:0.5H2O	-13.671	-18.651	
GdF3:0.5H2O	-13.671	-18.651	
SmF3:0.5H2O	-13.671	-18.651	

--- Summary of Gases ---

Gas	Fugacity	Log fugacity

Al(g)	1.9752-198	-197.7044
B(g)	8.5659-204	-203.0672
BF3(g)	4.2466E-26	-25.3720
C(g)	3.0917-190	-189.5098
CH4(g)	3.5240-146	-145.4530
CO(g)	6.0395E-49	-48.2190
CO2(g)	3.1623E-04	-3.5000
Ca(g)	7.5209-164	-163.1237
Chlorine	3.4780E-17	-16.4587
Cs(g)	3.5703E-89	-88.4473
Cu(g)	7.8232E-93	-92.1066
Fluorine	7.4282E-74	-73.1291
H2(g)	6.1104E-42	-41.2139
H2O(g)	2.5958E-02	-1.5857
H2S(g)	2.2302-130	-129.6517
HCl(g)	7.2319E-13	-12.1407
HF(g)	1.1928E-09	-8.9234
K(g)	2.8460E-83	-82.5458
Li(g)	7.9408-103	-102.1001
Mg(g)	1.1482-141	-140.9400
Nitrogen	2.5413E-08	-7.5949
NH3(g)	1.8358E-63	-62.7362
NO(g)	5.0197E-20	-19.2993
NO2(g)	3.4322E-14	-13.4644
Na(g)	1.8814E-81	-80.7255
O2(g)	2.0999E-01	-0.6778
Pb(g)	7.8664E-81	-80.1042
S2(g)	2.9702-203	-202.5272
SO2(g)	3.9515E-43	-42.4032
Si(g)	4.2257-221	-220.3741
SiF4(g)	8.9364E-21	-20.0488
Ti(g)	3.8019-231	-230.4200
TiCl4(g)	9.1764E-62	-61.0373
U(g)	1.1091-304	-303.9550
U2Cl10(g)	4.9107-202	-201.3089
U2Cl8(g)	4.3773-216	-215.3588
U2F10(g)	9.6889-127	-126.0137
UCl(g)	7.1507-255	-254.1456
UCl2(g)	1.3792-203	-202.8604
UCl3(g)	5.8262-150	-149.2346
UCl4(g)	1.3328-113	-112.8752
UCl5(g)	1.5686-114	-113.8045
UCl6(g)	3.4300-110	-109.4647
UF(g)	2.5065-241	-240.6009
UF2(g)	4.2011-196	-195.3766
UF3(g)	1.7328-144	-143.7612
UF4(g)	1.0550E-89	-88.9768
UF5(g)	2.9420E-76	-75.5314
UF6(g)	8.0785E-77	-76.0927
UO(g)	8.7596-220	-219.0575
UO2(g)	1.6229-135	-134.7897
UO2Cl2(g)	2.4644E-71	-70.6083
UO2F2(g)	5.4458E-62	-61.2639
UO3(g)	1.1937E-82	-81.9231
UOF4(g)	3.1437E-67	-66.5026
Zn(g)	1.3198E-90	-89.8795

- -

```
Stepping to zi=  1.9806E-03, delzi=  3.9574E-04, nord= 6
  time =  1.9103E+01 d, dltime =  3.8169E+00 d
Steps completed =    65, iter = 13, ncorr = 0
Most rapidly changing is zvclg1(Al+++                  ) =     -4.9811

Stepping to zi=  2.3728E-03, delzi=  3.9218E-04, nord= 6
  time =  2.2886E+01 d, dltime =  3.7826E+00 d
Steps completed =    66, iter = 14, ncorr = 0
Most rapidly changing is zvclg1(Al+++                  ) =     -4.7865

Stepping to zi=  2.5119E-03, delzi=  1.3908E-04, nord= 6
  time =  2.4227E+01 d, dltime =  1.3414E+00 d
Steps completed =    67, iter =  7, ncorr = 0
Most rapidly changing is zvclg1(Al+++                  ) =     -4.7282

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                    Reaction progress        =  2.51188643150945E-03
                    Log of reaction progress =      -2.6000000



                    Time =  2.093E+06 sec
                         =  2.423E+01 days
                         =  6.633E-02 years

                    Log sec =        6.321
                    Log days =       1.384
                    Log years =     -1.178

                    Temperature    =     25.000 degrees C
                    total pressure =      1.013 bars


Step size is limited by the print requirement


                              --- Reactant Summary ---


    Reactant                   Moles     Delta moles    Mass, g    Delta Mass, g

 Tuff                       9.9997E+01   2.5119E-03   2.0586E+03   5.1711E-02


               Current total mass =  2.05859E+03 grams
               Delta total mass   =  5.17109E-02 grams
               Delta total volume =      0.00000 cc


    Reactant                Rel. Rate      Rate         Rate
                             mol/mol       mol/s      mol/s/cm2

 Tuff                       1.0000E+00   1.2000E-09   2.5000E-15


    Reactant                   Affinity   Surface Area
                               kcal/mol     mol/s/cm2

 Tuff                        999.00000   4.8000E+05
```

Reactant Rate Constants, mol/s/cm2

Tuff
Forward 2.5000E-15

Affinity of the overall irreversible reaction= 0.000 kcal
Contributions from irreversible reactions
with no thermodynamic data are not included

--- Element Totals for the Aqueous Solution ---

Element	mg/kg soln.	Molality	Moles
O	8.865358E+05	5.561111E+01	5.559531E+01
Al	3.517443E+00	1.308366E-04	1.307994E-04
B	1.334816E-01	1.239152E-05	1.238800E-05
Ba	1.368707E-05	1.000284E-10	1.000000E-10
Ca	1.316329E+01	3.296306E-04	3.295369E-04
Ce	1.396493E-19	1.000284E-24	9.999994E-25
Cl	7.116447E+00	2.014573E-04	2.014000E-04
Cr	2.996324E+02	5.783451E-03	5.781807E-03
Cs	1.324638E-05	1.000284E-10	1.000000E-10
Cu	6.650158E-10	1.050299E-14	1.050000E-14
F	2.172822E+00	1.147826E-04	1.147500E-04
Fe	8.356528E-01	1.501741E-05	1.501314E-05
Gd	1.567275E-09	1.000284E-14	1.000000E-14
H	1.115146E+05	1.110366E+02	1.110050E+02
C	1.267518E-01	1.059118E-05	1.058816E-05
P	7.328948E+00	2.374743E-04	2.374069E-04
K	7.133893E+00	1.831208E-04	1.830688E-04
La	1.384439E-09	1.000284E-14	1.000000E-14
Li	6.917935E-07	1.000284E-10	1.000000E-10
Mg	2.079502E+00	8.586829E-05	8.584388E-05
Mn	3.094071E+01	5.652311E-04	5.650704E-04
Mo	2.179366E+02	2.279814E-03	2.279166E-03
N	1.982348E+00	1.420404E-04	1.420000E-04
Na	4.702234E+01	2.052762E-03	2.052179E-03
Nd	1.437607E-09	1.000284E-14	1.000000E-14
Ni	7.502018E+02	1.282871E-02	1.282506E-02
Pb	2.065115E-05	1.000284E-10	1.000000E-10
Pu	2.431892E-09	1.000284E-14	1.000000E-14
S	5.507342E+02	1.723718E-02	1.723228E-02
Si	2.802936E+00	1.001613E-04	1.001328E-04
Sm	1.498604E-09	1.000284E-14	1.000000E-14
Sr	8.732884E-06	1.000284E-10	1.000000E-10
Ti	1.078262E-05	2.260160E-10	2.259517E-10
U	2.372379E-09	1.000284E-14	1.000000E-14
V	4.768024E+00	9.393680E-05	9.391010E-05
Zn	6.517271E-06	1.000284E-10	1.000000E-10
Zr	9.092086E-16	1.000284E-20	1.000000E-20

Single ion activities and activity coefficients are here defined
with respect to the modified NBS pH scale

pH Eh pe

modified NBS pH scale	2.0518	1.0977	1.8555E+01
rational pH scale	1.9752	1.1022	1.8632E+01

pHCl = 5.8400

Oxygen fugacity = 2.09991E-01
Log oxygen fugacity = -0.67780

Activity of water = 0.99924
Log activity of water = -0.00033

Ionic strength = 5.899837E-02 molal
Sum of molalities = 0.0492842615583
Osmotic coefficient = 0.85693

Mass of solution = 1.003334 kg
Mass of solutes = 0.003618 kg
Conc. of solutes = 0.360627 per cent (w/w)

Moles of solvent H2O = 5.54927E+01
Mass of solvent H2O = 9.99716E-01 kg

Species	Molality	Log molality	Log gamma	Log activity
H+	1.0587E-02	-1.9752	-0.0766	-2.0518
Ni++	1.0200E-02	-1.9914	-0.3470	-2.3384
SO4--	9.8374E-03	-2.0071	-0.3607	-2.3678
HSO4-	4.4103E-03	-2.3555	-0.0850	-2.4405
HCrO4-	4.0504E-03	-2.3925	-0.0850	-2.4775
NiSO4(aq)	2.6274E-03	-2.5805	0.0000	-2.5805
MoO4--	2.2798E-03	-2.6421	-0.3496	-2.9917
Na+	1.9979E-03	-2.6994	-0.0985	-2.7979
Cr2O7--	8.6384E-04	-3.0636	-0.3607	-3.4242
Mn++	3.9359E-04	-3.4050	-0.3470	-3.7519
Ca++	2.6383E-04	-3.5787	-0.3470	-3.9257
O2(aq)	2.6165E-04	-3.5823	0.0062	-3.5761
Cl-	2.0086E-04	-3.6971	-0.0910	-3.7881
K+	1.7757E-04	-3.7506	-0.1045	-3.8552
MnSO4(aq)	1.7108E-04	-3.7668	0.0000	-3.7668
NO3-	1.4022E-04	-3.8532	-0.0910	-3.9442
H3PO4(aq)	1.1800E-04	-3.9281	0.0000	-3.9281
H2PO4-	1.0939E-04	-3.9610	-0.0850	-4.0460
SiO2(aq)	1.0016E-04	-3.9993	0.0000	-3.9993
VO2+	7.7863E-05	-4.1087	-0.0985	-4.2071
AlF++	7.6866E-05	-4.1143	-0.3766	-4.4908
CaSO4(aq)	6.5714E-05	-4.1823	0.0000	-4.1823
Mg++	5.5878E-05	-4.2528	-0.3142	-4.5670
NaSO4-	5.4865E-05	-4.2607	-0.0850	-4.3457
MgSO4(aq)	2.9986E-05	-4.5231	0.0000	-4.5231
AlSO4+	2.2096E-05	-4.6557	-0.0985	-4.7542
Al+++	1.8701E-05	-4.7281	-0.6682	-5.3964
AlF2+	1.2976E-05	-4.8868	-0.0985	-4.9853
B(OH)3(aq)	1.2392E-05	-4.9069	0.0000	-4.9069
VO2SO4-	1.2304E-05	-4.9099	-0.0850	-4.9949
CO2(aq)	1.0591E-05	-4.9751	0.0062	-4.9689
HF(aq)	1.0515E-05	-4.9782	0.0000	-4.9782
FeHPO4+	9.5107E-06	-5.0218	-0.0985	-5.1203

KSO4-	5.5161E-06	-5.2584	-0.0850	-5.3433
Fe+++	3.6945E-06	-5.4324	-0.6682	-6.1007
Cr+++	3.5985E-06	-5.4439	-0.6682	-6.1121
VO(OH)3(aq)	3.4997E-06	-5.4560	0.0000	-5.4560
NiNO3+	1.6438E-06	-5.7842	-0.0985	-5.8826
H2CrO4(aq)	1.4167E-06	-5.8487	0.0000	-5.8487
FeOH++	1.3721E-06	-5.8626	-0.3766	-6.2392
F-	9.8502E-07	-6.0066	-0.0879	-6.0945
MnH2PO4+	4.4725E-07	-6.3495	-0.0985	-6.4479
FeSO4+	3.6107E-07	-6.4424	-0.0985	-6.5409
HCl(aq)	3.0905E-07	-6.5100	0.0000	-6.5100
CrO4--	2.7581E-07	-6.5594	-0.3607	-6.9201
VO2F(aq)	1.1179E-07	-6.9516	0.0000	-6.9516
AlF3(aq)	1.0477E-07	-6.9798	0.0000	-6.9798
NiCl+	9.4566E-08	-7.0243	-0.0985	-7.1227
CaNO3+	8.4834E-08	-7.0714	-0.0985	-7.1699
AlHPO4+	7.9898E-08	-7.0975	-0.0985	-7.1959
H2VO4-	7.7383E-08	-7.1114	-0.0850	-7.1963
MnCl+	7.2393E-08	-7.1403	-0.0985	-7.2388
CrO3Cl-	6.3162E-08	-7.1995	-0.0850	-7.2845
HNO3(aq)	5.0284E-08	-7.2986	0.0000	-7.2986
VO2(OH)2-	4.7956E-08	-7.3192	-0.0850	-7.4041
NaCl(aq)	4.3347E-08	-7.3630	0.0000	-7.3630
MnNO3+	4.0022E-08	-7.3977	-0.0985	-7.4962
KHSO4(aq)	3.4580E-08	-7.4612	0.0000	-7.4612
VO2HPO4-	3.2232E-08	-7.4917	-0.0850	-7.5767
H2SO4(aq)	3.2185E-08	-7.4923	0.0000	-7.4923
Fe(SO4)2-	2.9002E-08	-7.5376	-0.0850	-7.6226
Fe(OH)2+	2.6963E-08	-7.5692	-0.0985	-7.6677
FeF++	2.0793E-08	-7.6821	-0.3766	-8.0587
CrOH++	2.0699E-08	-7.6841	-0.3766	-8.0606
AlOH++	1.1874E-08	-7.9254	-0.3766	-8.3020
HPO3F-	9.6921E-09	-8.0136	-0.0850	-8.0986
CaCl+	4.8873E-09	-8.3109	-0.0985	-8.4094
MnF+	4.8091E-09	-8.3179	-0.0985	-8.4164
MgCl+	4.0591E-09	-8.3916	-0.0985	-8.4900
FeNO3++	2.1461E-09	-8.6684	-0.3766	-9.0449
HPO4--	1.4491E-09	-8.8389	-0.3607	-9.1996
KCl(aq)	7.2794E-10	-9.1379	0.0000	-9.1379
HCO3-	6.6509E-10	-9.1771	-0.0850	-9.2621
MgF+	6.1574E-10	-9.2106	-0.0985	-9.3091
CaF+	5.7549E-10	-9.2400	-0.0985	-9.3384
MnHPO4(aq)	4.2512E-10	-9.3715	0.0000	-9.3715
H2F2(aq)	2.9881E-10	-9.5246	0.0000	-9.5246
VO++	2.7191E-10	-9.5656	-0.3766	-9.9422
Ti(OH)4(aq)	2.2602E-10	-9.6459	0.0000	-9.6459
CrCl++	2.1248E-10	-9.6727	-0.3766	-10.0493
PO3F--	1.6384E-10	-9.7856	-0.3607	-10.1462
VOSO4(aq)	1.4793E-10	-9.8299	0.0000	-9.8299
FeF2+	1.4409E-10	-9.8414	-0.0985	-9.9398
NaF(aq)	1.2883E-10	-9.8900	0.0000	-9.8900
Mn+++	1.0914E-10	-9.9620	-0.8167	-10.7787
Cs+	1.0002E-10	-9.9999	-0.1079	-10.1078

--- Summary of Instantaneously Precipitated Solid Phases ---
(defined by derivatives)

--- Theoretical Rock Composition ---
g/kg

O	5.116441E+01
Fe	9.092134E-01

C	8.963472E-06
Mn	4.313965E+00
Si	4.354112E+01
Ti	7.127894E-02

--- Oxide Percentages ---

Oxide Theoretical rock

Total = 0.0000

Phase/end-member	d mol/d zi	d grams/d zi	d vol (cc)/d zi
Hematite	1.3834E-03	2.2092E-01	4.1881E-02
Pyrolusite	1.3345E-02	1.1602E+00	6.6725E+00
Quartz	2.6347E-01	1.5830E+01	5.9776E+00
Rutile	2.5300E-04	2.0209E-02	4.7615E-03
fix CO2(g)	1.2683E-07	5.5816E-06	0.0000E+00
fix O2(g)	-7.4067E-03	-2.3700E-01	0.0000E+00

--- Summary of Solid Phases (E.S.+P.R.S.) ---

Phase/End-member	Log moles	Moles	Mass, g	Volume, cc
Hematite	-5.4557	3.5017E-06	5.5920E-04	1.0601E-04
Pyrolusite	-4.5363	2.9087E-05	2.5287E-03	1.4543E-02
Quartz	-3.1793	6.6181E-04	3.9764E-02	1.5015E-02
Rutile	-6.1970	6.3538E-07	5.0753E-05	1.1958E-05
fix CO2(g)	2.3010	2.0000E+02	8.8020E+03	0.0000E+00
fix O2(g)	2.3010	2.0000E+02	6.3998E+03	0.0000E+00

	Mass, grams	Volume, cc
Created	1.520176E+04	2.967648E-02
Destroyed	5.171087E-02	0.000000E+00
Net	1.520171E+04	2.967648E-02

Warning-- these volume totals may be incomplete because of missing partial molar volume data in the data base

--- Summary of Pure Mineral Saturation States ---

Mineral	Log Q/K	Aff, kcal	State
AlF3	-6.471	-8.828	
Anglesite	-4.893	-6.675	
Anhydrite	-1.987	-2.711	
BaZrO3	69.406	94.690	ssatd
Barite	-2.763	-3.769	
Bassanite	-2.632	-3.591	
Berlinite	-5.335	-7.279	
Boehmite	-6.806	-9.285	
Boric_acid	-4.749	-6.478	
CaSO4:0.5H2O(beta)	-2.800	-3.820	
CaZrO3	129.877	177.189	ssatd
Celestite	-7.193	-9.813	

Chalcedony	-0.271	-0.370	
Coesite	-0.810	-1.105	
CrO2	-0.921	-1.256	
Cristobalite(alpha)	-0.551	-0.751	
Cristobalite(beta)	-0.994	-1.356	
Crocoite	-4.580	-6.248	
Diaspore	-6.402	-8.734	
Epsomite	-4.975	-6.787	
Fe(OH)3	-5.602	-7.642	
FeF3	-5.145	-7.020	
Fluorite	-6.078	-8.292	
Gibbsite	-6.998	-9.547	
Goethite	-0.480	-0.655	
Gypsum	-1.812	-2.472	
Hematite	0.000	0.000	satd
Hexahydrite	-5.210	-7.108	
Ice	-0.139	-0.190	
Jarosite	-5.213	-7.112	
Kieserite	-6.668	-9.097	
Manganite	-4.459	-6.084	
Mercallite	-6.836	-9.326	
Mirabilite	-6.827	-9.314	
MnHPO4	-0.004	-0.006	
MnO2(gamma)	-1.518	-2.071	
Morenosite	-2.694	-3.676	
NiSO4:6H2O(alpha)	-2.701	-3.685	
Nontronite-Ca	-2.707	-3.694	
Nontronite-H	-1.779	-2.427	
Nontronite-K	-3.049	-4.160	
Nontronite-Mg	-2.775	-3.786	
Nontronite-Na	-3.039	-4.146	
Pentahydrite	-5.549	-7.571	
Pyrolusite	0.000	0.000	satd
Quartz	0.000	0.000	satd
Rutile	0.000	0.000	satd
Shcherbinaite	-2.859	-3.900	
SiO2(am)	-1.286	-1.754	
SrZrO3	106.265	144.975	ssatd
Starkeyite	-5.936	-8.099	
Strengite	-1.906	-2.601	
Tridymite	-0.172	-0.234	
fix CO2(g)	0.000	0.000	satd
fix O2(g)	0.000	0.000	satd

--- Summary of Solid Solutions ---

--- Carbonate-Calcite ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Calcite	6.0523E-03	-2.2181	0.0000	-2.2181
Magnesite	4.9622E-04	-3.3043	0.0000	-3.3043
Rhodochrosite	9.9345E-01	-0.0029	0.0000	-0.0029
Siderite	1.2685E-08	-7.8967	0.0000	-7.8967
Smithsonite	5.5625E-08	-7.2547	0.0000	-7.2547
Strontianite	2.3317E-07	-6.6323	0.0000	-6.6323

Mineral	Log Q/K	Aff, kcal	State

Carbonate-Calcite	-10.767	-14.689
Calcite	-10.767	-14.689
Magnesite	-10.767	-14.689
Rhodochrosite	-10.767	-14.689
Siderite	-10.767	-14.689
Smithsonite	-10.767	-14.689
Strontianite	-10.767	-14.689

--- Clinoptilolite-hy-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-hy-Ca	9.9590E-01	-0.0018	0.0000	-0.0018
Clinoptilolite-hy-Cs	6.4974E-23	-22.1873	0.0000	-22.1873
Clinoptilolite-hy-K	2.4008E-03	-2.6196	0.0000	-2.6196
Clinoptilolite-hy-Na	1.7016E-03	-2.7691	0.0000	-2.7691
Clinoptilolite-hy-Sr	5.4431E-12	-11.2642	0.0000	-11.2642

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-hy-ss	-48.187	-65.741	
Clinoptilolite-hy-Ca	-48.187	-65.741	
Clinoptilolite-hy-Cs	-48.187	-65.741	
Clinoptilolite-hy-K	-48.187	-65.741	
Clinoptilolite-hy-Na	-48.187	-65.741	
Clinoptilolite-hy-Sr	-48.187	-65.741	

--- Clinoptilolite-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-Ca	7.4980E-01	-0.1251	-0.3076	-0.4327
Clinoptilolite-Cs	2.8945E-07	-6.5384	-16.0845	-22.6230
Clinoptilolite-K	1.3098E-01	-0.8828	-2.1716	-3.0544
Clinoptilolite-NH4	9.3217E-52	-51.0305	-125.5350	-176.5655
Clinoptilolite-Na	1.1880E-01	-0.9252	-2.2759	-3.2011
Clinoptilolite-Sr	4.1717E-04	-3.3797	-8.3140	-11.6937

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-ss	-47.757	-65.154	
Clinoptilolite-Ca	-47.757	-65.154	
Clinoptilolite-Cs	-47.757	-65.154	
Clinoptilolite-K	-47.757	-65.154	
Clinoptilolite-NH4	-47.757	-65.154	
Clinoptilolite-Na	-47.757	-65.154	
Clinoptilolite-Sr	-47.757	-65.154	

--- Saponite-tri ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Saponite-Ca	1.5313E-03	-2.8149	1.8860	-0.9289
Saponite-H	9.9722E-01	-0.0012	0.0008	-0.0004
Saponite-K	1.4086E-04	-3.8512	2.5803	-1.2709
Saponite-Mg	9.5200E-04	-3.0214	2.0243	-0.9970
Saponite-Na	1.5156E-04	-3.8194	2.5590	-1.2604

Mineral	Log Q/K	Aff, kcal	State
Saponite-tri	-41.150	-56.141	
Saponite-Ca	-41.150	-56.141	
Saponite-H	-41.150	-56.141	
Saponite-K	-41.150	-56.141	
Saponite-Mg	-41.150	-56.141	
Saponite-Na	-41.150	-56.141	

--- Smectite-di ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Beidellite-Ca	9.3108E-49	-48.0310	32.1808	-15.8502
Beidellite-K	8.5707E-50	-49.0670	32.8749	-16.1921
Beidellite-Mg	5.7884E-49	-48.2374	32.3191	-15.9184
Beidellite-Na	9.2155E-50	-49.0355	32.8538	-16.1817
Montmor-Ca	2.3507E-45	-44.6288	29.9013	-14.7275
Montmor-K	3.5339E-46	-45.4517	30.4527	-14.9991
Montmor-Mg	2.3751E-45	-44.6243	29.8983	-14.7260
Montmor-Na	3.7055E-46	-45.4312	30.4389	-14.9923
Nontronite-Ca	5.5153E-01	-0.2584	0.1732	-0.0853
Nontronite-K	5.0769E-02	-1.2944	0.8673	-0.4272
Nontronite-Mg	3.4312E-01	-0.4646	0.3113	-0.1533
Nontronite-Na	5.4588E-02	-1.2629	0.8461	-0.4168

Mineral	Log Q/K	Aff, kcal	State
Smectite-di	-2.622	-3.577	
Beidellite-Ca	-2.622	-3.577	
Beidellite-K	-2.622	-3.577	
Beidellite-Mg	-2.622	-3.577	
Beidellite-Na	-2.622	-3.577	
Montmor-Ca	-2.622	-3.577	
Montmor-K	-2.622	-3.577	
Montmor-Mg	-2.622	-3.577	
Montmor-Na	-2.622	-3.577	
Nontronite-Ca	-2.622	-3.577	
Nontronite-K	-2.622	-3.577	
Nontronite-Mg	-2.622	-3.577	
Nontronite-Na	-2.622	-3.577	

--- Lanthanide hydroxide ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
La(OH)3	1.2764E-05	-4.8940	0.0000	-4.8940
Ce(OH)3	3.7001E-15	-14.4318	0.0000	-14.4318
Nd(OH)3(c)	3.4622E-01	-0.4607	0.0000	-0.4607
Gd(OH)3	5.8667E-01	-0.2316	0.0000	-0.2316
Sm(OH)3	6.7105E-02	-1.1732	0.0000	-1.1732

Mineral	Log Q/K	Aff, kcal	State
Lanthanide hydroxide	-24.604	-33.567	
La(OH)3	-24.604	-33.567	
Ce(OH)3	-24.604	-33.567	
Nd(OH)3(c)	-24.604	-33.567	
Gd(OH)3	-24.604	-33.567	
Sm(OH)3	-24.604	-33.567	

--- Rhabdophane-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaPO4:H2O	4.1118E-01	-0.3860	0.0000	-0.3860
CePO4:H2O	3.7693E-11	-10.4237	0.0000	-10.4237
NdPO4:H2O	2.2253E-01	-0.6526	0.0000	-0.6526
GdPO4:H2O	1.5012E-01	-0.8236	0.0000	-0.8236
SmPO4:H2O	2.1617E-01	-0.6652	0.0000	-0.6652

Mineral	Log Q/K	Aff, kcal	State
Rhabdophane-ss	-9.735	-13.282	
LaPO4:H2O	-9.735	-13.282	
CePO4:H2O	-9.735	-13.282	
NdPO4:H2O	-9.735	-13.282	
GdPO4:H2O	-9.735	-13.282	
SmPO4:H2O	-9.735	-13.282	

--- Lanthanide fluoride ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaF3:0.5H2O	5.7194E-01	-0.2427	0.0000	-0.2427
CeF3:0.5H2O	8.3095E-11	-10.0804	0.0000	-10.0804
NdF3:0.5H2O	3.8968E-01	-0.4093	0.0000	-0.4093
GdF3:0.5H2O	8.3129E-03	-2.0802	0.0000	-2.0802
SmF3:0.5H2O	3.0069E-02	-1.5219	0.0000	-1.5219

Mineral	Log Q/K	Aff, kcal	State
Lanthanide fluoride	-14.664	-20.006	
LaF3:0.5H2O	-14.664	-20.006	
CeF3:0.5H2O	-14.664	-20.006	
NdF3:0.5H2O	-14.664	-20.006	

GdF3:0.5H2O	-14.664	-20.006
SmF3:0.5H2O	-14.664	-20.006

--- Summary of Gases ---

Gas	Fugacity	Log fugacity
Al(g)	6.5294-198	-197.1851
B(g)	8.5658-204	-203.0672
BF3(g)	4.1842E-27	-26.3784
C(g)	3.0917-190	-189.5098
CH4(g)	3.5240-146	-145.4530
CO(g)	6.0395E-49	-48.2190
CO2(g)	3.1623E-04	-3.5000
Ca(g)	7.7245-164	-163.1121
Chlorine	3.4032E-17	-16.4681
Cs(g)	3.6085E-89	-88.4427
Cu(g)	7.9907E-93	-92.0974
Fluorine	1.5846E-74	-73.8001
H2(g)	6.1104E-42	-41.2139
H2O(g)	2.5958E-02	-1.5857
H2S(g)	2.1865-130	-129.6602
HCl(g)	7.1537E-13	-12.1455
HF(g)	5.5093E-10	-9.2589
K(g)	3.2289E-83	-82.4909
Li(g)	8.0258-103	-102.0955
Mg(g)	1.1883-141	-140.9251
Nitrogen	2.4865E-08	-7.6044
NH3(g)	1.8159E-63	-62.7409
NO(g)	4.9653E-20	-19.3041
NO2(g)	3.3951E-14	-13.4692
Na(g)	1.9223E-81	-80.7162
O2(g)	2.0999E-01	-0.6778
Pb(g)	8.0344E-81	-80.0950
S2(g)	2.8551-203	-202.5444
SO2(g)	3.8743E-43	-42.4118
Si(g)	4.2257-221	-220.3741
SiF4(g)	4.0668E-22	-21.3907
Ti(g)	3.8019-231	-230.4200
TiCl4(g)	8.7856E-62	-61.0562
U(g)	1.1423-304	-303.9422
U2Cl10(g)	4.6720-202	-201.3305
U2Cl8(g)	4.2562-216	-215.3710
U2F10(g)	4.5406-130	-129.3429
UCl(g)	7.2850-255	-254.1376
UCl2(g)	1.3899-203	-202.8570
UCl3(g)	5.8079-150	-149.2360
UCl4(g)	1.3142-113	-112.8813
UCl5(g)	1.5300-114	-113.8153
UCl6(g)	3.3094-110	-109.4803
UF(g)	1.1923-241	-240.9236
UF2(g)	9.2303-197	-196.0348
UF3(g)	1.7584-145	-144.7549
UF4(g)	4.9447E-91	-90.3059
UF5(g)	6.3688E-78	-77.1959
UF6(g)	8.0774E-79	-78.0927
UO(g)	9.0217-220	-219.0447
UO2(g)	1.6714-135	-134.7769
UO2Cl2(g)	2.4836E-71	-70.6049
UO2F2(g)	1.1965E-62	-61.9221

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UO3(g)                      1.2294E-82    -81.9103
UOF4(g)                     1.4735E-68    -67.8317
Zn(g)                       1.3481E-90    -89.8703



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Stepping to zi=  2.9279E-03, delzi=  4.1604E-04, nord= 6
  time =  2.8240E+01 d, dltime =  4.0127E+00 d
Steps completed =    68, iter = 12, ncorr = 0
Most rapidly changing is zvclg1(Al+++                   ) =     -4.5801

Stepping to zi=  3.3373E-03, delzi=  4.0942E-04, nord= 5
  time =  3.2189E+01 d, dltime =  3.9489E+00 d
Steps completed =    69, iter = 13, ncorr = 0
Most rapidly changing is zvclg1(Al+++                   ) =     -4.4635

Stepping to zi=  3.7746E-03, delzi=  4.3730E-04, nord= 6
  time =  3.6407E+01 d, dltime =  4.2178E+00 d
Steps completed =    70, iter = 14, ncorr = 0
Most rapidly changing is zvclg1(Al+++                   ) =     -4.3617

Stepping to zi=  3.9811E-03, delzi=  2.0643E-04, nord= 6
  time =  3.8398E+01 d, dltime =  1.9911E+00 d
Steps completed =    71, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Al+++                   ) =     -4.3198

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                    Reaction progress        =  3.98107170553476E-03
                    Log of reaction progress =      -2.4000000



                    Time =  3.318E+06 sec
                         =  3.840E+01 days
                         =  1.051E-01 years

                    Log sec =        6.521
                    Log days =       1.584
                    Log years =     -0.978

                    Temperature    =     25.000 degrees C
                    total pressure =      1.013 bars


Step size is limited by the print requirement


                              --- Reactant Summary ---


    Reactant                  Moles     Delta moles    Mass, g    Delta Mass, g

 Tuff                       9.9996E+01   3.9811E-03   2.0586E+03   8.1956E-02


               Current total mass =  2.05856E+03 grams
```

Delta total mass = 8.19562E-02 grams
Delta total volume = 0.00000 cc

Reactant	Rel. Rate mol/mol	Rate mol/s	Rate mol/s/cm2
Tuff	1.0000E+00	1.2000E-09	2.5000E-15

Reactant	Affinity kcal/mol	Surface Area mol/s/cm2
Tuff	999.00000	4.8000E+05

Reactant Rate Constants, mol/s/cm2

Tuff
Forward 2.5000E-15

Affinity of the overall irreversible reaction= 0.000 kcal
Contributions from irreversible reactions
with no thermodynamic data are not included

--- Element Totals for the Aqueous Solution ---

Element	mg/kg soln.	Molality	Moles
O	8.865332E+05	5.561111E+01	5.559544E+01
Al	5.551424E+00	2.064942E-04	2.064360E-04
B	1.334809E-01	1.239149E-05	1.238800E-05
Ba	1.368699E-05	1.000282E-10	1.000000E-10
Ca	1.328394E+01	3.326528E-04	3.325591E-04
Ce	1.396486E-19	1.000281E-24	9.999994E-25
Cl	7.116410E+00	2.014568E-04	2.014000E-04
Cr	2.996309E+02	5.783437E-03	5.781807E-03
Cs	1.324631E-05	1.000282E-10	1.000000E-10
Cu	6.650123E-10	1.050296E-14	1.050000E-14
F	2.172811E+00	1.147824E-04	1.147500E-04
Fe	8.070851E-01	1.450407E-05	1.449998E-05
Gd	1.567266E-09	1.000282E-14	1.000000E-14
H	1.115140E+05	1.110363E+02	1.110050E+02
C	1.267481E-01	1.059089E-05	1.058790E-05
P	7.330882E+00	2.375377E-04	2.374708E-04
K	8.368255E+00	2.148064E-04	2.147459E-04
La	1.384432E-09	1.000282E-14	1.000000E-14
Li	6.917899E-07	1.000282E-10	1.000000E-10
Mg	2.124050E+00	8.770802E-05	8.768330E-05
Mn	2.987804E+01	5.458197E-04	5.456658E-04
Mo	2.179354E+02	2.279808E-03	2.279166E-03
N	1.982337E+00	1.420400E-04	1.420000E-04
Na	4.782592E+01	2.087849E-03	2.087260E-03
Nd	1.437599E-09	1.000282E-14	1.000000E-14
Ni	7.501979E+02	1.282868E-02	1.282506E-02
Pb	2.065104E-05	1.000282E-10	1.000000E-10
Pu	2.431879E-09	1.000282E-14	9.999999E-15
S	5.507313E+02	1.723714E-02	1.723228E-02
Si	2.802928E+00	1.001613E-04	1.001331E-04
Sm	1.498596E-09	1.000282E-14	1.000000E-14

Sr	8.732838E-06	1.000282E-10	1.000000E-10
Ti	1.078264E-05	2.260170E-10	2.259533E-10
U	2.372367E-09	1.000282E-14	1.000000E-14
V	4.767999E+00	9.393658E-05	9.391010E-05
Zn	6.517237E-06	1.000282E-10	1.000000E-10
Zr	9.092038E-16	1.000282E-20	1.000000E-20

Single ion activities and activity coefficients are here defined
with respect to the modified NBS pH scale

	pH	Eh	pe
modified NBS pH scale	2.0597	1.0972	1.8547E+01
rational pH scale	1.9830	1.1017	1.8624E+01

pHCl = 5.8479

Oxygen fugacity = 2.09991E-01
Log oxygen fugacity = -0.67780

Activity of water = 0.99924
Log activity of water = -0.00033

Ionic strength = 5.911554E-02 molal
Sum of molalities = 0.0491806394974
Osmotic coefficient = 0.85626

Mass of solution = 1.003339 kg
Mass of solutes = 0.003621 kg
Conc. of solutes = 0.360915 per cent (w/w)

Moles of solvent H2O = 5.54928E+01
Mass of solvent H2O = 9.99718E-01 kg

Species	Molality	Log molality	Log gamma	Log activity
H+	1.0399E-02	-1.9830	-0.0766	-2.0597
Ni++	1.0195E-02	-1.9916	-0.3472	-2.3388
SO4--	9.8682E-03	-2.0058	-0.3609	-2.3667
HSO4-	4.3429E-03	-2.3622	-0.0850	-2.4473
HCrO4-	4.0502E-03	-2.3925	-0.0850	-2.4776
NiSO4(aq)	2.6315E-03	-2.5798	0.0000	-2.5798
MoO4--	2.2798E-03	-2.6421	-0.3498	-2.9919
Na+	2.0319E-03	-2.6921	-0.0985	-2.7906
Cr2O7--	8.6405E-04	-3.0635	-0.3609	-3.4244
Mn++	3.7984E-04	-3.4204	-0.3472	-3.7676
Ca++	2.6614E-04	-3.5749	-0.3472	-3.9221
O2(aq)	2.6164E-04	-3.5823	0.0062	-3.5761
K+	2.0828E-04	-3.6814	-0.1046	-3.7860
Cl-	2.0087E-04	-3.6971	-0.0911	-3.7882
MnSO4(aq)	1.6543E-04	-3.7814	0.0000	-3.7814
NO3-	1.4022E-04	-3.8532	-0.0911	-3.9443
H3PO4(aq)	1.1707E-04	-3.9316	0.0000	-3.9316
H2PO4-	1.1052E-04	-3.9566	-0.0850	-4.0416
SiO2(aq)	1.0016E-04	-3.9993	0.0000	-3.9993

AlF++	9.4051E-05	-4.0266	-0.3769	-4.4035
VO2+	7.7829E-05	-4.1089	-0.0985	-4.2074
CaSO4(aq)	6.6422E-05	-4.1777	0.0000	-4.1777
Mg++	5.7034E-05	-4.2439	-0.3144	-4.5583
AlSO4+	5.6692E-05	-4.2465	-0.0985	-4.3450
NaSO4-	5.5938E-05	-4.2523	-0.0850	-4.3373
Al+++	4.7897E-05	-4.3197	-0.6686	-4.9883
MgSO4(aq)	3.0670E-05	-4.5133	0.0000	-4.5133
B(OH)3(aq)	1.2391E-05	-4.9069	0.0000	-4.9069
VO2SO4-	1.2330E-05	-4.9090	-0.0850	-4.9941
CO2(aq)	1.0590E-05	-4.9751	0.0062	-4.9689
FeHPO4+	9.2682E-06	-5.0330	-0.0985	-5.1315
AlF2+	7.5838E-06	-5.1201	-0.0985	-5.2187
KSO4-	6.4861E-06	-5.1880	-0.0850	-5.2731
HF(aq)	4.9348E-06	-5.3067	0.0000	-5.3067
VO(OH)3(aq)	3.5613E-06	-5.4484	0.0000	-5.4484
Fe+++	3.5029E-06	-5.4556	-0.6686	-6.1242
Cr+++	3.3503E-06	-5.4749	-0.6686	-6.1436
NiNO3+	1.6422E-06	-5.7846	-0.0985	-5.8831
H2CrO4(aq)	1.3912E-06	-5.8566	0.0000	-5.8566
FeOH++	1.3243E-06	-5.8780	-0.3769	-6.2549
F-	4.7078E-07	-6.3272	-0.0880	-6.4152
MnH2PO4+	4.3584E-07	-6.3607	-0.0985	-6.4592
FeSO4+	3.4296E-07	-6.4648	-0.0985	-6.5633
HCl(aq)	3.0349E-07	-6.5179	0.0000	-6.5179
CrO4--	2.8095E-07	-6.5514	-0.3609	-6.9123
AlHPO4+	2.1032E-07	-6.6771	-0.0985	-6.7757
NiCl+	9.4481E-08	-7.0247	-0.0985	-7.1232
CaNO3+	8.5535E-08	-7.0679	-0.0985	-7.1664
H2VO4-	8.0189E-08	-7.0959	-0.0850	-7.1809
MnCl+	6.9830E-08	-7.1560	-0.0985	-7.2545
CrO3Cl-	6.2023E-08	-7.2074	-0.0850	-7.2925
VO2F(aq)	5.3387E-08	-7.2726	0.0000	-7.2726
VO2(OH)2-	4.9695E-08	-7.3037	-0.0850	-7.3887
HNO3(aq)	4.9378E-08	-7.3065	0.0000	-7.3065
NaCl(aq)	4.4072E-08	-7.3558	0.0000	-7.3558
KHSO4(aq)	3.9928E-08	-7.3987	0.0000	-7.3987
MnNO3+	3.8605E-08	-7.4134	-0.0985	-7.5119
VO2HPO4-	3.3136E-08	-7.4797	-0.0850	-7.5647
H2SO4(aq)	3.1123E-08	-7.5069	0.0000	-7.5069
AlOH++	3.0957E-08	-7.5092	-0.3769	-7.8861
AlF3(aq)	2.9254E-08	-7.5338	0.0000	-7.5338
Fe(SO4)2-	2.7616E-08	-7.5588	-0.0850	-7.6439
Fe(OH)2+	2.6486E-08	-7.5770	-0.0985	-7.6755
CrOH++	1.9617E-08	-7.7074	-0.3769	-8.0842
FeF++	9.4186E-09	-8.0260	-0.3769	-8.4029
CaCl+	4.9277E-09	-8.3074	-0.0985	-8.4059
HPO3F-	4.5955E-09	-8.3377	-0.0850	-8.4227
MgCl+	4.1414E-09	-8.3829	-0.0985	-8.4814
MnF+	2.2171E-09	-8.6542	-0.0985	-8.7528
FeNO3++	2.0340E-09	-8.6916	-0.3769	-9.0685
HPO4--	1.4914E-09	-8.8264	-0.3609	-9.1873
KCl(aq)	8.5357E-10	-9.0688	0.0000	-9.0688
HCO3-	6.7729E-10	-9.1692	-0.0850	-9.2543
MnHPO4(aq)	4.2175E-10	-9.3749	0.0000	-9.3749
MgF+	3.0025E-10	-9.5225	-0.0985	-9.6211
CaF+	2.7732E-10	-9.5570	-0.0985	-9.6556
VO++	2.6706E-10	-9.5734	-0.3769	-9.9503
Ti(OH)4(aq)	2.2602E-10	-9.6459	0.0000	-9.6459
CrCl++	1.9775E-10	-9.7039	-0.3769	-10.0807
VOSO4(aq)	1.4557E-10	-9.8369	0.0000	-9.8369
Mn+++	1.0353E-10	-9.9849	-0.8173	-10.8023
Cs+	1.0002E-10	-9.9999	-0.1080	-10.1079

--- Summary of Instantaneously Precipitated Solid Phases ---
(defined by derivatives)

--- Theoretical Rock Composition ---
g/kg

O	5.115859E+01
Fe	9.062771E-01
C	4.070823E-06
Mn	4.332013E+00
Si	4.353186E+01
Ti	7.126377E-02

--- Oxide Percentages ---

Oxide Theoretical rock

Total = 0.0000

Phase/end-member		d mol/d zi	d grams/d zi	d vol (cc)/d zi
Hematite		1.3792E-03	2.2025E-01	4.1755E-02
Pyrolusite		1.3404E-02	1.1653E+00	6.7018E+00
Quartz		2.6347E-01	1.5830E+01	5.9776E+00
Rutile		2.5300E-04	2.0209E-02	4.7615E-03
fix	CO2(g)	5.7611E-08	2.5355E-06	0.0000E+00
fix	O2(g)	-7.4321E-03	-2.3782E-01	0.0000E+00

--- Summary of Solid Phases (E.S.+P.R.S.) ---

Phase/End-member		Log moles	Moles	Mass, g	Volume, cc
Hematite		-5.2572	5.5309E-06	8.8324E-04	1.6744E-04
Pyrolusite		-4.3118	4.8777E-05	4.2405E-03	2.4388E-02
Quartz		-2.9793	1.0489E-03	6.3022E-02	2.3797E-02
Rutile		-5.9969	1.0071E-06	8.0445E-05	1.8953E-05
fix	CO2(g)	2.3010	2.0000E+02	8.8020E+03	0.0000E+00
fix	O2(g)	2.3010	2.0000E+02	6.3998E+03	0.0000E+00

	Mass, grams	Volume, cc
Created	1.520179E+04	4.837194E-02
Destroyed	8.195620E-02	0.000000E+00
Net	1.520171E+04	4.837194E-02

Warning-- these volume totals may be incomplete because
of missing partial molar volume data in the data base

--- Summary of Pure Mineral Saturation States ---

Mineral	Log Q/K	Aff, kcal	State
AlF3	-7.025	-9.584	
Anglesite	-4.892	-6.674	

Anhydrite	-1.982	-2.705	
BaZrO3	69.423	94.712	ssatd
Barite	-2.762	-3.768	
Bassanite	-2.627	-3.585	
Berlinite	-4.907	-6.695	
Boehmite	-6.374	-8.696	
Boric_acid	-4.749	-6.478	
CaSO4:0.5H2O(beta)	-2.796	-3.814	
CaZrO3	129.897	177.216	ssatd
Celestite	-7.192	-9.812	
Chalcedony	-0.271	-0.370	
Coesite	-0.810	-1.105	
CrO2	-0.929	-1.267	
Cristobalite(alpha)	-0.551	-0.751	
Cristobalite(beta)	-0.994	-1.356	
Crocoite	-4.572	-6.238	
Diaspore	-5.970	-8.145	
Epsomite	-4.965	-6.774	
Fe(OH)3	-5.602	-7.642	
FeF3	-6.131	-8.364	
Fluorite	-6.715	-9.162	
Gibbsite	-6.566	-8.958	
Goethite	-0.480	-0.655	
Gypsum	-1.807	-2.465	
Hematite	0.000	0.000	satd
Hexahydrite	-5.200	-7.095	
Ice	-0.139	-0.190	
Jarosite	-5.165	-7.047	
Kieserite	-6.658	-9.084	
Manganite	-4.459	-6.084	
Mercallite	-6.773	-9.241	
Mirabilite	-6.811	-9.293	
MnHPO4	-0.008	-0.011	
MnO2(gamma)	-1.518	-2.071	
Morenosite	-2.694	-3.675	
NiSO4:6H2O(alpha)	-2.700	-3.684	
Nontronite-Ca	-2.562	-3.495	
Nontronite-H	-1.636	-2.232	
Nontronite-K	-2.881	-3.931	
Nontronite-Mg	-2.629	-3.587	
Nontronite-Na	-2.891	-3.945	
Pentahydrite	-5.539	-7.557	
Pyrolusite	0.000	0.000	satd
Quartz	0.000	0.000	satd
Rutile	0.000	0.000	satd
Shcherbinaite	-2.844	-3.880	
SiO2(am)	-1.286	-1.754	
SrZrO3	106.281	144.998	ssatd
Starkeyite	-5.926	-8.085	
Strengite	-1.910	-2.605	
Tridymite	-0.172	-0.234	
fix CO2(g)	0.000	0.000	satd
fix O2(g)	0.000	0.000	satd

--- Summary of Solid Solutions ---

--- Carbonate-Calcite ---

Ideal solution

Component	x	Log x	Log lambda	Log activity

Calcite	6.3244E-03	-2.1990	0.0000	-2.1990
Magnesite	5.2471E-04	-3.2801	0.0000	-3.2801
Rhodochrosite	9.9315E-01	-0.0030	0.0000	-0.0030
Siderite	1.2681E-08	-7.8968	0.0000	-7.8968
Smithsonite	5.7620E-08	-7.2394	0.0000	-7.2394
Strontianite	2.4139E-07	-6.6173	0.0000	-6.6173

Mineral	Log Q/K	Aff, kcal	State
Carbonate-Calcite	-10.766	-14.688	
Calcite	-10.766	-14.688	
Magnesite	-10.766	-14.688	
Rhodochrosite	-10.766	-14.688	
Siderite	-10.766	-14.688	
Smithsonite	-10.766	-14.688	
Strontianite	-10.766	-14.688	

--- Clinoptilolite-hy-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-hy-Ca	9.9412E-01	-0.0026	0.0000	-0.0026
Clinoptilolite-hy-Cs	6.3898E-23	-22.1945	0.0000	-22.1945
Clinoptilolite-hy-K	4.1050E-03	-2.3867	0.0000	-2.3867
Clinoptilolite-hy-Na	1.7745E-03	-2.7509	0.0000	-2.7509
Clinoptilolite-hy-Sr	5.3464E-12	-11.2719	0.0000	-11.2719

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-hy-ss	-46.664	-63.663	
Clinoptilolite-hy-Ca	-46.664	-63.663	
Clinoptilolite-hy-Cs	-46.664	-63.663	
Clinoptilolite-hy-K	-46.664	-63.663	
Clinoptilolite-hy-Na	-46.664	-63.663	
Clinoptilolite-hy-Sr	-46.664	-63.663	

--- Clinoptilolite-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-Ca	7.3254E-01	-0.1352	-0.3325	-0.4677
Clinoptilolite-Cs	2.8157E-07	-6.5504	-16.1140	-22.6644
Clinoptilolite-K	1.4951E-01	-0.8253	-2.0303	-2.8557
Clinoptilolite-NH4	8.7466E-52	-51.0582	-125.6031	-176.6612
Clinoptilolite-Na	1.1755E-01	-0.9298	-2.2873	-3.2171
Clinoptilolite-Sr	4.0567E-04	-3.3918	-8.3439	-11.7357

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-ss	-46.200	-63.030	
Clinoptilolite-Ca	-46.200	-63.030	
Clinoptilolite-Cs	-46.200	-63.030	

Clinoptilolite-K	-46.200	-63.030
Clinoptilolite-NH4	-46.200	-63.030
Clinoptilolite-Na	-46.200	-63.030
Clinoptilolite-Sr	-46.200	-63.030

--- Saponite-tri ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Saponite-Ca	1.5655E-03	-2.8054	1.8796	-0.9258
Saponite-H	9.9713E-01	-0.0012	0.0008	-0.0004
Saponite-K	1.6818E-04	-3.7742	2.5287	-1.2455
Saponite-Mg	9.7900E-04	-3.0092	2.0162	-0.9930
Saponite-Na	1.5691E-04	-3.8043	2.5489	-1.2554

Mineral	Log Q/K	Aff, kcal	State
Saponite-tri	-40.935	-55.847	
Saponite-Ca	-40.935	-55.847	
Saponite-H	-40.935	-55.847	
Saponite-K	-40.935	-55.847	
Saponite-Mg	-40.935	-55.847	
Saponite-Na	-40.935	-55.847	

--- Smectite-di ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Beidellite-Ca	3.7983E-46	-45.4204	30.4317	-14.9887
Beidellite-K	4.0835E-47	-46.3890	31.0806	-15.3084
Beidellite-Mg	2.3754E-46	-45.6243	30.5683	-15.0560
Beidellite-Na	3.8071E-47	-46.4194	31.1010	-15.3184
Montmor-Ca	1.3902E-43	-42.8569	28.7141	-14.1428
Montmor-K	2.4408E-44	-43.6125	29.2203	-14.3921
Montmor-Mg	1.4129E-43	-42.8499	28.7094	-14.1405
Montmor-Na	2.2192E-44	-43.6538	29.2480	-14.4058
Nontronite-Ca	5.4539E-01	-0.2633	0.1764	-0.0869
Nontronite-K	5.8634E-02	-1.2318	0.8253	-0.4065
Nontronite-Mg	3.4131E-01	-0.4668	0.3128	-0.1541
Nontronite-Na	5.4666E-02	-1.2623	0.8457	-0.4166

Mineral	Log Q/K	Aff, kcal	State
Smectite-di	-2.475	-3.376	
Beidellite-Ca	-2.475	-3.376	
Beidellite-K	-2.475	-3.376	
Beidellite-Mg	-2.475	-3.376	
Beidellite-Na	-2.475	-3.376	
Montmor-Ca	-2.475	-3.376	
Montmor-K	-2.475	-3.376	
Montmor-Mg	-2.475	-3.376	
Montmor-Na	-2.475	-3.376	
Nontronite-Ca	-2.475	-3.376	

Nontronite-K	-2.475	-3.376
Nontronite-Mg	-2.475	-3.376
Nontronite-Na	-2.475	-3.376

--- Lanthanide hydroxide ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
La(OH)3	1.2760E-05	-4.8942	0.0000	-4.8942
Ce(OH)3	3.7007E-15	-14.4317	0.0000	-14.4317
Nd(OH)3(c)	3.4615E-01	-0.4607	0.0000	-0.4607
Gd(OH)3	5.8675E-01	-0.2316	0.0000	-0.2316
Sm(OH)3	6.7087E-02	-1.1734	0.0000	-1.1734

Mineral	Log Q/K	Aff, kcal	State
Lanthanide hydroxide	-24.582	-33.536	
La(OH)3	-24.582	-33.536	
Ce(OH)3	-24.582	-33.536	
Nd(OH)3(c)	-24.582	-33.536	
Gd(OH)3	-24.582	-33.536	
Sm(OH)3	-24.582	-33.536	

--- Rhabdophane-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaPO4:H2O	4.1113E-01	-0.3860	0.0000	-0.3860
CePO4:H2O	3.7707E-11	-10.4236	0.0000	-10.4236
NdPO4:H2O	2.2254E-01	-0.6526	0.0000	-0.6526
GdPO4:H2O	1.5017E-01	-0.8234	0.0000	-0.8234
SmPO4:H2O	2.1616E-01	-0.6652	0.0000	-0.6652

Mineral	Log Q/K	Aff, kcal	State
Rhabdophane-ss	-9.716	-13.256	
LaPO4:H2O	-9.716	-13.256	
CePO4:H2O	-9.716	-13.256	
NdPO4:H2O	-9.716	-13.256	
GdPO4:H2O	-9.716	-13.256	
SmPO4:H2O	-9.716	-13.256	

--- Lanthanide fluoride ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaF3:0.5H2O	5.7190E-01	-0.2427	0.0000	-0.2427
CeF3:0.5H2O	8.3130E-11	-10.0802	0.0000	-10.0802
NdF3:0.5H2O	3.8971E-01	-0.4093	0.0000	-0.4093

GdF3:0.5H2O	8.3162E-03	-2.0801	0.0000	-2.0801
SmF3:0.5H2O	3.0069E-02	-1.5219	0.0000	-1.5219

Mineral	Log Q/K	Aff, kcal	State
Lanthanide fluoride	-15.627	-21.320	
LaF3:0.5H2O	-15.627	-21.320	
CeF3:0.5H2O	-15.627	-21.320	
NdF3:0.5H2O	-15.627	-21.320	
GdF3:0.5H2O	-15.627	-21.320	
SmF3:0.5H2O	-15.627	-21.320	

--- Summary of Gases ---

Gas	Fugacity	Log fugacity
Al(g)	1.7637-197	-196.7536
B(g)	8.5658-204	-203.0672
BF3(g)	4.3254E-28	-27.3640
C(g)	3.0917-190	-189.5098
CH4(g)	3.5240-146	-145.4530
CO(g)	6.0395E-49	-48.2190
CO2(g)	3.1623E-04	-3.5000
Ca(g)	8.0743-164	-163.0929
Chlorine	3.2818E-17	-16.4839
Cs(g)	3.6735E-89	-88.4349
Cu(g)	8.2797E-93	-92.0820
Fluorine	3.4904E-75	-74.4571
H2(g)	6.1104E-42	-41.2139
H2O(g)	2.5958E-02	-1.5857
H2S(g)	2.1144-130	-129.6748
HCl(g)	7.0249E-13	-12.1534
HF(g)	2.5857E-10	-9.5874
K(g)	3.8555E-83	-82.4139
Li(g)	8.1703-103	-102.0878
Mg(g)	1.2569-141	-140.9007
Nitrogen	2.3977E-08	-7.6202
NH3(g)	1.7832E-63	-62.7488
NO(g)	4.8759E-20	-19.3119
NO2(g)	3.3339E-14	-13.4770
Na(g)	1.9902E-81	-80.7011
O2(g)	2.0999E-01	-0.6778
Pb(g)	8.3244E-81	-80.0796
S2(g)	2.6697-203	-202.5735
SO2(g)	3.7464E-43	-42.4264
Si(g)	4.2257-221	-220.3741
SiF4(g)	1.9731E-23	-22.7048
Ti(g)	3.8019-231	-230.4200
TiCl4(g)	8.1700E-62	-61.0878
U(g)	1.1843-304	-303.9265
U2Cl10(g)	4.1879-202	-201.3780
U2Cl8(g)	3.9563-216	-215.4027
U2F10(g)	2.5306-133	-132.5968
UCl(g)	7.4170-255	-254.1298
UCl2(g)	1.3896-203	-202.8571
UCl3(g)	5.7021-150	-149.2440
UCl4(g)	1.2670-113	-112.8972
UCl5(g)	1.4486-114	-113.8391
UCl6(g)	3.0768-110	-109.5119

```
UF(g)                      5.8017-242   -241.2364
UF2(g)                     2.1079-197   -196.6762
UF3(g)                     1.8847-146   -145.7248
UF4(g)                     2.4873E-92    -91.6043
UF5(g)                     1.5035E-79    -78.8229
UF6(g)                     8.9494E-81    -80.0482
UO(g)                      9.3534-220   -219.0290
UO2(g)                     1.7329-135   -134.7612
UO2Cl2(g)                  2.4830E-71    -70.6050
UO2F2(g)                   2.7324E-63    -62.5635
UO3(g)                     1.2746E-82    -81.8946
UOF4(g)                    7.4118E-70    -69.1301
Zn(g)                      1.3969E-90    -89.8548



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Stepping to zi=  4.5175E-03, delzi=  5.3639E-04, nord= 6
  time =  4.3571E+01 d, dltime =  5.1735E+00 d
Steps completed =    72, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Al+++                  ) =     -4.2251

Stepping to zi=  5.0568E-03, delzi=  5.3933E-04, nord= 6
  time =  4.8773E+01 d, dltime =  5.2019E+00 d
Steps completed =    73, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Al+++                  ) =     -4.1457

Stepping to zi=  5.6314E-03, delzi=  5.7458E-04, nord= 6
  time =  5.4315E+01 d, dltime =  5.5419E+00 d
Steps completed =    74, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Al+++                  ) =     -4.0736

Stepping to zi=  6.2650E-03, delzi=  6.3364E-04, nord= 6
  time =  6.0426E+01 d, dltime =  6.1115E+00 d
Steps completed =    75, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Al+++                  ) =     -4.0053

Stepping to zi=  6.3096E-03, delzi=  4.4562E-05, nord= 6
  time =  6.0856E+01 d, dltime =  4.2980E-01 d
Steps completed =    76, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Al+++                  ) =     -4.0009

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                    Reaction progress        =  6.30957344480160E-03
                    Log of reaction progress =      -2.2000000



                    Time =  5.258E+06 sec
                         =  6.086E+01 days
                         =  1.666E-01 years

                    Log sec =        6.721
                    Log days =       1.784
                    Log years =     -0.778

                    Temperature    =     25.000 degrees C
                    total pressure =      1.013 bars
```

Step size is limited by the print requirement

--- Reactant Summary ---

Reactant	Moles	Delta moles	Mass, g	Delta Mass, g
Tuff	9.9994E+01	6.3096E-03	2.0585E+03	1.2989E-01

Current total mass = 2.05852E+03 grams
Delta total mass = 1.29892E-01 grams
Delta total volume = 0.00000 cc

Reactant	Rel. Rate mol/mol	Rate mol/s	Rate mol/s/cm2
Tuff	1.0000E+00	1.2000E-09	2.5000E-15

Reactant	Affinity kcal/mol	Surface Area mol/s/cm2
Tuff	999.00000	4.8000E+05

Reactant	Rate Constants, mol/s/cm2	
Tuff		
	Forward	2.5000E-15

Affinity of the overall irreversible reaction= 0.000 kcal
Contributions from irreversible reactions
with no thermodynamic data are not included

--- Element Totals for the Aqueous Solution ---

Element	mg/kg soln.	Molality	Moles
O	8.865292E+05	5.561112E+01	5.559565E+01
Al	8.775023E+00	3.264027E-04	3.263120E-04
B	1.334798E-01	1.239145E-05	1.238800E-05
Ba	1.368688E-05	1.000278E-10	1.000000E-10
Ca	1.347515E+01	3.374426E-04	3.373488E-04
Ce	1.396474E-19	1.000278E-24	9.999994E-25
Cl	7.116350E+00	2.014560E-04	2.014000E-04
Cr	2.996284E+02	5.783416E-03	5.781807E-03
Cs	1.324620E-05	1.000278E-10	1.000000E-10
Cu	6.650067E-10	1.050292E-14	1.050000E-14
F	2.172792E+00	1.147819E-04	1.147500E-04
Fe	7.629615E-01	1.371119E-05	1.370737E-05
Gd	1.567253E-09	1.000278E-14	1.000000E-14
H	1.115131E+05	1.110359E+02	1.110050E+02
C	1.267425E-01	1.059047E-05	1.058753E-05
P	7.333948E+00	2.376381E-04	2.375721E-04

K	1.032456E+01	2.650244E-04	2.649507E-04
La	1.384420E-09	1.000278E-14	1.000000E-14
Li	6.917841E-07	1.000278E-10	1.000000E-10
Mg	2.194652E+00	9.062379E-05	9.059859E-05
Mn	2.820742E+01	5.153026E-04	5.151593E-04
Mo	2.179336E+02	2.279800E-03	2.279166E-03
N	1.982321E+00	1.420395E-04	1.420000E-04
Na	4.909949E+01	2.143456E-03	2.142860E-03
Nd	1.437587E-09	1.000278E-14	1.000000E-14
Ni	7.501916E+02	1.282863E-02	1.282506E-02
Pb	2.065087E-05	1.000278E-10	1.000000E-10
Pu	2.431859E-09	1.000278E-14	1.000000E-14
S	5.507267E+02	1.723708E-02	1.723228E-02
Si	2.802915E+00	1.001613E-04	1.001335E-04
Sm	1.498583E-09	1.000278E-14	1.000000E-14
Sr	8.732765E-06	1.000278E-10	1.000000E-10
Ti	1.078266E-05	2.260185E-10	2.259557E-10
U	2.372347E-09	1.000278E-14	1.000000E-14
V	4.767960E+00	9.393623E-05	9.391010E-05
Zn	6.517182E-06	1.000278E-10	1.000000E-10
Zr	9.091963E-16	1.000278E-20	1.000000E-20

Single ion activities and activity coefficients are here defined
with respect to the modified NBS pH scale

	pH	Eh	pe
modified NBS pH scale	2.0725	1.0964	1.8534E+01
rational pH scale	1.9958	1.1010	1.8611E+01

pHCl = 5.8608

Oxygen fugacity = 2.09991E-01
Log oxygen fugacity = -0.67780

Activity of water = 0.99925
Log activity of water = -0.00033

Ionic strength = 5.928873E-02 molal
Sum of molalities = 0.0490136167527
Osmotic coefficient = 0.85523

Mass of solution = 1.003348 kg
Mass of solutes = 0.003626 kg
Conc. of solutes = 0.361374 per cent (w/w)

Moles of solvent H2O = 5.54930E+01
Mass of solvent H2O = 9.99722E-01 kg

Species	Molality	Log molality	Log gamma	Log activity
Ni++	1.0189E-02	-1.9919	-0.3476	-2.3394
H+	1.0097E-02	-1.9958	-0.0767	-2.0725
SO4--	9.9139E-03	-2.0038	-0.3613	-2.3651
HSO4-	4.2328E-03	-2.3734	-0.0851	-2.4585

HCrO4-	4.0500E-03	-2.3925	-0.0851	-2.4777
NiSO4(aq)	2.6376E-03	-2.5788	0.0000	-2.5788
MoO4--	2.2798E-03	-2.6421	-0.3502	-2.9923
Na+	2.0858E-03	-2.6807	-0.0987	-2.7794
Cr2O7--	8.6437E-04	-3.0633	-0.3613	-3.4246
Mn++	3.5829E-04	-3.4458	-0.3476	-3.7933
Ca++	2.6981E-04	-3.5689	-0.3476	-3.9165
O2(aq)	2.6163E-04	-3.5823	0.0062	-3.5761
K+	2.5694E-04	-3.5902	-0.1047	-3.6949
Cl-	2.0089E-04	-3.6971	-0.0912	-3.7883
MnSO4(aq)	1.5650E-04	-3.8055	0.0000	-3.8055
NO3-	1.4023E-04	-3.8532	-0.0912	-3.9444
AlSO4+	1.1847E-04	-3.9264	-0.0987	-4.0250
H3PO4(aq)	1.1550E-04	-3.9374	0.0000	-3.9374
H2PO4-	1.1234E-04	-3.9495	-0.0851	-4.0346
AlF++	1.0319E-04	-3.9864	-0.3773	-4.3636
SiO2(aq)	1.0016E-04	-3.9993	0.0000	-3.9993
Al+++	9.9829E-05	-4.0007	-0.6692	-4.6700
VO2+	7.7716E-05	-4.1095	-0.0987	-4.2081
CaSO4(aq)	6.7536E-05	-4.1705	0.0000	-4.1705
Mg++	5.8867E-05	-4.2301	-0.3147	-4.5449
NaSO4-	5.7633E-05	-4.2393	-0.0851	-4.3244
MgSO4(aq)	3.1753E-05	-4.4982	0.0000	-4.4982
B(OH)3(aq)	1.2391E-05	-4.9069	0.0000	-4.9069
VO2SO4-	1.2357E-05	-4.9081	-0.0851	-4.9932
CO2(aq)	1.0590E-05	-4.9751	0.0062	-4.9689
FeHPO4+	8.8798E-06	-5.0516	-0.0987	-5.1503
KSO4-	8.0308E-06	-5.0952	-0.0851	-5.1804
AlF2+	4.3789E-06	-5.3586	-0.0987	-5.4573
VO(OH)3(aq)	3.6621E-06	-5.4363	0.0000	-5.4363
Fe+++	3.2094E-06	-5.4936	-0.6692	-6.1628
Cr+++	2.9792E-06	-5.5259	-0.6692	-6.1951
HF(aq)	2.5230E-06	-5.5981	0.0000	-5.5981
NiNO3+	1.6400E-06	-5.7851	-0.0987	-5.8838
H2CrO4(aq)	1.3502E-06	-5.8696	0.0000	-5.8696
FeOH++	1.2493E-06	-5.9033	-0.3773	-6.2806
AlHPO4+	4.5838E-07	-6.3388	-0.0987	-6.4374
MnH2PO4+	4.1758E-07	-6.3793	-0.0987	-6.4779
FeSO4+	3.1506E-07	-6.5016	-0.0987	-6.6003
HCl(aq)	2.9458E-07	-6.5308	0.0000	-6.5308
CrO4--	2.8958E-07	-6.5382	-0.3613	-6.8995
F-	2.4798E-07	-6.6056	-0.0881	-6.6937
NiCl+	9.4356E-08	-7.0252	-0.0987	-7.1239
CaNO3+	8.6651E-08	-7.0622	-0.0987	-7.1609
H2VO4-	8.4955E-08	-7.0708	-0.0851	-7.1559
AlOH++	6.6435E-08	-7.1776	-0.3773	-7.5549
MnCl+	6.5820E-08	-7.1816	-0.0987	-7.2803
CrO3Cl-	6.0199E-08	-7.2204	-0.0851	-7.3055
VO2(OH)2-	5.2649E-08	-7.2786	-0.0851	-7.3637
KHSO4(aq)	4.7985E-08	-7.3189	0.0000	-7.3189
HNO3(aq)	4.7928E-08	-7.3194	0.0000	-7.3194
NaCl(aq)	4.5222E-08	-7.3446	0.0000	-7.3446
MnNO3+	3.6386E-08	-7.4391	-0.0987	-7.5377
VO2HPO4-	3.4636E-08	-7.4605	-0.0851	-7.5456
H2SO4(aq)	2.9442E-08	-7.5310	0.0000	-7.5310
VO2F(aq)	2.8067E-08	-7.5518	0.0000	-7.5518
Fe(OH)2+	2.5719E-08	-7.5897	-0.0987	-7.6884
Fe(SO4)2-	2.5462E-08	-7.5941	-0.0851	-7.6792
CrOH++	1.7962E-08	-7.7457	-0.3773	-8.1229
AlF3(aq)	8.8931E-09	-8.0509	0.0000	-8.0509
CaCl+	4.9922E-09	-8.3017	-0.0987	-8.4004
FeF++	4.5427E-09	-8.3427	-0.3773	-8.7200
MgCl+	4.2720E-09	-8.3694	-0.0987	-8.4680

HPO3F-	2.3883E-09	-8.6219	-0.0851	-8.7070
FeNO3++	1.8625E-09	-8.7299	-0.3773	-9.1072
HPO4--	1.5626E-09	-8.8061	-0.3613	-9.1674
MnF+	1.1007E-09	-8.9583	-0.0987	-9.0570
KCl(aq)	1.0525E-09	-8.9778	0.0000	-8.9778
HCO3-	6.9779E-10	-9.1563	-0.0851	-9.2414
MnHPO4(aq)	4.1612E-10	-9.3808	0.0000	-9.3808
VO++	2.5907E-10	-9.5866	-0.3773	-9.9639
Ti(OH)4(aq)	2.2602E-10	-9.6459	0.0000	-9.6459
CrCl++	1.7574E-10	-9.7551	-0.3773	-10.1324
MgF+	1.6313E-10	-9.7875	-0.0987	-9.8861
CaF+	1.4798E-10	-9.8298	-0.0987	-9.9285
VOSO4(aq)	1.4161E-10	-9.8489	0.0000	-9.8489
Cs+	1.0002E-10	-9.9999	-0.1081	-10.1080

--- Summary of Instantaneously Precipitated Solid Phases ---
(defined by derivatives)

--- Theoretical Rock Composition ---
g/kg

O	5.119000E+01
Fe	9.039890E-01
C	1.163889E-05
Mn	4.256579E+00
Si	4.357808E+01
Ti	7.133944E-02

--- Oxide Percentages ---

Oxide Theoretical rock

Total = 0.0000

Phase/end-member	d mol/d zi	d grams/d zi	d vol (cc)/d zi
Hematite	1.3743E-03	2.1946E-01	4.1605E-02
Pyrolusite	1.3156E-02	1.1438E+00	6.5781E+00
Quartz	2.6347E-01	1.5830E+01	5.9776E+00
Rutile	2.5300E-04	2.0209E-02	4.7615E-03
fix CO2(g)	1.6454E-07	7.2415E-06	0.0000E+00
fix O2(g)	-7.2990E-03	-2.3356E-01	0.0000E+00

--- Summary of Solid Phases (E.S.+P.R.S.) ---

Phase/End-member	Log moles	Moles	Mass, g	Volume, cc
Hematite	-5.0587	8.7365E-06	1.3952E-03	2.6449E-04
Pyrolusite	-4.0984	7.9735E-05	6.9319E-03	3.9867E-02
Quartz	-2.7793	1.6624E-03	9.9883E-02	3.7716E-02
Rutile	-5.7969	1.5962E-06	1.2750E-04	3.0040E-05
fix CO2(g)	2.3010	2.0000E+02	8.8020E+03	0.0000E+00
fix O2(g)	2.3010	2.0000E+02	6.3998E+03	0.0000E+00

	Mass, grams	Volume, cc
Created	1.520183E+04	7.787804E-02
Destroyed	1.298918E-01	0.000000E+00

```
 Net             1.520170E+04       7.787804E-02

Warning-- these volume totals may be incomplete because
of missing partial molar volume data in the data base


--- Summary of Pure Mineral Saturation States ---


   Mineral                      Log Q/K     Aff, kcal  State

Anglesite                        -4.891      -6.672
Anhydrite                        -1.975      -2.695
BaZrO3                           69.449      94.748   ssatd
Barite                           -2.761      -3.767
Bassanite                        -2.620      -3.575
Berlinite                        -4.556      -6.216
Boehmite                         -6.017      -8.209
Boric_acid                       -4.749      -6.478
CaSO4:0.5H2O(beta)               -2.788      -3.804
CaZrO3                          129.929     177.261   ssatd
Celestite                        -7.191      -9.811
Chalcedony                       -0.271      -0.370
Coesite                          -0.810      -1.105
CrO2                             -0.942      -1.285
Cristobalite(alpha)              -0.551      -0.751
Cristobalite(beta)               -0.994      -1.356
Crocoite                         -4.560      -6.221
Diaspore                         -5.613      -7.658
Epsomite                         -4.950      -6.753
Fe(OH)3                          -5.602      -7.642
FeF3                             -7.005      -9.557
Fluorite                         -7.267      -9.914
Gibbsite                         -6.209      -8.471
Goethite                         -0.480      -0.655
Gypsum                           -1.800      -2.456
Hematite                          0.000       0.000   satd
Hexahydrite                      -5.185      -7.074
Ice                              -0.139      -0.190
Jarosite                         -5.110      -6.971
Kieserite                        -6.643      -9.063
Manganite                        -4.459      -6.084
Mercallite                       -6.694      -9.132
Mirabilite                       -6.787      -9.260
MnHPO4                           -0.014      -0.019
MnO2(gamma)                      -1.518      -2.071
Morenosite                       -2.693      -3.674
NiSO4:6H2O(alpha)                -2.699      -3.683
Nontronite-Ca                    -2.439      -3.327
Nontronite-H                     -1.519      -2.072
Nontronite-K                     -2.729      -3.723
Nontronite-Mg                    -2.505      -3.417
Nontronite-Na                    -2.766      -3.773
Pentahydrite                     -5.524      -7.537
Pyrolusite                        0.000       0.000   satd
Quartz                            0.000       0.000   satd
Rutile                            0.000       0.000   satd
Shcherbinaite                    -2.820      -3.847
SiO2(am)                         -1.286      -1.754
SrZrO3                          106.307     145.033   ssatd
Starkeyite                       -5.911      -8.065
Strengite                        -1.915      -2.613
```

```
Tridymite                    -0.171      -0.234
fix     CO2(g)                0.000       0.000   satd
fix     O2(g)                 0.000       0.000   satd
```

--- Summary of Solid Solutions ---

--- Carbonate-Calcite ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Calcite	6.7940E-03	-2.1679	0.0000	-2.1679
Magnesite	5.7394E-04	-3.2411	0.0000	-3.2411
Rhodochrosite	9.9263E-01	-0.0032	0.0000	-0.0032
Siderite	1.2675E-08	-7.8971	0.0000	-7.8971
Smithsonite	6.1055E-08	-7.2143	0.0000	-7.2143
Strontianite	2.5557E-07	-6.5925	0.0000	-6.5925

Mineral	Log Q/K	Aff, kcal	State
Carbonate-Calcite	-10.766	-14.688	
Calcite	-10.766	-14.688	
Magnesite	-10.766	-14.688	
Rhodochrosite	-10.766	-14.688	
Siderite	-10.766	-14.688	
Smithsonite	-10.766	-14.688	
Strontianite	-10.766	-14.688	

--- Clinoptilolite-hy-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-hy-Ca	9.8984E-01	-0.0044	0.0000	-0.0044
Clinoptilolite-hy-Cs	6.2148E-23	-22.2066	0.0000	-22.2066
Clinoptilolite-hy-K	8.2690E-03	-2.0825	0.0000	-2.0825
Clinoptilolite-hy-Na	1.8904E-03	-2.7235	0.0000	-2.7235
Clinoptilolite-hy-Sr	5.1907E-12	-11.2848	0.0000	-11.2848

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-hy-ss	-45.376	-61.906	
Clinoptilolite-hy-Ca	-45.376	-61.906	
Clinoptilolite-hy-Cs	-45.376	-61.906	
Clinoptilolite-hy-K	-45.376	-61.906	
Clinoptilolite-hy-Na	-45.376	-61.906	
Clinoptilolite-hy-Sr	-45.376	-61.906	

--- Clinoptilolite-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity

Clinoptilolite-Ca	7.0703E-01	-0.1506	-0.3704	-0.5209
Clinoptilolite-Cs	2.6993E-07	-6.5687	-16.1591	-22.7279
Clinoptilolite-K	1.7689E-01	-0.7523	-1.8506	-2.6029
Clinoptilolite-NH4	7.9027E-52	-51.1022	-125.7115	-176.8137
Clinoptilolite-Na	1.1569E-01	-0.9367	-2.3043	-3.2410
Clinoptilolite-Sr	3.8870E-04	-3.4104	-8.3896	-11.7999

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-ss	-44.861	-61.203	
Clinoptilolite-Ca	-44.861	-61.203	
Clinoptilolite-Cs	-44.861	-61.203	
Clinoptilolite-K	-44.861	-61.203	
Clinoptilolite-NH4	-44.861	-61.203	
Clinoptilolite-Na	-44.861	-61.203	
Clinoptilolite-Sr	-44.861	-61.203	

--- Saponite-tri ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Saponite-Ca	1.6227E-03	-2.7898	1.8691	-0.9206
Saponite-H	9.9697E-01	-0.0013	0.0009	-0.0004
Saponite-K	2.1362E-04	-3.6704	2.4591	-1.2112
Saponite-Mg	1.0240E-03	-2.9897	2.0031	-0.9866
Saponite-Na	1.6585E-04	-3.7803	2.5328	-1.2475

Mineral	Log Q/K	Aff, kcal	State
Saponite-tri	-40.699	-55.525	
Saponite-Ca	-40.699	-55.525	
Saponite-H	-40.699	-55.525	
Saponite-K	-40.699	-55.525	
Saponite-Mg	-40.699	-55.525	
Saponite-Na	-40.699	-55.525	

--- Smectite-di ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Beidellite-Ca	5.4381E-44	-43.2646	28.9873	-14.2773
Beidellite-K	7.1640E-45	-44.1448	29.5770	-14.5678
Beidellite-Mg	3.4317E-44	-43.4645	29.1212	-14.3433
Beidellite-Na	5.5580E-45	-44.2551	29.6509	-14.6042
Montmor-Ca	4.2092E-42	-41.3758	27.7218	-13.6540
Montmor-K	9.0560E-43	-42.0431	28.1689	-13.8742
Montmor-Mg	4.3169E-42	-41.3648	27.7144	-13.6504
Montmor-Na	6.8515E-43	-42.1642	28.2500	-13.9142
Nontronite-Ca	5.3607E-01	-0.2708	0.1814	-0.0894
Nontronite-K	7.0621E-02	-1.1511	0.7712	-0.3799
Nontronite-Mg	3.3852E-01	-0.4704	0.3152	-0.1552
Nontronite-Na	5.4789E-02	-1.2613	0.8451	-0.4162

Mineral	Log Q/K	Aff, kcal	State
Smectite-di	-2.349	-3.205	
Beidellite-Ca	-2.349	-3.205	
Beidellite-K	-2.349	-3.205	
Beidellite-Mg	-2.349	-3.205	
Beidellite-Na	-2.349	-3.205	
Montmor-Ca	-2.349	-3.205	
Montmor-K	-2.349	-3.205	
Montmor-Mg	-2.349	-3.205	
Montmor-Na	-2.349	-3.205	
Nontronite-Ca	-2.349	-3.205	
Nontronite-K	-2.349	-3.205	
Nontronite-Mg	-2.349	-3.205	
Nontronite-Na	-2.349	-3.205	

--- Lanthanide hydroxide ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
La(OH)3	1.2758E-05	-4.8942	0.0000	-4.8942
Ce(OH)3	3.7025E-15	-14.4315	0.0000	-14.4315
Nd(OH)3(c)	3.4612E-01	-0.4608	0.0000	-0.4608
Gd(OH)3	5.8679E-01	-0.2315	0.0000	-0.2315
Sm(OH)3	6.7074E-02	-1.1734	0.0000	-1.1734

Mineral	Log Q/K	Aff, kcal	State
Lanthanide hydroxide	-24.545	-33.486	
La(OH)3	-24.545	-33.486	
Ce(OH)3	-24.545	-33.486	
Nd(OH)3(c)	-24.545	-33.486	
Gd(OH)3	-24.545	-33.486	
Sm(OH)3	-24.545	-33.486	

--- Rhabdophane-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaPO4:H2O	4.1112E-01	-0.3860	0.0000	-0.3860
CePO4:H2O	3.7729E-11	-10.4233	0.0000	-10.4233
NdPO4:H2O	2.2254E-01	-0.6526	0.0000	-0.6526
GdPO4:H2O	1.5020E-01	-0.8233	0.0000	-0.8233
SmPO4:H2O	2.1614E-01	-0.6653	0.0000	-0.6653

Mineral	Log Q/K	Aff, kcal	State
Rhabdophane-ss	-9.685	-13.213	
LaPO4:H2O	-9.685	-13.213	
CePO4:H2O	-9.685	-13.213	
NdPO4:H2O	-9.685	-13.213	
GdPO4:H2O	-9.685	-13.213	

SmPO4:H2O	-9.685	-13.213

--- Lanthanide fluoride ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaF3:0.5H2O	5.7189E-01	-0.2427	0.0000	-0.2427
CeF3:0.5H2O	8.3180E-11	-10.0800	0.0000	-10.0800
NdF3:0.5H2O	3.8973E-01	-0.4092	0.0000	-0.4092
GdF3:0.5H2O	8.3178E-03	-2.0800	0.0000	-2.0800
SmF3:0.5H2O	3.0066E-02	-1.5219	0.0000	-1.5219

Mineral	Log Q/K	Aff, kcal	State
Lanthanide fluoride	-16.465	-22.462	
LaF3:0.5H2O	-16.465	-22.462	
CeF3:0.5H2O	-16.465	-22.462	
NdF3:0.5H2O	-16.465	-22.462	
GdF3:0.5H2O	-16.465	-22.462	
SmF3:0.5H2O	-16.465	-22.462	

--- Summary of Gases ---

Gas	Fugacity	Log fugacity
Al(g)	4.0122-197	-196.3966
B(g)	8.5657-204	-203.0672
BF3(g)	5.7802E-29	-28.2381
C(g)	3.0917-190	-189.5098
CH4(g)	3.5241-146	-145.4530
CO(g)	6.0395E-49	-48.2190
CO2(g)	3.1623E-04	-3.5000
Ca(g)	8.6783-164	-163.0616
Chlorine	3.0920E-17	-16.5098
Cs(g)	3.7828E-89	-88.4222
Cu(g)	8.7775E-93	-92.0566
Fluorine	9.1233E-76	-75.0398
H2(g)	6.1104E-42	-41.2139
H2O(g)	2.5958E-02	-1.5857
H2S(g)	2.0002-130	-129.6989
HCl(g)	6.8188E-13	-12.1663
HF(g)	1.3219E-10	-9.8788
K(g)	4.8980E-83	-82.3100
Li(g)	8.4134-103	-102.0750
Mg(g)	1.3756-141	-140.8615
Nitrogen	2.2589E-08	-7.6461
NH3(g)	1.7309E-63	-62.7617
NO(g)	4.7326E-20	-19.3249
NO2(g)	3.2360E-14	-13.4900
Na(g)	2.1039E-81	-80.6770
O2(g)	2.0999E-01	-0.6778
Pb(g)	8.8240E-81	-80.0543
S2(g)	2.3892-203	-202.6217
SO2(g)	3.5441E-43	-42.4505
Si(g)	4.2257-221	-220.3741

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SiF4(g)                    1.3480E-24    -23.8703
Ti(g)                      3.8019-231   -230.4200
TiCl4(g)                   7.2524E-62    -61.1395
U(g)                       1.2493-304   -303.9033
U2Cl10(g)                  3.4596-202   -201.4610
U2Cl8(g)                   3.4688-216   -215.4598
U2F10(g)                   3.4354-136   -135.4640
UCl(g)                     7.5942-255   -254.1195
UCl2(g)                    1.3810-203   -202.8598
UCl3(g)                    5.5007-150   -149.2596
UCl4(g)                    1.1864-113   -112.9258
UCl5(g)                    1.3166-114   -113.8805
UCl6(g)                    2.7145-110   -109.5663
UF(g)                      3.1289-242   -241.5046
UF2(g)                     5.8118-198   -197.2357
UF3(g)                     2.6567-147   -146.5757
UF4(g)                     1.7925E-93    -92.7465
UF5(g)                     5.5397E-81    -80.2565
UF6(g)                     1.6858E-82    -81.7732
UO(g)                      9.8664-220   -219.0058
UO2(g)                     1.8279-135   -134.7380
UO2Cl2(g)                  2.4677E-71    -70.6077
UO2F2(g)                   7.5338E-64    -63.1230
UO3(g)                     1.3445E-82    -81.8714
UOF4(g)                    5.3415E-71    -70.2723
Zn(g)                      1.4809E-90    -89.8295



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Stepping to zi=  6.7552E-03, delzi=  4.4562E-04, nord= 5
  time =  6.5154E+01 d, dltime =  4.2980E+00 d
Steps completed =    77, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Al+++                   ) =     -3.9587

Stepping to zi=  7.6273E-03, delzi=  8.7211E-04, nord= 6
  time =  7.3566E+01 d, dltime =  8.4116E+00 d
Steps completed =    78, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Al+++                   ) =     -3.8862

Stepping to zi=  8.5912E-03, delzi=  9.6385E-04, nord= 6
  time =  8.2862E+01 d, dltime =  9.2964E+00 d
Steps completed =    79, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Al+++                   ) =     -3.8178

Stepping to zi=  9.6572E-03, delzi=  1.0660E-03, nord= 6
  time =  9.3144E+01 d, dltime =  1.0282E+01 d
Steps completed =    80, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Al+++                   ) =     -3.7527

Stepping to zi=  1.0000E-02, delzi=  3.4281E-04, nord= 6
  time =  9.6451E+01 d, dltime =  3.3065E+00 d
Steps completed =    81, iter =  8, ncorr = 0
Most rapidly changing is zvclg1(Al+++                   ) =     -3.7337

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                    Reaction progress        =  9.99999999999947E-03
                    Log of reaction progress =      -2.0000000
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```
Time =  8.333E+06 sec
     =  9.645E+01 days
     =  2.641E-01 years

Log sec =        6.921
Log days =       1.984
Log years =     -0.578

Temperature    =     25.000 degrees C
total pressure =      1.013 bars

Step size is limited by the print requirement

                    --- Reactant Summary ---

   Reactant                  Moles     Delta moles    Mass, g    Delta Mass, g

 Tuff                      9.9990E+01   1.0000E-02   2.0584E+03   2.0586E-01

              Current total mass =  2.05844E+03 grams
              Delta total mass   =  2.05865E-01 grams
              Delta total volume =      0.00000 cc

   Reactant                Rel. Rate      Rate         Rate
                            mol/mol       mol/s      mol/s/cm2

 Tuff                      1.0000E+00   1.2000E-09   2.5000E-15

   Reactant                  Affinity   Surface Area
                             kcal/mol     mol/s/cm2

 Tuff                       999.00000   4.8000E+05

   Reactant                Rate Constants, mol/s/cm2

 Tuff
                  Forward    2.5000E-15

        Affinity of the overall irreversible reaction=     0.000 kcal
        Contributions from irreversible reactions
        with no thermodynamic data are not included


    --- Element Totals for the Aqueous Solution ---

  Element        mg/kg soln.          Molality             Moles

     O          8.865227E+05        5.561112E+01        5.559598E+01
     Al         1.388397E+01        5.164431E-04        5.163025E-04
     B          1.334780E-01        1.239137E-05        1.238800E-05
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Ba	1.368670E-05	1.000272E-10	1.000000E-10
Ca	1.377820E+01	3.450339E-04	3.449400E-04
Ce	1.396456E-19	1.000272E-24	9.999994E-25
Cl	7.116255E+00	2.014548E-04	2.014000E-04
Cr	2.996244E+02	5.783381E-03	5.781807E-03
Cs	1.324602E-05	1.000272E-10	1.000000E-10
Cu	6.649979E-10	1.050286E-14	1.050000E-14
F	2.172764E+00	1.147812E-04	1.147500E-04
Fe	6.955192E-01	1.249927E-05	1.249587E-05
Gd	1.567232E-09	1.000272E-14	1.000000E-14
H	1.115116E+05	1.110352E+02	1.110050E+02
C	1.267338E-01	1.058983E-05	1.058694E-05
P	7.338806E+00	2.377973E-04	2.377326E-04
K	1.342502E+01	3.446138E-04	3.445200E-04
La	1.384402E-09	1.000272E-14	1.000000E-14
Li	6.917749E-07	1.000272E-10	1.000000E-10
Mg	2.306545E+00	9.524492E-05	9.521900E-05
Mn	2.563964E+01	4.683970E-04	4.682696E-04
Mo	2.179307E+02	2.279786E-03	2.279166E-03
N	1.982294E+00	1.420387E-04	1.420000E-04
Na	5.111790E+01	2.231587E-03	2.230980E-03
Nd	1.437568E-09	1.000272E-14	1.000000E-14
Ni	7.501816E+02	1.282856E-02	1.282507E-02
Pb	2.065059E-05	1.000272E-10	1.000000E-10
Pu	2.431827E-09	1.000272E-14	1.000000E-14
S	5.507194E+02	1.723698E-02	1.723228E-02
Si	2.802894E+00	1.001613E-04	1.001341E-04
Sm	1.498563E-09	1.000272E-14	1.000000E-14
Sr	8.732649E-06	1.000272E-10	1.000000E-10
Ti	1.078270E-05	2.260211E-10	2.259595E-10
U	2.372315E-09	1.000272E-14	1.000000E-14
V	4.767896E+00	9.393567E-05	9.391010E-05
Zn	6.517095E-06	1.000272E-10	1.000000E-10
Zr	9.091841E-16	1.000272E-20	1.000000E-20

Single ion activities and activity coefficients are here defined
with respect to the modified NBS pH scale

	pH	Eh	pe
modified NBS pH scale	2.0938	1.0952	1.8513E+01
rational pH scale	2.0170	1.0997	1.8590E+01

pHCl = 5.8822

Oxygen fugacity = 2.09991E-01
Log oxygen fugacity = -0.67780

Activity of water = 0.99925
Log activity of water = -0.00033

Ionic strength = 5.955746E-02 molal
Sum of molalities = 0.0487467988237
Osmotic coefficient = 0.85359

Mass of solution = 1.003361 kg

Mass of solutes = 0.003633 kg
Conc. of solutes = 0.362108 per cent (w/w)

Moles of solvent H2O = 5.54933E+01
Mass of solvent H2O = 9.99728E-01 kg

Species	Molality	Log molality	Log gamma	Log activity
Ni++	1.0180E-02	-1.9923	-0.3481	-2.3404
SO4--	9.9856E-03	-2.0006	-0.3619	-2.3625
H+	9.6157E-03	-2.0170	-0.0768	-2.0938
HSO4-	4.0550E-03	-2.3920	-0.0852	-2.4773
HCrO4-	4.0496E-03	-2.3926	-0.0852	-2.4778
NiSO4(aq)	2.6472E-03	-2.5772	0.0000	-2.5772
MoO4--	2.2798E-03	-2.6421	-0.3508	-2.9929
Na+	2.1712E-03	-2.6633	-0.0988	-2.7621
Cr2O7--	8.6485E-04	-3.0631	-0.3619	-3.4250
K+	3.3405E-04	-3.4762	-0.1049	-3.5811
Mn++	3.2521E-04	-3.4878	-0.3481	-3.8359
Ca++	2.7563E-04	-3.5597	-0.3481	-3.9078
O2(aq)	2.6161E-04	-3.5823	0.0062	-3.5761
AlSO4+	2.2007E-04	-3.6574	-0.0988	-3.7563
Cl-	2.0091E-04	-3.6970	-0.0914	-3.7884
Al+++	1.8467E-04	-3.7336	-0.6701	-4.4037
MnSO4(aq)	1.4270E-04	-3.8456	0.0000	-3.8456
NO3-	1.4023E-04	-3.8531	-0.0914	-3.9445
H2PO4-	1.1533E-04	-3.9381	-0.0852	-4.0233
H3PO4(aq)	1.1286E-04	-3.9474	0.0000	-3.9474
AlF++	1.0806E-04	-3.9663	-0.3779	-4.3442
SiO2(aq)	1.0016E-04	-3.9993	0.0000	-3.9993
VO2+	7.7503E-05	-4.1107	-0.0988	-4.2095
CaSO4(aq)	6.9309E-05	-4.1592	0.0000	-4.1592
Mg++	6.1764E-05	-4.2093	-0.3152	-4.5244
NaSO4-	6.0339E-05	-4.2194	-0.0852	-4.3047
MgSO4(aq)	3.3476E-05	-4.4753	0.0000	-4.4753
VO2SO4-	1.2394E-05	-4.9068	-0.0852	-4.9920
B(OH)3(aq)	1.2391E-05	-4.9069	0.0000	-4.9069
CO2(aq)	1.0589E-05	-4.9751	0.0062	-4.9689
KSO4-	1.0500E-05	-4.9788	-0.0852	-5.0640
FeHPO4+	8.2647E-06	-5.0828	-0.0988	-5.1816
VO(OH)3(aq)	3.8342E-06	-5.4163	0.0000	-5.4163
Fe+++	2.7760E-06	-5.5566	-0.6701	-6.2267
AlF2+	2.5947E-06	-5.5859	-0.0988	-5.6847
Cr+++	2.4526E-06	-5.6104	-0.6701	-6.2805
NiNO3+	1.6366E-06	-5.7861	-0.0988	-5.8849
HF(aq)	1.3607E-06	-5.8662	0.0000	-5.8662
H2CrO4(aq)	1.2851E-06	-5.8911	0.0000	-5.8911
FeOH++	1.1342E-06	-5.9453	-0.3779	-6.3232
AlHPO4+	9.1244E-07	-6.0398	-0.0988	-6.1386
MnH2PO4+	3.8866E-07	-6.4104	-0.0988	-6.5093
CrO4--	3.0443E-07	-6.5165	-0.3619	-6.8784
HCl(aq)	2.8041E-07	-6.5522	0.0000	-6.5522
FeSO4+	2.7364E-07	-6.5628	-0.0988	-6.6616
F-	1.4051E-07	-6.8523	-0.0882	-6.9405
AlOH++	1.2900E-07	-6.8894	-0.3779	-7.2673
NiCl+	9.4162E-08	-7.0261	-0.0988	-7.1250
H2VO4-	9.3446E-08	-7.0294	-0.0852	-7.1147
CaNO3+	8.8416E-08	-7.0535	-0.0988	-7.1523
KHSO4(aq)	5.9720E-08	-7.2239	0.0000	-7.2239
MnCl+	5.9678E-08	-7.2242	-0.0988	-7.3230
VO2(OH)2-	5.7911E-08	-7.2372	-0.0852	-7.3225
CrO3Cl-	5.7297E-08	-7.2419	-0.0852	-7.3271

NaCl(aq)	4.7044E-08	-7.3275	0.0000	-7.3275
HNO3(aq)	4.5620E-08	-7.3408	0.0000	-7.3408
VO2HPO4-	3.7227E-08	-7.4291	-0.0852	-7.5144
MnNO3+	3.2989E-08	-7.4816	-0.0988	-7.5805
H2SO4(aq)	2.6847E-08	-7.5711	0.0000	-7.5711
Fe(OH)2+	2.4498E-08	-7.6109	-0.0988	-7.7097
Fe(SO4)2-	2.2242E-08	-7.6528	-0.0852	-7.7381
VO2F(aq)	1.5849E-08	-7.8000	0.0000	-7.8000
CrOH++	1.5520E-08	-7.8091	-0.3779	-8.1870
CaCl+	5.0942E-09	-8.2929	-0.0988	-8.3918
MgCl+	4.4783E-09	-8.3489	-0.0988	-8.4477
AlF3(aq)	2.9837E-09	-8.5252	0.0000	-8.5252
FeF++	2.2243E-09	-8.6528	-0.3779	-9.0307
HPO4--	1.6866E-09	-8.7730	-0.3619	-9.1349
FeNO3++	1.6095E-09	-8.7933	-0.3779	-9.1712
KCl(aq)	1.3674E-09	-8.8641	0.0000	-8.8641
HPO3F-	1.3223E-09	-8.8787	-0.0852	-8.9639
HCO3-	7.3309E-10	-9.1348	-0.0852	-9.2201
MnF+	5.6543E-10	-9.2476	-0.0988	-9.3464
MnHPO4(aq)	4.0661E-10	-9.3908	0.0000	-9.3908
VO++	2.4625E-10	-9.6086	-0.3779	-9.9865
Ti(OH)4(aq)	2.2602E-10	-9.6459	0.0000	-9.6459
CrCl++	1.4455E-10	-9.8400	-0.3779	-10.2179
VOSO4(aq)	1.3519E-10	-9.8691	0.0000	-9.8691
Cs+	1.0002E-10	-9.9999	-0.1083	-10.1082

--- Summary of Instantaneously Precipitated Solid Phases ---
(defined by derivatives)

--- Theoretical Rock Composition ---
g/kg

O	5.125417E+01
Fe	9.012561E-01
C	1.465522E-05
Mn	4.099926E+00
Si	4.367314E+01
Ti	7.149505E-02

--- Oxide Percentages ---

Oxide Theoretical rock

Total = 0.0000

Phase/end-member	d mol/d zi	d grams/d zi	d vol (cc)/d zi
Hematite	1.3672E-03	2.1832E-01	4.1389E-02
Pyrolusite	1.2644E-02	1.0993E+00	6.3222E+00
Quartz	2.6347E-01	1.5830E+01	5.9776E+00
Rutile	2.5300E-04	2.0209E-02	4.7615E-03
fix CO2(g)	2.0673E-07	9.0983E-06	0.0000E+00
fix O2(g)	-7.0280E-03	-2.2489E-01	0.0000E+00

--- Summary of Solid Phases (E.S.+P.R.S.) ---

Phase/End-member	Log moles	Moles	Mass, g	Volume, cc
Hematite	-4.8603	1.3795E-05	2.2029E-03	4.1762E-04

Pyrolusite		-3.8950	1.2734E-04	1.1071E-02	6.3670E-02
Quartz		-2.5793	2.6347E-03	1.5830E-01	5.9776E-02
Rutile		-5.5969	2.5299E-06	2.0208E-04	4.7612E-05
fix	CO2(g)	2.3010	2.0000E+02	8.8020E+03	0.0000E+00
fix	O2(g)	2.3010	2.0000E+02	6.3998E+03	0.0000E+00

	Mass, grams	Volume, cc
Created	1.520189E+04	1.239115E-01
Destroyed	2.058647E-01	0.000000E+00
Net	1.520168E+04	1.239115E-01

Warning-- these volume totals may be incomplete because of missing partial molar volume data in the data base

--- Summary of Pure Mineral Saturation States ---

Mineral	Log Q/K	Aff, kcal	State
Anglesite	-4.889	-6.669	
Anhydrite	-1.964	-2.679	
BaCrO4	-7.314	-9.978	
BaZrO3	69.492	94.807	ssatd
Barite	-2.759	-3.764	
Bassanite	-2.609	-3.559	
Berlinite	-4.236	-5.779	
Boehmite	-5.687	-7.759	
Boric_acid	-4.749	-6.478	
CaSO4:0.5H2O(beta)	-2.777	-3.789	
CaZrO3	129.982	177.333	ssatd
Celestite	-7.190	-9.809	
Chalcedony	-0.271	-0.370	
Coesite	-0.810	-1.105	
CrO2	-0.963	-1.314	
Cristobalite(alpha)	-0.551	-0.751	
Cristobalite(beta)	-0.994	-1.356	
Crocoite	-4.540	-6.193	
Diaspore	-5.283	-7.208	
Epsomite	-4.927	-6.722	
Fe(OH)3	-5.602	-7.642	
Gibbsite	-5.879	-8.021	
Goethite	-0.480	-0.655	
Gypsum	-1.789	-2.440	
Hematite	0.000	0.000	satd
Hexahydrite	-5.162	-7.043	
Ice	-0.139	-0.190	
Jarosite	-5.055	-6.896	
Kieserite	-6.620	-9.032	
Manganite	-4.459	-6.084	
Mercallite	-6.599	-9.002	
Mirabilite	-6.750	-9.209	
MnHPO4	-0.024	-0.033	
MnO2(gamma)	-1.518	-2.071	
Morenosite	-2.691	-3.672	
NiSO4:6H2O(alpha)	-2.698	-3.680	
Niter	-7.320	-9.986	
Nontronite-Ca	-2.321	-3.167	
Nontronite-H	-1.410	-1.923	
Nontronite-K	-2.576	-3.514	

Nontronite-Mg	-2.385	-3.254	
Nontronite-Na	-2.644	-3.607	
Pentahydrite	-5.501	-7.505	
Pyrolusite	0.000	0.000	satd
Quartz	0.000	0.000	satd
Rutile	0.000	0.000	satd
Shcherbinaite	-2.780	-3.792	
SiO2(am)	-1.286	-1.754	
SrZrO3	106.350	145.092	ssatd
Starkeyite	-5.888	-8.033	
Strengite	-1.926	-2.627	
Tridymite	-0.171	-0.234	
fix CO2(g)	0.000	0.000	satd
fix O2(g)	0.000	0.000	satd

--- Summary of Solid Solutions ---

--- Carbonate-Calcite ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Calcite	7.6391E-03	-2.1170	0.0000	-2.1170
Magnesite	6.6296E-04	-3.1785	0.0000	-3.1785
Rhodochrosite	9.9170E-01	-0.0036	0.0000	-0.0036
Siderite	1.2663E-08	-7.8975	0.0000	-7.8975
Smithsonite	6.7200E-08	-7.1726	0.0000	-7.1726
Strontianite	2.8091E-07	-6.5514	0.0000	-6.5514

Mineral	Log Q/K	Aff, kcal	State
Carbonate-Calcite	-10.766	-14.688	
Calcite	-10.766	-14.688	
Magnesite	-10.766	-14.688	
Rhodochrosite	-10.766	-14.688	
Siderite	-10.766	-14.688	
Smithsonite	-10.766	-14.688	
Strontianite	-10.766	-14.688	

--- Clinoptilolite-hy-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-hy-Ca	9.7835E-01	-0.0095	0.0000	-0.0095
Clinoptilolite-hy-Cs	5.9225E-23	-22.2275	0.0000	-22.2275
Clinoptilolite-hy-K	1.9577E-02	-1.7083	0.0000	-1.7083
Clinoptilolite-hy-Na	2.0711E-03	-2.6838	0.0000	-2.6838
Clinoptilolite-hy-Sr	4.9328E-12	-11.3069	0.0000	-11.3069

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-hy-ss	-44.143	-60.224	
Clinoptilolite-hy-Ca	-44.143	-60.224	
Clinoptilolite-hy-Cs	-44.143	-60.224	
Clinoptilolite-hy-K	-44.143	-60.224	

Clinoptilolite-hy-Na	-44.143	-60.224
Clinoptilolite-hy-Sr	-44.143	-60.224

--- Clinoptilolite-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-Ca	6.7062E-01	-0.1735	-0.4269	-0.6004
Clinoptilolite-Cs	2.5335E-07	-6.5963	-16.2269	-22.8231
Clinoptilolite-K	2.1597E-01	-0.6656	-1.6374	-2.3030
Clinoptilolite-NH4	6.7240E-52	-51.1724	-125.8840	-177.0564
Clinoptilolite-Na	1.1305E-01	-0.9467	-2.3290	-3.2757
Clinoptilolite-Sr	3.6451E-04	-3.4383	-8.4582	-11.8965

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-ss	-43.553	-59.419	
Clinoptilolite-Ca	-43.553	-59.419	
Clinoptilolite-Cs	-43.553	-59.419	
Clinoptilolite-K	-43.553	-59.419	
Clinoptilolite-NH4	-43.553	-59.419	
Clinoptilolite-Na	-43.553	-59.419	
Clinoptilolite-Sr	-43.553	-59.419	

--- Saponite-tri ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Saponite-Ca	1.7210E-03	-2.7642	1.8520	-0.9122
Saponite-H	9.9671E-01	-0.0014	0.0010	-0.0005
Saponite-K	2.9148E-04	-3.5354	2.3687	-1.1667
Saponite-Mg	1.1008E-03	-2.9583	1.9821	-0.9762
Saponite-Na	1.8120E-04	-3.7418	2.5070	-1.2348

Mineral	Log Q/K	Aff, kcal	State
Saponite-tri	-40.401	-55.119	
Saponite-Ca	-40.401	-55.119	
Saponite-H	-40.401	-55.119	
Saponite-K	-40.401	-55.119	
Saponite-Mg	-40.401	-55.119	
Saponite-Na	-40.401	-55.119	

--- Smectite-di ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Beidellite-Ca	5.3089E-42	-41.2750	27.6542	-13.6207
Beidellite-K	8.9979E-43	-42.0459	28.1707	-13.8751

Beidellite-Mg	3.3956E-42	-41.4691	27.7843	-13.6848
Beidellite-Na	5.5896E-43	-42.2526	28.3093	-13.9434
Montmor-Ca	1.0387E-40	-39.9835	26.7890	-13.1946
Montmor-K	2.8751E-41	-40.5414	27.1627	-13.3786
Montmor-Mg	1.0797E-40	-39.9667	26.7777	-13.1890
Montmor-Na	1.7417E-41	-40.7590	27.3085	-13.4505
Nontronite-Ca	5.2224E-01	-0.2821	0.1890	-0.0931
Nontronite-K	8.8512E-02	-1.0530	0.7055	-0.3475
Nontronite-Mg	3.3426E-01	-0.4759	0.3189	-0.1571
Nontronite-Na	5.4985E-02	-1.2598	0.8440	-0.4157

Mineral	Log Q/K	Aff, kcal	State
Smectite-di	-2.228	-3.040	
Beidellite-Ca	-2.228	-3.040	
Beidellite-K	-2.228	-3.040	
Beidellite-Mg	-2.228	-3.040	
Beidellite-Na	-2.228	-3.040	
Montmor-Ca	-2.228	-3.040	
Montmor-K	-2.228	-3.040	
Montmor-Mg	-2.228	-3.040	
Montmor-Na	-2.228	-3.040	
Nontronite-Ca	-2.228	-3.040	
Nontronite-K	-2.228	-3.040	
Nontronite-Mg	-2.228	-3.040	
Nontronite-Na	-2.228	-3.040	

--- Lanthanide hydroxide ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
La(OH)3	1.2757E-05	-4.8943	0.0000	-4.8943
Ce(OH)3	3.7055E-15	-14.4311	0.0000	-14.4311
Nd(OH)3(c)	3.4610E-01	-0.4608	0.0000	-0.4608
Gd(OH)3	5.8683E-01	-0.2315	0.0000	-0.2315
Sm(OH)3	6.7059E-02	-1.1735	0.0000	-1.1735

Mineral	Log Q/K	Aff, kcal	State
Lanthanide hydroxide	-24.483	-33.402	
La(OH)3	-24.483	-33.402	
Ce(OH)3	-24.483	-33.402	
Nd(OH)3(c)	-24.483	-33.402	
Gd(OH)3	-24.483	-33.402	
Sm(OH)3	-24.483	-33.402	

--- Rhabdophane-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaPO4:H2O	4.1112E-01	-0.3860	0.0000	-0.3860
CePO4:H2O	3.7764E-11	-10.4229	0.0000	-10.4229
NdPO4:H2O	2.2255E-01	-0.6526	0.0000	-0.6526

GdPO4:H2O	1.5022E-01	-0.8233	0.0000	-0.8233
SmPO4:H2O	2.1611E-01	-0.6653	0.0000	-0.6653

Mineral	Log Q/K	Aff, kcal	State
Rhabdophane-ss	-9.634	-13.144	
LaPO4:H2O	-9.634	-13.144	
CePO4:H2O	-9.634	-13.144	
NdPO4:H2O	-9.634	-13.144	
GdPO4:H2O	-9.634	-13.144	
SmPO4:H2O	-9.634	-13.144	

--- Lanthanide fluoride ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaF3:0.5H2O	5.7188E-01	-0.2427	0.0000	-0.2427
CeF3:0.5H2O	8.3256E-11	-10.0796	0.0000	-10.0796
NdF3:0.5H2O	3.8973E-01	-0.4092	0.0000	-0.4092
GdF3:0.5H2O	8.3190E-03	-2.0799	0.0000	-2.0799
SmF3:0.5H2O	3.0062E-02	-1.5220	0.0000	-1.5220

Mineral	Log Q/K	Aff, kcal	State
Lanthanide fluoride	-17.208	-23.476	
LaF3:0.5H2O	-17.208	-23.476	
CeF3:0.5H2O	-17.208	-23.476	
NdF3:0.5H2O	-17.208	-23.476	
GdF3:0.5H2O	-17.208	-23.476	
SmF3:0.5H2O	-17.208	-23.476	

--- Summary of Gases ---

Gas	Fugacity	Log fugacity
Al(g)	8.5808-197	-196.0665
B(g)	8.5656-204	-203.0672
BF3(g)	9.0675E-30	-29.0425
C(g)	3.0917-190	-189.5098
CH4(g)	3.5241-146	-145.4530
CO(g)	6.0395E-49	-48.2190
CO2(g)	3.1623E-04	-3.5000
Ca(g)	9.7670-164	-163.0102
Chlorine	2.8017E-17	-16.5526
Cs(g)	3.9710E-89	-88.4011
Cu(g)	9.6693E-93	-92.0146
Fluorine	2.6537E-76	-75.5761
H2(g)	6.1105E-42	-41.2139
H2O(g)	2.5958E-02	-1.5857
H2S(g)	1.8239-130	-129.7390
HCl(g)	6.4908E-13	-12.1877
HF(g)	7.1296E-11	-10.1469
K(g)	6.6850E-83	-82.1749
Li(g)	8.8323-103	-102.0539

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Mg(g)                        1.5904-141   -140.7985
Nitrogen                     2.0466E-08     -7.6890
NH3(g)                       1.6475E-63    -62.7832
NO(g)                        4.5047E-20    -19.3463
NO2(g)                       3.0801E-14    -13.5114
Na(g)                        2.2993E-81    -80.6384
O2(g)                        2.0999E-01     -0.6778
Pb(g)                        9.7193E-81    -80.0124
S2(g)                        1.9866-203   -202.7019
SO2(g)                       3.2317E-43    -42.4906
Si(g)                        4.2257-221   -220.3741
SiF4(g)                      1.1405E-25    -24.9429
Ti(g)                        3.8019-231   -230.4200
TiCl4(g)                     5.9544E-62    -61.2252
U(g)                         1.3617-304   -303.8659
U2Cl10(g)                    2.5104-202   -201.6003
U2Cl8(g)                     2.7779-216   -215.5563
U2F10(g)                     8.4979-139   -138.0707
UCl(g)                       7.8792-255   -254.1035
UCl2(g)                      1.3639-203   -202.8652
UCl3(g)                      5.1713-150   -149.2864
UCl4(g)                      1.0617-113   -112.9740
UCl5(g)                      1.1216-114   -113.9502
UCl6(g)                      2.2010-110   -109.6574
UF(g)                        1.8393-242   -241.7353
UF2(g)                       1.8426-198   -197.7346
UF3(g)                       4.5426-148   -147.3427
UF4(g)                       1.6530E-94    -93.7817
UF5(g)                       2.7552E-82    -81.5598
UF6(g)                       4.5220E-84    -83.3447
UO(g)                        1.0754-219   -218.9684
UO2(g)                       1.9924-135   -134.7006
UO2Cl2(g)                    2.4372E-71    -70.6131
UO2F2(g)                     2.3885E-64    -63.6219
UO3(g)                       1.4655E-82    -81.8340
UOF4(g)                      4.9258E-72    -71.3075
Zn(g)                        1.6315E-90    -89.7874



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Stepping to zi=  1.1310E-02, delzi=  1.3104E-03, nord= 6
  time =  1.0909E+02 d, dltime =  1.2639E+01 d
Steps completed =    82, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Al+++                   ) =     -3.6678

Stepping to zi=  1.2744E-02, delzi=  1.4332E-03, nord= 6
  time =  1.2291E+02 d, dltime =  1.3823E+01 d
Steps completed =    83, iter = 13, ncorr = 0
Most rapidly changing is zvclg1(Al+++                   ) =     -3.6056

Stepping to zi=  1.4347E-02, delzi=  1.6034E-03, nord= 6
  time =  1.3838E+02 d, dltime =  1.5465E+01 d
Steps completed =    84, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Al+++                   ) =     -3.5452

Stepping to zi=  1.5849E-02, delzi=  1.5019E-03, nord= 6
  time =  1.5286E+02 d, dltime =  1.4486E+01 d
Steps completed =    85, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Al+++                   ) =     -3.4954
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                    Reaction progress        =  1.58489319246103E-02
                    Log of reaction progress =      -1.8000000



                    Time =  1.321E+07 sec
                         =  1.529E+02 days
                         =  4.185E-01 years

                    Log sec =        7.121
                    Log days =       2.184
                    Log years =     -0.378

                    Temperature    =     25.000 degrees C
                    total pressure =      1.013 bars


Step size is limited by the print requirement


                              --- Reactant Summary ---


   Reactant                   Moles     Delta moles    Mass, g    Delta Mass, g

 Tuff                       9.9984E+01   1.5849E-02   2.0583E+03   3.2627E-01


               Current total mass =  2.05832E+03 grams
               Delta total mass   =  3.26274E-01 grams
               Delta total volume =      0.00000 cc


   Reactant                Rel. Rate      Rate         Rate
                            mol/mol       mol/s      mol/s/cm2

 Tuff                      1.0000E+00   1.2000E-09   2.5000E-15


   Reactant                  Affinity   Surface Area
                             kcal/mol     mol/s/cm2

 Tuff                       999.00000   4.8000E+05


   Reactant                Rate Constants, mol/s/cm2

 Tuff
                   Forward    2.5000E-15


        Affinity of the overall irreversible reaction=     0.000 kcal
        Contributions from irreversible reactions
        with no thermodynamic data are not included


    --- Element Totals for the Aqueous Solution ---
```

Element	mg/kg soln.	Molality	Moles
O	8.865122E+05	5.561112E+01	5.559652E+01
Al	2.198082E+01	8.176320E-04	8.174172E-04
B	1.334752E-01	1.239125E-05	1.238800E-05
Ba	1.368640E-05	1.000263E-10	1.000000E-10
Ca	1.425846E+01	3.570650E-04	3.569713E-04
Ce	1.396426E-19	1.000262E-24	9.999994E-25
Cl	7.116103E+00	2.014529E-04	2.014000E-04
Cr	2.996180E+02	5.783326E-03	5.781807E-03
Cs	1.324574E-05	1.000263E-10	1.000000E-10
Cu	6.649836E-10	1.050276E-14	1.050000E-14
F	2.172717E+00	1.147801E-04	1.147500E-04
Fe	5.946631E-01	1.068690E-05	1.068409E-05
Gd	1.567199E-09	1.000263E-14	1.000000E-14
H	1.115092E+05	1.110342E+02	1.110050E+02
C	1.267201E-01	1.058881E-05	1.058603E-05
P	7.346503E+00	2.380495E-04	2.379870E-04
K	1.833875E+01	4.707525E-04	4.706288E-04
La	1.384372E-09	1.000263E-14	1.000000E-14
Li	6.917601E-07	1.000263E-10	1.000000E-10
Mg	2.483878E+00	1.025688E-04	1.025419E-04
Mn	2.179294E+01	3.981285E-04	3.980239E-04
Mo	2.179260E+02	2.279765E-03	2.279166E-03
N	1.982252E+00	1.420373E-04	1.420000E-04
Na	5.431676E+01	2.371264E-03	2.370641E-03
Nd	1.437537E-09	1.000263E-14	1.000000E-14
Ni	7.501656E+02	1.282843E-02	1.282507E-02
Pb	2.065015E-05	1.000263E-10	1.000000E-10
Pu	2.431774E-09	1.000263E-14	1.000000E-14
S	5.507076E+02	1.723681E-02	1.723228E-02
Si	2.802861E+00	1.001613E-04	1.001350E-04
Sm	1.498531E-09	1.000263E-14	1.000000E-14
Sr	8.732462E-06	1.000263E-10	1.000000E-10
Ti	1.078276E-05	2.260250E-10	2.259657E-10
U	2.372265E-09	1.000263E-14	1.000000E-14
V	4.767794E+00	9.393477E-05	9.391010E-05
Zn	6.516956E-06	1.000263E-10	1.000000E-10
Zr	9.091647E-16	1.000263E-20	1.000000E-20

Single ion activities and activity coefficients are here defined
with respect to the modified NBS pH scale

	pH	Eh	pe
modified NBS pH scale	2.1301	1.0930	1.8477E+01
rational pH scale	2.0531	1.0976	1.8554E+01

pHCl = 5.9186

Oxygen fugacity = 2.09991E-01
Log oxygen fugacity = -0.67780

Activity of water = 0.99926
Log activity of water = -0.00032

Ionic strength = 5.998363E-02 molal
Sum of molalities = 0.0483216086532
Osmotic coefficient = 0.85095

Mass of solution = 1.003383 kg
Mass of solutes = 0.003645 kg
Conc. of solutes = 0.363293 per cent (w/w)

Moles of solvent H2O = 5.54939E+01
Mass of solvent H2O = 9.99737E-01 kg

Species	Molality	Log molality	Log gamma	Log activity
Ni++	1.0164E-02	-1.9929	-0.3490	-2.3419
SO4--	1.0101E-02	-1.9956	-0.3628	-2.3585
H+	8.8497E-03	-2.0531	-0.0770	-2.1301
HCrO4-	4.0488E-03	-2.3927	-0.0855	-2.4781
HSO4-	3.7673E-03	-2.4240	-0.0855	-2.5094
NiSO4(aq)	2.6627E-03	-2.5747	0.0000	-2.5747
Na+	2.3065E-03	-2.6370	-0.0991	-2.7361
MoO4--	2.2798E-03	-2.6421	-0.3516	-2.9937
Cr2O7--	8.6558E-04	-3.0627	-0.3628	-3.4255
K+	4.5620E-04	-3.3408	-0.1052	-3.4461
AlSO4+	3.8353E-04	-3.4162	-0.0991	-3.5153
Al+++	3.1971E-04	-3.4952	-0.6716	-4.1668
Ca++	2.8482E-04	-3.5454	-0.3490	-3.8944
Mn++	2.7579E-04	-3.5594	-0.3490	-3.9084
O2(aq)	2.6159E-04	-3.5824	0.0063	-3.5761
Cl-	2.0094E-04	-3.6969	-0.0916	-3.7885
NO3-	1.4024E-04	-3.8531	-0.0916	-3.9447
MnSO4(aq)	1.2191E-04	-3.9140	0.0000	-3.9140
H2PO4-	1.2031E-04	-3.9197	-0.0855	-4.0052
AlF++	1.1079E-04	-3.9555	-0.3789	-4.3344
H3PO4(aq)	1.0827E-04	-3.9655	0.0000	-3.9655
SiO2(aq)	1.0016E-04	-3.9993	0.0000	-3.9993
VO2+	7.7115E-05	-4.1129	-0.0991	-4.2120
CaSO4(aq)	7.2148E-05	-4.1418	0.0000	-4.1418
Mg++	6.6333E-05	-4.1783	-0.3159	-4.4942
NaSO4-	6.4691E-05	-4.1892	-0.0855	-4.2746
MgSO4(aq)	3.6231E-05	-4.4409	0.0000	-4.4409
KSO4-	1.4471E-05	-4.8395	-0.0855	-4.9250
VO2SO4-	1.2446E-05	-4.9050	-0.0855	-4.9904
B(OH)3(aq)	1.2391E-05	-4.9069	0.0000	-4.9069
CO2(aq)	1.0588E-05	-4.9752	0.0063	-4.9689
FeHPO4+	7.2983E-06	-5.1368	-0.0991	-5.2359
VO(OH)3(aq)	4.1443E-06	-5.3825	0.0000	-5.3825
Fe+++	2.1687E-06	-5.6638	-0.6716	-6.3354
AlHPO4+	1.7856E-06	-5.7482	-0.0991	-5.8473
Cr+++	1.7615E-06	-5.7541	-0.6716	-6.4257
NiNO3+	1.6311E-06	-5.7875	-0.0991	-5.8866
AlF2+	1.5743E-06	-5.8029	-0.0991	-5.9020
H2CrO4(aq)	1.1815E-06	-5.9276	0.0000	-5.9276
FeOH++	9.6222E-07	-6.0167	-0.3789	-6.3956
HF(aq)	7.4209E-07	-6.1295	0.0000	-6.1295
MnH2PO4+	3.4321E-07	-6.4644	-0.0991	-6.5635
CrO4--	3.3141E-07	-6.4796	-0.3628	-6.8425
HCl(aq)	2.5787E-07	-6.5886	0.0000	-6.5886
AlOH++	2.4251E-07	-6.6153	-0.3789	-6.9942
FeSO4+	2.1520E-07	-6.6672	-0.0991	-6.7662
H2VO4-	1.0984E-07	-6.9592	-0.0855	-7.0447
NiCl+	9.3853E-08	-7.0276	-0.0991	-7.1266

CaNO3+	9.1197E-08	-7.0400	-0.0991	-7.1391
F-	8.3337E-08	-7.0792	-0.0884	-7.1676
KHSO4(aq)	7.5682E-08	-7.1210	0.0000	-7.1210
VO2(OH)2-	6.8071E-08	-7.1670	-0.0855	-7.2525
CrO3Cl-	5.2681E-08	-7.2783	-0.0855	-7.3638
MnCl+	5.0521E-08	-7.2965	-0.0991	-7.3956
NaCl(aq)	4.9925E-08	-7.3017	0.0000	-7.3017
VO2HPO4-	4.1976E-08	-7.3770	-0.0855	-7.4625
HNO3(aq)	4.1950E-08	-7.3773	0.0000	-7.3773
MnNO3+	2.7925E-08	-7.5540	-0.0991	-7.6531
H2SO4(aq)	2.2936E-08	-7.6395	0.0000	-7.6395
Fe(OH)2+	2.2552E-08	-7.6468	-0.0991	-7.7459
Fe(SO4)2-	1.7654E-08	-7.7532	-0.0855	-7.8386
CrOH++	1.2105E-08	-7.9170	-0.3789	-8.2960
VO2F(aq)	9.3422E-09	-8.0295	0.0000	-8.0295
CaCl+	5.2548E-09	-8.2794	-0.0991	-8.3785
MgCl+	4.8029E-09	-8.3185	-0.0991	-8.4176
HPO4--	1.9158E-09	-8.7177	-0.3628	-9.0805
KCl(aq)	1.8654E-09	-8.7292	0.0000	-8.7292
FeNO3++	1.2555E-09	-8.9012	-0.3789	-9.2801
AlF3(aq)	1.0725E-09	-8.9696	0.0000	-8.9696
FeF++	1.0291E-09	-8.9875	-0.3789	-9.3665
HCO3-	7.9724E-10	-9.0984	-0.0855	-9.1839
HPO3F-	7.5228E-10	-9.1236	-0.0855	-9.2091
MnHPO4(aq)	3.9005E-10	-9.4089	0.0000	-9.4089
MnF+	2.8387E-10	-9.5469	-0.0991	-9.6460
Ti(OH)4(aq)	2.2603E-10	-9.6458	0.0000	-9.6458
VO++	2.2580E-10	-9.6463	-0.3789	-10.0252
VOSO4(aq)	1.2483E-10	-9.9037	0.0000	-9.9037
CrCl++	1.0368E-10	-9.9843	-0.3789	-10.3632
H2P2O7--	1.0303E-10	-9.9870	-0.3628	-10.3499
Cs+	1.0002E-10	-9.9999	-0.1086	-10.1085

--- Summary of Instantaneously Precipitated Solid Phases ---
(defined by derivatives)

--- Theoretical Rock Composition ---
g/kg

O	5.136445E+01
Fe	8.970950E-01
C	1.306670E-05
Mn	3.829333E+00
Si	4.383735E+01
Ti	7.176388E-02

--- Oxide Percentages ---

Oxide Theoretical rock

Total = 0.0000

Phase/end-member	d mol/d zi	d grams/d zi	d vol (cc)/d zi
Hematite	1.3557E-03	2.1650E-01	4.1044E-02
Pyrolusite	1.1766E-02	1.0229E+00	5.8829E+00
Quartz	2.6347E-01	1.5830E+01	5.9776E+00
Rutile	2.5300E-04	2.0209E-02	4.7615E-03
fix CO2(g)	1.8364E-07	8.0817E-06	0.0000E+00
fix O2(g)	-6.5670E-03	-2.1014E-01	0.0000E+00

--- Summary of Solid Phases (E.S.+P.R.S.) ---

Phase/End-member	Log moles	Moles	Mass, g	Volume, cc
Hematite	-4.6624	2.1757E-05	3.4745E-03	6.5868E-04
Pyrolusite	-3.7018	1.9872E-04	1.7276E-02	9.9360E-02
Quartz	-2.3793	4.1757E-03	2.5089E-01	9.4739E-02
Rutile	-5.3969	4.0097E-06	3.2029E-04	7.5462E-05
fix CO2(g)	2.3010	2.0000E+02	8.8020E+03	0.0000E+00
fix O2(g)	2.3010	2.0000E+02	6.3998E+03	0.0000E+00

	Mass, grams	Volume, cc
Created	1.520199E+04	1.948332E-01
Destroyed	3.262735E-01	0.000000E+00
Net	1.520166E+04	1.948332E-01

Warning-- these volume totals may be incomplete because
of missing partial molar volume data in the data base

--- Summary of Pure Mineral Saturation States ---

Mineral	Log Q/K	Aff, kcal	State
Anglesite	-4.886	-6.665	
Anhydrite	-1.946	-2.656	
BaCrO4	-7.279	-9.930	
BaZrO3	69.566	94.908	ssatd
Barite	-2.756	-3.760	
Bassanite	-2.592	-3.536	
Berlinite	-3.909	-5.332	
Boehmite	-5.342	-7.287	
Boric_acid	-4.749	-6.478	
CaSO4:0.5H2O(beta)	-2.760	-3.765	
CaZrO3	130.070	177.453	ssatd
Celestite	-7.188	-9.806	
Chalcedony	-0.271	-0.370	
Coesite	-0.810	-1.105	
CrO2	-1.000	-1.364	
Cristobalite(alpha)	-0.551	-0.751	
Cristobalite(beta)	-0.994	-1.356	
Crocoite	-4.505	-6.146	
Diaspore	-4.938	-6.736	
Epsomite	-4.893	-6.675	
Fe(OH)3	-5.602	-7.642	
Gibbsite	-5.534	-7.549	
Goethite	-0.480	-0.655	
Gypsum	-1.771	-2.416	
Hematite	0.000	0.000	satd
Hexahydrite	-5.128	-6.996	
Ice	-0.139	-0.190	
Jarosite	-5.020	-6.849	
Kieserite	-6.586	-8.985	
Manganite	-4.459	-6.084	
Mercallite	-6.496	-8.862	
Mirabilite	-6.694	-9.133	
MnHPO4	-0.042	-0.057	

MnO2(gamma)	-1.518	-2.071	
Morenosite	-2.689	-3.668	
NiSO4:6H2O(alpha)	-2.695	-3.677	
Niter	-7.185	-9.802	
Nontronite-Ca	-2.193	-2.992	
Nontronite-H	-1.296	-1.768	
Nontronite-K	-2.405	-3.281	
Nontronite-Mg	-2.254	-3.075	
Nontronite-Na	-2.509	-3.423	
Pentahydrite	-5.467	-7.459	
Pyrolusite	0.000	0.000	satd
Quartz	0.000	0.000	satd
Rutile	0.000	0.000	satd
Shcherbinaite	-2.712	-3.700	
SiO2(am)	-1.286	-1.754	
SrZrO3	106.423	145.191	ssatd
Starkeyite	-5.854	-7.987	
Strengite	-1.944	-2.652	
Tridymite	-0.172	-0.234	
fix CO2(g)	0.000	0.000	satd
fix O2(g)	0.000	0.000	satd

--- Summary of Solid Solutions ---

--- Carbonate-Calcite ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Calcite	9.2910E-03	-2.0319	0.0000	-2.0319
Magnesite	8.3832E-04	-3.0766	0.0000	-3.0766
Rhodochrosite	9.8987E-01	-0.0044	0.0000	-0.0044
Siderite	1.2639E-08	-7.8983	0.0000	-7.8983
Smithsonite	7.9093E-08	-7.1019	0.0000	-7.1019
Strontianite	3.2992E-07	-6.4816	0.0000	-6.4816

Mineral	Log Q/K	Aff, kcal	State
Carbonate-Calcite	-10.765	-14.687	
Calcite	-10.765	-14.687	
Magnesite	-10.765	-14.687	
Rhodochrosite	-10.765	-14.687	
Siderite	-10.765	-14.687	
Smithsonite	-10.765	-14.687	
Strontianite	-10.765	-14.687	

--- Clinoptilolite-hy-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-hy-Ca	9.4499E-01	-0.0246	0.0000	-0.0246
Clinoptilolite-hy-Cs	5.4085E-23	-22.2669	0.0000	-22.2669
Clinoptilolite-hy-K	5.2679E-02	-1.2784	0.0000	-1.2784
Clinoptilolite-hy-Na	2.3336E-03	-2.6320	0.0000	-2.6320
Clinoptilolite-hy-Sr	4.4844E-12	-11.3483	0.0000	-11.3483

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-hy-ss	-42.787	-58.374	
Clinoptilolite-hy-Ca	-42.787	-58.374	
Clinoptilolite-hy-Cs	-42.787	-58.374	
Clinoptilolite-hy-K	-42.787	-58.374	
Clinoptilolite-hy-Na	-42.787	-58.374	
Clinoptilolite-hy-Sr	-42.787	-58.374	

--- Clinoptilolite-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-Ca	6.2119E-01	-0.2068	-0.5087	-0.7154
Clinoptilolite-Cs	2.3090E-07	-6.6366	-16.3260	-22.9625
Clinoptilolite-K	2.6900E-01	-0.5703	-1.4028	-1.9731
Clinoptilolite-NH4	5.1866E-52	-51.2851	-126.1614	-177.4465
Clinoptilolite-Na	1.0948E-01	-0.9607	-2.3632	-3.3239
Clinoptilolite-Sr	3.3178E-04	-3.4791	-8.5587	-12.0378

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-ss	-42.097	-57.433	
Clinoptilolite-Ca	-42.097	-57.433	
Clinoptilolite-Cs	-42.097	-57.433	
Clinoptilolite-K	-42.097	-57.433	
Clinoptilolite-NH4	-42.097	-57.433	
Clinoptilolite-Na	-42.097	-57.433	
Clinoptilolite-Sr	-42.097	-57.433	

--- Saponite-tri ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Saponite-Ca	1.8988E-03	-2.7215	1.8234	-0.8981
Saponite-H	9.9622E-01	-0.0016	0.0011	-0.0005
Saponite-K	4.3218E-04	-3.3643	2.2541	-1.1102
Saponite-Mg	1.2384E-03	-2.9072	1.9478	-0.9594
Saponite-Na	2.0900E-04	-3.6798	2.4655	-1.2144

Mineral	Log Q/K	Aff, kcal	State
Saponite-tri	-39.979	-54.543	
Saponite-Ca	-39.979	-54.543	
Saponite-H	-39.979	-54.543	
Saponite-K	-39.979	-54.543	
Saponite-Mg	-39.979	-54.543	
Saponite-Na	-39.979	-54.543	

--- Smectite-di ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Beidellite-Ca	6.3473E-40	-39.1974	26.2623	-12.9351
Beidellite-K	1.4457E-40	-39.8399	26.6928	-13.1472
Beidellite-Mg	4.1396E-40	-39.3830	26.3866	-12.9964
Beidellite-Na	6.9865E-41	-40.1557	26.9043	-13.2514
Montmor-Ca	3.2036E-39	-38.4944	25.7912	-12.7031
Montmor-K	1.1917E-39	-38.9239	26.0790	-12.8449
Montmor-Mg	3.3956E-39	-38.4691	25.7743	-12.6948
Montmor-Na	5.6160E-40	-39.2506	26.2979	-12.9527
Nontronite-Ca	5.0239E-01	-0.2990	0.2003	-0.0987
Nontronite-K	1.1443E-01	-0.9415	0.6308	-0.3107
Nontronite-Mg	3.2788E-01	-0.4843	0.3245	-0.1598
Nontronite-Na	5.5299E-02	-1.2573	0.8424	-0.4149

Mineral	Log Q/K	Aff, kcal	State
Smectite-di	-2.094	-2.857	
Beidellite-Ca	-2.094	-2.857	
Beidellite-K	-2.094	-2.857	
Beidellite-Mg	-2.094	-2.857	
Beidellite-Na	-2.094	-2.857	
Montmor-Ca	-2.094	-2.857	
Montmor-K	-2.094	-2.857	
Montmor-Mg	-2.094	-2.857	
Montmor-Na	-2.094	-2.857	
Nontronite-Ca	-2.094	-2.857	
Nontronite-K	-2.094	-2.857	
Nontronite-Mg	-2.094	-2.857	
Nontronite-Na	-2.094	-2.857	

--- Lanthanide hydroxide ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
La(OH)3	1.2756E-05	-4.8943	0.0000	-4.8943
Ce(OH)3	3.7107E-15	-14.4305	0.0000	-14.4305
Nd(OH)3(c)	3.4608E-01	-0.4608	0.0000	-0.4608
Gd(OH)3	5.8687E-01	-0.2315	0.0000	-0.2315
Sm(OH)3	6.7037E-02	-1.1737	0.0000	-1.1737

Mineral	Log Q/K	Aff, kcal	State
Lanthanide hydroxide	-24.379	-33.260	
La(OH)3	-24.379	-33.260	
Ce(OH)3	-24.379	-33.260	
Nd(OH)3(c)	-24.379	-33.260	
Gd(OH)3	-24.379	-33.260	
Sm(OH)3	-24.379	-33.260	

--- Rhabdophane-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaPO4:H2O	4.1113E-01	-0.3860	0.0000	-0.3860
CePO4:H2O	3.7820E-11	-10.4223	0.0000	-10.4223
NdPO4:H2O	2.2256E-01	-0.6526	0.0000	-0.6526
GdPO4:H2O	1.5025E-01	-0.8232	0.0000	-0.8232
SmPO4:H2O	2.1606E-01	-0.6654	0.0000	-0.6654

Mineral	Log Q/K	Aff, kcal	State
Rhabdophane-ss	-9.548	-13.026	
LaPO4:H2O	-9.548	-13.026	
CePO4:H2O	-9.548	-13.026	
NdPO4:H2O	-9.548	-13.026	
GdPO4:H2O	-9.548	-13.026	
SmPO4:H2O	-9.548	-13.026	

--- Lanthanide fluoride ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaF3:0.5H2O	5.7188E-01	-0.2427	0.0000	-0.2427
CeF3:0.5H2O	8.3378E-11	-10.0789	0.0000	-10.0789
NdF3:0.5H2O	3.8974E-01	-0.4092	0.0000	-0.4092
GdF3:0.5H2O	8.3203E-03	-2.0799	0.0000	-2.0799
SmF3:0.5H2O	3.0055E-02	-1.5221	0.0000	-1.5221

Mineral	Log Q/K	Aff, kcal	State
Lanthanide fluoride	-17.893	-24.412	
LaF3:0.5H2O	-17.893	-24.412	
CeF3:0.5H2O	-17.893	-24.412	
NdF3:0.5H2O	-17.893	-24.412	
GdF3:0.5H2O	-17.893	-24.412	
SmF3:0.5H2O	-17.893	-24.412	

--- Summary of Gases ---

Gas	Fugacity	Log fugacity
Al(g)	1.9015-196	-195.7209
B(g)	8.5654-204	-203.0673
BF3(g)	1.4708E-30	-29.8325
C(g)	3.0917-190	-189.5098
CH4(g)	3.5242-146	-145.4529
CO(g)	6.0395E-49	-48.2190
CO2(g)	3.1623E-04	-3.5000
Ca(g)	1.1901-163	-162.9244
Chlorine	2.3694E-17	-16.6254
Cs(g)	4.3132E-89	-88.3652
Cu(g)	1.1400E-92	-91.9431
Fluorine	7.8928E-77	-76.1028

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H2(g)                       6.1105E-42    -41.2139
H2O(g)                      2.5958E-02     -1.5857
H2S(g)                      1.5582-130   -129.8074
HCl(g)                      5.9691E-13    -12.2241
HF(g)                       3.8883E-11    -10.4102
K(g)                        9.9166E-83    -82.0036
Li(g)                       9.5933-103   -102.0180
Mg(g)                       2.0148-141   -140.6958
Nitrogen                    1.7305E-08     -7.7618
NH3(g)                      1.5150E-63    -62.8196
NO(g)                       4.1423E-20    -19.3828
NO2(g)                      2.8323E-14    -13.5479
Na(g)                       2.6534E-81    -80.5762
O2(g)                       2.0999E-01     -0.6778
Pb(g)                       1.1457E-80    -79.9409
S2(g)                       1.4499-203   -202.8387
SO2(g)                      2.7609E-43    -42.5590
Si(g)                       4.2257-221   -220.3741
SiF4(g)                     1.0089E-26    -25.9961
Ti(g)                       3.8019-231   -230.4200
TiCl4(g)                    4.2586E-62    -61.3707
U(g)                        1.5756-304   -303.8025
U2Cl10(g)                   1.4540-202   -201.8374
U2Cl8(g)                    1.9025-216   -215.7207
U2F10(g)                    2.6482-141   -140.5770
UCl(g)                      8.3844-255   -254.0765
UCl2(g)                     1.3347-203   -202.8746
UCl3(g)                     4.6537-150   -149.3322
UCl4(g)                     8.7865-114   -113.0562
UCl5(g)                     8.5356-115   -114.0688
UCl6(g)                     1.5405-110   -109.8124
UF(g)                       1.1607-242   -241.9353
UF2(g)                      6.3414-199   -198.1978
UF3(g)                      8.5261-149   -148.0693
UF4(g)                      1.6921E-95    -94.7716
UF5(g)                      1.5381E-83    -82.8130
UF6(g)                      1.3767E-85    -84.8612
UO(g)                       1.2444-219   -218.9050
UO2(g)                      2.3054-135   -134.6372
UO2Cl2(g)                   2.3850E-71    -70.6225
UO2F2(g)                    8.2202E-65    -64.0851
UO3(g)                      1.6957E-82    -81.7706
UOF4(g)                     5.0421E-73    -72.2974
Zn(g)                       1.9238E-90    -89.7158



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Stepping to zi=  1.7890E-02, delzi=  2.0413E-03, nord= 6
  time =  1.7255E+02 d, dltime =  1.9688E+01 d
Steps completed =    86, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Al+++                    ) =     -3.4358

Stepping to zi=  2.0181E-02, delzi=  2.2903E-03, nord= 6
  time =  1.9464E+02 d, dltime =  2.2090E+01 d
Steps completed =    87, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Al+++                    ) =     -3.3776

Stepping to zi=  2.2749E-02, delzi=  2.5689E-03, nord= 6
  time =  2.1942E+02 d, dltime =  2.4777E+01 d
```

```
Steps completed =    88, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Al+++                  ) =     -3.3206

Stepping to zi=  2.5119E-02, delzi=  2.3695E-03, nord= 6
  time =  2.4227E+02 d, dltime =  2.2854E+01 d
Steps completed =    89, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                 ) =    -24.7138

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                    Reaction progress        =  2.51188643150944E-02
                    Log of reaction progress =      -1.6000000



                    Time =  2.093E+07 sec
                         =  2.423E+02 days
                         =  6.633E-01 years

                    Log sec =        7.321
                    Log days =       2.384
                    Log years =     -0.178

                    Temperature    =     25.000 degrees C
                    total pressure =      1.013 bars


Step size is limited by the print requirement


                              --- Reactant Summary ---


    Reactant                  Moles     Delta moles    Mass, g    Delta Mass, g

 Tuff                       9.9975E+01   2.5119E-02   2.0581E+03   5.1711E-01


               Current total mass =  2.05813E+03 grams
               Delta total mass   =  5.17109E-01 grams
               Delta total volume =      0.00000 cc


    Reactant                Rel. Rate      Rate         Rate
                             mol/mol       mol/s      mol/s/cm2

 Tuff                       1.0000E+00   1.2000E-09   2.5000E-15


    Reactant                  Affinity   Surface Area
                              kcal/mol     mol/s/cm2

 Tuff                        999.00000   4.8000E+05


    Reactant                Rate Constants, mol/s/cm2

 Tuff
                   Forward    2.5000E-15
```

Affinity of the overall irreversible reaction= 0.000 kcal
Contributions from irreversible reactions
with no thermodynamic data are not included

--- Element Totals for the Aqueous Solution ---

Element	mg/kg soln.	Molality	Moles
O	8.864950E+05	5.561112E+01	5.559737E+01
Al	3.481273E+01	1.294972E-03	1.294652E-03
B	1.334705E-01	1.239106E-05	1.238800E-05
Ba	1.368593E-05	1.000247E-10	1.000000E-10
Ca	1.501958E+01	3.761325E-04	3.760395E-04
Ce	1.396377E-19	1.000247E-24	9.999995E-25
Cl	7.115856E+00	2.014498E-04	2.014000E-04
Cr	2.996076E+02	5.783238E-03	5.781808E-03
Cs	1.324528E-05	1.000247E-10	1.000000E-10
Cu	6.649605E-10	1.050260E-14	1.050000E-14
F	2.172642E+00	1.147784E-04	1.147500E-04
Fe	4.497492E-01	8.082758E-06	8.080759E-06
Gd	1.567144E-09	1.000247E-14	1.000000E-14
H	1.115053E+05	1.110325E+02	1.110050E+02
C	1.266985E-01	1.058721E-05	1.058459E-05
P	7.358695E+00	2.384492E-04	2.383903E-04
K	2.612604E+01	6.706637E-04	6.704978E-04
La	1.384324E-09	1.000247E-14	1.000000E-14
Li	6.917360E-07	1.000247E-10	1.000000E-10
Mg	2.764914E+00	1.141761E-04	1.141478E-04
Mn	1.628189E+01	2.974546E-04	2.973810E-04
Mo	2.179184E+02	2.279730E-03	2.279166E-03
N	1.982183E+00	1.420351E-04	1.420000E-04
Na	5.938626E+01	2.592629E-03	2.591988E-03
Nd	1.437488E-09	1.000247E-14	1.000000E-14
Ni	7.501395E+02	1.282824E-02	1.282507E-02
Pb	2.064943E-05	1.000247E-10	1.000000E-10
Pu	2.431690E-09	1.000247E-14	1.000000E-14
S	5.506885E+02	1.723655E-02	1.723228E-02
Si	2.802806E+00	1.001613E-04	1.001365E-04
Sm	1.498479E-09	1.000247E-14	1.000000E-14
Sr	8.732159E-06	1.000247E-10	1.000000E-10
Ti	1.078286E-05	2.260314E-10	2.259755E-10
U	2.372182E-09	1.000247E-14	1.000000E-14
V	4.767628E+00	9.393333E-05	9.391010E-05
Zn	6.516730E-06	1.000247E-10	1.000000E-10
Zr	9.091331E-16	1.000247E-20	1.000000E-20

Single ion activities and activity coefficients are here defined
with respect to the modified NBS pH scale

	pH	Eh	pe
modified NBS pH scale	2.1949	1.0892	1.8412E+01
rational pH scale	2.1176	1.0938	1.8489E+01

pHCl = 5.9837

Oxygen fugacity = 2.09991E-01
Log oxygen fugacity = -0.67780

Activity of water = 0.99927
Log activity of water = -0.00032

Ionic strength = 6.066737E-02 molal
Sum of molalities = 0.0476438394165
Osmotic coefficient = 0.84662

Mass of solution = 1.003417 kg
Mass of solutes = 0.003665 kg
Conc. of solutes = 0.365227 per cent (w/w)

Moles of solvent H2O = 5.54947E+01
Mass of solvent H2O = 9.99753E-01 kg

Species	Molality	Log molality	Log gamma	Log activity
SO4--	1.0291E-02	-1.9875	-0.3643	-2.3519
Ni++	1.0138E-02	-1.9940	-0.3503	-2.3444
H+	7.6276E-03	-2.1176	-0.0772	-2.1949
HCrO4-	4.0475E-03	-2.3928	-0.0858	-2.4786
HSO4-	3.2973E-03	-2.4818	-0.0858	-2.5676
NiSO4(aq)	2.6882E-03	-2.5705	0.0000	-2.5705
Na+	2.5208E-03	-2.5985	-0.0995	-2.6980
MoO4--	2.2797E-03	-2.6421	-0.3530	-2.9952
Cr2O7--	8.6667E-04	-3.0621	-0.3643	-3.4265
K+	6.4965E-04	-3.1873	-0.1057	-3.2930
AlSO4+	6.4536E-04	-3.1902	-0.0995	-3.2897
Al+++	5.3211E-04	-3.2740	-0.6739	-3.9479
Ca++	2.9930E-04	-3.5239	-0.3503	-3.8742
O2(aq)	2.6154E-04	-3.5825	0.0064	-3.5761
Mn++	2.0528E-04	-3.6876	-0.3503	-4.0380
Cl-	2.0098E-04	-3.6968	-0.0920	-3.7888
NO3-	1.4026E-04	-3.8531	-0.0920	-3.9450
H2PO4-	1.2884E-04	-3.8899	-0.0858	-3.9757
AlF++	1.1239E-04	-3.9493	-0.3805	-4.3298
SiO2(aq)	1.0016E-04	-3.9993	0.0000	-3.9993
H3PO4(aq)	9.9800E-05	-4.0009	0.0000	-4.0009
MnSO4(aq)	9.1841E-05	-4.0370	0.0000	-4.0370
CaSO4(aq)	7.6734E-05	-4.1150	0.0000	-4.1150
VO2+	7.6367E-05	-4.1171	-0.0995	-4.2166
Mg++	7.3511E-05	-4.1336	-0.3170	-4.4507
NaSO4-	7.1766E-05	-4.1441	-0.0858	-4.2299
MgSO4(aq)	4.0660E-05	-4.3908	0.0000	-4.3908
KSO4-	2.0915E-05	-4.6795	-0.0858	-4.7653
VO2SO4-	1.2511E-05	-4.9027	-0.0858	-4.9885
B(OH)3(aq)	1.2391E-05	-4.9069	0.0000	-4.9069
CO2(aq)	1.0586E-05	-4.9753	0.0064	-4.9689
FeHPO4+	5.8007E-06	-5.2365	-0.0995	-5.3360
VO(OH)3(aq)	4.7600E-06	-5.3224	0.0000	-5.3224
AlHPO4+	3.6763E-06	-5.4346	-0.0995	-5.5341
NiNO3+	1.6222E-06	-5.7899	-0.0995	-5.8894
Fe+++	1.3934E-06	-5.8559	-0.6739	-6.5298
H2CrO4(aq)	1.0166E-06	-5.9928	0.0000	-5.9928
Cr+++	9.7383E-07	-6.0115	-0.6739	-6.6854
AlF2+	9.7216E-07	-6.0123	-0.0995	-6.1118
FeOH++	7.1661E-07	-6.1447	-0.3805	-6.5252
AlOH++	4.6786E-07	-6.3299	-0.3805	-6.7104

HF(aq)	3.9019E-07	-6.4087	0.0000	-6.4087
CrO4--	3.8564E-07	-6.4138	-0.3643	-6.7781
MnH2PO4+	2.7279E-07	-6.5642	-0.0995	-6.6637
HCl(aq)	2.2199E-07	-6.6537	0.0000	-6.6537
H2VO4-	1.4657E-07	-6.8340	-0.0858	-6.9197
FeSO4+	1.3979E-07	-6.8545	-0.0995	-6.9541
CaNO3+	9.5552E-08	-7.0198	-0.0995	-7.1193
KHSO4(aq)	9.4152E-08	-7.0262	0.0000	-7.0262
NiCl+	9.3354E-08	-7.0299	-0.0995	-7.1294
VO2(OH)2-	9.0832E-08	-7.0418	-0.0858	-7.1275
NaCl(aq)	5.4475E-08	-7.2638	0.0000	-7.2638
VO2HPO4-	5.1630E-08	-7.2871	-0.0858	-7.3729
F-	5.0911E-08	-7.2932	-0.0888	-7.3820
CrO3Cl-	4.5334E-08	-7.3436	-0.0858	-7.4294
MnCl+	3.7499E-08	-7.4260	-0.0995	-7.5255
HNO3(aq)	3.6108E-08	-7.4424	0.0000	-7.4424
MnNO3+	2.0725E-08	-7.6835	-0.0995	-7.7830
Fe(OH)2+	1.9445E-08	-7.7112	-0.0995	-7.8107
H2SO4(aq)	1.7279E-08	-7.7625	0.0000	-7.7625
Fe(SO4)2-	1.1640E-08	-7.9340	-0.0858	-8.0198
CrOH++	7.7571E-09	-8.1103	-0.3805	-8.4908
VO2F(aq)	5.6417E-09	-8.2486	0.0000	-8.2486
CaCl+	5.5064E-09	-8.2591	-0.0995	-8.3587
MgCl+	5.3106E-09	-8.2749	-0.0995	-8.3744
KCl(aq)	2.6518E-09	-8.5765	0.0000	-8.5765
HPO4--	2.3882E-09	-8.6219	-0.3643	-8.9863
HCO3-	9.2623E-10	-9.0333	-0.0858	-9.1191
FeNO3++	8.0482E-10	-9.0943	-0.3805	-9.4748
HPO3F-	4.2360E-10	-9.3730	-0.0858	-9.4588
AlF3(aq)	4.0387E-10	-9.3938	0.0000	-9.3938
FeF++	4.0297E-10	-9.3947	-0.3805	-9.7753
MnHPO4(aq)	3.5954E-10	-9.4443	0.0000	-9.4443
Ti(OH)4(aq)	2.2603E-10	-9.6458	0.0000	-9.6458
VO++	1.9314E-10	-9.7141	-0.3805	-10.0947
MnF+	1.2870E-10	-9.8904	-0.0995	-9.9900
H2P2O7--	1.1839E-10	-9.9267	-0.3643	-10.2910
VOSO4(aq)	1.0801E-10	-9.9665	0.0000	-9.9665
Cs+	1.0002E-10	-9.9999	-0.1091	-10.1091

--- Summary of Instantaneously Precipitated Solid Phases ---
(defined by derivatives)

--- Theoretical Rock Composition ---
g/kg

O	5.154609E+01
Fe	8.909097E-01
C	1.099135E-05
Mn	3.381328E+00
Si	4.410945E+01
Ti	7.220931E-02

--- Oxide Percentages ---

Oxide Theoretical rock

Total = 0.0000

Phase/end-member d mol/d zi d grams/d zi d vol (cc)/d zi

Hematite		1.3381E-03	2.1368E-01	4.0509E-02
Pyrolusite		1.0325E-02	8.9763E-01	5.1626E+00
Quartz		2.6347E-01	1.5830E+01	5.9776E+00
Rutile		2.5300E-04	2.0209E-02	4.7615E-03
fix	CO2(g)	1.5352E-07	6.7562E-06	0.0000E+00
fix	O2(g)	-5.8191E-03	-1.8620E-01	0.0000E+00

--- Summary of Solid Phases (E.S.+P.R.S.) ---

Phase/End-member		Log moles	Moles	Mass, g	Volume, cc
Hematite		-4.4654	3.4243E-05	5.4684E-03	1.0367E-03
Pyrolusite		-3.5212	3.0116E-04	2.6182E-02	1.5058E-01
Quartz		-2.1793	6.6181E-03	3.9764E-01	1.5015E-01
Rutile		-5.1969	6.3549E-06	5.0763E-04	1.1960E-04
fix	CO2(g)	2.3010	2.0000E+02	8.8020E+03	0.0000E+00
fix	O2(g)	2.3010	2.0000E+02	6.3998E+03	0.0000E+00

	Mass, grams	Volume, cc
Created	1.520214E+04	3.018879E-01
Destroyed	5.171087E-01	0.000000E+00
Net	1.520163E+04	3.018879E-01

Warning-- these volume totals may be incomplete because of missing partial molar volume data in the data base

--- Summary of Pure Mineral Saturation States ---

Mineral	Log Q/K	Aff, kcal	State
Alum-K	-7.067	-9.641	
Alunite	-6.325	-8.629	
Anglesite	-4.881	-6.659	
Anhydrite	-1.920	-2.619	
Arcanite	-7.137	-9.737	
BaCrO4	-7.216	-9.845	
BaZrO3	69.698	95.088	ssatd
Barite	-2.751	-3.753	
Bassanite	-2.565	-3.499	
Berlinite	-3.531	-4.817	
Boehmite	-4.928	-6.723	
Boric_acid	-4.749	-6.478	
CaSO4:0.5H2O(beta)	-2.733	-3.728	
CaZrO3	130.223	177.662	ssatd
Celestite	-7.184	-9.801	
Chalcedony	-0.271	-0.370	
Coesite	-0.810	-1.105	
CrO2	-1.065	-1.453	
Cristobalite(alpha)	-0.551	-0.751	
Cristobalite(beta)	-0.994	-1.356	
Crocoite	-4.442	-6.060	
Diaspore	-4.524	-6.172	
Epsomite	-4.842	-6.606	
Fe(OH)3	-5.602	-7.642	
Gibbsite	-5.120	-6.985	
Goethite	-0.480	-0.655	
Gypsum	-1.744	-2.380	

Hematite	0.000	0.000	satd
Hexahydrite	-5.078	-6.927	
Ice	-0.139	-0.190	
Jarosite	-5.048	-6.887	
Kieserite	-6.536	-8.917	
Lopezite	-7.095	-9.680	
Manganite	-4.459	-6.084	
Mercallite	-6.401	-8.733	
Mirabilite	-6.611	-9.020	
MnHPO4	-0.077	-0.105	
MnO2(gamma)	-1.518	-2.071	
Morenosite	-2.684	-3.662	
NiSO4:6H2O(alpha)	-2.691	-3.671	
Niter	-7.032	-9.594	
Nontronite-Ca	-2.032	-2.772	
Nontronite-H	-1.159	-1.581	
Nontronite-K	-2.197	-2.997	
Nontronite-Mg	-2.089	-2.850	
Nontronite-Na	-2.339	-3.191	
Pentahydrite	-5.417	-7.390	
Pyrolusite	0.000	0.000	satd
Quartz	0.000	0.000	satd
Rutile	0.000	0.000	satd
Shcherbinaite	-2.592	-3.536	
SiO2(am)	-1.286	-1.754	
SrZrO3	106.553	145.369	ssatd
Starkeyite	-5.804	-7.918	
Strengite	-1.979	-2.700	
Tridymite	-0.172	-0.234	
fix CO2(g)	0.000	0.000	satd
fix O2(g)	0.000	0.000	satd

--- Summary of Solid Solutions ---

--- Carbonate-Calcite ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Calcite	1.3062E-02	-1.8840	0.0000	-1.8840
Magnesite	1.2436E-03	-2.9053	0.0000	-2.9053
Rhodochrosite	9.8569E-01	-0.0063	0.0000	-0.0063
Siderite	1.2586E-08	-7.9001	0.0000	-7.9001
Smithsonite	1.0581E-07	-6.9755	0.0000	-6.9755
Strontianite	4.3981E-07	-6.3567	0.0000	-6.3567

Mineral	Log Q/K	Aff, kcal	State
Carbonate-Calcite	-10.763	-14.684	
Calcite	-10.763	-14.684	
Magnesite	-10.763	-14.684	
Rhodochrosite	-10.763	-14.684	
Siderite	-10.763	-14.684	
Smithsonite	-10.763	-14.684	
Strontianite	-10.763	-14.684	

--- Clinoptilolite-hy-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-hy-Ca	8.4919E-01	-0.0710	0.0000	-0.0710
Clinoptilolite-hy-Cs	4.4653E-23	-22.3501	0.0000	-22.3501
Clinoptilolite-hy-K	1.4819E-01	-0.8292	0.0000	-0.8292
Clinoptilolite-hy-Na	2.6237E-03	-2.5811	0.0000	-2.5811
Clinoptilolite-hy-Sr	3.6753E-12	-11.4347	0.0000	-11.4347

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-hy-ss	-41.055	-56.010	
Clinoptilolite-hy-Ca	-41.055	-56.010	
Clinoptilolite-hy-Cs	-41.055	-56.010	
Clinoptilolite-hy-K	-41.055	-56.010	
Clinoptilolite-hy-Na	-41.055	-56.010	
Clinoptilolite-hy-Sr	-41.055	-56.010	

--- Clinoptilolite-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-Ca	5.5841E-01	-0.2530	-0.6225	-0.8755
Clinoptilolite-Cs	2.0255E-07	-6.6935	-16.4659	-23.1594
Clinoptilolite-K	3.3630E-01	-0.4733	-1.1643	-1.6375
Clinoptilolite-NH4	3.3754E-52	-51.4717	-126.6203	-178.0920
Clinoptilolite-Na	1.0500E-01	-0.9788	-2.4079	-3.3867
Clinoptilolite-Sr	2.9042E-04	-3.5370	-8.7010	-12.2379

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-ss	-40.251	-54.914	
Clinoptilolite-Ca	-40.251	-54.914	
Clinoptilolite-Cs	-40.251	-54.914	
Clinoptilolite-K	-40.251	-54.914	
Clinoptilolite-NH4	-40.251	-54.914	
Clinoptilolite-Na	-40.251	-54.914	
Clinoptilolite-Sr	-40.251	-54.914	

--- Saponite-tri ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Saponite-Ca	2.2539E-03	-2.6471	1.7735	-0.8735
Saponite-H	9.9526E-01	-0.0021	0.0014	-0.0007
Saponite-K	7.1298E-04	-3.1469	2.1084	-1.0385
Saponite-Mg	1.5100E-03	-2.8210	1.8901	-0.9309
Saponite-Na	2.6466E-04	-3.5773	2.3968	-1.1805

Mineral	Log Q/K	Aff, kcal	State

Saponite-tri	-39.323	-53.648
Saponite-Ca	-39.323	-53.648
Saponite-H	-39.323	-53.648
Saponite-K	-39.323	-53.648
Saponite-Mg	-39.323	-53.648
Saponite-Na	-39.323	-53.648

--- Smectite-di ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Beidellite-Ca	1.9220E-37	-36.7162	24.5999	-12.1164
Beidellite-K	6.0840E-38	-37.2158	24.9346	-12.2812
Beidellite-Mg	1.2876E-37	-36.8902	24.7164	-12.1738
Beidellite-Na	2.2568E-38	-37.6465	25.2232	-12.4233
Montmor-Ca	2.1535E-37	-36.6669	24.5668	-12.1001
Montmor-K	1.1133E-37	-36.9534	24.7588	-12.1946
Montmor-Mg	2.3446E-37	-36.6299	24.5420	-12.0879
Montmor-Na	4.0271E-38	-37.3950	25.0547	-12.3404
Nontronite-Ca	4.7520E-01	-0.3231	0.2165	-0.1066
Nontronite-K	1.5042E-01	-0.8227	0.5512	-0.2715
Nontronite-Mg	3.1858E-01	-0.4968	0.3328	-0.1639
Nontronite-Na	5.5798E-02	-1.2534	0.8398	-0.4136

Mineral	Log Q/K	Aff, kcal	State
Smectite-di	-1.925	-2.627	
Beidellite-Ca	-1.925	-2.627	
Beidellite-K	-1.925	-2.627	
Beidellite-Mg	-1.925	-2.627	
Beidellite-Na	-1.925	-2.627	
Montmor-Ca	-1.925	-2.627	
Montmor-K	-1.925	-2.627	
Montmor-Mg	-1.925	-2.627	
Montmor-Na	-1.925	-2.627	
Nontronite-Ca	-1.925	-2.627	
Nontronite-K	-1.925	-2.627	
Nontronite-Mg	-1.925	-2.627	
Nontronite-Na	-1.925	-2.627	

--- Lanthanide hydroxide ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
La(OH)3	1.2754E-05	-4.8943	0.0000	-4.8943
Ce(OH)3	3.7192E-15	-14.4296	0.0000	-14.4296
Nd(OH)3(c)	3.4605E-01	-0.4609	0.0000	-0.4609
Gd(OH)3	5.8694E-01	-0.2314	0.0000	-0.2314
Sm(OH)3	6.7001E-02	-1.1739	0.0000	-1.1739

Mineral	Log Q/K	Aff, kcal	State
Lanthanide hydroxide	-24.192	-33.004	

La(OH)3	-24.192	-33.004
Ce(OH)3	-24.192	-33.004
Nd(OH)3(c)	-24.192	-33.004
Gd(OH)3	-24.192	-33.004
Sm(OH)3	-24.192	-33.004

--- Rhabdophane-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaPO4:H2O	4.1115E-01	-0.3860	0.0000	-0.3860
CePO4:H2O	3.7913E-11	-10.4212	0.0000	-10.4212
NdPO4:H2O	2.2258E-01	-0.6525	0.0000	-0.6525
GdPO4:H2O	1.5029E-01	-0.8231	0.0000	-0.8231
SmPO4:H2O	2.1599E-01	-0.6656	0.0000	-0.6656

Mineral	Log Q/K	Aff, kcal	State
Rhabdophane-ss	-9.396	-12.818	
LaPO4:H2O	-9.396	-12.818	
CePO4:H2O	-9.396	-12.818	
NdPO4:H2O	-9.396	-12.818	
GdPO4:H2O	-9.396	-12.818	
SmPO4:H2O	-9.396	-12.818	

--- Lanthanide fluoride ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaF3:0.5H2O	5.7188E-01	-0.2427	0.0000	-0.2427
CeF3:0.5H2O	8.3579E-11	-10.0779	0.0000	-10.0779
NdF3:0.5H2O	3.8975E-01	-0.4092	0.0000	-0.4092
GdF3:0.5H2O	8.3223E-03	-2.0798	0.0000	-2.0798
SmF3:0.5H2O	3.0043E-02	-1.5223	0.0000	-1.5223

Mineral	Log Q/K	Aff, kcal	State
Lanthanide fluoride	-18.543	-25.299	
LaF3:0.5H2O	-18.543	-25.299	
CeF3:0.5H2O	-18.543	-25.299	
NdF3:0.5H2O	-18.543	-25.299	
GdF3:0.5H2O	-18.543	-25.299	
SmF3:0.5H2O	-18.543	-25.299	

--- Summary of Gases ---

Gas	Fugacity	Log fugacity
Al(g)	4.9259-196	-195.3075
B(g)	8.5651-204	-203.0673

BF3(g)	2.1379E-31	-30.6700
C(g)	3.0917-190	-189.5098
CH4(g)	3.5243-146	-145.4529
CO(g)	6.0395E-49	-48.2190
CO2(g)	3.1623E-04	-3.5000
Ca(g)	1.6802-163	-162.7746
Chlorine	1.7558E-17	-16.7555
Cs(g)	5.0012E-89	-88.3009
Cu(g)	1.5313E-92	-91.8149
Fluorine	2.1821E-77	-76.6611
H2(g)	6.1106E-42	-41.2139
H2O(g)	2.5959E-02	-1.5857
H2S(g)	1.1739-130	-129.9304
HCl(g)	5.1384E-13	-12.2892
HF(g)	2.0445E-11	-10.6894
K(g)	1.6376E-82	-81.7858
Li(g)	1.1124-102	-101.9537
Mg(g)	3.0014-141	-140.5227
Nitrogen	1.2821E-08	-7.8921
NH3(g)	1.3040E-63	-62.8847
NO(g)	3.5654E-20	-19.4479
NO2(g)	2.4379E-14	-13.6130
Na(g)	3.3632E-81	-80.4732
O2(g)	2.0999E-01	-0.6778
Pb(g)	1.5384E-80	-79.8129
S2(g)	8.2286-204	-203.0847
SO2(g)	2.0799E-43	-42.6820
Si(g)	4.2257-221	-220.3741
SiF4(g)	7.7115E-28	-27.1129
Ti(g)	3.8019-231	-230.4200
TiCl4(g)	2.3385E-62	-61.6311
U(g)	2.0487-304	-303.6885
U2Cl10(g)	5.4931-203	-202.2602
U2Cl8(g)	9.6994-217	-216.0133
U2F10(g)	7.2312-144	-143.1408
UCl(g)	9.3846-255	-254.0276
UCl2(g)	1.2860-203	-202.8907
UCl3(g)	3.8600-150	-149.4134
UCl4(g)	6.2737-114	-113.2025
UCl5(g)	5.2464-115	-114.2801
UCl6(g)	8.1507-111	-110.0888
UF(g)	7.9353-243	-242.1004
UF2(g)	2.2796-199	-198.6422
UF3(g)	1.6115-149	-148.7928
UF4(g)	1.6816E-96	-95.7743
UF5(g)	8.0372E-85	-84.0949
UF6(g)	3.7826E-87	-86.4222
UO(g)	1.6180-219	-218.7910
UO2(g)	2.9976-135	-134.5232
UO2Cl2(g)	2.2980E-71	-70.6386
UO2F2(g)	2.9549E-65	-64.5295
UO3(g)	2.2049E-82	-81.6566
UOF4(g)	5.0109E-74	-73.3001
Zn(g)	2.5845E-90	-89.5876

- -

Stepping to zi= 2.8445E-02, delzi= 3.3264E-03, nord= 6
time = 2.7436E+02 d, dltime = 3.2083E+01 d

```
Steps completed =    90, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -24.7889

Stepping to zi=  3.2210E-02, delzi=  3.7643E-03, nord= 6
  time =  3.1066E+02 d, dltime =  3.6307E+01 d
Steps completed =    91, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -24.8824

Stepping to zi=  3.6470E-02, delzi=  4.2604E-03, nord= 6
  time =  3.5175E+02 d, dltime =  4.1091E+01 d
Steps completed =    92, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -25.0011

Stepping to zi=  3.9811E-02, delzi=  3.3408E-03, nord= 6
  time =  3.8398E+02 d, dltime =  3.2222E+01 d
Steps completed =    93, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -25.1056

- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -


                    Reaction progress        =  3.98107170553475E-02
                    Log of reaction progress =      -1.4000000



                    Time =  3.318E+07 sec
                         =  3.840E+02 days
                         =  1.051E+00 years

                    Log sec =        7.521
                    Log days =       2.584
                    Log years =      0.022

                    Temperature    =     25.000 degrees C
                    total pressure =      1.013 bars


Step size is limited by the print requirement


                              --- Reactant Summary ---


    Reactant                  Moles     Delta moles    Mass, g    Delta Mass, g

 Tuff                       9.9960E+01   3.9811E-02   2.0578E+03   8.1956E-01


               Current total mass =  2.05783E+03 grams
               Delta total mass   =  8.19562E-01 grams
               Delta total volume =      0.00000 cc


    Reactant                Rel. Rate      Rate         Rate
                             mol/mol       mol/s      mol/s/cm2

 Tuff                       1.0000E+00   1.2000E-09   2.5000E-15


    Reactant                  Affinity   Surface Area
                              kcal/mol     mol/s/cm2
```

Tuff 999.00000 4.8000E+05

Reactant Rate Constants, mol/s/cm2

Tuff
Forward 2.5000E-15

Affinity of the overall irreversible reaction= 0.000 kcal
Contributions from irreversible reactions
with no thermodynamic data are not included

--- Element Totals for the Aqueous Solution ---

Element	mg/kg soln.	Molality	Moles
O	8.864665E+05	5.561113E+01	5.559875E+01
Al	5.514800E+01	2.051474E-03	2.051018E-03
B	1.334629E-01	1.239076E-05	1.238800E-05
Ba	1.368515E-05	1.000223E-10	1.000000E-10
Ca	1.622573E+01	4.063511E-04	4.062607E-04
Ce	1.396298E-19	1.000222E-24	9.999995E-25
Cl	7.115450E+00	2.014448E-04	2.014000E-04
Cr	2.995905E+02	5.783095E-03	5.781808E-03
Cs	1.324452E-05	1.000223E-10	1.000000E-10
Cu	6.649226E-10	1.050234E-14	1.050000E-14
F	2.172518E+00	1.147755E-04	1.147500E-04
Fe	2.575240E-01	4.628294E-06	4.627264E-06
Gd	1.567055E-09	1.000223E-14	1.000000E-14
H	1.114990E+05	1.110297E+02	1.110050E+02
C	1.266647E-01	1.058472E-05	1.058237E-05
P	7.378002E+00	2.390826E-04	2.390294E-04
K	3.846687E+01	9.874886E-04	9.872689E-04
La	1.384245E-09	1.000223E-14	1.000000E-14
Li	6.916966E-07	1.000223E-10	1.000000E-10
Mg	3.210279E+00	1.325715E-04	1.325420E-04
Mn	9.093457E+00	1.661341E-04	1.660971E-04
Mo	2.179060E+02	2.279673E-03	2.279166E-03
N	1.982070E+00	1.420316E-04	1.420000E-04
Na	6.742004E+01	2.943455E-03	2.942800E-03
Nd	1.437406E-09	1.000223E-14	1.000000E-14
Ni	7.500967E+02	1.282792E-02	1.282507E-02
Pb	2.064825E-05	1.000223E-10	1.000000E-10
Pu	2.431551E-09	1.000223E-14	1.000000E-14
S	5.506571E+02	1.723612E-02	1.723228E-02
Si	2.802716E+00	1.001613E-04	1.001390E-04
Sm	1.498394E-09	1.000223E-14	1.000000E-14
Sr	8.731660E-06	1.000223E-10	1.000000E-10
Ti	1.078300E-05	2.260416E-10	2.259913E-10
U	2.372047E-09	1.000223E-14	1.000000E-14
V	4.767356E+00	9.393101E-05	9.391010E-05
Zn	6.516358E-06	1.000223E-10	1.000000E-10
Zr	9.090812E-16	1.000223E-20	1.000000E-20

Single ion activities and activity coefficients are here defined
with respect to the modified NBS pH scale

	pH	Eh	pe
modified NBS pH scale	2.3238	1.0816	1.8283E+01
rational pH scale	2.2461	1.0862	1.8361E+01

pHCl = 6.1131

Oxygen fugacity = 2.09991E-01
Log oxygen fugacity = -0.67780

Activity of water = 0.99930
Log activity of water = -0.00031

Ionic strength = 6.177551E-02 molal
Sum of molalities = 0.0465625956247
Osmotic coefficient = 0.83939

Mass of solution = 1.003475 kg
Mass of solutes = 0.003697 kg
Conc. of solutes = 0.368442 per cent (w/w)

Moles of solvent H2O = 5.54961E+01
Mass of solvent H2O = 9.99777E-01 kg

Species	Molality	Log molality	Log gamma	Log activity
SO4--	1.0612E-02	-1.9742	-0.3667	-2.3409
Ni++	1.0095E-02	-1.9959	-0.3525	-2.3484
H+	5.6736E-03	-2.2461	-0.0777	-2.3238
HCrO4-	4.0450E-03	-2.3931	-0.0863	-2.4794
Na+	2.8599E-03	-2.5436	-0.1002	-2.6439
NiSO4(aq)	2.7312E-03	-2.5636	0.0000	-2.5636
HSO4-	2.5158E-03	-2.5993	-0.0863	-2.6856
MoO4--	2.2797E-03	-2.6421	-0.3553	-2.9974
AlSO4+	1.0653E-03	-2.9725	-0.1002	-3.0727
K+	9.5584E-04	-3.0196	-0.1065	-3.1261
Cr2O7--	8.6826E-04	-3.0613	-0.3667	-3.4281
Al+++	8.6233E-04	-3.0643	-0.6775	-3.7418
Ca++	3.2201E-04	-3.4921	-0.3525	-3.8447
O2(aq)	2.6147E-04	-3.5826	0.0065	-3.5761
Cl-	2.0106E-04	-3.6967	-0.0926	-3.7893
H2PO4-	1.4375E-04	-3.8424	-0.0863	-3.9287
NO3-	1.4028E-04	-3.8530	-0.0926	-3.9456
Mn++	1.1393E-04	-3.9434	-0.3525	-4.2959
AlF++	1.1334E-04	-3.9456	-0.3831	-4.3287
SiO2(aq)	1.0016E-04	-3.9993	0.0000	-3.9993
Mg++	8.4713E-05	-4.0721	-0.3188	-4.3909
CaSO4(aq)	8.4237E-05	-4.0745	0.0000	-4.0745
NaSO4-	8.3467E-05	-4.0785	-0.0863	-4.1648
H3PO4(aq)	8.2639E-05	-4.0828	0.0000	-4.0828
VO2+	7.4644E-05	-4.1270	-0.1002	-4.2272
MnSO4(aq)	5.2007E-05	-4.2839	0.0000	-4.2839
MgSO4(aq)	4.7853E-05	-4.3201	0.0000	-4.3201
KSO4-	3.1540E-05	-4.5011	-0.0863	-4.5874
VO2SO4-	1.2536E-05	-4.9018	-0.0863	-4.9881
B(OH)3(aq)	1.2391E-05	-4.9069	0.0000	-4.9069
CO2(aq)	1.0583E-05	-4.9754	0.0065	-4.9689

AlHPO4+	8.8736E-06	-5.0519	-0.1002	-5.1521
VO(OH)3(aq)	6.2514E-06	-5.2040	0.0000	-5.2040
FeHPO4+	3.5748E-06	-5.4467	-0.1002	-5.5470
NiNO3+	1.6077E-06	-5.7938	-0.1002	-5.8940
AlOH++	1.0179E-06	-5.9923	-0.3831	-6.3754
H2CrO4(aq)	7.5406E-07	-6.1226	0.0000	-6.1226
AlF2+	6.0897E-07	-6.2154	-0.1002	-6.3156
Fe+++	5.7654E-07	-6.2392	-0.6775	-6.9167
CrO4--	5.2089E-07	-6.2833	-0.3667	-6.6500
FeOH++	3.9806E-07	-6.4001	-0.3831	-6.7832
Cr+++	2.9887E-07	-6.5245	-0.6775	-7.2020
H2VO4-	2.5935E-07	-6.5861	-0.0863	-6.6724
HF(aq)	1.8088E-07	-6.7426	0.0000	-6.7426
MnH2PO4+	1.6811E-07	-6.7744	-0.1002	-6.8746
HCl(aq)	1.6479E-07	-6.7831	0.0000	-6.7831
VO2(OH)2-	1.6073E-07	-6.7939	-0.0863	-6.8802
KHSO4(aq)	1.0538E-07	-6.9773	0.0000	-6.9773
CaNO3+	1.0232E-07	-6.9900	-0.1002	-7.0903
NiCl+	9.2538E-08	-7.0337	-0.1002	-7.1339
VO2HPO4-	7.5646E-08	-7.1212	-0.0863	-7.2075
NaCl(aq)	6.1640E-08	-7.2101	0.0000	-7.2101
FeSO4+	5.8915E-08	-7.2298	-0.1002	-7.3300
CrO3Cl-	3.3631E-08	-7.4733	-0.0863	-7.5596
F-	3.1801E-08	-7.4976	-0.0893	-7.5869
HNO3(aq)	2.6798E-08	-7.5719	0.0000	-7.5719
MnCl+	2.0717E-08	-7.6837	-0.1002	-7.7839
Fe(OH)2+	1.4473E-08	-7.8394	-0.1002	-7.9397
MnNO3+	1.1448E-08	-7.9413	-0.1002	-8.0415
H2SO4(aq)	9.7850E-09	-8.0094	0.0000	-8.0094
MgCl+	6.0978E-09	-8.2148	-0.1002	-8.3150
CaCl+	5.8976E-09	-8.2293	-0.1002	-8.3295
Fe(SO4)2-	5.0291E-09	-8.2985	-0.0863	-8.3848
KCl(aq)	3.8905E-09	-8.4100	0.0000	-8.4100
HPO4--	3.6010E-09	-8.4436	-0.3667	-8.8103
VO2F(aq)	3.4346E-09	-8.4641	0.0000	-8.4641
CrOH++	3.1960E-09	-8.4954	-0.3831	-8.8785
HCO3-	1.2480E-09	-8.9038	-0.0863	-8.9901
FeNO3++	3.3179E-10	-9.4791	-0.3831	-9.8623
MnHPO4(aq)	2.9771E-10	-9.5262	0.0000	-9.5262
Al(OH)2+	2.5757E-10	-9.5891	-0.1002	-9.6893
Ti(OH)4(aq)	2.2604E-10	-9.6458	0.0000	-9.6458
HPO3F-	2.1908E-10	-9.6594	-0.0863	-9.7457
AlF3(aq)	1.5757E-10	-9.8025	0.0000	-9.8025
H2P2O7--	1.4782E-10	-9.8303	-0.3667	-10.1970
VO++	1.4089E-10	-9.8511	-0.3831	-10.2342
CaHPO4(aq)	1.2163E-10	-9.9150	0.0000	-9.9150
FeF++	1.0376E-10	-9.9840	-0.3831	-10.3671
Cs+	1.0001E-10	-9.9999	-0.1100	-10.1099

--- Summary of Instantaneously Precipitated Solid Phases ---
(defined by derivatives)

--- Theoretical Rock Composition ---
g/kg

O	5.185424E+01
Fe	8.812647E-01
C	1.063621E-05
Mn	2.616887E+00
Si	4.457463E+01
Ti	7.297084E-02

--- Oxide Percentages ---

Oxide	Theoretical rock

Total = 0.0000

Phase/end-member	d mol/d zi	d grams/d zi	d vol (cc)/d zi
Hematite	1.3098E-03	2.0916E-01	3.9653E-02
Pyrolusite	7.9075E-03	6.8745E-01	3.9537E+00
Quartz	2.6347E-01	1.5830E+01	5.9776E+00
Rutile	2.5300E-04	2.0209E-02	4.7615E-03
fix CO2(g)	1.4701E-07	6.4697E-06	0.0000E+00
fix O2(g)	-4.5805E-03	-1.4657E-01	0.0000E+00

--- Summary of Solid Phases (E.S.+P.R.S.) ---

Phase/End-member	Log moles	Moles	Mass, g	Volume, cc
Hematite	-4.2701	5.3696E-05	8.5748E-03	1.6256E-03
Pyrolusite	-3.3612	4.3530E-04	3.7843E-02	2.1765E-01
Quartz	-1.9793	1.0489E-02	6.3022E-01	2.3797E-01
Rutile	-4.9969	1.0072E-05	8.0454E-04	1.8955E-04
fix CO2(g)	2.3010	2.0000E+02	8.8020E+03	0.0000E+00
fix O2(g)	2.3010	2.0000E+02	6.3998E+03	0.0000E+00

	Mass, grams	Volume, cc
Created	1.520239E+04	4.574359E-01
Destroyed	8.195620E-01	0.000000E+00
Net	1.520157E+04	4.574359E-01

Warning-- these volume totals may be incomplete because of missing partial molar volume data in the data base

--- Summary of Pure Mineral Saturation States ---

Mineral	Log Q/K	Aff, kcal	State
Alum-K	-6.672	-9.102	
Alunite	-4.745	-6.473	
Anglesite	-4.872	-6.647	
Anhydrite	-1.879	-2.564	
Arcanite	-6.792	-9.267	
BaCrO4	-7.090	-9.673	
BaZrO3	69.959	95.444	ssatd
Barite	-2.742	-3.741	
Bassanite	-2.524	-3.444	
Berlinite	-3.020	-4.120	
Boehmite	-4.335	-5.914	
Boric_acid	-4.749	-6.478	
CaSO4:0.5H2O(beta)	-2.692	-3.673	
CaZrO3	130.517	178.062	ssatd
Celestite	-7.178	-9.793	
Chalcedony	-0.271	-0.370	
Coesite	-0.810	-1.105	

CrO2	-1.195	-1.630	
Cristobalite(alpha)	-0.551	-0.751	
Cristobalite(beta)	-0.994	-1.356	
Crocoite	-4.316	-5.889	
Diaspore	-3.931	-5.363	
Epsomite	-4.772	-6.510	
Fe(OH)3	-5.602	-7.642	
Gibbsite	-4.527	-6.177	
Goethite	-0.480	-0.655	
Gypsum	-1.704	-2.325	
Hematite	0.000	0.000	satd
Hexahydrite	-5.007	-6.831	
Ice	-0.139	-0.190	
Jarosite	-5.246	-7.158	
Kieserite	-6.465	-8.820	
Lopezite	-6.763	-9.227	
Manganite	-4.459	-6.084	
Mercallite	-6.352	-8.666	
Mirabilite	-6.492	-8.857	
MnHPO4	-0.159	-0.217	
MnO2(gamma)	-1.518	-2.071	
Morenosite	-2.677	-3.653	
NiSO4:6H2O(alpha)	-2.684	-3.662	
Niter	-6.866	-9.367	
Nontronite-Ca	-1.789	-2.441	
Nontronite-H	-0.963	-1.314	
Nontronite-K	-1.904	-2.597	
Nontronite-Mg	-1.841	-2.512	
Nontronite-Na	-2.083	-2.842	
Pentahydrite	-5.346	-7.294	
Pyrolusite	0.000	0.000	satd
Quartz	0.000	0.000	satd
Rutile	0.000	0.000	satd
Shcherbinaite	-2.355	-3.213	
SiO2(am)	-1.286	-1.754	
SrZrO3	106.812	145.722	ssatd
Starkeyite	-5.733	-7.822	
Strengite	-2.061	-2.812	
Syngenite	-7.179	-9.794	
Thenardite	-7.320	-9.986	
Tridymite	-0.172	-0.234	
fix CO2(g)	0.000	0.000	satd
fix O2(g)	0.000	0.000	satd

--- Summary of Solid Solutions ---

--- Carbonate-Calcite ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Calcite	2.4981E-02	-1.6024	0.0000	-1.6024
Magnesite	2.5499E-03	-2.5935	0.0000	-2.5935
Rhodochrosite	9.7247E-01	-0.0121	0.0000	-0.0121
Siderite	1.2417E-08	-7.9060	0.0000	-7.9060
Smithsonite	1.8809E-07	-6.7256	0.0000	-6.7256
Strontianite	7.7716E-07	-6.1095	0.0000	-6.1095

Mineral	Log Q/K	Aff, kcal	State

Carbonate-Calcite	-10.757	-14.676
Calcite	-10.757	-14.676
Magnesite	-10.757	-14.676
Rhodochrosite	-10.757	-14.676
Siderite	-10.757	-14.676
Smithsonite	-10.757	-14.676
Strontianite	-10.757	-14.676

--- Clinoptilolite-hy-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-hy-Ca	6.2812E-01	-0.2020	0.0000	-0.2020
Clinoptilolite-hy-Cs	2.9152E-23	-22.5353	0.0000	-22.5353
Clinoptilolite-hy-K	3.6922E-01	-0.4327	0.0000	-0.4327
Clinoptilolite-hy-Na	2.6567E-03	-2.5757	0.0000	-2.5757
Clinoptilolite-hy-Sr	2.3701E-12	-11.6252	0.0000	-11.6252

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-hy-ss	-38.380	-52.361	
Clinoptilolite-hy-Ca	-38.380	-52.361	
Clinoptilolite-hy-Cs	-38.380	-52.361	
Clinoptilolite-hy-K	-38.380	-52.361	
Clinoptilolite-hy-Na	-38.380	-52.361	
Clinoptilolite-hy-Sr	-38.380	-52.361	

--- Clinoptilolite-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-Ca	4.8499E-01	-0.3143	-0.7731	-1.0874
Clinoptilolite-Cs	1.6969E-07	-6.7703	-16.6550	-23.4254
Clinoptilolite-K	4.1491E-01	-0.3820	-0.9398	-1.3219
Clinoptilolite-NH4	1.5607E-52	-51.8067	-127.4444	-179.2511
Clinoptilolite-Na	9.9860E-02	-1.0006	-2.4615	-3.4621
Clinoptilolite-Sr	2.4243E-04	-3.6154	-8.8939	-12.5093

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-ss	-37.495	-51.154	
Clinoptilolite-Ca	-37.495	-51.154	
Clinoptilolite-Cs	-37.495	-51.154	
Clinoptilolite-K	-37.495	-51.154	
Clinoptilolite-NH4	-37.495	-51.154	
Clinoptilolite-Na	-37.495	-51.154	
Clinoptilolite-Sr	-37.495	-51.154	

--- Saponite-tri ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Saponite-Ca	3.1307E-03	-2.5044	1.6779	-0.8264
Saponite-H	9.9289E-01	-0.0031	0.0021	-0.0010
Saponite-K	1.4058E-03	-2.8521	1.9109	-0.9412
Saponite-Mg	2.1716E-03	-2.6632	1.7844	-0.8789
Saponite-Na	4.0246E-04	-3.3953	2.2748	-1.1204

Mineral	Log Q/K	Aff, kcal	State
Saponite-tri	-38.174	-52.080	
Saponite-Ca	-38.174	-52.080	
Saponite-H	-38.174	-52.080	
Saponite-K	-38.174	-52.080	
Saponite-Mg	-38.174	-52.080	
Saponite-Na	-38.174	-52.080	

--- Smectite-di ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Beidellite-Ca	6.9800E-34	-33.1561	22.2146	-10.9415
Beidellite-K	3.1364E-34	-33.5036	22.4474	-11.0562
Beidellite-Mg	4.8417E-34	-33.3150	22.3211	-10.9940
Beidellite-Na	8.9729E-35	-34.0471	22.8115	-11.2355
Montmor-Ca	1.0596E-34	-33.9749	22.7632	-11.2117
Montmor-K	7.7757E-35	-34.1093	22.8532	-11.2561
Montmor-Mg	1.1945E-34	-33.9228	22.7283	-11.1945
Montmor-Na	2.1693E-35	-34.6637	23.2247	-11.4390
Nontronite-Ca	4.4013E-01	-0.3564	0.2388	-0.1176
Nontronite-K	1.9777E-01	-0.7038	0.4716	-0.2323
Nontronite-Mg	3.0551E-01	-0.5150	0.3450	-0.1699
Nontronite-Na	5.6580E-02	-1.2473	0.8357	-0.4116

Mineral	Log Q/K	Aff, kcal	State
Smectite-di	-1.671	-2.280	
Beidellite-Ca	-1.671	-2.280	
Beidellite-K	-1.671	-2.280	
Beidellite-Mg	-1.671	-2.280	
Beidellite-Na	-1.671	-2.280	
Montmor-Ca	-1.671	-2.280	
Montmor-K	-1.671	-2.280	
Montmor-Mg	-1.671	-2.280	
Montmor-Na	-1.671	-2.280	
Nontronite-Ca	-1.671	-2.280	
Nontronite-K	-1.671	-2.280	
Nontronite-Mg	-1.671	-2.280	
Nontronite-Na	-1.671	-2.280	

--- Lanthanide hydroxide ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
La(OH)3	1.2751E-05	-4.8944	0.0000	-4.8944
Ce(OH)3	3.7335E-15	-14.4279	0.0000	-14.4279
Nd(OH)3(c)	3.4599E-01	-0.4609	0.0000	-0.4609
Gd(OH)3	5.8706E-01	-0.2313	0.0000	-0.2313
Sm(OH)3	6.6940E-02	-1.1743	0.0000	-1.1743

Mineral	Log Q/K	Aff, kcal	State
Lanthanide hydroxide	-23.816	-32.492	
La(OH)3	-23.816	-32.492	
Ce(OH)3	-23.816	-32.492	
Nd(OH)3(c)	-23.816	-32.492	
Gd(OH)3	-23.816	-32.492	
Sm(OH)3	-23.816	-32.492	

--- Rhabdophane-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaPO4:H2O	4.1118E-01	-0.3860	0.0000	-0.3860
CePO4:H2O	3.8070E-11	-10.4194	0.0000	-10.4194
NdPO4:H2O	2.2260E-01	-0.6525	0.0000	-0.6525
GdPO4:H2O	1.5037E-01	-0.8228	0.0000	-0.8228
SmPO4:H2O	2.1585E-01	-0.6658	0.0000	-0.6658

Mineral	Log Q/K	Aff, kcal	State
Rhabdophane-ss	-9.102	-12.418	
LaPO4:H2O	-9.102	-12.418	
CePO4:H2O	-9.102	-12.418	
NdPO4:H2O	-9.102	-12.418	
GdPO4:H2O	-9.102	-12.418	
SmPO4:H2O	-9.102	-12.418	

--- Lanthanide fluoride ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaF3:0.5H2O	5.7188E-01	-0.2427	0.0000	-0.2427
CeF3:0.5H2O	8.3920E-11	-10.0761	0.0000	-10.0761
NdF3:0.5H2O	3.8977E-01	-0.4092	0.0000	-0.4092
GdF3:0.5H2O	8.3260E-03	-2.0796	0.0000	-2.0796
SmF3:0.5H2O	3.0022E-02	-1.5226	0.0000	-1.5226

Mineral	Log Q/K	Aff, kcal	State
Lanthanide fluoride	-19.170	-26.153	
LaF3:0.5H2O	-19.170	-26.153	
CeF3:0.5H2O	-19.170	-26.153	
NdF3:0.5H2O	-19.170	-26.153	

GdF3:0.5H2O	-19.170	-26.153
SmF3:0.5H2O	-19.170	-26.153

--- Summary of Gases ---

Gas	Fugacity	Log fugacity
Al(g)	1.9293-195	-194.7146
B(g)	8.5646-204	-203.0673
BF3(g)	2.1295E-32	-31.6717
C(g)	3.0917-190	-189.5098
CH4(g)	3.5244-146	-145.4529
CO(g)	6.0395E-49	-48.2190
CO2(g)	3.1623E-04	-3.5000
Ca(g)	3.2572-163	-162.4872
Chlorine	9.6748E-18	-17.0144
Cs(g)	6.7173E-89	-88.1728
Cu(g)	2.7581E-92	-91.5594
Fluorine	4.6891E-78	-77.3289
H2(g)	6.1107E-42	-41.2139
H2O(g)	2.5959E-02	-1.5857
H2S(g)	6.6475-131	-130.1773
HCl(g)	3.8143E-13	-12.4186
HF(g)	9.4774E-12	-11.0233
K(g)	3.2366E-82	-81.4899
Li(g)	1.4941-102	-101.8256
Mg(g)	6.2379-141	-140.2050
Nitrogen	7.0619E-09	-8.1511
NH3(g)	9.6783E-64	-63.0142
NO(g)	2.6461E-20	-19.5774
NO2(g)	1.8093E-14	-13.7425
Na(g)	5.1267E-81	-80.2902
O2(g)	2.0999E-01	-0.6778
Pb(g)	2.7694E-80	-79.5576
S2(g)	2.6386-204	-203.5786
SO2(g)	1.1778E-43	-42.9289
Si(g)	4.2257-221	-220.3741
SiF4(g)	3.5610E-29	-28.4484
Ti(g)	3.8019-231	-230.4200
TiCl4(g)	7.1005E-63	-62.1487
U(g)	3.4827-304	-303.4581
U2Cl10(g)	8.0642-204	-203.0934
U2Cl8(g)	2.5841-217	-216.5877
U2F10(g)	9.5757-147	-146.0188
UCl(g)	1.1842-254	-253.9266
UCl2(g)	1.2047-203	-202.9191
UCl3(g)	2.6840-150	-149.5712
UCl4(g)	3.2382-114	-113.4897
UCl5(g)	2.0102-115	-114.6968
UCl6(g)	2.3182-111	-110.6348
UF(g)	6.2534-243	-242.2039
UF2(g)	8.3274-200	-199.0795
UF3(g)	2.7290-150	-149.5640
UF4(g)	1.3201E-97	-96.8794
UF5(g)	2.9247E-86	-85.5339
UF6(g)	6.3808E-89	-88.1951
UO(g)	2.7506-219	-218.5606
UO2(g)	5.0959-135	-134.2928
UO2Cl2(g)	2.1526E-71	-70.6670
UO2F2(g)	1.0795E-65	-64.9668

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UO3(g)                      3.7482E-82    -81.4262
UOF4(g)                     3.9336E-75    -74.4052
Zn(g)                       4.6567E-90    -89.3319



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Stepping to zi=  4.5305E-02, delzi=  5.4945E-03, nord= 6
  time =  4.3697E+02 d, dltime =  5.2995E+01 d
Steps completed =    94, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -25.3040

Stepping to zi=  5.1506E-02, delzi=  6.2004E-03, nord= 6
  time =  4.9678E+02 d, dltime =  5.9803E+01 d
Steps completed =    95, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -25.5779

Stepping to zi=  5.8510E-02, delzi=  7.0046E-03, nord= 6
  time =  5.6434E+02 d, dltime =  6.7560E+01 d
Steps completed =    96, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -25.9734

Stepping to zi=  6.3096E-02, delzi=  4.5854E-03, nord= 6
  time =  6.0856E+02 d, dltime =  4.4227E+01 d
Steps completed =    97, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -26.2988

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                    Reaction progress        =  6.30957344480158E-02
                    Log of reaction progress =      -1.2000000



                    Time =  5.258E+07 sec
                         =  6.086E+02 days
                         =  1.666E+00 years

                    Log sec =        7.721
                    Log days =       2.784
                    Log years =      0.222

                    Temperature    =     25.000 degrees C
                    total pressure =      1.013 bars


Step size is limited by the print requirement


                              --- Reactant Summary ---


    Reactant                  Moles     Delta moles    Mass, g    Delta Mass, g

 Tuff                      9.9937E+01   6.3096E-02   2.0573E+03   1.2989E+00


               Current total mass =  2.05735E+03 grams
```

Delta total mass = 1.29892E+00 grams
Delta total volume = 0.00000 cc

Reactant	Rel. Rate mol/mol	Rate mol/s	Rate mol/s/cm2
Tuff	1.0000E+00	1.2000E-09	2.5000E-15

Reactant	Affinity kcal/mol	Surface Area mol/s/cm2
Tuff	999.00000	4.8000E+05

Reactant	Rate Constants, mol/s/cm2	
Tuff		
	Forward	2.5000E-15

Affinity of the overall irreversible reaction= 0.000 kcal
Contributions from irreversible reactions
with no thermodynamic data are not included

--- Element Totals for the Aqueous Solution ---

Element	mg/kg soln.	Molality	Moles
O	8.864176E+05	5.561114E+01	5.560102E+01
Al	8.737198E+01	3.250368E-03	3.249777E-03
B	1.334501E-01	1.239026E-05	1.238800E-05
Ba	1.368384E-05	1.000182E-10	1.000000E-10
Ca	1.813697E+01	4.542406E-04	4.541579E-04
Ce	1.396163E-19	1.000181E-24	9.999993E-25
Cl	7.114767E+00	2.014367E-04	2.014000E-04
Cr	2.995617E+02	5.782860E-03	5.781807E-03
Cs	1.324325E-05	1.000182E-10	1.000000E-10
Cu	6.648588E-10	1.050191E-14	1.050000E-14
F	2.172309E+00	1.147709E-04	1.147500E-04
Fe	5.350355E-02	9.616341E-07	9.614591E-07
Gd	1.566904E-09	1.000182E-14	9.999998E-15
H	1.114883E+05	1.110252E+02	1.110050E+02
C	1.266214E-01	1.058169E-05	1.057977E-05
P	7.408555E+00	2.400859E-04	2.400422E-04
K	5.802257E+01	1.489588E-03	1.489317E-03
La	1.384112E-09	1.000182E-14	9.999999E-15
Li	6.916302E-07	1.000182E-10	1.000000E-10
Mg	3.916009E+00	1.617243E-04	1.616949E-04
Mn	1.869490E+00	3.415678E-05	3.415057E-05
Mo	2.178851E+02	2.279581E-03	2.279166E-03
N	1.981880E+00	1.420258E-04	1.420000E-04
Na	8.015039E+01	3.499437E-03	3.498800E-03
Nd	1.437267E-09	1.000182E-14	9.999999E-15
Ni	7.500247E+02	1.282740E-02	1.282506E-02
Pb	2.064627E-05	1.000182E-10	1.000000E-10
Pu	2.431317E-09	1.000182E-14	9.999997E-15
S	5.506042E+02	1.723542E-02	1.723228E-02
Si	2.802561E+00	1.001613E-04	1.001431E-04
Sm	1.498250E-09	1.000182E-14	9.999999E-15

Sr	8.730822E-06	1.000182E-10	1.000000E-10
Ti	1.078318E-05	2.260579E-10	2.260167E-10
U	2.371819E-09	1.000182E-14	9.999999E-15
V	4.766899E+00	9.392719E-05	9.391010E-05
Zn	6.515733E-06	1.000182E-10	1.000000E-10
Zr	9.089940E-16	1.000182E-20	9.999999E-21

Single ion activities and activity coefficients are here defined
with respect to the modified NBS pH scale

	pH	Eh	pe
modified NBS pH scale	2.6715	1.0610	1.7935E+01
rational pH scale	2.5931	1.0656	1.8014E+01

pHCl = 6.4615

Oxygen fugacity = 2.09991E-01
Log oxygen fugacity = -0.67780

Activity of water = 0.99933
Log activity of water = -0.00029

Ionic strength = 6.358136E-02 molal
Sum of molalities = 0.0448452743505
Osmotic coefficient = 0.82699

Mass of solution = 1.003571 kg
Mass of solutes = 0.003753 kg
Conc. of solutes = 0.373962 per cent (w/w)

Moles of solvent H2O = 5.54983E+01
Mass of solvent H2O = 9.99818E-01 kg

Species	Molality	Log molality	Log gamma	Log activity
SO4--	1.1178E-02	-1.9517	-0.3705	-2.3222
Ni++	1.0019E-02	-1.9992	-0.3560	-2.3552
HCrO4-	4.0403E-03	-2.3936	-0.0871	-2.4807
Na+	3.3960E-03	-2.4690	-0.1013	-2.5704
NiSO4(aq)	2.8071E-03	-2.5517	0.0000	-2.5517
H+	2.5519E-03	-2.5931	-0.0783	-2.6715
MoO4--	2.2796E-03	-2.6421	-0.3589	-3.0010
AlSO4+	1.7366E-03	-2.7603	-0.1013	-2.8616
K+	1.4399E-03	-2.8417	-0.1078	-2.9494
Al+++	1.3611E-03	-2.8661	-0.6833	-3.5494
HSO4-	1.1818E-03	-2.9275	-0.0871	-3.0146
Cr2O7--	8.7054E-04	-3.0602	-0.3705	-3.4308
Ca++	3.5731E-04	-3.4469	-0.3560	-3.8030
O2(aq)	2.6136E-04	-3.5828	0.0067	-3.5761
Cl-	2.0116E-04	-3.6965	-0.0936	-3.7900
H2PO4-	1.6241E-04	-3.7894	-0.0871	-3.8765
NO3-	1.4032E-04	-3.8529	-0.0936	-3.9465
AlF++	1.1392E-04	-3.9434	-0.3872	-4.3306
NaSO4-	1.0341E-04	-3.9854	-0.0871	-4.0726

Mg++	1.0197E-04	-3.9915	-0.3217	-4.3132
SiO2(aq)	1.0016E-04	-3.9993	0.0000	-3.9993
CaSO4(aq)	9.6807E-05	-4.0141	0.0000	-4.0141
VO2+	6.7490E-05	-4.1708	-0.1013	-4.2721
MgSO4(aq)	5.9743E-05	-4.2237	0.0000	-4.2237
KSO4-	4.9559E-05	-4.3049	-0.0871	-4.3920
H3PO4(aq)	4.1850E-05	-4.3783	0.0000	-4.3783
AlHPO4+	3.4791E-05	-4.4585	-0.1013	-4.5599
Mn++	2.3162E-05	-4.6352	-0.3560	-4.9913
VO(OH)3(aq)	1.2555E-05	-4.9012	0.0000	-4.9012
B(OH)3(aq)	1.2390E-05	-4.9069	0.0000	-4.9069
VO2SO4-	1.1826E-05	-4.9272	-0.0871	-5.0143
MnSO4(aq)	1.0950E-05	-4.9606	0.0000	-4.9606
CO2(aq)	1.0579E-05	-4.9756	0.0067	-4.9689
AlOH++	3.5638E-06	-5.4481	-0.3872	-5.8353
NiNO3+	1.5836E-06	-5.8004	-0.1013	-5.9017
CrO4--	1.1666E-06	-5.9331	-0.3705	-6.3036
H2VO4-	1.1621E-06	-5.9348	-0.0871	-6.0219
FeHPO4+	8.1503E-07	-6.0888	-0.1013	-6.1902
VO2(OH)2-	7.2016E-07	-6.1426	-0.0871	-6.2297
AlF2+	3.8856E-07	-6.4105	-0.1013	-6.5119
H2CrO4(aq)	3.3759E-07	-6.4716	0.0000	-6.4716
VO2HPO4-	1.7164E-07	-6.7654	-0.0871	-6.8525
CaNO3+	1.1269E-07	-6.9481	-0.1013	-7.0495
NiCl+	9.1174E-08	-7.0401	-0.1013	-7.1415
FeOH++	8.1044E-08	-7.0913	-0.3872	-7.4785
KHSO4(aq)	7.4217E-08	-7.1295	0.0000	-7.1295
HCl(aq)	7.3875E-08	-7.1315	0.0000	-7.1315
NaCl(aq)	7.2881E-08	-7.1374	0.0000	-7.1374
Fe+++	5.2918E-08	-7.2764	-0.6833	-7.9597
HF(aq)	5.1928E-08	-7.2846	0.0000	-7.2846
MnH2PO4+	3.8329E-08	-7.4165	-0.1013	-7.5178
F-	2.0372E-08	-7.6910	-0.0902	-7.7812
CrO3Cl-	1.5059E-08	-7.8222	-0.0871	-7.9093
Cr+++	1.2281E-08	-7.9108	-0.6833	-8.5941
HNO3(aq)	1.2010E-08	-7.9204	0.0000	-7.9204
HPO4--	9.1224E-09	-8.0399	-0.3705	-8.4104
MgCl+	7.2978E-09	-8.1368	-0.1013	-8.2381
Fe(OH)2+	6.5163E-09	-8.1860	-0.1013	-8.2873
CaCl+	6.4970E-09	-8.1873	-0.1013	-8.2886
KCl(aq)	5.8340E-09	-8.2340	0.0000	-8.2340
FeSO4+	5.5849E-09	-8.2530	-0.1013	-8.3543
MnCl+	4.1815E-09	-8.3787	-0.1013	-8.4800
HCO3-	2.7844E-09	-8.5553	-0.0871	-8.6424
MnNO3+	2.3099E-09	-8.6364	-0.1013	-8.7377
H2SO4(aq)	2.0603E-09	-8.6861	0.0000	-8.6861
Al(OH)2+	1.9943E-09	-8.7002	-0.1013	-8.8015
VO2F(aq)	1.9801E-09	-8.7033	0.0000	-8.7033
Fe(SO4)2-	4.9741E-10	-9.3033	-0.0871	-9.3904
CaHPO4(aq)	3.3618E-10	-9.4734	0.0000	-9.4734
CrOH++	2.9131E-10	-9.5356	-0.3872	-9.9229
Ti(OH)4(aq)	2.2606E-10	-9.6458	0.0000	-9.6458
H2P2O7--	1.8962E-10	-9.7221	-0.3705	-10.0927
MgHPO4(aq)	1.5358E-10	-9.8137	0.0000	-9.8137
MnHPO4(aq)	1.5076E-10	-9.8217	0.0000	-9.8217
NaHPO4-	1.0625E-10	-9.9737	-0.0871	-10.0608
Cs+	1.0001E-10	-10.0000	-0.1113	-10.1113

--- Summary of Instantaneously Precipitated Solid Phases ---
(defined by derivatives)

--- Theoretical Rock Composition ---

g/kg

O	5.239737E+01
Fe	8.623251E-01
C	3.467999E-06
Mn	1.263756E+00
Si	4.540221E+01
Ti	7.432564E-02

--- Oxide Percentages ---

Oxide Theoretical rock

Total = 0.0000

Phase/end-member	d mol/d zi	d grams/d zi	d vol (cc)/d zi
Hematite	1.2583E-03	2.0094E-01	3.8093E-02
Pyrolusite	3.7491E-03	3.2593E-01	1.8745E+00
Quartz	2.6347E-01	1.5830E+01	5.9776E+00
Rutile	2.5300E-04	2.0209E-02	4.7615E-03
fix CO2(g)	4.7058E-08	2.0710E-06	0.0000E+00
fix O2(g)	-2.4820E-03	-7.9420E-02	0.0000E+00

--- Summary of Solid Phases (E.S.+P.R.S.) ---

Phase/End-member	Log moles	Moles	Mass, g	Volume, cc
Hematite	-4.0777	8.3622E-05	1.3354E-02	2.5316E-03
Pyrolusite	-3.2428	5.7176E-04	4.9707E-02	2.8588E-01
Quartz	-1.7793	1.6624E-02	9.9883E-01	3.7716E-01
Rutile	-4.7969	1.5963E-05	1.2751E-03	3.0043E-04
fix CO2(g)	2.3010	2.0000E+02	8.8020E+03	0.0000E+00
fix O2(g)	2.3010	2.0000E+02	6.3997E+03	0.0000E+00

	Mass, grams	Volume, cc
Created	1.520277E+04	6.658733E-01
Destroyed	1.298918E+00	0.000000E+00
Net	1.520147E+04	6.658733E-01

Warning-- these volume totals may be incomplete because of missing partial molar volume data in the data base

--- Summary of Pure Mineral Saturation States ---

Mineral	Log Q/K	Aff, kcal	State
Alum-K	-6.265	-8.547	
Alunite	-1.867	-2.547	
Anglesite	-4.858	-6.627	
Anhydrite	-1.819	-2.481	
Arcanite	-6.420	-8.759	
BaCrO4	-6.748	-9.206	
BaZrO3	70.659	96.399	ssatd
Barite	-2.727	-3.721	

Bassanite	-2.464	-3.361	
Berlinite	-2.080	-2.837	
Boehmite	-3.100	-4.229	
Boric_acid	-4.749	-6.478	
CaSO4:0.5H2O(beta)	-2.632	-3.591	
CaV2O6	-7.195	-9.816	
CaZrO3	131.263	179.080	ssatd
Celestite	-7.167	-9.778	
Chalcedony	-0.271	-0.370	
Coesite	-0.810	-1.105	
CrO2	-1.544	-2.106	
Cristobalite(alpha)	-0.551	-0.751	
Cristobalite(beta)	-0.994	-1.356	
Crocoite	-3.974	-5.422	
Diaspore	-2.696	-3.678	
Epsomite	-4.675	-6.378	
Fe(OH)3	-5.602	-7.642	
Gibbsite	-3.292	-4.491	
Goethite	-0.480	-0.655	
Gypsum	-1.643	-2.242	
Hematite	0.000	0.000	satd
Hexahydrite	-4.910	-6.699	
Ice	-0.139	-0.190	
Jarosite	-6.075	-8.288	
Kaolinite	-5.880	-8.022	
Kieserite	-6.369	-8.689	
Lopezite	-6.412	-8.748	
Manganite	-4.459	-6.084	
Mercallite	-6.504	-8.874	
Mirabilite	-6.326	-8.631	
MnHPO4	-0.455	-0.620	
MnO2(gamma)	-1.518	-2.071	
Morenosite	-2.665	-3.636	
NiSO4:6H2O(alpha)	-2.672	-3.645	
Niter	-6.690	-9.127	
Nontronite-Ca	-1.260	-1.718	
Nontronite-H	-0.556	-0.758	
Nontronite-K	-1.323	-1.805	
Nontronite-Mg	-1.306	-1.782	
Nontronite-Na	-1.536	-2.096	
PbHPO4	-7.232	-9.866	
Pentahydrite	-5.250	-7.162	
Pyrolusite	0.000	0.000	satd
Quartz	0.000	0.000	satd
Rutile	0.000	0.000	satd
Shcherbinaite	-1.749	-2.387	
SiO2(am)	-1.286	-1.754	
SrZrO3	107.508	146.672	ssatd
Starkeyite	-5.637	-7.690	
Strengite	-2.356	-3.215	
Syngenite	-6.746	-9.204	
Thenardite	-7.154	-9.760	
Trevorite	-6.692	-9.129	
Tridymite	-0.172	-0.234	
fix CO2(g)	0.000	0.000	satd
fix O2(g)	0.000	0.000	satd

--- Summary of Solid Solutions ---

--- Carbonate-Calcite ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Calcite	1.2131E-01	-0.9161	0.0000	-0.9161
Magnesite	1.3452E-02	-1.8712	0.0000	-1.8712
Rhodochrosite	8.6523E-01	-0.0629	0.0000	-0.0629
Siderite	1.1048E-08	-7.9567	0.0000	-7.9567
Smithsonite	8.2304E-07	-6.0846	0.0000	-6.0846
Strontianite	3.3654E-06	-5.4730	0.0000	-5.4730

Mineral	Log Q/K	Aff, kcal	State
Carbonate-Calcite	-10.707	-14.607	
Calcite	-10.707	-14.607	
Magnesite	-10.707	-14.607	
Rhodochrosite	-10.707	-14.607	
Siderite	-10.707	-14.607	
Smithsonite	-10.707	-14.607	
Strontianite	-10.707	-14.607	

--- Clinoptilolite-hy-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-hy-Ca	3.2827E-01	-0.4838	0.0000	-0.4838
Clinoptilolite-hy-Cs	1.2760E-23	-22.8942	0.0000	-22.8942
Clinoptilolite-hy-K	6.6961E-01	-0.1742	0.0000	-0.1742
Clinoptilolite-hy-Na	2.1139E-03	-2.6749	0.0000	-2.6749
Clinoptilolite-hy-Sr	1.0156E-12	-11.9933	0.0000	-11.9933

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-hy-ss	-32.558	-44.418	
Clinoptilolite-hy-Ca	-32.558	-44.418	
Clinoptilolite-hy-Cs	-32.558	-44.418	
Clinoptilolite-hy-K	-32.558	-44.418	
Clinoptilolite-hy-Na	-32.558	-44.418	
Clinoptilolite-hy-Sr	-32.558	-44.418	

--- Clinoptilolite-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-Ca	4.0671E-01	-0.3907	-0.9612	-1.3519
Clinoptilolite-Cs	1.3520E-07	-6.8690	-16.8978	-23.7668
Clinoptilolite-K	4.9853E-01	-0.3023	-0.7437	-1.0460
Clinoptilolite-NH4	2.5026E-53	-52.6016	-129.4000	-182.0016
Clinoptilolite-Na	9.4561E-02	-1.0243	-2.5197	-3.5440
Clinoptilolite-Sr	1.9195E-04	-3.7168	-9.1433	-12.8601

Mineral	Log Q/K	Aff, kcal	State

Clinoptilolite-ss	-31.691	-43.235
Clinoptilolite-Ca	-31.691	-43.235
Clinoptilolite-Cs	-31.691	-43.235
Clinoptilolite-K	-31.691	-43.235
Clinoptilolite-NH4	-31.691	-43.235
Clinoptilolite-Na	-31.691	-43.235
Clinoptilolite-Sr	-31.691	-43.235

--- Saponite-tri ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Saponite-Ca	7.2327E-03	-2.1407	1.4343	-0.7064
Saponite-H	9.8184E-01	-0.0080	0.0053	-0.0026
Saponite-K	4.6499E-03	-2.3326	1.5628	-0.7697
Saponite-Mg	5.2292E-03	-2.2816	1.5287	-0.7529
Saponite-Na	1.0496E-03	-2.9790	1.9959	-0.9831

Mineral	Log Q/K	Aff, kcal	State
Saponite-tri	-35.446	-48.358	
Saponite-Ca	-35.446	-48.358	
Saponite-H	-35.446	-48.358	
Saponite-K	-35.446	-48.358	
Saponite-Mg	-35.446	-48.358	
Saponite-Na	-35.446	-48.358	

--- Smectite-di ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Beidellite-Ca	1.9399E-26	-25.7122	17.2272	-8.4850
Beidellite-K	1.2481E-26	-25.9038	17.3555	-8.5482
Beidellite-Mg	1.4026E-26	-25.8531	17.3216	-8.5315
Beidellite-Na	2.8153E-27	-26.5505	17.7888	-8.7617
Montmor-Ca	5.9047E-29	-28.2288	18.9133	-9.3155
Montmor-K	6.2041E-29	-28.2073	18.8989	-9.3084
Montmor-Mg	6.9381E-29	-28.1588	18.8664	-9.2924
Montmor-Na	1.3648E-29	-28.8649	19.3395	-9.5254
Nontronite-Ca	3.9809E-01	-0.4000	0.2680	-0.1320
Nontronite-K	2.5612E-01	-0.5916	0.3963	-0.1952
Nontronite-Mg	2.8802E-01	-0.5406	0.3622	-0.1784
Nontronite-Na	5.7773E-02	-1.2383	0.8296	-0.4086

Mineral	Log Q/K	Aff, kcal	State
Smectite-di	-1.128	-1.538	
Beidellite-Ca	-1.128	-1.538	
Beidellite-K	-1.128	-1.538	
Beidellite-Mg	-1.128	-1.538	
Beidellite-Na	-1.128	-1.538	
Montmor-Ca	-1.128	-1.538	
Montmor-K	-1.128	-1.538	

Montmor-Mg	-1.128	-1.538
Montmor-Na	-1.128	-1.538
Nontronite-Ca	-1.128	-1.538
Nontronite-K	-1.128	-1.538
Nontronite-Mg	-1.128	-1.538
Nontronite-Na	-1.128	-1.538

--- Lanthanide hydroxide ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
La(OH)3	1.2746E-05	-4.8946	0.0000	-4.8946
Ce(OH)3	3.7590E-15	-14.4249	0.0000	-14.4249
Nd(OH)3(c)	3.4585E-01	-0.4611	0.0000	-0.4611
Gd(OH)3	5.8732E-01	-0.2311	0.0000	-0.2311
Sm(OH)3	6.6825E-02	-1.1751	0.0000	-1.1751

Mineral	Log Q/K	Aff, kcal	State
Lanthanide hydroxide	-22.793	-31.096	
La(OH)3	-22.793	-31.096	
Ce(OH)3	-22.793	-31.096	
Nd(OH)3(c)	-22.793	-31.096	
Gd(OH)3	-22.793	-31.096	
Sm(OH)3	-22.793	-31.096	

--- Rhabdophane-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaPO4:H2O	4.1123E-01	-0.3859	0.0000	-0.3859
CePO4:H2O	3.8353E-11	-10.4162	0.0000	-10.4162
NdPO4:H2O	2.2264E-01	-0.6524	0.0000	-0.6524
GdPO4:H2O	1.5052E-01	-0.8224	0.0000	-0.8224
SmPO4:H2O	2.1560E-01	-0.6663	0.0000	-0.6663

Mineral	Log Q/K	Aff, kcal	State
Rhabdophane-ss	-8.375	-11.425	
LaPO4:H2O	-8.375	-11.425	
CePO4:H2O	-8.375	-11.425	
NdPO4:H2O	-8.375	-11.425	
GdPO4:H2O	-8.375	-11.425	
SmPO4:H2O	-8.375	-11.425	

--- Lanthanide fluoride ---

Ideal solution

Component	x	Log x	Log lambda	Log activity

LaF3:0.5H2O	5.7189E-01	-0.2427	0.0000	-0.2427
CeF3:0.5H2O	8.4532E-11	-10.0730	0.0000	-10.0730
NdF3:0.5H2O	3.8979E-01	-0.4092	0.0000	-0.4092
GdF3:0.5H2O	8.3333E-03	-2.0792	0.0000	-2.0792
SmF3:0.5H2O	2.9984E-02	-1.5231	0.0000	-1.5231

Mineral	Log Q/K	Aff, kcal	State
Lanthanide fluoride	-19.773	-26.975	
LaF3:0.5H2O	-19.773	-26.975	
CeF3:0.5H2O	-19.773	-26.975	
NdF3:0.5H2O	-19.773	-26.975	
GdF3:0.5H2O	-19.773	-26.975	
SmF3:0.5H2O	-19.773	-26.975	

--- Summary of Gases ---

Gas	Fugacity	Log fugacity
Al(g)	3.3177-194	-193.4792
B(g)	8.5638-204	-203.0673
BF3(g)	5.0378E-34	-33.2978
C(g)	3.0917-190	-189.5098
CH4(g)	3.5247-146	-145.4529
CO(g)	6.0395E-49	-48.2190
CO2(g)	3.1623E-04	-3.5000
Ca(g)	1.7778-162	-161.7501
Chlorine	1.9444E-18	-17.7112
Cs(g)	1.4912E-88	-87.8265
Cu(g)	1.3559E-91	-90.8678
Fluorine	3.8644E-79	-78.4129
H2(g)	6.1110E-42	-41.2139
H2O(g)	2.5960E-02	-1.5857
H2S(g)	1.3997-131	-130.8540
HCl(g)	1.7100E-13	-12.7670
HF(g)	2.7208E-12	-11.5653
K(g)	1.0826E-81	-80.9655
Li(g)	3.3162-102	-101.4794
Mg(g)	3.6988-140	-139.4319
Nitrogen	1.4184E-09	-8.8482
NH3(g)	4.3378E-64	-63.3627
NO(g)	1.1859E-20	-19.9259
NO2(g)	8.1088E-15	-14.0910
Na(g)	1.3521E-80	-79.8690
O2(g)	2.0999E-01	-0.6778
Pb(g)	1.3602E-79	-78.8664
S2(g)	1.1698-205	-204.9319
SO2(g)	2.4798E-44	-43.6056
Si(g)	4.2257-221	-220.3741
SiF4(g)	2.4186E-31	-30.6164
Ti(g)	3.8019-231	-230.4200
TiCl4(g)	2.8679E-64	-63.5424
U(g)	1.5439-303	-302.8114
U2Cl10(g)	5.1960-206	-205.2843
U2Cl8(g)	8.2849-219	-218.0817
U2F10(g)	7.1546-151	-150.1454
UCl(g)	2.3535-254	-253.6283
UCl2(g)	1.0733-203	-202.9693
UCl3(g)	1.0720-150	-149.9698

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UCl4(g)                    5.7982-115   -114.2367
UCl5(g)                    1.6136-116   -115.7922
UCl6(g)                    8.3421-113   -112.0787
UF(g)                      7.9583-243   -242.0992
UF2(g)                     3.0424-200   -199.5168
UF3(g)                     2.8622-151   -150.5433
UF4(g)                     3.9747E-99    -98.4007
UF5(g)                     2.5281E-88    -87.5972
UF6(g)                     1.5834E-91    -90.8004
UO(g)                      1.2193-218   -217.9139
UO2(g)                     2.2591-134   -133.6461
UO2Cl2(g)                  1.9178E-71    -70.7172
UO2F2(g)                   3.9438E-66    -65.4041
UO3(g)                     1.6616E-81    -80.7795
UOF4(g)                    1.1844E-76    -75.9265
Zn(g)                      2.2903E-89    -88.6401



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Stepping to zi=  6.9447E-02, delzi=  6.3512E-03, nord= 6
  time =  6.6982E+02 d, dltime =  6.1258E+01 d
Steps completed =    98, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -26.8720

Stepping to zi=  7.2121E-02, delzi=  2.6739E-03, nord= 6
  time =  6.9561E+02 d, dltime =  2.5790E+01 d
Steps completed =    99, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -27.1712

Stepping to zi=  7.2133E-02, delzi=  1.2002E-05, nord= 6
  time =  6.9573E+02 d, dltime =  1.1576E-01 d
iter =    2
      1 supersaturated pure minerals
      0 supersaturated solid solutions

               The most supersaturated phases           Affinity, kcal

                 1      20   Alunite                       0.00639640


  Attempted species assemblage no.   2

            1      1  H2O
            2      3  Al+++
            3      7  B(OH)3(aq)
            4      8  Ba++
            5     11  Ca++
            6     13  Ce+++
            7     14  Cl-
            8     16  CrO4--
            9     17  Cs+
           10     18  Cu++
           11     22  F-
           12     23  Fe++
           13     25  Gd+++
           14     26  H+
           15     28  HCO3-
           16     29  HPO4--
           17     35  K+
```

```
            18     37  La+++
            19     38  Li+
            20     40  Mg++
            21     41  Mn++
            22     42  MoO4--
            23     43  NO3-
            24     44  Na+
            25     45  Nd+++
            26     47  Ni++
            27     49  Pb++
            28     52  Pu++++
            29     58  SO4--
            30     62  SiO2(aq)
            31     63  Sm+++
            32     65  Sr++
            33     69  Ti(OH)4(aq)
            34     72  UO2++
            35     73  VO++
            36     78  Zn++
            37     79  Zr(OH)2++
            38     80  O2(g)
            39     20  Alunite
            40    252  Hematite
            41    470  Pyrolusite
            42    475  Quartz
            43    482  Rutile
            44    689  fix     CO2(g)
            45    690  fix     O2(g)

Steps completed =   100, iter = 17, ncorr = 0

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                    Reaction progress        =  7.21328443522350E-02
                    Log of reaction progress =      -1.1418669



                    Time =  6.011E+07 sec
                         =  6.957E+02 days
                         =  1.905E+00 years

                    Log sec =        7.779
                    Log days =       2.842
                    Log years =      0.280

                    Temperature    =     25.000 degrees C
                    total pressure =      1.013 bars


Change in the product phase assemblage


                              --- Reactant Summary ---


    Reactant                   Moles     Delta moles    Mass, g    Delta Mass, g

 Tuff                       9.9928E+01   7.2133E-02   2.0572E+03   1.4850E+00
```

```
Current total mass =  2.05716E+03 grams
Delta total mass   =  1.48496E+00 grams
Delta total volume =      0.00000 cc
```

Reactant	Rel. Rate mol/mol	Rate mol/s	Rate mol/s/cm2
Tuff	1.0000E+00	1.2000E-09	2.5000E-15

Reactant	Affinity kcal/mol	Surface Area mol/s/cm2
Tuff	999.00000	4.8000E+05

Reactant	Rate Constants, mol/s/cm2	
Tuff		
	Forward	2.5000E-15

```
Affinity of the overall irreversible reaction=     0.000 kcal
Contributions from irreversible reactions
with no thermodynamic data are not included
```

--- Element Totals for the Aqueous Solution ---

Element	mg/kg soln.	Molality	Moles
O	8.863975E+05	5.561117E+01	5.560192E+01
Al	9.983244E+01	3.714002E-03	3.713385E-03
B	1.334449E-01	1.239006E-05	1.238800E-05
Ba	1.368330E-05	1.000166E-10	1.000000E-10
Ca	1.887861E+01	4.728258E-04	4.727473E-04
Ce	1.396109E-19	1.000166E-24	9.999994E-25
Cl	7.114490E+00	2.014335E-04	2.014000E-04
Cr	2.995500E+02	5.782768E-03	5.781807E-03
Cs	1.324274E-05	1.000166E-10	1.000000E-10
Cu	6.648329E-10	1.050175E-14	1.050000E-14
F	2.172225E+00	1.147691E-04	1.147500E-04
Fe	1.386935E-02	2.492834E-07	2.492420E-07
Gd	1.566844E-09	1.000166E-14	1.000000E-14
H	1.114839E+05	1.110235E+02	1.110050E+02
C	1.266273E-01	1.058243E-05	1.058067E-05
P	7.420399E+00	2.404753E-04	2.404354E-04
K	6.558987E+01	1.683899E-03	1.683619E-03
La	1.384058E-09	1.000166E-14	1.000000E-14
Li	6.916033E-07	1.000166E-10	1.000000E-10
Mg	4.189866E+00	1.730381E-04	1.730093E-04
Mn	5.319193E-01	9.718735E-06	9.717120E-06
Mo	2.178766E+02	2.279545E-03	2.279166E-03
N	1.981803E+00	1.420236E-04	1.420000E-04
Na	8.509034E+01	3.715206E-03	3.714588E-03
Nd	1.437212E-09	1.000166E-14	1.000000E-14
Ni	7.499955E+02	1.282720E-02	1.282506E-02
Pb	2.064547E-05	1.000166E-10	1.000000E-10
Pu	2.431223E-09	1.000166E-14	1.000000E-14
S	5.505478E+02	1.723405E-02	1.723119E-02
Si	2.802496E+00	1.001613E-04	1.001447E-04

Sm	1.498191E-09	1.000166E-14	1.000000E-14
Sr	8.730482E-06	1.000166E-10	1.000000E-10
Ti	1.078322E-05	2.260641E-10	2.260265E-10
U	2.371727E-09	1.000166E-14	1.000000E-14
V	4.766713E+00	9.392571E-05	9.391010E-05
Zn	6.515479E-06	1.000166E-10	1.000000E-10
Zr	9.089586E-16	1.000166E-20	1.000000E-20

Single ion activities and activity coefficients are here defined
with respect to the modified NBS pH scale

	pH	Eh	pe
modified NBS pH scale	2.9461	1.0448	1.7661E+01
rational pH scale	2.8675	1.0494	1.7739E+01

pHCl = 6.7364

Oxygen fugacity = 2.09991E-01
Log oxygen fugacity = -0.67780

Activity of water = 0.99935
Log activity of water = -0.00028

Ionic strength = 6.426984E-02 molal
Sum of molalities = 0.0441934899979
Osmotic coefficient = 0.82202

Mass of solution = 1.003610 kg
Mass of solutes = 0.003776 kg
Conc. of solutes = 0.376267 per cent (w/w)

Moles of solvent H2O = 5.54992E+01
Mass of solvent H2O = 9.99834E-01 kg

Species	Molality	Log molality	Log gamma	Log activity
SO4--	1.1418E-02	-1.9424	-0.3720	-2.3144
Ni++	9.9855E-03	-2.0006	-0.3574	-2.3580
HCrO4-	4.0380E-03	-2.3938	-0.0874	-2.4813
Na+	3.6034E-03	-2.4433	-0.1017	-2.5450
NiSO4(aq)	2.8400E-03	-2.5467	0.0000	-2.5467
MoO4--	2.2795E-03	-2.6422	-0.3602	-3.0023
AlSO4+	1.9875E-03	-2.7017	-0.1017	-2.8034
K+	1.6269E-03	-2.7886	-0.1082	-2.8969
Al+++	1.5362E-03	-2.8136	-0.6855	-3.4990
H+	1.3567E-03	-2.8675	-0.0786	-2.9461
Cr2O7--	8.7119E-04	-3.0599	-0.3720	-3.4319
HSO4-	6.3981E-04	-3.1939	-0.0874	-3.2814
Ca++	3.7074E-04	-3.4309	-0.3574	-3.7883
O2(aq)	2.6132E-04	-3.5828	0.0067	-3.5761
Cl-	2.0120E-04	-3.6964	-0.0939	-3.7903
H2PO4-	1.5096E-04	-3.8211	-0.0874	-3.9086
NO3-	1.4033E-04	-3.8529	-0.0939	-3.9468
AlF++	1.1404E-04	-3.9430	-0.3888	-4.3318

NaSO4-	1.1169E-04	-3.9520	-0.0874	-4.0394
Mg++	1.0848E-04	-3.9646	-0.3228	-4.2874
CaSO4(aq)	1.0196E-04	-3.9916	0.0000	-3.9916
SiO2(aq)	1.0016E-04	-3.9993	0.0000	-3.9993
AlHPO4+	6.8362E-05	-4.1652	-0.1017	-4.2669
MgSO4(aq)	6.4548E-05	-4.1901	0.0000	-4.1901
VO2+	5.7574E-05	-4.2398	-0.1017	-4.3415
KSO4-	5.6987E-05	-4.2442	-0.0874	-4.3317
H3PO4(aq)	2.0655E-05	-4.6850	0.0000	-4.6850
VO(OH)3(aq)	2.0138E-05	-4.6960	0.0000	-4.6960
B(OH)3(aq)	1.2390E-05	-4.9069	0.0000	-4.9069
CO2(aq)	1.0577E-05	-4.9756	0.0067	-4.9689
VO2SO4-	1.0269E-05	-4.9885	-0.0874	-5.0759
AlOH++	7.5589E-06	-5.1215	-0.3888	-5.5103
Mn++	6.5591E-06	-5.1832	-0.3574	-5.5405
H2VO4-	3.5105E-06	-5.4546	-0.0874	-5.5421
MnSO4(aq)	3.1477E-06	-5.5020	0.0000	-5.5020
CrO4--	2.1999E-06	-5.6576	-0.3720	-6.0296
VO2(OH)2-	2.1755E-06	-5.6624	-0.0874	-5.7499
NiNO3+	1.5739E-06	-5.8030	-0.1017	-5.9048
AlF2+	3.4458E-07	-6.4627	-0.1017	-6.5645
VO2HPO4-	2.5589E-07	-6.5919	-0.0874	-6.6794
FeHPO4+	2.1394E-07	-6.6697	-0.1017	-6.7715
H2CrO4(aq)	1.7915E-07	-6.7468	0.0000	-6.7468
CaNO3+	1.1659E-07	-6.9333	-0.1017	-7.0351
NiCl+	9.0625E-08	-7.0428	-0.1017	-7.1445
NaCl(aq)	7.7208E-08	-7.1123	0.0000	-7.1123
KHSO4(aq)	4.5314E-08	-7.3438	0.0000	-7.3438
HCl(aq)	3.9228E-08	-7.4064	0.0000	-7.4064
HF(aq)	2.4507E-08	-7.6107	0.0000	-7.6107
FeOH++	2.2963E-08	-7.6390	-0.3888	-8.0278
F-	1.8108E-08	-7.7421	-0.0906	-7.8327
HPO4--	1.5999E-08	-7.7959	-0.3720	-8.1679
MnH2PO4+	1.0061E-08	-7.9974	-0.1017	-8.0991
CrO3Cl-	7.9918E-09	-8.0974	-0.0874	-8.1848
Fe+++	7.9785E-09	-8.0981	-0.6855	-8.7836
Al(OH)2+	7.9402E-09	-8.1002	-0.1017	-8.2019
MgCl+	7.7465E-09	-8.1109	-0.1017	-8.2126
CaCl+	6.7228E-09	-8.1725	-0.1017	-8.2742
KCl(aq)	6.5798E-09	-8.1818	0.0000	-8.1818
HNO3(aq)	6.3769E-09	-8.1954	0.0000	-8.1954
HCO3-	5.2440E-09	-8.2803	-0.0874	-8.3678
Fe(OH)2+	3.4658E-09	-8.4602	-0.1017	-8.5619
VO2F(aq)	1.4989E-09	-8.8242	0.0000	-8.8242
MnCl+	1.1809E-09	-8.9278	-0.1017	-9.0295
Cr+++	9.8260E-10	-9.0076	-0.6855	-9.6931
FeSO4+	8.5384E-10	-9.0686	-0.1017	-9.1704
MnNO3+	6.5228E-10	-9.1856	-0.1017	-9.2873
CaHPO4(aq)	6.0790E-10	-9.2162	0.0000	-9.2162
H2SO4(aq)	5.9225E-10	-9.2275	0.0000	-9.2275
VO3OH--	4.7941E-10	-9.3193	-0.3720	-9.6913
MgHPO4(aq)	2.8490E-10	-9.5453	0.0000	-9.5453
Ti(OH)4(aq)	2.2606E-10	-9.6458	0.0000	-9.6458
NaHPO4-	1.9703E-10	-9.7055	-0.0874	-9.7929
H2P2O7--	1.6414E-10	-9.7848	-0.3720	-10.1568
Cs+	1.0001E-10	-10.0000	-0.1118	-10.1118

--- Summary of Instantaneously Precipitated Solid Phases ---
(defined by derivatives)

--- Theoretical Rock Composition ---
g/kg

O	5.262571E+01
Fe	8.514896E-01
Mn	6.957431E-01
Si	4.575219E+01
Ti	7.489856E-02

--- Oxide Percentages ---

Oxide Theoretical rock

Total = 0.0000

Phase/end-member	d mol/d zi	d grams/d zi	d vol (cc)/d zi
Alunite	1.2330E-03	5.1071E-01	3.6200E-01
Hematite	2.0482E-03	3.2708E-01	6.2008E-02
Pyrolusite	2.6347E-01	2.2905E+01	1.3173E+02
Quartz	2.5300E-04	1.5201E-02	5.7401E-03
Rutile	-3.3005E-07	-2.6364E-05	-6.2115E-06
fix CO2(g)	-1.6301E-03	-7.1740E-02	0.0000E+00
fix O2(g)	0.0000E+00	0.0000E+00	0.0000E+00

--- Summary of Solid Phases (E.S.+P.R.S.) ---

Phase/End-member	Log moles	Moles	Mass, g	Volume, cc
Alunite	-6.2621	5.4689E-07	2.2653E-04	1.6057E-04
Hematite	-4.0228	9.4881E-05	1.5152E-02	2.8724E-03
Pyrolusite	-3.2233	5.9795E-04	5.1984E-02	2.9897E-01
Quartz	-1.7211	1.9005E-02	1.1419E+00	4.3118E-01
Rutile	-4.7387	1.8249E-05	1.4577E-03	3.4346E-04
fix CO2(g)	2.3010	2.0000E+02	8.8020E+03	0.0000E+00
fix O2(g)	2.3010	2.0000E+02	6.3997E+03	0.0000E+00

	Mass, grams	Volume, cc
Created	1.520292E+04	7.335313E-01
Destroyed	1.484960E+00	0.000000E+00
Net	1.520143E+04	7.335313E-01

Warning-- these volume totals may be incomplete because of missing partial molar volume data in the data base

--- Summary of Pure Mineral Saturation States ---

Mineral	Log Q/K	Aff, kcal	State
Alum-K	-6.146	-8.385	
Alunite	0.000	0.000	satd
Anglesite	-4.851	-6.619	
Anhydrite	-1.796	-2.451	
Arcanite	-6.307	-8.605	
BaCrO4	-6.475	-8.834	
BaZrO3	71.211	97.151	ssatd
Barite	-2.721	-3.712	

Bassanite	-2.441	-3.331	
Beidellite-H	-6.872	-9.375	
Berlinite	-1.512	-2.063	
Boehmite	-2.226	-3.036	
Boric_acid	-4.749	-6.478	
CaSO4:0.5H2O(beta)	-2.609	-3.560	
CaV2O6	-6.221	-8.487	
CaZrO3	131.830	179.854	ssatd
Celestite	-7.163	-9.772	
Chalcedony	-0.271	-0.370	
Coesite	-0.810	-1.105	
CrO2	-1.819	-2.481	
Cristobalite(alpha)	-0.551	-0.751	
Cristobalite(beta)	-0.994	-1.356	
Crocoite	-3.702	-5.050	
Diaspore	-1.822	-2.485	
Epsomite	-4.642	-6.332	
Fe(OH)3	-5.602	-7.642	
Gibbsite	-2.418	-3.298	
Goethite	-0.480	-0.655	
Gypsum	-1.621	-2.211	
Hematite	0.000	0.000	satd
Hexahydrite	-4.877	-6.653	
Ice	-0.139	-0.190	
Jarosite	-6.831	-9.319	
K-Feldspar	-6.335	-8.642	
Kaolinite	-4.132	-5.637	
Kieserite	-6.335	-8.643	
Lopezite	-6.308	-8.606	
Manganite	-4.459	-6.084	
Maximum_Microcline	-6.335	-8.642	
Mercallite	-6.718	-9.166	
Mirabilite	-6.267	-8.551	
MnHPO4	-0.761	-1.039	
MnO2(gamma)	-1.518	-2.071	
MnV2O6	-7.260	-9.904	
Morenosite	-2.660	-3.630	
NiSO4:6H2O(alpha)	-2.667	-3.638	
Niter	-6.638	-9.056	
Nontronite-Ca	-0.878	-1.198	
Nontronite-H	-0.267	-0.365	
Nontronite-K	-0.926	-1.264	
Nontronite-Mg	-0.923	-1.259	
Nontronite-Na	-1.149	-1.567	
PbHPO4	-6.991	-9.537	
Pentahydrite	-5.216	-7.116	
Pyrolusite	0.000	0.000	satd
Pyrophyllite	-5.760	-7.858	
Quartz	0.000	0.000	satd
Rutile	0.000	0.000	satd
Shcherbinaite	-1.339	-1.827	
SiO2(am)	-1.286	-1.754	
SrZrO3	108.058	147.421	ssatd
Starkeyite	-5.603	-7.644	
Strengite	-2.663	-3.633	
Syngenite	-6.611	-9.019	
Thenardite	-7.095	-9.680	
Trevorite	-6.145	-8.384	
Tridymite	-0.172	-0.234	
fix CO2(g)	0.000	0.000	satd
fix O2(g)	0.000	0.000	satd

--- Summary of Solid Solutions ---

--- Carbonate-Calcite ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Calcite	3.2676E-01	-0.4858	0.0000	-0.4858
Magnesite	3.7170E-02	-1.4298	0.0000	-1.4298
Rhodochrosite	6.3606E-01	-0.1965	0.0000	-0.1965
Siderite	8.1217E-09	-8.0904	0.0000	-8.0904
Smithsonite	2.1364E-06	-5.6703	0.0000	-5.6703
Strontianite	8.6966E-06	-5.0607	0.0000	-5.0607

Mineral	Log Q/K	Aff, kcal	State
Carbonate-Calcite	-10.573	-14.424	
Calcite	-10.573	-14.424	
Magnesite	-10.573	-14.424	
Rhodochrosite	-10.573	-14.424	
Siderite	-10.573	-14.424	
Smithsonite	-10.573	-14.424	
Strontianite	-10.573	-14.424	

--- Clinoptilolite-hy-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-hy-Ca	2.5426E-01	-0.5947	0.0000	-0.5947
Clinoptilolite-hy-Cs	9.2812E-24	-23.0324	0.0000	-23.0324
Clinoptilolite-hy-K	7.4385E-01	-0.1285	0.0000	-0.1285
Clinoptilolite-hy-Na	1.8901E-03	-2.7235	0.0000	-2.7235
Clinoptilolite-hy-Sr	7.3210E-13	-12.1354	0.0000	-12.1354

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-hy-ss	-28.453	-38.818	
Clinoptilolite-hy-Ca	-28.453	-38.818	
Clinoptilolite-hy-Cs	-28.453	-38.818	
Clinoptilolite-hy-K	-28.453	-38.818	
Clinoptilolite-hy-Na	-28.453	-38.818	
Clinoptilolite-hy-Sr	-28.453	-38.818	

--- Clinoptilolite-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-Ca	3.8414E-01	-0.4155	-1.0222	-1.4377
Clinoptilolite-Cs	1.2540E-07	-6.9017	-16.9782	-23.8799
Clinoptilolite-K	5.2259E-01	-0.2818	-0.6933	-0.9752
Clinoptilolite-NH4	6.5394E-54	-53.1845	-130.8338	-184.0182
Clinoptilolite-Na	9.3096E-02	-1.0311	-2.5364	-3.5675

Clinoptilolite-Sr	1.7757E-04	-3.7506	-9.2265	-12.9772

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-ss	-27.611	-37.670	
Clinoptilolite-Ca	-27.611	-37.670	
Clinoptilolite-Cs	-27.611	-37.670	
Clinoptilolite-K	-27.611	-37.670	
Clinoptilolite-NH4	-27.611	-37.670	
Clinoptilolite-Na	-27.611	-37.670	
Clinoptilolite-Sr	-27.611	-37.670	

--- Saponite-tri ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Saponite-Ca	1.3602E-02	-1.8664	1.2505	-0.6159
Saponite-H	9.6468E-01	-0.0156	0.0105	-0.0052
Saponite-K	9.7037E-03	-2.0131	1.3488	-0.6643
Saponite-Mg	9.9606E-03	-2.0017	1.3411	-0.6606
Saponite-Na	2.0575E-03	-2.6867	1.8001	-0.8866

Mineral	Log Q/K	Aff, kcal	State
Saponite-tri	-33.429	-45.607	
Saponite-Ca	-33.429	-45.607	
Saponite-H	-33.429	-45.607	
Saponite-K	-33.429	-45.607	
Saponite-Mg	-33.429	-45.607	
Saponite-Na	-33.429	-45.607	

--- Smectite-di ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Beidellite-Ca	3.7291E-21	-20.4284	13.6870	-6.7414
Beidellite-K	2.6622E-21	-20.5748	13.7851	-6.7897
Beidellite-Mg	2.7307E-21	-20.5637	13.7777	-6.7860
Beidellite-Na	5.6406E-22	-21.2487	14.2366	-7.0121
Montmor-Ca	7.6131E-25	-24.1184	16.1594	-7.9591
Montmor-K	8.8761E-25	-24.0518	16.1147	-7.9371
Montmor-Mg	9.0603E-25	-24.0429	16.1087	-7.9341
Montmor-Na	1.8340E-25	-24.7366	16.5735	-8.1631
Nontronite-Ca	3.8492E-01	-0.4146	0.2778	-0.1368
Nontronite-K	2.7479E-01	-0.5610	0.3759	-0.1851
Nontronite-Mg	2.8206E-01	-0.5497	0.3683	-0.1814
Nontronite-Na	5.8223E-02	-1.2349	0.8274	-0.4075

Mineral	Log Q/K	Aff, kcal	State
Smectite-di	-0.741	-1.011	
Beidellite-Ca	-0.741	-1.011	

Beidellite-K	-0.741	-1.011
Beidellite-Mg	-0.741	-1.011
Beidellite-Na	-0.741	-1.011
Montmor-Ca	-0.741	-1.011
Montmor-K	-0.741	-1.011
Montmor-Mg	-0.741	-1.011
Montmor-Na	-0.741	-1.011
Nontronite-Ca	-0.741	-1.011
Nontronite-K	-0.741	-1.011
Nontronite-Mg	-0.741	-1.011
Nontronite-Na	-0.741	-1.011

--- Lanthanide hydroxide ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
La(OH)3	1.2745E-05	-4.8947	0.0000	-4.8947
Ce(OH)3	3.7708E-15	-14.4236	0.0000	-14.4236
Nd(OH)3(c)	3.4577E-01	-0.4612	0.0000	-0.4612
Gd(OH)3	5.8745E-01	-0.2310	0.0000	-0.2310
Sm(OH)3	6.6767E-02	-1.1754	0.0000	-1.1754

Mineral	Log Q/K	Aff, kcal	State
Lanthanide hydroxide	-21.977	-29.983	
La(OH)3	-21.977	-29.983	
Ce(OH)3	-21.977	-29.983	
Nd(OH)3(c)	-21.977	-29.983	
Gd(OH)3	-21.977	-29.983	
Sm(OH)3	-21.977	-29.983	

--- Rhabdophane-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaPO4:H2O	4.1130E-01	-0.3858	0.0000	-0.3858
CePO4:H2O	3.8482E-11	-10.4147	0.0000	-10.4147
NdPO4:H2O	2.2264E-01	-0.6524	0.0000	-0.6524
GdPO4:H2O	1.5059E-01	-0.8222	0.0000	-0.8222
SmPO4:H2O	2.1547E-01	-0.6666	0.0000	-0.6666

Mineral	Log Q/K	Aff, kcal	State
Rhabdophane-ss	-7.866	-10.731	
LaPO4:H2O	-7.866	-10.731	
CePO4:H2O	-7.866	-10.731	
NdPO4:H2O	-7.866	-10.731	
GdPO4:H2O	-7.866	-10.731	
SmPO4:H2O	-7.866	-10.731	

--- Lanthanide fluoride ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaF3:0.5H2O	5.7194E-01	-0.2426	0.0000	-0.2426
CeF3:0.5H2O	8.4810E-11	-10.0716	0.0000	-10.0716
NdF3:0.5H2O	3.8976E-01	-0.4092	0.0000	-0.4092
GdF3:0.5H2O	8.3365E-03	-2.0790	0.0000	-2.0790
SmF3:0.5H2O	2.9962E-02	-1.5234	0.0000	-1.5234

Mineral	Log Q/K	Aff, kcal	State
Lanthanide fluoride	-19.935	-27.197	
LaF3:0.5H2O	-19.935	-27.197	
CeF3:0.5H2O	-19.935	-27.197	
NdF3:0.5H2O	-19.935	-27.197	
GdF3:0.5H2O	-19.935	-27.197	
SmF3:0.5H2O	-19.935	-27.197	

--- Summary of Gases ---

Gas	Fugacity	Log fugacity
Al(g)	2.4836-193	-192.6049
B(g)	8.5635-204	-203.0674
BF3(g)	5.2955E-35	-34.2761
C(g)	3.0917-190	-189.5098
CH4(g)	3.5248-146	-145.4529
CO(g)	6.0395E-49	-48.2190
CO2(g)	3.1623E-04	-3.5000
Ca(g)	6.5138-162	-161.1862
Chlorine	5.4823E-19	-18.2610
Cs(g)	2.8031E-88	-87.5524
Cu(g)	4.7894E-91	-90.3197
Fluorine	8.6074E-80	-79.0651
H2(g)	6.1110E-42	-41.2139
H2O(g)	2.5961E-02	-1.5857
H2S(g)	4.0235-132	-131.3954
HCl(g)	9.0801E-14	-13.0419
HF(g)	1.2841E-12	-11.8914
K(g)	2.2995E-81	-80.6384
Li(g)	6.2332-102	-101.2053
Mg(g)	1.3902-139	-138.8569
Nitrogen	3.9985E-10	-9.3981
NH3(g)	2.3032E-64	-63.6377
NO(g)	6.2965E-21	-20.2009
NO2(g)	4.3053E-15	-14.3660
Na(g)	2.6976E-80	-79.5690
O2(g)	2.0999E-01	-0.6778
Pb(g)	4.8007E-79	-78.3187
S2(g)	9.6658-207	-206.0148
SO2(g)	7.1284E-45	-44.1470
Si(g)	4.2257-221	-220.3741
SiF4(g)	1.1999E-32	-31.9209
Ti(g)	3.8019-231	-230.4200
TiCl4(g)	2.2800E-65	-64.6421
U(g)	5.2820-303	-302.2772
U2Cl10(g)	1.0837-207	-206.9651

```
U2Cl8(g)                    6.1285-220   -219.2126
U2F10(g)                    4.5905-153   -152.3381
UCl(g)                      4.2754-254   -253.3690
UCl2(g)                     1.0353-203   -202.9849
UCl3(g)                     5.4909-151   -150.2604
UCl4(g)                     1.5770-115   -114.8022
UCl5(g)                     2.3303-117   -116.6326
UCl6(g)                     6.3972-114   -113.1940
UF(g)                       1.2849-242   -241.8911
UF2(g)                      2.3183-200   -199.6348
UF3(g)                      1.0293-151   -150.9874
UF4(g)                      6.7459-100    -99.1710
UF5(g)                      2.0250E-89    -88.6936
UF6(g)                      5.9857E-93    -92.2229
UO(g)                       4.1715-218   -217.3797
UO2(g)                      7.7285-134   -133.1119
UO2Cl2(g)                   1.8500E-71    -70.7328
UO2F2(g)                    3.0052E-66    -65.5221
UO3(g)                      5.6845E-81    -80.2453
UOF4(g)                     2.0102E-77    -76.6968
Zn(g)                       8.0871E-89    -88.0922



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--- shifting e.s. solid(s) to the p.r.s. (shftz) ---

  not shifted -- Alunite
              - mass=  5.46888E-07
      shifted -- Hematite
              - old mass=  9.47943E-05, new mass=  9.47943E-07
      shifted -- Pyrolusite
              - old mass=  5.92648E-04, new mass=  5.92648E-06
      shifted -- Quartz
              - old mass=  1.88402E-02, new mass=  1.88402E-04
      shifted -- Rutile
              - old mass=  1.82495E-05, new mass=  8.00000E-07

Stepping to zi=  7.2133E-02, delzi=  1.0000E-09, nord= 0
  time =  6.9573E+02 d, dltime =  9.6451E-06 d
Steps completed =   101, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Alunite                 ) =     -6.2621

Stepping to zi=  7.2133E-02, delzi=  1.0000E-09, nord= 0
  time =  6.9573E+02 d, dltime =  9.6451E-06 d
Steps completed =   102, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Alunite                 ) =     -6.2621

Stepping to zi=  7.2133E-02, delzi=  1.0000E-09, nord= 0
  time =  6.9573E+02 d, dltime =  9.6451E-06 d
Steps completed =   103, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Alunite                 ) =     -6.2620

Stepping to zi=  7.2133E-02, delzi=  1.0000E-08, nord= 1
  time =  6.9573E+02 d, dltime =  9.6451E-05 d
Steps completed =   104, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Alunite                 ) =     -6.2618

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```
Reaction progress        =  7.21328573522347E-02
Log of reaction progress =      -1.1418669


Time =  6.011E+07 sec
     =  6.957E+02 days
     =  1.905E+00 years

Log sec =        7.779
Log days =       2.842
Log years =      0.280

Temperature    =     25.000 degrees C
total pressure =      1.013 bars


Flow-through system print following a discontinuity


     --- Summary of Instantaneously Precipitated Solid Phases ---
                 (defined by derivatives)

     --- Theoretical Rock Composition ---
                  g/kg

      O      5.340167E+01
      Al     8.804173E+00
      Fe     4.620939E-01
      H      6.577888E-01
      K      4.252638E+00
      Mn     6.389797E-02
      S      6.975500E+00
      Si     2.534075E+01
      Ti     4.148400E-02

      --- Oxide Percentages ---

   Oxide   Theoretical rock


    Total =     0.0000


   Phase/end-member     d mol/d zi    d grams/d zi   d vol (cc)/d zi

Alunite                    3.1761E-02   1.3156E+01   9.3250E+00
Hematite                   1.2081E-03   1.9292E-01   3.6573E-02
Pyrolusite                 3.3963E-04   2.9526E-02   1.6982E-01
Quartz                     2.6347E-01   1.5830E+01   5.9776E+00
Rutile                     2.5300E-04   2.0209E-02   4.7615E-03
fix     CO2(g)             0.0000E+00   0.0000E+00   0.0000E+00
fix     O2(g)             -8.8107E-04  -2.8193E-02   0.0000E+00


                --- Summary of Solid Phases (E.S.+P.R.S.) ---

   Phase/End-member        Log moles     Moles       Mass, g     Volume, cc

Alunite                      -6.2618   5.4730E-07   2.2670E-04   1.6069E-04
Hematite                     -4.0228   9.4881E-05   1.5152E-02   2.8724E-03
Pyrolusite                   -3.2233   5.9795E-04   5.1984E-02   2.9897E-01
Quartz                       -1.7211   1.9005E-02   1.1419E+00   4.3118E-01
```

```
Rutile                        -4.7387   1.8249E-05   1.4577E-03   3.4346E-04
fix     CO2(g)                 2.3010   2.0000E+02   8.8020E+03   0.0000E+00
fix     O2(g)                  2.3010   2.0000E+02   6.3997E+03   0.0000E+00


                          Mass, grams        Volume, cc

          Created         1.520292E+04       7.335315E-01
          Destroyed       0.000000E+00       0.000000E+00
          Net             1.520292E+04       7.335315E-01

         Warning-- these volume totals may be incomplete because
         of missing partial molar volume data in the data base




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Stepping to zi=  7.2133E-02, delzi=  1.0000E-07, nord= 2
  time =  6.9573E+02 d, dltime =  9.6451E-04 d
Steps completed =   105, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Alunite                 ) =     -6.2593

Stepping to zi=  7.2134E-02, delzi=  1.0000E-06, nord= 2
  time =  6.9574E+02 d, dltime =  9.6451E-03 d
Steps completed =   106, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Alunite                 ) =     -6.2349

Stepping to zi=  7.2144E-02, delzi=  1.0000E-05, nord= 2
  time =  6.9583E+02 d, dltime =  9.6451E-02 d
Steps completed =   107, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Alunite                 ) =     -6.0458

Stepping to zi=  7.2244E-02, delzi=  1.0000E-04, nord= 2
  time =  6.9680E+02 d, dltime =  9.6451E-01 d
Steps completed =   108, iter =  8, ncorr = 0
Most rapidly changing is zvclg1(Alunite                 ) =     -5.3898

Stepping to zi=  7.2642E-02, delzi=  3.9843E-04, nord= 3
  time =  7.0064E+02 d, dltime =  3.8429E+00 d
Steps completed =   109, iter =  6, ncorr = 0
Most rapidly changing is zvclg1(Alunite                 ) =     -4.7765

Stepping to zi=  7.3550E-02, delzi=  9.0792E-04, nord= 3
  time =  7.0940E+02 d, dltime =  8.7570E+00 d
Steps completed =   110, iter =  7, ncorr = 0
Most rapidly changing is zvclg1(Alunite                 ) =     -4.3414

Stepping to zi=  7.5366E-02, delzi=  1.8158E-03, nord= 3
  time =  7.2691E+02 d, dltime =  1.7514E+01 d
Steps completed =   111, iter = 15, ncorr = 0
Most rapidly changing is zvclg1(Alunite                 ) =     -3.9863

Stepping to zi=  7.8998E-02, delzi=  3.6317E-03, nord= 3
  time =  7.6194E+02 d, dltime =  3.5028E+01 d
Steps completed =   112, iter =  6, ncorr = 0
Most rapidly changing is zvclg1(Alunite                 ) =     -3.6607

Stepping to zi=  8.6261E-02, delzi=  7.2634E-03, nord= 4
  time =  8.3199E+02 d, dltime =  7.0056E+01 d
```

```
Steps completed =   113, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Alunite                 ) =     -3.3482

Stepping to zi=  1.0000E-01, delzi=  1.3739E-02, nord= 6
  time =  9.6451E+02 d, dltime =  1.3251E+02 d
Steps completed =   114, iter = 19, ncorr = 0
Most rapidly changing is zvclg1(Alunite                 ) =     -3.0544

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                    Reaction progress        =  9.99999999999944E-02
                    Log of reaction progress =      -1.0000000



                    Time =  8.333E+07 sec
                         =  9.645E+02 days
                         =  2.641E+00 years

                    Log sec =        7.921
                    Log days =       2.984
                    Log years =      0.422

                    Temperature    =     25.000 degrees C
                    total pressure =      1.013 bars


Step size is limited by the print requirement


                              --- Reactant Summary ---


    Reactant                   Moles     Delta moles    Mass, g    Delta Mass, g

 Tuff                       9.9900E+01   1.0000E-01   2.0566E+03   2.0586E+00


               Current total mass =  2.05659E+03 grams
               Delta total mass   =  2.05865E+00 grams
               Delta total volume =      0.00000 cc


    Reactant                Rel. Rate      Rate         Rate
                             mol/mol       mol/s      mol/s/cm2

 Tuff                       1.0000E+00   1.2000E-09   2.5000E-15


    Reactant                   Affinity   Surface Area
                               kcal/mol     mol/s/cm2

 Tuff                        999.00000   4.8000E+05


    Reactant                Rate Constants, mol/s/cm2

 Tuff
                   Forward    2.5000E-15
```

Affinity of the overall irreversible reaction= 0.000 kcal
Contributions from irreversible reactions
with no thermodynamic data are not included

--- Element Totals for the Aqueous Solution ---

Element	mg/kg soln.	Molality	Moles
O	8.864574E+05	5.560414E+01	5.559245E+01
Al	6.729672E+01	2.503111E-03	2.502585E-03
B	1.334767E-01	1.239060E-05	1.238800E-05
Ba	1.368656E-05	1.000210E-10	1.000000E-10
Ca	2.117277E+01	5.301814E-04	5.300700E-04
Ce	1.396441E-19	1.000210E-24	9.999994E-25
Cl	7.116183E+00	2.014423E-04	2.014000E-04
Cr	2.996213E+02	5.783022E-03	5.781807E-03
Cs	1.324589E-05	1.000210E-10	1.000000E-10
Cu	6.649911E-10	1.050221E-14	1.050000E-14
F	2.172741E+00	1.147741E-04	1.147500E-04
Fe	9.106340E-03	1.636428E-07	1.636084E-07
Gd	1.567216E-09	1.000210E-14	1.000000E-14
H	1.115051E+05	1.110230E+02	1.109997E+02
C	1.267905E-01	1.059401E-05	1.059178E-05
P	7.459586E+00	2.416984E-04	2.416476E-04
K	5.465674E+01	1.402939E-03	1.402644E-03
La	1.384388E-09	1.000210E-14	1.000000E-14
Li	6.917678E-07	1.000210E-10	1.000000E-10
Mg	5.036007E+00	2.079427E-04	2.078990E-04
Mn	3.239158E-01	5.917139E-06	5.915896E-06
Mo	2.179285E+02	2.279645E-03	2.279166E-03
N	1.982274E+00	1.420298E-04	1.420000E-04
Na	1.003569E+02	4.380920E-03	4.380000E-03
Nd	1.437554E-09	1.000210E-14	1.000000E-14
Ni	7.501740E+02	1.282776E-02	1.282506E-02
Pb	2.065038E-05	1.000210E-10	1.000000E-10
Pu	2.431802E-09	1.000210E-14	1.000000E-14
S	4.943160E+02	1.547080E-02	1.546755E-02
Si	2.803040E+00	1.001613E-04	1.001403E-04
Sm	1.498548E-09	1.000210E-14	1.000000E-14
Sr	8.732560E-06	1.000210E-10	1.000000E-10
Ti	1.078585E-05	2.260754E-10	2.260279E-10
U	2.372291E-09	1.000210E-14	1.000000E-14
V	4.767848E+00	9.392983E-05	9.391010E-05
Zn	6.517029E-06	1.000210E-10	1.000000E-10
Zr	9.091749E-16	1.000210E-20	1.000000E-20

Single ion activities and activity coefficients are here defined
with respect to the modified NBS pH scale

	pH	Eh	pe
modified NBS pH scale	3.0473	1.0388	1.7560E+01
rational pH scale	2.9702	1.0433	1.7637E+01

pHCl = 6.8354

Oxygen fugacity = 2.09991E-01
Log oxygen fugacity = -0.67780

Activity of water = 0.99937
Log activity of water = -0.00027

Ionic strength = 6.023404E-02 molal
Sum of molalities = 0.0421822446281
Osmotic coefficient = 0.82834

Mass of solution = 1.003371 kg
Mass of solutes = 0.003581 kg
Conc. of solutes = 0.356933 per cent (w/w)

Moles of solvent H2O = 5.54968E+01
Mass of solvent H2O = 9.99790E-01 kg

Species	Molality	Log molality	Log gamma	Log activity
SO4--	1.0580E-02	-1.9755	-0.3634	-2.3389
Ni++	1.0070E-02	-1.9970	-0.3495	-2.3465
Na+	4.2560E-03	-2.3710	-0.0993	-2.4703
HCrO4-	4.0483E-03	-2.3927	-0.0856	-2.4783
NiSO4(aq)	2.7564E-03	-2.5597	0.0000	-2.5597
MoO4--	2.2796E-03	-2.6421	-0.3522	-2.9943
K+	1.3579E-03	-2.8671	-0.1054	-2.9726
AlSO4+	1.2898E-03	-2.8895	-0.0993	-2.9887
H+	1.0711E-03	-2.9702	-0.0771	-3.0473
Al+++	1.0294E-03	-2.9874	-0.6724	-3.6598
Cr2O7--	8.6589E-04	-3.0625	-0.3634	-3.4259
HSO4-	4.7700E-04	-3.3215	-0.0856	-3.4071
Ca++	4.1911E-04	-3.3777	-0.3495	-3.7272
O2(aq)	2.6157E-04	-3.5824	0.0063	-3.5761
Cl-	2.0120E-04	-3.6964	-0.0917	-3.7881
H2PO4-	1.6048E-04	-3.7946	-0.0856	-3.8802
NO3-	1.4028E-04	-3.8530	-0.0917	-3.9448
Mg++	1.3237E-04	-3.8782	-0.3163	-4.1945
NaSO4-	1.2486E-04	-3.9036	-0.0856	-3.9891
AlF++	1.1369E-04	-3.9443	-0.3795	-4.3238
CaSO4(aq)	1.1093E-04	-3.9549	0.0000	-3.9549
SiO2(aq)	1.0016E-04	-3.9993	0.0000	-3.9993
MgSO4(aq)	7.5562E-05	-4.1217	0.0000	-4.1217
AlHPO4+	6.3260E-05	-4.1989	-0.0993	-4.2981
VO2+	5.2872E-05	-4.2768	-0.0993	-4.3760
KSO4-	4.5053E-05	-4.3463	-0.0856	-4.4319
VO(OH)3(aq)	2.3479E-05	-4.6293	0.0000	-4.6293
H3PO4(aq)	1.7469E-05	-4.7577	0.0000	-4.7577
B(OH)3(aq)	1.2391E-05	-4.9069	0.0000	-4.9069
CO2(aq)	1.0587E-05	-4.9752	0.0063	-4.9689
VO2SO4-	8.9260E-06	-5.0493	-0.0856	-5.1349
AlOH++	6.4501E-06	-5.1904	-0.3795	-5.5699
H2VO4-	5.1443E-06	-5.2887	-0.0856	-5.3742
Mn++	4.0422E-06	-5.3934	-0.3495	-5.7429
VO2(OH)2-	3.1881E-06	-5.4965	-0.0856	-5.5820
CrO4--	2.7413E-06	-5.5620	-0.3634	-5.9254
MnSO4(aq)	1.8670E-06	-5.7288	0.0000	-5.7288
NiNO3+	1.6145E-06	-5.7920	-0.0993	-5.8912
AlF2+	5.1463E-07	-6.2885	-0.0993	-6.3878
VO2HPO4-	3.1714E-07	-6.4987	-0.0856	-6.5843
H2CrO4(aq)	1.4290E-07	-6.8450	0.0000	-6.8450

FeHPO4+	1.4252E-07	-6.8461	-0.0993	-6.9454
CaNO3+	1.3407E-07	-6.8727	-0.0993	-6.9719
NiCl+	9.2998E-08	-7.0315	-0.0993	-7.1308
NaCl(aq)	9.2177E-08	-7.0354	0.0000	-7.0354
HCl(aq)	3.1233E-08	-7.5054	0.0000	-7.5054
HF(aq)	2.8633E-08	-7.5431	0.0000	-7.5431
KHSO4(aq)	2.8502E-08	-7.5451	0.0000	-7.5451
F-	2.6583E-08	-7.5754	-0.0886	-7.6640
HPO4--	2.1140E-08	-7.6749	-0.3634	-8.0383
FeOH++	1.4106E-08	-7.8506	-0.3795	-8.2301
MgCl+	9.5880E-09	-8.0183	-0.0993	-8.1175
Al(OH)2+	8.6876E-09	-8.0611	-0.0993	-8.1604
CaCl+	7.7336E-09	-8.1116	-0.0993	-8.2109
MnH2PO4+	6.7026E-09	-8.1738	-0.0993	-8.2730
HCO3-	6.5912E-09	-8.1810	-0.0856	-8.2666
CrO3Cl-	6.3792E-09	-8.1952	-0.0856	-8.2808
KCl(aq)	5.5554E-09	-8.2553	0.0000	-8.2553
HNO3(aq)	5.0755E-09	-8.2945	0.0000	-8.2945
Fe+++	3.8488E-09	-8.4147	-0.6724	-9.0871
Fe(OH)2+	2.7299E-09	-8.5638	-0.0993	-8.6631
VO2F(aq)	2.0418E-09	-8.6900	0.0000	-8.6900
CaHPO4(aq)	9.4310E-10	-9.0254	0.0000	-9.0254
VO3OH--	8.7319E-10	-9.0589	-0.3634	-9.4223
MnCl+	7.4059E-10	-9.1304	-0.0993	-9.2297
MgHPO4(aq)	4.7556E-10	-9.3228	0.0000	-9.3228
MnNO3+	4.0892E-10	-9.3884	-0.0993	-9.4876
FeSO4+	3.9891E-10	-9.3991	-0.0993	-9.4984
Cr+++	3.7808E-10	-9.4224	-0.6724	-10.0948
H2SO4(aq)	3.5130E-10	-9.4543	0.0000	-9.4543
NaHPO4-	3.1407E-10	-9.5030	-0.0856	-9.5885
Ti(OH)4(aq)	2.2608E-10	-9.6457	0.0000	-9.6457
H2P2O7--	1.8342E-10	-9.7366	-0.3634	-10.0999
AlF3(aq)	1.1176E-10	-9.9517	0.0000	-9.9517
Cs+	1.0001E-10	-9.9999	-0.1088	-10.1088

--- Summary of Instantaneously Precipitated Solid Phases ---
(defined by derivatives)

--- Theoretical Rock Composition ---
g/kg

O	5.338075E+01
Al	8.772283E+00
Fe	4.637636E-01
H	6.554062E-01
C	3.887560E-03
K	4.237235E+00
Mn	6.040617E-02
S	6.950234E+00
Si	2.543440E+01
Ti	4.163730E-02

--- Oxide Percentages ---

Oxide Theoretical rock

Total = 0.0000

Phase/end-member d mol/d zi d grams/d zi d vol (cc)/d zi

Alunite	3.1529E-02	1.3060E+01	9.2571E+00
Hematite	1.2080E-03	1.9290E-01	3.6570E-02
Pyrolusite	3.1989E-04	2.7810E-02	1.5994E-01
Quartz	2.6347E-01	1.5830E+01	5.9776E+00
Rutile	2.5300E-04	2.0209E-02	4.7615E-03
fix CO2(g)	9.4165E-05	4.1442E-03	0.0000E+00
fix O2(g)	-1.3189E-03	-4.2204E-02	0.0000E+00

--- Summary of Solid Phases (E.S.+P.R.S.) ---

Phase/End-member	Log moles	Moles	Mass, g	Volume, cc
Alunite	-3.0544	8.8237E-04	3.6549E-01	2.5906E-01
Hematite	-3.8909	1.2855E-04	2.0528E-02	3.8916E-03
Pyrolusite	-3.2167	6.0715E-04	5.2784E-02	3.0358E-01
Quartz	-1.5793	2.6347E-02	1.5830E+00	5.9776E-01
Rutile	-4.5969	2.5300E-05	2.0209E-03	4.7614E-04
fix CO2(g)	2.3010	2.0000E+02	8.8020E+03	0.0000E+00
fix O2(g)	2.3010	2.0000E+02	6.3997E+03	0.0000E+00

	Mass, grams	Volume, cc
Created	1.520373E+04	1.164768E+00
Destroyed	2.058647E+00	0.000000E+00
Net	1.520167E+04	1.164768E+00

Warning-- these volume totals may be incomplete because of missing partial molar volume data in the data base

--- Summary of Pure Mineral Saturation States ---

Mineral	Log Q/K	Aff, kcal	State
Alum-K	-6.432	-8.775	
Alunite	0.000	0.000	satd
Anglesite	-4.867	-6.639	
Anhydrite	-1.760	-2.401	
Arcanite	-6.483	-8.845	
BaCrO4	-6.362	-8.680	
BaZrO3	71.422	97.441	ssatd
Barite	-2.737	-3.734	
Bassanite	-2.405	-3.281	
Beidellite-Ca	-7.107	-9.695	
Beidellite-H	-6.539	-8.921	
Beidellite-K	-7.190	-9.809	
Beidellite-Mg	-7.146	-9.749	
Berlinite	-1.442	-1.968	
Boehmite	-2.083	-2.842	
Boric_acid	-4.749	-6.478	
CaSO4:0.5H2O(beta)	-2.573	-3.510	
CaV2O6	-5.824	-7.946	
CaZrO3	132.094	180.214	ssatd
Celestite	-7.174	-9.788	
Chalcedony	-0.271	-0.370	
Coesite	-0.810	-1.105	
CrO2	-1.917	-2.615	
Cristobalite(alpha)	-0.551	-0.751	
Cristobalite(beta)	-0.994	-1.356	

Crocoite	-3.588	-4.895	
Diaspore	-1.679	-2.290	
Epsomite	-4.573	-6.239	
Fe(OH)3	-5.602	-7.642	
Gibbsite	-2.275	-3.104	
Goethite	-0.480	-0.655	
Gypsum	-1.584	-2.161	
Hematite	0.000	0.000	satd
Hexahydrite	-4.808	-6.560	
Ice	-0.139	-0.190	
Jarosite	-7.259	-9.903	
K-Feldspar	-6.166	-8.413	
Kaolinite	-3.846	-5.247	
Kieserite	-6.267	-8.550	
Lopezite	-6.454	-8.805	
Manganite	-4.459	-6.084	
Maximum_Microcline	-6.166	-8.413	
Mercallite	-6.920	-9.441	
Mirabilite	-6.142	-8.380	
MnHPO4	-0.834	-1.138	
MnO2(gamma)	-1.518	-2.071	
MnV2O6	-7.126	-9.722	
Morenosite	-2.673	-3.647	
NiSO4:6H2O(alpha)	-2.680	-3.656	
Niter	-6.711	-9.156	
Nontronite-Ca	-0.787	-1.074	
Nontronite-H	-0.220	-0.300	
Nontronite-K	-0.871	-1.188	
Nontronite-Mg	-0.827	-1.128	
Nontronite-Na	-1.044	-1.424	
PbHPO4	-6.852	-9.348	
Pentahydrite	-5.148	-7.023	
Pyrolusite	0.000	0.000	satd
Pyrophyllite	-5.474	-7.468	
Quartz	0.000	0.000	satd
Rutile	0.000	0.000	satd
Shcherbinaite	-1.206	-1.645	
SiO2(am)	-1.286	-1.754	
SrZrO3	108.274	147.717	ssatd
Starkeyite	-5.535	-7.551	
Strengite	-2.736	-3.732	
Syngenite	-6.750	-9.209	
Thenardite	-6.970	-9.509	
Trevorite	-5.931	-8.092	
Tridymite	-0.172	-0.234	
fix CO2(g)	0.000	0.000	satd
fix O2(g)	0.000	0.000	satd

--- Summary of Solid Solutions ---

--- Carbonate-Calcite ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Calcite	4.5796E-01	-0.3392	0.0000	-0.3392
Magnesite	5.6049E-02	-1.2514	0.0000	-1.2514
Rhodochrosite	4.8598E-01	-0.3134	0.0000	-0.3134
Siderite	6.2054E-09	-8.2072	0.0000	-8.2072
Smithsonite	2.6490E-06	-5.5769	0.0000	-5.5769
Strontianite	1.0916E-05	-4.9619	0.0000	-4.9619

Mineral	Log Q/K	Aff, kcal	State
Carbonate-Calcite	-10.456	-14.265	
Calcite	-10.456	-14.265	
Magnesite	-10.456	-14.265	
Rhodochrosite	-10.456	-14.265	
Siderite	-10.456	-14.265	
Smithsonite	-10.456	-14.265	
Strontianite	-10.456	-14.265	

--- Clinoptilolite-hy-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-hy-Ca	4.4188E-01	-0.3547	0.0000	-0.3547
Clinoptilolite-hy-Cs	1.2943E-23	-22.8880	0.0000	-22.8880
Clinoptilolite-hy-K	5.5344E-01	-0.2569	0.0000	-0.2569
Clinoptilolite-hy-Na	4.6747E-03	-2.3302	0.0000	-2.3302
Clinoptilolite-hy-Sr	1.0511E-12	-11.9784	0.0000	-11.9784

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-hy-ss	-27.744	-37.851	
Clinoptilolite-hy-Ca	-27.744	-37.851	
Clinoptilolite-hy-Cs	-27.744	-37.851	
Clinoptilolite-hy-K	-27.744	-37.851	
Clinoptilolite-hy-Na	-27.744	-37.851	
Clinoptilolite-hy-Sr	-27.744	-37.851	

--- Clinoptilolite-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-Ca	4.2855E-01	-0.3680	-0.9053	-1.2733
Clinoptilolite-Cs	1.3128E-07	-6.8818	-16.9292	-23.8110
Clinoptilolite-K	4.5625E-01	-0.3408	-0.8384	-1.1791
Clinoptilolite-NH4	4.2829E-54	-53.3683	-131.2859	-184.6542
Clinoptilolite-Na	1.1501E-01	-0.9393	-2.3106	-3.2498
Clinoptilolite-Sr	1.8746E-04	-3.7271	-9.1686	-12.8957

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-ss	-26.826	-36.599	
Clinoptilolite-Ca	-26.826	-36.599	
Clinoptilolite-Cs	-26.826	-36.599	
Clinoptilolite-K	-26.826	-36.599	
Clinoptilolite-NH4	-26.826	-36.599	
Clinoptilolite-Na	-26.826	-36.599	
Clinoptilolite-Sr	-26.826	-36.599	

--- Saponite-tri ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Saponite-Ca	1.8232E-02	-1.7392	1.1652	-0.5739
Saponite-H	9.5468E-01	-0.0201	0.0135	-0.0066
Saponite-K	1.0183E-02	-1.9921	1.3347	-0.6574
Saponite-Mg	1.3848E-02	-1.8586	1.2453	-0.6133
Saponite-Na	3.0532E-03	-2.5153	1.6852	-0.8300

Mineral	Log Q/K	Aff, kcal	State
Saponite-tri	-32.495	-44.333	
Saponite-Ca	-32.495	-44.333	
Saponite-H	-32.495	-44.333	
Saponite-K	-32.495	-44.333	
Saponite-Mg	-32.495	-44.333	
Saponite-Na	-32.495	-44.333	

--- Smectite-di ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Beidellite-Ca	2.8551E-20	-19.5444	13.0947	-6.4496
Beidellite-K	1.5959E-20	-19.7970	13.2640	-6.5330
Beidellite-Mg	2.1686E-20	-19.6638	13.1748	-6.4891
Beidellite-Na	4.7813E-21	-20.3205	13.6147	-6.7057
Montmor-Ca	5.9621E-24	-23.2246	15.5605	-7.6641
Montmor-K	5.4425E-24	-23.2642	15.5870	-7.6772
Montmor-Mg	7.3599E-24	-23.1331	15.4992	-7.6339
Montmor-Na	1.5902E-24	-23.7986	15.9450	-7.8535
Nontronite-Ca	4.0217E-01	-0.3956	0.2650	-0.1305
Nontronite-K	2.2479E-01	-0.6482	0.4343	-0.2139
Nontronite-Mg	3.0569E-01	-0.5147	0.3449	-0.1699
Nontronite-Na	6.7350E-02	-1.1717	0.7850	-0.3866

Mineral	Log Q/K	Aff, kcal	State
Smectite-di	-0.657	-0.896	
Beidellite-Ca	-0.657	-0.896	
Beidellite-K	-0.657	-0.896	
Beidellite-Mg	-0.657	-0.896	
Beidellite-Na	-0.657	-0.896	
Montmor-Ca	-0.657	-0.896	
Montmor-K	-0.657	-0.896	
Montmor-Mg	-0.657	-0.896	
Montmor-Na	-0.657	-0.896	
Nontronite-Ca	-0.657	-0.896	
Nontronite-K	-0.657	-0.896	
Nontronite-Mg	-0.657	-0.896	
Nontronite-Na	-0.657	-0.896	

--- Lanthanide hydroxide ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
La(OH)3	1.2734E-05	-4.8950	0.0000	-4.8950
Ce(OH)3	3.7326E-15	-14.4280	0.0000	-14.4280
Nd(OH)3(c)	3.4544E-01	-0.4616	0.0000	-0.4616
Gd(OH)3	5.8773E-01	-0.2308	0.0000	-0.2308
Sm(OH)3	6.6819E-02	-1.1751	0.0000	-1.1751

Mineral	Log Q/K	Aff, kcal	State
Lanthanide hydroxide	-21.645	-29.530	
La(OH)3	-21.645	-29.530	
Ce(OH)3	-21.645	-29.530	
Nd(OH)3(c)	-21.645	-29.530	
Gd(OH)3	-21.645	-29.530	
Sm(OH)3	-21.645	-29.530	

--- Rhabdophane-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaPO4:H2O	4.1108E-01	-0.3861	0.0000	-0.3861
CePO4:H2O	3.8105E-11	-10.4190	0.0000	-10.4190
NdPO4:H2O	2.2250E-01	-0.6527	0.0000	-0.6527
GdPO4:H2O	1.5071E-01	-0.8219	0.0000	-0.8219
SmPO4:H2O	2.1571E-01	-0.6661	0.0000	-0.6661

Mineral	Log Q/K	Aff, kcal	State
Rhabdophane-ss	-7.607	-10.378	
LaPO4:H2O	-7.607	-10.378	
CePO4:H2O	-7.607	-10.378	
NdPO4:H2O	-7.607	-10.378	
GdPO4:H2O	-7.607	-10.378	
SmPO4:H2O	-7.607	-10.378	

--- Lanthanide fluoride ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaF3:0.5H2O	5.7193E-01	-0.2427	0.0000	-0.2427
CeF3:0.5H2O	8.4022E-11	-10.0756	0.0000	-10.0756
NdF3:0.5H2O	3.8972E-01	-0.4093	0.0000	-0.4093
GdF3:0.5H2O	8.3475E-03	-2.0784	0.0000	-2.0784
SmF3:0.5H2O	3.0011E-02	-1.5227	0.0000	-1.5227

Mineral	Log Q/K	Aff, kcal	State

Lanthanide fluoride	-19.401	-26.469
LaF3:0.5H2O	-19.401	-26.469
CeF3:0.5H2O	-19.401	-26.469
NdF3:0.5H2O	-19.401	-26.469
GdF3:0.5H2O	-19.401	-26.469
SmF3:0.5H2O	-19.401	-26.469

--- Summary of Gases ---

Gas	Fugacity	Log fugacity
Al(g)	3.4498-193	-192.4622
B(g)	8.5635-204	-203.0673
BF3(g)	8.4455E-35	-34.0734
C(g)	3.0917-190	-189.5098
CH4(g)	3.5250-146	-145.4528
CO(g)	6.0395E-49	-48.2190
CO2(g)	3.1623E-04	-3.5000
Ca(g)	1.1948-161	-160.9227
Chlorine	3.4754E-19	-18.4590
Cs(g)	3.5630E-88	-87.4482
Cu(g)	7.7692E-91	-90.1096
Fluorine	1.1749E-79	-78.9300
H2(g)	6.1112E-42	-41.2139
H2O(g)	2.5961E-02	-1.5857
H2S(g)	2.3866-132	-131.6222
HCl(g)	7.2296E-14	-13.1409
HF(g)	1.5003E-12	-11.8238
K(g)	2.4384E-81	-80.6129
Li(g)	7.9169-102	-101.1014
Mg(g)	2.7438-139	-138.5616
Nitrogen	2.5330E-10	-9.5964
NH3(g)	1.8332E-64	-63.7368
NO(g)	5.0115E-21	-20.3000
NO2(g)	3.4266E-15	-14.4651
Na(g)	4.0450E-80	-79.3931
O2(g)	2.0999E-01	-0.6778
Pb(g)	7.8149E-79	-78.1071
S2(g)	3.4006-207	-206.4684
SO2(g)	4.2282E-45	-44.3738
Si(g)	4.2257-221	-220.3741
SiF4(g)	2.2358E-32	-31.6506
Ti(g)	3.8019-231	-230.4200
TiCl4(g)	9.1623E-66	-65.0380
U(g)	8.1283-303	-302.0900
U2Cl10(g)	2.6273-208	-207.5805
U2Cl8(g)	2.3437-220	-219.6301
U2F10(g)	5.1520-152	-151.2880
UCl(g)	5.2384-254	-253.2808
UCl2(g)	1.0100-203	-202.9957
UCl3(g)	4.2648-151	-150.3701
UCl4(g)	9.7522-116	-115.0109
UCl5(g)	1.1474-117	-116.9403
UCl6(g)	2.5079-114	-113.6007
UF(g)	2.3102-242	-241.6363
UF2(g)	4.8698-200	-199.3125
UF3(g)	2.5262-151	-150.5975
UF4(g)	1.9343E-99	-98.7135
UF5(g)	6.7840E-89	-88.1685
UF6(g)	2.3429E-92	-91.6303

```
UO(g)                        6.4195-218   -217.1925
UO2(g)                       1.1893-133   -132.9247
UO2Cl2(g)                    1.8047E-71    -70.7436
UO2F2(g)                     6.3127E-66    -65.1998
UO3(g)                       8.7478E-81    -80.0581
UOF4(g)                      5.7641E-77    -76.2393
Zn(g)                        1.3124E-88    -87.8819



- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -


Stepping to zi=  1.1740E-01, delzi=  1.7401E-02, nord= 6
  time =  1.1323E+03 d, dltime =  1.6783E+02 d
Steps completed =   115, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -28.0870

Stepping to zi=  1.3380E-01, delzi=  1.6402E-02, nord= 6
  time =  1.2905E+03 d, dltime =  1.5820E+02 d
Steps completed =   116, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -28.6973

Stepping to zi=  1.4840E-01, delzi=  1.4592E-02, nord= 6
  time =  1.4313E+03 d, dltime =  1.4074E+02 d
Steps completed =   117, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -29.6735

Stepping to zi=  1.5092E-01, delzi=  2.5236E-03, nord= 6
  time =  1.4556E+03 d, dltime =  2.4340E+01 d
Steps completed =   118, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -29.9481

Stepping to zi=  1.5597E-01, delzi=  5.0471E-03, nord= 5
  time =  1.5043E+03 d, dltime =  4.8680E+01 d
iter =    5
      1 supersaturated pure minerals
      0 supersaturated solid solutions

               The most supersaturated phases           Affinity, kcal

                 1     421   Nontronite-H                  0.04213815
--- Go back to reduce the extent of supersaturation ---
--- Cutting step size and trying again ---

Stepping to zi=  1.5218E-01, delzi=  1.2618E-03, nord= 5
  time =  1.4678E+03 d, dltime =  1.2170E+01 d
Steps completed =   119, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -30.1094

Stepping to zi=  1.5449E-01, delzi=  2.3106E-03, nord= 5
  time =  1.4901E+03 d, dltime =  2.2286E+01 d
iter =   19
      1 supersaturated pure minerals
      0 supersaturated solid solutions

               The most supersaturated phases           Affinity, kcal

                 1     421   Nontronite-H                  0.01231533
--- Go back to reduce the extent of supersaturation ---
--- Cutting step size and trying again ---
```

```
Stepping to zi=  1.5276E-01, delzi=  5.7765E-04, nord= 5
  time =  1.4734E+03 d, dltime =  5.5714E+00 d
Steps completed =   120, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -30.1900

Stepping to zi=  1.5391E-01, delzi=  1.1553E-03, nord= 4
  time =  1.4845E+03 d, dltime =  1.1143E+01 d
Steps completed =   121, iter =  7, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -30.3669

Stepping to zi=  1.5435E-01, delzi=  4.3324E-04, nord= 6
  time =  1.4887E+03 d, dltime =  4.1786E+00 d
iter =    3
      1 supersaturated pure minerals
      0 supersaturated solid solutions

               The most supersaturated phases           Affinity, kcal

                 1     421   Nontronite-H                  0.00969365


  Attempted species assemblage no.   2

            1      1  H2O
            2      3  Al+++
            3      7  B(OH)3(aq)
            4      8  Ba++
            5     11  Ca++
            6     13  Ce+++
            7     14  Cl-
            8     16  CrO4--
            9     17  Cs+
           10     18  Cu++
           11     22  F-
           12     23  Fe++
           13     25  Gd+++
           14     26  H+
           15     28  HCO3-
           16     29  HPO4--
           17     35  K+
           18     37  La+++
           19     38  Li+
           20     40  Mg++
           21     41  Mn++
           22     42  MoO4--
           23     43  NO3-
           24     44  Na+
           25     45  Nd+++
           26     47  Ni++
           27     49  Pb++
           28     52  Pu++++
           29     58  SO4--
           30     62  SiO2(aq)
           31     63  Sm+++
           32     65  Sr++
           33     69  Ti(OH)4(aq)
           34     72  UO2++
           35     73  VO++
           36     78  Zn++
           37     79  Zr(OH)2++
           38     80  O2(g)
           39     20  Alunite
           40    252  Hematite
```

```
           41    421  Nontronite-H
           42    470  Pyrolusite
           43    475  Quartz
           44    482  Rutile
           45    689  fix     CO2(g)
           46    690  fix     O2(g)

--- Iteration has gone sour (iter=  16) ---
     The phase to be dropped is Hematite                  (  252)


  Attempted species assemblage no.   3

            1      1  H2O
            2      3  Al+++
            3      7  B(OH)3(aq)
            4      8  Ba++
            5     11  Ca++
            6     13  Ce+++
            7     14  Cl-
            8     16  CrO4--
            9     17  Cs+
           10     18  Cu++
           11     22  F-
           12     23  Fe++
           13     25  Gd+++
           14     26  H+
           15     28  HCO3-
           16     29  HPO4--
           17     35  K+
           18     37  La+++
           19     38  Li+
           20     40  Mg++
           21     41  Mn++
           22     42  MoO4--
           23     43  NO3-
           24     44  Na+
           25     45  Nd+++
           26     47  Ni++
           27     49  Pb++
           28     52  Pu++++
           29     58  SO4--
           30     62  SiO2(aq)
           31     63  Sm+++
           32     65  Sr++
           33     69  Ti(OH)4(aq)
           34     72  UO2++
           35     73  VO++
           36     78  Zn++
           37     79  Zr(OH)2++
           38     80  O2(g)
           39     20  Alunite
           40    421  Nontronite-H
           41    470  Pyrolusite
           42    475  Quartz
           43    482  Rutile
           44    689  fix     CO2(g)
           45    690  fix     O2(g)

--- Some of Alunite                 was unexpectedly destroyed in eqcalc ---
     Previous mass was  2.53447E-03
     Current mass is    2.53226E-03
     Amount destroyed was  2.20643E-06
```

```
                    That's too much--go back and first do a P.R.S. transfer
--- Some of Hematite                 was unexpectedly destroyed in eqcalc ---
     Previous mass was  9.97333E-05
     Current mass is    0.00000E+00
     Amount destroyed was  9.97333E-05
                    That's too much--go back and first do a P.R.S. transfer
--- Some of Quartz                   was unexpectedly destroyed in eqcalc ---
     Previous mass was  2.17351E-02
     Current mass is    2.14813E-02
     Amount destroyed was  2.53795E-04
                    That's too much--go back and first do a P.R.S. transfer
--- shifting e.s. solid(s) to the p.r.s. (shftz) ---

      shifted -- Alunite
              - old mass=  2.53447E-03, new mass=  2.53447E-05
      shifted -- Hematite
              - old mass=  9.97333E-05, new mass=  9.97333E-07
      shifted -- Pyrolusite
              - old mass=  3.11182E-05, new mass=  8.00000E-07
      shifted -- Quartz
              - old mass=  2.17351E-02, new mass=  2.17351E-04
      shifted -- Rutile
              - old mass=  2.14905E-05, new mass=  8.00000E-07

Stepping to zi=  1.5402E-01, delzi=  1.0831E-04, nord= 6
  time =  1.4855E+03 d, dltime =  1.0446E+00 d
Steps completed =   122, iter =  7, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -3.6093

Stepping to zi=  1.5424E-01, delzi=  2.1662E-04, nord= 3
  time =  1.4876E+03 d, dltime =  2.0893E+00 d
iter =    9
      1 supersaturated pure minerals
      0 supersaturated solid solutions

               The most supersaturated phases           Affinity, kcal

                 1     421   Nontronite-H                  0.00775764


  Attempted species assemblage no.   2

             1      1  H2O
             2      3  Al+++
             3      7  B(OH)3(aq)
             4      8  Ba++
             5     11  Ca++
             6     13  Ce+++
             7     14  Cl-
             8     16  CrO4--
             9     17  Cs+
            10     18  Cu++
            11     22  F-
            12     23  Fe++
            13     25  Gd+++
            14     26  H+
            15     28  HCO3-
            16     29  HPO4--
            17     35  K+
            18     37  La+++
            19     38  Li+
            20     40  Mg++
            21     41  Mn++
```

```
            22     42  MoO4--
            23     43  NO3-
            24     44  Na+
            25     45  Nd+++
            26     47  Ni++
            27     49  Pb++
            28     52  Pu++++
            29     58  SO4--
            30     62  SiO2(aq)
            31     63  Sm+++
            32     65  Sr++
            33     69  Ti(OH)4(aq)
            34     72  UO2++
            35     73  VO++
            36     78  Zn++
            37     79  Zr(OH)2++
            38     80  O2(g)
            39     20  Alunite
            40    252  Hematite
            41    421  Nontronite-H
            42    470  Pyrolusite
            43    475  Quartz
            44    482  Rutile
            45    689  fix     CO2(g)
            46    690  fix     O2(g)

--- Iteration has gone sour (iter=  16) ---
     The phase to be dropped is Hematite                  (  252)


  Attempted species assemblage no.   3

             1      1  H2O
             2      3  Al+++
             3      7  B(OH)3(aq)
             4      8  Ba++
             5     11  Ca++
             6     13  Ce+++
             7     14  Cl-
             8     16  CrO4--
             9     17  Cs+
            10     18  Cu++
            11     22  F-
            12     23  Fe++
            13     25  Gd+++
            14     26  H+
            15     28  HCO3-
            16     29  HPO4--
            17     35  K+
            18     37  La+++
            19     38  Li+
            20     40  Mg++
            21     41  Mn++
            22     42  MoO4--
            23     43  NO3-
            24     44  Na+
            25     45  Nd+++
            26     47  Ni++
            27     49  Pb++
            28     52  Pu++++
            29     58  SO4--
            30     62  SiO2(aq)
            31     63  Sm+++
```

```
            32     65  Sr++
            33     69  Ti(OH)4(aq)
            34     72  UO2++
            35     73  VO++
            36     78  Zn++
            37     79  Zr(OH)2++
            38     80  O2(g)
            39     20  Alunite
            40    421  Nontronite-H
            41    470  Pyrolusite
            42    475  Quartz
            43    482  Rutile
            44    689  fix     CO2(g)
            45    690  fix     O2(g)

--- Some of Hematite                 was unexpectedly destroyed in eqcalc ---
     Previous mass was  1.12813E-06
     Current mass is    0.00000E+00
     Amount destroyed was  1.12813E-06
                    That's too much--go back and first do a P.R.S. transfer
--- shifting e.s. solid(s) to the p.r.s. (shftz) ---

      shifted -- Alunite
              - old mass=  2.83954E-05, new mass=  8.00000E-07
      shifted -- Hematite
              - old mass=  1.12813E-06, new mass=  8.00000E-07
      shifted -- Pyrolusite
              - old mass=  8.28109E-07, new mass=  8.00000E-07
      shifted -- Quartz
              - old mass=  2.45887E-04, new mass=  2.45887E-06
      shifted -- Rutile
              - old mass=  8.27402E-07, new mass=  8.00000E-07

Stepping to zi=  1.5408E-01, delzi=  5.4154E-05, nord= 3
  time =  1.4861E+03 d, dltime =  5.2232E-01 d
Steps completed =   123, iter =  6, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -4.7766

Stepping to zi=  1.5418E-01, delzi=  1.0831E-04, nord= 3
  time =  1.4871E+03 d, dltime =  1.0446E+00 d
iter =    9
      1 supersaturated pure minerals
      0 supersaturated solid solutions

               The most supersaturated phases           Affinity, kcal

                 1     421   Nontronite-H                  0.00679920


  Attempted species assemblage no.   2

            1      1  H2O
            2      3  Al+++
            3      7  B(OH)3(aq)
            4      8  Ba++
            5     11  Ca++
            6     13  Ce+++
            7     14  Cl-
            8     16  CrO4--
            9     17  Cs+
           10     18  Cu++
           11     22  F-
           12     23  Fe++
```

```
            13     25  Gd+++
            14     26  H+
            15     28  HCO3-
            16     29  HPO4--
            17     35  K+
            18     37  La+++
            19     38  Li+
            20     40  Mg++
            21     41  Mn++
            22     42  MoO4--
            23     43  NO3-
            24     44  Na+
            25     45  Nd+++
            26     47  Ni++
            27     49  Pb++
            28     52  Pu++++
            29     58  SO4--
            30     62  SiO2(aq)
            31     63  Sm+++
            32     65  Sr++
            33     69  Ti(OH)4(aq)
            34     72  UO2++
            35     73  VO++
            36     78  Zn++
            37     79  Zr(OH)2++
            38     80  O2(g)
            39     20  Alunite
            40    252  Hematite
            41    421  Nontronite-H
            42    470  Pyrolusite
            43    475  Quartz
            44    482  Rutile
            45    689  fix     CO2(g)
            46    690  fix     O2(g)

--- Iteration has gone sour (iter=  16) ---
     The phase to be dropped is Hematite                  (  252)


  Attempted species assemblage no.   3

             1      1  H2O
             2      3  Al+++
             3      7  B(OH)3(aq)
             4      8  Ba++
             5     11  Ca++
             6     13  Ce+++
             7     14  Cl-
             8     16  CrO4--
             9     17  Cs+
            10     18  Cu++
            11     22  F-
            12     23  Fe++
            13     25  Gd+++
            14     26  H+
            15     28  HCO3-
            16     29  HPO4--
            17     35  K+
            18     37  La+++
            19     38  Li+
            20     40  Mg++
            21     41  Mn++
            22     42  MoO4--
```

```
23     43  NO3-
24     44  Na+
25     45  Nd+++
26     47  Ni++
27     49  Pb++
28     52  Pu++++
29     58  SO4--
30     62  SiO2(aq)
31     63  Sm+++
32     65  Sr++
33     69  Ti(OH)4(aq)
34     72  UO2++
35     73  VO++
36     78  Zn++
37     79  Zr(OH)2++
38     80  O2(g)
39     20  Alunite
40    421  Nontronite-H
41    470  Pyrolusite
42    475  Quartz
43    482  Rutile
44    689  fix     CO2(g)
45    690  fix     O2(g)

Steps completed =   124, iter = 12, ncorr = 0

- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -


                    Reaction progress        =  1.54184112349815E-01
                    Log of reaction progress =      -0.8119604



                    Time =  1.285E+08 sec
                         =  1.487E+03 days
                         =  4.071E+00 years

                    Log sec =        8.109
                    Log days =       3.172
                    Log years =      0.610

                    Temperature    =     25.000 degrees C
                    total pressure =      1.013 bars


Change in the product phase assemblage


                              --- Reactant Summary ---


    Reactant                  Moles     Delta moles    Mass, g    Delta Mass, g

 Tuff                       9.9846E+01   1.5418E-01   2.0555E+03   3.1741E+00


               Current total mass =  2.05547E+03 grams
               Delta total mass   =  3.17411E+00 grams
               Delta total volume =      0.00000 cc
```

Reactant	Rel. Rate mol/mol	Rate mol/s	Rate mol/s/cm2
Tuff	1.0000E+00	1.2000E-09	2.5000E-15

Reactant	Affinity kcal/mol	Surface Area mol/s/cm2
Tuff	999.00000	4.8000E+05

Reactant Rate Constants, mol/s/cm2

Tuff
Forward 2.5000E-15

Affinity of the overall irreversible reaction= 0.000 kcal
Contributions from irreversible reactions
with no thermodynamic data are not included

--- Element Totals for the Aqueous Solution ---

Element	mg/kg soln.	Molality	Moles
O	8.865661E+05	5.559096E+01	5.557481E+01
Al	8.421414E+00	3.131231E-04	3.130321E-04
B	1.335354E-01	1.239160E-05	1.238800E-05
Ba	1.369258E-05	1.000291E-10	1.000000E-10
Ca	2.563600E+01	6.417131E-04	6.415267E-04
Ce	1.397056E-19	1.000290E-24	9.999993E-25
Cl	7.119315E+00	2.014585E-04	2.014000E-04
Cr	2.997532E+02	5.783487E-03	5.781807E-03
Cs	1.325172E-05	1.000291E-10	1.000000E-10
Cu	6.652838E-10	1.050305E-14	1.050000E-14
F	2.173698E+00	1.147833E-04	1.147500E-04
Fe	7.869507E-04	1.413658E-08	1.413248E-08
Gd	1.567906E-09	1.000290E-14	9.999999E-15
H	1.115442E+05	1.110220E+02	1.109898E+02
C	1.272926E-01	1.063214E-05	1.062905E-05
P	7.535661E+00	2.440755E-04	2.440046E-04
K	3.552740E+01	9.115958E-04	9.113309E-04
La	1.384997E-09	1.000291E-14	9.999999E-15
Li	6.920723E-07	1.000291E-10	1.000000E-10
Mg	6.682222E+00	2.758176E-04	2.757375E-04
Mn	2.044911E-02	3.734203E-07	3.733118E-07
Mo	2.180244E+02	2.279828E-03	2.279166E-03
N	1.983147E+00	1.420413E-04	1.420000E-04
Na	1.300585E+02	5.675457E-03	5.673808E-03
Nd	1.438186E-09	1.000290E-14	9.999999E-15
Ni	7.505041E+02	1.282879E-02	1.282506E-02
Pb	2.065947E-05	1.000291E-10	1.000000E-10
Pu	2.432872E-09	1.000290E-14	9.999999E-15
S	3.884125E+02	1.215193E-02	1.214840E-02
Si	2.804050E+00	1.001614E-04	1.001323E-04
Sm	1.499207E-09	1.000290E-14	9.999999E-15
Sr	8.736403E-06	1.000291E-10	1.000000E-10
Ti	1.079081E-05	2.260979E-10	2.260322E-10
U	2.373335E-09	1.000291E-14	9.999999E-15
V	4.769945E+00	9.393736E-05	9.391008E-05

Zn	6.519897E-06	1.000291E-10	1.000000E-10
Zr	9.095748E-16	1.000290E-20	9.999997E-21

Single ion activities and activity coefficients are here defined
with respect to the modified NBS pH scale

	pH	Eh	pe
modified NBS pH scale	3.6335	1.0041	1.6973E+01
rational pH scale	3.5596	1.0085	1.7047E+01

pHCl = 7.4172

Oxygen fugacity = 2.09991E-01
Log oxygen fugacity = -0.67780

Activity of water = 0.99942
Log activity of water = -0.00025

Ionic strength = 5.261884E-02 molal
Sum of molalities = 0.0382603892539
Osmotic coefficient = 0.84094

Mass of solution = 1.002930 kg
Mass of solutes = 0.003220 kg
Conc. of solutes = 0.321101 per cent (w/w)

Moles of solvent H2O = 5.54923E+01
Mass of solvent H2O = 9.99710E-01 kg

Species	Molality	Log molality	Log gamma	Log activity
Ni++	1.0252E-02	-1.9892	-0.3333	-2.3225
SO4--	8.9822E-03	-2.0466	-0.3459	-2.3925
Na+	5.5315E-03	-2.2572	-0.0942	-2.3513
HCrO4-	4.0657E-03	-2.3909	-0.0817	-2.4726
NiSO4(aq)	2.5745E-03	-2.5893	0.0000	-2.5893
MoO4--	2.2798E-03	-2.6421	-0.3357	-2.9778
K+	8.8551E-04	-3.0528	-0.0997	-3.1525
Cr2O7--	8.5373E-04	-3.0687	-0.3459	-3.4145
Ca++	5.1619E-04	-3.2872	-0.3333	-3.6205
H+	2.7570E-04	-3.5596	-0.0739	-3.6335
O2(aq)	2.6205E-04	-3.5816	0.0055	-3.5761
H2PO4-	2.1064E-04	-3.6765	-0.0817	-3.7582
Cl-	2.0120E-04	-3.6964	-0.0873	-3.7836
Mg++	1.8141E-04	-3.7413	-0.3030	-4.0443
NaSO4-	1.4385E-04	-3.8421	-0.0817	-3.9238
NO3-	1.4017E-04	-3.8534	-0.0873	-3.9406
CaSO4(aq)	1.2534E-04	-3.9019	0.0000	-3.9019
HSO4-	1.0835E-04	-3.9652	-0.0817	-4.0469
AlF++	1.0340E-04	-3.9855	-0.3606	-4.3461
SiO2(aq)	1.0016E-04	-3.9993	0.0000	-3.9993
AlSO4+	9.4418E-05	-4.0249	-0.0942	-4.1191
MgSO4(aq)	9.4390E-05	-4.0251	0.0000	-4.0251
Al+++	8.1053E-05	-4.0912	-0.6454	-4.7366

VO(OH)3(aq)	3.0914E-05	-4.5098	0.0000	-4.5098
AlHPO4+	2.6759E-05	-4.5725	-0.0942	-4.6667
KSO4-	2.6080E-05	-4.5837	-0.0817	-4.6654
H2VO4-	2.5894E-05	-4.5868	-0.0817	-4.6685
VO2+	1.7838E-05	-4.7487	-0.0942	-4.8428
VO2(OH)2-	1.6047E-05	-4.7946	-0.0817	-4.8763
B(OH)3(aq)	1.2392E-05	-4.9069	0.0000	-4.9069
CO2(aq)	1.0607E-05	-4.9744	0.0055	-4.9689
CrO4--	1.0289E-05	-4.9876	-0.3459	-5.3335
H3PO4(aq)	5.9979E-06	-5.2220	0.0000	-5.2220
AlF2+	5.4775E-06	-5.2614	-0.0942	-5.3556
VO2SO4-	2.6693E-06	-5.5736	-0.0817	-5.6553
AlOH++	1.9959E-06	-5.6999	-0.3606	-6.0605
NiNO3+	1.7023E-06	-5.7690	-0.0942	-5.8632
VO2HPO4-	5.4803E-07	-6.2612	-0.0817	-6.3429
F-	2.9850E-07	-6.5251	-0.0844	-6.6095
Mn++	2.6180E-07	-6.5820	-0.3333	-6.9154
CaNO3+	1.7101E-07	-6.7670	-0.0942	-6.8612
NaCl(aq)	1.2246E-07	-6.9120	0.0000	-6.9120
MnSO4(aq)	1.1093E-07	-6.9550	0.0000	-6.9550
HPO4--	1.0370E-07	-6.9842	-0.3459	-7.3301
NiCl+	9.8136E-08	-7.0082	-0.0942	-7.1024
HF(aq)	8.4160E-08	-7.0749	0.0000	-7.0749
H2CrO4(aq)	3.7540E-08	-7.4255	0.0000	-7.4255
HCO3-	2.5200E-08	-7.5986	-0.0817	-7.6803
VO3OH--	1.6427E-08	-7.7845	-0.3459	-8.1303
AlF3(aq)	1.3643E-08	-7.8651	0.0000	-7.8651
MgCl+	1.3532E-08	-7.8686	-0.0942	-7.9628
FeHPO4+	1.2468E-08	-7.9042	-0.0942	-7.9984
Al(OH)2+	1.0704E-08	-7.9704	-0.0942	-8.0646
CaCl+	9.8720E-09	-8.0056	-0.0942	-8.0998
HCl(aq)	8.1816E-09	-8.0872	0.0000	-8.0872
VO2F(aq)	7.9008E-09	-8.1023	0.0000	-8.1023
CaHPO4(aq)	6.1572E-09	-8.2106	0.0000	-8.2106
KHSO4(aq)	4.3158E-09	-8.3649	0.0000	-8.3649
KCl(aq)	3.7086E-09	-8.4308	0.0000	-8.4308
MgHPO4(aq)	3.4327E-09	-8.4644	0.0000	-8.4644
NaHPO4-	2.0908E-09	-8.6797	-0.0817	-8.7614
HVO4--	1.7695E-09	-8.7522	-0.3459	-9.0980
CrO3Cl-	1.6781E-09	-8.7752	-0.0817	-8.8569
HNO3(aq)	1.3285E-09	-8.8766	0.0000	-8.8766
FeOH++	9.0275E-10	-9.0444	-0.3606	-9.4051
Fe(OH)2+	6.9564E-10	-9.1576	-0.0942	-9.2518
MgF+	6.2061E-10	-9.2072	-0.0942	-9.3014
MnH2PO4+	5.8970E-10	-9.2294	-0.0942	-9.3236
CaF+	3.5146E-10	-9.4541	-0.0942	-9.5483
H2P2O7--	3.0891E-10	-9.5102	-0.3459	-9.8560
KHPO4-	2.3939E-10	-9.6209	-0.0817	-9.7026
Ti(OH)4(aq)	2.2610E-10	-9.6457	0.0000	-9.6457
HPO3F-	1.4935E-10	-9.8258	-0.0817	-9.9075
NaHCO3(aq)	1.3256E-10	-9.8776	0.0000	-9.8776
NaF(aq)	1.1004E-10	-9.9584	0.0000	-9.9584
Cs+	1.0002E-10	-9.9999	-0.1028	-10.1027

--- Summary of Instantaneously Precipitated Solid Phases ---
(defined by derivatives)

--- Theoretical Rock Composition ---
g/kg

O	5.337577E+01
Al	8.218089E+00

Fe	4.872323E-01
H	6.140006E-01
K	3.969545E+00
Mn	5.137457E-02
S	6.511149E+00
Si	2.672921E+01
Ti	4.375697E-02

--- Oxide Percentages ---

Oxide Theoretical rock

Total = 0.0000

Phase/end-member	d mol/d zi	d grams/d zi	d vol (cc)/d zi
Alunite	2.8107E-02	1.1642E+01	8.2521E+00
Nontronite-H	1.2076E-03	5.0480E-01	6.0381E-01
Pyrolusite	2.5888E-04	2.2506E-02	1.2944E-01
Quartz	2.6347E-01	1.5830E+01	5.9776E+00
Rutile	2.5300E-04	2.0209E-02	4.7615E-03
fix CO2(g)	-2.7294E-06	-1.2012E-04	0.0000E+00
fix O2(g)	-7.5488E-04	-2.4155E-02	0.0000E+00

--- Summary of Solid Phases (E.S.+P.R.S.) ---

Phase/End-member	Log moles	Moles	Mass, g	Volume, cc
Alunite	-2.5948	2.5419E-03	1.0529E+00	7.4631E-01
Hematite	-3.7144	1.9300E-04	3.0820E-02	5.8428E-03
Nontronite-H	-6.0016	9.9623E-07	4.1644E-04	4.9812E-04
Pyrolusite	-3.2054	6.2321E-04	5.4180E-02	3.1160E-01
Quartz	-1.3913	4.0619E-02	2.4406E+00	9.2157E-01
Rutile	-4.4088	3.9008E-05	3.1159E-03	7.3414E-04
fix CO2(g)	2.3010	2.0000E+02	8.8020E+03	0.0000E+00
fix O2(g)	2.3010	2.0000E+02	6.3997E+03	0.0000E+00

	Mass, grams	Volume, cc
Created	1.520529E+04	1.986563E+00
Destroyed	3.174106E+00	0.000000E+00
Net	1.520211E+04	1.986563E+00

Warning-- these volume totals may be incomplete because of missing partial molar volume data in the data base

--- Summary of Pure Mineral Saturation States ---

Mineral	Log Q/K	Aff, kcal	State
Albite	-7.317	-9.982	
Albite_low	-7.317	-9.982	
Alunite	0.000	0.000	satd
Analcime	-7.151	-9.756	
Anglesite	-4.901	-6.687	
Anhydrite	-1.707	-2.328	

Arcanite	-6.897	-9.409	
BaCrO4	-5.752	-7.848	
BaZrO3	72.615	99.068	ssatd
Barite	-2.773	-3.783	
Bassanite	-2.352	-3.208	
Beidellite-Ca	-5.306	-7.240	
Beidellite-H	-4.950	-6.754	
Beidellite-K	-5.467	-7.458	
Beidellite-Mg	-5.339	-7.284	
Beidellite-Na	-5.541	-7.559	
Berlinite	-1.225	-1.671	
Boehmite	-1.401	-1.911	
Boric_acid	-4.749	-6.478	
CaSO4:0.5H2O(beta)	-2.520	-3.438	
CaV2O6	-4.306	-5.875	
CaZrO3	133.376	181.962	ssatd
Celestite	-7.200	-9.823	
Chalcedony	-0.271	-0.370	
Coesite	-0.810	-1.105	
Corundum	-5.985	-8.165	
CrO2	-2.498	-3.408	
Cristobalite(alpha)	-0.551	-0.751	
Cristobalite(beta)	-0.994	-1.356	
Crocoite	-2.977	-4.062	
Diaspore	-0.997	-1.360	
Epsomite	-4.476	-6.107	
Fe(OH)3	-5.604	-7.646	
Fluorite	-6.802	-9.281	
GdPO4:H2O	-7.076	-9.653	
Gibbsite	-1.593	-2.173	
Goethite	-0.483	-0.659	
Gypsum	-1.531	-2.089	
Hematite	-0.005	-0.007	
Hexahydrite	-4.711	-6.428	
Ice	-0.139	-0.190	
K-Feldspar	-5.078	-6.928	
Kaolinite	-2.482	-3.386	
Kieserite	-6.170	-8.418	
LaPO4:H2O	-6.641	-9.060	
Lopezite	-6.802	-9.280	
Manganite	-4.459	-6.084	
Maximum_Microcline	-5.078	-6.928	
Mirabilite	-5.958	-8.128	
MnHPO4	-1.298	-1.771	
MnO2(gamma)	-1.518	-2.071	
MnV2O6	-6.887	-9.396	
Montmor-Ca	-6.535	-8.915	
Montmor-K	-6.625	-9.038	
Montmor-Mg	-6.497	-8.864	
Montmor-Na	-6.702	-9.144	
Morenosite	-2.703	-3.687	
Muscovite	-6.613	-9.021	
NdPO4:H2O	-6.907	-9.424	
NiSO4:6H2O(alpha)	-2.709	-3.696	
Niter	-6.887	-9.396	
Nontronite-Ca	-0.356	-0.486	
Nontronite-H	0.000	0.000	satd
Nontronite-K	-0.517	-0.705	
Nontronite-Mg	-0.388	-0.530	
Nontronite-Na	-0.591	-0.806	
PbHPO4	-6.125	-8.356	
Pentahydrite	-5.051	-6.891	
Plumbogummite	-5.652	-7.711	

Pyrolusite	0.000	0.000	satd
Pyrophyllite	-4.110	-5.607	
Quartz	0.000	0.000	satd
Rutile	0.000	0.000	satd
Sanidine_high	-6.277	-8.564	
Shcherbinaite	-0.967	-1.319	
SiO2(am)	-1.286	-1.754	
SmPO4:H2O	-6.919	-9.440	
SrZrO3	109.476	149.357	ssatd
Starkeyite	-5.438	-7.419	
Strengite	-3.202	-4.369	
Syngenite	-7.111	-9.701	
Thenardite	-6.786	-9.258	
Trevorite	-4.740	-6.466	
Tridymite	-0.171	-0.234	
fix CO2(g)	0.000	0.000	satd
fix O2(g)	0.000	0.000	satd

--- Summary of Solid Solutions ---

--- Carbonate-Calcite ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Calcite	8.3953E-01	-0.0760	0.0000	-0.0760
Magnesite	1.1360E-01	-0.9446	0.0000	-0.9446
Rhodochrosite	4.6849E-02	-1.3293	0.0000	-1.3293
Siderite	5.9482E-10	-9.2256	0.0000	-9.2256
Smithsonite	3.9437E-06	-5.4041	0.0000	-5.4041
Strontianite	1.6685E-05	-4.7777	0.0000	-4.7777

Mineral	Log Q/K	Aff, kcal	State
Carbonate-Calcite	-9.440	-12.879	
Calcite	-9.440	-12.879	
Magnesite	-9.440	-12.879	
Rhodochrosite	-9.440	-12.879	
Siderite	-9.440	-12.879	
Smithsonite	-9.440	-12.879	
Strontianite	-9.440	-12.879	

--- Clinoptilolite-hy-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-hy-Ca	8.2485E-01	-0.0836	0.0000	-0.0836
Clinoptilolite-hy-Cs	1.6567E-23	-22.7808	0.0000	-22.7808
Clinoptilolite-hy-K	1.6042E-01	-0.7947	0.0000	-0.7947
Clinoptilolite-hy-Na	1.4731E-02	-1.8318	0.0000	-1.8318
Clinoptilolite-hy-Sr	1.4318E-12	-11.8441	0.0000	-11.8441

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-hy-ss	-23.445	-31.985	

Clinoptilolite-hy-Ca	-23.445	-31.985
Clinoptilolite-hy-Cs	-23.445	-31.985
Clinoptilolite-hy-K	-23.445	-31.985
Clinoptilolite-hy-Na	-23.445	-31.985
Clinoptilolite-hy-Sr	-23.445	-31.985

--- Clinoptilolite-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-Ca	5.1703E-01	-0.2865	-0.7048	-0.9912
Clinoptilolite-Cs	1.4203E-07	-6.8476	-16.8451	-23.6928
Clinoptilolite-K	3.2134E-01	-0.4930	-1.2129	-1.7059
Clinoptilolite-NH4	3.0841E-55	-54.5109	-134.0968	-188.6076
Clinoptilolite-Na	1.6143E-01	-0.7920	-1.9484	-2.7404
Clinoptilolite-Sr	2.0647E-04	-3.6851	-9.0654	-12.7506

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-ss	-22.538	-30.748	
Clinoptilolite-Ca	-22.538	-30.748	
Clinoptilolite-Cs	-22.538	-30.748	
Clinoptilolite-K	-22.538	-30.748	
Clinoptilolite-NH4	-22.538	-30.748	
Clinoptilolite-Na	-22.538	-30.748	
Clinoptilolite-Sr	-22.538	-30.748	

--- Saponite-tri ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Saponite-Ca	6.9792E-02	-1.1562	0.7746	-0.3815
Saponite-H	8.3809E-01	-0.0767	0.0514	-0.0253
Saponite-K	2.2782E-02	-1.6424	1.1004	-0.5420
Saponite-Mg	5.5741E-02	-1.2538	0.8401	-0.4138
Saponite-Na	1.3594E-02	-1.8667	1.2507	-0.6160

Mineral	Log Q/K	Aff, kcal	State
Saponite-tri	-28.283	-38.586	
Saponite-Ca	-28.283	-38.586	
Saponite-H	-28.283	-38.586	
Saponite-K	-28.283	-38.586	
Saponite-Mg	-28.283	-38.586	
Saponite-Na	-28.283	-38.586	

--- Smectite-di ---

Ideal solution

Component	x	Log x	Log lambda	Log activity

Beidellite-Ca	4.3016E-16	-15.3664	10.2955	-5.0709
Beidellite-K	1.4052E-16	-15.8523	10.6210	-5.2313
Beidellite-Mg	3.4356E-16	-15.4640	10.3609	-5.1031
Beidellite-Na	8.3784E-17	-16.0768	10.7715	-5.3054
Montmor-Ca	8.1700E-20	-19.0878	12.7888	-6.2990
Montmor-K	4.3586E-20	-19.3607	12.9716	-6.3890
Montmor-Mg	1.0605E-19	-18.9745	12.7129	-6.2616
Montmor-Na	2.5344E-20	-19.5961	13.1294	-6.4667
Nontronite-Ca	4.3091E-01	-0.3656	0.2450	-0.1207
Nontronite-K	1.4076E-01	-0.8515	0.5705	-0.2810
Nontronite-Mg	3.4440E-01	-0.4629	0.3102	-0.1528
Nontronite-Na	8.3930E-02	-1.0761	0.7210	-0.3551

Mineral	Log Q/K	Aff, kcal	State
Smectite-di	-0.236	-0.321	
Beidellite-Ca	-0.236	-0.321	
Beidellite-K	-0.236	-0.321	
Beidellite-Mg	-0.236	-0.321	
Beidellite-Na	-0.236	-0.321	
Montmor-Ca	-0.236	-0.321	
Montmor-K	-0.236	-0.321	
Montmor-Mg	-0.236	-0.321	
Montmor-Na	-0.236	-0.321	
Nontronite-Ca	-0.236	-0.321	
Nontronite-K	-0.236	-0.321	
Nontronite-Mg	-0.236	-0.321	
Nontronite-Na	-0.236	-0.321	

--- Lanthanide hydroxide ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
La(OH)3	1.2716E-05	-4.8957	0.0000	-4.8957
Ce(OH)3	3.6560E-15	-14.4370	0.0000	-14.4370
Nd(OH)3(c)	3.4504E-01	-0.4621	0.0000	-0.4621
Gd(OH)3	5.8798E-01	-0.2306	0.0000	-0.2306
Sm(OH)3	6.6969E-02	-1.1741	0.0000	-1.1741

Mineral	Log Q/K	Aff, kcal	State
Lanthanide hydroxide	-19.828	-27.051	
La(OH)3	-19.828	-27.051	
Ce(OH)3	-19.828	-27.051	
Nd(OH)3(c)	-19.828	-27.051	
Gd(OH)3	-19.828	-27.051	
Sm(OH)3	-19.828	-27.051	

--- Rhabdophane-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity

LaPO4:H2O	4.1061E-01	-0.3866	0.0000	-0.3866
CePO4:H2O	3.7334E-11	-10.4279	0.0000	-10.4279
NdPO4:H2O	2.2231E-01	-0.6530	0.0000	-0.6530
GdPO4:H2O	1.5082E-01	-0.8215	0.0000	-0.8215
SmPO4:H2O	2.1626E-01	-0.6650	0.0000	-0.6650

Mineral	Log Q/K	Aff, kcal	State
Rhabdophane-ss	-6.254	-8.533	
LaPO4:H2O	-6.254	-8.533	
CePO4:H2O	-6.254	-8.533	
NdPO4:H2O	-6.254	-8.533	
GdPO4:H2O	-6.254	-8.533	
SmPO4:H2O	-6.254	-8.533	

--- Lanthanide fluoride ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaF3:0.5H2O	5.7179E-01	-0.2428	0.0000	-0.2428
CeF3:0.5H2O	8.2397E-11	-10.0841	0.0000	-10.0841
NdF3:0.5H2O	3.8973E-01	-0.4092	0.0000	-0.4092
GdF3:0.5H2O	8.3611E-03	-2.0777	0.0000	-2.0777
SmF3:0.5H2O	3.0114E-02	-1.5212	0.0000	-1.5212

Mineral	Log Q/K	Aff, kcal	State
Lanthanide fluoride	-16.180	-22.074	
LaF3:0.5H2O	-16.180	-22.074	
CeF3:0.5H2O	-16.180	-22.074	
NdF3:0.5H2O	-16.180	-22.074	
GdF3:0.5H2O	-16.180	-22.074	
SmF3:0.5H2O	-16.180	-22.074	

--- Summary of Gases ---

Gas	Fugacity	Log fugacity
Al(g)	1.6587-192	-191.7802
B(g)	8.5635-204	-203.0673
BF3(g)	2.1444E-33	-32.6687
C(g)	3.0917-190	-189.5098
CH4(g)	3.5253-146	-145.4528
CO(g)	6.0395E-49	-48.2190
CO2(g)	3.1623E-04	-3.5000
Ca(g)	2.2721-160	-159.6436
Chlorine	2.3847E-20	-19.6226
Cs(g)	1.3936E-87	-86.8558
Cu(g)	1.1975E-89	-88.9217
Fluorine	1.0150E-78	-77.9935
H2(g)	6.1115E-42	-41.2139
H2O(g)	2.5963E-02	-1.5857
H2S(g)	1.4180-133	-132.8483
HCl(g)	1.8938E-14	-13.7227

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HF(g)                       4.4097E-12    -11.3556
K(g)                        6.2143E-81    -80.2066
Li(g)                       3.0922-101   -100.5097
Mg(g)                       5.7687-138   -137.2389
Nitrogen                    1.7352E-11    -10.7606
NH3(g)                      4.7985E-65    -64.3189
NO(g)                       1.3117E-21    -20.8822
NO2(g)                      8.9687E-16    -15.0473
Na(g)                       2.0516E-79    -78.6879
O2(g)                       2.0999E-01     -0.6778
Pb(g)                       1.2142E-77    -76.9157
S2(g)                       1.2004-209   -208.9207
SO2(g)                      2.5121E-46    -45.6000
Si(g)                       4.2257-221   -220.3741
SiF4(g)                     1.6685E-30    -29.7777
Ti(g)                       3.8019-231   -230.4200
TiCl4(g)                    4.3139E-68    -67.3651
U(g)                        7.0720-302   -301.1505
U2Cl10(g)                   3.0252-212   -211.5192
U2Cl8(g)                    3.9330-223   -222.4053
U2F10(g)                    1.8764-145   -144.7267
UCl(g)                      1.1939-253   -252.9230
UCl2(g)                     6.0294-204   -203.2197
UCl3(g)                     6.6695-152   -151.1759
UCl4(g)                     3.9949-117   -116.3985
UCl5(g)                     1.2312-119   -118.9097
UCl6(g)                     7.0493-117   -116.1519
UF(g)                       5.9078-241   -240.2286
UF2(g)                      3.6603-198   -197.4365
UF3(g)                      5.5808-149   -148.2533
UF4(g)                      1.2560E-96    -95.9010
UF5(g)                      1.2947E-85    -84.8878
UF6(g)                      1.3141E-88    -87.8814
UO(g)                       5.5853-217   -216.2530
UO2(g)                      1.0348-132   -131.9852
UO2Cl2(g)                   1.0774E-71    -70.9676
UO2F2(g)                    4.7447E-64    -63.3238
UO3(g)                      7.6111E-80    -79.1186
UOF4(g)                     3.7426E-74    -73.4268
Zn(g)                       2.0267E-87    -86.6932



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--- shifting e.s. solid(s) to the p.r.s. (shftz) ---

      shifted -- Alunite
              - old mass=  5.22673E-06, new mass=  8.00000E-07
      shifted -- Nontronite-H
              - old mass=  9.96232E-07, new mass=  8.00000E-07
      shifted -- Pyrolusite
              - old mass=  8.41879E-07, new mass=  8.00000E-07
      shifted -- Quartz
              - old mass=  4.16069E-05, new mass=  8.00000E-07
      shifted -- Rutile
              - old mass=  8.41103E-07, new mass=  8.00000E-07

Stepping to zi=  1.5418E-01, delzi=  1.0000E-09, nord= 0
  time =  1.4871E+03 d, dltime =  9.6451E-06 d
Steps completed =   125, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -6.0968
```

```
Stepping to zi=  1.5418E-01, delzi=  1.0000E-09, nord= 0
  time =  1.4871E+03 d, dltime =  9.6451E-06 d
Steps completed =   126, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -6.0966

Stepping to zi=  1.5418E-01, delzi=  1.0000E-09, nord= 0
  time =  1.4871E+03 d, dltime =  9.6451E-06 d
Steps completed =   127, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -6.0965

Stepping to zi=  1.5418E-01, delzi=  1.0000E-08, nord= 1
  time =  1.4871E+03 d, dltime =  9.6451E-05 d
Steps completed =   128, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -6.0951

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                    Reaction progress        =  1.54184125349815E-01
                    Log of reaction progress =      -0.8119603



                    Time =  1.285E+08 sec
                         =  1.487E+03 days
                         =  4.072E+00 years

                    Log sec =        8.109
                    Log days =       3.172
                    Log years =      0.610

                    Temperature    =     25.000 degrees C
                    total pressure =      1.013 bars


Flow-through system print following a discontinuity


     --- Summary of Instantaneously Precipitated Solid Phases ---
                 (defined by derivatives)

     --- Theoretical Rock Composition ---
                  g/kg

      O      5.339504E+01
      Al     8.214673E+00
      Fe     4.878211E-01
      H      6.210970E-01
      K      3.949111E+00
      Mn     5.137832E-02
      S      6.477632E+00
      Si     2.675944E+01
      Ti     4.380645E-02

      --- Oxide Percentages ---

   Oxide   Theoretical rock


    Total =     0.0000
```

Phase/end-member	d mol/d zi	d grams/d zi	d vol (cc)/d zi
Alunite	2.7930E-02	1.1569E+01	8.2004E+00
Nontronite-H	1.2077E-03	5.0484E-01	6.0386E-01
Pyrolusite	2.5861E-04	2.2483E-02	1.2930E-01
Quartz	2.5904E-01	1.5564E+01	5.8770E+00
Rutile	2.5300E-04	2.0209E-02	4.7615E-03
fix CO2(g)	0.0000E+00	0.0000E+00	0.0000E+00
fix O2(g)	-8.8107E-04	-2.8193E-02	0.0000E+00

--- Summary of Solid Phases (E.S.+P.R.S.) ---

Phase/End-member	Log moles	Moles	Mass, g	Volume, cc
Alunite	-2.5948	2.5419E-03	1.0529E+00	7.4631E-01
Hematite	-3.7144	1.9300E-04	3.0820E-02	5.8428E-03
Nontronite-H	-6.0016	9.9625E-07	4.1644E-04	4.9812E-04
Pyrolusite	-3.2054	6.2321E-04	5.4180E-02	3.1160E-01
Quartz	-1.3913	4.0619E-02	2.4406E+00	9.2157E-01
Rutile	-4.4088	3.9008E-05	3.1159E-03	7.3414E-04
fix CO2(g)	2.3010	2.0000E+02	8.8020E+03	0.0000E+00
fix O2(g)	2.3010	2.0000E+02	6.3997E+03	0.0000E+00

	Mass, grams	Volume, cc
Created	1.520529E+04	1.986563E+00
Destroyed	0.000000E+00	0.000000E+00
Net	1.520529E+04	1.986563E+00

Warning-- these volume totals may be incomplete because
of missing partial molar volume data in the data base

- -

```
Stepping to zi=  1.5418E-01, delzi=  1.0000E-07, nord= 1
  time =  1.4871E+03 d, dltime =  9.6451E-04 d
Steps completed =   129, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -6.0813

Stepping to zi=  1.5419E-01, delzi=  1.0000E-06, nord= 2
  time =  1.4871E+03 d, dltime =  9.6451E-03 d
Steps completed =   130, iter =  6, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -5.9632

Stepping to zi=  1.5420E-01, delzi=  1.0000E-05, nord= 2
  time =  1.4872E+03 d, dltime =  9.6451E-02 d
Steps completed =   131, iter =  7, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -5.4343

Stepping to zi=  1.5427E-01, delzi=  7.1276E-05, nord= 3
  time =  1.4879E+03 d, dltime =  6.8746E-01 d
Steps completed =   132, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -4.6548

Stepping to zi=  1.5461E-01, delzi=  3.3909E-04, nord= 3
  time =  1.4912E+03 d, dltime =  3.2705E+00 d
```

```
Steps completed =   133, iter = 10, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -3.9587

Stepping to zi=  1.5535E-01, delzi=  7.4572E-04, nord= 4
  time =  1.4984E+03 d, dltime =  7.1925E+00 d
Steps completed =   134, iter = 17, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -3.5183

Stepping to zi=  1.5641E-01, delzi=  1.0590E-03, nord= 5
  time =  1.5086E+03 d, dltime =  1.0214E+01 d
Steps completed =   135, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -3.2385

Stepping to zi=  1.5763E-01, delzi=  1.2237E-03, nord= 5
  time =  1.5204E+03 d, dltime =  1.1803E+01 d
Steps completed =   136, iter =  7, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -31.1514

Stepping to zi=  1.5849E-01, delzi=  8.5530E-04, nord= 6
  time =  1.5286E+03 d, dltime =  8.2494E+00 d
Steps completed =   137, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -31.4096

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                    Reaction progress        =  1.58489319246102E-01
                    Log of reaction progress =      -0.8000000



                    Time =  1.321E+08 sec
                         =  1.529E+03 days
                         =  4.185E+00 years

                    Log sec =        8.121
                    Log days =       3.184
                    Log years =      0.622

                    Temperature    =     25.000 degrees C
                    total pressure =      1.013 bars


Step size is limited by the print requirement


                                --- Reactant Summary ---


    Reactant                   Moles     Delta moles    Mass, g    Delta Mass, g

 Tuff                       9.9842E+01   1.5849E-01   2.0554E+03   3.2627E+00


               Current total mass =  2.05538E+03 grams
               Delta total mass   =  3.26274E+00 grams
               Delta total volume =      0.00000 cc


    Reactant                Rel. Rate      Rate         Rate
                             mol/mol       mol/s      mol/s/cm2
```

```
Tuff                        1.0000E+00   1.2000E-09   2.5000E-15


   Reactant                   Affinity   Surface Area
                              kcal/mol     mol/s/cm2

Tuff                         999.00000   4.8000E+05


   Reactant                 Rate Constants, mol/s/cm2

Tuff
                  Forward    2.5000E-15


        Affinity of the overall irreversible reaction=     0.000 kcal
        Contributions from irreversible reactions
        with no thermodynamic data are not included


    --- Element Totals for the Aqueous Solution ---

 Element        mg/kg soln.          Molality             Moles

    O          8.865726E+05        5.559005E+01        5.557362E+01
    Al         4.910229E+00        1.825667E-04        1.825127E-04
    B          1.335393E-01        1.239166E-05        1.238800E-05
    Ba         1.369298E-05        1.000296E-10        1.000000E-10
    Ca         2.599063E+01        6.505749E-04        6.503825E-04
    Ce         1.397096E-19        1.000295E-24        9.999993E-25
    Cl         7.119521E+00        2.014596E-04        2.014000E-04
    Cr         2.997618E+02        5.783517E-03        5.781807E-03
    Cs         1.325210E-05        1.000296E-10        1.000000E-10
    Cu         6.653030E-10        1.050311E-14        1.050000E-14
    F          2.173760E+00        1.147839E-04        1.147500E-04
    Fe         2.745273E-04        4.931422E-09        4.929964E-09
    Gd         1.567951E-09        1.000296E-14        9.999999E-15
    H          1.115467E+05        1.110219E+02        1.109890E+02
    C          1.275188E-01        1.065079E-05        1.064764E-05
    P          7.541662E+00        2.442641E-04        2.441919E-04
    K          3.459316E+01        8.876031E-04        8.873407E-04
    La         1.385037E-09        1.000296E-14        9.999999E-15
    Li         6.920923E-07        1.000296E-10        1.000000E-10
    Mg         6.813043E+00        2.812108E-04        2.811276E-04
    Mn         7.169609E-03        1.309208E-07        1.308821E-07
    Mo         2.180307E+02        2.279840E-03        2.279166E-03
    N          1.983204E+00        1.420420E-04        1.420000E-04
    Na         1.324188E+02        5.778317E-03        5.776608E-03
    Nd         1.438228E-09        1.000296E-14        9.999999E-15
    Ni         7.505258E+02        1.282886E-02        1.282506E-02
    Pb         2.066007E-05        1.000296E-10        1.000000E-10
    Pu         2.432942E-09        1.000296E-14        9.999998E-15
    S          3.809539E+02        1.191829E-02        1.191477E-02
    Si         2.804117E+00        1.001614E-04        1.001318E-04
    Sm         1.499251E-09        1.000296E-14        9.999999E-15
    Sr         8.736655E-06        1.000296E-10        1.000000E-10
    Ti         1.079115E-05        2.260997E-10        2.260329E-10
    U          2.373404E-09        1.000296E-14        9.999999E-15
    V          4.770082E+00        9.393785E-05        9.391007E-05
    Zn         6.520086E-06        1.000296E-10        1.000000E-10
    Zr         9.096011E-16        1.000295E-20        9.999997E-21
```

Single ion activities and activity coefficients are here defined
with respect to the modified NBS pH scale

	pH	Eh	pe
modified NBS pH scale	3.8601	0.9907	1.6747E+01
rational pH scale	3.7864	0.9950	1.6821E+01

pHCl = 7.6434

Oxygen fugacity = 2.09991E-01
Log oxygen fugacity = -0.67780

Activity of water = 0.99942
Log activity of water = -0.00025

Ionic strength = 5.212914E-02 molal
Sum of molalities = 0.0379649825004
Osmotic coefficient = 0.84163

Mass of solution = 1.002901 kg
Mass of solutes = 0.003197 kg
Conc. of solutes = 0.318735 per cent (w/w)

Moles of solvent H2O = 5.54920E+01
Mass of solvent H2O = 9.99704E-01 kg

Species	Molality	Log molality	Log gamma	Log activity
Ni++	1.0268E-02	-1.9885	-0.3322	-2.3208
SO4--	8.8685E-03	-2.0522	-0.3447	-2.3968
Na+	5.6331E-03	-2.2493	-0.0938	-2.3431
HCrO4-	4.0633E-03	-2.3911	-0.0815	-2.4726
NiSO4(aq)	2.5592E-03	-2.5919	0.0000	-2.5919
MoO4--	2.2798E-03	-2.6421	-0.3346	-2.9767
K+	8.6244E-04	-3.0643	-0.0993	-3.1636
Cr2O7--	8.5143E-04	-3.0699	-0.3447	-3.4145
Ca++	5.2407E-04	-3.2806	-0.3322	-3.6129
O2(aq)	2.6208E-04	-3.5816	0.0055	-3.5761
H2PO4-	2.2276E-04	-3.6522	-0.0815	-3.7336
Cl-	2.0120E-04	-3.6964	-0.0870	-3.7833
Mg++	1.8545E-04	-3.7318	-0.3020	-4.0338
H+	1.6354E-04	-3.7864	-0.0737	-3.8601
NaSO4-	1.4506E-04	-3.8385	-0.0815	-3.9199
NO3-	1.4016E-04	-3.8534	-0.0870	-3.9404
CaSO4(aq)	1.2630E-04	-3.8986	0.0000	-3.8986
SiO2(aq)	1.0016E-04	-3.9993	0.0000	-3.9993
MgSO4(aq)	9.5735E-05	-4.0189	0.0000	-4.0189
AlF++	9.0246E-05	-4.0446	-0.3593	-4.4039
HSO4-	6.3627E-05	-4.1964	-0.0815	-4.2778
H2VO4-	3.5827E-05	-4.4458	-0.0815	-4.5273
AlSO4+	3.3401E-05	-4.4762	-0.0938	-4.5701
Al+++	2.8861E-05	-4.5397	-0.6436	-5.1833
VO(OH)3(aq)	2.5400E-05	-4.5952	0.0000	-4.5952
KSO4-	2.5155E-05	-4.5994	-0.0815	-4.6808

VO2(OH)2-	2.2203E-05	-4.6536	-0.0815	-4.7351
CrO4--	1.7290E-05	-4.7622	-0.3447	-5.1069
AlHPO4+	1.7048E-05	-4.7683	-0.0938	-4.8622
B(OH)3(aq)	1.2392E-05	-4.9069	0.0000	-4.9069
AlF2+	1.1729E-05	-4.9307	-0.0938	-5.0246
CO2(aq)	1.0608E-05	-4.9744	0.0055	-4.9689
VO2+	8.6912E-06	-5.0609	-0.0938	-5.1548
H3PO4(aq)	3.7667E-06	-5.4240	0.0000	-5.4240
NiNO3+	1.7089E-06	-5.7673	-0.0938	-5.8611
VO2SO4-	1.2879E-06	-5.8901	-0.0815	-5.9716
AlOH++	1.1991E-06	-5.9211	-0.3593	-6.2805
F-	7.3026E-07	-6.1365	-0.0841	-6.2207
VO2HPO4-	4.7619E-07	-6.3222	-0.0815	-6.4037
HPO4--	1.8440E-07	-6.7342	-0.3447	-7.0789
CaNO3+	1.7404E-07	-6.7594	-0.0938	-6.8532
NaCl(aq)	1.2490E-07	-6.9034	0.0000	-6.9034
HF(aq)	1.2227E-07	-6.9127	0.0000	-6.9127
NiCl+	9.8524E-08	-7.0065	-0.0938	-7.1003
Mn++	9.1978E-08	-7.0363	-0.3322	-7.3686
AlF3(aq)	7.1573E-08	-7.1453	0.0000	-7.1453
HCO3-	4.2435E-08	-7.3723	-0.0815	-7.4537
MnSO4(aq)	3.8682E-08	-7.4125	0.0000	-7.4125
VO3OH--	3.8214E-08	-7.4178	-0.3447	-7.7625
H2CrO4(aq)	2.2279E-08	-7.6521	0.0000	-7.6521
MgCl+	1.3861E-08	-7.8582	-0.0938	-7.9520
CaHPO4(aq)	1.1174E-08	-7.9518	0.0000	-7.9518
Al(OH)2+	1.0859E-08	-7.9642	-0.0938	-8.0580
CaCl+	1.0047E-08	-7.9979	-0.0938	-8.0918
VO2F(aq)	9.4311E-09	-8.0254	0.0000	-8.0254
MgHPO4(aq)	6.2701E-09	-8.2027	0.0000	-8.2027
HCl(aq)	4.8591E-09	-8.3134	0.0000	-8.3134
FeHPO4+	4.2495E-09	-8.3717	-0.0938	-8.4655
HVO4--	4.1165E-09	-8.3855	-0.3447	-8.7302
NaHPO4-	3.7971E-09	-8.4206	-0.0815	-8.5020
KCl(aq)	3.6178E-09	-8.4416	0.0000	-8.4416
KHSO4(aq)	2.4720E-09	-8.6070	0.0000	-8.6070
MgF+	1.5552E-09	-8.8082	-0.0938	-8.9021
CrO3Cl-	9.9606E-10	-9.0017	-0.0815	-9.0832
CaF+	8.7504E-10	-9.0580	-0.0938	-9.1518
HNO3(aq)	7.8893E-10	-9.1030	0.0000	-9.1030
KHPO4-	4.1584E-10	-9.3811	-0.0815	-9.4625
Fe(OH)2+	3.7755E-10	-9.4230	-0.0938	-9.5169
H2P2O7--	3.4495E-10	-9.4622	-0.3447	-9.8069
FeOH++	2.9015E-10	-9.5374	-0.3593	-9.8967
NaF(aq)	2.7456E-10	-9.5614	0.0000	-9.5614
PO3F--	2.4240E-10	-9.6155	-0.3447	-9.9601
HPO3F-	2.2947E-10	-9.6393	-0.0815	-9.7208
NaHCO3(aq)	2.2765E-10	-9.6427	0.0000	-9.6427
Ti(OH)4(aq)	2.2610E-10	-9.6457	0.0000	-9.6457
MnH2PO4+	2.1961E-10	-9.6583	-0.0938	-9.7522
VO2(HPO4)2---	1.1881E-10	-9.9251	-0.7875	-10.7126
CaHCO3+	1.1856E-10	-9.9260	-0.0938	-10.0199
Cs+	1.0002E-10	-9.9999	-0.1024	-10.1023

--- Summary of Instantaneously Precipitated Solid Phases ---
(defined by derivatives)

--- Theoretical Rock Composition ---
g/kg

O	5.338415E+01
Al	7.907859E+00

Fe	5.009095E-01
H	5.983711E-01
K	3.800409E+00
Mn	4.893488E-02
S	6.233719E+00
Si	2.748546E+01
Ti	4.499499E-02

--- Oxide Percentages ---

Oxide Theoretical rock

Total = 0.0000

Phase/end-member	d mol/d zi	d grams/d zi	d vol (cc)/d zi
Alunite	2.6169E-02	1.0839E+01	7.6831E+00
Nontronite-H	1.2074E-03	5.0470E-01	6.0368E-01
Pyrolusite	2.3980E-04	2.0848E-02	1.1990E-01
Quartz	2.5904E-01	1.5564E+01	5.8771E+00
Rutile	2.5300E-04	2.0209E-02	4.7615E-03
fix CO2(g)	-1.0770E-04	-4.7399E-03	0.0000E+00
fix O2(g)	-7.0193E-04	-2.2461E-02	0.0000E+00

--- Summary of Solid Phases (E.S.+P.R.S.) ---

Phase/End-member	Log moles	Moles	Mass, g	Volume, cc
Alunite	-2.5753	2.6588E-03	1.1013E+00	7.8061E-01
Hematite	-3.7144	1.9300E-04	3.0820E-02	5.8428E-03
Nontronite-H	-5.2080	6.1951E-06	2.5896E-03	3.0975E-03
Pyrolusite	-3.2046	6.2429E-04	5.4273E-02	3.1214E-01
Quartz	-1.3795	4.1734E-02	2.5076E+00	9.4687E-01
Rutile	-4.3969	4.0098E-05	3.2030E-03	7.5464E-04
fix CO2(g)	2.3010	2.0000E+02	8.8020E+03	0.0000E+00
fix O2(g)	2.3010	2.0000E+02	6.3997E+03	0.0000E+00

	Mass, grams	Volume, cc
Created	1.520541E+04	2.049320E+00
Destroyed	3.262735E+00	0.000000E+00
Net	1.520214E+04	2.049320E+00

Warning-- these volume totals may be incomplete because of missing partial molar volume data in the data base

--- Summary of Pure Mineral Saturation States ---

Mineral	Log Q/K	Aff, kcal	State
AlF3	-6.636	-9.054	
Albite	-6.849	-9.344	
Albite_low	-6.849	-9.344	
Alunite	0.000	0.000	satd
Analcime	-6.701	-9.143	
Andalusite	-7.150	-9.755	

Anglesite	-4.904	-6.691	
Anhydrite	-1.703	-2.324	
Arcanite	-6.923	-9.445	
BaCrO4	-5.525	-7.537	
BaZrO3	73.070	99.688	ssatd
Barite	-2.776	-3.787	
Bassanite	-2.348	-3.204	
Beidellite-Ca	-4.687	-6.395	
Beidellite-Cs	-6.987	-9.533	
Beidellite-H	-4.407	-6.012	
Beidellite-K	-4.852	-6.620	
Beidellite-Mg	-4.719	-6.438	
Beidellite-Na	-4.920	-6.712	
Berlinite	-1.193	-1.628	
Boehmite	-1.168	-1.593	
Boric_acid	-4.749	-6.478	
Bunsenite	-7.073	-9.649	
CaSO4:0.5H2O(beta)	-2.516	-3.433	
CaV2O6	-4.016	-5.479	
CaZrO3	133.837	182.592	ssatd
Celestite	-7.202	-9.826	
Chalcedony	-0.271	-0.370	
Coesite	-0.810	-1.105	
Corundum	-5.519	-7.529	
CrO2	-2.724	-3.717	
Cristobalite(alpha)	-0.551	-0.751	
Cristobalite(beta)	-0.994	-1.356	
Crocoite	-2.750	-3.751	
Diaspore	-0.764	-1.042	
Epsomite	-4.470	-6.098	
Fe(OH)3	-5.643	-7.698	
Fluorite	-6.017	-8.209	
GdPO4:H2O	-6.594	-8.997	
Gibbsite	-1.360	-1.855	
Goethite	-0.521	-0.711	
Gypsum	-1.528	-2.084	
Hematite	-0.082	-0.112	
Hexahydrite	-4.705	-6.419	
Ice	-0.139	-0.190	
Illite	-6.972	-9.512	
K-Feldspar	-4.630	-6.316	
Kaolinite	-2.016	-2.750	
Kieserite	-6.164	-8.409	
Kyanite	-6.880	-9.386	
LaPO4:H2O	-6.159	-8.402	
Lopezite	-6.824	-9.311	
Manganite	-4.459	-6.084	
Maximum_Microcline	-4.630	-6.316	
Mirabilite	-5.946	-8.112	
MnHPO4	-1.500	-2.047	
MnO2(gamma)	-1.518	-2.071	
MnV2O6	-7.058	-9.629	
Montmor-Ca	-5.916	-8.071	
Montmor-K	-6.011	-8.201	
Montmor-Mg	-5.878	-8.020	
Montmor-Na	-6.082	-8.298	
Mordenite	-7.291	-9.947	
Morenosite	-2.705	-3.691	
Muscovite	-5.698	-7.773	
NdPO4:H2O	-6.425	-8.766	
Ni3(PO4)2	-6.759	-9.221	
NiSO4:6H2O(alpha)	-2.712	-3.700	
Niter	-6.898	-9.411	

Nontronite-Ca	-0.280	-0.382	
Nontronite-H	0.000	0.000	satd
Nontronite-K	-0.445	-0.608	
Nontronite-Mg	-0.312	-0.425	
Nontronite-Na	-0.513	-0.700	
PbHPO4	-5.872	-8.012	
Pentahydrite	-5.045	-6.882	
Plumbogummite	-4.902	-6.688	
Pyrolusite	0.000	0.000	satd
Pyrophyllite	-3.644	-4.971	
Quartz	0.000	0.000	satd
Rutile	0.000	0.000	satd
Sanidine_high	-5.829	-7.952	
Sellaite	-7.091	-9.674	
Shcherbinaite	-1.138	-1.552	
SiO2(am)	-1.286	-1.754	
SmPO4:H2O	-6.437	-8.782	
SrZrO3	109.932	149.979	ssatd
Starkeyite	-5.432	-7.410	
Strengite	-3.443	-4.697	
Syngenite	-7.134	-9.733	
Thenardite	-6.774	-9.242	
Trevorite	-4.362	-5.951	
Tridymite	-0.172	-0.234	
fix CO2(g)	0.000	0.000	satd
fix O2(g)	0.000	0.000	satd

--- Summary of Solid Solutions ---

--- Carbonate-Calcite ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Calcite	8.6541E-01	-0.0628	0.0000	-0.0628
Magnesite	1.1786E-01	-0.9286	0.0000	-0.9286
Rhodochrosite	1.6711E-02	-1.7770	0.0000	-1.7770
Siderite	1.9419E-10	-9.7118	0.0000	-9.7118
Smithsonite	4.0040E-06	-5.3975	0.0000	-5.3975
Strontianite	1.6978E-05	-4.7701	0.0000	-4.7701

Mineral	Log Q/K	Aff, kcal	State
Carbonate-Calcite	-8.992	-12.268	
Calcite	-8.992	-12.268	
Magnesite	-8.992	-12.268	
Rhodochrosite	-8.992	-12.268	
Siderite	-8.992	-12.268	
Smithsonite	-8.992	-12.268	
Strontianite	-8.992	-12.268	

--- Clinoptilolite-hy-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-hy-Ca	8.3953E-01	-0.0760	0.0000	-0.0760

Clinoptilolite-hy-Cs	1.6405E-23	-22.7850	0.0000	-22.7850
Clinoptilolite-hy-K	1.4494E-01	-0.8388	0.0000	-0.8388
Clinoptilolite-hy-Na	1.5531E-02	-1.8088	0.0000	-1.8088
Clinoptilolite-hy-Sr	1.4249E-12	-11.8462	0.0000	-11.8462

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-hy-ss	-21.849	-29.809	
Clinoptilolite-hy-Ca	-21.849	-29.809	
Clinoptilolite-hy-Cs	-21.849	-29.809	
Clinoptilolite-hy-K	-21.849	-29.809	
Clinoptilolite-hy-Na	-21.849	-29.809	
Clinoptilolite-hy-Sr	-21.849	-29.809	

--- Clinoptilolite-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-Ca	5.2184E-01	-0.2825	-0.6949	-0.9773
Clinoptilolite-Cs	1.4222E-07	-6.8470	-16.8437	-23.6907
Clinoptilolite-K	3.1335E-01	-0.5040	-1.2398	-1.7437
Clinoptilolite-NH4	1.0851E-55	-54.9645	-135.2127	-190.1773
Clinoptilolite-Na	1.6460E-01	-0.7836	-1.9276	-2.7112
Clinoptilolite-Sr	2.0704E-04	-3.6839	-9.0625	-12.7464

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-ss	-20.949	-28.581	
Clinoptilolite-Ca	-20.949	-28.581	
Clinoptilolite-Cs	-20.949	-28.581	
Clinoptilolite-K	-20.949	-28.581	
Clinoptilolite-NH4	-20.949	-28.581	
Clinoptilolite-Na	-20.949	-28.581	
Clinoptilolite-Sr	-20.949	-28.581	

--- Saponite-tri ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Saponite-Ca	1.0664E-01	-0.9721	0.6513	-0.3208
Saponite-H	7.5330E-01	-0.1230	0.0824	-0.0406
Saponite-K	3.3635E-02	-1.4732	0.9871	-0.4862
Saponite-Mg	8.5445E-02	-1.0683	0.7158	-0.3525
Saponite-Na	2.0982E-02	-1.6781	1.1244	-0.5538

Mineral	Log Q/K	Aff, kcal	State
Saponite-tri	-26.800	-36.563	
Saponite-Ca	-26.800	-36.563	
Saponite-H	-26.800	-36.563	
Saponite-K	-26.800	-36.563	
Saponite-Mg	-26.800	-36.563	

Saponite-Na	-26.800	-36.563

--- Smectite-di ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Beidellite-Ca	1.9110E-14	-13.7187	9.1916	-4.5272
Beidellite-K	6.0315E-15	-14.2196	9.5271	-4.6925
Beidellite-Mg	1.5312E-14	-13.8150	9.2560	-4.5589
Beidellite-Na	3.7600E-15	-14.4248	9.6646	-4.7602
Montmor-Ca	3.6071E-18	-17.4428	11.6867	-5.7561
Montmor-K	1.8593E-18	-17.7306	11.8795	-5.8511
Montmor-Mg	4.6972E-18	-17.3282	11.6099	-5.7183
Montmor-Na	1.1304E-18	-17.9468	12.0243	-5.9224
Nontronite-Ca	4.3212E-01	-0.3644	0.2441	-0.1203
Nontronite-K	1.3639E-01	-0.8652	0.5797	-0.2855
Nontronite-Mg	3.4647E-01	-0.4603	0.3084	-0.1519
Nontronite-Na	8.5023E-02	-1.0705	0.7172	-0.3533

Mineral	Log Q/K	Aff, kcal	State
Smectite-di	-0.160	-0.218	
Beidellite-Ca	-0.160	-0.218	
Beidellite-K	-0.160	-0.218	
Beidellite-Mg	-0.160	-0.218	
Beidellite-Na	-0.160	-0.218	
Montmor-Ca	-0.160	-0.218	
Montmor-K	-0.160	-0.218	
Montmor-Mg	-0.160	-0.218	
Montmor-Na	-0.160	-0.218	
Nontronite-Ca	-0.160	-0.218	
Nontronite-K	-0.160	-0.218	
Nontronite-Mg	-0.160	-0.218	
Nontronite-Na	-0.160	-0.218	

--- Lanthanide hydroxide ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
La(OH)3	1.2724E-05	-4.8954	0.0000	-4.8954
Ce(OH)3	3.6519E-15	-14.4375	0.0000	-14.4375
Nd(OH)3(c)	3.4521E-01	-0.4619	0.0000	-0.4619
Gd(OH)3	5.8778E-01	-0.2308	0.0000	-0.2308
Sm(OH)3	6.7004E-02	-1.1739	0.0000	-1.1739

Mineral	Log Q/K	Aff, kcal	State
Lanthanide hydroxide	-19.144	-26.118	
La(OH)3	-19.144	-26.118	
Ce(OH)3	-19.144	-26.118	
Nd(OH)3(c)	-19.144	-26.118	
Gd(OH)3	-19.144	-26.118	
Sm(OH)3	-19.144	-26.118	

--- Rhabdophane-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaPO4:H2O	4.1070E-01	-0.3865	0.0000	-0.3865
CePO4:H2O	3.7275E-11	-10.4286	0.0000	-10.4286
NdPO4:H2O	2.2232E-01	-0.6530	0.0000	-0.6530
GdPO4:H2O	1.5070E-01	-0.8219	0.0000	-0.8219
SmPO4:H2O	2.1627E-01	-0.6650	0.0000	-0.6650

Mineral	Log Q/K	Aff, kcal	State
Rhabdophane-ss	-5.772	-7.875	
LaPO4:H2O	-5.772	-7.875	
CePO4:H2O	-5.772	-7.875	
NdPO4:H2O	-5.772	-7.875	
GdPO4:H2O	-5.772	-7.875	
SmPO4:H2O	-5.772	-7.875	

--- Lanthanide fluoride ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaF3:0.5H2O	5.7184E-01	-0.2427	0.0000	-0.2427
CeF3:0.5H2O	8.2256E-11	-10.0848	0.0000	-10.0848
NdF3:0.5H2O	3.8970E-01	-0.4093	0.0000	-0.4093
GdF3:0.5H2O	8.3534E-03	-2.0781	0.0000	-2.0781
SmF3:0.5H2O	3.0113E-02	-1.5213	0.0000	-1.5213

Mineral	Log Q/K	Aff, kcal	State
Lanthanide fluoride	-15.009	-20.477	
LaF3:0.5H2O	-15.009	-20.477	
CeF3:0.5H2O	-15.009	-20.477	
NdF3:0.5H2O	-15.009	-20.477	
GdF3:0.5H2O	-15.009	-20.477	
SmF3:0.5H2O	-15.009	-20.477	

--- Summary of Gases ---

Gas	Fugacity	Log fugacity
Al(g)	2.8375-192	-191.5471
B(g)	8.5635-204	-203.0673
BF3(g)	6.5760E-33	-32.1820
C(g)	3.0917-190	-189.5098
CH4(g)	3.5253-146	-145.4528
CO(g)	6.0395E-49	-48.2190
CO2(g)	3.1623E-04	-3.5000

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Ca(g)                       6.5661-160   -159.1827
Chlorine                    8.4112E-21    -20.0751
Cs(g)                       2.3505E-87    -86.6288
Cu(g)                       3.4063E-89    -88.4677
Fluorine                    2.1424E-78    -77.6691
H2(g)                       6.1115E-42    -41.2138
H2O(g)                      2.5963E-02     -1.5856
H2S(g)                      4.9449-134   -133.3058
HCl(g)                      1.1247E-14    -13.9489
HF(g)                       6.4066E-12    -11.1934
K(g)                        1.0207E-80    -79.9911
Li(g)                       5.2148-101   -100.2828
Mg(g)                       1.6779-137   -136.7752
Nitrogen                    6.1196E-12    -11.2133
NH3(g)                      2.8496E-65    -64.5452
NO(g)                       7.7895E-22    -21.1085
NO2(g)                      5.3261E-16    -15.2736
Na(g)                       3.5232E-79    -78.4531
O2(g)                       2.0999E-01     -0.6778
Pb(g)                       3.4575E-77    -76.4612
S2(g)                       1.4597-210   -209.8357
SO2(g)                      8.7601E-47    -46.0575
Si(g)                       4.2257-221   -220.3741
SiF4(g)                     7.4338E-30    -29.1288
Ti(g)                       3.8019-231   -230.4200
TiCl4(g)                    5.3668E-69    -68.2703
U(g)                        1.4478-301   -300.8393
U2Cl10(g)                   6.9215-214   -213.1598
U2Cl8(g)                    2.5512-224   -223.5933
U2F10(g)                    3.2949-143   -142.4822
UCl(g)                      1.4516-253   -252.8382
UCl2(g)                     4.3538-204   -203.3611
UCl3(g)                     2.8602-152   -151.5436
UCl4(g)                     1.0175-117   -116.9925
UCl5(g)                     1.8623-120   -119.7300
UCl6(g)                     6.3325-118   -117.1984
UF(g)                       1.7572-240   -239.7552
UF2(g)                      1.5817-197   -196.8009
UF3(g)                      3.5036-148   -147.4555
UF4(g)                      1.1456E-95    -94.9410
UF5(g)                      1.7156E-84    -83.7656
UF6(g)                      2.5300E-87    -86.5969
UO(g)                       1.1434-216   -215.9418
UO2(g)                      2.1184-132   -131.6740
UO2Cl2(g)                   7.7798E-72    -71.1090
UO2F2(g)                    2.0503E-63    -62.6882
UO3(g)                      1.5582E-79    -78.8074
UOF4(g)                     3.4137E-73    -72.4668
Zn(g)                       5.7688E-87    -86.2389



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Stepping to zi=  1.6008E-01, delzi=  1.5867E-03, nord= 6
  time =  1.5439E+03 d, dltime =  1.5304E+01 d
Steps completed =   138, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -32.0321

Stepping to zi=  1.6159E-01, delzi=  1.5112E-03, nord= 6
  time =  1.5585E+03 d, dltime =  1.4576E+01 d
```

```
Steps completed =   139, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -32.9066

* note - (eq6/search) A search for where a phase supersaturates
      indicates that the event being searched for does not
      take place in the interval being examined:
           the phase is Smectite-di
           delzi will not be decreased

Stepping to zi=  1.6260E-01, delzi=  1.0082E-03, nord= 6
  time =  1.5682E+03 d, dltime =  9.7237E+00 d
iter =    6
      0 supersaturated pure minerals
      1 supersaturated solid solutions

               The most supersaturated phases           Affinity, kcal

                 1   51200   Smectite-di                   0.03043399
--- Go back to reduce the extent of supersaturation ---
--- Cutting step size and trying again ---

Stepping to zi=  1.6184E-01, delzi=  2.5204E-04, nord= 6
  time =  1.5609E+03 d, dltime =  2.4309E+00 d
Steps completed =   140, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -33.0905

* note - (eq6/search) A search for where a phase supersaturates
      indicates that the event being searched for does not
      take place in the interval being examined:
           the phase is Smectite-di
           delzi will not be decreased

Stepping to zi=  1.6234E-01, delzi=  5.0408E-04, nord= 6
  time =  1.5658E+03 d, dltime =  4.8619E+00 d
iter =    4
      0 supersaturated pure minerals
      1 supersaturated solid solutions

               The most supersaturated phases           Affinity, kcal

                 1   51200   Smectite-di                   0.00631205


  Attempted species assemblage no.   2

            1      1  H2O
            2      3  Al+++
            3      7  B(OH)3(aq)
            4      8  Ba++
            5     11  Ca++
            6     13  Ce+++
            7     14  Cl-
            8     16  CrO4--
            9     17  Cs+
           10     18  Cu++
           11     22  F-
           12     23  Fe++
           13     25  Gd+++
           14     26  H+
           15     28  HCO3-
           16     29  HPO4--
           17     35  K+
           18     37  La+++
```

```
            19     38  Li+
            20     40  Mg++
            21     41  Mn++
            22     42  MoO4--
            23     43  NO3-
            24     44  Na+
            25     45  Nd+++
            26     47  Ni++
            27     49  Pb++
            28     52  Pu++++
            29     58  SO4--
            30     62  SiO2(aq)
            31     63  Sm+++
            32     65  Sr++
            33     69  Ti(OH)4(aq)
            34     72  UO2++
            35     73  VO++
            36     78  Zn++
            37     79  Zr(OH)2++
            38     80  O2(g)
            39     20  Alunite
            40    421  Nontronite-H
            41    470  Pyrolusite
            42    475  Quartz
            43    482  Rutile
            44    689  fix     CO2(g)
            45    690  fix     O2(g)
            46      1  SmectiteBeidellite-Ca
            47      2  SmectiteBeidellite-K
            48      3  SmectiteBeidellite-Mg
            49      4  SmectiteBeidellite-Na
            50      5  SmectiteMontmor-Ca
            51      6  SmectiteMontmor-K
            52      7  SmectiteMontmor-Mg
            53      8  SmectiteMontmor-Na
            54      9  SmectiteNontronite-Ca
            55     10  SmectiteNontronite-K
            56     11  SmectiteNontronite-Mg
            57     12  SmectiteNontronite-Na

--- Iteration has gone sour (iter=  16) ---
     The phase to be dropped is Nontronite-H              (  421)


  Attempted species assemblage no.   3

             1      1  H2O
             2      3  Al+++
             3      7  B(OH)3(aq)
             4      8  Ba++
             5     11  Ca++
             6     13  Ce+++
             7     14  Cl-
             8     16  CrO4--
             9     17  Cs+
            10     18  Cu++
            11     22  F-
            12     23  Fe++
            13     25  Gd+++
            14     26  H+
            15     28  HCO3-
            16     29  HPO4--
            17     35  K+
```

```
            18     37  La+++
            19     38  Li+
            20     40  Mg++
            21     41  Mn++
            22     42  MoO4--
            23     43  NO3-
            24     44  Na+
            25     45  Nd+++
            26     47  Ni++
            27     49  Pb++
            28     52  Pu++++
            29     58  SO4--
            30     62  SiO2(aq)
            31     63  Sm+++
            32     65  Sr++
            33     69  Ti(OH)4(aq)
            34     72  UO2++
            35     73  VO++
            36     78  Zn++
            37     79  Zr(OH)2++
            38     80  O2(g)
            39     20  Alunite
            40    470  Pyrolusite
            41    475  Quartz
            42    482  Rutile
            43    689  fix     CO2(g)
            44    690  fix     O2(g)
            45      1  SmectiteBeidellite-Ca
            46      2  SmectiteBeidellite-K
            47      3  SmectiteBeidellite-Mg
            48      4  SmectiteBeidellite-Na
            49      5  SmectiteMontmor-Ca
            50      6  SmectiteMontmor-K
            51      7  SmectiteMontmor-Mg
            52      8  SmectiteMontmor-Na
            53      9  SmectiteNontronite-Ca
            54     10  SmectiteNontronite-K
            55     11  SmectiteNontronite-Mg
            56     12  SmectiteNontronite-Na

--- Some of Nontronite-H             was unexpectedly destroyed in eqcalc ---
     Previous mass was  1.00426E-05
     Current mass is    0.00000E+00
     Amount destroyed was  1.00426E-05
                    That's too much--go back and first do a P.R.S. transfer
--- shifting e.s. solid(s) to the p.r.s. (shftz) ---

      shifted -- Alunite
              - old mass=  2.01846E-04, new mass=  2.01846E-06
      shifted -- Nontronite-H
              - old mass=  1.00426E-05, new mass=  8.00000E-07
      shifted -- Pyrolusite
              - old mass=  2.63754E-06, new mass=  8.00000E-07
      shifted -- Quartz
              - old mass=  1.98379E-03, new mass=  1.98379E-05
      shifted -- Rutile
              - old mass=  2.73676E-06, new mass=  8.00000E-07

Stepping to zi=  1.6197E-01, delzi=  1.2602E-04, nord= 6
  time =  1.5622E+03 d, dltime =  1.2155E+00 d
Steps completed =   141, iter =  9, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -4.2800
```

```
Stepping to zi=  1.6222E-01, delzi=  2.5204E-04, nord= 5
  time =  1.5646E+03 d, dltime =  2.4309E+00 d
Steps completed =   142, iter = 12, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -3.9290

* note - (eq6/search) A search for where a phase supersaturates
      indicates that the event being searched for does not
      take place in the interval being examined:
           the phase is Smectite-di
           delzi will not be decreased

Stepping to zi=  1.6250E-01, delzi=  2.8354E-04, nord= 6
  time =  1.5673E+03 d, dltime =  2.7348E+00 d
iter =    7
      0 supersaturated pure minerals
      1 supersaturated solid solutions

               The most supersaturated phases           Affinity, kcal

                 1   51200   Smectite-di                   0.02124820
--- Go back to reduce the extent of supersaturation ---
--- Cutting step size and trying again ---

Stepping to zi=  1.6229E-01, delzi=  7.0886E-05, nord= 6
  time =  1.5653E+03 d, dltime =  6.8370E-01 d
Steps completed =   143, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -3.8660

* note - (eq6/search) A search for where a phase supersaturates
      indicates that the event being searched for does not
      take place in the interval being examined:
           the phase is Smectite-di
           delzi will not be decreased

Stepping to zi=  1.6243E-01, delzi=  1.4177E-04, nord= 4
  time =  1.5666E+03 d, dltime =  1.3674E+00 d
iter =    3
      0 supersaturated pure minerals
      1 supersaturated solid solutions

               The most supersaturated phases           Affinity, kcal

                 1   51200   Smectite-di                   0.01446706
--- Go back to reduce the extent of supersaturation ---
--- Cutting step size and trying again ---

Stepping to zi=  1.6232E-01, delzi=  3.5443E-05, nord= 4
  time =  1.5656E+03 d, dltime =  3.4185E-01 d
Steps completed =   144, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -33.4784

* note - (eq6/search) A search for where a phase supersaturates
      indicates that the event being searched for does not
      take place in the interval being examined:
           the phase is Smectite-di
           delzi will not be decreased

Stepping to zi=  1.6239E-01, delzi=  7.0886E-05, nord= 4
  time =  1.5663E+03 d, dltime =  6.8370E-01 d
iter =    3
      0 supersaturated pure minerals
      1 supersaturated solid solutions
```

```
               The most supersaturated phases          Affinity, kcal

                 1   51200   Smectite-di                  0.01111312
--- Go back to reduce the extent of supersaturation ---
--- Cutting step size and trying again ---

Stepping to zi=  1.6234E-01, delzi=  1.7721E-05, nord= 4
  time =  1.5658E+03 d, dltime =  1.7092E-01 d
iter =    3
      0 supersaturated pure minerals
      1 supersaturated solid solutions

               The most supersaturated phases          Affinity, kcal

                 1   51200   Smectite-di                  0.00612939


  Attempted species assemblage no.   2

            1      1  H2O
            2      3  Al+++
            3      7  B(OH)3(aq)
            4      8  Ba++
            5     11  Ca++
            6     13  Ce+++
            7     14  Cl-
            8     16  CrO4--
            9     17  Cs+
           10     18  Cu++
           11     22  F-
           12     23  Fe++
           13     25  Gd+++
           14     26  H+
           15     28  HCO3-
           16     29  HPO4--
           17     35  K+
           18     37  La+++
           19     38  Li+
           20     40  Mg++
           21     41  Mn++
           22     42  MoO4--
           23     43  NO3-
           24     44  Na+
           25     45  Nd+++
           26     47  Ni++
           27     49  Pb++
           28     52  Pu++++
           29     58  SO4--
           30     62  SiO2(aq)
           31     63  Sm+++
           32     65  Sr++
           33     69  Ti(OH)4(aq)
           34     72  UO2++
           35     73  VO++
           36     78  Zn++
           37     79  Zr(OH)2++
           38     80  O2(g)
           39     20  Alunite
           40    421  Nontronite-H
           41    470  Pyrolusite
           42    475  Quartz
           43    482  Rutile
           44    689  fix     CO2(g)
```

```
            45    690  fix     O2(g)
            46      1  SmectiteBeidellite-Ca
            47      2  SmectiteBeidellite-K
            48      3  SmectiteBeidellite-Mg
            49      4  SmectiteBeidellite-Na
            50      5  SmectiteMontmor-Ca
            51      6  SmectiteMontmor-K
            52      7  SmectiteMontmor-Mg
            53      8  SmectiteMontmor-Na
            54      9  SmectiteNontronite-Ca
            55     10  SmectiteNontronite-K
            56     11  SmectiteNontronite-Mg
            57     12  SmectiteNontronite-Na

--- Iteration has gone sour (iter=  16) ---
     The phase to be dropped is Nontronite-H              (  421)


  Attempted species assemblage no.   3

             1      1  H2O
             2      3  Al+++
             3      7  B(OH)3(aq)
             4      8  Ba++
             5     11  Ca++
             6     13  Ce+++
             7     14  Cl-
             8     16  CrO4--
             9     17  Cs+
            10     18  Cu++
            11     22  F-
            12     23  Fe++
            13     25  Gd+++
            14     26  H+
            15     28  HCO3-
            16     29  HPO4--
            17     35  K+
            18     37  La+++
            19     38  Li+
            20     40  Mg++
            21     41  Mn++
            22     42  MoO4--
            23     43  NO3-
            24     44  Na+
            25     45  Nd+++
            26     47  Ni++
            27     49  Pb++
            28     52  Pu++++
            29     58  SO4--
            30     62  SiO2(aq)
            31     63  Sm+++
            32     65  Sr++
            33     69  Ti(OH)4(aq)
            34     72  UO2++
            35     73  VO++
            36     78  Zn++
            37     79  Zr(OH)2++
            38     80  O2(g)
            39     20  Alunite
            40    470  Pyrolusite
            41    475  Quartz
            42    482  Rutile
            43    689  fix     CO2(g)
```

```
            44    690  fix     O2(g)
            45      1  SmectiteBeidellite-Ca
            46      2  SmectiteBeidellite-K
            47      3  SmectiteBeidellite-Mg
            48      4  SmectiteBeidellite-Na
            49      5  SmectiteMontmor-Ca
            50      6  SmectiteMontmor-K
            51      7  SmectiteMontmor-Mg
            52      8  SmectiteMontmor-Na
            53      9  SmectiteNontronite-Ca
            54     10  SmectiteNontronite-K
            55     11  SmectiteNontronite-Mg
            56     12  SmectiteNontronite-Na

--- Some of Nontronite-H             was unexpectedly destroyed in eqcalc ---
     Previous mass was  1.38455E-06
     Current mass is    0.00000E+00
     Amount destroyed was  1.38455E-06
                    That's too much--go back and first do a P.R.S. transfer
--- shifting e.s. solid(s) to the p.r.s. (shftz) ---

      shifted -- Alunite
              - old mass=  1.34790E-05, new mass=  8.00000E-07
      shifted -- Nontronite-H
              - old mass=  1.38455E-06, new mass=  8.00000E-07
      shifted -- Pyrolusite
              - old mass=  9.01304E-07, new mass=  8.00000E-07
      shifted -- Quartz
              - old mass=  1.45314E-04, new mass=  1.45314E-06
      shifted -- Rutile
              - old mass=  9.22550E-07, new mass=  8.00000E-07

Stepping to zi=  1.6233E-01, delzi=  4.4304E-06, nord= 4
  time =  1.5657E+03 d, dltime =  4.2731E-02 d
Steps completed =   145, iter =  7, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -5.5849

Stepping to zi=  1.6234E-01, delzi=  8.8607E-06, nord= 3
  time =  1.5658E+03 d, dltime =  8.5462E-02 d
iter =    4
      0 supersaturated pure minerals
      1 supersaturated solid solutions

               The most supersaturated phases           Affinity, kcal

                 1   51200   Smectite-di                   0.00571671


  Attempted species assemblage no.   2

            1      1  H2O
            2      3  Al+++
            3      7  B(OH)3(aq)
            4      8  Ba++
            5     11  Ca++
            6     13  Ce+++
            7     14  Cl-
            8     16  CrO4--
            9     17  Cs+
           10     18  Cu++
           11     22  F-
           12     23  Fe++
           13     25  Gd+++
```

```
            14     26  H+
            15     28  HCO3-
            16     29  HPO4--
            17     35  K+
            18     37  La+++
            19     38  Li+
            20     40  Mg++
            21     41  Mn++
            22     42  MoO4--
            23     43  NO3-
            24     44  Na+
            25     45  Nd+++
            26     47  Ni++
            27     49  Pb++
            28     52  Pu++++
            29     58  SO4--
            30     62  SiO2(aq)
            31     63  Sm+++
            32     65  Sr++
            33     69  Ti(OH)4(aq)
            34     72  UO2++
            35     73  VO++
            36     78  Zn++
            37     79  Zr(OH)2++
            38     80  O2(g)
            39     20  Alunite
            40    421  Nontronite-H
            41    470  Pyrolusite
            42    475  Quartz
            43    482  Rutile
            44    689  fix     CO2(g)
            45    690  fix     O2(g)
            46      1  SmectiteBeidellite-Ca
            47      2  SmectiteBeidellite-K
            48      3  SmectiteBeidellite-Mg
            49      4  SmectiteBeidellite-Na
            50      5  SmectiteMontmor-Ca
            51      6  SmectiteMontmor-K
            52      7  SmectiteMontmor-Mg
            53      8  SmectiteMontmor-Na
            54      9  SmectiteNontronite-Ca
            55     10  SmectiteNontronite-K
            56     11  SmectiteNontronite-Mg
            57     12  SmectiteNontronite-Na

--- Iteration has gone sour (iter=  16) ---
     The phase to be dropped is Nontronite-H              (  421)


  Attempted species assemblage no.   3

             1      1  H2O
             2      3  Al+++
             3      7  B(OH)3(aq)
             4      8  Ba++
             5     11  Ca++
             6     13  Ce+++
             7     14  Cl-
             8     16  CrO4--
             9     17  Cs+
            10     18  Cu++
            11     22  F-
            12     23  Fe++
```

```
 13     25  Gd+++
 14     26  H+
 15     28  HCO3-
 16     29  HPO4--
 17     35  K+
 18     37  La+++
 19     38  Li+
 20     40  Mg++
 21     41  Mn++
 22     42  MoO4--
 23     43  NO3-
 24     44  Na+
 25     45  Nd+++
 26     47  Ni++
 27     49  Pb++
 28     52  Pu++++
 29     58  SO4--
 30     62  SiO2(aq)
 31     63  Sm+++
 32     65  Sr++
 33     69  Ti(OH)4(aq)
 34     72  UO2++
 35     73  VO++
 36     78  Zn++
 37     79  Zr(OH)2++
 38     80  O2(g)
 39     20  Alunite
 40    470  Pyrolusite
 41    475  Quartz
 42    482  Rutile
 43    689  fix     CO2(g)
 44    690  fix     O2(g)
 45      1  SmectiteBeidellite-Ca
 46      2  SmectiteBeidellite-K
 47      3  SmectiteBeidellite-Mg
 48      4  SmectiteBeidellite-Na
 49      5  SmectiteMontmor-Ca
 50      6  SmectiteMontmor-K
 51      7  SmectiteMontmor-Mg
 52      8  SmectiteMontmor-Na
 53      9  SmectiteNontronite-Ca
 54     10  SmectiteNontronite-K
 55     11  SmectiteNontronite-Mg
 56     12  SmectiteNontronite-Na

Steps completed =   146, iter = 14, ncorr = 0

- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -


                    Reaction progress        =  1.62336970216648E-01
                    Log of reaction progress =      -0.7895826



                    Time =  1.353E+08 sec
                         =  1.566E+03 days
                         =  4.287E+00 years

                    Log sec =        8.131
                    Log days =       3.195
                    Log years =      0.632
```

Temperature = 25.000 degrees C
total pressure = 1.013 bars

Change in the product phase assemblage

--- Reactant Summary ---

Reactant	Moles	Delta moles	Mass, g	Delta Mass, g
Tuff	9.9838E+01	1.6234E-01	2.0553E+03	3.3419E+00

Current total mass = 2.05530E+03 grams
Delta total mass = 3.34194E+00 grams
Delta total volume = 0.00000 cc

Reactant	Rel. Rate mol/mol	Rate mol/s	Rate mol/s/cm2
Tuff	1.0000E+00	1.2000E-09	2.5000E-15

Reactant	Affinity kcal/mol	Surface Area mol/s/cm2
Tuff	999.00000	4.8000E+05

Reactant Rate Constants, mol/s/cm2

Tuff
Forward 2.5000E-15

Affinity of the overall irreversible reaction= 0.000 kcal
Contributions from irreversible reactions
with no thermodynamic data are not included

--- Element Totals for the Aqueous Solution ---

Element	mg/kg soln.	Molality	Moles
O	8.865773E+05	5.558931E+01	5.557266E+01
Al	2.451151E+00	9.113429E-05	9.110699E-05
B	1.335423E-01	1.239171E-05	1.238800E-05
Ba	1.369328E-05	1.000300E-10	1.000000E-10
Ca	2.630518E+01	6.584361E-04	6.582389E-04
Ce	1.397127E-19	1.000299E-24	9.999993E-25
Cl	7.119680E+00	2.014603E-04	2.014000E-04
Cr	2.997685E+02	5.783539E-03	5.781806E-03
Cs	1.325240E-05	1.000300E-10	1.000000E-10
Cu	6.653179E-10	1.050315E-14	1.050000E-14
F	2.173809E+00	1.147844E-04	1.147500E-04
Fe	2.823278E-05	5.071451E-10	5.069932E-10
Gd	1.567986E-09	1.000299E-14	9.999998E-15
H	1.115486E+05	1.110217E+02	1.109885E+02

C	1.286176E-01	1.074236E-05	1.073914E-05
P	7.547000E+00	2.444324E-04	2.443592E-04
K	3.408467E+01	8.745399E-04	8.742780E-04
La	1.385068E-09	1.000299E-14	9.999998E-15
Li	6.921078E-07	1.000300E-10	1.000000E-10
Mg	6.928807E+00	2.859837E-04	2.858980E-04
Mn	7.344090E-04	1.341044E-08	1.340643E-08
Mo	2.180356E+02	2.279849E-03	2.279166E-03
N	1.983248E+00	1.420425E-04	1.420000E-04
Na	1.345273E+02	5.870217E-03	5.868459E-03
Nd	1.438260E-09	1.000299E-14	9.999998E-15
Ni	7.505426E+02	1.282891E-02	1.282506E-02
Pb	2.066053E-05	1.000300E-10	1.000000E-10
Pu	2.432996E-09	1.000299E-14	9.999997E-15
S	3.748243E+02	1.172631E-02	1.172280E-02
Si	2.804176E+00	1.001617E-04	1.001317E-04
Sm	1.499284E-09	1.000299E-14	9.999998E-15
Sr	8.736851E-06	1.000300E-10	1.000000E-10
Ti	1.079142E-05	2.261012E-10	2.260335E-10
U	2.373457E-09	1.000299E-14	9.999998E-15
V	4.770195E+00	9.393832E-05	9.391018E-05
Zn	6.520232E-06	1.000300E-10	1.000000E-10
Zr	9.096222E-16	1.000300E-20	1.000000E-20

Single ion activities and activity coefficients are here defined
with respect to the modified NBS pH scale

	pH	Eh	pe
modified NBS pH scale	4.3541	0.9615	1.6253E+01
rational pH scale	4.2805	0.9658	1.6326E+01

pHCl = 8.1372

Oxygen fugacity = 2.09991E-01
Log oxygen fugacity = -0.67780

Activity of water = 0.99943
Log activity of water = -0.00025

Ionic strength = 5.178518E-02 molal
Sum of molalities = 0.0377305873242
Osmotic coefficient = 0.84200

Mass of solution = 1.002878 kg
Mass of solutes = 0.003178 kg
Conc. of solutes = 0.316886 per cent (w/w)

Moles of solvent H2O = 5.54918E+01
Mass of solvent H2O = 9.99700E-01 kg

Species	Molality	Log molality	Log gamma	Log activity
Ni++	1.0284E-02	-1.9878	-0.3315	-2.3193
SO4--	8.7652E-03	-2.0572	-0.3438	-2.4011

Na+	5.7241E-03	-2.2423	-0.0936	-2.3359
HCrO4-	4.0446E-03	-2.3931	-0.0813	-2.4744
NiSO4(aq)	2.5429E-03	-2.5947	0.0000	-2.5947
MoO4--	2.2798E-03	-2.6421	-0.3338	-2.9759
K+	8.4998E-04	-3.0706	-0.0991	-3.1697
Cr2O7--	8.4267E-04	-3.0743	-0.3438	-3.4182
Ca++	5.3120E-04	-3.2747	-0.3315	-3.6062
O2(aq)	2.6210E-04	-3.5815	0.0054	-3.5761
H2PO4-	2.3637E-04	-3.6264	-0.0813	-3.7077
Cl-	2.0120E-04	-3.6964	-0.0868	-3.7831
Mg++	1.8912E-04	-3.7233	-0.3014	-4.0247
NaSO4-	1.4599E-04	-3.8357	-0.0813	-3.9170
NO3-	1.4015E-04	-3.8534	-0.0868	-3.9402
CaSO4(aq)	1.2700E-04	-3.8962	0.0000	-3.8962
SiO2(aq)	1.0016E-04	-3.9993	0.0000	-3.9993
MgSO4(aq)	9.6821E-05	-4.0140	0.0000	-4.0140
CrO4--	5.3591E-05	-4.2709	-0.3438	-4.6147
H+	5.2422E-05	-4.2805	-0.0736	-4.3541
H2VO4-	4.9859E-05	-4.3023	-0.0813	-4.3835
AlF++	4.6912E-05	-4.3287	-0.3584	-4.6872
VO2(OH)2-	3.0899E-05	-4.5101	-0.0813	-4.5913
AlF2+	3.0593E-05	-4.5144	-0.0936	-4.6080
KSO4-	2.4555E-05	-4.6099	-0.0813	-4.6911
HSO4-	2.0195E-05	-4.6948	-0.0813	-4.7760
B(OH)3(aq)	1.2392E-05	-4.9069	0.0000	-4.9069
VO(OH)3(aq)	1.1339E-05	-4.9454	0.0000	-4.9454
CO2(aq)	1.0609E-05	-4.9743	0.0054	-4.9689
AlHPO4+	5.8648E-06	-5.2318	-0.0936	-5.3254
F-	3.6570E-06	-5.4369	-0.0839	-5.5208
AlSO4+	3.4371E-06	-5.4638	-0.0936	-5.5574
Al+++	2.9917E-06	-5.5241	-0.6423	-6.1663
NiNO3+	1.7145E-06	-5.7659	-0.0936	-5.8595
H3PO4(aq)	1.2822E-06	-5.8921	0.0000	-5.8921
VO2+	1.2434E-06	-5.9054	-0.0936	-5.9990
AlF3(aq)	9.3583E-07	-6.0288	0.0000	-6.0288
HPO4--	6.0928E-07	-6.2152	-0.3438	-6.5590
AlOH++	3.8799E-07	-6.4112	-0.3584	-6.7696
VO2HPO4-	2.2557E-07	-6.6467	-0.0813	-6.7280
HF(aq)	1.9643E-07	-6.7068	0.0000	-6.7068
VO2SO4-	1.8248E-07	-6.7388	-0.0813	-6.8201
CaNO3+	1.7670E-07	-6.7528	-0.0936	-6.8464
VO3OH--	1.6560E-07	-6.7809	-0.3438	-7.1248
HCO3-	1.3228E-07	-6.8785	-0.0813	-6.9598
NaCl(aq)	1.2705E-07	-6.8960	0.0000	-6.8960
NiCl+	9.8852E-08	-7.0050	-0.0936	-7.0986
CaHPO4(aq)	3.7564E-08	-7.4252	0.0000	-7.4252
MgHPO4(aq)	2.1200E-08	-7.6737	0.0000	-7.6737
HVO4--	1.7838E-08	-7.7486	-0.3438	-8.0925
MgCl+	1.4155E-08	-7.8491	-0.0936	-7.9427
NaHPO4-	1.2775E-08	-7.8936	-0.0813	-7.9749
Al(OH)2+	1.0975E-08	-7.9596	-0.0936	-8.0532
CaCl+	1.0202E-08	-7.9913	-0.0936	-8.0849
Mn++	9.4401E-09	-8.0250	-0.3315	-8.3565
MgF+	7.9529E-09	-8.0995	-0.0936	-8.1931
H2CrO4(aq)	7.1141E-09	-8.1479	0.0000	-8.1479
VO2F(aq)	6.7638E-09	-8.1698	0.0000	-8.1698
CaF+	4.4491E-09	-8.3517	-0.0936	-8.4453
MnSO4(aq)	3.9385E-09	-8.4047	0.0000	-8.4047
KCl(aq)	3.5695E-09	-8.4474	0.0000	-8.4474
HCl(aq)	1.5589E-09	-8.8072	0.0000	-8.8072
NaF(aq)	1.3986E-09	-8.8543	0.0000	-8.8543
KHPO4-	1.3571E-09	-8.8674	-0.0813	-8.9487
PO3F--	1.2867E-09	-8.8905	-0.3438	-9.2344

AlF4-	8.5440E-10	-9.0683	-0.0813	-9.1496
KHSO4(aq)	7.7408E-10	-9.1112	0.0000	-9.1112
NaHCO3(aq)	7.2181E-10	-9.1416	0.0000	-9.1416
HPO3F-	3.9116E-10	-9.4076	-0.0813	-9.4889
H2P2O7--	3.8798E-10	-9.4112	-0.3438	-9.7550
FeHPO4+	3.8177E-10	-9.4182	-0.0936	-9.5118
CaHCO3+	3.7525E-10	-9.4257	-0.0936	-9.5193
CrO3Cl-	3.1808E-10	-9.4975	-0.0813	-9.5788
HSiO3-	3.0430E-10	-9.5167	-0.0813	-9.5980
HAlO2(aq)	2.9005E-10	-9.5375	0.0000	-9.5375
OH-	2.7712E-10	-9.5573	-0.0839	-9.6413
HNO3(aq)	2.5308E-10	-9.5967	0.0000	-9.5967
Ti(OH)4(aq)	2.2610E-10	-9.6457	0.0000	-9.6457
BO2-	1.9223E-10	-9.7162	-0.0813	-9.7975
VO2(HPO4)2---	1.8557E-10	-9.7315	-0.7855	-10.5170
MgHCO3+	1.3959E-10	-9.8551	-0.0936	-9.9487
Cs+	1.0002E-10	-9.9999	-0.1021	-10.1020

--- Summary of Instantaneously Precipitated Solid Phases ---
(defined by derivatives)

--- Theoretical Rock Composition ---
g/kg

O	5.335530E+01
Al	7.384007E+00
Fe	5.232425E-01
H	5.595690E-01
K	3.546515E+00
Mn	4.408320E-02
S	5.817263E+00
Si	2.872596E+01
Ti	4.702579E-02

--- Oxide Percentages ---

Oxide Theoretical rock

Total = 0.0000

Phase/end-member	d mol/d zi	d grams/d zi	d vol (cc)/d zi
Alunite	2.3366E-02	9.6785E+00	6.8602E+00
Pyrolusite	1.2067E-03	1.0491E-01	6.0337E-01
Quartz	2.0670E-04	1.2419E-02	4.6896E-03
Rutile	2.5904E-01	2.0692E+01	4.8752E+00
fix CO2(g)	2.5300E-04	1.1134E-02	0.0000E+00
fix O2(g)	-6.3584E-05	-2.0346E-03	0.0000E+00
Smectite-di			
Beidellite-Ca	-7.1998E-04	-2.6392E-01	-9.3259E-02
Beidellite-K	0.0000E+00	0.0000E+00	0.0000E+00
Beidellite-Mg	0.0000E+00	0.0000E+00	0.0000E+00
Beidellite-Na	0.0000E+00	0.0000E+00	0.0000E+00
Montmor-Ca	0.0000E+00	0.0000E+00	0.0000E+00
Montmor-K	0.0000E+00	0.0000E+00	0.0000E+00
Montmor-Mg	0.0000E+00	0.0000E+00	0.0000E+00
Montmor-Na	0.0000E+00	0.0000E+00	0.0000E+00
Nontronite-Ca	0.0000E+00	0.0000E+00	0.0000E+00
Nontronite-K	0.0000E+00	0.0000E+00	0.0000E+00
Nontronite-Mg	0.0000E+00	0.0000E+00	0.0000E+00

Nontronite-Na	0.0000E+00	0.0000E+00	0.0000E+00

--- Summary of Solid Phases (E.S.+P.R.S.) ---

Phase/End-member	Log moles	Moles	Mass, g	Volume, cc
Alunite	-2.5599	2.7547E-03	1.1411E+00	8.0879E-01
Hematite	-3.7144	1.9300E-04	3.0820E-02	5.8428E-03
Nontronite-H	-4.9990	1.0023E-05	4.1899E-03	5.0117E-03
Pyrolusite	-3.2040	6.2515E-04	5.4349E-02	3.1257E-01
Quartz	-1.3693	4.2731E-02	2.5675E+00	9.6948E-01
Rutile	-4.3865	4.1071E-05	3.2807E-03	7.7296E-04
fix CO2(g)	2.3010	2.0000E+02	8.8020E+03	0.0000E+00
fix O2(g)	2.3010	2.0000E+02	6.3997E+03	0.0000E+00
Smectite-di	-6.0883	8.1604E-07		
Beidellite-Ca	-16.2725	5.3395E-17	1.9573E-14	6.9163E-15
Beidellite-K	-16.7827	1.6493E-17	6.1494E-15	2.2051E-15
Beidellite-Mg	-16.3675	4.2906E-17	1.5616E-14	5.2856E-15
Beidellite-Na	-16.9747	1.0600E-17	3.8959E-15	1.3837E-15
Montmor-Ca	-19.9971	1.0066E-20	3.6846E-18	5.0331E-18
Montmor-K	-20.2943	5.0780E-21	1.8907E-18	2.5390E-18
Montmor-Mg	-19.8812	1.3146E-20	4.7777E-18	6.5729E-18
Montmor-Na	-20.4972	3.1827E-21	1.1681E-18	1.5913E-18
Nontronite-Ca	-6.4522	3.5303E-07	1.4979E-04	4.6282E-05
Nontronite-K	-6.9624	1.0905E-07	4.6953E-05	1.4751E-05
Nontronite-Mg	-6.5469	2.8388E-07	1.1971E-04	3.6836E-05
Nontronite-Na	-7.1544	7.0085E-08	2.9805E-05	9.2589E-06

	Mass, grams	Volume, cc
Created	1.520551E+04	2.102586E+00
Destroyed	3.341945E+00	0.000000E+00
Net	1.520217E+04	2.102586E+00

Warning-- these volume totals may be incomplete because of missing partial molar volume data in the data base

--- Summary of Pure Mineral Saturation States ---

Mineral	Log Q/K	Aff, kcal	State
AlF3	-5.520	-7.531	
Albite	-5.849	-7.980	
Albite_high	-7.168	-9.779	
Albite_low	-5.849	-7.980	
Alunite	0.000	0.000	satd
Analcime	-5.741	-7.833	
Andalusite	-6.153	-8.394	
Anglesite	-4.908	-6.696	
Anhydrite	-1.701	-2.320	
Arcanite	-6.940	-9.468	
BaCrO4	-5.032	-6.865	
BaZrO3	74.059	101.038	ssatd
Barite	-2.779	-3.791	
Bassanite	-2.346	-3.200	
Beidellite-Ca	-3.361	-4.585	
Beidellite-Cs	-5.662	-7.725	

Beidellite-H	-3.245	-4.427	
Beidellite-K	-3.529	-4.815	
Beidellite-Mg	-3.392	-4.628	
Beidellite-Na	-3.593	-4.901	
Berlinite	-1.163	-1.586	
Boehmite	-0.669	-0.912	
Boric_acid	-4.749	-6.478	
Bunsenite	-6.083	-8.299	
CaSO4:0.5H2O(beta)	-2.514	-3.430	
CaV2O6	-3.722	-5.077	
CaZrO3	134.832	183.949	ssatd
Celestite	-7.205	-9.829	
Chalcedony	-0.271	-0.370	
Coesite	-0.810	-1.105	
Corundum	-4.521	-6.168	
CrO2	-3.220	-4.393	
Cristobalite(alpha)	-0.551	-0.751	
Cristobalite(beta)	-0.994	-1.356	
Crocoite	-2.257	-3.079	
Dawsonite	-6.747	-9.204	
Diaspore	-0.265	-0.361	
Epsomite	-4.465	-6.092	
Fe(OH)3	-5.727	-7.813	
Fluorapatite	-5.173	-7.057	
Fluorite	-4.611	-6.291	
GdPO4:H2O	-5.580	-7.613	
Gibbsite	-0.861	-1.174	
Goethite	-0.606	-0.826	
Gypsum	-1.525	-2.081	
Hematite	-0.250	-0.342	
Hexahydrite	-4.700	-6.413	
Ice	-0.139	-0.190	
Illite	-5.283	-7.207	
K-Feldspar	-3.643	-4.970	
Kalsilite	-6.818	-9.302	
Kaolinite	-1.018	-1.389	
Kieserite	-6.159	-8.403	
Kyanite	-5.882	-8.025	
LaPO4:H2O	-5.142	-7.015	
Lopezite	-6.840	-9.332	
Manganite	-4.459	-6.084	
Maximum_Microcline	-3.643	-4.970	
Mesolite	-7.220	-9.850	
Mirabilite	-5.936	-8.098	
MnHPO4	-1.969	-2.686	
MnO2(gamma)	-1.518	-2.071	
Montmor-Ca	-4.590	-6.262	
Montmor-Cs	-6.825	-9.311	
Montmor-K	-4.688	-6.396	
Montmor-Mg	-4.552	-6.210	
Montmor-Na	-4.755	-6.487	
Mordenite	-6.353	-8.668	
Morenosite	-2.708	-3.695	
Muscovite	-3.713	-5.066	
NdPO4:H2O	-5.409	-7.380	
Ni(OH)2	-6.360	-8.677	
Ni2SiO4	-5.564	-7.590	
Ni3(PO4)2	-4.726	-6.448	
NiSO4:6H2O(alpha)	-2.715	-3.704	
Niter	-6.904	-9.419	
Nontronite-Ca	-0.120	-0.164	
Nontronite-H	-0.004	-0.005	
Nontronite-K	-0.288	-0.394	

Nontronite-Mg	-0.151	-0.206	
Nontronite-Na	-0.352	-0.480	
Paragonite	-6.816	-9.298	
PbHPO4	-5.352	-7.301	
Pentahydrite	-5.040	-6.876	
Plumbogummite	-3.353	-4.575	
Pyrolusite	0.000	0.000	satd
Pyrophyllite	-2.646	-3.610	
Quartz	0.000	0.000	satd
Rutile	0.000	0.000	satd
Sanidine_high	-4.842	-6.606	
Sellaite	-5.682	-7.752	
Shcherbinaite	-1.838	-2.508	
SiO2(am)	-1.286	-1.754	
Sillimanite	-6.516	-8.890	
SmPO4:H2O	-5.422	-7.397	
SrZrO3	110.922	151.329	ssatd
Starkeyite	-5.427	-7.404	
Strengite	-3.995	-5.451	
Syngenite	-7.148	-9.752	
Thenardite	-6.764	-9.228	
Trevorite	-3.541	-4.831	
Tridymite	-0.172	-0.234	
fix CO2(g)	0.000	0.000	satd
fix O2(g)	0.000	0.000	satd

--- Summary of Solid Solutions ---

--- Carbonate-Calcite ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Calcite	8.7800E-01	-0.0565	0.0000	-0.0565
Magnesite	1.2027E-01	-0.9199	0.0000	-0.9199
Rhodochrosite	1.7168E-03	-2.7653	0.0000	-2.7653
Siderite	1.6429E-11	-10.7844	0.0000	-10.7844
Smithsonite	4.0070E-06	-5.3972	0.0000	-5.3972
Strontianite	1.7031E-05	-4.7688	0.0000	-4.7688

Mineral	Log Q/K	Aff, kcal	State
Carbonate-Calcite	-8.004	-10.920	
Calcite	-8.004	-10.920	
Magnesite	-8.004	-10.920	
Rhodochrosite	-8.004	-10.920	
Siderite	-8.004	-10.920	
Smithsonite	-8.004	-10.920	
Strontianite	-8.004	-10.920	

--- Clinoptilolite-hy-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-hy-Ca	8.4798E-01	-0.0716	0.0000	-0.0716
Clinoptilolite-hy-Cs	1.6174E-23	-22.7912	0.0000	-22.7912

Clinoptilolite-hy-K	1.3584E-01	-0.8670	0.0000	-0.8670
Clinoptilolite-hy-Na	1.6180E-02	-1.7910	0.0000	-1.7910
Clinoptilolite-hy-Sr	1.4113E-12	-11.8504	0.0000	-11.8504

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-hy-ss	-18.410	-25.117	
Clinoptilolite-hy-Ca	-18.410	-25.117	
Clinoptilolite-hy-Cs	-18.410	-25.117	
Clinoptilolite-hy-K	-18.410	-25.117	
Clinoptilolite-hy-Na	-18.410	-25.117	
Clinoptilolite-hy-Sr	-18.410	-25.117	

--- Clinoptilolite-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-Ca	5.2458E-01	-0.2802	-0.6893	-0.9695
Clinoptilolite-Cs	1.4197E-07	-6.8478	-16.8456	-23.6934
Clinoptilolite-K	3.0826E-01	-0.5111	-1.2573	-1.7683
Clinoptilolite-NH4	1.1084E-56	-55.9553	-137.6501	-193.6054
Clinoptilolite-Na	1.6695E-01	-0.7774	-1.9124	-2.6898
Clinoptilolite-Sr	2.0696E-04	-3.6841	-9.0629	-12.7470

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-ss	-17.514	-23.893	
Clinoptilolite-Ca	-17.514	-23.893	
Clinoptilolite-Cs	-17.514	-23.893	
Clinoptilolite-K	-17.514	-23.893	
Clinoptilolite-NH4	-17.514	-23.893	
Clinoptilolite-Na	-17.514	-23.893	
Clinoptilolite-Sr	-17.514	-23.893	

--- Saponite-tri ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Saponite-Ca	2.1937E-01	-0.6588	0.4414	-0.2174
Saponite-H	4.9310E-01	-0.3071	0.2057	-0.1013
Saponite-K	6.7712E-02	-1.1693	0.7835	-0.3859
Saponite-Mg	1.7627E-01	-0.7538	0.5051	-0.2488
Saponite-Na	4.3549E-02	-1.3610	0.9119	-0.4491

Mineral	Log Q/K	Aff, kcal	State
Saponite-tri	-23.583	-32.174	
Saponite-Ca	-23.583	-32.174	
Saponite-H	-23.583	-32.174	
Saponite-K	-23.583	-32.174	
Saponite-Mg	-23.583	-32.174	
Saponite-Na	-23.583	-32.174	

--- Smectite-di ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Beidellite-Ca	6.5432E-11	-10.1842	6.8234	-3.3608
Beidellite-K	2.0211E-11	-10.6944	7.1653	-3.5292
Beidellite-Mg	5.2578E-11	-10.2792	6.8871	-3.3921
Beidellite-Na	1.2990E-11	-10.8864	7.2939	-3.5925
Montmor-Ca	1.2335E-14	-13.9088	9.3189	-4.5899
Montmor-K	6.2227E-15	-14.2060	9.5180	-4.6880
Montmor-Mg	1.6109E-14	-13.7929	9.2413	-4.5517
Montmor-Na	3.9002E-15	-14.4089	9.6540	-4.7549
Nontronite-Ca	4.3261E-01	-0.3639	0.2438	-0.1201
Nontronite-K	1.3363E-01	-0.8741	0.5856	-0.2885
Nontronite-Mg	3.4787E-01	-0.4586	0.3072	-0.1513
Nontronite-Na	8.5884E-02	-1.0661	0.7143	-0.3518

Mineral	Log Q/K	Aff, kcal	State
Smectite-di	0.000	0.000	satd
Beidellite-Ca	0.000	0.000	satd
Beidellite-K	0.000	0.000	satd
Beidellite-Mg	0.000	0.000	satd
Beidellite-Na	0.000	0.000	satd
Montmor-Ca	0.000	0.000	satd
Montmor-K	0.000	0.000	satd
Montmor-Mg	0.000	0.000	satd
Montmor-Na	0.000	0.000	satd
Nontronite-Ca	0.000	0.000	satd
Nontronite-K	0.000	0.000	satd
Nontronite-Mg	0.000	0.000	satd
Nontronite-Na	0.000	0.000	satd

--- Lanthanide hydroxide ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
La(OH)3	1.2786E-05	-4.8932	0.0000	-4.8932
Ce(OH)3	3.6584E-15	-14.4367	0.0000	-14.4367
Nd(OH)3(c)	3.4628E-01	-0.4606	0.0000	-0.4606
Gd(OH)3	5.8658E-01	-0.2317	0.0000	-0.2317
Sm(OH)3	6.7133E-02	-1.1731	0.0000	-1.1731

Mineral	Log Q/K	Aff, kcal	State
Lanthanide hydroxide	-17.662	-24.095	
La(OH)3	-17.662	-24.095	
Ce(OH)3	-17.662	-24.095	
Nd(OH)3(c)	-17.662	-24.095	
Gd(OH)3	-17.662	-24.095	
Sm(OH)3	-17.662	-24.095	

--- Rhabdophane-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaPO4:H2O	4.1156E-01	-0.3856	0.0000	-0.3856
CePO4:H2O	3.7237E-11	-10.4290	0.0000	-10.4290
NdPO4:H2O	2.2239E-01	-0.6529	0.0000	-0.6529
GdPO4:H2O	1.4997E-01	-0.8240	0.0000	-0.8240
SmPO4:H2O	2.1608E-01	-0.6654	0.0000	-0.6654

Mineral	Log Q/K	Aff, kcal	State
Rhabdophane-ss	-4.756	-6.489	
LaPO4:H2O	-4.756	-6.489	
CePO4:H2O	-4.756	-6.489	
NdPO4:H2O	-4.756	-6.489	
GdPO4:H2O	-4.756	-6.489	
SmPO4:H2O	-4.756	-6.489	

--- Lanthanide fluoride ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaF3:0.5H2O	5.7232E-01	-0.2424	0.0000	-0.2424
CeF3:0.5H2O	8.2069E-11	-10.0858	0.0000	-10.0858
NdF3:0.5H2O	3.8933E-01	-0.4097	0.0000	-0.4097
GdF3:0.5H2O	8.3026E-03	-2.0808	0.0000	-2.0808
SmF3:0.5H2O	3.0049E-02	-1.5222	0.0000	-1.5222

Mineral	Log Q/K	Aff, kcal	State
Lanthanide fluoride	-12.907	-17.609	
LaF3:0.5H2O	-12.907	-17.609	
CeF3:0.5H2O	-12.907	-17.609	
NdF3:0.5H2O	-12.907	-17.609	
GdF3:0.5H2O	-12.907	-17.609	
SmF3:0.5H2O	-12.907	-17.609	

--- Summary of Gases ---

Gas	Fugacity	Log fugacity
Al(g)	8.9485-192	-191.0483
B(g)	8.5634-204	-203.0674
BF3(g)	2.7264E-32	-31.5644
C(g)	3.0917-190	-189.5098
CH4(g)	3.5254-146	-145.4528
CO(g)	6.0395E-49	-48.2190
CO2(g)	3.1623E-04	-3.5000
Ca(g)	6.4846-159	-158.1881

Chlorine	8.6569E-22	-21.0626
Cs(g)	7.3352E-87	-86.1346
Cu(g)	3.3126E-88	-87.4798
Fluorine	5.5292E-78	-77.2573
H2(g)	6.1116E-42	-41.2138
H2O(g)	2.5963E-02	-1.5856
H2S(g)	5.0349-135	-134.2980
HCl(g)	3.6083E-15	-14.4427
HF(g)	1.0292E-11	-10.9875
K(g)	3.1393E-80	-79.5032
Li(g)	1.6274-100	-99.7885
Mg(g)	1.6666-136	-135.7782
Nitrogen	6.2977E-13	-12.2008
NH3(g)	9.1415E-66	-65.0390
NO(g)	2.4988E-22	-21.6023
NO2(g)	1.7086E-16	-15.7674
Na(g)	1.1171E-78	-77.9519
O2(g)	2.0999E-01	-0.6778
Pb(g)	3.3693E-76	-75.4725
S2(g)	1.5133-212	-211.8201
SO2(g)	8.9194E-48	-47.0497
Si(g)	4.2257-221	-220.3741
SiF4(g)	4.9514E-29	-28.3053
Ti(g)	3.8019-231	-230.4200
TiCl4(g)	5.6850E-71	-70.2453
U(g)	5.7649-301	-300.2392
U2Cl10(g)	1.2674-217	-216.8971
U2Cl8(g)	4.5389-227	-226.3431
U2F10(g)	5.9816-140	-139.2232
UCl(g)	1.8543-253	-252.7318
UCl2(g)	1.7843-204	-203.7485
UCl3(g)	3.7605-153	-152.4248
UCl4(g)	4.2916-119	-118.3674
UCl5(g)	2.5200-122	-121.5986
UCl6(g)	2.7491-120	-119.5608
UF(g)	1.1240-239	-238.9492
UF2(g)	1.6254-196	-195.7890
UF3(g)	5.7842-147	-146.2378
UF4(g)	3.0383E-94	-93.5174
UF5(g)	7.3098E-83	-82.1361
UF6(g)	1.7318E-85	-84.7615
UO(g)	4.5530-216	-215.3417
UO2(g)	8.4352-132	-131.0739
UO2Cl2(g)	3.1883E-72	-71.4964
UO2F2(g)	2.1070E-62	-61.6763
UO3(g)	6.2043E-79	-78.2073
UOF4(g)	9.0537E-72	-71.0432
Zn(g)	5.6197E-86	-85.2503

- -

--- shifting e.s. solid(s) to the p.r.s. (shftz) ---

```
      shifted -- Alunite
              - old mass=  1.09404E-06, new mass=  8.00000E-07
      shifted -- Pyrolusite
              - old mass=  8.02715E-07, new mass=  8.00000E-07
      shifted -- Quartz
              - old mass=  4.89609E-06, new mass=  8.00000E-07
      shifted -- Rutile
```

```
            - old mass=  8.03363E-07, new mass=  8.00000E-07
      shifted -- Smectite-di
            - old mass=  8.16039E-07, new mass=  8.00000E-07

Stepping to zi=  1.6234E-01, delzi=  1.0000E-09, nord= 0
  time =  1.5658E+03 d, dltime =  9.6451E-06 d
Steps completed =   147, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -6.0968

Stepping to zi=  1.6234E-01, delzi=  1.0000E-09, nord= 0
  time =  1.5658E+03 d, dltime =  9.6451E-06 d
Steps completed =   148, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -6.0966

Stepping to zi=  1.6234E-01, delzi=  1.0000E-09, nord= 0
  time =  1.5658E+03 d, dltime =  9.6451E-06 d
Steps completed =   149, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -6.0965

Stepping to zi=  1.6234E-01, delzi=  1.0000E-08, nord= 1
  time =  1.5658E+03 d, dltime =  9.6451E-05 d
Steps completed =   150, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -6.0951

- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -


                    Reaction progress        =  1.62336983216647E-01
                    Log of reaction progress =      -0.7895825



                    Time =  1.353E+08 sec
                         =  1.566E+03 days
                         =  4.287E+00 years

                    Log sec =        8.131
                    Log days =       3.195
                    Log years =      0.632

                    Temperature    =     25.000 degrees C
                    total pressure =      1.013 bars


Flow-through system print following a discontinuity


     --- Summary of Instantaneously Precipitated Solid Phases ---
                 (defined by derivatives)

     --- Theoretical Rock Composition ---
                  g/kg

      O      5.334195E+01
      Al     7.376613E+00
      Ca     1.340167E-02
      Fe     5.232194E-01
      H      5.574580E-01
      K      3.551000E+00
      Mg     6.538552E-03
      Mn     4.407491E-02
      Na     3.057054E-03
      S      5.811406E+00
```

Si	2.872426E+01
Ti	4.702300E-02

--- Oxide Percentages ---

Oxide	Theoretical rock

Total = 0.0000

Phase/end-member	d mol/d zi	d grams/d zi	d vol (cc)/d zi
Alunite	2.3344E-02	9.6693E+00	6.8537E+00
Pyrolusite	2.0667E-04	1.7967E-02	1.0334E-01
Quartz	2.5904E-01	1.5564E+01	5.8771E+00
Rutile	2.5300E-04	2.0209E-02	4.7615E-03
fix CO2(g)	0.0000E+00	0.0000E+00	0.0000E+00
fix O2(g)	-7.1054E-04	-2.2737E-02	0.0000E+00
Smectite-di			
Beidellite-Ca	2.7926E-13	1.0237E-10	3.6173E-11
Beidellite-K	8.6198E-14	3.2139E-11	1.1525E-11
Beidellite-Mg	2.2443E-13	8.1685E-11	2.7648E-11
Beidellite-Na	5.5464E-14	2.0385E-11	7.2403E-12
Montmor-Ca	5.2647E-17	1.9271E-14	2.6324E-14
Montmor-K	2.6539E-17	9.8815E-15	1.3270E-14
Montmor-Mg	6.8764E-17	2.4992E-14	3.4382E-14
Montmor-Na	1.6653E-17	6.1120E-15	8.3266E-15
Nontronite-Ca	5.2208E-04	2.2151E-01	6.8444E-02
Nontronite-K	1.6086E-04	6.9262E-02	2.1759E-02
Nontronite-Mg	4.2002E-04	1.7712E-01	5.4501E-02
Nontronite-Na	1.0381E-04	4.4145E-02	1.3714E-02

--- Summary of Solid Phases (E.S.+P.R.S.) ---

Phase/End-member	Log moles	Moles	Mass, g	Volume, cc
Alunite	-2.5599	2.7547E-03	1.1411E+00	8.0879E-01
Hematite	-3.7144	1.9300E-04	3.0820E-02	5.8428E-03
Nontronite-H	-4.9990	1.0023E-05	4.1899E-03	5.0117E-03
Pyrolusite	-3.2040	6.2515E-04	5.4349E-02	3.1258E-01
Quartz	-1.3693	4.2731E-02	2.5675E+00	9.6948E-01
Rutile	-4.3865	4.1071E-05	3.2807E-03	7.7296E-04
fix CO2(g)	2.3010	2.0000E+02	8.8020E+03	0.0000E+00
fix O2(g)	2.3010	2.0000E+02	6.3997E+03	0.0000E+00
Smectite-di	-6.0883	8.1606E-07		
Beidellite-Ca	-16.2725	5.3399E-17	1.9574E-14	6.9167E-15
Beidellite-K	-16.7827	1.6494E-17	6.1499E-15	2.2053E-15
Beidellite-Mg	-16.3675	4.2909E-17	1.5617E-14	5.2860E-15
Beidellite-Na	-16.9747	1.0601E-17	3.8962E-15	1.3838E-15
Montmor-Ca	-19.9971	1.0067E-20	3.6849E-18	5.0334E-18
Montmor-K	-20.2943	5.0783E-21	1.8908E-18	2.5392E-18
Montmor-Mg	-19.8812	1.3147E-20	4.7781E-18	6.5734E-18
Montmor-Na	-20.4972	3.1829E-21	1.1682E-18	1.5915E-18
Nontronite-Ca	-6.4522	3.5304E-07	1.4979E-04	4.6283E-05
Nontronite-K	-6.9624	1.0905E-07	4.6954E-05	1.4751E-05
Nontronite-Mg	-6.5469	2.8388E-07	1.1971E-04	3.6837E-05
Nontronite-Na	-7.1544	7.0086E-08	2.9805E-05	9.2591E-06

Mass, grams Volume, cc

```
 Created         1.520551E+04       2.102587E+00
 Destroyed       0.000000E+00       0.000000E+00
 Net             1.520551E+04       2.102587E+00

Warning-- these volume totals may be incomplete because
of missing partial molar volume data in the data base



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Stepping to zi=  1.6234E-01, delzi=  1.0000E-07, nord= 2
  time =  1.5658E+03 d, dltime =  9.6451E-04 d
Steps completed =   151, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -6.0813

Stepping to zi=  1.6234E-01, delzi=  1.0000E-06, nord= 2
  time =  1.5658E+03 d, dltime =  9.6451E-03 d
Steps completed =   152, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -5.9632

Stepping to zi=  1.6235E-01, delzi=  1.0000E-05, nord= 3
  time =  1.5659E+03 d, dltime =  9.6451E-02 d
Steps completed =   153, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -5.4343

Stepping to zi=  1.6240E-01, delzi=  4.9679E-05, nord= 3
  time =  1.5663E+03 d, dltime =  4.7916E-01 d
Steps completed =   154, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -4.7813

Stepping to zi=  1.6252E-01, delzi=  1.1825E-04, nord= 4
  time =  1.5675E+03 d, dltime =  1.1405E+00 d
Steps completed =   155, iter =  7, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -4.3262

Stepping to zi=  1.6266E-01, delzi=  1.4703E-04, nord= 5
  time =  1.5689E+03 d, dltime =  1.4181E+00 d
Steps completed =   156, iter =  7, ncorr = 0
Most rapidly changing is zvclg1(Montmor-Na              ) =    -19.7717

Stepping to zi=  1.6300E-01, delzi=  3.3764E-04, nord= 5
  time =  1.5722E+03 d, dltime =  3.2566E+00 d
Steps completed =   157, iter =  8, ncorr = 0
Most rapidly changing is zvclg1(Montmor-Na              ) =    -19.0323

Stepping to zi=  1.6340E-01, delzi=  4.0010E-04, nord= 6
  time =  1.5760E+03 d, dltime =  3.8589E+00 d
Steps completed =   158, iter =  8, ncorr = 0
Most rapidly changing is zvclg1(Montmor-Na              ) =    -18.1718

Stepping to zi=  1.6354E-01, delzi=  1.4008E-04, nord= 6
  time =  1.5774E+03 d, dltime =  1.3511E+00 d
iter =    4
      1 supersaturated pure minerals
      0 supersaturated solid solutions

               The most supersaturated phases           Affinity, kcal
```

```
     1     192   Diaspore                        0.00727600


Attempted species assemblage no.   2

           1      1  H2O
           2      3  Al+++
           3      7  B(OH)3(aq)
           4      8  Ba++
           5     11  Ca++
           6     13  Ce+++
           7     14  Cl-
           8     16  CrO4--
           9     17  Cs+
          10     18  Cu++
          11     22  F-
          12     23  Fe++
          13     25  Gd+++
          14     26  H+
          15     28  HCO3-
          16     29  HPO4--
          17     35  K+
          18     37  La+++
          19     38  Li+
          20     40  Mg++
          21     41  Mn++
          22     42  MoO4--
          23     43  NO3-
          24     44  Na+
          25     45  Nd+++
          26     47  Ni++
          27     49  Pb++
          28     52  Pu++++
          29     58  SO4--
          30     62  SiO2(aq)
          31     63  Sm+++
          32     65  Sr++
          33     69  Ti(OH)4(aq)
          34     72  UO2++
          35     73  VO++
          36     78  Zn++
          37     79  Zr(OH)2++
          38     80  O2(g)
          39     20  Alunite
          40    192  Diaspore
          41    470  Pyrolusite
          42    475  Quartz
          43    482  Rutile
          44    689  fix     CO2(g)
          45    690  fix     O2(g)
          46      1  SmectiteBeidellite-Ca
          47      2  SmectiteBeidellite-K
          48      3  SmectiteBeidellite-Mg
          49      4  SmectiteBeidellite-Na
          50      5  SmectiteMontmor-Ca
          51      6  SmectiteMontmor-K
          52      7  SmectiteMontmor-Mg
          53      8  SmectiteMontmor-Na
          54      9  SmectiteNontronite-Ca
          55     10  SmectiteNontronite-K
          56     11  SmectiteNontronite-Mg
          57     12  SmectiteNontronite-Na
```

```
Steps completed =   159, iter = 11, ncorr = 0

- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -


                    Reaction progress        =  1.63540866070830E-01
                    Log of reaction progress =      -0.7863737



                    Time =  1.363E+08 sec
                         =  1.577E+03 days
                         =  4.319E+00 years

                    Log sec =        8.134
                    Log days =       3.198
                    Log years =      0.635

                    Temperature    =     25.000 degrees C
                    total pressure =      1.013 bars


Change in the product phase assemblage


                              --- Reactant Summary ---


   Reactant                   Moles     Delta moles    Mass, g    Delta Mass, g

 Tuff                       9.9836E+01   1.6354E-01   2.0553E+03   3.3667E+00


               Current total mass =  2.05528E+03 grams
               Delta total mass   =  3.36673E+00 grams
               Delta total volume =      0.00000 cc


   Reactant                Rel. Rate      Rate         Rate
                            mol/mol       mol/s      mol/s/cm2

 Tuff                      1.0000E+00   1.2000E-09   2.5000E-15


   Reactant                  Affinity   Surface Area
                             kcal/mol     mol/s/cm2

 Tuff                       999.00000   4.8000E+05


   Reactant                Rate Constants, mol/s/cm2

 Tuff
                   Forward    2.5000E-15


         Affinity of the overall irreversible reaction=     0.000 kcal
         Contributions from irreversible reactions
         with no thermodynamic data are not included
```

--- Element Totals for the Aqueous Solution ---

Element	mg/kg soln.	Molality	Moles
O	8.865782E+05	5.558911E+01	5.557241E+01
Al	1.931417E+00	7.181014E-05	7.178856E-05
B	1.335430E-01	1.239172E-05	1.238800E-05
Ba	1.369336E-05	1.000301E-10	1.000000E-10
Ca	2.640015E+01	6.608102E-04	6.606116E-04
Ce	1.397135E-19	1.000300E-24	9.999993E-25
Cl	7.119720E+00	2.014605E-04	2.014000E-04
Cr	2.997702E+02	5.783544E-03	5.781806E-03
Cs	1.325247E-05	1.000301E-10	1.000000E-10
Cu	6.653216E-10	1.050316E-14	1.050000E-14
F	2.173821E+00	1.147845E-04	1.147500E-04
Fe	8.059357E-06	1.447695E-10	1.447260E-10
Gd	1.567995E-09	1.000300E-14	9.999998E-15
H	1.115491E+05	1.110216E+02	1.109883E+02
C	1.299554E-01	1.085405E-05	1.085079E-05
P	7.548659E+00	2.444850E-04	2.444116E-04
K	3.407391E+01	8.742597E-04	8.739971E-04
La	1.385076E-09	1.000300E-14	9.999998E-15
Li	6.921116E-07	1.000301E-10	1.000000E-10
Mg	6.963352E+00	2.874082E-04	2.873218E-04
Mn	2.177191E-04	3.975573E-09	3.974379E-09
Mo	2.180368E+02	2.279851E-03	2.279166E-03
N	1.983259E+00	1.420427E-04	1.420000E-04
Na	1.351861E+02	5.898937E-03	5.897164E-03
Nd	1.438268E-09	1.000300E-14	9.999998E-15
Ni	7.505468E+02	1.282892E-02	1.282506E-02
Pb	2.066064E-05	1.000301E-10	1.000000E-10
Pu	2.433009E-09	1.000300E-14	9.999997E-15
S	3.731526E+02	1.167396E-02	1.167045E-02
Si	2.804197E+00	1.001620E-04	1.001319E-04
Sm	1.499292E-09	1.000300E-14	9.999998E-15
Sr	8.736899E-06	1.000300E-10	1.000000E-10
Ti	1.079148E-05	2.261015E-10	2.260335E-10
U	2.373470E-09	1.000300E-14	9.999998E-15
V	4.770221E+00	9.393841E-05	9.391018E-05
Zn	6.520268E-06	1.000301E-10	1.000000E-10
Zr	9.096273E-16	1.000301E-20	1.000000E-20

Single ion activities and activity coefficients are here defined
with respect to the modified NBS pH scale

	pH	Eh	pe
modified NBS pH scale	4.6179	0.9459	1.5989E+01
rational pH scale	4.5443	0.9502	1.6063E+01

pHCl = 8.4010

Oxygen fugacity = 2.09991E-01
Log oxygen fugacity = -0.67780

Activity of water = 0.99943

Log activity of water = -0.00025

Ionic strength = 5.175186E-02 molal
Sum of molalities = 0.0376931075897
Osmotic coefficient = 0.84198

Mass of solution = 1.002873 kg
Mass of solutes = 0.003173 kg
Conc. of solutes = 0.316426 per cent (w/w)

Moles of solvent H2O = 5.54918E+01
Mass of solvent H2O = 9.99700E-01 kg

Species	Molality	Log molality	Log gamma	Log activity
Ni++	1.0291E-02	-1.9875	-0.3314	-2.3189
SO4--	8.7314E-03	-2.0589	-0.3438	-2.4027
Na+	5.7526E-03	-2.2401	-0.0936	-2.3337
HCrO4-	4.0206E-03	-2.3957	-0.0813	-2.4770
NiSO4(aq)	2.5358E-03	-2.5959	0.0000	-2.5959
MoO4--	2.2799E-03	-2.6421	-0.3337	-2.9758
K+	8.4979E-04	-3.0707	-0.0991	-3.1697
Cr2O7--	8.3260E-04	-3.0796	-0.3438	-3.4233
Ca++	5.3345E-04	-3.2729	-0.3314	-3.6043
O2(aq)	2.6210E-04	-3.5815	0.0054	-3.5761
H2PO4-	2.3913E-04	-3.6214	-0.0813	-3.7026
Cl-	2.0120E-04	-3.6964	-0.0867	-3.7831
Mg++	1.9027E-04	-3.7206	-0.3013	-4.0220
NaSO4-	1.4618E-04	-3.8351	-0.0813	-3.9164
NO3-	1.4015E-04	-3.8534	-0.0867	-3.9402
CaSO4(aq)	1.2710E-04	-3.8959	0.0000	-3.8959
SiO2(aq)	1.0016E-04	-3.9993	0.0000	-3.9993
CrO4--	9.7786E-05	-4.0097	-0.3438	-4.3535
MgSO4(aq)	9.7067E-05	-4.0129	0.0000	-4.0129
H2VO4-	5.3331E-05	-4.2730	-0.0813	-4.3543
AlF2+	3.6335E-05	-4.4397	-0.0936	-4.5333
VO2(OH)2-	3.3051E-05	-4.4808	-0.0813	-4.5621
H+	2.8553E-05	-4.5443	-0.0736	-4.6179
AlF++	2.7878E-05	-4.5547	-0.3584	-4.9131
KSO4-	2.4460E-05	-4.6115	-0.0813	-4.6928
B(OH)3(aq)	1.2391E-05	-4.9069	0.0000	-4.9069
HSO4-	1.0960E-05	-4.9602	-0.0813	-5.0415
CO2(aq)	1.0609E-05	-4.9743	0.0054	-4.9689
F-	7.3073E-06	-5.1362	-0.0839	-5.2202
VO(OH)3(aq)	6.6070E-06	-5.1800	0.0000	-5.1800
AlHPO4+	3.2399E-06	-5.4895	-0.0936	-5.5830
AlF3(aq)	2.2212E-06	-5.6534	0.0000	-5.6534
NiNO3+	1.7160E-06	-5.7655	-0.0936	-5.8591
HPO4--	1.1314E-06	-5.9464	-0.3438	-6.2901
AlSO4+	1.0186E-06	-5.9920	-0.0936	-6.0856
Al+++	8.8962E-07	-6.0508	-0.6421	-6.6929
H3PO4(aq)	7.0659E-07	-6.1508	0.0000	-6.1508
VO2+	3.9462E-07	-6.4038	-0.0936	-6.4974
VO3OH--	3.2514E-07	-6.4879	-0.3438	-6.8317
HCO3-	2.4284E-07	-6.6147	-0.0813	-6.6959
HF(aq)	2.1381E-07	-6.6700	0.0000	-6.6700
AlOH++	2.1183E-07	-6.6740	-0.3584	-7.0324
CaNO3+	1.7747E-07	-6.7509	-0.0936	-6.8444
VO2HPO4-	1.3297E-07	-6.8763	-0.0813	-6.9575
NaCl(aq)	1.2770E-07	-6.8938	0.0000	-6.8938
NiCl+	9.8937E-08	-7.0046	-0.0936	-7.0982
CaHPO4(aq)	7.0078E-08	-7.1544	0.0000	-7.1544

VO2SO4-	5.7702E-08	-7.2388	-0.0813	-7.3201
MgHPO4(aq)	3.9621E-08	-7.4021	0.0000	-7.4021
HVO4--	3.5024E-08	-7.4556	-0.3438	-7.7994
NaHPO4-	2.3847E-08	-7.6226	-0.0813	-7.7038
MgF+	1.5990E-08	-7.7961	-0.0936	-7.8897
MgCl+	1.4244E-08	-7.8464	-0.0936	-7.9400
Al(OH)2+	1.1002E-08	-7.9585	-0.0936	-8.0521
CaCl+	1.0247E-08	-7.9894	-0.0936	-8.0830
CaF+	8.9293E-09	-8.0492	-0.0936	-8.1428
VO2F(aq)	4.2897E-09	-8.3676	0.0000	-8.3676
AlF4-	4.0521E-09	-8.3923	-0.0813	-8.4736
H2CrO4(aq)	3.8522E-09	-8.4143	0.0000	-8.4143
KCl(aq)	3.5691E-09	-8.4474	0.0000	-8.4474
NaF(aq)	2.8088E-09	-8.5515	0.0000	-8.5515
Mn++	2.8004E-09	-8.5528	-0.3314	-8.8842
PO3F--	2.6008E-09	-8.5849	-0.3438	-8.9286
KHPO4-	2.5201E-09	-8.5986	-0.0813	-8.6799
NaHCO3(aq)	1.3318E-09	-8.8756	0.0000	-8.8756
MnSO4(aq)	1.1643E-09	-8.9339	0.0000	-8.9339
HCl(aq)	8.4917E-10	-9.0710	0.0000	-9.0710
CaHCO3+	6.9189E-10	-9.1600	-0.0936	-9.2535
HSiO3-	5.5863E-10	-9.2529	-0.0813	-9.3341
HAlO2(aq)	5.3383E-10	-9.2726	0.0000	-9.2726
OH-	5.0872E-10	-9.2935	-0.0839	-9.3774
HPO3F-	4.3074E-10	-9.3658	-0.0813	-9.4471
KHSO4(aq)	4.2003E-10	-9.3767	0.0000	-9.3767
H2P2O7--	3.9705E-10	-9.4012	-0.3438	-9.7449
BO2-	3.5289E-10	-9.4524	-0.0813	-9.5336
MgHCO3+	2.5786E-10	-9.5886	-0.0936	-9.6822
Ti(OH)4(aq)	2.2610E-10	-9.6457	0.0000	-9.6457
VO2(HPO4)2---	2.0309E-10	-9.6923	-0.7853	-10.4777
CrO3Cl-	1.7224E-10	-9.7639	-0.0813	-9.8451
HNO3(aq)	1.3786E-10	-9.8606	0.0000	-9.8606
Cs+	1.0002E-10	-9.9999	-0.1020	-10.1020

--- Summary of Instantaneously Precipitated Solid Phases ---
(defined by derivatives)

--- Theoretical Rock Composition ---
g/kg

O	5.331536E+01
Al	7.001941E+00
Ca	1.380913E-02
Fe	5.394687E-01
H	5.296616E-01
K	3.369611E+00
Mg	6.750306E-03
Mn	4.356575E-02
Na	3.167795E-03
S	5.513529E+00
Si	2.962068E+01
Ti	4.849052E-02

--- Oxide Percentages ---

Oxide Theoretical rock

Total = 0.0000

Phase/end-member	d mol/d zi	d grams/d zi	d vol (cc)/d zi
Alunite	2.1477E-02	8.8961E+00	6.3056E+00
Diaspore	1.9810E-04	1.1884E-02	3.5183E-03
Pyrolusite	2.5904E-01	2.2520E+01	1.2952E+02
Quartz	2.5300E-04	1.5201E-02	5.7401E-03
Rutile	-1.2558E-04	-1.0031E-02	-2.3635E-03
fix CO2(g)	-7.1223E-04	-3.1345E-02	0.0000E+00
fix O2(g)	9.4263E-11	3.0163E-09	0.0000E+00
Smectite-di			
Beidellite-Ca	2.9012E-11	1.0635E-08	3.7579E-09
Beidellite-K	7.5822E-11	2.8270E-08	1.0137E-08
Beidellite-Mg	1.8771E-11	6.8319E-09	2.3124E-09
Beidellite-Na	1.7779E-14	6.5344E-12	2.3209E-12
Montmor-Ca	8.9367E-15	3.2712E-12	4.4683E-12
Montmor-K	2.3242E-14	8.6537E-12	1.1621E-11
Montmor-Mg	5.6387E-15	2.0493E-12	2.8193E-12
Montmor-Na	5.2167E-04	1.9146E-01	2.6083E-01
Nontronite-Ca	1.6010E-04	6.7930E-02	2.0989E-02
Nontronite-K	4.2050E-04	1.8106E-01	5.6880E-02
Nontronite-Mg	1.0431E-04	4.3987E-02	1.3535E-02
Nontronite-Na	0.0000E+00	0.0000E+00	0.0000E+00

--- Summary of Solid Phases (E.S.+P.R.S.) ---

Phase/End-member	Log moles	Moles	Mass, g	Volume, cc
Alunite	-2.5558	2.7809E-03	1.1519E+00	8.1648E-01
Diaspore	-5.6392	2.2951E-06	1.3768E-04	4.0761E-05
Hematite	-3.7144	1.9300E-04	3.0820E-02	5.8428E-03
Nontronite-H	-4.9990	1.0023E-05	4.1899E-03	5.0117E-03
Pyrolusite	-3.2038	6.2539E-04	5.4370E-02	3.1270E-01
Quartz	-1.3661	4.3043E-02	2.5862E+00	9.7656E-01
Rutile	-4.3833	4.1376E-05	3.3050E-03	7.7869E-04
fix CO2(g)	2.3010	2.0000E+02	8.8020E+03	0.0000E+00
fix O2(g)	2.3010	2.0000E+02	6.3997E+03	0.0000E+00
Smectite-di	-5.6442	2.2687E-06		
Beidellite-Ca	-13.6962	2.0130E-14	7.3788E-12	2.6074E-12
Beidellite-K	-14.2074	6.2031E-15	2.3129E-12	8.2936E-13
Beidellite-Mg	-13.7907	1.6190E-14	5.8926E-12	1.9945E-12
Beidellite-Na	-14.3971	4.0075E-15	1.4729E-12	5.2314E-13
Montmor-Ca	-17.4203	3.7994E-18	1.3908E-15	1.8997E-15
Montmor-K	-17.7185	1.9122E-18	7.1196E-16	9.5608E-16
Montmor-Mg	-17.3040	4.9664E-18	1.8050E-15	2.4832E-15
Montmor-Na	-17.9191	1.2047E-18	4.4215E-16	6.0235E-16
Nontronite-Ca	-6.0082	9.8124E-07	4.1633E-04	1.2864E-04
Nontronite-K	-6.5194	3.0238E-07	1.3020E-04	4.0903E-05
Nontronite-Mg	-6.1025	7.8975E-07	3.3303E-04	1.0248E-04
Nontronite-Na	-6.7092	1.9535E-07	8.3075E-05	2.5807E-05

	Mass, grams	Volume, cc
Created	1.520554E+04	2.117705E+00
Destroyed	3.366729E+00	0.000000E+00
Net	1.520217E+04	2.117705E+00

Warning-- these volume totals may be incomplete because
of missing partial molar volume data in the data base

--- Summary of Pure Mineral Saturation States ---

Mineral	Log Q/K	Aff, kcal	State
AlF3	-5.145	-7.019	
Albite	-5.318	-7.255	
Albite_high	-6.637	-9.054	
Albite_low	-5.318	-7.255	
Alunite	0.000	0.000	satd
Analcime	-5.232	-7.138	
Andalusite	-5.623	-7.671	
Anglesite	-4.909	-6.698	
Anhydrite	-1.701	-2.320	
Arcanite	-6.941	-9.470	
BaCrO4	-4.770	-6.508	
BaZrO3	74.587	101.758	ssatd
Barite	-2.781	-3.793	
Bassanite	-2.346	-3.200	
Beidellite-Ca	-2.656	-3.624	
Beidellite-Cs	-4.958	-6.764	
Beidellite-H	-2.627	-3.585	
Beidellite-K	-2.825	-3.854	
Beidellite-Mg	-2.687	-3.666	
Beidellite-Na	-2.887	-3.939	
Berlinite	-1.156	-1.578	
Boehmite	-0.404	-0.551	
Boric_acid	-4.749	-6.478	
Bunsenite	-5.555	-7.579	
CaSO4:0.5H2O(beta)	-2.514	-3.429	
CaV2O6	-3.661	-4.995	
CaZrO3	135.361	184.672	ssatd
Celestite	-7.206	-9.831	
Chalcedony	-0.271	-0.370	
Coesite	-0.810	-1.105	
Corundum	-3.991	-5.445	
CrO2	-3.486	-4.757	
Cristobalite(alpha)	-0.551	-0.751	
Cristobalite(beta)	-0.994	-1.356	
Crocoite	-1.995	-2.722	
Dawsonite	-6.216	-8.480	
Diaspore	0.000	0.000	satd
Epsomite	-4.464	-6.090	
Fe(OH)3	-5.814	-7.932	
Fluorapatite	-3.264	-4.453	
Fluorite	-4.008	-5.468	
GdPO4:H2O	-5.051	-6.891	
Gibbsite	-0.596	-0.813	
Goethite	-0.693	-0.945	
Gypsum	-1.525	-2.081	
Hematite	-0.425	-0.580	
Hexahydrite	-4.699	-6.411	
Ice	-0.139	-0.190	
Illite	-4.383	-5.979	
Jadeite	-6.943	-9.472	
K-Feldspar	-3.114	-4.249	
Kalsilite	-6.290	-8.581	
Kaolinite	-0.488	-0.666	
Kieserite	-6.158	-8.401	
Kyanite	-5.352	-7.302	
LaPO4:H2O	-4.609	-6.288	
Lopezite	-6.845	-9.339	

Manganite	-4.459	-6.084	
Maximum_Microcline	-3.114	-4.249	
Mesolite	-6.165	-8.410	
Mirabilite	-5.933	-8.094	
MnHPO4	-2.227	-3.039	
MnO2(gamma)	-1.518	-2.071	
Montmor-Ca	-3.885	-5.300	
Montmor-Cs	-6.120	-8.350	
Montmor-K	-3.983	-5.435	
Montmor-Mg	-3.847	-5.248	
Montmor-Na	-4.050	-5.525	
Mordenite	-5.855	-7.988	
Morenosite	-2.709	-3.696	
Muscovite	-2.655	-3.622	
NdPO4:H2O	-4.877	-6.654	
Ni(OH)2	-5.832	-7.957	
Ni2SiO4	-4.508	-6.150	
Ni3(PO4)2	-3.660	-4.993	
NiSO4:6H2O(alpha)	-2.716	-3.705	
Niter	-6.904	-9.419	
Nontronite-Ca	-0.120	-0.164	
Nontronite-H	-0.091	-0.125	
Nontronite-K	-0.289	-0.394	
Nontronite-Mg	-0.151	-0.206	
Nontronite-Na	-0.351	-0.479	
Paragonite	-5.755	-7.851	
PbHPO4	-5.083	-6.934	
Pentahydrite	-5.039	-6.874	
Plumbogummite	-2.548	-3.477	
Pyrolusite	0.000	0.000	satd
Pyrophyllite	-2.116	-2.887	
Quartz	0.000	0.000	satd
Rutile	0.000	0.000	satd
Sanidine_high	-4.313	-5.885	
Sellaite	-5.078	-6.928	
Shcherbinaite	-2.307	-3.148	
SiO2(am)	-1.286	-1.754	
Sillimanite	-5.986	-8.167	
SmPO4:H2O	-4.891	-6.672	
SrZrO3	111.450	152.050	ssatd
Starkeyite	-5.426	-7.402	
Stilbite	-6.664	-9.092	
Strengite	-4.342	-5.923	
Syngenite	-7.149	-9.754	
Thenardite	-6.761	-9.224	
Trevorite	-3.188	-4.349	
Tridymite	-0.172	-0.234	
fix CO2(g)	0.000	0.000	satd
fix O2(g)	0.000	0.000	satd

--- Summary of Solid Solutions ---

--- Carbonate-Calcite ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Calcite	8.7887E-01	-0.0561	0.0000	-0.0561
Magnesite	1.2061E-01	-0.9186	0.0000	-0.9186
Rhodochrosite	5.0764E-04	-3.2944	0.0000	-3.2944
Siderite	3.9723E-12	-11.4010	0.0000	-11.4010

Smithsonite	3.9932E-06	-5.3987	0.0000	-5.3987
Strontianite	1.6992E-05	-4.7698	0.0000	-4.7698

Mineral	Log Q/K	Aff, kcal	State
Carbonate-Calcite	-7.475	-10.198	
Calcite	-7.475	-10.198	
Magnesite	-7.475	-10.198	
Rhodochrosite	-7.475	-10.198	
Siderite	-7.475	-10.198	
Smithsonite	-7.475	-10.198	
Strontianite	-7.475	-10.198	

--- Clinoptilolite-hy-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-hy-Ca	8.4878E-01	-0.0712	0.0000	-0.0712
Clinoptilolite-hy-Cs	1.6070E-23	-22.7940	0.0000	-22.7940
Clinoptilolite-hy-K	1.3486E-01	-0.8701	0.0000	-0.8701
Clinoptilolite-hy-Na	1.6355E-02	-1.7864	0.0000	-1.7864
Clinoptilolite-hy-Sr	1.4046E-12	-11.8524	0.0000	-11.8524

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-hy-ss	-16.580	-22.620	
Clinoptilolite-hy-Ca	-16.580	-22.620	
Clinoptilolite-hy-Cs	-16.580	-22.620	
Clinoptilolite-hy-K	-16.580	-22.620	
Clinoptilolite-hy-Na	-16.580	-22.620	
Clinoptilolite-hy-Sr	-16.580	-22.620	

--- Clinoptilolite-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-Ca	5.2471E-01	-0.2801	-0.6890	-0.9691
Clinoptilolite-Cs	1.4171E-07	-6.8486	-16.8476	-23.6962
Clinoptilolite-K	3.0761E-01	-0.5120	-1.2595	-1.7715
Clinoptilolite-NH4	3.2743E-57	-56.4849	-138.9528	-195.4377
Clinoptilolite-Na	1.6747E-01	-0.7761	-1.9091	-2.6852
Clinoptilolite-Sr	2.0667E-04	-3.6847	-9.0644	-12.7492

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-ss	-15.683	-21.397	
Clinoptilolite-Ca	-15.683	-21.397	
Clinoptilolite-Cs	-15.683	-21.397	
Clinoptilolite-K	-15.683	-21.397	
Clinoptilolite-NH4	-15.683	-21.397	
Clinoptilolite-Na	-15.683	-21.397	
Clinoptilolite-Sr	-15.683	-21.397	

--- Saponite-tri ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Saponite-Ca	2.8304E-01	-0.5481	0.3673	-0.1809
Saponite-H	3.4580E-01	-0.4612	0.3090	-0.1522
Saponite-K	8.7161E-02	-1.0597	0.7100	-0.3497
Saponite-Mg	2.2765E-01	-0.6427	0.4306	-0.2121
Saponite-Na	5.6350E-02	-1.2491	0.8369	-0.4122

Mineral	Log Q/K	Aff, kcal	State
Saponite-tri	-21.854	-29.815	
Saponite-Ca	-21.854	-29.815	
Saponite-H	-21.854	-29.815	
Saponite-K	-21.854	-29.815	
Saponite-Mg	-21.854	-29.815	
Saponite-Na	-21.854	-29.815	

--- Smectite-di ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Beidellite-Ca	8.9354E-09	-8.0489	5.3928	-2.6561
Beidellite-K	2.7535E-09	-8.5601	5.7353	-2.8248
Beidellite-Mg	7.1867E-09	-8.1435	5.4561	-2.6873
Beidellite-Na	1.7789E-09	-8.7498	5.8624	-2.8874
Montmor-Ca	1.6865E-12	-11.7730	7.8879	-3.8851
Montmor-K	8.4880E-13	-12.0712	8.0877	-3.9835
Montmor-Mg	2.2046E-12	-11.6567	7.8100	-3.8467
Montmor-Na	5.3476E-13	-12.2718	8.2221	-4.0497
Nontronite-Ca	4.3251E-01	-0.3640	0.2439	-0.1201
Nontronite-K	1.3328E-01	-0.8752	0.5864	-0.2888
Nontronite-Mg	3.4811E-01	-0.4583	0.3071	-0.1512
Nontronite-Na	8.6106E-02	-1.0650	0.7135	-0.3514

Mineral	Log Q/K	Aff, kcal	State
Smectite-di	0.000	0.000	satd
Beidellite-Ca	0.000	0.000	satd
Beidellite-K	0.000	0.000	satd
Beidellite-Mg	0.000	0.000	satd
Beidellite-Na	0.000	0.000	satd
Montmor-Ca	0.000	0.000	satd
Montmor-K	0.000	0.000	satd
Montmor-Mg	0.000	0.000	satd
Montmor-Na	0.000	0.000	satd
Nontronite-Ca	0.000	0.000	satd
Nontronite-K	0.000	0.000	satd
Nontronite-Mg	0.000	0.000	satd
Nontronite-Na	0.000	0.000	satd

--- Lanthanide hydroxide ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
La(OH)3	1.2869E-05	-4.8905	0.0000	-4.8905
Ce(OH)3	3.6724E-15	-14.4351	0.0000	-14.4351
Nd(OH)3(c)	3.4763E-01	-0.4589	0.0000	-0.4589
Gd(OH)3	5.8509E-01	-0.2328	0.0000	-0.2328
Sm(OH)3	6.7273E-02	-1.1722	0.0000	-1.1722

Mineral	Log Q/K	Aff, kcal	State
Lanthanide hydroxide	-16.873	-23.019	
La(OH)3	-16.873	-23.019	
Ce(OH)3	-16.873	-23.019	
Nd(OH)3(c)	-16.873	-23.019	
Gd(OH)3	-16.873	-23.019	
Sm(OH)3	-16.873	-23.019	

--- Rhabdophane-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaPO4:H2O	4.1273E-01	-0.3843	0.0000	-0.3843
CePO4:H2O	3.7246E-11	-10.4289	0.0000	-10.4289
NdPO4:H2O	2.2245E-01	-0.6528	0.0000	-0.6528
GdPO4:H2O	1.4906E-01	-0.8267	0.0000	-0.8267
SmPO4:H2O	2.1576E-01	-0.6660	0.0000	-0.6660

Mineral	Log Q/K	Aff, kcal	State
Rhabdophane-ss	-4.225	-5.764	
LaPO4:H2O	-4.225	-5.764	
CePO4:H2O	-4.225	-5.764	
NdPO4:H2O	-4.225	-5.764	
GdPO4:H2O	-4.225	-5.764	
SmPO4:H2O	-4.225	-5.764	

--- Lanthanide fluoride ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaF3:0.5H2O	5.7300E-01	-0.2418	0.0000	-0.2418
CeF3:0.5H2O	8.1954E-11	-10.0864	0.0000	-10.0864
NdF3:0.5H2O	3.8881E-01	-0.4103	0.0000	-0.4103
GdF3:0.5H2O	8.2383E-03	-2.0842	0.0000	-2.0842
SmF3:0.5H2O	2.9955E-02	-1.5235	0.0000	-1.5235

Mineral	Log Q/K	Aff, kcal	State
Lanthanide fluoride	-12.005	-16.379	
LaF3:0.5H2O	-12.005	-16.379	
CeF3:0.5H2O	-12.005	-16.379	
NdF3:0.5H2O	-12.005	-16.379	
GdF3:0.5H2O	-12.005	-16.379	
SmF3:0.5H2O	-12.005	-16.379	

--- Summary of Gases ---

Gas	Fugacity	Log fugacity
Al(g)	1.6469-191	-190.7833
B(g)	8.5633-204	-203.0674
BF3(g)	3.5160E-32	-31.4540
C(g)	3.0917-190	-189.5098
CH4(g)	3.5254-146	-145.4528
CO(g)	6.0395E-49	-48.2190
CO2(g)	3.1623E-04	-3.5000
Ca(g)	2.1952-158	-157.6585
Chlorine	2.5688E-22	-21.5903
Cs(g)	1.3467E-86	-85.8707
Cu(g)	1.1145E-87	-86.9529
Fluorine	6.5510E-78	-77.1837
H2(g)	6.1116E-42	-41.2138
H2O(g)	2.5963E-02	-1.5856
H2S(g)	1.4884-135	-134.8273
HCl(g)	1.9656E-15	-14.7065
HF(g)	1.1203E-11	-10.9507
K(g)	5.7623E-80	-79.2394
Li(g)	2.9881-100	-99.5246
Mg(g)	5.6521-136	-135.2478
Nitrogen	1.8687E-13	-12.7285
NH3(g)	4.9796E-66	-65.3028
NO(g)	1.3612E-22	-21.8661
NO2(g)	9.3072E-17	-16.0312
Na(g)	2.0612E-78	-77.6859
O2(g)	2.0999E-01	-0.6778
Pb(g)	1.1357E-75	-74.9448
S2(g)	1.3224-213	-212.8786
SO2(g)	2.6367E-48	-47.5789
Si(g)	4.2257-221	-220.3741
SiF4(g)	6.9504E-29	-28.1580
Ti(g)	3.8019-231	-230.4200
TiCl4(g)	5.0057E-72	-71.3005
U(g)	1.1207-300	-299.9505
U2Cl10(g)	1.1020-219	-218.9578
U2Cl8(g)	1.3300-228	-227.8762
U2F10(g)	5.2776-139	-138.2776
UCl(g)	1.9637-253	-252.7069
UCl2(g)	1.0293-204	-203.9875
UCl3(g)	1.1817-153	-152.9275
UCl4(g)	7.3464-120	-119.1339
UCl5(g)	2.3499-123	-122.6290
UCl6(g)	1.3964-121	-120.8550
UF(g)	2.3785-239	-238.6237
UF2(g)	3.7438-196	-195.4267
UF3(g)	1.4502-146	-145.8386
UF4(g)	8.2912E-94	-93.0814

```
UF5(g)                      2.1713E-82    -81.6633
UF6(g)                      5.5991E-85    -84.2519
UO(g)                       8.8513-216   -215.0530
UO2(g)                      1.6399-131   -130.7852
UO2Cl2(g)                   1.8392E-72    -71.7354
UO2F2(g)                    4.8530E-62    -61.3140
UO3(g)                      1.2062E-78    -77.9186
UOF4(g)                     2.4707E-71    -70.6072
Zn(g)                       1.8939E-85    -84.7226



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--- shifting e.s. solid(s) to the p.r.s. (shftz) ---

      shifted -- Alunite
              - old mass=  2.69743E-05, new mass=  8.00000E-07
      shifted -- Diaspore
              - old mass=  2.29509E-06, new mass=  8.00000E-07
      shifted -- Pyrolusite
              - old mass=  1.04299E-06, new mass=  8.00000E-07
      shifted -- Quartz
              - old mass=  3.12659E-04, new mass=  3.12659E-06
      shifted -- Rutile
              - old mass=  1.10459E-06, new mass=  8.00000E-07
      shifted -- Smectite-di
              - old mass=  2.25268E-06, new mass=  8.00000E-07

Stepping to zi=  1.6354E-01, delzi=  1.0000E-09, nord= 0
  time =  1.5774E+03 d, dltime =  9.6451E-06 d
Steps completed =   160, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Diaspore                ) =     -6.0969

Stepping to zi=  1.6354E-01, delzi=  1.0000E-09, nord= 0
  time =  1.5774E+03 d, dltime =  9.6451E-06 d
Steps completed =   161, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Diaspore                ) =     -6.0968

Stepping to zi=  1.6354E-01, delzi=  1.0000E-09, nord= 0
  time =  1.5774E+03 d, dltime =  9.6451E-06 d
Steps completed =   162, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Diaspore                ) =     -6.0967

Stepping to zi=  1.6354E-01, delzi=  1.2073E-09, nord= 1
  time =  1.5774E+03 d, dltime =  1.1644E-05 d
Steps completed =   163, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Diaspore                ) =     -6.0967

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                     Reaction progress        =  1.63540870278110E-01
                     Log of reaction progress =      -0.7863737



                     Time =  1.363E+08 sec
                          =  1.577E+03 days
                          =  4.319E+00 years

                     Log sec =        8.134
```

Log days = 3.198
Log years = 0.635

Temperature = 25.000 degrees C
total pressure = 1.013 bars

Flow-through system print following a discontinuity

--- Summary of Instantaneously Precipitated Solid Phases ---
(defined by derivatives)

--- Theoretical Rock Composition ---
g/kg

O	5.257287E+01
Al	9.081816E+00
Ca	2.220463E-02
Fe	8.705552E-01
H	4.278022E-02
Mg	1.084122E-02
Mn	6.889459E-02
Na	5.080881E-03
Si	4.780262E+01
Ti	7.825517E-02

--- Oxide Percentages ---

Oxide Theoretical rock

Total = 0.0000

Phase/end-member	d mol/d zi	d grams/d zi	d vol (cc)/d zi
Alunite	-1.5849E-02	-6.5651E+00	-4.6534E+00
Diaspore	9.9254E-02	5.9541E+00	1.7627E+00
Pyrolusite	1.9412E-04	1.6876E-02	9.7061E-02
Quartz	2.5904E-01	1.5564E+01	5.8771E+00
Rutile	2.5300E-04	2.0209E-02	4.7615E-03
fix CO2(g)	0.0000E+00	0.0000E+00	0.0000E+00
fix O2(g)	-7.1054E-04	-2.2737E-02	0.0000E+00
Smectite-di			
Beidellite-Ca	1.0901E-11	3.9960E-09	1.4120E-09
Beidellite-K	3.4506E-12	1.2866E-09	4.6134E-10
Beidellite-Mg	8.7703E-12	3.1920E-09	1.0804E-09
Beidellite-Na	2.1742E-12	7.9910E-10	2.8382E-10
Montmor-Ca	2.1043E-15	7.7027E-13	1.0522E-12
Montmor-K	1.0872E-15	4.0480E-13	5.4359E-13
Montmor-Mg	2.7514E-15	9.9998E-13	1.3757E-12
Montmor-Na	6.6841E-16	2.4532E-13	3.3420E-13
Nontronite-Ca	5.1977E-04	2.2054E-01	6.8142E-02
Nontronite-K	1.6459E-04	7.0870E-02	2.2264E-02
Nontronite-Mg	4.1847E-04	1.7646E-01	5.4300E-02
Nontronite-Na	1.0367E-04	4.4087E-02	1.3696E-02

--- Summary of Solid Phases (E.S.+P.R.S.) ---

Phase/End-member	Log moles	Moles	Mass, g	Volume, cc

```
Alunite                    -2.5558   2.7809E-03   1.1519E+00   8.1648E-01
Diaspore                   -5.6391   2.2955E-06   1.3770E-04   4.0768E-05
Hematite                   -3.7144   1.9300E-04   3.0820E-02   5.8428E-03
Nontronite-H               -4.9990   1.0023E-05   4.1899E-03   5.0117E-03
Pyrolusite                 -3.2038   6.2539E-04   5.4370E-02   3.1270E-01
Quartz                     -1.3661   4.3043E-02   2.5862E+00   9.7656E-01
Rutile                     -4.3833   4.1376E-05   3.3050E-03   7.7869E-04
fix     CO2(g)              2.3010   2.0000E+02   8.8020E+03   0.0000E+00
fix     O2(g)               2.3010   2.0000E+02   6.3997E+03   0.0000E+00

Smectite-di                -5.6442   2.2687E-06
  Beidellite-Ca           -13.6962   2.0130E-14   7.3788E-12   2.6074E-12
  Beidellite-K            -14.2074   6.2032E-15   2.3129E-12   8.2936E-13
  Beidellite-Mg           -13.7907   1.6190E-14   5.8926E-12   1.9945E-12
  Beidellite-Na           -14.3971   4.0075E-15   1.4729E-12   5.2314E-13
  Montmor-Ca              -17.4203   3.7995E-18   1.3908E-15   1.8997E-15
  Montmor-K               -17.7185   1.9122E-18   7.1197E-16   9.5609E-16
  Montmor-Mg              -17.3040   4.9664E-18   1.8050E-15   2.4832E-15
  Montmor-Na              -17.9191   1.2047E-18   4.4215E-16   6.0235E-16
  Nontronite-Ca            -6.0082   9.8124E-07   4.1633E-04   1.2864E-04
  Nontronite-K             -6.5194   3.0238E-07   1.3020E-04   4.0904E-05
  Nontronite-Mg            -6.1025   7.8975E-07   3.3303E-04   1.0248E-04
  Nontronite-Na            -6.7092   1.9535E-07   8.3075E-05   2.5807E-05


                         Mass, grams        Volume, cc

          Created        1.520554E+04       2.117705E+00
          Destroyed      0.000000E+00       0.000000E+00
          Net            1.520554E+04       2.117705E+00

         Warning-- these volume totals may be incomplete because
         of missing partial molar volume data in the data base




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Stepping to zi=  1.6354E-01, delzi=  1.2073E-08, nord= 2
  time =  1.5774E+03 d, dltime =  1.1644E-04 d
Steps completed =   164, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Diaspore                ) =     -6.0960

Stepping to zi=  1.6354E-01, delzi=  1.2073E-07, nord= 2
  time =  1.5774E+03 d, dltime =  1.1644E-03 d
Steps completed =   165, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Diaspore                ) =     -6.0896

Stepping to zi=  1.6354E-01, delzi=  1.2073E-06, nord= 2
  time =  1.5774E+03 d, dltime =  1.1644E-02 d
Steps completed =   166, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Diaspore                ) =     -6.0299

Stepping to zi=  1.6355E-01, delzi=  1.2073E-05, nord= 2
  time =  1.5775E+03 d, dltime =  1.1644E-01 d
Steps completed =   167, iter =  6, ncorr = 0
Most rapidly changing is zvclg1(Diaspore                ) =     -5.6713

Stepping to zi=  1.6361E-01, delzi=  5.6869E-05, nord= 2
  time =  1.5780E+03 d, dltime =  5.4850E-01 d
```

```
--- Iteration has gone sour (iter=  16) ---
     The phase to be dropped is Alunite                    (   20)


  Attempted species assemblage no.   2

             1      1  H2O
             2      3  Al+++
             3      7  B(OH)3(aq)
             4      8  Ba++
             5     11  Ca++
             6     13  Ce+++
             7     14  Cl-
             8     16  CrO4--
             9     17  Cs+
            10     18  Cu++
            11     22  F-
            12     23  Fe++
            13     25  Gd+++
            14     26  H+
            15     28  HCO3-
            16     29  HPO4--
            17     35  K+
            18     37  La+++
            19     38  Li+
            20     40  Mg++
            21     41  Mn++
            22     42  MoO4--
            23     43  NO3-
            24     44  Na+
            25     45  Nd+++
            26     47  Ni++
            27     49  Pb++
            28     52  Pu++++
            29     58  SO4--
            30     62  SiO2(aq)
            31     63  Sm+++
            32     65  Sr++
            33     69  Ti(OH)4(aq)
            34     72  UO2++
            35     73  VO++
            36     78  Zn++
            37     79  Zr(OH)2++
            38     80  O2(g)
            39    192  Diaspore
            40    470  Pyrolusite
            41    475  Quartz
            42    482  Rutile
            43    689  fix     CO2(g)
            44    690  fix     O2(g)
            45      1  SmectiteBeidellite-Ca
            46      2  SmectiteBeidellite-K
            47      3  SmectiteBeidellite-Mg
            48      4  SmectiteBeidellite-Na
            49      5  SmectiteMontmor-Ca
            50      6  SmectiteMontmor-K
            51      7  SmectiteMontmor-Mg
            52      8  SmectiteMontmor-Na
            53      9  SmectiteNontronite-Ca
            54     10  SmectiteNontronite-K
            55     11  SmectiteNontronite-Mg
            56     12  SmectiteNontronite-Na
```

```
Steps completed =   168, iter =  5, ncorr = 0

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                    Reaction progress        =  1.63611152108958E-01
                    Log of reaction progress =      -0.7861871



                    Time =  1.363E+08 sec
                         =  1.578E+03 days
                         =  4.320E+00 years

                    Log sec =        8.135
                    Log days =       3.198
                    Log years =      0.636

                    Temperature    =     25.000 degrees C
                    total pressure =      1.013 bars


Change in the product phase assemblage


                              --- Reactant Summary ---


   Reactant                   Moles     Delta moles    Mass, g    Delta Mass, g

 Tuff                       9.9836E+01   1.6361E-01   2.0553E+03   3.3682E+00


               Current total mass =  2.05528E+03 grams
               Delta total mass   =  3.36818E+00 grams
               Delta total volume =      0.00000 cc


   Reactant                Rel. Rate      Rate         Rate
                            mol/mol       mol/s      mol/s/cm2

 Tuff                      1.0000E+00   1.2000E-09   2.5000E-15


   Reactant                  Affinity   Surface Area
                             kcal/mol     mol/s/cm2

 Tuff                       999.00000   4.8000E+05


   Reactant                Rate Constants, mol/s/cm2

 Tuff
                   Forward    2.5000E-15


         Affinity of the overall irreversible reaction=     0.000 kcal
         Contributions from irreversible reactions
         with no thermodynamic data are not included
```

--- Element Totals for the Aqueous Solution ---

Element	mg/kg soln.	Molality	Moles
O	8.865781E+05	5.558912E+01	5.557242E+01
Al	1.926346E+00	7.162160E-05	7.160008E-05
B	1.335430E-01	1.239172E-05	1.238800E-05
Ba	1.369336E-05	1.000301E-10	1.000000E-10
Ca	2.640568E+01	6.609488E-04	6.607502E-04
Ce	1.397135E-19	1.000300E-24	9.999993E-25
Cl	7.119718E+00	2.014605E-04	2.014000E-04
Cr	2.997701E+02	5.783544E-03	5.781806E-03
Cs	1.325247E-05	1.000301E-10	1.000000E-10
Cu	6.653214E-10	1.050316E-14	1.050000E-14
F	2.173820E+00	1.147845E-04	1.147500E-04
Fe	7.989177E-06	1.435089E-10	1.434657E-10
Gd	1.567995E-09	1.000300E-14	9.999998E-15
H	1.115490E+05	1.110216E+02	1.109883E+02
C	1.299692E-01	1.085520E-05	1.085194E-05
P	7.548752E+00	2.444881E-04	2.444147E-04
K	3.416402E+01	8.765721E-04	8.763087E-04
La	1.385075E-09	1.000300E-14	9.999998E-15
Li	6.921114E-07	1.000301E-10	1.000000E-10
Mg	6.965365E+00	2.874914E-04	2.874050E-04
Mn	2.156777E-04	3.938298E-09	3.937115E-09
Mo	2.180367E+02	2.279851E-03	2.279166E-03
N	1.983259E+00	1.420427E-04	1.420000E-04
Na	1.352245E+02	5.900613E-03	5.898840E-03
Nd	1.438267E-09	1.000300E-14	9.999998E-15
Ni	7.505466E+02	1.282892E-02	1.282506E-02
Pb	2.066064E-05	1.000301E-10	1.000000E-10
Pu	2.433009E-09	1.000300E-14	9.999997E-15
S	3.732036E+02	1.167556E-02	1.167205E-02
Si	2.804197E+00	1.001620E-04	1.001319E-04
Sm	1.499292E-09	1.000300E-14	9.999998E-15
Sr	8.736897E-06	1.000301E-10	1.000000E-10
Ti	1.079148E-05	2.261014E-10	2.260335E-10
U	2.373469E-09	1.000300E-14	9.999998E-15
V	4.770220E+00	9.393841E-05	9.391018E-05
Zn	6.520266E-06	1.000301E-10	1.000000E-10
Zr	9.096270E-16	1.000301E-20	1.000000E-20

Single ion activities and activity coefficients are here defined
with respect to the modified NBS pH scale

	pH	Eh	pe
modified NBS pH scale	4.6200	0.9457	1.5987E+01
rational pH scale	4.5464	0.9501	1.6061E+01

pHCl = 8.4031

Oxygen fugacity = 2.09991E-01
Log oxygen fugacity = -0.67780

Activity of water = 0.99943

Log activity of water = -0.00025

Ionic strength = 5.175646E-02 molal
Sum of molalities = 0.0376984061310
Osmotic coefficient = 0.84198

Mass of solution = 1.002873 kg
Mass of solutes = 0.003174 kg
Conc. of solutes = 0.316454 per cent (w/w)

Moles of solvent H2O = 5.54918E+01
Mass of solvent H2O = 9.99700E-01 kg

Species	Molality	Log molality	Log gamma	Log activity
Ni++	1.0291E-02	-1.9875	-0.3314	-2.3189
SO4--	8.7326E-03	-2.0589	-0.3438	-2.4026
Na+	5.7542E-03	-2.2400	-0.0936	-2.3336
HCrO4-	4.0203E-03	-2.3957	-0.0813	-2.4770
NiSO4(aq)	2.5360E-03	-2.5959	0.0000	-2.5959
MoO4--	2.2799E-03	-2.6421	-0.3337	-2.9758
K+	8.5204E-04	-3.0695	-0.0991	-3.1686
Cr2O7--	8.3250E-04	-3.0796	-0.3438	-3.4234
Ca++	5.3355E-04	-3.2728	-0.3314	-3.6042
O2(aq)	2.6210E-04	-3.5815	0.0054	-3.5761
H2PO4-	2.3916E-04	-3.6213	-0.0813	-3.7026
Cl-	2.0120E-04	-3.6964	-0.0867	-3.7831
Mg++	1.9032E-04	-3.7205	-0.3013	-4.0219
NaSO4-	1.4624E-04	-3.8349	-0.0813	-3.9162
NO3-	1.4015E-04	-3.8534	-0.0867	-3.9402
CaSO4(aq)	1.2713E-04	-3.8957	0.0000	-3.8957
SiO2(aq)	1.0016E-04	-3.9993	0.0000	-3.9993
CrO4--	9.8246E-05	-4.0077	-0.3438	-4.3515
MgSO4(aq)	9.7101E-05	-4.0128	0.0000	-4.0128
H2VO4-	5.3350E-05	-4.2729	-0.0813	-4.3541
AlF2+	3.6370E-05	-4.4393	-0.0936	-4.5328
VO2(OH)2-	3.3063E-05	-4.4807	-0.0813	-4.5619
H+	2.8419E-05	-4.5464	-0.0736	-4.6200
AlF++	2.7695E-05	-4.5576	-0.3584	-4.9160
KSO4-	2.4528E-05	-4.6103	-0.0813	-4.6916
B(OH)3(aq)	1.2391E-05	-4.9069	0.0000	-4.9069
HSO4-	1.0909E-05	-4.9622	-0.0813	-5.0435
CO2(aq)	1.0609E-05	-4.9743	0.0054	-4.9689
F-	7.3630E-06	-5.1329	-0.0839	-5.2169
VO(OH)3(aq)	6.5781E-06	-5.1819	0.0000	-5.1819
AlHPO4+	3.2098E-06	-5.4935	-0.0936	-5.5871
AlF3(aq)	2.2402E-06	-5.6497	0.0000	-5.6497
NiNO3+	1.7159E-06	-5.7655	-0.0936	-5.8591
HPO4--	1.1370E-06	-5.9442	-0.3438	-6.2880
AlSO4+	1.0043E-06	-5.9981	-0.0936	-6.0917
Al+++	8.7710E-07	-6.0570	-0.6421	-6.6991
H3PO4(aq)	7.0333E-07	-6.1528	0.0000	-6.1528
VO2+	3.9104E-07	-6.4078	-0.0936	-6.5014
VO3OH--	3.2681E-07	-6.4857	-0.3438	-6.8295
HCO3-	2.4400E-07	-6.6126	-0.0813	-6.6939
HF(aq)	2.1442E-07	-6.6687	0.0000	-6.6687
AlOH++	2.0984E-07	-6.6781	-0.3584	-7.0365
CaNO3+	1.7750E-07	-6.7508	-0.0936	-6.8444
VO2HPO4-	1.3240E-07	-6.8781	-0.0813	-6.9594
NaCl(aq)	1.2773E-07	-6.8937	0.0000	-6.8937
NiCl+	9.8933E-08	-7.0047	-0.0936	-7.0982
CaHPO4(aq)	7.0431E-08	-7.1522	0.0000	-7.1522

VO2SO4-	5.7186E-08	-7.2427	-0.0813	-7.3240
MgHPO4(aq)	3.9823E-08	-7.3999	0.0000	-7.3999
HVO4--	3.5204E-08	-7.4534	-0.3438	-7.7972
NaHPO4-	2.3970E-08	-7.6203	-0.0813	-7.7016
MgF+	1.6116E-08	-7.7927	-0.0936	-7.8863
MgCl+	1.4247E-08	-7.8463	-0.0936	-7.9399
Al(OH)2+	1.0950E-08	-7.9606	-0.0936	-8.0542
CaCl+	1.0248E-08	-7.9893	-0.0936	-8.0829
CaF+	8.9988E-09	-8.0458	-0.0936	-8.1394
VO2F(aq)	4.2831E-09	-8.3682	0.0000	-8.3682
AlF4-	4.1180E-09	-8.3853	-0.0813	-8.4666
H2CrO4(aq)	3.8337E-09	-8.4164	0.0000	-8.4164
KCl(aq)	3.5785E-09	-8.4463	0.0000	-8.4463
NaF(aq)	2.8309E-09	-8.5481	0.0000	-8.5481
Mn++	2.7741E-09	-8.5569	-0.3314	-8.8883
PO3F--	2.6210E-09	-8.5815	-0.3438	-8.9253
KHPO4-	2.5390E-09	-8.5953	-0.0813	-8.6766
NaHCO3(aq)	1.3385E-09	-8.8734	0.0000	-8.8734
MnSO4(aq)	1.1535E-09	-8.9380	0.0000	-8.9380
HCl(aq)	8.4515E-10	-9.0731	0.0000	-9.0731
CaHCO3+	6.9530E-10	-9.1578	-0.0936	-9.2514
HSiO3-	5.6129E-10	-9.2508	-0.0813	-9.3321
HAlO2(aq)	5.3383E-10	-9.2726	0.0000	-9.2726
OH-	5.1114E-10	-9.2915	-0.0839	-9.3754
HPO3F-	4.3202E-10	-9.3645	-0.0813	-9.4458
KHSO4(aq)	4.1920E-10	-9.3776	0.0000	-9.3776
H2P2O7--	3.9716E-10	-9.4010	-0.3438	-9.7448
BO2-	3.5457E-10	-9.4503	-0.0813	-9.5316
MgHCO3+	2.5915E-10	-9.5865	-0.0936	-9.6800
Ti(OH)4(aq)	2.2610E-10	-9.6457	0.0000	-9.6457
VO2(HPO4)2---	2.0322E-10	-9.6920	-0.7854	-10.4774
CrO3Cl-	1.7141E-10	-9.7660	-0.0813	-9.8472
HNO3(aq)	1.3721E-10	-9.8626	0.0000	-9.8626
Cs+	1.0002E-10	-9.9999	-0.1020	-10.1020

--- Summary of Instantaneously Precipitated Solid Phases ---
(defined by derivatives)

--- Theoretical Rock Composition ---
g/kg

O	5.257350E+01
Al	9.081928E+00
Ca	2.218745E-02
Fe	8.706050E-01
H	4.269190E-02
Mg	1.083350E-02
Mn	6.889832E-02
Na	5.078923E-03
Si	4.780535E+01
Ti	7.825964E-02

--- Oxide Percentages ---

Oxide Theoretical rock

Total = 0.0000

Phase/end-member d mol/d zi d grams/d zi d vol (cc)/d zi

Diaspore	-1.5853E-02	-9.5101E-01	-2.8156E-01
Pyrolusite	9.9263E-02	8.6296E+00	4.9632E+01
Quartz	1.9412E-04	1.1664E-02	4.4042E-03
Rutile	2.5904E-01	2.0692E+01	4.8752E+00
fix CO2(g)	2.5300E-04	1.1134E-02	0.0000E+00
fix O2(g)	-3.8945E-06	-1.2462E-04	0.0000E+00
Smectite-di			
Beidellite-Ca	-7.0033E-04	-2.5672E-01	-9.0714E-02
Beidellite-K	1.0927E-11	4.0740E-09	1.4609E-09
Beidellite-Mg	3.4780E-12	1.2658E-09	4.2845E-10
Beidellite-Na	8.7913E-12	3.2311E-09	1.1476E-09
Montmor-Ca	2.1801E-12	7.9801E-10	1.0901E-09
Montmor-K	2.1191E-15	7.8902E-13	1.0596E-12
Montmor-Mg	1.1008E-15	4.0008E-13	5.5041E-13
Montmor-Na	2.7710E-15	1.0170E-12	1.3855E-12
Nontronite-Ca	6.7336E-16	2.8570E-13	8.8278E-14
Nontronite-K	5.1934E-04	2.2362E-01	7.0252E-02
Nontronite-Mg	1.6539E-04	6.9744E-02	2.1461E-02
Nontronite-Na	4.1814E-04	1.7782E-01	5.5241E-02

--- Summary of Solid Phases (E.S.+P.R.S.) ---

Phase/End-member	Log moles	Moles	Mass, g	Volume, cc
Alunite	-2.5559	2.7801E-03	1.1516E+00	8.1624E-01
Diaspore	-5.0719	8.4740E-06	5.0834E-04	1.5050E-04
Hematite	-3.7144	1.9300E-04	3.0820E-02	5.8428E-03
Nontronite-H	-4.9990	1.0023E-05	4.1899E-03	5.0117E-03
Pyrolusite	-3.2038	6.2541E-04	5.4371E-02	3.1270E-01
Quartz	-1.3659	4.3061E-02	2.5873E+00	9.7697E-01
Rutile	-4.3831	4.1393E-05	3.3065E-03	7.7903E-04
fix CO2(g)	2.3010	2.0000E+02	8.8020E+03	0.0000E+00
fix O2(g)	2.3010	2.0000E+02	6.3997E+03	0.0000E+00
Smectite-di	-5.6283	2.3535E-06		
Beidellite-Ca	-13.6793	2.0926E-14	7.6705E-12	2.7105E-12
Beidellite-K	-14.1901	6.4547E-15	2.4066E-12	8.6299E-13
Beidellite-Mg	-13.7739	1.6831E-14	6.1256E-12	2.0734E-12
Beidellite-Na	-14.3803	4.1663E-15	1.5313E-12	5.4387E-13
Montmor-Ca	-17.4018	3.9643E-18	1.4511E-15	1.9822E-15
Montmor-K	-17.6996	1.9971E-18	7.4358E-16	9.9854E-16
Montmor-Mg	-17.2855	5.1820E-18	1.8833E-15	2.5910E-15
Montmor-Na	-17.9006	1.2571E-18	4.6137E-16	6.2854E-16
Nontronite-Ca	-5.9923	1.0178E-06	4.3184E-04	1.3343E-04
Nontronite-K	-6.5031	3.1394E-07	1.3518E-04	4.2467E-05
Nontronite-Mg	-6.0866	8.1917E-07	3.4543E-04	1.0630E-04
Nontronite-Na	-6.6933	2.0264E-07	8.6174E-05	2.6770E-05

	Mass, grams	Volume, cc
Created	1.520554E+04	2.118012E+00
Destroyed	3.368176E+00	0.000000E+00
Net	1.520217E+04	2.118012E+00

Warning-- these volume totals may be incomplete because of missing partial molar volume data in the data base

--- Summary of Pure Mineral Saturation States ---

Mineral	Log Q/K	Aff, kcal	State
AlF3	-5.141	-7.014	
Albite	-5.316	-7.252	
Albite_high	-6.634	-9.051	
Albite_low	-5.316	-7.252	
Alunite	-0.005	-0.007	
Analcime	-5.230	-7.135	
Andalusite	-5.623	-7.671	
Anglesite	-4.909	-6.698	
Anhydrite	-1.700	-2.320	
Arcanite	-6.939	-9.467	
BaCrO4	-4.768	-6.505	
BaZrO3	74.591	101.763	ssatd
Barite	-2.781	-3.793	
Bassanite	-2.345	-3.200	
Beidellite-Ca	-2.655	-3.623	
Beidellite-Cs	-4.957	-6.763	
Beidellite-H	-2.627	-3.585	
Beidellite-K	-2.824	-3.852	
Beidellite-Mg	-2.687	-3.665	
Beidellite-Na	-2.887	-3.938	
Berlinite	-1.158	-1.580	
Boehmite	-0.404	-0.551	
Boric_acid	-4.749	-6.478	
Bunsenite	-5.551	-7.573	
CaSO4:0.5H2O(beta)	-2.514	-3.429	
CaV2O6	-3.661	-4.995	
CaZrO3	135.366	184.677	ssatd
Celestite	-7.206	-9.831	
Chalcedony	-0.271	-0.370	
Coesite	-0.810	-1.105	
Corundum	-3.991	-5.445	
CrO2	-3.489	-4.759	
Cristobalite(alpha)	-0.551	-0.751	
Cristobalite(beta)	-0.994	-1.356	
Crocoite	-1.993	-2.719	
Dawsonite	-6.214	-8.477	
Diaspore	0.000	0.000	satd
Epsomite	-4.464	-6.090	
Fe(OH)3	-5.815	-7.933	
Fluorapatite	-3.248	-4.431	
Fluorite	-4.001	-5.458	
GdPO4:H2O	-5.047	-6.886	
Gibbsite	-0.596	-0.813	
Goethite	-0.693	-0.946	
Gypsum	-1.525	-2.081	
Hematite	-0.426	-0.581	
Hexahydrite	-4.699	-6.411	
Ice	-0.139	-0.190	
Illite	-4.380	-5.975	
Jadeite	-6.941	-9.469	
K-Feldspar	-3.111	-4.244	
Kalsilite	-6.286	-8.576	
Kaolinite	-0.488	-0.666	
Kieserite	-6.158	-8.401	
Kyanite	-5.352	-7.302	
LaPO4:H2O	-4.605	-6.282	
Lopezite	-6.843	-9.336	
Manganite	-4.459	-6.084	
Maximum_Microcline	-3.111	-4.244	
Mesolite	-6.160	-8.405	

Mirabilite	-5.932	-8.094	
MnHPO4	-2.229	-3.041	
MnO2(gamma)	-1.518	-2.071	
Montmor-Ca	-3.883	-5.298	
Montmor-Cs	-6.118	-8.347	
Montmor-K	-3.981	-5.431	
Montmor-Mg	-3.845	-5.245	
Montmor-Na	-4.048	-5.522	
Mordenite	-5.853	-7.985	
Morenosite	-2.709	-3.696	
Muscovite	-2.651	-3.617	
NdPO4:H2O	-4.873	-6.649	
Ni(OH)2	-5.828	-7.951	
Ni2SiO4	-4.499	-6.138	
Ni3(PO4)2	-3.652	-4.982	
NiSO4:6H2O(alpha)	-2.716	-3.705	
Niter	-6.903	-9.417	
Nontronite-Ca	-0.120	-0.164	
Nontronite-H	-0.092	-0.126	
Nontronite-K	-0.289	-0.394	
Nontronite-Mg	-0.151	-0.206	
Nontronite-Na	-0.351	-0.479	
Paragonite	-5.753	-7.848	
PbHPO4	-5.081	-6.931	
Pentahydrite	-5.039	-6.874	
Plumbogummite	-2.548	-3.476	
Pyrolusite	0.000	0.000	satd
Pyrophyllite	-2.116	-2.887	
Quartz	0.000	0.000	satd
Rutile	0.000	0.000	satd
Sanidine_high	-4.310	-5.880	
Sellaite	-5.071	-6.919	
Shcherbinaite	-2.311	-3.153	
SiO2(am)	-1.286	-1.754	
Sillimanite	-5.986	-8.167	
SmPO4:H2O	-4.887	-6.667	
SrZrO3	111.454	152.056	ssatd
Starkeyite	-5.426	-7.402	
Stilbite	-6.660	-9.086	
Strengite	-4.344	-5.926	
Syngenite	-7.147	-9.750	
Thenardite	-6.761	-9.224	
Trevorite	-3.184	-4.344	
Tridymite	-0.172	-0.234	
fix CO2(g)	0.000	0.000	satd
fix O2(g)	0.000	0.000	satd

--- Summary of Solid Solutions ---

--- Carbonate-Calcite ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Calcite	8.7886E-01	-0.0561	0.0000	-0.0561
Magnesite	1.2061E-01	-0.9186	0.0000	-0.9186
Rhodochrosite	5.0277E-04	-3.2986	0.0000	-3.2986
Siderite	3.9308E-12	-11.4055	0.0000	-11.4055
Smithsonite	3.9924E-06	-5.3988	0.0000	-5.3988
Strontianite	1.6988E-05	-4.7699	0.0000	-4.7699

Mineral	Log Q/K	Aff, kcal	State
Carbonate-Calcite	-7.471	-10.192	
Calcite	-7.471	-10.192	
Magnesite	-7.471	-10.192	
Rhodochrosite	-7.471	-10.192	
Siderite	-7.471	-10.192	
Smithsonite	-7.471	-10.192	
Strontianite	-7.471	-10.192	

--- Clinoptilolite-hy-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-hy-Ca	8.4776E-01	-0.0717	0.0000	-0.0717
Clinoptilolite-hy-Cs	1.6045E-23	-22.7946	0.0000	-22.7946
Clinoptilolite-hy-K	1.3590E-01	-0.8668	0.0000	-0.8668
Clinoptilolite-hy-Na	1.6346E-02	-1.7866	0.0000	-1.7866
Clinoptilolite-hy-Sr	1.4024E-12	-11.8531	0.0000	-11.8531

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-hy-ss	-16.572	-22.609	
Clinoptilolite-hy-Ca	-16.572	-22.609	
Clinoptilolite-hy-Cs	-16.572	-22.609	
Clinoptilolite-hy-K	-16.572	-22.609	
Clinoptilolite-hy-Na	-16.572	-22.609	
Clinoptilolite-hy-Sr	-16.572	-22.609	

--- Clinoptilolite-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-Ca	5.2428E-01	-0.2804	-0.6899	-0.9703
Clinoptilolite-Cs	1.4158E-07	-6.8490	-16.8486	-23.6976
Clinoptilolite-K	3.0815E-01	-0.5112	-1.2577	-1.7689
Clinoptilolite-NH4	3.2404E-57	-56.4894	-138.9639	-195.4533
Clinoptilolite-Na	1.6736E-01	-0.7763	-1.9098	-2.6862
Clinoptilolite-Sr	2.0648E-04	-3.6851	-9.0654	-12.7505

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-ss	-15.675	-21.385	
Clinoptilolite-Ca	-15.675	-21.385	
Clinoptilolite-Cs	-15.675	-21.385	
Clinoptilolite-K	-15.675	-21.385	
Clinoptilolite-NH4	-15.675	-21.385	
Clinoptilolite-Na	-15.675	-21.385	
Clinoptilolite-Sr	-15.675	-21.385	

--- Saponite-tri ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Saponite-Ca	2.8345E-01	-0.5475	0.3668	-0.1807
Saponite-H	3.4462E-01	-0.4627	0.3100	-0.1527
Saponite-K	8.7508E-02	-1.0580	0.7088	-0.3491
Saponite-Mg	2.2798E-01	-0.6421	0.4302	-0.2119
Saponite-Na	5.6441E-02	-1.2484	0.8364	-0.4120

Mineral	Log Q/K	Aff, kcal	State
Saponite-tri	-21.841	-29.797	
Saponite-Ca	-21.841	-29.797	
Saponite-H	-21.841	-29.797	
Saponite-K	-21.841	-29.797	
Saponite-Mg	-21.841	-29.797	
Saponite-Na	-21.841	-29.797	

--- Smectite-di ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Beidellite-Ca	8.9786E-09	-8.0468	5.3914	-2.6554
Beidellite-K	2.7739E-09	-8.5569	5.7331	-2.8238
Beidellite-Mg	7.2217E-09	-8.1414	5.4547	-2.6866
Beidellite-Na	1.7878E-09	-8.7477	5.8609	-2.8867
Montmor-Ca	1.7112E-12	-11.7667	7.8837	-3.8830
Montmor-K	8.6342E-13	-12.0638	8.0827	-3.9810
Montmor-Mg	2.2369E-12	-11.6504	7.8057	-3.8446
Montmor-Na	5.4269E-13	-12.2654	8.2178	-4.0476
Nontronite-Ca	4.3235E-01	-0.3642	0.2440	-0.1202
Nontronite-K	1.3357E-01	-0.8743	0.5858	-0.2885
Nontronite-Mg	3.4799E-01	-0.4584	0.3072	-0.1513
Nontronite-Na	8.6091E-02	-1.0650	0.7136	-0.3515

Mineral	Log Q/K	Aff, kcal	State
Smectite-di	0.000	0.000	satd
Beidellite-Ca	0.000	0.000	satd
Beidellite-K	0.000	0.000	satd
Beidellite-Mg	0.000	0.000	satd
Beidellite-Na	0.000	0.000	satd
Montmor-Ca	0.000	0.000	satd
Montmor-K	0.000	0.000	satd
Montmor-Mg	0.000	0.000	satd
Montmor-Na	0.000	0.000	satd
Nontronite-Ca	0.000	0.000	satd
Nontronite-K	0.000	0.000	satd
Nontronite-Mg	0.000	0.000	satd
Nontronite-Na	0.000	0.000	satd

--- Lanthanide hydroxide ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
La(OH)3	1.2870E-05	-4.8904	0.0000	-4.8904
Ce(OH)3	3.6727E-15	-14.4350	0.0000	-14.4350
Nd(OH)3(c)	3.4764E-01	-0.4589	0.0000	-0.4589
Gd(OH)3	5.8507E-01	-0.2328	0.0000	-0.2328
Sm(OH)3	6.7275E-02	-1.1721	0.0000	-1.1721

Mineral	Log Q/K	Aff, kcal	State
Lanthanide hydroxide	-16.867	-23.011	
La(OH)3	-16.867	-23.011	
Ce(OH)3	-16.867	-23.011	
Nd(OH)3(c)	-16.867	-23.011	
Gd(OH)3	-16.867	-23.011	
Sm(OH)3	-16.867	-23.011	

--- Rhabdophane-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaPO4:H2O	4.1274E-01	-0.3843	0.0000	-0.3843
CePO4:H2O	3.7247E-11	-10.4289	0.0000	-10.4289
NdPO4:H2O	2.2245E-01	-0.6528	0.0000	-0.6528
GdPO4:H2O	1.4905E-01	-0.8267	0.0000	-0.8267
SmPO4:H2O	2.1576E-01	-0.6660	0.0000	-0.6660

Mineral	Log Q/K	Aff, kcal	State
Rhabdophane-ss	-4.221	-5.758	
LaPO4:H2O	-4.221	-5.758	
CePO4:H2O	-4.221	-5.758	
NdPO4:H2O	-4.221	-5.758	
GdPO4:H2O	-4.221	-5.758	
SmPO4:H2O	-4.221	-5.758	

--- Lanthanide fluoride ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaF3:0.5H2O	5.7301E-01	-0.2418	0.0000	-0.2418
CeF3:0.5H2O	8.1954E-11	-10.0864	0.0000	-10.0864
NdF3:0.5H2O	3.8880E-01	-0.4103	0.0000	-0.4103
GdF3:0.5H2O	8.2376E-03	-2.0842	0.0000	-2.0842
SmF3:0.5H2O	2.9953E-02	-1.5236	0.0000	-1.5236

Mineral	Log Q/K	Aff, kcal	State
Lanthanide fluoride	-11.996	-16.365	

LaF3:0.5H2O	-11.996	-16.365
CeF3:0.5H2O	-11.996	-16.365
NdF3:0.5H2O	-11.996	-16.365
GdF3:0.5H2O	-11.996	-16.365
SmF3:0.5H2O	-11.996	-16.365

--- Summary of Gases ---

Gas	Fugacity	Log fugacity
Al(g)	1.6469-191	-190.7833
B(g)	8.5633-204	-203.0674
BF3(g)	3.5461E-32	-31.4502
C(g)	3.0917-190	-189.5098
CH4(g)	3.5254-146	-145.4528
CO(g)	6.0395E-49	-48.2190
CO2(g)	3.1623E-04	-3.5000
Ca(g)	2.2164-158	-157.6543
Chlorine	2.5446E-22	-21.5944
Cs(g)	1.3531E-86	-85.8687
Cu(g)	1.1250E-87	-86.9488
Fluorine	6.5883E-78	-77.1812
H2(g)	6.1116E-42	-41.2138
H2O(g)	2.5963E-02	-1.5856
H2S(g)	1.4745-135	-134.8313
HCl(g)	1.9563E-15	-14.7086
HF(g)	1.1235E-11	-10.9494
K(g)	5.8049E-80	-79.2362
Li(g)	3.0023-100	-99.5226
Mg(g)	5.7072-136	-135.2436
Nitrogen	1.8510E-13	-12.7326
NH3(g)	4.9560E-66	-65.3049
NO(g)	1.3547E-22	-21.8681
NO2(g)	9.2631E-17	-16.0332
Na(g)	2.0715E-78	-77.6837
O2(g)	2.0999E-01	-0.6778
Pb(g)	1.1464E-75	-74.9407
S2(g)	1.2979-213	-212.8867
SO2(g)	2.6122E-48	-47.5830
Si(g)	4.2257-221	-220.3741
SiF4(g)	7.0299E-29	-28.1531
Ti(g)	3.8019-231	-230.4200
TiCl4(g)	4.9116E-72	-71.3088
U(g)	1.1263-300	-299.9483
U2Cl10(g)	1.0614-219	-218.9741
U2Cl8(g)	1.2932-228	-227.8883
U2F10(g)	5.4839-139	-138.2609
UCl(g)	1.9641-253	-252.7068
UCl2(g)	1.0246-204	-203.9894
UCl3(g)	1.1708-153	-152.9315
UCl4(g)	7.2441-120	-119.1400
UCl5(g)	2.3062-123	-122.6371
UCl6(g)	1.3639-121	-120.8652
UF(g)	2.3972-239	-238.6203
UF2(g)	3.7839-196	-195.4221
UF3(g)	1.4698-146	-145.8327
UF4(g)	8.4277E-94	-93.0743
UF5(g)	2.2133E-82	-81.6550
UF6(g)	5.7238E-85	-84.2423
UO(g)	8.8953-216	-215.0508

```
UO2(g)                    1.6480-131   -130.7830
UO2Cl2(g)                 1.8309E-72    -71.7373
UO2F2(g)                  4.9049E-62    -61.3094
UO3(g)                    1.2122E-78    -77.9164
UOF4(g)                   2.5114E-71    -70.6001
Zn(g)                     1.9119E-85    -84.7185



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--- shifting e.s. solid(s) to the p.r.s. (shftz) ---

      shifted -- Diaspore
              - old mass=  6.97896E-06, new mass=  8.00000E-07
      shifted -- Pyrolusite
              - old mass=  8.13673E-07, new mass=  8.00000E-07
      shifted -- Quartz
              - old mass=  2.13336E-05, new mass=  8.00000E-07
      shifted -- Rutile
              - old mass=  8.17782E-07, new mass=  8.00000E-07
      shifted -- Smectite-di
              - old mass=  8.84801E-07, new mass=  8.00000E-07

Stepping to zi=  1.6361E-01, delzi=  1.0000E-09, nord= 0
  time =  1.5780E+03 d, dltime =  9.6451E-06 d
Steps completed =   169, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -6.0968

Stepping to zi=  1.6361E-01, delzi=  1.0000E-09, nord= 0
  time =  1.5780E+03 d, dltime =  9.6451E-06 d
Steps completed =   170, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -6.0966

Stepping to zi=  1.6361E-01, delzi=  1.0000E-09, nord= 0
  time =  1.5780E+03 d, dltime =  9.6451E-06 d
Steps completed =   171, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -6.0965

Stepping to zi=  1.6361E-01, delzi=  1.0000E-08, nord= 1
  time =  1.5780E+03 d, dltime =  9.6451E-05 d
Steps completed =   172, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -6.0951

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                     Reaction progress        =  1.63611165108957E-01
                     Log of reaction progress =      -0.7861871



                     Time =  1.363E+08 sec
                          =  1.578E+03 days
                          =  4.320E+00 years

                     Log sec =        8.135
                     Log days =       3.198
                     Log years =      0.636

                     Temperature    =     25.000 degrees C
                     total pressure =      1.013 bars
```

Flow-through system print following a discontinuity

--- Summary of Instantaneously Precipitated Solid Phases ---
(defined by derivatives)

--- Theoretical Rock Composition ---
g/kg

O	5.298654E+01
Al	8.165354E+00
Ca	1.753354E-02
Fe	6.865730E-01
H	3.153771E-01
K	1.073104E-02
Mg	8.561692E-03
Mn	5.473782E-02
Na	4.012303E-03
Si	3.769930E+01
Ti	6.171558E-02

--- Oxide Percentages ---

Oxide Theoretical rock

Total = 0.0000

Phase/end-member	d mol/d zi	d grams/d zi	d vol (cc)/d zi
Diaspore	5.9002E-02	3.5394E+00	1.0479E+00
Pyrolusite	1.9557E-04	1.7002E-02	9.7783E-02
Quartz	2.5904E-01	1.5564E+01	5.8771E+00
Rutile	2.5300E-04	2.0209E-02	4.7615E-03
fix CO2(g)	-1.7053E-04	-7.5050E-03	0.0000E+00
fix O2(g)	-5.4001E-04	-1.7280E-02	0.0000E+00
Smectite-di			
Beidellite-Ca	1.2273E-11	4.4988E-09	1.5897E-09
Beidellite-K	3.8428E-12	1.4328E-09	5.1379E-10
Beidellite-Mg	9.8747E-12	3.5940E-09	1.2165E-09
Beidellite-Na	2.4475E-12	8.9954E-10	3.1950E-10
Montmor-Ca	2.8896E-15	1.0577E-12	1.4448E-12
Montmor-K	1.4739E-15	5.4878E-13	7.3694E-13
Montmor-Mg	3.7782E-15	1.3732E-12	1.8891E-12
Montmor-Na	9.1750E-16	3.3674E-13	4.5875E-13
Nontronite-Ca	5.2043E-04	2.2081E-01	6.8228E-02
Nontronite-K	1.6325E-04	7.0292E-02	2.2083E-02
Nontronite-Mg	4.1904E-04	1.7671E-01	5.4375E-02
Nontronite-Na	1.0381E-04	4.4146E-02	1.3714E-02

--- Summary of Solid Phases (E.S.+P.R.S.) ---

Phase/End-member	Log moles	Moles	Mass, g	Volume, cc
Alunite	-2.5559	2.7801E-03	1.1516E+00	8.1624E-01
Diaspore	-5.0719	8.4748E-06	5.0839E-04	1.5051E-04
Hematite	-3.7144	1.9300E-04	3.0820E-02	5.8428E-03
Nontronite-H	-4.9990	1.0023E-05	4.1899E-03	5.0117E-03
Pyrolusite	-3.2038	6.2541E-04	5.4371E-02	3.1270E-01

```
Quartz                        -1.3659   4.3061E-02   2.5873E+00   9.7697E-01
Rutile                        -4.3831   4.1393E-05   3.3065E-03   7.7903E-04
fix     CO2(g)                 2.3010   2.0000E+02   8.8020E+03   0.0000E+00
fix     O2(g)                  2.3010   2.0000E+02   6.3997E+03   0.0000E+00

Smectite-di                   -5.6283   2.3535E-06
  Beidellite-Ca              -13.6793   2.0926E-14   7.6706E-12   2.7105E-12
  Beidellite-K               -14.1901   6.4547E-15   2.4067E-12   8.6300E-13
  Beidellite-Mg              -13.7739   1.6831E-14   6.1257E-12   2.0734E-12
  Beidellite-Na              -14.3802   4.1663E-15   1.5313E-12   5.4387E-13
  Montmor-Ca                 -17.4018   3.9643E-18   1.4511E-15   1.9822E-15
  Montmor-K                  -17.6996   1.9971E-18   7.4359E-16   9.9855E-16
  Montmor-Mg                 -17.2855   5.1820E-18   1.8834E-15   2.5910E-15
  Montmor-Na                 -17.9006   1.2571E-18   4.6137E-16   6.2854E-16
  Nontronite-Ca               -5.9923   1.0178E-06   4.3184E-04   1.3343E-04
  Nontronite-K                -6.5031   3.1395E-07   1.3518E-04   4.2467E-05
  Nontronite-Mg               -6.0866   8.1917E-07   3.4544E-04   1.0630E-04
  Nontronite-Na               -6.6933   2.0264E-07   8.6175E-05   2.6770E-05


                          Mass, grams        Volume, cc

          Created         1.520554E+04       2.118012E+00
          Destroyed       0.000000E+00       0.000000E+00
          Net             1.520554E+04       2.118012E+00

         Warning-- these volume totals may be incomplete because
         of missing partial molar volume data in the data base




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Stepping to zi=  1.6361E-01, delzi=  1.0000E-07, nord= 1
  time =  1.5780E+03 d, dltime =  9.6451E-04 d
Steps completed =   173, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -6.0813

Stepping to zi=  1.6361E-01, delzi=  1.0000E-06, nord= 2
  time =  1.5781E+03 d, dltime =  9.6451E-03 d
Steps completed =   174, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -5.9632

Stepping to zi=  1.6362E-01, delzi=  1.0000E-05, nord= 2
  time =  1.5781E+03 d, dltime =  9.6451E-02 d
Steps completed =   175, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -5.4343

Stepping to zi=  1.6372E-01, delzi=  1.0000E-04, nord= 3
  time =  1.5791E+03 d, dltime =  9.6451E-01 d
Steps completed =   176, iter =  7, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -4.5290

Stepping to zi=  1.6393E-01, delzi=  2.0472E-04, nord= 4
  time =  1.5811E+03 d, dltime =  1.9746E+00 d
Steps completed =   177, iter =  8, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -4.0829

Stepping to zi=  1.6423E-01, delzi=  3.0508E-04, nord= 4
  time =  1.5840E+03 d, dltime =  2.9425E+00 d
```

```
Steps completed =   178, iter =  8, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -3.7914

Stepping to zi=  1.6497E-01, delzi=  7.3797E-04, nord= 5
  time =  1.5911E+03 d, dltime =  7.1177E+00 d
Steps completed =   179, iter =  9, ncorr = 0
Most rapidly changing is zvclg1(Montmor-K               ) =    -17.3021

Stepping to zi=  1.6584E-01, delzi=  8.6773E-04, nord= 6
  time =  1.5995E+03 d, dltime =  8.3693E+00 d
Steps completed =   180, iter =  7, ncorr = 0
Most rapidly changing is zvclg1(Montmor-K               ) =    -16.9123

Stepping to zi=  1.6665E-01, delzi=  8.0789E-04, nord= 6
  time =  1.6073E+03 d, dltime =  7.7921E+00 d
Steps completed =   181, iter = 10, ncorr = 0
Most rapidly changing is zvclg1(Montmor-K               ) =    -16.5967

Stepping to zi=  1.6749E-01, delzi=  8.4055E-04, nord= 6
  time =  1.6154E+03 d, dltime =  8.1072E+00 d
Steps completed =   182, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Montmor-K               ) =    -16.3042

Stepping to zi=  1.6833E-01, delzi=  8.4158E-04, nord= 6
  time =  1.6235E+03 d, dltime =  8.1171E+00 d
Steps completed =   183, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Montmor-K               ) =    -16.0409

Stepping to zi=  1.6899E-01, delzi=  6.6149E-04, nord= 6
  time =  1.6299E+03 d, dltime =  6.3801E+00 d
Steps completed =   184, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Montmor-K               ) =    -15.8516

Stepping to zi=  1.6909E-01, delzi=  1.0236E-04, nord= 6
  time =  1.6309E+03 d, dltime =  9.8730E-01 d
iter =    3
      1 supersaturated pure minerals
      0 supersaturated solid solutions

               The most supersaturated phases           Affinity, kcal

                 1     222   Fluorapatite                  0.00895682


  Attempted species assemblage no.   2

            1      1  H2O
            2      3  Al+++
            3      7  B(OH)3(aq)
            4      8  Ba++
            5     11  Ca++
            6     13  Ce+++
            7     14  Cl-
            8     16  CrO4--
            9     17  Cs+
           10     18  Cu++
           11     22  F-
           12     23  Fe++
           13     25  Gd+++
           14     26  H+
           15     28  HCO3-
           16     29  HPO4--
           17     35  K+
```

```
 18     37  La+++
 19     38  Li+
 20     40  Mg++
 21     41  Mn++
 22     42  MoO4--
 23     43  NO3-
 24     44  Na+
 25     45  Nd+++
 26     47  Ni++
 27     49  Pb++
 28     52  Pu++++
 29     58  SO4--
 30     62  SiO2(aq)
 31     63  Sm+++
 32     65  Sr++
 33     69  Ti(OH)4(aq)
 34     72  UO2++
 35     73  VO++
 36     78  Zn++
 37     79  Zr(OH)2++
 38     80  O2(g)
 39    192  Diaspore
 40    222  Fluorapatite
 41    470  Pyrolusite
 42    475  Quartz
 43    482  Rutile
 44    689  fix     CO2(g)
 45    690  fix     O2(g)
 46      1  SmectiteBeidellite-Ca
 47      2  SmectiteBeidellite-K
 48      3  SmectiteBeidellite-Mg
 49      4  SmectiteBeidellite-Na
 50      5  SmectiteMontmor-Ca
 51      6  SmectiteMontmor-K
 52      7  SmectiteMontmor-Mg
 53      8  SmectiteMontmor-Na
 54      9  SmectiteNontronite-Ca
 55     10  SmectiteNontronite-K
 56     11  SmectiteNontronite-Mg
 57     12  SmectiteNontronite-Na

Steps completed =   185, iter = 15, ncorr = 0

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                    Reaction progress        =  1.69091639245687E-01
                    Log of reaction progress =      -0.7718779



                    Time =  1.409E+08 sec
                         =  1.631E+03 days
                         =  4.465E+00 years

                    Log sec =        8.149
                    Log days =       3.212
                    Log years =      0.650

                    Temperature    =     25.000 degrees C
                    total pressure =      1.013 bars
```

Change in the product phase assemblage

--- Reactant Summary ---

Reactant	Moles	Delta moles	Mass, g	Delta Mass, g
Tuff	9.9831E+01	1.6909E-01	2.0552E+03	3.4810E+00

Current total mass = 2.05517E+03 grams
Delta total mass = 3.48100E+00 grams
Delta total volume = 0.00000 cc

Reactant	Rel. Rate mol/mol	Rate mol/s	Rate mol/s/cm2
Tuff	1.0000E+00	1.2000E-09	2.5000E-15

Reactant	Affinity kcal/mol	Surface Area mol/s/cm2
Tuff	999.00000	4.8000E+05

Reactant	Rate Constants, mol/s/cm2	
Tuff		
	Forward	2.5000E-15

Affinity of the overall irreversible reaction= 0.000 kcal
Contributions from irreversible reactions
with no thermodynamic data are not included

--- Element Totals for the Aqueous Solution ---

Element	mg/kg soln.	Molality	Moles
O	8.865717E+05	5.558916E+01	5.557236E+01
Al	1.132533E+00	4.210794E-05	4.209521E-05
B	1.335422E-01	1.239175E-05	1.238800E-05
Ba	1.369327E-05	1.000302E-10	1.000000E-10
Ca	2.682407E+01	6.714266E-04	6.712236E-04
Ce	1.397126E-19	1.000302E-24	9.999993E-25
Cl	7.119675E+00	2.014609E-04	2.014000E-04
Cr	2.997683E+02	5.783555E-03	5.781806E-03
Cs	1.325239E-05	1.000302E-10	1.000000E-10
Cu	6.653174E-10	1.050318E-14	1.050000E-14
F	2.172526E+00	1.147170E-04	1.146823E-04
Fe	1.423297E-06	2.556675E-11	2.555902E-11
Gd	1.567985E-09	1.000302E-14	9.999998E-15
H	1.115480E+05	1.110215E+02	1.109880E+02
C	1.350408E-01	1.127888E-05	1.127547E-05
P	7.549802E+00	2.445240E-04	2.444501E-04
K	3.875790E+01	9.944485E-04	9.941479E-04
La	1.385067E-09	1.000302E-14	9.999998E-15

Li	6.921073E-07	1.000302E-10	1.000000E-10
Mg	7.122573E+00	2.939823E-04	2.938935E-04
Mn	2.917085E-05	5.326670E-10	5.325060E-10
Mo	2.180354E+02	2.279855E-03	2.279166E-03
N	1.983247E+00	1.420429E-04	1.420000E-04
Na	1.382192E+02	6.031340E-03	6.029516E-03
Nd	1.438259E-09	1.000302E-14	9.999998E-15
Ni	7.505420E+02	1.282894E-02	1.282506E-02
Pb	2.066051E-05	1.000302E-10	1.000000E-10
Pu	2.432994E-09	1.000302E-14	9.999997E-15
S	3.732014E+02	1.167558E-02	1.167205E-02
Si	2.804207E+00	1.001631E-04	1.001328E-04
Sm	1.499283E-09	1.000302E-14	9.999998E-15
Sr	8.736844E-06	1.000302E-10	1.000000E-10
Ti	1.079130E-05	2.260996E-10	2.260312E-10
U	2.373455E-09	1.000302E-14	9.999998E-15
V	4.770191E+00	9.393858E-05	9.391018E-05
Zn	6.520227E-06	1.000302E-10	1.000000E-10
Zr	9.096216E-16	1.000303E-20	1.000000E-20

Single ion activities and activity coefficients are here defined
with respect to the modified NBS pH scale

	pH	Eh	pe
modified NBS pH scale	5.0549	0.9200	1.5552E+01
rational pH scale	4.9811	0.9244	1.5626E+01

pHCl = 8.8382

Oxygen fugacity = 2.09991E-01
Log oxygen fugacity = -0.67780

Activity of water = 0.99942
Log activity of water = -0.00025

Ionic strength = 5.208958E-02 molal
Sum of molalities = 0.0379755744395
Osmotic coefficient = 0.84183

Mass of solution = 1.002879 kg
Mass of solutes = 0.003182 kg
Conc. of solutes = 0.317240 per cent (w/w)

Moles of solvent H2O = 5.54917E+01
Mass of solvent H2O = 9.99698E-01 kg

Species	Molality	Log molality	Log gamma	Log activity
Ni++	1.0297E-02	-1.9873	-0.3322	-2.3194
SO4--	8.7370E-03	-2.0586	-0.3446	-2.4032
Na+	5.8819E-03	-2.2305	-0.0938	-2.3243
HCrO4-	3.9295E-03	-2.4057	-0.0815	-2.4871
NiSO4(aq)	2.5296E-03	-2.5969	0.0000	-2.5969
MoO4--	2.2799E-03	-2.6421	-0.3345	-2.9766

K+	9.6665E-04	-3.0147	-0.0993	-3.1140
Cr2O7--	7.9615E-04	-3.0990	-0.3446	-3.4436
Ca++	5.4221E-04	-3.2658	-0.3322	-3.5980
O2(aq)	2.6208E-04	-3.5816	0.0055	-3.5761
CrO4--	2.6177E-04	-3.5821	-0.3446	-3.9267
H2PO4-	2.4027E-04	-3.6193	-0.0815	-3.7008
Cl-	2.0120E-04	-3.6964	-0.0870	-3.7833
Mg++	1.9472E-04	-3.7106	-0.3020	-4.0125
NaSO4-	1.4925E-04	-3.8261	-0.0815	-3.9075
NO3-	1.4015E-04	-3.8534	-0.0870	-3.9404
CaSO4(aq)	1.2879E-04	-3.8901	0.0000	-3.8901
SiO2(aq)	1.0016E-04	-3.9993	0.0000	-3.9993
MgSO4(aq)	9.9068E-05	-4.0041	0.0000	-4.0041
H2VO4-	5.5730E-05	-4.2539	-0.0815	-4.3354
VO2(OH)2-	3.4537E-05	-4.4617	-0.0815	-4.5432
F-	2.9470E-05	-4.5306	-0.0841	-4.6147
AlF2+	2.8877E-05	-4.5394	-0.0938	-4.6333
KSO4-	2.7783E-05	-4.5562	-0.0815	-4.6377
B(OH)3(aq)	1.2391E-05	-4.9069	0.0000	-4.9069
CO2(aq)	1.0608E-05	-4.9744	0.0055	-4.9689
H+	1.0444E-05	-4.9811	-0.0737	-5.0549
AlF3(aq)	7.1120E-06	-5.1480	0.0000	-5.1480
AlF++	5.5046E-06	-5.2593	-0.3592	-5.6185
HSO4-	4.0038E-06	-5.3975	-0.0815	-5.4790
HPO4--	3.1138E-06	-5.5067	-0.3446	-5.8513
VO(OH)3(aq)	2.5234E-06	-5.5980	0.0000	-5.5980
NiNO3+	1.7141E-06	-5.7660	-0.0938	-5.8598
VO3OH--	9.3063E-07	-6.0312	-0.3446	-6.3758
HCO3-	6.6444E-07	-6.1775	-0.0815	-6.2590
AlHPO4+	4.3527E-07	-6.3612	-0.0938	-6.4551
HF(aq)	3.1514E-07	-6.5015	0.0000	-6.5015
H3PO4(aq)	2.5947E-07	-6.5859	0.0000	-6.5859
CaHPO4(aq)	1.9531E-07	-6.7093	0.0000	-6.7093
CaNO3+	1.8008E-07	-6.7445	-0.0938	-6.8383
NaCl(aq)	1.3043E-07	-6.8846	0.0000	-6.8846
MgHPO4(aq)	1.1121E-07	-6.9538	0.0000	-6.9538
HVO4--	1.0025E-07	-6.9989	-0.3446	-7.3435
NiCl+	9.8828E-08	-7.0051	-0.0938	-7.0989
NaHPO4-	6.6966E-08	-7.1741	-0.0815	-7.2556
MgF+	6.5906E-08	-7.1811	-0.0938	-7.2749
VO2+	5.5137E-08	-7.2586	-0.0938	-7.3524
AlF4-	5.2324E-08	-7.2813	-0.0815	-7.3628
VO2HPO4-	5.1025E-08	-7.2922	-0.0815	-7.3737
AlSO4+	4.9754E-08	-7.3032	-0.0938	-7.3970
Al+++	4.3616E-08	-7.3604	-0.6434	-8.0038
CaF+	3.6541E-08	-7.4372	-0.0938	-7.5310
AlOH++	2.8378E-08	-7.5470	-0.3592	-7.9063
MgCl+	1.4556E-08	-7.8369	-0.0938	-7.9308
NaF(aq)	1.1570E-08	-7.9366	0.0000	-7.9366
PO3F--	1.0550E-08	-7.9768	-0.3446	-8.3213
CaCl+	1.0397E-08	-7.9831	-0.0938	-8.0769
VO2SO4-	8.0511E-09	-8.0941	-0.0815	-8.1756
KHPO4-	7.8724E-09	-8.1039	-0.0815	-8.1853
KCl(aq)	4.0554E-09	-8.3920	0.0000	-8.3920
Al(OH)2+	4.0250E-09	-8.3952	-0.0938	-8.4891
NaHCO3(aq)	3.7222E-09	-8.4292	0.0000	-8.4292
VO2F(aq)	2.4148E-09	-8.6171	0.0000	-8.6171
CaHCO3+	1.9210E-09	-8.7165	-0.0938	-8.8103
HSiO3-	1.5285E-09	-8.8157	-0.0815	-8.8972
OH-	1.3920E-09	-8.8564	-0.0841	-8.9405
H2CrO4(aq)	1.3760E-09	-8.8614	0.0000	-8.8614
BO2-	9.6551E-10	-9.0152	-0.0815	-9.0967
MgHCO3+	7.2107E-10	-9.1420	-0.0938	-9.2358

HPO3F-	6.3789E-10	-9.1953	-0.0815	-9.2767
HAlO2(aq)	5.3383E-10	-9.2726	0.0000	-9.2726
H2P2O7--	4.0126E-10	-9.3966	-0.3446	-9.7412
Mn++	3.7505E-10	-9.4259	-0.3322	-9.7581
HCl(aq)	3.1033E-10	-9.5082	0.0000	-9.5082
NaHSiO3(aq)	2.6730E-10	-9.5730	0.0000	-9.5730
Ti(OH)4(aq)	2.2610E-10	-9.6457	0.0000	-9.6457
VO2(HPO4)2---	2.1493E-10	-9.6677	-0.7873	-10.4550
KHSO4(aq)	1.7437E-10	-9.7585	0.0000	-9.7585
MnSO4(aq)	1.5546E-10	-9.8084	0.0000	-9.8084
Cs+	1.0002E-10	-9.9999	-0.1023	-10.1022

--- Summary of Instantaneously Precipitated Solid Phases ---
(defined by derivatives)

--- Theoretical Rock Composition ---
g/kg

O	5.297209E+01
Al	7.693841E+00
Ca	1.710275E-02
Fe	6.954358E-01
H	2.978965E-01
K	1.307118E-02
Mg	8.407297E-03
Mn	5.504573E-02
Na	4.024599E-03
Si	3.818667E+01
Ti	6.251345E-02

--- Oxide Percentages ---

Oxide Theoretical rock

Total = 0.0000

Phase/end-member	d mol/d zi	d grams/d zi	d vol (cc)/d zi
Diaspore	5.4858E-02	3.2908E+00	9.7427E-01
Fluorapatite	1.9416E-04	9.7914E-02	9.7078E-02
Pyrolusite	2.5904E-01	2.2520E+01	1.2952E+02
Quartz	2.5300E-04	1.5201E-02	5.7401E-03
Rutile	-9.8314E-05	-7.8532E-03	-1.8503E-03
fix CO2(g)	-7.0200E-04	-3.0895E-02	0.0000E+00
fix O2(g)	5.6784E-11	1.8170E-09	0.0000E+00
Smectite-di			
Beidellite-Ca	2.1025E-11	7.7071E-09	2.7234E-09
Beidellite-K	4.5911E-11	1.7118E-08	6.1383E-09
Beidellite-Mg	1.1559E-11	4.2070E-09	1.4239E-09
Beidellite-Na	1.6067E-13	5.9052E-11	2.0974E-11
Montmor-Ca	9.4265E-14	3.4505E-11	4.7132E-11
Montmor-K	2.1093E-13	7.8534E-11	1.0546E-10
Montmor-Mg	5.1885E-14	1.8857E-11	2.5942E-11
Montmor-Na	5.0116E-04	1.8393E-01	2.5058E-01
Nontronite-Ca	1.9631E-04	8.3293E-02	2.5736E-02
Nontronite-K	4.0624E-04	1.7492E-01	5.4951E-02
Nontronite-Mg	1.0280E-04	4.3348E-02	1.3339E-02
Nontronite-Na	1.0362E-04	4.4068E-02	1.3690E-02

--- Summary of Solid Phases (E.S.+P.R.S.) ---

Phase/End-member	Log moles	Moles	Mass, g	Volume, cc
Alunite	-2.5559	2.7801E-03	1.1516E+00	8.1624E-01
Diaspore	-3.4977	3.1794E-04	1.9073E-02	5.6467E-03
Fluorapatite	-7.1698	6.7642E-08	3.4112E-05	3.3821E-05
Hematite	-3.7144	1.9300E-04	3.0820E-02	5.8428E-03
Nontronite-H	-4.9990	1.0023E-05	4.1899E-03	5.0117E-03
Pyrolusite	-3.2031	6.2647E-04	5.4464E-02	3.1324E-01
Quartz	-1.3518	4.4481E-02	2.6726E+00	1.0092E+00
Rutile	-4.3688	4.2780E-05	3.4172E-03	8.0512E-04
fix CO2(g)	2.3010	2.0000E+02	8.8020E+03	0.0000E+00
fix O2(g)	2.3010	2.0000E+02	6.3997E+03	0.0000E+00
Smectite-di	-5.0474	8.9658E-06		
Beidellite-Ca	-12.7073	1.9620E-13	7.1921E-11	2.5414E-11
Beidellite-K	-13.1695	6.7693E-14	2.5239E-11	9.0505E-12
Beidellite-Mg	-12.8004	1.5833E-13	5.7626E-11	1.9505E-11
Beidellite-Na	-13.4024	3.9589E-14	1.4550E-11	5.1679E-12
Montmor-Ca	-15.5754	2.6584E-16	9.7309E-14	1.3292E-13
Montmor-K	-15.8215	1.5083E-16	5.6158E-14	7.5413E-14
Montmor-Mg	-15.4575	3.4872E-16	1.2674E-13	1.7436E-13
Montmor-Na	-16.0680	8.5502E-17	3.1381E-14	4.2751E-14
Nontronite-Ca	-5.4184	3.8160E-06	1.6191E-03	5.0028E-04
Nontronite-K	-5.8859	1.3006E-06	5.6000E-04	1.7593E-04
Nontronite-Mg	-5.5114	3.0804E-06	1.2990E-03	3.9971E-04
Nontronite-Na	-6.1142	7.6880E-07	3.2694E-04	1.0157E-04

	Mass, grams	Volume, cc
Created	1.520565E+04	2.157179E+00
Destroyed	3.480999E+00	0.000000E+00
Net	1.520217E+04	2.157179E+00

Warning-- these volume totals may be incomplete because
of missing partial molar volume data in the data base

--- Summary of Pure Mineral Saturation States ---

Mineral	Log Q/K	Aff, kcal	State
AlF3	-4.639	-6.329	
Albite	-4.872	-6.646	
Albite_high	-6.190	-8.445	
Albite_low	-4.872	-6.646	
Alunite	-1.256	-1.714	
Analcime	-4.803	-6.553	
Andalusite	-5.623	-7.671	
Anglesite	-4.911	-6.700	
Anhydrite	-1.695	-2.312	
Aragonite	-6.795	-9.271	
Arcanite	-6.831	-9.319	
BaCrO4	-4.344	-5.927	
BaZrO3	75.460	102.949	ssatd
Barite	-2.782	-3.795	
Bassanite	-2.340	-3.192	
Beidellite-Ca	-2.511	-3.426	
Beidellite-Cs	-4.814	-6.567	

Beidellite-H	-2.627	-3.585	
Beidellite-K	-2.662	-3.632	
Beidellite-Mg	-2.542	-3.467	
Beidellite-Na	-2.740	-3.738	
Berlinite	-1.592	-2.171	
Boehmite	-0.404	-0.551	
Boric_acid	-4.749	-6.478	
Bunsenite	-4.682	-6.387	
CaSO4:0.5H2O(beta)	-2.508	-3.422	
CaV2O6	-3.617	-4.935	
CaZrO3	136.242	185.873	ssatd
Calcite	-6.651	-9.074	
Celestite	-7.207	-9.832	
Chalcedony	-0.271	-0.370	
Coesite	-0.810	-1.105	
Corundum	-3.991	-5.445	
CrO2	-3.934	-5.366	
Cristobalite(alpha)	-0.551	-0.751	
Cristobalite(beta)	-0.994	-1.356	
Crocoite	-1.570	-2.141	
Dawsonite	-5.769	-7.871	
Diaspore	0.000	0.000	satd
Epsomite	-4.455	-6.078	
Fe(OH)3	-5.888	-8.033	
Fluorapatite	0.000	0.000	satd
Fluorite	-2.790	-3.807	
GdPO4:H2O	-4.200	-5.729	
Gibbsite	-0.596	-0.813	
Goethite	-0.767	-1.046	
Gypsum	-1.519	-2.073	
Hematite	-0.573	-0.782	
Hexahydrite	-4.690	-6.399	
Ice	-0.139	-0.190	
Illite	-3.866	-5.275	
Jadeite	-6.497	-8.863	
K-Feldspar	-2.621	-3.576	
Kalsilite	-5.797	-7.909	
Kaolinite	-0.488	-0.666	
Kieserite	-6.149	-8.389	
Kyanite	-5.352	-7.302	
LaPO4:H2O	-3.739	-5.101	
Lopezite	-6.754	-9.215	
Manganite	-4.459	-6.084	
Maximum_Microcline	-2.621	-3.576	
Mesolite	-5.285	-7.210	
Mirabilite	-5.915	-8.069	
MnHPO4	-2.662	-3.632	
MnO2(gamma)	-1.518	-2.071	
Montmor-Ca	-3.448	-4.705	
Montmor-Cs	-5.685	-7.755	
Montmor-K	-3.529	-4.815	
Montmor-Mg	-3.409	-4.651	
Montmor-Na	-3.611	-4.926	
Mordenite	-5.439	-7.420	
Morenosite	-2.710	-3.698	
Muscovite	-2.162	-2.950	
NdPO4:H2O	-4.013	-5.475	
Ni(OH)2	-4.959	-6.765	
Ni2SiO4	-2.761	-3.767	
Ni3(PO4)2	-1.910	-2.605	
NiCO3	-7.035	-9.598	
NiSO4:6H2O(alpha)	-2.717	-3.707	
Niter	-6.848	-9.343	

Nontronite-Ca	-0.123	-0.168	
Nontronite-H	-0.239	-0.327	
Nontronite-K	-0.274	-0.374	
Nontronite-Mg	-0.154	-0.209	
Nontronite-Na	-0.352	-0.480	
Paragonite	-5.308	-7.242	
PbHPO4	-4.645	-6.337	
Pentahydrite	-5.030	-6.862	
Plumbogummite	-2.546	-3.473	
Pyrolusite	0.000	0.000	satd
Pyrophyllite	-2.116	-2.887	
Quartz	0.000	0.000	satd
Rutile	0.000	0.000	satd
Sanidine_high	-3.821	-5.213	
Scolecite	-7.043	-9.609	
Sellaite	-3.858	-5.263	
Shcherbinaite	-3.143	-4.288	
SiO2(am)	-1.286	-1.754	
Sillimanite	-5.986	-8.167	
SmPO4:H2O	-4.030	-5.498	
SrZrO3	112.324	153.242	ssatd
Starkeyite	-5.417	-7.390	
Stilbite	-5.704	-7.781	
Strengite	-4.851	-6.618	
Syngenite	-7.033	-9.595	
Thenardite	-6.743	-9.199	
Trevorite	-2.462	-3.359	
Tridymite	-0.172	-0.234	
fix CO2(g)	0.000	0.000	satd
fix O2(g)	0.000	0.000	satd

--- Summary of Solid Solutions ---

--- Carbonate-Calcite ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Calcite	8.7850E-01	-0.0563	0.0000	-0.0563
Magnesite	1.2142E-01	-0.9157	0.0000	-0.9157
Rhodochrosite	6.6860E-05	-4.1748	0.0000	-4.1748
Siderite	4.4120E-13	-12.3554	0.0000	-12.3554
Smithsonite	3.9233E-06	-5.4064	0.0000	-5.4064
Strontianite	1.6721E-05	-4.7767	0.0000	-4.7767

Mineral	Log Q/K	Aff, kcal	State
Carbonate-Calcite	-6.595	-8.997	
Calcite	-6.595	-8.997	
Magnesite	-6.595	-8.997	
Rhodochrosite	-6.595	-8.997	
Siderite	-6.595	-8.997	
Smithsonite	-6.595	-8.997	
Strontianite	-6.595	-8.997	

--- Clinoptilolite-hy-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-hy-Ca	7.9243E-01	-0.1010	0.0000	-0.1010
Clinoptilolite-hy-Cs	1.4597E-23	-22.8357	0.0000	-22.8357
Clinoptilolite-hy-K	1.9152E-01	-0.7178	0.0000	-0.7178
Clinoptilolite-hy-Na	1.6051E-02	-1.7945	0.0000	-1.7945
Clinoptilolite-hy-Sr	1.2762E-12	-11.8941	0.0000	-11.8941

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-hy-ss	-15.026	-20.499	
Clinoptilolite-hy-Ca	-15.026	-20.499	
Clinoptilolite-hy-Cs	-15.026	-20.499	
Clinoptilolite-hy-K	-15.026	-20.499	
Clinoptilolite-hy-Na	-15.026	-20.499	
Clinoptilolite-hy-Sr	-15.026	-20.499	

--- Clinoptilolite-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-Ca	5.0353E-01	-0.2980	-0.7330	-1.0310
Clinoptilolite-Cs	1.3491E-07	-6.8700	-16.9001	-23.7700
Clinoptilolite-K	3.3323E-01	-0.4773	-1.1740	-1.6513
Clinoptilolite-NH4	4.1512E-58	-57.3818	-141.1593	-198.5411
Clinoptilolite-Na	1.6304E-01	-0.7877	-1.9377	-2.7254
Clinoptilolite-Sr	1.9677E-04	-3.7060	-9.1168	-12.8229

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-ss	-14.097	-19.232	
Clinoptilolite-Ca	-14.097	-19.232	
Clinoptilolite-Cs	-14.097	-19.232	
Clinoptilolite-K	-14.097	-19.232	
Clinoptilolite-NH4	-14.097	-19.232	
Clinoptilolite-Na	-14.097	-19.232	
Clinoptilolite-Sr	-14.097	-19.232	

--- Saponite-tri ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Saponite-Ca	3.5712E-01	-0.4472	0.2996	-0.1476
Saponite-H	1.5837E-01	-0.8003	0.5362	-0.2641
Saponite-K	1.2412E-01	-0.9062	0.6071	-0.2990
Saponite-Mg	2.8826E-01	-0.5402	0.3619	-0.1783
Saponite-Na	7.2130E-02	-1.1419	0.7651	-0.3768

Mineral	Log Q/K	Aff, kcal	State
Saponite-tri	-19.092	-26.047	

Saponite-Ca	-19.092	-26.047
Saponite-H	-19.092	-26.047
Saponite-K	-19.092	-26.047
Saponite-Mg	-19.092	-26.047
Saponite-Na	-19.092	-26.047

--- Smectite-di ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Beidellite-Ca	2.4616E-08	-7.6088	5.0979	-2.5109
Beidellite-K	8.5611E-09	-8.0675	5.4052	-2.6623
Beidellite-Mg	1.9869E-08	-7.7018	5.1602	-2.5416
Beidellite-Na	4.9718E-09	-8.3035	5.5633	-2.7401
Montmor-Ca	3.5515E-11	-10.4496	7.0012	-3.4484
Montmor-K	2.0172E-11	-10.6953	7.1658	-3.5294
Montmor-Mg	4.6589E-11	-10.3317	6.9223	-3.4095
Montmor-Na	1.1424E-11	-10.9422	7.3313	-3.6109
Nontronite-Ca	4.2418E-01	-0.3724	0.2495	-0.1229
Nontronite-K	1.4752E-01	-0.8311	0.5569	-0.2743
Nontronite-Mg	3.4262E-01	-0.4652	0.3117	-0.1535
Nontronite-Na	8.5674E-02	-1.0672	0.7150	-0.3522

Mineral	Log Q/K	Aff, kcal	State
Smectite-di	0.000	0.000	satd
Beidellite-Ca	0.000	0.000	satd
Beidellite-K	0.000	0.000	satd
Beidellite-Mg	0.000	0.000	satd
Beidellite-Na	0.000	0.000	satd
Montmor-Ca	0.000	0.000	satd
Montmor-K	0.000	0.000	satd
Montmor-Mg	0.000	0.000	satd
Montmor-Na	0.000	0.000	satd
Nontronite-Ca	0.000	0.000	satd
Nontronite-K	0.000	0.000	satd
Nontronite-Mg	0.000	0.000	satd
Nontronite-Na	0.000	0.000	satd

--- Lanthanide hydroxide ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
La(OH)3	1.3272E-05	-4.8771	0.0000	-4.8771
Ce(OH)3	3.7509E-15	-14.4259	0.0000	-14.4259
Nd(OH)3(c)	3.5371E-01	-0.4514	0.0000	-0.4514
Gd(OH)3	5.7837E-01	-0.2378	0.0000	-0.2378
Sm(OH)3	6.7912E-02	-1.1681	0.0000	-1.1681

Mineral	Log Q/K	Aff, kcal	State
Lanthanide hydroxide	-15.581	-21.257	
La(OH)3	-15.581	-21.257	

Ce(OH)3	-15.581	-21.257
Nd(OH)3(c)	-15.581	-21.257
Gd(OH)3	-15.581	-21.257
Sm(OH)3	-15.581	-21.257

--- Rhabdophane-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaPO4:H2O	4.1848E-01	-0.3783	0.0000	-0.3783
CePO4:H2O	3.7400E-11	-10.4271	0.0000	-10.4271
NdPO4:H2O	2.2253E-01	-0.6526	0.0000	-0.6526
GdPO4:H2O	1.4486E-01	-0.8391	0.0000	-0.8391
SmPO4:H2O	2.1413E-01	-0.6693	0.0000	-0.6693

Mineral	Log Q/K	Aff, kcal	State
Rhabdophane-ss	-3.361	-4.585	
LaPO4:H2O	-3.361	-4.585	
CePO4:H2O	-3.361	-4.585	
NdPO4:H2O	-3.361	-4.585	
GdPO4:H2O	-3.361	-4.585	
SmPO4:H2O	-3.361	-4.585	

--- Lanthanide fluoride ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaF3:0.5H2O	5.7658E-01	-0.2391	0.0000	-0.2391
CeF3:0.5H2O	8.1668E-11	-10.0880	0.0000	-10.0880
NdF3:0.5H2O	3.8597E-01	-0.4134	0.0000	-0.4134
GdF3:0.5H2O	7.9455E-03	-2.0999	0.0000	-2.0999
SmF3:0.5H2O	2.9503E-02	-1.5301	0.0000	-1.5301

Mineral	Log Q/K	Aff, kcal	State
Lanthanide fluoride	-10.198	-13.912	
LaF3:0.5H2O	-10.198	-13.912	
CeF3:0.5H2O	-10.198	-13.912	
NdF3:0.5H2O	-10.198	-13.912	
GdF3:0.5H2O	-10.198	-13.912	
SmF3:0.5H2O	-10.198	-13.912	

--- Summary of Gases ---

Gas	Fugacity	Log fugacity
Al(g)	1.6469-191	-190.7833
B(g)	8.5629-204	-203.0674
BF3(g)	1.1257E-31	-30.9486

C(g)	3.0917-190	-189.5098
CH4(g)	3.5253-146	-145.4528
CO(g)	6.0395E-49	-48.2190
CO2(g)	3.1623E-04	-3.5000
Ca(g)	1.6660-157	-156.7783
Chlorine	3.4309E-23	-22.4646
Cs(g)	3.6808E-86	-85.4341
Cu(g)	8.2612E-87	-86.0830
Fluorine	1.4231E-77	-76.8468
H2(g)	6.1115E-42	-41.2139
H2O(g)	2.5963E-02	-1.5857
H2S(g)	1.9873-136	-135.7017
HCl(g)	7.1833E-16	-15.1437
HF(g)	1.6512E-11	-10.7822
K(g)	1.7916E-79	-78.7468
Li(g)	8.1689-100	-99.0878
Mg(g)	4.3203-135	-134.3645
Nitrogen	2.4958E-14	-13.6028
NH3(g)	1.8198E-66	-65.7400
NO(g)	4.9746E-23	-22.3032
NO2(g)	3.4014E-17	-16.4683
Na(g)	5.7607E-78	-77.2395
O2(g)	2.0999E-01	-0.6778
Pb(g)	8.4725E-75	-74.0720
S2(g)	2.3577-215	-214.6275
SO2(g)	3.5206E-49	-48.4534
Si(g)	4.2257-221	-220.3741
SiF4(g)	3.2801E-28	-27.4841
Ti(g)	3.8019-231	-230.4200
TiCl4(g)	8.9290E-74	-73.0492
U(g)	3.1253-300	-299.5051
U2Cl10(g)	3.6416-223	-222.4387
U2Cl8(g)	3.2907-231	-230.4827
U2F10(g)	1.9856-136	-135.7021
UCl(g)	2.0012-253	-252.6987
UCl2(g)	3.8335-205	-204.4164
UCl3(g)	1.6084-154	-153.7936
UCl4(g)	3.6542-121	-120.4372
UCl5(g)	4.2716-125	-124.3694
UCl6(g)	9.2767-124	-123.0326
UF(g)	9.7760-239	-238.0098
UF2(g)	2.2679-195	-194.6444
UF3(g)	1.2948-145	-144.8878
UF4(g)	1.0911E-92	-91.9621
UF5(g)	4.2116E-81	-80.3755
UF6(g)	1.6007E-83	-82.7957
UO(g)	2.4682-215	-214.6076
UO2(g)	4.5729-131	-130.3398
UO2Cl2(g)	6.8500E-73	-72.1643
UO2F2(g)	2.9399E-61	-60.5317
UO3(g)	3.3635E-78	-77.4732
UOF4(g)	3.2515E-70	-69.4879
Zn(g)	1.4128E-84	-83.8499

- -

--- shifting e.s. solid(s) to the p.r.s. (shftz) ---

shifted -- Diaspore
- old mass= 3.10269E-04, new mass= 3.10269E-06

```
  not shifted -- Fluorapatite
              - mass=  6.76419E-08
      shifted -- Pyrolusite
              - old mass=  1.86662E-06, new mass=  8.00000E-07
      shifted -- Quartz
              - old mass=  1.42048E-03, new mass=  1.42048E-05
      shifted -- Rutile
              - old mass=  2.18656E-06, new mass=  8.00000E-07
      shifted -- Smectite-di
              - old mass=  7.41227E-06, new mass=  8.00000E-07

Stepping to zi=  1.6909E-01, delzi=  1.0000E-09, nord= 0
  time =  1.6309E+03 d, dltime =  9.6451E-06 d
Steps completed =   186, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Fluorapatite            ) =     -7.1698

Stepping to zi=  1.6909E-01, delzi=  1.0000E-09, nord= 0
  time =  1.6309E+03 d, dltime =  9.6451E-06 d
Steps completed =   187, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Fluorapatite            ) =     -7.1697

Stepping to zi=  1.6909E-01, delzi=  1.0000E-09, nord= 0
  time =  1.6309E+03 d, dltime =  9.6451E-06 d
Steps completed =   188, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Fluorapatite            ) =     -7.1697

Stepping to zi=  1.6909E-01, delzi=  5.4839E-09, nord= 1
  time =  1.6309E+03 d, dltime =  5.2892E-05 d
Steps completed =   189, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Fluorapatite            ) =     -7.1695

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                     Reaction progress        =  1.69091647729559E-01
                     Log of reaction progress =      -0.7718778



                     Time =  1.409E+08 sec
                          =  1.631E+03 days
                          =  4.465E+00 years

                     Log sec =        8.149
                     Log days =       3.212
                     Log years =      0.650

                     Temperature    =     25.000 degrees C
                     total pressure =      1.013 bars


Flow-through system print following a discontinuity


     --- Summary of Instantaneously Precipitated Solid Phases ---
                 (defined by derivatives)

     --- Theoretical Rock Composition ---
                  g/kg

      O      5.133245E+01
      Al     6.783635E+00
      Ca     4.395832E+00
```

F	4.152938E-01
Fe	6.197775E-01
H	2.627541E-01
P	2.031204E+00
K	1.073210E-02
Mg	7.647891E-03
Mn	4.903123E-02
Na	3.622514E-03
Si	3.403230E+01
Ti	5.571252E-02

--- Oxide Percentages ---

Oxide Theoretical rock

Total = 0.0000

Phase/end-member	d mol/d zi	d grams/d zi	d vol (cc)/d zi
Diaspore	5.4268E-02	3.2554E+00	9.6380E-01
Fluorapatite	4.7529E-03	2.3969E+00	2.3765E+00
Pyrolusite	1.9405E-04	1.6870E-02	9.7027E-02
Quartz	2.5904E-01	1.5564E+01	5.8771E+00
Rutile	2.5300E-04	2.0209E-02	4.7615E-03
fix CO2(g)	0.0000E+00	0.0000E+00	0.0000E+00
fix O2(g)	-7.1054E-04	-2.2737E-02	0.0000E+00
Smectite-di			
Beidellite-Ca	3.0368E-11	1.1132E-08	3.9335E-09
Beidellite-K	1.0821E-11	4.0346E-09	1.4467E-09
Beidellite-Mg	2.4801E-11	9.0267E-09	3.0553E-09
Beidellite-Na	6.2139E-12	2.2838E-09	8.1116E-10
Montmor-Ca	4.6777E-14	1.7122E-11	2.3388E-11
Montmor-K	2.7180E-14	1.0120E-11	1.3590E-11
Montmor-Mg	6.2041E-14	2.2548E-11	3.1021E-11
Montmor-Na	1.5232E-14	5.5902E-12	7.6158E-12
Nontronite-Ca	5.0717E-04	2.1519E-01	6.6490E-02
Nontronite-K	1.8086E-04	7.7874E-02	2.4465E-02
Nontronite-Mg	4.1465E-04	1.7485E-01	5.3805E-02
Nontronite-Na	1.0382E-04	4.4151E-02	1.3716E-02

--- Summary of Solid Phases (E.S.+P.R.S.) ---

Phase/End-member	Log moles	Moles	Mass, g	Volume, cc
Alunite	-2.5559	2.7801E-03	1.1516E+00	8.1624E-01
Diaspore	-3.4976	3.1794E-04	1.9073E-02	5.6467E-03
Fluorapatite	-7.1695	6.7682E-08	3.4132E-05	3.3841E-05
Hematite	-3.7144	1.9300E-04	3.0820E-02	5.8428E-03
Nontronite-H	-4.9990	1.0023E-05	4.1899E-03	5.0117E-03
Pyrolusite	-3.2031	6.2647E-04	5.4464E-02	3.1324E-01
Quartz	-1.3518	4.4481E-02	2.6726E+00	1.0092E+00
Rutile	-4.3688	4.2780E-05	3.4172E-03	8.0512E-04
fix CO2(g)	2.3010	2.0000E+02	8.8020E+03	0.0000E+00
fix O2(g)	2.3010	2.0000E+02	6.3997E+03	0.0000E+00
Smectite-di	-5.0474	8.9658E-06		
Beidellite-Ca	-12.7073	1.9620E-13	7.1921E-11	2.5414E-11
Beidellite-K	-13.1695	6.7693E-14	2.5239E-11	9.0505E-12
Beidellite-Mg	-12.8004	1.5833E-13	5.7626E-11	1.9505E-11
Beidellite-Na	-13.4024	3.9589E-14	1.4550E-11	5.1679E-12

```
  Montmor-Ca                -15.5754   2.6584E-16   9.7309E-14   1.3292E-13
  Montmor-K                 -15.8215   1.5083E-16   5.6158E-14   7.5413E-14
  Montmor-Mg                -15.4575   3.4872E-16   1.2674E-13   1.7436E-13
  Montmor-Na                -16.0680   8.5502E-17   3.1381E-14   4.2751E-14
  Nontronite-Ca              -5.4184   3.8160E-06   1.6191E-03   5.0028E-04
  Nontronite-K               -5.8859   1.3006E-06   5.6000E-04   1.7593E-04
  Nontronite-Mg              -5.5114   3.0804E-06   1.2990E-03   3.9971E-04
  Nontronite-Na              -6.1142   7.6880E-07   3.2694E-04   1.0157E-04


                          Mass, grams        Volume, cc

          Created         1.520565E+04       2.157179E+00
          Destroyed       0.000000E+00       0.000000E+00
          Net             1.520565E+04       2.157179E+00

         Warning-- these volume totals may be incomplete because
         of missing partial molar volume data in the data base




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Stepping to zi=  1.6909E-01, delzi=  5.4839E-08, nord= 2
  time =  1.6309E+03 d, dltime =  5.2892E-04 d
Steps completed =   190, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Fluorapatite            ) =     -7.1679

Stepping to zi=  1.6909E-01, delzi=  5.4839E-07, nord= 2
  time =  1.6309E+03 d, dltime =  5.2892E-03 d
Steps completed =   191, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Fluorapatite            ) =     -7.1515

Stepping to zi=  1.6910E-01, delzi=  5.4839E-06, nord= 2
  time =  1.6310E+03 d, dltime =  5.2892E-02 d
Steps completed =   192, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Fluorapatite            ) =     -7.0150

Stepping to zi=  1.6915E-01, delzi=  5.4839E-05, nord= 2
  time =  1.6315E+03 d, dltime =  5.2892E-01 d
Steps completed =   193, iter = 12, ncorr = 0
Most rapidly changing is zvclg1(Fluorapatite            ) =     -6.4473

Stepping to zi=  1.6970E-01, delzi=  5.4839E-04, nord= 3
  time =  1.6368E+03 d, dltime =  5.2892E+00 d
Steps completed =   194, iter = 10, ncorr = 0
Most rapidly changing is zvclg1(Fluorapatite            ) =     -5.5312

Stepping to zi=  1.7169E-01, delzi=  1.9850E-03, nord= 4
  time =  1.6559E+03 d, dltime =  1.9146E+01 d
Steps completed =   195, iter =  9, ncorr = 0
Most rapidly changing is zvclg1(Fluorapatite            ) =     -4.9207

Stepping to zi=  1.7470E-01, delzi=  3.0125E-03, nord= 5
  time =  1.6850E+03 d, dltime =  2.9056E+01 d
Steps completed =   196, iter =  7, ncorr = 0
Most rapidly changing is zvclg1(Montmor-K               ) =    -15.3653

Stepping to zi=  1.7830E-01, delzi=  3.6029E-03, nord= 5
  time =  1.7197E+03 d, dltime =  3.4750E+01 d
```

```
Steps completed =   197, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Montmor-K               ) =    -14.8582

Stepping to zi=  1.8402E-01, delzi=  5.7184E-03, nord= 6
  time =  1.7749E+03 d, dltime =  5.5154E+01 d
Steps completed =   198, iter =  6, ncorr = 0
Most rapidly changing is zvclg1(Montmor-K               ) =    -14.1536

Stepping to zi=  1.8833E-01, delzi=  4.3055E-03, nord= 6
  time =  1.8164E+03 d, dltime =  4.1527E+01 d
Steps completed =   199, iter =  6, ncorr = 0
Most rapidly changing is zvclg1(Montmor-K               ) =    -13.6749

Stepping to zi=  1.9184E-01, delzi=  3.5157E-03, nord= 6
  time =  1.8503E+03 d, dltime =  3.3909E+01 d
Steps completed =   200, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Montmor-K               ) =    -13.3168

Stepping to zi=  1.9504E-01, delzi=  3.2009E-03, nord= 6
  time =  1.8812E+03 d, dltime =  3.0873E+01 d
Steps completed =   201, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Montmor-K               ) =    -13.0165

Stepping to zi=  1.9721E-01, delzi=  2.1652E-03, nord= 6
  time =  1.9021E+03 d, dltime =  2.0883E+01 d
iter =    4
      1 supersaturated pure minerals
      0 supersaturated solid solutions

               The most supersaturated phases           Affinity, kcal

                 1     405   Ni2SiO4                       0.00762258


  Attempted species assemblage no.   2

            1      1  H2O
            2      3  Al+++
            3      7  B(OH)3(aq)
            4      8  Ba++
            5     11  Ca++
            6     13  Ce+++
            7     14  Cl-
            8     16  CrO4--
            9     17  Cs+
           10     18  Cu++
           11     22  F-
           12     23  Fe++
           13     25  Gd+++
           14     26  H+
           15     28  HCO3-
           16     29  HPO4--
           17     35  K+
           18     37  La+++
           19     38  Li+
           20     40  Mg++
           21     41  Mn++
           22     42  MoO4--
           23     43  NO3-
           24     44  Na+
           25     45  Nd+++
           26     47  Ni++
           27     49  Pb++
```

```
28     52  Pu++++
29     58  SO4--
30     62  SiO2(aq)
31     63  Sm+++
32     65  Sr++
33     69  Ti(OH)4(aq)
34     72  UO2++
35     73  VO++
36     78  Zn++
37     79  Zr(OH)2++
38     80  O2(g)
39    192  Diaspore
40    222  Fluorapatite
41    405  Ni2SiO4
42    470  Pyrolusite
43    475  Quartz
44    482  Rutile
45    689  fix     CO2(g)
46    690  fix     O2(g)
47      1  SmectiteBeidellite-Ca
48      2  SmectiteBeidellite-K
49      3  SmectiteBeidellite-Mg
50      4  SmectiteBeidellite-Na
51      5  SmectiteMontmor-Ca
52      6  SmectiteMontmor-K
53      7  SmectiteMontmor-Mg
54      8  SmectiteMontmor-Na
55      9  SmectiteNontronite-Ca
56     10  SmectiteNontronite-K
57     11  SmectiteNontronite-Mg
58     12  SmectiteNontronite-Na

Steps completed =   202, iter = 12, ncorr = 0

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                    Reaction progress        =  1.97207191776806E-01
                    Log of reaction progress =      -0.7050773



                    Time =  1.643E+08 sec
                         =  1.902E+03 days
                         =  5.208E+00 years

                    Log sec =        8.216
                    Log days =       3.279
                    Log years =      0.717

                    Temperature    =     25.000 degrees C
                    total pressure =      1.013 bars


Change in the product phase assemblage


                              --- Reactant Summary ---


    Reactant                  Moles     Delta moles    Mass, g    Delta Mass, g
```

Tuff	9.9803E+01	1.9721E-01	2.0546E+03	4.0598E+00

Current total mass = 2.05459E+03 grams
Delta total mass = 4.05980E+00 grams
Delta total volume = 0.00000 cc

Reactant	Rel. Rate mol/mol	Rate mol/s	Rate mol/s/cm2
Tuff	1.0000E+00	1.2000E-09	2.5000E-15

Reactant	Affinity kcal/mol	Surface Area mol/s/cm2
Tuff	999.00000	4.8000E+05

Reactant	Rate Constants, mol/s/cm2	
Tuff		
	Forward	2.5000E-15

Affinity of the overall irreversible reaction= 0.000 kcal
Contributions from irreversible reactions
with no thermodynamic data are not included

--- Element Totals for the Aqueous Solution ---

Element	mg/kg soln.	Molality	Moles
O	8.865552E+05	5.558848E+01	5.557138E+01
Al	1.811730E-02	6.736114E-07	6.734041E-07
B	1.335420E-01	1.239181E-05	1.238800E-05
Ba	1.369326E-05	1.000308E-10	1.000000E-10
Ca	1.450554E+01	3.630869E-04	3.629752E-04
Ce	1.397125E-19	1.000307E-24	9.999993E-25
Cl	7.119668E+00	2.014620E-04	2.014000E-04
Cr	2.997680E+02	5.783586E-03	5.781806E-03
Cs	1.325237E-05	1.000308E-10	1.000000E-10
Cu	6.653167E-10	1.050323E-14	1.050000E-14
F	7.920411E-01	4.182283E-05	4.180996E-05
Fe	1.477218E-07	2.653552E-12	2.652735E-12
Gd	1.567984E-09	1.000308E-14	9.999998E-15
H	1.115464E+05	1.110206E+02	1.109864E+02
C	1.664610E-01	1.390324E-05	1.389897E-05
P	8.356191E-01	2.706432E-05	2.705599E-05
K	6.228740E+01	1.598178E-03	1.597686E-03
La	1.385066E-09	1.000308E-14	9.999998E-15
Li	6.921066E-07	1.000308E-10	1.000000E-10
Mg	7.926825E+00	3.271797E-04	3.270790E-04
Mn	1.210776E-06	2.210921E-11	2.210240E-11
Mo	2.180352E+02	2.279867E-03	2.279166E-03
N	1.983245E+00	1.420437E-04	1.420000E-04
Na	1.535845E+02	6.701860E-03	6.699798E-03
Nd	1.438257E-09	1.000308E-14	9.999998E-15
Ni	7.504437E+02	1.282734E-02	1.282340E-02
Pb	2.066049E-05	1.000308E-10	1.000000E-10

Pu	2.432992E-09	1.000308E-14	9.999997E-15
S	3.732010E+02	1.167564E-02	1.167205E-02
Si	2.804390E+00	1.001703E-04	1.001395E-04
Sm	1.499282E-09	1.000308E-14	9.999998E-15
Sr	8.736836E-06	1.000308E-10	1.000000E-10
Ti	1.079093E-05	2.260933E-10	2.260237E-10
U	2.373453E-09	1.000308E-14	9.999998E-15
V	4.770186E+00	9.393909E-05	9.391018E-05
Zn	6.520220E-06	1.000308E-10	1.000000E-10
Zr	9.096207E-16	1.000308E-20	1.000000E-20

Single ion activities and activity coefficients are here defined
with respect to the modified NBS pH scale

	pH	Eh	pe
modified NBS pH scale	5.7461	0.8791	1.4861E+01
rational pH scale	5.6719	0.8835	1.4935E+01

pHCl = 9.5303

Oxygen fugacity = 2.09991E-01
Log oxygen fugacity = -0.67780

Activity of water = 0.99941
Log activity of water = -0.00026

Ionic strength = 5.337592E-02 molal
Sum of molalities = 0.0389412571689
Osmotic coefficient = 0.84081

Mass of solution = 1.002880 kg
Mass of solutes = 0.003188 kg
Conc. of solutes = 0.317877 per cent (w/w)

Moles of solvent H2O = 5.54914E+01
Mass of solvent H2O = 9.99692E-01 kg

Species	Molality	Log molality	Log gamma	Log activity
Ni++	1.0315E-02	-1.9865	-0.3350	-2.3216
SO4--	8.7758E-03	-2.0567	-0.3477	-2.4044
Na+	6.5363E-03	-2.1847	-0.0947	-2.2794
HCrO4-	3.4333E-03	-2.4643	-0.0821	-2.5464
NiSO4(aq)	2.5104E-03	-2.6003	0.0000	-2.6003
MoO4--	2.2799E-03	-2.6421	-0.3374	-2.9795
K+	1.5537E-03	-2.8086	-0.1003	-2.9090
CrO4--	1.1298E-03	-2.9470	-0.3477	-3.2947
Cr2O7--	6.1024E-04	-3.2145	-0.3477	-3.5622
Ca++	2.9377E-04	-3.5320	-0.3350	-3.8670
O2(aq)	2.6200E-04	-3.5817	0.0056	-3.5761
Mg++	2.1733E-04	-3.6629	-0.3044	-3.9672
Cl-	2.0119E-04	-3.6964	-0.0877	-3.7841
NaSO4-	1.6533E-04	-3.7817	-0.0821	-3.8638
NO3-	1.4024E-04	-3.8531	-0.0877	-3.9409

MgSO4(aq)	1.0966E-04	-3.9599	0.0000	-3.9599
SiO2(aq)	1.0016E-04	-3.9993	0.0000	-3.9993
CaSO4(aq)	6.9130E-05	-4.1603	0.0000	-4.1603
H2VO4-	5.4604E-05	-4.2628	-0.0821	-4.3449
KSO4-	4.4500E-05	-4.3516	-0.0821	-4.4338
F-	4.0163E-05	-4.3962	-0.0849	-4.4810
VO2(OH)2-	3.3840E-05	-4.4706	-0.0821	-4.5527
H2PO4-	2.5273E-05	-4.5973	-0.0821	-4.6795
B(OH)3(aq)	1.2387E-05	-4.9070	0.0000	-4.9070
CO2(aq)	1.0605E-05	-4.9745	0.0056	-4.9689
VO3OH--	4.5041E-06	-5.3464	-0.3477	-5.6941
HCO3-	3.2690E-06	-5.4856	-0.0821	-5.5677
H+	2.1289E-06	-5.6719	-0.0743	-5.7461
NiNO3+	1.7072E-06	-5.7677	-0.0947	-5.8624
HPO4--	1.6179E-06	-5.7910	-0.3477	-6.1387
HSO4-	8.1414E-07	-6.0893	-0.0821	-6.1714
VO(OH)3(aq)	5.0252E-07	-6.2988	0.0000	-6.2988
HVO4--	4.8519E-07	-6.3141	-0.3477	-6.6618
AlF2+	4.5194E-07	-6.3449	-0.0947	-6.4396
AlF3(aq)	1.5112E-07	-6.8207	0.0000	-6.8207
NaCl(aq)	1.4437E-07	-6.8405	0.0000	-6.8405
MgF+	9.9738E-08	-7.0011	-0.0947	-7.0959
NiCl+	9.8363E-08	-7.0072	-0.0947	-7.1019
CaNO3+	9.7011E-08	-7.0132	-0.0947	-7.1079
HF(aq)	8.7285E-08	-7.0591	0.0000	-7.0591
MgHPO4(aq)	6.3684E-08	-7.1960	0.0000	-7.1960
AlF++	6.3678E-08	-7.1960	-0.3626	-7.5586
CaHPO4(aq)	5.4229E-08	-7.2658	0.0000	-7.2658
NaHPO4-	3.8371E-08	-7.4160	-0.0821	-7.4981
CaF+	2.6814E-08	-7.5716	-0.0947	-7.6664
NaHCO3(aq)	2.0276E-08	-7.6930	0.0000	-7.6930
NaF(aq)	1.7458E-08	-7.7580	0.0000	-7.7580
MgCl+	1.6161E-08	-7.7915	-0.0947	-7.8863
HSiO3-	7.5199E-09	-8.1238	-0.0821	-8.2059
OH-	6.8490E-09	-8.1644	-0.0849	-8.2492
KHPO4-	6.5227E-09	-8.1856	-0.0821	-8.2677
KCl(aq)	6.4908E-09	-8.1877	0.0000	-8.1877
CaCl+	5.5970E-09	-8.2520	-0.0947	-8.3468
H3PO4(aq)	5.5475E-09	-8.2559	0.0000	-8.2559
CaHCO3+	5.0894E-09	-8.2933	-0.0947	-8.3881
BO2-	4.7488E-09	-8.3234	-0.0821	-8.4055
MgHCO3+	3.9397E-09	-8.4045	-0.0947	-8.4993
VO2+	2.2401E-09	-8.6497	-0.0947	-8.7445
AlHPO4+	1.8984E-09	-8.7216	-0.0947	-8.8163
PO3F--	1.5183E-09	-8.8187	-0.3477	-9.1663
AlF4-	1.5151E-09	-8.8196	-0.0821	-8.9017
NaHSiO3(aq)	1.4561E-09	-8.8368	0.0000	-8.8368
AlOH++	1.1852E-09	-8.9262	-0.3626	-9.2888
VO2HPO4-	1.0689E-09	-8.9711	-0.0821	-9.0532
Al(OH)2+	8.2109E-10	-9.0856	-0.0947	-9.1803
HAlO2(aq)	5.3383E-10	-9.2726	0.0000	-9.2726
AlSO4+	4.1950E-10	-9.3773	-0.0947	-9.4720
Al+++	3.7211E-10	-9.4293	-0.6482	-10.0776
VO2SO4-	3.2604E-10	-9.4867	-0.0821	-9.5689
H2CrO4(aq)	2.4437E-10	-9.6120	0.0000	-9.6120
Ti(OH)4(aq)	2.2609E-10	-9.6457	0.0000	-9.6457
CO3--	1.5383E-10	-9.8130	-0.3374	-10.1504
VO2F(aq)	1.3320E-10	-9.8755	0.0000	-9.8755
AlO2-	1.2743E-10	-9.8947	-0.0821	-9.9769
Cs+	1.0002E-10	-9.9999	-0.1034	-10.1033

--- Summary of Instantaneously Precipitated Solid Phases ---

(defined by derivatives)

--- Theoretical Rock Composition ---
g/kg

O	5.268824E+01
Al	7.124564E+00
Ca	7.411075E-01
F	6.926539E-02
Fe	6.907017E-01
H	2.765589E-01
P	3.387774E-01
K	2.423404E-02
Mg	8.531608E-03
Mn	5.462772E-02
Na	4.462204E-03
Si	3.792678E+01
Ti	6.208804E-02

--- Oxide Percentages ---

Oxide	Theoretical rock

Total = 0.0000

Phase/end-member	d mol/d zi	d grams/d zi	d vol (cc)/d zi
Diaspore	5.1120E-02	3.0666E+00	9.0789E-01
Fluorapatite	7.1132E-04	3.5872E-01	3.5566E-01
Ni2SiO4	1.9400E-04	4.0636E-02	8.2664E-03
Pyrolusite	2.5904E-01	2.2520E+01	1.2952E+02
Quartz	2.5300E-04	1.5201E-02	5.7401E-03
Rutile	-1.6136E-04	-1.2890E-02	-3.0369E-03
fix CO2(g)	-7.0142E-04	-3.0869E-02	0.0000E+00
fix O2(g)	2.4877E-10	7.9602E-09	0.0000E+00
Smectite-di			
Beidellite-Ca	2.2610E-10	8.2881E-08	2.9287E-08
Beidellite-K	3.0381E-10	1.1328E-07	4.0620E-08
Beidellite-Mg	8.1586E-11	2.9694E-08	1.0051E-08
Beidellite-Na	2.1700E-11	7.9756E-09	2.8328E-09
Montmor-Ca	2.9285E-11	1.0720E-08	1.4643E-08
Montmor-K	4.1867E-11	1.5588E-08	2.0933E-08
Montmor-Mg	1.0902E-11	3.9624E-09	5.4512E-09
Montmor-Na	3.1023E-04	1.1386E-01	1.5511E-01
Nontronite-Ca	3.6645E-04	1.5548E-01	4.8042E-02
Nontronite-K	4.1507E-04	1.7872E-01	5.6146E-02
Nontronite-Mg	1.1475E-04	4.8391E-02	1.4890E-02
Nontronite-Na	0.0000E+00	0.0000E+00	0.0000E+00

--- Summary of Solid Phases (E.S.+P.R.S.) ---

Phase/End-member	Log moles	Moles	Mass, g	Volume, cc
Alunite	-2.5559	2.7801E-03	1.1516E+00	8.1624E-01
Diaspore	-2.7458	1.7956E-03	1.0772E-01	3.1890E-02
Fluorapatite	-4.1370	7.2940E-05	3.6784E-02	3.6470E-02
Hematite	-3.7144	1.9300E-04	3.0820E-02	5.8428E-03
Ni2SiO4	-6.0789	8.3382E-07	1.7465E-04	3.5529E-05
Nontronite-H	-4.9990	1.0023E-05	4.1899E-03	5.0117E-03
Pyrolusite	-3.1993	6.3193E-04	5.4938E-02	3.1596E-01

Quartz	-1.2860	5.1763E-02	3.1102E+00	1.1744E+00
Rutile	-4.3020	4.9893E-05	3.9854E-03	9.3899E-04
fix CO2(g)	2.3010	2.0000E+02	8.8020E+03	0.0000E+00
fix O2(g)	2.3010	2.0000E+02	6.3997E+03	0.0000E+00
Smectite-di	-4.3677	4.2887E-05		
Beidellite-Ca	-11.4872	3.2567E-12	1.1938E-09	4.2184E-10
Beidellite-K	-11.6194	2.4023E-12	8.9569E-10	3.2118E-10
Beidellite-Mg	-11.4303	3.7128E-12	1.3513E-09	4.5738E-10
Beidellite-Na	-12.0106	9.7600E-13	3.5871E-10	1.2741E-10
Montmor-Ca	-12.9235	1.1926E-13	4.3653E-11	5.9628E-11
Montmor-K	-12.8300	1.4789E-13	5.5066E-11	7.3947E-11
Montmor-Mg	-12.6487	2.2453E-13	8.1602E-11	1.1226E-10
Montmor-Na	-13.2370	5.7949E-14	2.1268E-11	2.8974E-11
Nontronite-Ca	-4.8464	1.4242E-05	6.0426E-03	1.8671E-03
Nontronite-K	-5.0285	9.3657E-06	4.0327E-03	1.2669E-03
Nontronite-Mg	-4.8155	1.5293E-05	6.4490E-03	1.9844E-03
Nontronite-Na	-5.3994	3.9868E-06	1.6955E-03	5.2670E-04

	Mass, grams	Volume, cc
Created	1.520622E+04	2.392443E+00
Destroyed	4.059799E+00	0.000000E+00
Net	1.520216E+04	2.392443E+00

Warning-- these volume totals may be incomplete because of missing partial molar volume data in the data base

--- Summary of Pure Mineral Saturation States ---

Mineral	Log Q/K	Aff, kcal	State
AlF3	-6.312	-8.611	
Albite	-4.135	-5.642	
Albite_high	-5.454	-7.441	
Albite_low	-4.135	-5.642	
Alunite	-3.127	-4.267	
Analcime	-4.096	-5.589	
Andalusite	-5.623	-7.671	
Anglesite	-4.915	-6.706	
Anhydrite	-1.965	-2.681	
Aragonite	-5.682	-7.751	
Arcanite	-6.422	-8.761	
BaCrO4	-3.715	-5.069	
BaZrO3	76.839	104.831	ssatd
Barite	-2.786	-3.801	
Bassanite	-2.610	-3.561	
Beidellite-Ca	-2.327	-3.175	
Beidellite-Cs	-4.586	-6.256	
Beidellite-H	-2.627	-3.585	
Beidellite-K	-2.366	-3.229	
Beidellite-Mg	-2.306	-3.146	
Beidellite-Na	-2.497	-3.407	
Berlinite	-3.261	-4.450	
Boehmite	-0.404	-0.551	
Boric_acid	-4.749	-6.479	
Bunsenite	-3.301	-4.504	
CaSO4:0.5H2O(beta)	-2.778	-3.790	
CaV2O6	-3.905	-5.328	

CaZrO3	137.355	187.392	ssatd
Calcite	-5.537	-7.554	
Celadonite	-5.933	-8.094	
Celestite	-7.210	-9.837	
Cerussite	-6.976	-9.518	
Chalcedony	-0.271	-0.370	
Coesite	-0.810	-1.105	
Corundum	-3.991	-5.445	
CrO2	-4.684	-6.390	
Cristobalite(alpha)	-0.551	-0.751	
Cristobalite(beta)	-0.994	-1.356	
Crocoite	-0.941	-1.284	
Dawsonite	-5.033	-6.867	
Diaspore	0.000	0.000	satd
Epsomite	-4.411	-6.018	
Fe(OH)3	-6.003	-8.189	
Fluorapatite	0.000	0.000	satd
Fluorite	-2.792	-3.809	
GdPO4:H2O	-3.796	-5.179	
Gibbsite	-0.596	-0.813	
Goethite	-0.881	-1.202	
Gypsum	-1.790	-2.442	
Hematite	-0.802	-1.094	
Hexahydrite	-4.646	-6.339	
Ice	-0.139	-0.190	
Illite	-2.971	-4.054	
Jadeite	-5.760	-7.859	
K-Feldspar	-1.725	-2.354	
Kalsilite	-4.901	-6.686	
Kaolinite	-0.488	-0.666	
Kieserite	-6.105	-8.329	
Kyanite	-5.352	-7.302	
LaPO4:H2O	-3.332	-4.546	
Lopezite	-6.463	-8.817	
Magnesite	-6.082	-8.298	
Manganite	-4.459	-6.084	
Maximum_Microcline	-1.725	-2.354	
Mesolite	-4.055	-5.533	
Mirabilite	-5.826	-7.948	
MnHPO4	-4.332	-5.911	
MnO2(gamma)	-1.518	-2.071	
Monohydrocalcite	-6.371	-8.692	
Montmor-Ca	-2.793	-3.811	
Montmor-Cs	-4.986	-6.802	
Montmor-K	-2.762	-3.769	
Montmor-Mg	-2.703	-3.687	
Montmor-Na	-2.897	-3.952	
Mordenite	-4.851	-6.618	
Morenosite	-2.714	-3.702	
Muscovite	-1.266	-1.727	
NdPO4:H2O	-3.608	-4.923	
Nepheline	-7.173	-9.786	
Ni(OH)2	-3.578	-4.882	
Ni2SiO4	0.000	0.000	satd
Ni3(PO4)2	-1.108	-1.512	
NiCO3	-5.655	-7.715	
NiF2:4H2O	-7.226	-9.858	
NiSO4:6H2O(alpha)	-2.720	-3.711	
Niter	-6.644	-9.064	
Nontronite-Ca	-0.168	-0.229	
Nontronite-H	-0.468	-0.639	
Nontronite-K	-0.207	-0.283	
Nontronite-Mg	-0.147	-0.200	

Nontronite-Na	-0.338	-0.461	
Paragonite	-4.572	-6.238	
PbHPO4	-4.936	-6.734	
Pentahydrite	-4.986	-6.802	
Plattnerite	-6.879	-9.385	
Plumbogummite	-4.506	-6.148	
PuO2	-6.190	-8.444	
Pyrolusite	0.000	0.000	satd
Pyrophyllite	-2.116	-2.887	
Quartz	0.000	0.000	satd
Rutile	0.000	0.000	satd
Sanidine_high	-2.924	-3.990	
Scolecite	-5.930	-8.090	
Sellaite	-3.545	-4.836	
Shcherbinaite	-4.545	-6.201	
SiO2(am)	-1.286	-1.754	
Sillimanite	-5.986	-8.167	
SmPO4:H2O	-3.624	-4.945	
SrZrO3	113.704	155.125	ssatd
Starkeyite	-5.373	-7.330	
Stilbite	-4.464	-6.090	
Strengite	-6.635	-9.052	
Syngenite	-6.894	-9.405	
Thenardite	-6.654	-9.078	
Trevorite	-1.311	-1.788	
Tridymite	-0.172	-0.234	
Witherite	-7.178	-9.793	
fix CO2(g)	0.000	0.000	satd
fix O2(g)	0.000	0.000	satd

--- Summary of Solid Solutions ---

--- Carbonate-Calcite ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Calcite	7.7816E-01	-0.1089	0.0000	-0.1089
Magnesite	2.2180E-01	-0.6540	0.0000	-0.6540
Rhodochrosite	4.5603E-06	-5.3410	0.0000	-5.3410
Siderite	2.3128E-14	-13.6359	0.0000	-13.6359
Smithsonite	6.4155E-06	-5.1928	0.0000	-5.1928
Strontianite	2.7389E-05	-4.5624	0.0000	-4.5624

Mineral	Log Q/K	Aff, kcal	State
Carbonate-Calcite	-5.428	-7.406	
Calcite	-5.428	-7.406	
Magnesite	-5.428	-7.406	
Rhodochrosite	-5.428	-7.406	
Siderite	-5.428	-7.406	
Smithsonite	-5.428	-7.406	
Strontianite	-5.428	-7.406	

--- Clinoptilolite-hy-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-hy-Ca	2.1181E-01	-0.6740	0.0000	-0.6740
Clinoptilolite-hy-Cs	1.1323E-23	-22.9460	0.0000	-22.9460
Clinoptilolite-hy-K	7.7022E-01	-0.1134	0.0000	-0.1134
Clinoptilolite-hy-Na	1.7972E-02	-1.7454	0.0000	-1.7454
Clinoptilolite-hy-Sr	9.9023E-13	-12.0043	0.0000	-12.0043

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-hy-ss	-12.524	-17.087	
Clinoptilolite-hy-Ca	-12.524	-17.087	
Clinoptilolite-hy-Cs	-12.524	-17.087	
Clinoptilolite-hy-K	-12.524	-17.087	
Clinoptilolite-hy-Na	-12.524	-17.087	
Clinoptilolite-hy-Sr	-12.524	-17.087	

--- Clinoptilolite-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-Ca	3.4023E-01	-0.4682	-1.1518	-1.6201
Clinoptilolite-Cs	1.2403E-07	-6.9065	-16.9900	-23.8964
Clinoptilolite-K	4.9293E-01	-0.3072	-0.7558	-1.0630
Clinoptilolite-NH4	1.5734E-59	-58.8032	-144.6558	-203.4589
Clinoptilolite-Na	1.6667E-01	-0.7782	-1.9143	-2.6924
Clinoptilolite-Sr	1.8092E-04	-3.7425	-9.2066	-12.9491

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-ss	-11.580	-15.798	
Clinoptilolite-Ca	-11.580	-15.798	
Clinoptilolite-Cs	-11.580	-15.798	
Clinoptilolite-K	-11.580	-15.798	
Clinoptilolite-NH4	-11.580	-15.798	
Clinoptilolite-Na	-11.580	-15.798	
Clinoptilolite-Sr	-11.580	-15.798	

--- Saponite-tri ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Saponite-Ca	2.9876E-01	-0.5247	0.3515	-0.1731
Saponite-H	3.6765E-02	-1.4346	0.9612	-0.4734
Saponite-K	2.2695E-01	-0.6441	0.4315	-0.2125
Saponite-Mg	3.4631E-01	-0.4605	0.3086	-0.1520
Saponite-Na	9.1213E-02	-1.0399	0.6968	-0.3432

Mineral	Log Q/K	Aff, kcal	State
Saponite-tri	-14.599	-19.917	
Saponite-Ca	-14.599	-19.917	

Saponite-H	-14.599	-19.917
Saponite-K	-14.599	-19.917
Saponite-Mg	-14.599	-19.917
Saponite-Na	-14.599	-19.917

--- Smectite-di ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Beidellite-Ca	8.8710E-08	-7.0520	4.7249	-2.3272
Beidellite-K	6.7435E-08	-7.1711	4.8046	-2.3665
Beidellite-Mg	1.0283E-07	-6.9879	4.6819	-2.3060
Beidellite-Na	2.7084E-08	-7.5673	5.0701	-2.4972
Montmor-Ca	3.4278E-09	-8.4650	5.6715	-2.7934
Montmor-K	4.2556E-09	-8.3710	5.6086	-2.7624
Montmor-Mg	6.4576E-09	-8.1899	5.4873	-2.7027
Montmor-Na	1.6668E-09	-8.7781	5.8813	-2.8968
Nontronite-Ca	3.1004E-01	-0.5086	0.3408	-0.1678
Nontronite-K	2.3568E-01	-0.6277	0.4205	-0.2071
Nontronite-Mg	3.5963E-01	-0.4441	0.2976	-0.1466
Nontronite-Na	9.4655E-02	-1.0239	0.6860	-0.3379

Mineral	Log Q/K	Aff, kcal	State
Smectite-di	0.000	0.000	satd
Beidellite-Ca	0.000	0.000	satd
Beidellite-K	0.000	0.000	satd
Beidellite-Mg	0.000	0.000	satd
Beidellite-Na	0.000	0.000	satd
Montmor-Ca	0.000	0.000	satd
Montmor-K	0.000	0.000	satd
Montmor-Mg	0.000	0.000	satd
Montmor-Na	0.000	0.000	satd
Nontronite-Ca	0.000	0.000	satd
Nontronite-K	0.000	0.000	satd
Nontronite-Mg	0.000	0.000	satd
Nontronite-Na	0.000	0.000	satd

--- Lanthanide hydroxide ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
La(OH)3	1.3354E-05	-4.8744	0.0000	-4.8744
Ce(OH)3	3.7358E-15	-14.4276	0.0000	-14.4276
Nd(OH)3(c)	3.5421E-01	-0.4507	0.0000	-0.4507
Gd(OH)3	5.7767E-01	-0.2383	0.0000	-0.2383
Sm(OH)3	6.8110E-02	-1.1668	0.0000	-1.1668

Mineral	Log Q/K	Aff, kcal	State
Lanthanide hydroxide	-13.507	-18.427	
La(OH)3	-13.507	-18.427	
Ce(OH)3	-13.507	-18.427	

Nd(OH)3(c)	-13.507	-18.427
Gd(OH)3	-13.507	-18.427
Sm(OH)3	-13.507	-18.427

--- Rhabdophane-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaPO4:H2O	4.1965E-01	-0.3771	0.0000	-0.3771
CePO4:H2O	3.7126E-11	-10.4303	0.0000	-10.4303
NdPO4:H2O	2.2210E-01	-0.6534	0.0000	-0.6534
GdPO4:H2O	1.4420E-01	-0.8410	0.0000	-0.8410
SmPO4:H2O	2.1404E-01	-0.6695	0.0000	-0.6695

Mineral	Log Q/K	Aff, kcal	State
Rhabdophane-ss	-2.955	-4.031	
LaPO4:H2O	-2.955	-4.031	
CePO4:H2O	-2.955	-4.031	
NdPO4:H2O	-2.955	-4.031	
GdPO4:H2O	-2.955	-4.031	
SmPO4:H2O	-2.955	-4.031	

--- Lanthanide fluoride ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaF3:0.5H2O	5.7771E-01	-0.2383	0.0000	-0.2383
CeF3:0.5H2O	8.1002E-11	-10.0915	0.0000	-10.0915
NdF3:0.5H2O	3.8492E-01	-0.4146	0.0000	-0.4146
GdF3:0.5H2O	7.9029E-03	-2.1022	0.0000	-2.1022
SmF3:0.5H2O	2.9466E-02	-1.5307	0.0000	-1.5307

Mineral	Log Q/K	Aff, kcal	State
Lanthanide fluoride	-9.794	-13.362	
LaF3:0.5H2O	-9.794	-13.362	
CeF3:0.5H2O	-9.794	-13.362	
NdF3:0.5H2O	-9.794	-13.362	
GdF3:0.5H2O	-9.794	-13.362	
SmF3:0.5H2O	-9.794	-13.362	

--- Summary of Gases ---

Gas	Fugacity	Log fugacity
Al(g)	1.6469-191	-190.7833
B(g)	8.5605-204	-203.0675
BF3(g)	2.3914E-33	-32.6213
C(g)	3.0917-190	-189.5098

CH4(g)	3.5252-146	-145.4528
CO(g)	6.0395E-49	-48.2190
CO2(g)	3.1623E-04	-3.5000
Ca(g)	2.1636-156	-155.6648
Chlorine	1.4165E-24	-23.8488
Cs(g)	1.8036E-85	-84.7439
Cu(g)	1.9718E-85	-84.7051
Fluorine	1.0918E-78	-77.9619
H2(g)	6.1114E-42	-41.2139
H2O(g)	2.5962E-02	-1.5857
H2S(g)	8.2136-138	-137.0855
HCl(g)	1.4596E-16	-15.8358
HF(g)	4.5734E-12	-11.3398
K(g)	1.4112E-78	-77.8504
Li(g)	4.0062E-99	-98.3973
Mg(g)	1.1571-133	-132.9366
Nitrogen	1.0319E-15	-14.9864
NH3(g)	3.7003E-67	-66.4318
NO(g)	1.0115E-23	-22.9950
NO2(g)	6.9163E-18	-17.1601
Na(g)	3.1381E-77	-76.5033
O2(g)	2.0999E-01	-0.6778
Pb(g)	2.0294E-73	-72.6926
S2(g)	4.0274-218	-217.3950
SO2(g)	1.4551E-50	-49.8371
Si(g)	4.2257-221	-220.3741
SiF4(g)	1.9305E-30	-29.7143
Ti(g)	3.8019-231	-230.4200
TiCl4(g)	1.5221E-76	-75.8175
U(g)	1.1158-298	-297.9524
U2Cl10(g)	5.5692-227	-226.2542
U2Cl8(g)	1.2189-233	-232.9140
U2F10(g)	6.7256-139	-138.1723
UCl(g)	1.4518-252	-251.8381
UCl2(g)	5.6507-205	-204.2479
UCl3(g)	4.8175-155	-154.3172
UCl4(g)	2.2240-122	-121.6529
UCl5(g)	5.2826-127	-126.2772
UCl6(g)	2.3311-126	-125.6324
UF(g)	9.6671-238	-237.0147
UF2(g)	6.2117-195	-194.2068
UF3(g)	9.8227-146	-145.0078
UF4(g)	2.2927E-93	-92.6397
UF5(g)	2.4511E-82	-81.6106
UF6(g)	2.5804E-85	-84.5883
UO(g)	8.8121-214	-213.0549
UO2(g)	1.6326-129	-128.7871
UO2Cl2(g)	1.0097E-72	-71.9958
UO2F2(g)	8.0522E-61	-60.0941
UO3(g)	1.2008E-76	-75.9205
UOF4(g)	6.8320E-71	-70.1655
Zn(g)	3.3872E-83	-82.4702

- -

--- shifting e.s. solid(s) to the p.r.s. (shftz) ---

```
      shifted -- Diaspore
              - old mass=  1.48078E-03, new mass=  1.48078E-05
      shifted -- Fluorapatite
```

```
            - old mass=  7.29400E-05, new mass=  8.00000E-07
      shifted -- Ni2SiO4
            - old mass=  8.33821E-07, new mass=  8.00000E-07
      shifted -- Pyrolusite
            - old mass=  6.25493E-06, new mass=  8.00000E-07
      shifted -- Quartz
            - old mass=  7.29648E-03, new mass=  7.29648E-05
      shifted -- Rutile
            - old mass=  7.91323E-06, new mass=  8.00000E-07
      shifted -- Smectite-di
            - old mass=  3.47214E-05, new mass=  8.00000E-07

Stepping to zi=  1.9721E-01, delzi=  1.0000E-09, nord= 0
  time =  1.9021E+03 d, dltime =  9.6451E-06 d
Steps completed =   203, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Ni2SiO4                 ) =     -6.0969

Stepping to zi=  1.9721E-01, delzi=  1.0000E-09, nord= 0
  time =  1.9021E+03 d, dltime =  9.6451E-06 d
Steps completed =   204, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Ni2SiO4                 ) =     -6.0969

Stepping to zi=  1.9721E-01, delzi=  1.0000E-09, nord= 0
  time =  1.9021E+03 d, dltime =  9.6451E-06 d
Steps completed =   205, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Ni2SiO4                 ) =     -6.0969

Stepping to zi=  1.9721E-01, delzi=  1.0000E-08, nord= 1
  time =  1.9021E+03 d, dltime =  9.6451E-05 d
Steps completed =   206, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Ni2SiO4                 ) =     -6.0968

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                    Reaction progress        =  1.97207204776806E-01
                    Log of reaction progress =      -0.7050772



                    Time =  1.643E+08 sec
                         =  1.902E+03 days
                         =  5.208E+00 years

                    Log sec =        8.216
                    Log days =       3.279
                    Log years =      0.717

                    Temperature    =     25.000 degrees C
                    total pressure =      1.013 bars


Flow-through system print following a discontinuity


     --- Summary of Instantaneously Precipitated Solid Phases ---
                 (defined by derivatives)

     --- Theoretical Rock Composition ---
                  g/kg

      O      5.013382E+01
      Al     6.591785E+00
```

Ca	9.691539E-02
F	8.077462E-03
Fe	6.394367E-01
H	2.558835E-01
P	3.950691E-02
K	1.750826E-02
Mg	8.240035E-03
Mn	5.057262E-02
Na	4.107769E-03
Ni	6.984810E+00
Si	3.511185E+01
Ti	5.747977E-02

--- Oxide Percentages ---

Oxide	Theoretical rock

Total = 0.0000

Phase/end-member	d mol/d zi	d grams/d zi	d vol (cc)/d zi
Diaspore	5.1089E-02	3.0647E+00	9.0733E-01
Fluorapatite	8.9602E-05	4.5186E-02	4.4801E-02
Ni2SiO4	1.2541E-02	2.6268E+00	5.3436E-01
Pyrolusite	1.9400E-04	1.6866E-02	9.7000E-02
Quartz	2.4650E-01	1.4811E+01	5.5926E+00
Rutile	2.5300E-04	2.0209E-02	4.7615E-03
fix CO2(g)	0.0000E+00	0.0000E+00	0.0000E+00
fix O2(g)	-7.1054E-04	-2.2737E-02	0.0000E+00
Smectite-di			
Beidellite-Ca	1.0725E-10	3.9314E-08	1.3892E-08
Beidellite-K	8.2139E-11	3.0626E-08	1.0982E-08
Beidellite-Mg	1.2429E-10	4.5237E-08	1.5311E-08
Beidellite-Na	3.2775E-11	1.2046E-08	4.2785E-09
Montmor-Ca	4.1593E-12	1.5225E-09	2.0797E-09
Montmor-K	5.2022E-12	1.9370E-09	2.6011E-09
Montmor-Mg	7.8338E-12	2.8471E-09	3.9169E-09
Montmor-Na	2.0244E-12	7.4298E-10	1.0122E-09
Nontronite-Ca	3.7339E-04	1.5843E-01	4.8952E-02
Nontronite-K	2.8598E-04	1.2314E-01	3.8684E-02
Nontronite-Mg	4.3302E-04	1.8260E-01	5.6189E-02
Nontronite-Na	1.1411E-04	4.8526E-02	1.5075E-02

--- Summary of Solid Phases (E.S.+P.R.S.) ---

Phase/End-member	Log moles	Moles	Mass, g	Volume, cc
Alunite	-2.5559	2.7801E-03	1.1516E+00	8.1624E-01
Diaspore	-2.7458	1.7956E-03	1.0772E-01	3.1890E-02
Fluorapatite	-4.1370	7.2940E-05	3.6784E-02	3.6470E-02
Hematite	-3.7144	1.9300E-04	3.0820E-02	5.8428E-03
Ni2SiO4	-6.0788	8.3398E-07	1.7469E-04	3.5536E-05
Nontronite-H	-4.9990	1.0023E-05	4.1899E-03	5.0117E-03
Pyrolusite	-3.1993	6.3193E-04	5.4938E-02	3.1596E-01
Quartz	-1.2860	5.1763E-02	3.1102E+00	1.1744E+00
Rutile	-4.3020	4.9893E-05	3.9854E-03	9.3899E-04
fix CO2(g)	2.3010	2.0000E+02	8.8020E+03	0.0000E+00
fix O2(g)	2.3010	2.0000E+02	6.3997E+03	0.0000E+00
Smectite-di	-4.3677	4.2887E-05		

```
  Beidellite-Ca            -11.4872   3.2567E-12   1.1938E-09   4.2184E-10
  Beidellite-K             -11.6194   2.4023E-12   8.9569E-10   3.2118E-10
  Beidellite-Mg            -11.4303   3.7128E-12   1.3513E-09   4.5738E-10
  Beidellite-Na            -12.0106   9.7600E-13   3.5871E-10   1.2741E-10
  Montmor-Ca               -12.9235   1.1926E-13   4.3653E-11   5.9628E-11
  Montmor-K                -12.8300   1.4789E-13   5.5066E-11   7.3947E-11
  Montmor-Mg               -12.6487   2.2453E-13   8.1602E-11   1.1226E-10
  Montmor-Na               -13.2370   5.7949E-14   2.1268E-11   2.8974E-11
  Nontronite-Ca             -4.8464   1.4242E-05   6.0426E-03   1.8671E-03
  Nontronite-K              -5.0285   9.3657E-06   4.0327E-03   1.2669E-03
  Nontronite-Mg             -4.8155   1.5293E-05   6.4490E-03   1.9844E-03
  Nontronite-Na             -5.3994   3.9868E-06   1.6955E-03   5.2670E-04


                         Mass, grams        Volume, cc

          Created        1.520622E+04       2.392444E+00
          Destroyed      0.000000E+00       0.000000E+00
          Net            1.520622E+04       2.392444E+00

         Warning-- these volume totals may be incomplete because
         of missing partial molar volume data in the data base



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Stepping to zi=  1.9721E-01, delzi=  1.0000E-07, nord= 2
  time =  1.9021E+03 d, dltime =  9.6451E-04 d
Steps completed =   207, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Ni2SiO4                 ) =     -6.0961

Stepping to zi=  1.9721E-01, delzi=  1.0000E-06, nord= 2
  time =  1.9021E+03 d, dltime =  9.6451E-03 d
Steps completed =   208, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Ni2SiO4                 ) =     -6.0894

Stepping to zi=  1.9722E-01, delzi=  1.0000E-05, nord= 2
  time =  1.9022E+03 d, dltime =  9.6451E-02 d
Steps completed =   209, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Ni2SiO4                 ) =     -6.0272

Stepping to zi=  1.9732E-01, delzi=  1.0000E-04, nord= 2
  time =  1.9031E+03 d, dltime =  9.6451E-01 d
Steps completed =   210, iter =  8, ncorr = 0
Most rapidly changing is zvclg1(Ni2SiO4                 ) =     -5.6589

Stepping to zi=  1.9780E-01, delzi=  4.8575E-04, nord= 2
  time =  1.9078E+03 d, dltime =  4.6851E+00 d
Steps completed =   211, iter =  9, ncorr = 0
Most rapidly changing is zvclg1(Ni2SiO4                 ) =     -5.0817

Stepping to zi=  1.9845E-01, delzi=  6.4846E-04, nord= 3
  time =  1.9141E+03 d, dltime =  6.2544E+00 d
Steps completed =   212, iter =  9, ncorr = 0
Most rapidly changing is zvclg1(Ni2SiO4                 ) =     -4.7847

Stepping to zi=  1.9975E-01, delzi=  1.2969E-03, nord= 3
  time =  1.9266E+03 d, dltime =  1.2509E+01 d
Steps completed =   213, iter =  9, ncorr = 0
```

```
Most rapidly changing is zvclg1(Ni2SiO4                 ) =     -4.4857

Stepping to zi=  2.0234E-01, delzi=  2.5938E-03, nord= 3
  time =  1.9516E+03 d, dltime =  2.5018E+01 d
Steps completed =   214, iter =  7, ncorr = 0
Most rapidly changing is zvclg1(Ni2SiO4                 ) =     -4.1857

Stepping to zi=  2.0753E-01, delzi=  5.1877E-03, nord= 4
  time =  2.0016E+03 d, dltime =  5.0035E+01 d
Steps completed =   215, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Montmor-K               ) =    -13.1632

Stepping to zi=  2.1791E-01, delzi=  1.0375E-02, nord= 5
  time =  2.1017E+03 d, dltime =  1.0007E+02 d
Steps completed =   216, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Montmor-K               ) =    -12.7953

Stepping to zi=  2.3866E-01, delzi=  2.0751E-02, nord= 6
  time =  2.3019E+03 d, dltime =  2.0014E+02 d
Steps completed =   217, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Montmor-K               ) =    -12.3576

Stepping to zi=  2.5119E-01, delzi=  1.2532E-02, nord= 6
  time =  2.4227E+03 d, dltime =  1.2087E+02 d
Steps completed =   218, iter =  9, ncorr = 0
Most rapidly changing is zvclg1(Montmor-K               ) =    -12.1656

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                    Reaction progress        =  2.51188643150944E-01
                    Log of reaction progress =      -0.6000000



                    Time =  2.093E+08 sec
                         =  2.423E+03 days
                         =  6.633E+00 years

                    Log sec =        8.321
                    Log days =       3.384
                    Log years =      0.822

                    Temperature    =     25.000 degrees C
                    total pressure =      1.013 bars


Step size is limited by the print requirement


                              --- Reactant Summary ---


    Reactant                  Moles     Delta moles    Mass, g    Delta Mass, g

 Tuff                      9.9749E+01   2.5119E-01   2.0535E+03   5.1711E+00


               Current total mass =  2.05348E+03 grams
               Delta total mass   =  5.17109E+00 grams
               Delta total volume =      0.00000 cc
```

Reactant	Rel. Rate mol/mol	Rate mol/s	Rate mol/s/cm2
Tuff	1.0000E+00	1.2000E-09	2.5000E-15

Reactant	Affinity kcal/mol	Surface Area mol/s/cm2
Tuff	999.00000	4.8000E+05

Reactant	Rate Constants, mol/s/cm2	
Tuff		
	Forward	2.5000E-15

Affinity of the overall irreversible reaction= 0.000 kcal
Contributions from irreversible reactions
with no thermodynamic data are not included

--- Element Totals for the Aqueous Solution ---

Element	mg/kg soln.	Molality	Moles
O	8.865552E+05	5.558846E+01	5.556993E+01
Al	1.260116E-02	4.685181E-07	4.683620E-07
B	1.335455E-01	1.239213E-05	1.238800E-05
Ba	1.369362E-05	1.000333E-10	1.000000E-10
Ca	1.802948E+01	4.512941E-04	4.511437E-04
Ce	1.397161E-19	1.000333E-24	9.999993E-25
Cl	7.119852E+00	2.014671E-04	2.014000E-04
Cr	2.997758E+02	5.783734E-03	5.781806E-03
Cs	1.325272E-05	1.000333E-10	1.000000E-10
Cu	6.653340E-10	1.050350E-14	1.050000E-14
F	7.165741E-01	3.783787E-05	3.782526E-05
Fe	1.336525E-07	2.400820E-12	2.400020E-12
Gd	1.568024E-09	1.000333E-14	9.999998E-15
H	1.115464E+05	1.110205E+02	1.109835E+02
C	1.688167E-01	1.409999E-05	1.409529E-05
P	5.389559E-01	1.745589E-05	1.745007E-05
K	1.073940E+02	2.755527E-03	2.754608E-03
La	1.385101E-09	1.000333E-14	9.999998E-15
Li	6.921245E-07	1.000333E-10	1.000000E-10
Mg	9.483846E+00	3.914456E-04	3.913151E-04
Mn	1.084462E-06	1.980267E-11	1.979607E-11
Mo	2.180408E+02	2.279926E-03	2.279166E-03
N	1.983296E+00	1.420473E-04	1.420000E-04
Na	1.830930E+02	7.989501E-03	7.986839E-03
Nd	1.438295E-09	1.000333E-14	9.999998E-15
Ni	6.711934E+02	1.147271E-02	1.146889E-02
Pb	2.066103E-05	1.000333E-10	1.000000E-10
Pu	2.433055E-09	1.000333E-14	9.999997E-15
S	3.732107E+02	1.167594E-02	1.167205E-02
Si	2.804413E+00	1.001711E-04	1.001377E-04
Sm	1.499320E-09	1.000333E-14	9.999998E-15
Sr	8.737062E-06	1.000333E-10	1.000000E-10
Ti	1.079038E-05	2.260816E-10	2.260062E-10
U	2.373514E-09	1.000333E-14	9.999998E-15

V	4.770310E+00	9.394149E-05	9.391018E-05
Zn	6.520389E-06	1.000333E-10	1.000000E-10
Zr	9.096443E-16	1.000334E-20	1.000000E-20

Single ion activities and activity coefficients are here defined
with respect to the modified NBS pH scale

	pH	Eh	pe
modified NBS pH scale	5.7706	0.8777	1.4836E+01
rational pH scale	5.6966	0.8820	1.4910E+01

pHCl = 9.5545

Oxygen fugacity = 2.09991E-01
Log oxygen fugacity = -0.67780

Activity of water = 0.99938
Log activity of water = -0.00027

Ionic strength = 5.287581E-02 molal
Sum of molalities = 0.0403036780770
Osmotic coefficient = 0.84805

Mass of solution = 1.002854 kg
Mass of solutes = 0.003187 kg
Conc. of solutes = 0.317843 per cent (w/w)

Moles of solvent H2O = 5.54899E+01
Mass of solvent H2O = 9.99667E-01 kg

Species	Molality	Log molality	Log gamma	Log activity
Ni++	9.1913E-03	-2.0366	-0.3339	-2.3705
SO4--	8.8969E-03	-2.0508	-0.3465	-2.3973
Na+	7.7889E-03	-2.1085	-0.0944	-2.2029
HCrO4-	3.4036E-03	-2.4681	-0.0819	-2.5499
K+	2.6775E-03	-2.5723	-0.0999	-2.6722
MoO4--	2.2799E-03	-2.6421	-0.3363	-2.9784
NiSO4(aq)	2.2798E-03	-2.6421	0.0000	-2.6421
CrO4--	1.1825E-03	-2.9272	-0.3465	-3.2737
Cr2O7--	5.9882E-04	-3.2227	-0.3465	-3.5692
Ca++	3.6382E-04	-3.4391	-0.3339	-3.7730
O2(aq)	2.6203E-04	-3.5816	0.0055	-3.5761
Mg++	2.5842E-04	-3.5877	-0.3034	-3.8911
Cl-	2.0117E-04	-3.6964	-0.0874	-3.7839
NaSO4-	2.0032E-04	-3.6983	-0.0819	-3.7801
NO3-	1.4040E-04	-3.8526	-0.0874	-3.9401
MgSO4(aq)	1.3284E-04	-3.8767	0.0000	-3.8767
SiO2(aq)	1.0016E-04	-3.9993	0.0000	-3.9993
CaSO4(aq)	8.7261E-05	-4.0592	0.0000	-4.0592
KSO4-	7.7986E-05	-4.1080	-0.0819	-4.1899
H2VO4-	5.4460E-05	-4.2639	-0.0819	-4.3458
F-	3.6626E-05	-4.4362	-0.0846	-4.5208
VO2(OH)2-	3.3750E-05	-4.4717	-0.0819	-4.5536

H2PO4-	1.6218E-05	-4.7900	-0.0819	-4.8719
B(OH)3(aq)	1.2387E-05	-4.9070	0.0000	-4.9070
CO2(aq)	1.0606E-05	-4.9744	0.0055	-4.9689
VO3OH--	4.7427E-06	-5.3240	-0.3465	-5.6705
HCO3-	3.4565E-06	-5.4614	-0.0819	-5.5432
H+	2.0111E-06	-5.6966	-0.0741	-5.7706
NiNO3+	1.5267E-06	-5.8162	-0.0944	-5.9106
HPO4--	1.0961E-06	-5.9602	-0.3465	-6.3067
HSO4-	7.8179E-07	-6.1069	-0.0819	-6.1888
HVO4--	5.1089E-07	-6.2917	-0.3465	-6.6382
VO(OH)3(aq)	4.7400E-07	-6.3242	0.0000	-6.3242
AlF2+	3.1750E-07	-6.4983	-0.0944	-6.5926
NaCl(aq)	1.7228E-07	-6.7638	0.0000	-6.7638
CaNO3+	1.2058E-07	-6.9187	-0.0944	-7.0131
MgF+	1.0836E-07	-6.9651	-0.0944	-7.0595
AlF3(aq)	9.6958E-08	-7.0134	0.0000	-7.0134
NiCl+	8.7852E-08	-7.0562	-0.0944	-7.1506
HF(aq)	7.5280E-08	-7.1233	0.0000	-7.1233
MgHPO4(aq)	5.1551E-08	-7.2878	0.0000	-7.2878
AlF++	4.8917E-08	-7.3105	-0.3613	-7.6718
CaHPO4(aq)	4.5742E-08	-7.3397	0.0000	-7.3397
NaHPO4-	3.1069E-08	-7.5077	-0.0819	-7.5895
CaF+	3.0357E-08	-7.5177	-0.0944	-7.6121
NaHCO3(aq)	2.5584E-08	-7.5920	0.0000	-7.5920
MgCl+	1.9253E-08	-7.7155	-0.0944	-7.8099
NaF(aq)	1.8999E-08	-7.7213	0.0000	-7.7213
KCl(aq)	1.1203E-08	-7.9507	0.0000	-7.9507
HSiO3-	7.9512E-09	-8.0996	-0.0819	-8.1814
KHPO4-	7.6386E-09	-8.1170	-0.0819	-8.1989
OH-	7.2416E-09	-8.1402	-0.0846	-8.2247
CaCl+	6.9481E-09	-8.1581	-0.0944	-8.2525
CaHCO3+	6.6804E-09	-8.1752	-0.0944	-8.2696
BO2-	5.0215E-09	-8.2992	-0.0819	-8.3810
MgHCO3+	4.9628E-09	-8.3043	-0.0944	-8.3986
H3PO4(aq)	3.3666E-09	-8.4728	0.0000	-8.4728
VO2+	1.9955E-09	-8.6999	-0.0944	-8.7943
NaHSiO3(aq)	1.8373E-09	-8.7358	0.0000	-8.7358
AlHPO4+	1.0881E-09	-8.9633	-0.0944	-9.0577
AlOH++	1.0556E-09	-8.9765	-0.3613	-9.3378
PO3F--	8.8713E-10	-9.0520	-0.3465	-9.3985
AlF4-	8.8648E-10	-9.0523	-0.0819	-9.1342
Al(OH)2+	7.7543E-10	-9.1105	-0.0944	-9.2048
VO2HPO4-	6.4699E-10	-9.1891	-0.0819	-9.2710
HAlO2(aq)	5.3383E-10	-9.2726	0.0000	-9.2726
AlSO4+	3.5980E-10	-9.4439	-0.0944	-9.5383
Al+++	3.1284E-10	-9.5047	-0.6464	-10.1511
VO2SO4-	2.9533E-10	-9.5297	-0.0819	-9.6116
H2CrO4(aq)	2.2911E-10	-9.6400	0.0000	-9.6400
Ti(OH)4(aq)	2.2608E-10	-9.6457	0.0000	-9.6457
CO3--	1.7175E-10	-9.7651	-0.3363	-10.1014
AlO2-	1.3474E-10	-9.8705	-0.0819	-9.9524
VO2F(aq)	1.0837E-10	-9.9651	0.0000	-9.9651
Cs+	1.0002E-10	-9.9999	-0.1030	-10.1029

--- Summary of Instantaneously Precipitated Solid Phases ---
(defined by derivatives)

--- Theoretical Rock Composition ---
g/kg

O	5.013825E+01
Al	6.595559E+00

Ca	6.680043E-02
F	5.448263E-03
Fe	6.398252E-01
H	2.560303E-01
P	2.664749E-02
K	2.913967E-02
Mg	6.280083E-03
Mn	5.060335E-02
Na	3.736465E-03
Ni	6.991058E+00
Si	3.513319E+01
Ti	5.751470E-02

--- Oxide Percentages ---

Oxide Theoretical rock

Total = 0.0000

Phase/end-member	d mol/d zi	d grams/d zi	d vol (cc)/d zi
Diaspore	5.1087E-02	3.0646E+00	9.0730E-01
Fluorapatite	6.0400E-05	3.0460E-02	3.0200E-02
Ni2SiO4	1.2544E-02	2.6276E+00	5.3451E-01
Pyrolusite	1.9400E-04	1.6866E-02	9.7000E-02
Quartz	2.4650E-01	1.4811E+01	5.5925E+00
Rutile	2.5300E-04	2.0209E-02	4.7615E-03
fix CO2(g)	-1.4353E-06	-6.3169E-05	0.0000E+00
fix O2(g)	-7.0702E-04	-2.2624E-02	0.0000E+00
Smectite-di			
Beidellite-Ca	1.4677E-10	5.3801E-08	1.9011E-08
Beidellite-K	2.2057E-10	8.2238E-08	2.9490E-08
Beidellite-Mg	1.6363E-10	5.9554E-08	2.0157E-08
Beidellite-Na	5.0465E-11	1.8548E-08	6.5878E-09
Montmor-Ca	9.4107E-12	3.4447E-09	4.7053E-09
Montmor-K	2.2113E-11	8.2334E-09	1.1057E-08
Montmor-Mg	1.7113E-11	6.2195E-09	8.5564E-09
Montmor-Na	5.1032E-12	1.8729E-09	2.5516E-09
Nontronite-Ca	2.9727E-04	1.2613E-01	3.8972E-02
Nontronite-K	4.7567E-04	2.0482E-01	6.4344E-02
Nontronite-Mg	3.2982E-04	1.3908E-01	4.2798E-02
Nontronite-Na	1.0373E-04	4.4113E-02	1.3704E-02

--- Summary of Solid Phases (E.S.+P.R.S.) ---

Phase/End-member	Log moles	Moles	Mass, g	Volume, cc
Alunite	-2.5559	2.7801E-03	1.1516E+00	8.1624E-01
Diaspore	-2.3417	4.5534E-03	2.7315E-01	8.0868E-02
Fluorapatite	-4.1139	7.6925E-05	3.8793E-02	3.8462E-02
Hematite	-3.7144	1.9300E-04	3.0820E-02	5.8428E-03
Ni2SiO4	-3.1687	6.7809E-04	1.4203E-01	2.8893E-02
Nontronite-H	-4.9990	1.0023E-05	4.1899E-03	5.0117E-03
Pyrolusite	-3.1922	6.4240E-04	5.5848E-02	3.2120E-01
Quartz	-1.1866	6.5069E-02	3.9096E+00	1.4763E+00
Rutile	-4.1969	6.3551E-05	5.0763E-03	1.1960E-03
fix CO2(g)	2.3010	2.0000E+02	8.8020E+03	0.0000E+00
fix O2(g)	2.3010	2.0000E+02	6.3997E+03	0.0000E+00
Smectite-di	-3.9665	1.0802E-04		

Beidellite-Ca	-10.9965	1.0081E-11	3.6953E-09	1.3058E-09
Beidellite-K	-10.9804	1.0462E-11	3.9008E-09	1.3988E-09
Beidellite-Mg	-10.9408	1.1460E-11	4.1711E-09	1.4118E-09
Beidellite-Na	-11.4938	3.2074E-12	1.1788E-09	4.1869E-10
Montmor-Ca	-12.3262	4.7189E-13	1.7273E-10	2.3595E-10
Montmor-K	-12.0823	8.2745E-13	3.0809E-10	4.1373E-10
Montmor-Mg	-12.0579	8.7521E-13	3.1809E-10	4.3760E-10
Montmor-Na	-12.6170	2.4156E-13	8.8656E-11	1.2078E-10
Nontronite-Ca	-4.4934	3.2107E-05	1.3623E-02	4.2092E-03
Nontronite-K	-4.5158	3.0491E-05	1.3129E-02	4.1246E-03
Nontronite-Mg	-4.4487	3.5588E-05	1.5007E-02	4.6179E-03
Nontronite-Na	-5.0075	9.8297E-06	4.1803E-03	1.2986E-03

	Mass, grams	Volume, cc
Created	1.520736E+04	2.788262E+00
Destroyed	5.171087E+00	0.000000E+00
Net	1.520219E+04	2.788262E+00

Warning-- these volume totals may be incomplete because
of missing partial molar volume data in the data base

--- Summary of Pure Mineral Saturation States ---

Mineral	Log Q/K	Aff, kcal	State
AlF3	-6.505	-8.874	
Albite	-4.034	-5.504	
Albite_high	-5.353	-7.303	
Albite_low	-4.034	-5.504	
Alunite	-2.950	-4.024	
Analcime	-4.000	-5.456	
Andalusite	-5.623	-7.671	
Anglesite	-4.907	-6.694	
Anhydrite	-1.864	-2.543	
Aragonite	-5.539	-7.556	
Arcanite	-5.941	-8.105	
BaCrO4	-3.693	-5.039	
BaZrO3	76.890	104.899	ssatd
Barite	-2.778	-3.790	
Bassanite	-2.509	-3.423	
Beidellite-Ca	-2.304	-3.143	
Beidellite-Cs	-4.578	-6.245	
Beidellite-H	-2.627	-3.585	
Beidellite-K	-2.280	-3.111	
Beidellite-Mg	-2.285	-3.118	
Beidellite-Na	-2.464	-3.361	
Berlinite	-3.478	-4.746	
Boehmite	-0.404	-0.551	
Boric_acid	-4.749	-6.479	
Bunsenite	-3.301	-4.504	
CaSO4:0.5H2O(beta)	-2.677	-3.652	
CaV2O6	-3.813	-5.202	
CaZrO3	137.498	187.587	ssatd
Calcite	-5.394	-7.359	
Celadonite	-5.546	-7.567	
Celestite	-7.204	-9.828	
Cerussite	-6.926	-9.449	
Chalcedony	-0.271	-0.370	

Coesite	-0.810	-1.105	
Corundum	-3.991	-5.445	
CrO2	-4.712	-6.429	
Cristobalite(alpha)	-0.551	-0.751	
Cristobalite(beta)	-0.994	-1.356	
Crocoite	-0.918	-1.253	
Dawsonite	-4.932	-6.729	
Diaspore	0.000	0.000	satd
Epsomite	-4.328	-5.905	
Fe(OH)3	-6.023	-8.217	
Fluorapatite	0.000	0.000	satd
Fluorite	-2.778	-3.789	
GdPO4:H2O	-3.938	-5.372	
Gibbsite	-0.596	-0.813	
Goethite	-0.902	-1.230	
Gypsum	-1.689	-2.304	
Hematite	-0.843	-1.150	
Hexahydrite	-4.563	-6.225	
Ice	-0.139	-0.190	
Illite	-2.783	-3.797	
Jadeite	-5.659	-7.721	
K-Feldspar	-1.464	-1.997	
Kalsilite	-4.639	-6.329	
Kaolinite	-0.488	-0.666	
Kieserite	-6.022	-8.215	
Kyanite	-5.352	-7.302	
LaPO4:H2O	-3.480	-4.747	
Lopezite	-5.996	-8.181	
Magnesite	-5.957	-8.127	
Manganite	-4.459	-6.084	
Maximum_Microcline	-1.464	-1.997	
Mesolite	-3.893	-5.311	
Mirabilite	-5.666	-7.730	
MnHPO4	-4.549	-6.206	
MnO2(gamma)	-1.518	-2.071	
Monohydrocalcite	-6.228	-8.497	
Montmor-Ca	-2.729	-3.723	
Montmor-Cs	-4.936	-6.734	
Montmor-K	-2.635	-3.595	
Montmor-Mg	-2.641	-3.603	
Montmor-Na	-2.822	-3.850	
Mordenite	-4.773	-6.512	
Morenosite	-2.756	-3.760	
Muscovite	-1.004	-1.370	
NdPO4:H2O	-3.754	-5.122	
Nepheline	-7.072	-9.648	
Ni(OH)2	-3.578	-4.882	
Ni2SiO4	0.000	0.000	satd
Ni3(PO4)2	-1.542	-2.104	
NiCO3	-5.655	-7.715	
NiSO4:6H2O(alpha)	-2.762	-3.768	
Niter	-6.406	-8.740	
Nontronite-Ca	-0.185	-0.253	
Nontronite-H	-0.509	-0.694	
Nontronite-K	-0.162	-0.221	
Nontronite-Mg	-0.167	-0.228	
Nontronite-Na	-0.345	-0.471	
Paragonite	-4.471	-6.100	
PbHPO4	-5.102	-6.961	
Pentahydrite	-4.902	-6.688	
Plattnerite	-6.829	-9.317	
Plumbogummite	-4.890	-6.671	
PuO2	-5.418	-7.391	

Pyrolusite	0.000	0.000	satd
Pyrophyllite	-2.116	-2.887	
Quartz	0.000	0.000	satd
Rutile	0.000	0.000	satd
Sanidine_high	-2.663	-3.633	
Scolecite	-5.787	-7.895	
Sellaite	-3.548	-4.841	
Shcherbinaite	-4.596	-6.270	
SiO2(am)	-1.286	-1.754	
Sillimanite	-5.986	-8.167	
SmPO4:H2O	-3.769	-5.143	
SrZrO3	113.752	155.191	ssatd
Starkeyite	-5.290	-7.216	
Stilbite	-4.303	-5.870	
Strengite	-6.872	-9.376	
Sylvite	-7.302	-9.962	
Syngenite	-6.312	-8.612	
Thenardite	-6.494	-8.860	
Trevorite	-1.351	-1.844	
Tridymite	-0.171	-0.234	
Witherite	-7.128	-9.724	
fix CO2(g)	0.000	0.000	satd
fix O2(g)	0.000	0.000	satd

--- Summary of Solid Solutions ---

--- Carbonate-Calcite ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Calcite	7.8519E-01	-0.1050	0.0000	-0.1050
Magnesite	2.1478E-01	-0.6680	0.0000	-0.6680
Rhodochrosite	3.3106E-06	-5.4801	0.0000	-5.4801
Siderite	1.6018E-14	-13.7954	0.0000	-13.7954
Smithsonite	5.2280E-06	-5.2817	0.0000	-5.2817
Strontianite	2.2210E-05	-4.6534	0.0000	-4.6534

Mineral	Log Q/K	Aff, kcal	State
Carbonate-Calcite	-5.289	-7.216	
Calcite	-5.289	-7.216	
Magnesite	-5.289	-7.216	
Rhodochrosite	-5.289	-7.216	
Siderite	-5.289	-7.216	
Smithsonite	-5.289	-7.216	
Strontianite	-5.289	-7.216	

--- Clinoptilolite-hy-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-hy-Ca	5.6654E-02	-1.2468	0.0000	-1.2468
Clinoptilolite-hy-Cs	2.0885E-24	-23.6802	0.0000	-23.6802
Clinoptilolite-hy-K	9.3726E-01	-0.0281	0.0000	-0.0281
Clinoptilolite-hy-Na	6.0835E-03	-2.2158	0.0000	-2.2158

Clinoptilolite-hy-Sr	1.8131E-13	-12.7416	0.0000	-12.7416

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-hy-ss	-11.704	-15.968	
Clinoptilolite-hy-Ca	-11.704	-15.968	
Clinoptilolite-hy-Cs	-11.704	-15.968	
Clinoptilolite-hy-K	-11.704	-15.968	
Clinoptilolite-hy-Na	-11.704	-15.968	
Clinoptilolite-hy-Sr	-11.704	-15.968	

--- Clinoptilolite-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-Ca	2.6528E-01	-0.5763	-1.4177	-1.9940
Clinoptilolite-Cs	8.6853E-08	-7.0612	-17.3706	-24.4318
Clinoptilolite-K	5.9549E-01	-0.2251	-0.5538	-0.7789
Clinoptilolite-NH4	9.8488E-60	-59.0066	-145.1563	-204.1629
Clinoptilolite-Na	1.3910E-01	-0.8567	-2.1074	-2.9640
Clinoptilolite-Sr	1.2643E-04	-3.8981	-9.5894	-13.4876

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-ss	-10.958	-14.950	
Clinoptilolite-Ca	-10.958	-14.950	
Clinoptilolite-Cs	-10.958	-14.950	
Clinoptilolite-K	-10.958	-14.950	
Clinoptilolite-NH4	-10.958	-14.950	
Clinoptilolite-Na	-10.958	-14.950	
Clinoptilolite-Sr	-10.958	-14.950	

--- Saponite-tri ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Saponite-Ca	2.6719E-01	-0.5732	0.3840	-0.1891
Saponite-H	2.7889E-02	-1.5546	1.0416	-0.5130
Saponite-K	3.1420E-01	-0.5028	0.3369	-0.1659
Saponite-Mg	3.0341E-01	-0.5180	0.3470	-0.1709
Saponite-Na	8.7308E-02	-1.0589	0.7095	-0.3495

Mineral	Log Q/K	Aff, kcal	State
Saponite-tri	-14.184	-19.351	
Saponite-Ca	-14.184	-19.351	
Saponite-H	-14.184	-19.351	
Saponite-K	-14.184	-19.351	
Saponite-Mg	-14.184	-19.351	
Saponite-Na	-14.184	-19.351	

--- Smectite-di ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Beidellite-Ca	1.0459E-07	-6.9805	4.6770	-2.3036
Beidellite-K	1.2307E-07	-6.9099	4.6296	-2.2803
Beidellite-Mg	1.1876E-07	-6.9253	4.6400	-2.2854
Beidellite-Na	3.4174E-08	-7.4663	5.0024	-2.4639
Montmor-Ca	5.3904E-09	-8.2684	5.5398	-2.7286
Montmor-K	1.0359E-08	-7.9847	5.3497	-2.6349
Montmor-Mg	9.9479E-09	-8.0023	5.3615	-2.6407
Montmor-Na	2.8052E-09	-8.5520	5.7299	-2.8222
Nontronite-Ca	2.7474E-01	-0.5611	0.3759	-0.1852
Nontronite-K	3.2329E-01	-0.4904	0.3286	-0.1618
Nontronite-Mg	3.1220E-01	-0.5056	0.3387	-0.1668
Nontronite-Na	8.9773E-02	-1.0469	0.7014	-0.3455

Mineral	Log Q/K	Aff, kcal	State
Smectite-di	0.000	0.000	satd
Beidellite-Ca	0.000	0.000	satd
Beidellite-K	0.000	0.000	satd
Beidellite-Mg	0.000	0.000	satd
Beidellite-Na	0.000	0.000	satd
Montmor-Ca	0.000	0.000	satd
Montmor-K	0.000	0.000	satd
Montmor-Mg	0.000	0.000	satd
Montmor-Na	0.000	0.000	satd
Nontronite-Ca	0.000	0.000	satd
Nontronite-K	0.000	0.000	satd
Nontronite-Mg	0.000	0.000	satd
Nontronite-Na	0.000	0.000	satd

--- Lanthanide hydroxide ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
La(OH)3	1.3228E-05	-4.8785	0.0000	-4.8785
Ce(OH)3	3.7160E-15	-14.4299	0.0000	-14.4299
Nd(OH)3(c)	3.5211E-01	-0.4533	0.0000	-0.4533
Gd(OH)3	5.8000E-01	-0.2366	0.0000	-0.2366
Sm(OH)3	6.7875E-02	-1.1683	0.0000	-1.1683

Mineral	Log Q/K	Aff, kcal	State
Lanthanide hydroxide	-13.433	-18.327	
La(OH)3	-13.433	-18.327	
Ce(OH)3	-13.433	-18.327	
Nd(OH)3(c)	-13.433	-18.327	
Gd(OH)3	-13.433	-18.327	
Sm(OH)3	-13.433	-18.327	

--- Rhabdophane-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaPO4:H2O	4.1796E-01	-0.3789	0.0000	-0.3789
CePO4:H2O	3.7131E-11	-10.4303	0.0000	-10.4303
NdPO4:H2O	2.2199E-01	-0.6537	0.0000	-0.6537
GdPO4:H2O	1.4558E-01	-0.8369	0.0000	-0.8369
SmPO4:H2O	2.1447E-01	-0.6686	0.0000	-0.6686

Mineral	Log Q/K	Aff, kcal	State
Rhabdophane-ss	-3.101	-4.230	
LaPO4:H2O	-3.101	-4.230	
CePO4:H2O	-3.101	-4.230	
NdPO4:H2O	-3.101	-4.230	
GdPO4:H2O	-3.101	-4.230	
SmPO4:H2O	-3.101	-4.230	

--- Lanthanide fluoride ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaF3:0.5H2O	5.7676E-01	-0.2390	0.0000	-0.2390
CeF3:0.5H2O	8.1207E-11	-10.0904	0.0000	-10.0904
NdF3:0.5H2O	3.8565E-01	-0.4138	0.0000	-0.4138
GdF3:0.5H2O	7.9974E-03	-2.0971	0.0000	-2.0971
SmF3:0.5H2O	2.9596E-02	-1.5288	0.0000	-1.5288

Mineral	Log Q/K	Aff, kcal	State
Lanthanide fluoride	-9.917	-13.530	
LaF3:0.5H2O	-9.917	-13.530	
CeF3:0.5H2O	-9.917	-13.530	
NdF3:0.5H2O	-9.917	-13.530	
GdF3:0.5H2O	-9.917	-13.530	
SmF3:0.5H2O	-9.917	-13.530	

--- Summary of Gases ---

Gas	Fugacity	Log fugacity
Al(g)	1.6470-191	-190.7833
B(g)	8.5608-204	-203.0675
BF3(g)	1.5343E-33	-32.8141
C(g)	3.0917-190	-189.5098
CH4(g)	3.5250-146	-145.4528
CO(g)	6.0395E-49	-48.2190
CO2(g)	3.1623E-04	-3.5000
Ca(g)	3.0072-156	-155.5218
Chlorine	1.2669E-24	-23.8972
Cs(g)	1.9102E-85	-84.7189

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Cu(g)                       2.2144E-85    -84.6547
Fluorine                    8.1214E-79    -78.0904
H2(g)                       6.1113E-42    -41.2139
H2O(g)                      2.5962E-02     -1.5857
H2S(g)                      7.4591-138   -137.1273
HCl(g)                      1.3804E-16    -15.8600
HF(g)                       3.9444E-12    -11.4040
K(g)                        2.5754E-78    -77.5892
Li(g)                       4.2399E-99    -98.3726
Mg(g)                       1.5434-133   -132.8115
Nitrogen                    9.2527E-16    -15.0337
NH3(g)                      3.5037E-67    -66.4555
NO(g)                       9.5782E-24    -23.0187
NO2(g)                      6.5491E-18    -17.1838
Na(g)                       3.9596E-77    -76.4023
O2(g)                       2.0999E-01     -0.6778
Pb(g)                       2.2789E-73    -72.6423
S2(g)                       3.3217-218   -217.4786
SO2(g)                      1.3215E-50    -49.8789
Si(g)                       4.2257-221   -220.3741
SiF4(g)                     1.0682E-30    -29.9713
Ti(g)                       3.8019-231   -230.4200
TiCl4(g)                    1.2176E-76    -75.9145
U(g)                        1.7156-298   -297.7656
U2Cl10(g)                   7.5361-227   -226.1229
U2Cl8(g)                    1.8441-233   -232.7342
U2F10(g)                    3.6217-139   -138.4411
UCl(g)                      2.1111-252   -251.6755
UCl2(g)                     7.7711-205   -204.1095
UCl3(g)                     6.2656-155   -154.2030
UCl4(g)                     2.7355-122   -121.5630
UCl5(g)                     6.1450-127   -126.2115
UCl6(g)                     2.5645-126   -125.5910
UF(g)                       1.2820-237   -236.8921
UF2(g)                      7.1049-195   -194.1484
UF3(g)                      9.6900-146   -145.0137
UF4(g)                      1.9507E-93    -92.7098
UF5(g)                      1.7987E-82    -81.7450
UF6(g)                      1.6331E-85    -84.7870
UO(g)                       1.3550-213   -212.8681
UO2(g)                      2.5103-129   -128.6003
UO2Cl2(g)                   1.3886E-72    -71.8574
UO2F2(g)                    9.2100E-61    -60.0357
UO3(g)                      1.8464E-76    -75.7337
UOF4(g)                     5.8129E-71    -70.2356
Zn(g)                       3.8021E-83    -82.4200


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Stepping to zi=  2.7625E-01, delzi=  2.5063E-02, nord= 6
  time =  2.6645E+03 d, dltime =  2.4174E+02 d
Steps completed =   219, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Montmor-K               ) =    -11.8559

Stepping to zi=  3.1896E-01, delzi=  4.2704E-02, nord= 6
  time =  3.0763E+03 d, dltime =  4.1188E+02 d
Steps completed =   220, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -33.7825
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```
Stepping to zi=  3.5885E-01, delzi=  3.9893E-02, nord= 6
  time =  3.4611E+03 d, dltime =  3.8477E+02 d
Steps completed =   221, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -33.4366

Stepping to zi=  3.9631E-01, delzi=  3.7466E-02, nord= 6
  time =  3.8225E+03 d, dltime =  3.6136E+02 d
Steps completed =   222, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Montmor-K               ) =    -10.8686

Stepping to zi=  3.9811E-01, delzi=  1.7927E-03, nord= 6
  time =  3.8398E+03 d, dltime =  1.7291E+01 d
Steps completed =   223, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Montmor-K               ) =    -10.8565

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                    Reaction progress        =  3.98107170553475E-01
                    Log of reaction progress =      -0.4000000



                    Time =  3.318E+08 sec
                         =  3.840E+03 days
                         =  1.051E+01 years

                    Log sec =        8.521
                    Log days =       3.584
                    Log years =      1.022

                    Temperature    =     25.000 degrees C
                    total pressure =      1.013 bars


Step size is limited by the print requirement


                              --- Reactant Summary ---


    Reactant                   Moles     Delta moles    Mass, g    Delta Mass, g

 Tuff                       9.9602E+01   3.9811E-01   2.0505E+03   8.1956E+00


               Current total mass =  2.05045E+03 grams
               Delta total mass   =  8.19562E+00 grams
               Delta total volume =      0.00000 cc


    Reactant                Rel. Rate      Rate         Rate
                             mol/mol       mol/s      mol/s/cm2

 Tuff                       1.0000E+00   1.2000E-09   2.5000E-15


    Reactant                   Affinity   Surface Area
                               kcal/mol     mol/s/cm2

 Tuff                        999.00000   4.8000E+05
```

Reactant Rate Constants, mol/s/cm2

Tuff
Forward 2.5000E-15

Affinity of the overall irreversible reaction= 0.000 kcal
Contributions from irreversible reactions
with no thermodynamic data are not included

--- Element Totals for the Aqueous Solution ---

Element	mg/kg soln.	Molality	Moles
O	8.865532E+05	5.558846E+01	5.556607E+01
Al	5.062831E-03	1.882393E-07	1.881635E-07
B	1.335545E-01	1.239299E-05	1.238800E-05
Ba	1.369454E-05	1.000403E-10	1.000000E-10
Ca	2.867307E+01	7.177146E-04	7.174254E-04
Ce	1.397255E-19	1.000402E-24	9.999991E-25
Cl	7.120331E+00	2.014812E-04	2.014000E-04
Cr	2.997959E+02	5.784136E-03	5.781806E-03
Cs	1.325361E-05	1.000403E-10	1.000000E-10
Cu	6.653788E-10	1.050423E-14	1.050000E-14
F	6.032616E-01	3.185460E-05	3.184177E-05
Fe	1.020803E-07	1.833689E-12	1.832950E-12
Gd	1.568129E-09	1.000403E-14	9.999996E-15
H	1.115460E+05	1.110204E+02	1.109757E+02
C	1.780488E-01	1.487111E-05	1.486512E-05
P	1.819462E-01	5.892949E-06	5.890575E-06
K	2.297782E+02	5.895688E-03	5.893313E-03
La	1.385194E-09	1.000403E-14	9.999997E-15
Li	6.921711E-07	1.000403E-10	1.000000E-10
Mg	1.378899E+01	5.691418E-04	5.689126E-04
Mn	7.404721E-07	1.352132E-11	1.351587E-11
Mo	2.180555E+02	2.280084E-03	2.279166E-03
N	1.983430E+00	1.420572E-04	1.420000E-04
Na	2.634226E+02	1.149481E-02	1.149018E-02
Nd	1.438391E-09	1.000403E-14	9.999997E-15
Ni	4.562835E+02	7.799275E-03	7.796134E-03
Pb	2.066242E-05	1.000403E-10	1.000000E-10
Pu	2.433218E-09	1.000402E-14	9.999994E-15
S	3.732358E+02	1.167675E-02	1.167205E-02
Si	2.804493E+00	1.001742E-04	1.001338E-04
Sm	1.499421E-09	1.000403E-14	9.999997E-15
Sr	8.737650E-06	1.000403E-10	9.999999E-11
Ti	1.078882E-05	2.260494E-10	2.259583E-10
U	2.373674E-09	1.000403E-14	9.999997E-15
V	4.770631E+00	9.394803E-05	9.391018E-05
Zn	6.520828E-06	1.000403E-10	1.000000E-10
Zr	9.097054E-16	1.000404E-20	1.000000E-20

Single ion activities and activity coefficients are here defined
with respect to the modified NBS pH scale

pH Eh pe

modified NBS pH scale	5.8554	0.8726	1.4752E+01
rational pH scale	5.7818	0.8770	1.4825E+01

pHCl = 9.6387

Oxygen fugacity = 2.09991E-01
Log oxygen fugacity = -0.67780

Activity of water = 0.99931
Log activity of water = -0.00030

Ionic strength = 5.176991E-02 molal
Sum of molalities = 0.0440924235131
Osmotic coefficient = 0.86485

Mass of solution = 1.002787 kg
Mass of solutes = 0.003190 kg
Conc. of solutes = 0.318069 per cent (w/w)

Moles of solvent H2O = 5.54861E+01
Mass of solvent H2O = 9.99597E-01 kg

Species	Molality	Log molality	Log gamma	Log activity
Na+	1.1193E-02	-1.9510	-0.0936	-2.0446
SO4--	9.2436E-03	-2.0342	-0.3438	-2.3780
Ni++	6.1851E-03	-2.2087	-0.3314	-2.5401
K+	5.7213E-03	-2.2425	-0.0991	-2.3416
HCrO4-	3.2882E-03	-2.4830	-0.0813	-2.5643
MoO4--	2.2801E-03	-2.6420	-0.3338	-2.9758
NiSO4(aq)	1.6131E-03	-2.7923	0.0000	-2.7923
CrO4--	1.3820E-03	-2.8595	-0.3438	-3.2033
Ca++	5.7294E-04	-3.2419	-0.3314	-3.5733
Cr2O7--	5.5700E-04	-3.2541	-0.3438	-3.5979
Mg++	3.6945E-04	-3.4324	-0.3014	-3.7338
NaSO4-	3.0109E-04	-3.5213	-0.0813	-3.6026
O2(aq)	2.6210E-04	-3.5815	0.0054	-3.5761
Cl-	2.0111E-04	-3.6966	-0.0868	-3.7833
MgSO4(aq)	1.9950E-04	-3.7001	0.0000	-3.7001
KSO4-	1.7432E-04	-3.7586	-0.0813	-3.8399
CaSO4(aq)	1.4449E-04	-3.8402	0.0000	-3.8402
NO3-	1.4083E-04	-3.8513	-0.0868	-3.9381
SiO2(aq)	1.0016E-04	-3.9993	0.0000	-3.9993
H2VO4-	5.3881E-05	-4.2686	-0.0813	-4.3498
VO2(OH)2-	3.3391E-05	-4.4764	-0.0813	-4.5576
F-	3.1222E-05	-4.5055	-0.0839	-4.5895
B(OH)3(aq)	1.2387E-05	-4.9070	0.0000	-4.9070
CO2(aq)	1.0609E-05	-4.9743	0.0054	-4.9689
VO3OH--	5.6764E-06	-5.2459	-0.3438	-5.5897
H2PO4-	5.3687E-06	-5.2701	-0.0813	-5.3514
HCO3-	4.1956E-06	-5.3772	-0.0813	-5.4585
H+	1.6526E-06	-5.7818	-0.0736	-5.8554
NiNO3+	1.0362E-06	-5.9846	-0.0936	-6.0781
HSO4-	6.7144E-07	-6.1730	-0.0813	-6.2543
HVO4--	6.1146E-07	-6.2136	-0.3438	-6.5574
HPO4--	4.3894E-07	-6.3576	-0.3438	-6.7014
VO(OH)3(aq)	3.8631E-07	-6.4131	0.0000	-6.4131
NaCl(aq)	2.4834E-07	-6.6049	0.0000	-6.6049

CaNO3+	1.9152E-07	-6.7178	-0.0936	-6.8114
MgF+	1.3265E-07	-6.8773	-0.0936	-6.9709
AlF2+	1.2862E-07	-6.8907	-0.0936	-6.9843
NiCl+	5.9428E-08	-7.2260	-0.0936	-7.3196
HF(aq)	5.2871E-08	-7.2768	0.0000	-7.2768
NaHCO3(aq)	4.4770E-08	-7.3490	0.0000	-7.3490
CaF+	4.0974E-08	-7.3875	-0.0936	-7.4811
AlF3(aq)	3.3592E-08	-7.4738	0.0000	-7.4738
MgHPO4(aq)	2.9840E-08	-7.5252	0.0000	-7.5252
CaHPO4(aq)	2.9193E-08	-7.5347	0.0000	-7.5347
MgCl+	2.7642E-08	-7.5584	-0.0936	-7.6520
KCl(aq)	2.4017E-08	-7.6195	0.0000	-7.6195
NaF(aq)	2.3351E-08	-7.6317	0.0000	-7.6317
AlF++	2.3098E-08	-7.6364	-0.3584	-7.9948
NaHPO4-	1.7999E-08	-7.7447	-0.0813	-7.8260
CaHCO3+	1.2838E-08	-7.8915	-0.0936	-7.9851
CaCl+	1.0999E-08	-7.9586	-0.0936	-8.0522
HSiO3-	9.6516E-09	-8.0154	-0.0813	-8.0967
OH-	8.7893E-09	-8.0560	-0.0839	-8.1400
MgHCO3+	8.6497E-09	-8.0630	-0.0936	-8.1566
KHPO4-	6.5814E-09	-8.1817	-0.0813	-8.2630
BO2-	6.0960E-09	-8.2150	-0.0813	-8.2962
NaHSiO3(aq)	3.2150E-09	-8.4928	0.0000	-8.4928
VO2+	1.3357E-09	-8.8743	-0.0936	-8.9679
H3PO4(aq)	9.1806E-10	-9.0371	0.0000	-9.0371
AlOH++	7.0969E-10	-9.1489	-0.3584	-9.5073
Al(OH)2+	6.3676E-10	-9.1960	-0.0936	-9.2896
HAlO2(aq)	5.3383E-10	-9.2726	0.0000	-9.2726
AlF4-	2.6185E-10	-9.5820	-0.0813	-9.6632
CO3--	2.5229E-10	-9.5981	-0.3338	-9.9319
PO3F--	2.4953E-10	-9.6029	-0.3438	-9.9467
AlHPO4+	2.4369E-10	-9.6132	-0.0936	-9.7067
Ti(OH)4(aq)	2.2605E-10	-9.6458	0.0000	-9.6458
AlSO4+	2.0907E-10	-9.6797	-0.0936	-9.7733
VO2SO4-	2.0675E-10	-9.6846	-0.0813	-9.7658
H2CrO4(aq)	1.8233E-10	-9.7391	0.0000	-9.7391
VO2HPO4-	1.7458E-10	-9.7580	-0.0813	-9.8393
KHSO4(aq)	1.7324E-10	-9.7613	0.0000	-9.7613
Al+++	1.7252E-10	-9.7632	-0.6422	-10.4054
AlO2-	1.6357E-10	-9.7863	-0.0813	-9.8676
CaB(OH)4+	1.1121E-10	-9.9539	-0.0936	-10.0474
Cs+	1.0003E-10	-9.9999	-0.1021	-10.1019

--- Summary of Instantaneously Precipitated Solid Phases ---
(defined by derivatives)

--- Theoretical Rock Composition ---
g/kg

O	5.016932E+01
Al	6.605946E+00
Ca	3.382304E-02
F	2.570811E-03
Fe	6.408550E-01
H	2.564339E-01
P	1.257385E-02
K	4.186975E-02
Mg	4.101651E-03
Mn	5.068479E-02
Na	3.455898E-03
Ni	6.931420E+00
Si	3.518973E+01

Ti 5.760727E-02

--- Oxide Percentages ---

Oxide Theoretical rock

Total = 0.0000

Phase/end-member	d mol/d zi	d grams/d zi	d vol (cc)/d zi
Diaspore	5.1085E-02	3.0645E+00	9.0727E-01
Fluorapatite	2.8454E-05	1.4350E-02	1.4227E-02
Ni2SiO4	1.2417E-02	2.6010E+00	5.2910E-01
Pyrolusite	1.9400E-04	1.6866E-02	9.7000E-02
Quartz	2.4662E-01	1.4818E+01	5.5954E+00
Rutile	2.5300E-04	2.0209E-02	4.7615E-03
fix CO2(g)	-6.9822E-06	-3.0728E-04	0.0000E+00
fix O2(g)	-7.0713E-04	-2.2627E-02	0.0000E+00
Smectite-di			
Beidellite-Ca	3.0600E-10	1.1217E-07	3.9636E-08
Beidellite-K	7.9408E-10	2.9607E-07	1.0617E-07
Beidellite-Mg	3.1968E-10	1.1635E-07	3.9382E-08
Beidellite-Na	1.2580E-10	4.6235E-08	1.6422E-08
Montmor-Ca	5.5868E-11	2.0450E-08	2.7934E-08
Montmor-K	2.1500E-10	8.0050E-08	1.0750E-07
Montmor-Mg	9.6196E-11	3.4961E-08	4.8098E-08
Montmor-Na	3.5242E-11	1.2934E-08	1.7621E-08
Nontronite-Ca	2.1327E-04	9.0488E-02	2.7959E-02
Nontronite-K	6.8238E-04	2.9382E-01	9.2305E-02
Nontronite-Mg	2.1507E-04	9.0692E-02	2.7907E-02
Nontronite-Na	9.5788E-05	4.0735E-02	1.2654E-02

--- Summary of Solid Phases (E.S.+P.R.S.) ---

Phase/End-member	Log moles	Moles	Mass, g	Volume, cc
Alunite	-2.5559	2.7801E-03	1.1516E+00	8.1624E-01
Diaspore	-1.9187	1.2059E-02	7.2339E-01	2.1417E-01
Fluorapatite	-4.0814	8.2908E-05	4.1811E-02	4.1454E-02
Hematite	-3.7144	1.9300E-04	3.0820E-02	5.8428E-03
Ni2SiO4	-2.5996	2.5145E-03	5.2669E-01	1.0714E-01
Nontronite-H	-4.9990	1.0023E-05	4.1899E-03	5.0117E-03
Pyrolusite	-3.1733	6.7090E-04	5.8326E-02	3.3545E-01
Quartz	-0.9944	1.0129E-01	6.0860E+00	2.2981E+00
Rutile	-3.9969	1.0072E-04	8.0455E-03	1.8956E-03
fix CO2(g)	2.3010	2.0000E+02	8.8020E+03	0.0000E+00
fix O2(g)	2.3010	2.0000E+02	6.3997E+03	0.0000E+00
Smectite-di	-3.5447	2.8527E-04		
Beidellite-Ca	-10.3758	4.2095E-11	1.5430E-08	5.4526E-09
Beidellite-K	-10.0956	8.0243E-11	2.9919E-08	1.0729E-08
Beidellite-Mg	-10.3400	4.5708E-11	1.6636E-08	5.6308E-09
Beidellite-Na	-10.8097	1.5498E-11	5.6962E-09	2.0232E-09
Montmor-Ca	-11.3593	4.3725E-12	1.6005E-09	2.1863E-09
Montmor-K	-10.8520	1.4060E-11	5.2349E-09	7.0299E-09
Montmor-Mg	-11.1135	7.6995E-12	2.7983E-09	3.8498E-09
Montmor-Na	-11.5866	2.5903E-12	9.5070E-10	1.2952E-09
Nontronite-Ca	-4.1640	6.8545E-05	2.9083E-02	8.9862E-03
Nontronite-K	-3.9267	1.1839E-04	5.0975E-02	1.6014E-02
Nontronite-Mg	-4.1305	7.4040E-05	3.1222E-02	9.6074E-03

Nontronite-Na	-4.6144	2.4302E-05	1.0335E-02	3.2106E-03

	Mass, grams	Volume, cc
Created	1.521045E+04	3.863115E+00
Destroyed	8.195620E+00	0.000000E+00
Net	1.520226E+04	3.863115E+00

Warning-- these volume totals may be incomplete because of missing partial molar volume data in the data base

--- Summary of Pure Mineral Saturation States ---

Mineral	Log Q/K	Aff, kcal	State
AlF3	-6.965	-9.502	
Albite	-3.791	-5.172	
Albite_high	-5.110	-6.972	
Albite_low	-3.791	-5.172	
Alunite	-2.835	-3.868	
Analcime	-3.766	-5.138	
Andalusite	-5.623	-7.671	
Anglesite	-4.885	-6.664	
Anhydrite	-1.645	-2.244	
Aragonite	-5.169	-7.053	
Arcanite	-5.260	-7.177	
BaCrO4	-3.620	-4.939	
BaZrO3	77.062	105.135	ssatd
Barite	-2.756	-3.760	
Bassanite	-2.290	-3.124	
Beidellite-Ca	-2.243	-3.060	
Beidellite-Cs	-4.549	-6.207	
Beidellite-H	-2.627	-3.585	
Beidellite-K	-2.143	-2.924	
Beidellite-Mg	-2.231	-3.044	
Beidellite-Na	-2.384	-3.252	
Berlinite	-4.043	-5.515	
Boehmite	-0.404	-0.551	
Boric_acid	-4.749	-6.479	
Bunsenite	-3.301	-4.504	
Ca2V2O7	-7.133	-9.731	
CaSO4:0.5H2O(beta)	-2.458	-3.353	
CaV2O6	-3.621	-4.941	
CaZrO3	137.868	188.091	ssatd
Calcite	-5.025	-6.856	
Celadonite	-4.804	-6.554	
Celestite	-7.188	-9.806	
Cerussite	-6.753	-9.213	
Chalcedony	-0.271	-0.370	
Coesite	-0.810	-1.105	
Corundum	-3.991	-5.445	
CrO2	-4.811	-6.564	
Cristobalite(alpha)	-0.551	-0.751	
Cristobalite(beta)	-0.994	-1.356	
Crocoite	-0.845	-1.153	
Dawsonite	-4.689	-6.397	
Diaspore	0.000	0.000	satd
Epsomite	-4.152	-5.664	
Fe(OH)3	-6.068	-8.279	

Fluorapatite	0.000	0.000	satd
Fluorite	-2.715	-3.704	
GdPO4:H2O	-4.253	-5.802	
Gibbsite	-0.596	-0.813	
Glauberite	-6.949	-9.481	
Goethite	-0.947	-1.292	
Gypsum	-1.470	-2.005	
Hematite	-0.933	-1.273	
Hexahydrite	-4.387	-5.985	
Ice	-0.139	-0.190	
Illite	-2.452	-3.346	
Jadeite	-5.416	-7.389	
K-Feldspar	-1.048	-1.430	
Kalsilite	-4.224	-5.763	
Kaolinite	-0.488	-0.666	
Kieserite	-5.845	-7.974	
Kyanite	-5.352	-7.302	
LaPO4:H2O	-3.804	-5.189	
Laumontite	-7.207	-9.832	
Lopezite	-5.364	-7.318	
Magnesite	-5.630	-7.682	
Manganite	-4.459	-6.084	
Maximum_Microcline	-1.048	-1.430	
Mesolite	-3.486	-4.756	
Mirabilite	-5.330	-7.272	
MnHPO4	-5.114	-6.976	
MnO2(gamma)	-1.518	-2.071	
Monohydrocalcite	-5.859	-7.993	
Montmor-Ca	-2.560	-3.492	
Montmor-Cs	-4.800	-6.548	
Montmor-K	-2.390	-3.261	
Montmor-Mg	-2.479	-3.382	
Montmor-Na	-2.634	-3.594	
Mordenite	-4.578	-6.246	
Morenosite	-2.906	-3.965	
Muscovite	-0.589	-0.803	
NdPO4:H2O	-4.076	-5.561	
Nepheline	-6.829	-9.316	
Ni(OH)2	-3.578	-4.882	
Ni2SiO4	0.000	0.000	satd
Ni3(PO4)2	-2.671	-3.644	
NiCO3	-5.655	-7.715	
NiSO4:6H2O(alpha)	-2.913	-3.974	
Niter	-6.074	-8.286	
Nontronite-Ca	-0.214	-0.292	
Nontronite-H	-0.599	-0.817	
Nontronite-K	-0.115	-0.157	
Nontronite-Mg	-0.203	-0.277	
Nontronite-Na	-0.355	-0.485	
Paragonite	-4.228	-5.768	
PbHPO4	-5.494	-7.495	
Pentahydrite	-4.726	-6.448	
Plattnerite	-6.656	-9.081	
Plumbogummite	-5.846	-7.975	
PuO2	-3.742	-5.105	
Pyrolusite	0.000	0.000	satd
Pyrophyllite	-2.116	-2.887	
Quartz	0.000	0.000	satd
Rutile	0.000	0.000	satd
Sanidine_high	-2.248	-3.066	
Scolecite	-5.417	-7.391	
Sellaite	-3.528	-4.814	
Shcherbinaite	-4.773	-6.512	

SiO2(am)	-1.286	-1.754	
Sillimanite	-5.986	-8.167	
SmPO4:H2O	-4.090	-5.580	
SrZrO3	113.919	155.418	ssatd
Starkeyite	-5.113	-6.976	
Stilbite	-3.891	-5.308	
Sylvite	-6.971	-9.510	
Syngenite	-5.413	-7.384	
Thenardite	-6.158	-8.401	
Trevorite	-1.441	-1.967	
Tridymite	-0.171	-0.234	
Witherite	-6.956	-9.489	
fix CO2(g)	0.000	0.000	satd
fix O2(g)	0.000	0.000	satd

--- Summary of Solid Solutions ---

--- Carbonate-Calcite ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Calcite	8.0121E-01	-0.0963	0.0000	-0.0963
Magnesite	1.9877E-01	-0.7016	0.0000	-0.7016
Rhodochrosite	1.4435E-06	-5.8406	0.0000	-5.8406
Siderite	6.2971E-15	-14.2009	0.0000	-14.2009
Smithsonite	3.3881E-06	-5.4700	0.0000	-5.4700
Strontianite	1.4207E-05	-4.8475	0.0000	-4.8475

Mineral	Log Q/K	Aff, kcal	State
Carbonate-Calcite	-4.929	-6.724	
Calcite	-4.929	-6.724	
Magnesite	-4.929	-6.724	
Rhodochrosite	-4.929	-6.724	
Siderite	-4.929	-6.724	
Smithsonite	-4.929	-6.724	
Strontianite	-4.929	-6.724	

--- Clinoptilolite-hy-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-hy-Ca	9.4686E-03	-2.0237	0.0000	-2.0237
Clinoptilolite-hy-Cs	1.5855E-25	-24.7998	0.0000	-24.7998
Clinoptilolite-hy-K	9.8891E-01	-0.0048	0.0000	-0.0048
Clinoptilolite-hy-Na	1.6208E-03	-2.7903	0.0000	-2.7903
Clinoptilolite-hy-Sr	1.3484E-14	-13.8702	0.0000	-13.8702

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-hy-ss	-10.288	-14.036	
Clinoptilolite-hy-Ca	-10.288	-14.036	
Clinoptilolite-hy-Cs	-10.288	-14.036	
Clinoptilolite-hy-K	-10.288	-14.036	

Clinoptilolite-hy-Na	-10.288	-14.036
Clinoptilolite-hy-Sr	-10.288	-14.036

--- Clinoptilolite-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-Ca	1.8439E-01	-0.7343	-1.8063	-2.5406
Clinoptilolite-Cs	4.8051E-08	-7.3183	-18.0030	-25.3213
Clinoptilolite-K	7.0491E-01	-0.1519	-0.3736	-0.5255
Clinoptilolite-NH4	3.6933E-60	-59.4326	-146.2042	-205.6367
Clinoptilolite-Na	1.1063E-01	-0.9561	-2.3521	-3.3082
Clinoptilolite-Sr	6.9544E-05	-4.1577	-10.2280	-14.3858

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-ss	-9.773	-13.333	
Clinoptilolite-Ca	-9.773	-13.333	
Clinoptilolite-Cs	-9.773	-13.333	
Clinoptilolite-K	-9.773	-13.333	
Clinoptilolite-NH4	-9.773	-13.333	
Clinoptilolite-Na	-9.773	-13.333	
Clinoptilolite-Sr	-9.773	-13.333	

--- Saponite-tri ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Saponite-Ca	2.2104E-01	-0.6555	0.4392	-0.2163
Saponite-H	1.5082E-02	-1.8216	1.2204	-0.6011
Saponite-K	4.4221E-01	-0.3544	0.2374	-0.1169
Saponite-Mg	2.3904E-01	-0.6215	0.4164	-0.2051
Saponite-Na	8.2625E-02	-1.0829	0.7255	-0.3574

Mineral	Log Q/K	Aff, kcal	State
Saponite-tri	-13.116	-17.893	
Saponite-Ca	-13.116	-17.893	
Saponite-H	-13.116	-17.893	
Saponite-K	-13.116	-17.893	
Saponite-Mg	-13.116	-17.893	
Saponite-Na	-13.116	-17.893	

--- Smectite-di ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Beidellite-Ca	1.6000E-07	-6.7959	4.5532	-2.2426
Beidellite-K	3.2031E-07	-6.4944	4.3513	-2.1432

Beidellite-Mg	1.7303E-07	-6.7619	4.5305	-2.2314
Beidellite-Na	5.9807E-08	-7.2233	4.8396	-2.3837
Montmor-Ca	1.7501E-08	-7.7569	5.1971	-2.5598
Montmor-K	5.7221E-08	-7.2424	4.8524	-2.3900
Montmor-Mg	3.0759E-08	-7.5120	5.0331	-2.4790
Montmor-Na	1.0419E-08	-7.9822	5.3481	-2.6341
Nontronite-Ca	2.2432E-01	-0.6491	0.4349	-0.2142
Nontronite-K	4.4908E-01	-0.3477	0.2329	-0.1147
Nontronite-Mg	2.4275E-01	-0.6148	0.4119	-0.2029
Nontronite-Na	8.3849E-02	-1.0765	0.7213	-0.3552

Mineral	Log Q/K	Aff, kcal	State
Smectite-di	0.000	0.000	satd
Beidellite-Ca	0.000	0.000	satd
Beidellite-K	0.000	0.000	satd
Beidellite-Mg	0.000	0.000	satd
Beidellite-Na	0.000	0.000	satd
Montmor-Ca	0.000	0.000	satd
Montmor-K	0.000	0.000	satd
Montmor-Mg	0.000	0.000	satd
Montmor-Na	0.000	0.000	satd
Nontronite-Ca	0.000	0.000	satd
Nontronite-K	0.000	0.000	satd
Nontronite-Mg	0.000	0.000	satd
Nontronite-Na	0.000	0.000	satd

--- Lanthanide hydroxide ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
La(OH)3	1.3042E-05	-4.8847	0.0000	-4.8847
Ce(OH)3	3.6936E-15	-14.4326	0.0000	-14.4326
Nd(OH)3(c)	3.4873E-01	-0.4575	0.0000	-0.4575
Gd(OH)3	5.8387E-01	-0.2337	0.0000	-0.2337
Sm(OH)3	6.7388E-02	-1.1714	0.0000	-1.1714

Mineral	Log Q/K	Aff, kcal	State
Lanthanide hydroxide	-13.187	-17.990	
La(OH)3	-13.187	-17.990	
Ce(OH)3	-13.187	-17.990	
Nd(OH)3(c)	-13.187	-17.990	
Gd(OH)3	-13.187	-17.990	
Sm(OH)3	-13.187	-17.990	

--- Rhabdophane-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaPO4:H2O	4.1566E-01	-0.3813	0.0000	-0.3813
CePO4:H2O	3.7226E-11	-10.4292	0.0000	-10.4292
NdPO4:H2O	2.2176E-01	-0.6541	0.0000	-0.6541

GdPO4:H2O	1.4781E-01	-0.8303	0.0000	-0.8303
SmPO4:H2O	2.1477E-01	-0.6680	0.0000	-0.6680

Mineral	Log Q/K	Aff, kcal	State
Rhabdophane-ss	-3.422	-4.669	
LaPO4:H2O	-3.422	-4.669	
CePO4:H2O	-3.422	-4.669	
NdPO4:H2O	-3.422	-4.669	
GdPO4:H2O	-3.422	-4.669	
SmPO4:H2O	-3.422	-4.669	

--- Lanthanide fluoride ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaF3:0.5H2O	5.7554E-01	-0.2399	0.0000	-0.2399
CeF3:0.5H2O	8.1693E-11	-10.0878	0.0000	-10.0878
NdF3:0.5H2O	3.8657E-01	-0.4128	0.0000	-0.4128
GdF3:0.5H2O	8.1480E-03	-2.0889	0.0000	-2.0889
SmF3:0.5H2O	2.9738E-02	-1.5267	0.0000	-1.5267

Mineral	Log Q/K	Aff, kcal	State
Lanthanide fluoride	-10.136	-13.828	
LaF3:0.5H2O	-10.136	-13.828	
CeF3:0.5H2O	-10.136	-13.828	
NdF3:0.5H2O	-10.136	-13.828	
GdF3:0.5H2O	-10.136	-13.828	
SmF3:0.5H2O	-10.136	-13.828	

--- Summary of Gases ---

Gas	Fugacity	Log fugacity
Al(g)	1.6470-191	-190.7833
B(g)	8.5615-204	-203.0675
BF3(g)	5.3161E-34	-33.2744
C(g)	3.0917-190	-189.5098
CH4(g)	3.5245-146	-145.4529
CO(g)	6.0395E-49	-48.2190
CO2(g)	3.1623E-04	-3.5000
Ca(g)	7.0375-156	-155.1526
Chlorine	8.5967E-25	-24.0657
Cs(g)	2.3270E-85	-84.6332
Cu(g)	3.2850E-85	-84.4835
Fluorine	4.0061E-79	-78.3973
H2(g)	6.1109E-42	-41.2139
H2O(g)	2.5960E-02	-1.5857
H2S(g)	5.2773-138	-137.2776
HCl(g)	1.1370E-16	-15.9442
HF(g)	2.7702E-12	-11.5575
K(g)	6.7027E-78	-77.1738
Li(g)	5.1563E-99	-98.2877

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Mg(g)                        3.2759-133   -132.4847
Nitrogen                     6.3205E-16    -15.1993
NH3(g)                       2.8955E-67    -66.5383
NO(g)                        7.9163E-24    -23.1015
NO2(g)                       5.4128E-18    -17.2666
Na(g)                        6.9292E-77    -76.1593
O2(g)                        2.0999E-01     -0.6778
Pb(g)                        3.3905E-73    -72.4697
S2(g)                        1.6629-218   -217.7791
SO2(g)                       9.3499E-51    -50.0292
Si(g)                        4.2257-221   -220.3741
SiF4(g)                      2.5993E-31    -30.5851
Ti(g)                        3.8019-231   -230.4200
TiCl4(g)                     5.6062E-77    -76.2513
U(g)                         4.5628-298   -297.3408
U2Cl10(g)                    7.6671-227   -226.1154
U2Cl8(g)                     2.7650-233   -232.5583
U2F10(g)                     7.4816-140   -139.1260
UCl(g)                       4.6249-252   -251.3349
UCl2(g)                      1.4024-204   -203.8531
UCl3(g)                      9.3139-155   -154.0309
UCl4(g)                      3.3496-122   -121.4750
UCl5(g)                      6.1982-127   -126.2077
UCl6(g)                      2.1307-126   -125.6715
UF(g)                        2.3947-237   -236.6208
UF2(g)                       9.3209-195   -194.0305
UF3(g)                       8.9284-146   -145.0492
UF4(g)                       1.2624E-93    -92.8988
UF5(g)                       8.1752E-83    -82.0875
UF6(g)                       5.2133E-86    -85.2829
UO(g)                        3.6036-213   -212.4433
UO2(g)                       6.6763-129   -128.1755
UO2Cl2(g)                    2.5059E-72    -71.6010
UO2F2(g)                     1.2083E-60    -59.9178
UO3(g)                       4.9106E-76    -75.3089
UOF4(g)                      3.7617E-71    -70.4246
Zn(g)                        5.6511E-83    -82.2479



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Stepping to zi=  4.1603E-01, delzi=  1.7927E-02, nord= 5
  time =  4.0127E+03 d, dltime =  1.7291E+02 d
Steps completed =   224, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Montmor-K               ) =    -10.7378

Stepping to zi=  4.6123E-01, delzi=  4.5193E-02, nord= 5
  time =  4.4486E+03 d, dltime =  4.3589E+02 d
Steps completed =   225, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Montmor-K               ) =    -10.4491

Stepping to zi=  4.9330E-01, delzi=  3.2075E-02, nord= 6
  time =  4.7579E+03 d, dltime =  3.0937E+02 d
Steps completed =   226, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Montmor-K               ) =    -10.2475

Stepping to zi=  5.3526E-01, delzi=  4.1955E-02, nord= 6
  time =  5.1626E+03 d, dltime =  4.0466E+02 d
Steps completed =   227, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Montmor-K               ) =     -9.9785
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Stepping to zi=  5.6617E-01, delzi=  3.0914E-02, nord= 6
  time =  5.4608E+03 d, dltime =  2.9817E+02 d
Steps completed =   228, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Montmor-K              ) =     -9.7697

Stepping to zi=  6.0276E-01, delzi=  3.6593E-02, nord= 6
  time =  5.8137E+03 d, dltime =  3.5294E+02 d
Steps completed =   229, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Montmor-K              ) =     -9.5000

Stepping to zi=  6.3096E-01, delzi=  2.8194E-02, nord= 6
  time =  6.0856E+03 d, dltime =  2.7193E+02 d
Steps completed =   230, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Montmor-K              ) =     -9.2646

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                    Reaction progress        =  6.30957344480158E-01
                    Log of reaction progress =      -0.2000000



                    Time =  5.258E+08 sec
                         =  6.086E+03 days
                         =  1.666E+01 years

                    Log sec =        8.721
                    Log days =       3.784
                    Log years =      1.222

                    Temperature    =     25.000 degrees C
                    total pressure =      1.013 bars


Step size is limited by the print requirement


                              --- Reactant Summary ---


    Reactant                   Moles     Delta moles    Mass, g    Delta Mass, g

 Tuff                       9.9369E+01   6.3096E-01   2.0457E+03   1.2989E+01


               Current total mass =  2.04566E+03 grams
               Delta total mass   =  1.29892E+01 grams
               Delta total volume =      0.00000 cc


    Reactant                Rel. Rate      Rate         Rate
                             mol/mol       mol/s      mol/s/cm2

 Tuff                       1.0000E+00   1.2000E-09   2.5000E-15


    Reactant                   Affinity   Surface Area
                               kcal/mol     mol/s/cm2

 Tuff                        999.00000   4.8000E+05
```

Reactant	Rate Constants, mol/s/cm2	
Tuff		
	Forward	2.5000E-15

Affinity of the overall irreversible reaction= 0.000 kcal
Contributions from irreversible reactions
with no thermodynamic data are not included

--- Element Totals for the Aqueous Solution ---

Element	mg/kg soln.	Molality	Moles
O	8.865371E+05	5.558862E+01	5.556025E+01
Al	5.716573E-04	2.125503E-08	2.124418E-08
B	1.335660E-01	1.239433E-05	1.238800E-05
Ba	1.369572E-05	1.000511E-10	1.000000E-10
Ca	4.652824E+01	1.164671E-03	1.164077E-03
Ce	1.397376E-19	1.000510E-24	9.999993E-25
Cl	7.120948E+00	2.015028E-04	2.014000E-04
Cr	2.998219E+02	5.784759E-03	5.781806E-03
Cs	1.325476E-05	1.000511E-10	1.000000E-10
Cu	6.654364E-10	1.050536E-14	1.050000E-14
F	5.076253E-01	2.680519E-05	2.679151E-05
Fe	5.369737E-08	9.645969E-13	9.641046E-13
Gd	1.568265E-09	1.000510E-14	9.999998E-15
H	1.115431E+05	1.110199E+02	1.109632E+02
C	2.239824E-01	1.870800E-05	1.869845E-05
P	2.683653E-02	8.692107E-07	8.687671E-07
K	4.233221E+02	1.086190E-02	1.085636E-02
La	1.385315E-09	1.000510E-14	9.999998E-15
Li	6.922310E-07	1.000511E-10	1.000000E-10
Mg	2.068944E+01	8.539761E-04	8.535403E-04
Mn	2.119392E-07	3.870176E-12	3.868201E-12
Mo	2.180744E+02	2.280330E-03	2.279166E-03
N	1.983602E+00	1.420725E-04	1.420000E-04
Na	3.907563E+02	1.705156E-02	1.704285E-02
Nd	1.438516E-09	1.000510E-14	9.999998E-15
Ni	1.297877E+02	2.218514E-03	2.217382E-03
Pb	2.066421E-05	1.000511E-10	1.000000E-10
Pu	2.433429E-09	1.000510E-14	9.999997E-15
S	3.732681E+02	1.167801E-02	1.167205E-02
Si	2.804835E+00	1.001885E-04	1.001374E-04
Sm	1.499551E-09	1.000510E-14	9.999998E-15
Sr	8.738407E-06	1.000511E-10	1.000000E-10
Ti	1.078608E-05	2.259968E-10	2.258814E-10
U	2.373879E-09	1.000510E-14	9.999998E-15
V	4.771044E+00	9.395814E-05	9.391018E-05
Zn	6.521393E-06	1.000511E-10	1.000000E-10
Zr	9.097842E-16	1.000511E-20	1.000000E-20

Single ion activities and activity coefficients are here defined
with respect to the modified NBS pH scale

pH Eh pe

modified NBS pH scale	6.1310	0.8563	1.4476E+01
rational pH scale	6.0576	0.8607	1.4549E+01

pHCl = 9.9143

Oxygen fugacity = 2.09991E-01
Log oxygen fugacity = -0.67780

Activity of water = 0.99920
Log activity of water = -0.00035

Ionic strength = 5.139621E-02 molal
Sum of molalities = 0.0504951835429
Osmotic coefficient = 0.88309

Mass of solution = 1.002700 kg
Mass of solutes = 0.003210 kg
Conc. of solutes = 0.320167 per cent (w/w)

Moles of solvent H2O = 5.54801E+01
Mass of solvent H2O = 9.99490E-01 kg

Species	Molality	Log molality	Log gamma	Log activity
Na+	1.6576E-02	-1.7805	-0.0933	-1.8738
K+	1.0521E-02	-1.9780	-0.0988	-2.0767
SO4--	9.8200E-03	-2.0079	-0.3429	-2.3508
HCrO4-	2.7839E-03	-2.5553	-0.0811	-2.6364
MoO4--	2.2803E-03	-2.6420	-0.3329	-2.9749
CrO4--	2.2032E-03	-2.6570	-0.3429	-2.9998
Ni++	1.7354E-03	-2.7606	-0.3306	-3.0912
Ca++	9.1744E-04	-3.0374	-0.3306	-3.3680
Mg++	5.4178E-04	-3.2662	-0.3007	-3.5668
NiSO4(aq)	4.8279E-04	-3.3162	0.0000	-3.3162
NaSO4-	4.7475E-04	-3.3235	-0.0811	-3.4046
Cr2O7--	3.9883E-04	-3.3992	-0.3429	-3.7421
KSO4-	3.4133E-04	-3.4668	-0.0811	-3.5479
MgSO4(aq)	3.1196E-04	-3.5059	0.0000	-3.5059
O2(aq)	2.6212E-04	-3.5815	0.0054	-3.5761
CaSO4(aq)	2.4679E-04	-3.6077	0.0000	-3.6077
Cl-	2.0102E-04	-3.6968	-0.0865	-3.7833
NO3-	1.4147E-04	-3.8493	-0.0865	-3.9358
SiO2(aq)	1.0016E-04	-3.9993	0.0000	-3.9993
H2VO4-	5.0973E-05	-4.2927	-0.0811	-4.3737
VO2(OH)2-	3.1589E-05	-4.5005	-0.0811	-4.5815
F-	2.6491E-05	-4.5769	-0.0837	-4.6606
B(OH)3(aq)	1.2382E-05	-4.9072	0.0000	-4.9072
CO2(aq)	1.0610E-05	-4.9743	0.0054	-4.9689
VO3OH--	1.0112E-05	-4.9952	-0.3429	-5.3380
HCO3-	7.9089E-06	-5.1019	-0.0811	-5.1830
HVO4--	1.0893E-06	-5.9629	-0.3429	-6.3057
H+	8.7583E-07	-6.0576	-0.0734	-6.1310
H2PO4-	7.2450E-07	-6.1400	-0.0811	-6.2210
HSO4-	3.7881E-07	-6.4216	-0.0811	-6.5027
NaCl(aq)	3.6802E-07	-6.4341	0.0000	-6.4341
CaNO3+	3.0866E-07	-6.5105	-0.0933	-6.6039
NiNO3+	2.9262E-07	-6.5337	-0.0933	-6.6270

VO(OH)3(aq)	1.9386E-07	-6.7125	0.0000	-6.7125
MgF+	1.6530E-07	-6.7817	-0.0933	-6.8751
NaHCO3(aq)	1.2511E-07	-6.9027	0.0000	-6.9027
HPO4--	1.1154E-07	-6.9526	-0.3429	-7.2954
CaF+	5.5771E-08	-7.2536	-0.0933	-7.3469
KCl(aq)	4.4196E-08	-7.3546	0.0000	-7.3546
MgCl+	4.0579E-08	-7.3917	-0.0933	-7.4850
CaHCO3+	3.8821E-08	-7.4109	-0.0933	-7.5043
NaF(aq)	2.9373E-08	-7.5321	0.0000	-7.5321
MgHCO3+	2.3946E-08	-7.6208	-0.0933	-7.7141
HF(aq)	2.3796E-08	-7.6235	0.0000	-7.6235
HSiO3-	1.8193E-08	-7.7401	-0.0811	-7.8212
CaCl+	1.7638E-08	-7.7536	-0.0933	-7.8469
NiCl+	1.6698E-08	-7.7773	-0.0933	-7.8707
OH-	1.6567E-08	-7.7807	-0.0837	-7.8645
AlF2+	1.3808E-08	-7.8599	-0.0933	-7.9532
CaHPO4(aq)	1.1928E-08	-7.9234	0.0000	-7.9234
BO2-	1.1490E-08	-7.9397	-0.0811	-8.0208
MgHPO4(aq)	1.1161E-08	-7.9523	0.0000	-7.9523
NaHSiO3(aq)	8.9846E-09	-8.0465	0.0000	-8.0465
NaHPO4-	6.7887E-09	-8.1682	-0.0811	-8.2493
KHPO4-	3.0825E-09	-8.5111	-0.0811	-8.5922
AlF3(aq)	3.0633E-09	-8.5138	0.0000	-8.5138
AlF++	2.9163E-09	-8.5352	-0.3574	-8.8926
CO3--	8.9564E-10	-9.0479	-0.3329	-9.3808
HAlO2(aq)	5.3383E-10	-9.2726	0.0000	-9.2726
CaCO3(aq)	3.7873E-10	-9.4217	0.0000	-9.4217
VO2+	3.5523E-10	-9.4495	-0.0933	-9.5428
Al(OH)2+	3.3740E-10	-9.4719	-0.0933	-9.5652
CaB(OH)4+	3.3617E-10	-9.4734	-0.0933	-9.5668
AlO2-	3.0836E-10	-9.5109	-0.0811	-9.5920
MgB(OH)4+	2.5306E-10	-9.5968	-0.0933	-9.6901
NaB(OH)4(aq)	2.3746E-10	-9.6244	0.0000	-9.6244
Ti(OH)4(aq)	2.2600E-10	-9.6459	0.0000	-9.6459
AlOH++	1.9906E-10	-9.7010	-0.3574	-10.0584
KHSO4(aq)	1.7993E-10	-9.7449	0.0000	-9.7449
MgCO3(aq)	1.0747E-10	-9.9687	0.0000	-9.9687
CaOH+	1.0138E-10	-9.9940	-0.0933	-10.0874
Cs+	1.0004E-10	-9.9998	-0.1017	-10.1016

--- Summary of Instantaneously Precipitated Solid Phases ---
(defined by derivatives)

--- Theoretical Rock Composition ---
g/kg

O	5.045550E+01
Al	6.673597E+00
Ca	2.230330E-02
F	1.627597E-03
Fe	6.474291E-01
H	2.590602E-01
P	7.960584E-03
K	4.925631E-02
Mg	2.980882E-03
Mn	5.120473E-02
Na	3.483756E-03
Ni	6.218987E+00
Si	3.555071E+01
Ti	5.819822E-02

--- Oxide Percentages ---

Oxide Theoretical rock

Total = 0.0000

Phase/end-member	d mol/d zi	d grams/d zi	d vol (cc)/d zi
Diaspore	5.1084E-02	3.0644E+00	9.0725E-01
Fluorapatite	1.7832E-05	8.9926E-03	8.9159E-03
Ni2SiO4	1.1028E-02	2.3099E+00	4.6990E-01
Pyrolusite	1.9400E-04	1.6866E-02	9.7000E-02
Quartz	2.4801E-01	1.4902E+01	5.6269E+00
Rutile	2.5300E-04	2.0209E-02	4.7615E-03
fix CO2(g)	-3.9818E-05	-1.7524E-03	0.0000E+00
fix O2(g)	-7.0633E-04	-2.2602E-02	0.0000E+00
Smectite-di			
Beidellite-Ca	1.5877E-09	5.8200E-07	2.0566E-07
Beidellite-K	5.2686E-09	1.9644E-06	7.0441E-07
Beidellite-Mg	1.6172E-09	5.8859E-07	1.9922E-07
Beidellite-Na	7.4420E-10	2.7352E-07	9.7148E-08
Montmor-Ca	2.0057E-09	7.3417E-07	1.0028E-06
Montmor-K	1.0035E-08	3.7364E-06	5.0176E-06
Montmor-Mg	3.3524E-09	1.2184E-06	1.6762E-06
Montmor-Na	1.4347E-09	5.2657E-07	7.1736E-07
Nontronite-Ca	1.6165E-04	6.8587E-02	2.1192E-02
Nontronite-K	7.9460E-04	3.4214E-01	1.0749E-01
Nontronite-Mg	1.5468E-04	6.5225E-02	2.0071E-02
Nontronite-Na	9.5577E-05	4.0646E-02	1.2627E-02

--- Summary of Solid Phases (E.S.+P.R.S.) ---

Phase/End-member	Log moles	Moles	Mass, g	Volume, cc
Alunite	-2.5559	2.7801E-03	1.1516E+00	8.1624E-01
Diaspore	-1.6206	2.3954E-02	1.4370E+00	4.2542E-01
Fluorapatite	-4.0557	8.7958E-05	4.4358E-02	4.3979E-02
Hematite	-3.7144	1.9300E-04	3.0820E-02	5.8428E-03
Ni2SiO4	-2.2754	5.3038E-03	1.1110E+00	2.2600E-01
Nontronite-H	-4.9990	1.0023E-05	4.1899E-03	5.0117E-03
Pyrolusite	-3.1450	7.1608E-04	6.2253E-02	3.5804E-01
Quartz	-0.7991	1.5882E-01	9.5426E+00	3.6033E+00
Rutile	-3.7969	1.5963E-04	1.2751E-02	3.0043E-03
fix CO2(g)	2.3010	2.0000E+02	8.8020E+03	0.0000E+00
fix O2(g)	2.3010	2.0000E+02	6.3997E+03	0.0000E+00
Smectite-di	-3.2470	5.6621E-04		
Beidellite-Ca	-9.6914	2.0353E-10	7.4606E-08	2.6363E-08
Beidellite-K	-9.2328	5.8500E-10	2.1812E-07	7.8215E-08
Beidellite-Mg	-9.6759	2.1093E-10	7.6771E-08	2.5985E-08
Beidellite-Na	-10.0528	8.8562E-11	3.2550E-08	1.1561E-08
Montmor-Ca	-9.9408	1.1460E-10	4.1949E-08	5.7300E-08
Montmor-K	-9.2645	5.4390E-10	2.0251E-07	2.7195E-07
Montmor-Mg	-9.7150	1.9274E-10	7.0050E-08	9.6370E-08
Montmor-Na	-10.0981	7.9788E-11	2.9284E-08	3.9894E-08
Nontronite-Ca	-3.9531	1.1140E-04	4.7264E-02	1.4604E-02
Nontronite-K	-3.5340	2.9245E-04	1.2592E-01	3.9559E-02
Nontronite-Mg	-3.9361	1.1586E-04	4.8857E-02	1.5034E-02
Nontronite-Na	-4.3325	4.6504E-05	1.9776E-02	6.1436E-03

	Mass, grams	Volume, cc
Created	1.521533E+04	5.562180E+00
Destroyed	1.298918E+01	0.000000E+00
Net	1.520234E+04	5.562180E+00

Warning-- these volume totals may be incomplete because of missing partial molar volume data in the data base

--- Summary of Pure Mineral Saturation States ---

Mineral	Log Q/K	Aff, kcal	State
Albite	-3.345	-4.563	
Albite_high	-4.664	-6.363	
Albite_low	-3.345	-4.563	
Alunite	-3.342	-4.560	
Analcime	-3.338	-4.554	
Andalusite	-5.623	-7.671	
Anglesite	-4.856	-6.625	
Anhydrite	-1.412	-1.927	
Aragonite	-4.413	-6.021	
Arcanite	-4.703	-6.417	
BaCrO4	-3.416	-4.660	
BaZrO3	77.614	105.888	ssatd
Barite	-2.728	-3.721	
Bassanite	-2.057	-2.807	
Beidellite-Ca	-2.118	-2.889	
Beidellite-Cs	-4.458	-6.082	
Beidellite-H	-2.627	-3.585	
Beidellite-K	-1.965	-2.681	
Beidellite-Mg	-2.113	-2.883	
Beidellite-Na	-2.236	-3.051	
Berlinite	-5.188	-7.078	
Boehmite	-0.404	-0.551	
Boric_acid	-4.749	-6.479	
Bunsenite	-3.301	-4.504	
Ca2V2O7	-6.219	-8.484	
CaSO4:0.5H2O(beta)	-2.226	-3.036	
CaV2O6	-3.464	-4.725	
CaZrO3	138.624	189.123	ssatd
Calcite	-4.269	-5.824	
Carnotite	-6.973	-9.513	
Celadonite	-3.546	-4.837	
Celestite	-7.167	-9.778	
Cerussite	-6.201	-8.460	
Chalcedony	-0.271	-0.370	
Coesite	-0.810	-1.105	
Corundum	-3.991	-5.445	
CrO2	-5.159	-7.038	
Cristobalite(alpha)	-0.551	-0.751	
Cristobalite(beta)	-0.994	-1.356	
Crocoite	-0.641	-0.874	
Dawsonite	-4.243	-5.789	
Diaspore	0.000	0.000	satd
Enstatite	-6.631	-9.047	
Epsomite	-3.958	-5.399	
Fe(OH)3	-6.144	-8.382	
Fluorapatite	0.000	0.000	satd
Fluorite	-2.652	-3.618	

GdPO4:H2O	-4.589	-6.260	
Gibbsite	-0.596	-0.813	
Glauberite	-6.348	-8.661	
Goethite	-1.023	-1.395	
Gypsum	-1.237	-1.688	
Halite	-7.243	-9.881	
Hematite	-1.085	-1.480	
Hexahydrite	-4.193	-5.720	
Ice	-0.139	-0.190	
Illite	-1.949	-2.659	
Jadeite	-4.970	-6.780	
K-Feldspar	-0.508	-0.693	
Kalsilite	-3.683	-5.025	
Kaolinite	-0.488	-0.666	
Kieserite	-5.651	-7.710	
Kyanite	-5.352	-7.302	
LaPO4:H2O	-4.146	-5.656	
Laumontite	-6.451	-8.801	
Lawsonite	-6.998	-9.547	
Lopezite	-4.978	-6.792	
Magnesite	-4.912	-6.702	
Manganite	-4.459	-6.084	
Maximum_Microcline	-0.508	-0.693	
Mesolite	-2.688	-3.667	
Mirabilite	-4.962	-6.770	
MnHPO4	-6.259	-8.539	
MnO2(gamma)	-1.518	-2.071	
Monohydrocalcite	-5.103	-6.962	
Montmor-Ca	-2.198	-2.999	
Montmor-Cs	-4.472	-6.101	
Montmor-K	-1.975	-2.694	
Montmor-Mg	-2.124	-2.897	
Montmor-Na	-2.250	-3.069	
Mordenite	-4.198	-5.728	
Morenosite	-3.430	-4.680	
Muscovite	-0.049	-0.066	
Nahcolite	-6.945	-9.475	
NdPO4:H2O	-4.417	-6.027	
Nepheline	-6.382	-8.707	
Ni(OH)2	-3.578	-4.882	
Ni2SiO4	0.000	0.000	satd
Ni3(PO4)2	-4.961	-6.768	
NiCO3	-5.655	-7.715	
NiSO4:6H2O(alpha)	-3.437	-4.689	
Niter	-5.806	-7.922	
Nontronite-Ca	-0.241	-0.329	
Nontronite-H	-0.751	-1.024	
Nontronite-K	-0.088	-0.120	
Nontronite-Mg	-0.236	-0.322	
Nontronite-Na	-0.360	-0.491	
Paragonite	-3.782	-5.160	
PbHPO4	-6.087	-8.304	
Pentahydrite	-4.532	-6.183	
Plattnerite	-6.104	-8.328	
PuO2	-2.854	-3.894	
Pyrolusite	0.000	0.000	satd
Pyrophyllite	-2.116	-2.887	
Quartz	0.000	0.000	satd
Rutile	0.000	0.000	satd
Sanidine_high	-1.707	-2.329	
Scolecite	-4.661	-6.359	
Sellaite	-3.504	-4.780	
Shcherbinaite	-5.372	-7.329	

SiO2(am)	-1.286	-1.754	
Sillimanite	-5.986	-8.167	
SmPO4:H2O	-4.432	-6.046	
SrZrO3	114.463	156.161	ssatd
Starkeyite	-4.919	-6.711	
Stilbite	-3.057	-4.170	
Sylvite	-6.706	-9.149	
Syngenite	-4.623	-6.307	
Tarapacaite	-6.750	-9.208	
Thenardite	-5.789	-7.898	
Trevorite	-1.593	-2.174	
Tridymite	-0.172	-0.234	
Witherite	-6.403	-8.736	
fix CO2(g)	0.000	0.000	satd
fix O2(g)	0.000	0.000	satd

--- Summary of Solid Solutions ---

--- Carbonate-Calcite ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Calcite	8.1490E-01	-0.0889	0.0000	-0.0889
Magnesite	1.8509E-01	-0.7326	0.0000	-0.7326
Rhodochrosite	2.5726E-07	-6.5896	0.0000	-6.5896
Siderite	9.4238E-16	-15.0258	0.0000	-15.0258
Smithsonite	2.1514E-06	-5.6673	0.0000	-5.6673
Strontianite	8.8655E-06	-5.0523	0.0000	-5.0523

Mineral	Log Q/K	Aff, kcal	State
Carbonate-Calcite	-4.180	-5.702	
Calcite	-4.180	-5.702	
Magnesite	-4.180	-5.702	
Rhodochrosite	-4.180	-5.702	
Siderite	-4.180	-5.702	
Smithsonite	-4.180	-5.702	
Strontianite	-4.180	-5.702	

--- Clinoptilolite-hy-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-hy-Ca	2.6132E-03	-2.5828	0.0000	-2.5828
Clinoptilolite-hy-Cs	1.9350E-26	-25.7133	0.0000	-25.7133
Clinoptilolite-hy-K	9.9662E-01	-0.0015	0.0000	-0.0015
Clinoptilolite-hy-Na	7.7067E-04	-3.1131	0.0000	-3.1131
Clinoptilolite-hy-Sr	1.5952E-15	-14.7972	0.0000	-14.7972

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-hy-ss	-8.420	-11.487	
Clinoptilolite-hy-Ca	-8.420	-11.487	
Clinoptilolite-hy-Cs	-8.420	-11.487	

Clinoptilolite-hy-K	-8.420	-11.487
Clinoptilolite-hy-Na	-8.420	-11.487
Clinoptilolite-hy-Sr	-8.420	-11.487

--- Clinoptilolite-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-Ca	1.3773E-01	-0.8610	-2.1180	-2.9789
Clinoptilolite-Cs	2.8347E-08	-7.5475	-18.5668	-26.1143
Clinoptilolite-K	7.6552E-01	-0.1160	-0.2855	-0.4015
Clinoptilolite-NH4	6.1343E-61	-60.2122	-148.1221	-208.3343
Clinoptilolite-Na	9.6708E-02	-1.0145	-2.4958	-3.5103
Clinoptilolite-Sr	4.0670E-05	-4.3907	-10.8012	-15.1919

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-ss	-8.025	-10.948	
Clinoptilolite-Ca	-8.025	-10.948	
Clinoptilolite-Cs	-8.025	-10.948	
Clinoptilolite-K	-8.025	-10.948	
Clinoptilolite-NH4	-8.025	-10.948	
Clinoptilolite-Na	-8.025	-10.948	
Clinoptilolite-Sr	-8.025	-10.948	

--- Saponite-tri ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Saponite-Ca	1.8495E-01	-0.7329	0.4911	-0.2419
Saponite-H	5.2820E-03	-2.2772	1.5257	-0.7515
Saponite-K	5.3751E-01	-0.2696	0.1806	-0.0890
Saponite-Mg	1.9137E-01	-0.7181	0.4811	-0.2370
Saponite-Na	8.0877E-02	-1.0922	0.7318	-0.3604

Mineral	Log Q/K	Aff, kcal	State
Saponite-tri	-10.811	-14.749	
Saponite-Ca	-10.811	-14.749	
Saponite-H	-10.811	-14.749	
Saponite-K	-10.811	-14.749	
Saponite-Mg	-10.811	-14.749	
Saponite-Na	-10.811	-14.749	

--- Smectite-di ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Beidellite-Ca	3.8225E-07	-6.4177	4.2998	-2.1178

Beidellite-K	1.1117E-06	-5.9540	3.9892	-1.9648
Beidellite-Mg	3.9552E-07	-6.4028	4.2899	-2.1129
Beidellite-Na	1.6715E-07	-6.7769	4.5405	-2.2364
Montmor-Ca	2.1843E-07	-6.6607	4.4627	-2.1980
Montmor-K	1.0375E-06	-5.9840	4.0093	-1.9747
Montmor-Mg	3.6732E-07	-6.4350	4.3114	-2.1235
Montmor-Na	1.5212E-07	-6.8178	4.5679	-2.2499
Nontronite-Ca	1.8584E-01	-0.7309	0.4897	-0.2412
Nontronite-K	5.4047E-01	-0.2672	0.1790	-0.0882
Nontronite-Mg	1.9243E-01	-0.7157	0.4795	-0.2362
Nontronite-Na	8.1265E-02	-1.0901	0.7304	-0.3597

Mineral	Log Q/K	Aff, kcal	State
Smectite-di	0.000	0.000	satd
Beidellite-Ca	0.000	0.000	satd
Beidellite-K	0.000	0.000	satd
Beidellite-Mg	0.000	0.000	satd
Beidellite-Na	0.000	0.000	satd
Montmor-Ca	0.000	0.000	satd
Montmor-K	0.000	0.000	satd
Montmor-Mg	0.000	0.000	satd
Montmor-Na	0.000	0.000	satd
Nontronite-Ca	0.000	0.000	satd
Nontronite-K	0.000	0.000	satd
Nontronite-Mg	0.000	0.000	satd
Nontronite-Na	0.000	0.000	satd

--- Lanthanide hydroxide ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
La(OH)3	1.2923E-05	-4.8886	0.0000	-4.8886
Ce(OH)3	3.6625E-15	-14.4362	0.0000	-14.4362
Nd(OH)3(c)	3.4635E-01	-0.4605	0.0000	-0.4605
Gd(OH)3	5.8675E-01	-0.2316	0.0000	-0.2316
Sm(OH)3	6.6888E-02	-1.1747	0.0000	-1.1747

Mineral	Log Q/K	Aff, kcal	State
Lanthanide hydroxide	-12.380	-16.890	
La(OH)3	-12.380	-16.890	
Ce(OH)3	-12.380	-16.890	
Nd(OH)3(c)	-12.380	-16.890	
Gd(OH)3	-12.380	-16.890	
Sm(OH)3	-12.380	-16.890	

--- Rhabdophane-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaPO4:H2O	4.1442E-01	-0.3826	0.0000	-0.3826
CePO4:H2O	3.7142E-11	-10.4301	0.0000	-10.4301

NdPO4:H2O	2.2162E-01	-0.6544	0.0000	-0.6544
GdPO4:H2O	1.4946E-01	-0.8255	0.0000	-0.8255
SmPO4:H2O	2.1450E-01	-0.6686	0.0000	-0.6686

Mineral	Log Q/K	Aff, kcal	State
Rhabdophane-ss	-3.763	-5.134	
LaPO4:H2O	-3.763	-5.134	
CePO4:H2O	-3.763	-5.134	
NdPO4:H2O	-3.763	-5.134	
GdPO4:H2O	-3.763	-5.134	
SmPO4:H2O	-3.763	-5.134	

--- Lanthanide fluoride ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaF3:0.5H2O	5.7493E-01	-0.2404	0.0000	-0.2404
CeF3:0.5H2O	8.1666E-11	-10.0880	0.0000	-10.0880
NdF3:0.5H2O	3.8706E-01	-0.4122	0.0000	-0.4122
GdF3:0.5H2O	8.2548E-03	-2.0833	0.0000	-2.0833
SmF3:0.5H2O	2.9758E-02	-1.5264	0.0000	-1.5264

Mineral	Log Q/K	Aff, kcal	State
Lanthanide fluoride	-10.373	-14.151	
LaF3:0.5H2O	-10.373	-14.151	
CeF3:0.5H2O	-10.373	-14.151	
NdF3:0.5H2O	-10.373	-14.151	
GdF3:0.5H2O	-10.373	-14.151	
SmF3:0.5H2O	-10.373	-14.151	

--- Summary of Gases ---

Gas	Fugacity	Log fugacity
Al(g)	1.6471-191	-190.7833
B(g)	8.5598-204	-203.0675
BF3(g)	4.8465E-35	-34.3146
C(g)	3.0917-190	-189.5098
CH4(g)	3.5237-146	-145.4530
CO(g)	6.0395E-49	-48.2190
CO2(g)	3.1623E-04	-3.5000
Ca(g)	4.0163-155	-154.3962
Chlorine	2.4171E-25	-24.6167
Cs(g)	4.3924E-85	-84.3573
Cu(g)	1.1494E-84	-83.9395
Fluorine	8.1160E-80	-79.0907
H2(g)	6.1101E-42	-41.2139
H2O(g)	2.5957E-02	-1.5857
H2S(g)	1.5793-138	-137.8015
HCl(g)	6.0287E-17	-16.2198
HF(g)	1.2468E-12	-11.9042
K(g)	2.3261E-77	-76.6334

```
Li(g)                       9.7158E-99    -98.0125
Mg(g)                       1.7116-132   -131.7666
Nitrogen                    1.7950E-16    -15.7459
NH3(g)                      1.5428E-67    -66.8117
NO(g)                       4.2188E-24    -23.3748
NO2(g)                      2.8846E-18    -17.5399
Na(g)                       1.9365E-76    -75.7130
O2(g)                       2.0999E-01     -0.6778
Pb(g)                       1.2090E-72    -71.9176
S2(g)                       1.4896-219   -218.8269
SO2(g)                      2.7984E-51    -50.5531
Si(g)                       4.2257-221   -220.3741
SiF4(g)                     1.0668E-32    -31.9719
Ti(g)                       3.8019-231   -230.4200
TiCl4(g)                    4.4320E-78    -77.3534
U(g)                        1.4074-297   -296.8516
U2Cl10(g)                   1.2818-228   -227.8922
U2Cl8(g)                    1.6440-234   -233.7841
U2F10(g)                    2.4289-142   -141.6146
UCl(g)                      7.5641-252   -251.1212
UCl2(g)                     1.2162-204   -203.9150
UCl3(g)                     4.2831-155   -154.3682
UCl4(g)                     8.1678-123   -122.0879
UCl5(g)                     8.0141-128   -127.0961
UCl6(g)                     1.4608-127   -126.8354
UF(g)                       3.3245-237   -236.4783
UF2(g)                      5.8244-195   -194.2348
UF3(g)                      2.5111-146   -145.6001
UF4(g)                      1.5980E-94    -93.7964
UF5(g)                      4.6581E-84    -83.3318
UF6(g)                      1.3370E-87    -86.8739
UO(g)                       1.1115-212   -211.9541
UO2(g)                      2.0592-128   -127.6863
UO2Cl2(g)                   2.1732E-72    -71.6629
UO2F2(g)                    7.5500E-61    -60.1221
UO3(g)                      1.5146E-75    -74.8197
UOF4(g)                     4.7620E-72    -71.3222
Zn(g)                       2.0134E-82    -81.6961



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Stepping to zi=  6.4755E-01, delzi=  1.6592E-02, nord= 5
  time =  6.2457E+03 d, dltime =  1.6003E+02 d
iter =    3
      1 supersaturated pure minerals
      0 supersaturated solid solutions

               The most supersaturated phases          Affinity, kcal

                 1     368   Muscovite                     0.00538479


  Attempted species assemblage no.   2

            1      1  H2O
            2      3  Al+++
            3      7  B(OH)3(aq)
            4      8  Ba++
            5     11  Ca++
```

```
     6     13  Ce+++
     7     14  Cl-
     8     16  CrO4--
     9     17  Cs+
    10     18  Cu++
    11     22  F-
    12     23  Fe++
    13     25  Gd+++
    14     26  H+
    15     28  HCO3-
    16     29  HPO4--
    17     35  K+
    18     37  La+++
    19     38  Li+
    20     40  Mg++
    21     41  Mn++
    22     42  MoO4--
    23     43  NO3-
    24     44  Na+
    25     45  Nd+++
    26     47  Ni++
    27     49  Pb++
    28     52  Pu++++
    29     58  SO4--
    30     62  SiO2(aq)
    31     63  Sm+++
    32     65  Sr++
    33     69  Ti(OH)4(aq)
    34     72  UO2++
    35     73  VO++
    36     78  Zn++
    37     79  Zr(OH)2++
    38     80  O2(g)
    39    192  Diaspore
    40    222  Fluorapatite
    41    368  Muscovite
    42    405  Ni2SiO4
    43    470  Pyrolusite
    44    475  Quartz
    45    482  Rutile
    46    689  fix     CO2(g)
    47    690  fix     O2(g)
    48      1  SmectiteBeidellite-Ca
    49      2  SmectiteBeidellite-K
    50      3  SmectiteBeidellite-Mg
    51      4  SmectiteBeidellite-Na
    52      5  SmectiteMontmor-Ca
    53      6  SmectiteMontmor-K
    54      7  SmectiteMontmor-Mg
    55      8  SmectiteMontmor-Na
    56      9  SmectiteNontronite-Ca
    57     10  SmectiteNontronite-K
    58     11  SmectiteNontronite-Mg
    59     12  SmectiteNontronite-Na

Steps completed =   231, iter =  8, ncorr = 0

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                    Reaction progress        =  6.47549303009944E-01
                    Log of reaction progress =      -0.1887272
```

```
Time =  5.396E+08 sec
     =  6.246E+03 days
     =  1.710E+01 years

Log sec =        8.732
Log days =       3.796
Log years =      1.233

Temperature    =     25.000 degrees C
total pressure =      1.013 bars
```

Change in the product phase assemblage

--- Reactant Summary ---

Reactant	Moles	Delta moles	Mass, g	Delta Mass, g
Tuff	9.9352E+01	6.4755E-01	2.0453E+03	1.3331E+01

```
Current total mass =  2.04532E+03 grams
Delta total mass   =  1.33308E+01 grams
Delta total volume =      0.00000 cc
```

Reactant	Rel. Rate mol/mol	Rate mol/s	Rate mol/s/cm2
Tuff	1.0000E+00	1.2000E-09	2.5000E-15

Reactant	Affinity kcal/mol	Surface Area mol/s/cm2
Tuff	999.00000	4.8000E+05

Reactant	Rate Constants, mol/s/cm2	
Tuff		
	Forward	2.5000E-15

```
Affinity of the overall irreversible reaction=     0.000 kcal
Contributions from irreversible reactions
with no thermodynamic data are not included
```

--- Element Totals for the Aqueous Solution ---

Element	mg/kg soln.	Molality	Moles
O	8.865346E+05	5.558865E+01	5.555989E+01
Al	4.427661E-04	1.646273E-08	1.645421E-08
B	1.335665E-01	1.239441E-05	1.238800E-05
Ba	1.369577E-05	1.000518E-10	1.000000E-10

Ca	4.781535E+01	1.196893E-03	1.196274E-03
Ce	1.397381E-19	1.000517E-24	9.999993E-25
Cl	7.120974E+00	2.015042E-04	2.014000E-04
Cr	2.998230E+02	5.784798E-03	5.781806E-03
Cs	1.325480E-05	1.000518E-10	1.000000E-10
Cu	6.654388E-10	1.050543E-14	1.050000E-14
F	5.021083E-01	2.651395E-05	2.650024E-05
Fe	4.994276E-08	8.971536E-13	8.966895E-13
Gd	1.568271E-09	1.000517E-14	9.999998E-15
H	1.115427E+05	1.110198E+02	1.109624E+02
C	2.325598E-01	1.942449E-05	1.941444E-05
P	2.213916E-02	7.170695E-07	7.166986E-07
K	4.353415E+02	1.117034E-02	1.116456E-02
La	1.385320E-09	1.000517E-14	9.999998E-15
Li	6.922335E-07	1.000518E-10	1.000000E-10
Mg	2.118194E+01	8.743074E-04	8.738551E-04
Mn	1.793753E-07	3.275545E-12	3.273851E-12
Mo	2.180752E+02	2.280345E-03	2.279166E-03
N	1.983609E+00	1.420735E-04	1.420000E-04
Na	3.998286E+02	1.744751E-02	1.743848E-02
Nd	1.438521E-09	1.000517E-14	9.999998E-15
Ni	1.098225E+02	1.877246E-03	1.876275E-03
Pb	2.066428E-05	1.000518E-10	1.000000E-10
Pu	2.433438E-09	1.000517E-14	9.999997E-15
S	3.732695E+02	1.167809E-02	1.167205E-02
Si	2.804899E+00	1.001911E-04	1.001393E-04
Sm	1.499557E-09	1.000517E-14	9.999998E-15
Sr	8.738438E-06	1.000517E-10	1.000000E-10
Ti	1.078587E-05	2.259931E-10	2.258762E-10
U	2.373888E-09	1.000517E-14	9.999998E-15
V	4.771061E+00	9.395878E-05	9.391018E-05
Zn	6.521416E-06	1.000518E-10	1.000000E-10
Zr	9.097875E-16	1.000518E-20	1.000000E-20

Single ion activities and activity coefficients are here defined
with respect to the modified NBS pH scale

	pH	Eh	pe
modified NBS pH scale	6.1675	0.8542	1.4439E+01
rational pH scale	6.0940	0.8585	1.4513E+01

pHCl = 9.9509

Oxygen fugacity = 2.09991E-01
Log oxygen fugacity = -0.67780

Activity of water = 0.99919
Log activity of water = -0.00035

Ionic strength = 5.152593E-02 molal
Sum of molalities = 0.0509691384546
Osmotic coefficient = 0.88380

Mass of solution = 1.002696 kg
Mass of solutes = 0.003214 kg

Conc. of solutes = 0.320489 per cent (w/w)

Moles of solvent H2O = 5.54797E+01
Mass of solvent H2O = 9.99483E-01 kg

Species	Molality	Log molality	Log gamma	Log activity
Na+	1.6960E-02	-1.7706	-0.0934	-1.8640
K+	1.0818E-02	-1.9658	-0.0989	-2.0647
SO4--	9.8555E-03	-2.0063	-0.3432	-2.3495
HCrO4-	2.7036E-03	-2.5681	-0.0811	-2.6492
CrO4--	2.3286E-03	-2.6329	-0.3432	-2.9761
MoO4--	2.2803E-03	-2.6420	-0.3332	-2.9752
Ni++	1.4678E-03	-2.8333	-0.3309	-3.1642
Ca++	9.4239E-04	-3.0258	-0.3309	-3.3566
Mg++	5.5421E-04	-3.2563	-0.3009	-3.5572
NaSO4-	4.8711E-04	-3.3124	-0.0811	-3.3935
NiSO4(aq)	4.0922E-04	-3.3880	0.0000	-3.3880
Cr2O7--	3.7630E-04	-3.4245	-0.3432	-3.7677
KSO4-	3.5198E-04	-3.4535	-0.0811	-3.5346
MgSO4(aq)	3.1985E-04	-3.4950	0.0000	-3.4950
O2(aq)	2.6212E-04	-3.5815	0.0054	-3.5761
CaSO4(aq)	2.5406E-04	-3.5951	0.0000	-3.5951
Cl-	2.0101E-04	-3.6968	-0.0866	-3.7834
NO3-	1.4151E-04	-3.8492	-0.0866	-3.9358
SiO2(aq)	1.0016E-04	-3.9993	0.0000	-3.9993
H2VO4-	5.0451E-05	-4.2971	-0.0811	-4.3783
VO2(OH)2-	3.1266E-05	-4.5049	-0.0811	-4.5861
F-	2.6208E-05	-4.5816	-0.0838	-4.6653
B(OH)3(aq)	1.2381E-05	-4.9072	0.0000	-4.9072
VO3OH--	1.0893E-05	-4.9629	-0.3432	-5.3061
CO2(aq)	1.0609E-05	-4.9743	0.0054	-4.9689
HCO3-	8.6041E-06	-5.0653	-0.0811	-5.1464
HVO4--	1.1734E-06	-5.9306	-0.3432	-6.2738
H+	8.0529E-07	-6.0940	-0.0735	-6.1675
H2PO4-	5.8846E-07	-6.2303	-0.0811	-6.3114
NaCl(aq)	3.7637E-07	-6.4244	0.0000	-6.4244
HSO4-	3.4931E-07	-6.4568	-0.0811	-6.5379
CaNO3+	3.1693E-07	-6.4990	-0.0934	-6.5925
NiNO3+	2.4739E-07	-6.6066	-0.0934	-6.7000
VO(OH)3(aq)	1.7636E-07	-6.7536	0.0000	-6.7536
MgF+	1.6720E-07	-6.7768	-0.0934	-6.8702
NaHCO3(aq)	1.3921E-07	-6.8563	0.0000	-6.8563
HPO4--	9.8601E-08	-7.0061	-0.3432	-7.3493
CaF+	5.6640E-08	-7.2469	-0.0934	-7.3403
KCl(aq)	4.5426E-08	-7.3427	0.0000	-7.3427
CaHCO3+	4.3354E-08	-7.3630	-0.0934	-7.4564
MgCl+	4.1487E-08	-7.3821	-0.0934	-7.4755
NaF(aq)	2.9720E-08	-7.5269	0.0000	-7.5269
MgHCO3+	2.6635E-08	-7.5745	-0.0934	-7.6680
HF(aq)	2.1639E-08	-7.6648	0.0000	-7.6648
HSiO3-	1.9793E-08	-7.7035	-0.0811	-7.7846
CaCl+	1.8105E-08	-7.7422	-0.0934	-7.8356
OH-	1.8024E-08	-7.7441	-0.0838	-7.8279
NiCl+	1.4113E-08	-7.8504	-0.0934	-7.9438
BO2-	1.2499E-08	-7.9031	-0.0811	-7.9843
CaHPO4(aq)	1.0815E-08	-7.9660	0.0000	-7.9660
AlF2+	1.0500E-08	-7.9788	-0.0934	-8.0722
MgHPO4(aq)	1.0080E-08	-7.9965	0.0000	-7.9965
NaHSiO3(aq)	9.9968E-09	-8.0001	0.0000	-8.0001
NaHPO4-	6.1352E-09	-8.2122	-0.0811	-8.2933
KHPO4-	2.7997E-09	-8.5529	-0.0811	-8.6340

AlF3(aq)	2.3037E-09	-8.6376	0.0000	-8.6376
AlF++	2.2432E-09	-8.6491	-0.3578	-9.0069
CO3--	1.0604E-09	-8.9745	-0.3332	-9.3077
HAlO2(aq)	5.3383E-10	-9.2726	0.0000	-9.2726
CaCO3(aq)	4.5996E-10	-9.3373	0.0000	-9.3373
CaB(OH)4+	3.7539E-10	-9.4255	-0.0934	-9.5189
AlO2-	3.3547E-10	-9.4743	-0.0811	-9.5555
Al(OH)2+	3.1025E-10	-9.5083	-0.0934	-9.6017
VO2+	2.9718E-10	-9.5270	-0.0934	-9.6204
MgB(OH)4+	2.8145E-10	-9.5506	-0.0934	-9.6440
NaB(OH)4(aq)	2.6419E-10	-9.5781	0.0000	-9.5781
Ti(OH)4(aq)	2.2599E-10	-9.6459	0.0000	-9.6459
KHSO4(aq)	1.7055E-10	-9.7681	0.0000	-9.7681
AlOH++	1.6838E-10	-9.7737	-0.3578	-10.1315
MgCO3(aq)	1.3000E-10	-9.8861	0.0000	-9.8861
CaOH+	1.1322E-10	-9.9461	-0.0934	-10.0395
Cs+	1.0004E-10	-9.9998	-0.1019	-10.1017

--- Summary of Instantaneously Precipitated Solid Phases ---
(defined by derivatives)

--- Theoretical Rock Composition ---
g/kg

O	5.052649E+01
Al	6.690199E+00
Ca	2.200058E-02
F	1.604839E-03
Fe	6.490403E-01
H	2.597047E-01
P	7.849276E-03
K	4.965638E-02
Mg	2.946988E-03
Mn	5.133216E-02
Na	3.495131E-03
Ni	6.041076E+00
Si	3.563917E+01
Ti	5.834306E-02

--- Oxide Percentages ---

Oxide Theoretical rock

Total = 0.0000

Phase/end-member	d mol/d zi	d grams/d zi	d vol (cc)/d zi
Diaspore	5.1084E-02	3.0644E+00	9.0725E-01
Fluorapatite	1.7539E-05	8.8449E-03	8.7694E-03
Muscovite	1.0686E-02	4.2562E+00	1.5036E+00
Ni2SiO4	1.9400E-04	4.0636E-02	8.2663E-03
Pyrolusite	2.4836E-01	2.1591E+01	1.2418E+02
Quartz	2.5300E-04	1.5201E-02	5.7401E-03
Rutile	-5.0229E-05	-4.0122E-03	-9.4531E-04
fix CO2(g)	-7.0616E-04	-3.1078E-02	0.0000E+00
fix O2(g)	1.9725E-09	6.3118E-08	0.0000E+00
Smectite-di			
Beidellite-Ca	6.5785E-09	2.4114E-06	8.5211E-07
Beidellite-K	2.0096E-09	7.4927E-07	2.6868E-07
Beidellite-Mg	9.2765E-10	3.3763E-07	1.1428E-07

Beidellite-Na	3.1372E-09	1.1530E-06	4.0953E-07
Montmor-Ca	1.5888E-08	5.8156E-06	7.9438E-06
Montmor-K	5.2383E-09	1.9504E-06	2.6191E-06
Montmor-Mg	2.2591E-09	8.2105E-07	1.1296E-06
Montmor-Na	1.5928E-04	5.8458E-02	7.9640E-02
Nontronite-Ca	7.9905E-04	3.3903E-01	1.0476E-01
Nontronite-K	1.5252E-04	6.5670E-02	2.0631E-02
Nontronite-Mg	9.5650E-05	4.0335E-02	1.2412E-02
Nontronite-Na	0.0000E+00	0.0000E+00	0.0000E+00

--- Summary of Solid Phases (E.S.+P.R.S.) ---

Phase/End-member	Log moles	Moles	Mass, g	Volume, cc
Alunite	-2.5559	2.7801E-03	1.1516E+00	8.1624E-01
Diaspore	-1.6079	2.4665E-02	1.4796E+00	4.3806E-01
Fluorapatite	-4.0543	8.8250E-05	4.4505E-02	4.4125E-02
Hematite	-3.7144	1.9300E-04	3.0820E-02	5.8428E-03
Muscovite	-4.3434	4.5351E-05	1.8064E-02	6.3814E-03
Ni2SiO4	-2.2617	5.4744E-03	1.1467E+00	2.3326E-01
Nontronite-H	-4.9990	1.0023E-05	4.1899E-03	5.0117E-03
Pyrolusite	-3.1431	7.1929E-04	6.2533E-02	3.5965E-01
Quartz	-0.7883	1.6281E-01	9.7824E+00	3.6939E+00
Rutile	-3.7856	1.6383E-04	1.3087E-02	3.0833E-03
fix CO2(g)	2.3010	2.0000E+02	8.8020E+03	0.0000E+00
fix O2(g)	2.3010	2.0000E+02	6.3997E+03	0.0000E+00
Smectite-di	-3.2319	5.8623E-04		
Beidellite-Ca	-9.6337	2.3241E-10	8.5192E-08	3.0104E-08
Beidellite-K	-9.1683	6.7879E-10	2.5309E-07	9.0755E-08
Beidellite-Mg	-9.6192	2.4034E-10	8.7473E-08	2.9607E-08
Beidellite-Na	-9.9907	1.0216E-10	3.7546E-08	1.3335E-08
Montmor-Ca	-9.7998	1.5856E-10	5.8039E-08	7.9279E-08
Montmor-K	-9.1170	7.6376E-10	2.8437E-07	3.8188E-07
Montmor-Mg	-9.5749	2.6613E-10	9.6722E-08	1.3306E-07
Montmor-Na	-9.9529	1.1147E-10	4.0910E-08	5.5733E-08
Nontronite-Ca	-3.9420	1.1428E-04	4.8488E-02	1.4982E-02
Nontronite-K	-3.5155	3.0512E-04	1.3138E-01	4.1274E-02
Nontronite-Mg	-3.9258	1.1864E-04	5.0028E-02	1.5394E-02
Nontronite-Na	-4.3171	4.8187E-05	2.0492E-02	6.3660E-03

	Mass, grams	Volume, cc
Created	1.521568E+04	5.683531E+00
Destroyed	1.333075E+01	0.000000E+00
Net	1.520235E+04	5.683531E+00

Warning-- these volume totals may be incomplete because of missing partial molar volume data in the data base

--- Summary of Pure Mineral Saturation States ---

Mineral	Log Q/K	Aff, kcal	State
Albite	-3.299	-4.500	
Albite_high	-4.617	-6.299	
Albite_low	-3.299	-4.500	
Alunite	-3.437	-4.690	

Analcime	-3.293	-4.493	
Andalusite	-5.623	-7.671	
Anglesite	-4.855	-6.624	
Anhydrite	-1.400	-1.910	
Aragonite	-4.329	-5.906	
Arcanite	-4.678	-6.382	
BaCrO4	-3.392	-4.628	
BaZrO3	77.687	105.987	ssatd
Barite	-2.727	-3.720	
Bassanite	-2.045	-2.790	
Beidellite-Ca	-2.104	-2.870	
Beidellite-Cs	-4.446	-6.066	
Beidellite-H	-2.627	-3.585	
Beidellite-K	-1.949	-2.659	
Beidellite-Mg	-2.099	-2.864	
Beidellite-Na	-2.221	-3.030	
Berlinite	-5.315	-7.251	
Boehmite	-0.404	-0.551	
Boric_acid	-4.749	-6.479	
Bunsenite	-3.301	-4.504	
Ca2V2O7	-6.132	-8.366	
CaSO4:0.5H2O(beta)	-2.213	-3.019	
CaV2O6	-3.461	-4.722	
CaZrO3	138.709	189.238	ssatd
Calcite	-4.184	-5.709	
Carnotite	-6.906	-9.421	
Celadonite	-3.415	-4.658	
Celestite	-7.167	-9.778	
Cerussite	-6.128	-8.361	
Chalcedony	-0.271	-0.370	
Coesite	-0.810	-1.105	
Corundum	-3.991	-5.445	
CrO2	-5.208	-7.105	
Cristobalite(alpha)	-0.551	-0.751	
Cristobalite(beta)	-0.994	-1.356	
Crocoite	-0.617	-0.842	
Dawsonite	-4.197	-5.725	
Diaspore	0.000	0.000	satd
Enstatite	-6.549	-8.934	
Epsomite	-3.947	-5.385	
Fe(OH)3	-6.152	-8.393	
Fluorapatite	0.000	0.000	satd
Fluorite	-2.650	-3.616	
GdPO4:H2O	-4.607	-6.285	
Gibbsite	-0.596	-0.813	
Glauberite	-6.315	-8.615	
Goethite	-1.030	-1.406	
Gypsum	-1.225	-1.671	
Halite	-7.233	-9.868	
Hematite	-1.100	-1.500	
Heulandite	-7.292	-9.949	
Hexahydrite	-4.182	-5.706	
Ice	-0.139	-0.190	
Illite	-1.899	-2.591	
Jadeite	-4.924	-6.717	
K-Feldspar	-0.459	-0.627	
Kalsilite	-3.635	-4.959	
Kaolinite	-0.488	-0.666	
Kieserite	-5.640	-7.695	
Kyanite	-5.352	-7.302	
LaPO4:H2O	-4.164	-5.681	
Laumontite	-6.366	-8.685	
Lawsonite	-6.914	-9.432	

Lopezite	-4.980	-6.794	
Magnesite	-4.830	-6.589	
Manganite	-4.459	-6.084	
Maximum_Microcline	-0.459	-0.627	
Mesolite	-2.601	-3.548	
Mirabilite	-4.941	-6.741	
MnHPO4	-6.386	-8.712	
MnO2(gamma)	-1.518	-2.071	
Monohydrocalcite	-5.018	-6.846	
Montmor-Ca	-2.157	-2.943	
Montmor-Cs	-4.433	-6.047	
Montmor-K	-1.931	-2.635	
Montmor-Mg	-2.083	-2.841	
Montmor-Na	-2.207	-3.011	
Mordenite	-4.157	-5.672	
Morenosite	-3.502	-4.778	
Muscovite	0.000	0.000	satd
Nahcolite	-6.899	-9.412	
NdPO4:H2O	-4.436	-6.052	
Nepheline	-6.336	-8.644	
Ni(OH)2	-3.578	-4.882	
Ni2SiO4	0.000	0.000	satd
Ni3(PO4)2	-5.215	-7.115	
NiCO3	-5.655	-7.715	
NiSO4:6H2O(alpha)	-3.509	-4.787	
Niter	-5.794	-7.905	
Nontronite-Ca	-0.242	-0.331	
Nontronite-H	-0.766	-1.045	
Nontronite-K	-0.087	-0.119	
Nontronite-Mg	-0.238	-0.324	
Nontronite-Na	-0.360	-0.491	
Paragonite	-3.735	-5.096	
PbHPO4	-6.141	-8.378	
Pentahydrite	-4.521	-6.168	
Plattnerite	-6.031	-8.229	
PuO2	-2.804	-3.825	
Pyrolusite	0.000	0.000	satd
Pyrophyllite	-2.116	-2.887	
Quartz	0.000	0.000	satd
Rutile	0.000	0.000	satd
Sanidine_high	-1.659	-2.263	
Scolecite	-4.577	-6.244	
Sellaite	-3.504	-4.780	
Shcherbinaite	-5.454	-7.441	
SiO2(am)	-1.286	-1.754	
Sillimanite	-5.986	-8.167	
SmPO4:H2O	-4.450	-6.072	
SrZrO3	114.536	156.259	ssatd
Starkeyite	-4.908	-6.696	
Stilbite	-2.964	-4.044	
Sylvite	-6.694	-9.133	
Syngenite	-4.585	-6.256	
Tarapacaite	-6.702	-9.143	
Thenardite	-5.768	-7.870	
Trevorite	-1.608	-2.194	
Tridymite	-0.172	-0.234	
Witherite	-6.331	-8.637	
fix CO2(g)	0.000	0.000	satd
fix O2(g)	0.000	0.000	satd

--- Summary of Solid Solutions ---

--- Carbonate-Calcite ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Calcite	8.1551E-01	-0.0886	0.0000	-0.0886
Magnesite	1.8448E-01	-0.7341	0.0000	-0.7341
Rhodochrosite	2.1199E-07	-6.6737	0.0000	-6.6737
Siderite	7.6312E-16	-15.1174	0.0000	-15.1174
Smithsonite	2.0959E-06	-5.6786	0.0000	-5.6786
Strontianite	8.6315E-06	-5.0639	0.0000	-5.0639

Mineral	Log Q/K	Aff, kcal	State
Carbonate-Calcite	-4.096	-5.588	
Calcite	-4.096	-5.588	
Magnesite	-4.096	-5.588	
Rhodochrosite	-4.096	-5.588	
Siderite	-4.096	-5.588	
Smithsonite	-4.096	-5.588	
Strontianite	-4.096	-5.588	

--- Clinoptilolite-hy-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-hy-Ca	2.4845E-03	-2.6048	0.0000	-2.6048
Clinoptilolite-hy-Cs	1.7567E-26	-25.7553	0.0000	-25.7553
Clinoptilolite-hy-K	9.9676E-01	-0.0014	0.0000	-0.0014
Clinoptilolite-hy-Na	7.5748E-04	-3.1206	0.0000	-3.1206
Clinoptilolite-hy-Sr	1.4460E-15	-14.8398	0.0000	-14.8398

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-hy-ss	-8.252	-11.258	
Clinoptilolite-hy-Ca	-8.252	-11.258	
Clinoptilolite-hy-Cs	-8.252	-11.258	
Clinoptilolite-hy-K	-8.252	-11.258	
Clinoptilolite-hy-Na	-8.252	-11.258	
Clinoptilolite-hy-Sr	-8.252	-11.258	

--- Clinoptilolite-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-Ca	1.3607E-01	-0.8662	-2.1309	-2.9972
Clinoptilolite-Cs	2.7634E-08	-7.5586	-18.5941	-26.1526
Clinoptilolite-K	7.6743E-01	-0.1150	-0.2828	-0.3978
Clinoptilolite-NH4	5.0541E-61	-60.2964	-148.3290	-208.6254
Clinoptilolite-Na	9.6464E-02	-1.0156	-2.4985	-3.5141
Clinoptilolite-Sr	3.9630E-05	-4.4020	-10.8289	-15.2308

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-ss	-7.860	-10.724	
Clinoptilolite-Ca	-7.860	-10.724	
Clinoptilolite-Cs	-7.860	-10.724	
Clinoptilolite-K	-7.860	-10.724	
Clinoptilolite-NH4	-7.860	-10.724	
Clinoptilolite-Na	-7.860	-10.724	
Clinoptilolite-Sr	-7.860	-10.724	

--- Saponite-tri ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Saponite-Ca	1.8352E-01	-0.7363	0.4933	-0.2430
Saponite-H	4.7557E-03	-2.3228	1.5563	-0.7665
Saponite-K	5.4119E-01	-0.2666	0.1787	-0.0880
Saponite-Mg	1.8951E-01	-0.7224	0.4840	-0.2384
Saponite-Na	8.1023E-02	-1.0914	0.7312	-0.3602

Mineral	Log Q/K	Aff, kcal	State
Saponite-tri	-10.548	-14.391	
Saponite-Ca	-10.548	-14.391	
Saponite-H	-10.548	-14.391	
Saponite-K	-10.548	-14.391	
Saponite-Mg	-10.548	-14.391	
Saponite-Na	-10.548	-14.391	

--- Smectite-di ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Beidellite-Ca	4.2126E-07	-6.3755	4.2716	-2.1039
Beidellite-K	1.2431E-06	-5.9055	3.9567	-1.9488
Beidellite-Mg	4.3501E-07	-6.3615	4.2622	-2.0993
Beidellite-Na	1.8598E-07	-6.7305	4.5095	-2.2211
Montmor-Ca	2.9118E-07	-6.5358	4.3790	-2.1568
Montmor-K	1.4033E-06	-5.8528	3.9214	-1.9314
Montmor-Mg	4.8868E-07	-6.3110	4.2284	-2.0826
Montmor-Na	2.0474E-07	-6.6888	4.4815	-2.2073
Nontronite-Ca	1.8430E-01	-0.7345	0.4921	-0.2424
Nontronite-K	5.4388E-01	-0.2645	0.1772	-0.0873
Nontronite-Mg	1.9045E-01	-0.7202	0.4825	-0.2377
Nontronite-Na	8.1369E-02	-1.0895	0.7300	-0.3595

Mineral	Log Q/K	Aff, kcal	State
Smectite-di	0.000	0.000	satd
Beidellite-Ca	0.000	0.000	satd
Beidellite-K	0.000	0.000	satd
Beidellite-Mg	0.000	0.000	satd

Beidellite-Na	0.000	0.000	satd
Montmor-Ca	0.000	0.000	satd
Montmor-K	0.000	0.000	satd
Montmor-Mg	0.000	0.000	satd
Montmor-Na	0.000	0.000	satd
Nontronite-Ca	0.000	0.000	satd
Nontronite-K	0.000	0.000	satd
Nontronite-Mg	0.000	0.000	satd
Nontronite-Na	0.000	0.000	satd

--- Lanthanide hydroxide ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
La(OH)3	1.2921E-05	-4.8887	0.0000	-4.8887
Ce(OH)3	3.6556E-15	-14.4370	0.0000	-14.4370
Nd(OH)3(c)	3.4632E-01	-0.4605	0.0000	-0.4605
Gd(OH)3	5.8680E-01	-0.2315	0.0000	-0.2315
Sm(OH)3	6.6872E-02	-1.1748	0.0000	-1.1748

Mineral	Log Q/K	Aff, kcal	State
Lanthanide hydroxide	-12.271	-16.742	
La(OH)3	-12.271	-16.742	
Ce(OH)3	-12.271	-16.742	
Nd(OH)3(c)	-12.271	-16.742	
Gd(OH)3	-12.271	-16.742	
Sm(OH)3	-12.271	-16.742	

--- Rhabdophane-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaPO4:H2O	4.1441E-01	-0.3826	0.0000	-0.3826
CePO4:H2O	3.7076E-11	-10.4309	0.0000	-10.4309
NdPO4:H2O	2.2162E-01	-0.6544	0.0000	-0.6544
GdPO4:H2O	1.4949E-01	-0.8254	0.0000	-0.8254
SmPO4:H2O	2.1448E-01	-0.6686	0.0000	-0.6686

Mineral	Log Q/K	Aff, kcal	State
Rhabdophane-ss	-3.782	-5.159	
LaPO4:H2O	-3.782	-5.159	
CePO4:H2O	-3.782	-5.159	
NdPO4:H2O	-3.782	-5.159	
GdPO4:H2O	-3.782	-5.159	
SmPO4:H2O	-3.782	-5.159	

--- Lanthanide fluoride ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaF3:0.5H2O	5.7492E-01	-0.2404	0.0000	-0.2404
CeF3:0.5H2O	8.1522E-11	-10.0887	0.0000	-10.0887
NdF3:0.5H2O	3.8707E-01	-0.4122	0.0000	-0.4122
GdF3:0.5H2O	8.2566E-03	-2.0832	0.0000	-2.0832
SmF3:0.5H2O	2.9755E-02	-1.5264	0.0000	-1.5264

Mineral	Log Q/K	Aff, kcal	State
Lanthanide fluoride	-10.388	-14.172	
LaF3:0.5H2O	-10.388	-14.172	
CeF3:0.5H2O	-10.388	-14.172	
NdF3:0.5H2O	-10.388	-14.172	
GdF3:0.5H2O	-10.388	-14.172	
SmF3:0.5H2O	-10.388	-14.172	

--- Summary of Gases ---

Gas	Fugacity	Log fugacity
Al(g)	1.6471-191	-190.7833
B(g)	8.5592-204	-203.0676
BF3(g)	3.6444E-35	-34.4384
C(g)	3.0917-190	-189.5098
CH4(g)	3.5237-146	-145.4530
CO(g)	6.0395E-49	-48.2190
CO2(g)	3.1623E-04	-3.5000
Ca(g)	4.8778-155	-154.3118
Chlorine	2.0420E-25	-24.6899
Cs(g)	4.7766E-85	-84.3209
Cu(g)	1.3541E-84	-83.8683
Fluorine	6.7116E-80	-79.1732
H2(g)	6.1101E-42	-41.2140
H2O(g)	2.5957E-02	-1.5858
H2S(g)	1.3386-138	-137.8733
HCl(g)	5.5412E-17	-16.2564
HF(g)	1.1338E-12	-11.9455
K(g)	2.6012E-77	-76.5848
Li(g)	1.0566E-98	-97.9761
Mg(g)	2.0703-132	-131.6840
Nitrogen	1.5174E-16	-15.8189
NH3(g)	1.4185E-67	-66.8482
NO(g)	3.8788E-24	-23.4113
NO2(g)	2.6522E-18	-17.5764
Na(g)	2.1547E-76	-75.6666
O2(g)	2.0999E-01	-0.6778
Pb(g)	1.4293E-72	-71.8449
S2(g)	1.0702-219	-218.9705
SO2(g)	2.3720E-51	-50.6249
Si(g)	4.2257-221	-220.3741
SiF4(g)	7.2956E-33	-32.1369
Ti(g)	3.8019-231	-230.4200
TiCl4(g)	3.1632E-78	-77.4999
U(g)	1.4948-297	-296.8254
U2Cl10(g)	6.2229-229	-228.2060
U2Cl8(g)	9.4479-235	-234.0247
U2F10(g)	1.0598-142	-141.9748

```
UCl(g)                      7.3846-252   -251.1317
UCl2(g)                     1.0913-204   -203.9620
UCl3(g)                     3.5325-155   -154.4519
UCl4(g)                     6.1918-123   -122.2082
UCl5(g)                     5.5840-128   -127.2531
UCl6(g)                     9.3557-128   -127.0289
UF(g)                       3.2111-237   -236.4933
UF2(g)                      5.1159-195   -194.2911
UF3(g)                      2.0058-146   -145.6977
UF4(g)                      1.1608E-94    -93.9352
UF5(g)                      3.0769E-84    -83.5119
UF6(g)                      8.0312E-88    -87.0952
UO(g)                       1.1806-212   -211.9279
UO2(g)                      2.1872-128   -127.6601
UO2Cl2(g)                   1.9501E-72    -71.7099
UO2F2(g)                    6.6317E-61    -60.1784
UO3(g)                      1.6088E-75    -74.7935
UOF4(g)                     3.4590E-72    -71.4610
Zn(g)                       2.3804E-82    -81.6233



- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

--- shifting e.s. solid(s) to the p.r.s. (shftz) ---

      shifted -- Diaspore
              - old mass=  2.28846E-02, new mass=  2.28846E-04
      shifted -- Fluorapatite
              - old mass=  1.61097E-05, new mass=  8.00000E-07
      shifted -- Muscovite
              - old mass=  4.53512E-05, new mass=  8.00000E-07
      shifted -- Ni2SiO4
              - old mass=  5.47436E-03, new mass=  5.47436E-05
      shifted -- Pyrolusite
              - old mass=  8.81664E-05, new mass=  8.81664E-07
      shifted -- Quartz
              - old mass=  1.11121E-01, new mass=  1.11121E-03
      shifted -- Rutile
              - old mass=  1.14737E-04, new mass=  1.14737E-06
      shifted -- Smectite-di
              - old mass=  5.44140E-04, new mass=  5.44140E-06

Stepping to zi=  6.4755E-01, delzi=  1.0000E-09, nord= 0
  time =  6.2457E+03 d, dltime =  9.6451E-06 d
Steps completed =   232, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Muscovite               ) =     -6.0969

Stepping to zi=  6.4755E-01, delzi=  1.0000E-09, nord= 0
  time =  6.2457E+03 d, dltime =  9.6451E-06 d
Steps completed =   233, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Muscovite               ) =     -6.0969

Stepping to zi=  6.4755E-01, delzi=  1.0000E-09, nord= 0
  time =  6.2457E+03 d, dltime =  9.6451E-06 d
Steps completed =   234, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Muscovite               ) =     -6.0968

Stepping to zi=  6.4755E-01, delzi=  1.0000E-08, nord= 1
  time =  6.2457E+03 d, dltime =  9.6451E-05 d
Steps completed =   235, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Muscovite               ) =     -6.0966
```

- -

```
                    Reaction progress        =  6.47549316009944E-01
                    Log of reaction progress =      -0.1887272


                    Time =  5.396E+08 sec
                         =  6.246E+03 days
                         =  1.710E+01 years

                    Log sec =        8.732
                    Log days =       3.796
                    Log years =      1.233

                    Temperature    =     25.000 degrees C
                    total pressure =      1.013 bars


Flow-through system print following a discontinuity


     --- Summary of Instantaneously Precipitated Solid Phases ---
                 (defined by derivatives)

     --- Theoretical Rock Composition ---
                   g/kg

      O      4.868237E+01
      Al     6.604133E+00
      Ca     2.201796E-02
      F      1.420987E-03
      Fe     6.406932E-01
      H      7.414684E-02
      P      6.950054E-03
      K      7.108307E+00
      Mg     4.403240E-03
      Mn     5.067199E-02
      Na     3.569578E-03
      Ni     1.562877E+00
      Si     3.518084E+01
      Ti     5.759272E-02

      --- Oxide Percentages ---

   Oxide   Theoretical rock


    Total =     0.0000


   Phase/end-member     d mol/d zi    d grams/d zi   d vol (cc)/d zi

Diaspore                   -6.2989E-02  -3.7786E+00  -1.1187E+00
Fluorapatite                1.5732E-05   7.9336E-03   7.8659E-03
Muscovite                   3.8024E-02   1.5145E+01   5.3504E+00
Ni2SiO4                     2.8005E-03   5.8660E-01   1.1933E-01
Pyrolusite                  1.9400E-04   1.6866E-02   9.7000E-02
Quartz                      1.4217E-01   8.5421E+00   3.2255E+00
Rutile                      2.5300E-04   2.0209E-02   4.7615E-03
fix     CO2(g)              0.0000E+00   0.0000E+00   0.0000E+00
```

fix O2(g)	-7.1054E-04	-2.2737E-02	0.0000E+00
Smectite-di			
Beidellite-Ca	5.1353E-10	1.8824E-07	6.6517E-08
Beidellite-K	1.4999E-09	5.5923E-07	2.0053E-07
Beidellite-Mg	5.3002E-10	1.9291E-07	6.5293E-08
Beidellite-Na	2.2729E-10	8.3536E-08	2.9670E-08
Montmor-Ca	3.6189E-10	1.3247E-07	1.8095E-07
Montmor-K	1.7266E-09	6.4286E-07	8.6329E-07
Montmor-Mg	6.0705E-10	2.2063E-07	3.0352E-07
Montmor-Na	2.5509E-10	9.3623E-08	1.2755E-07
Nontronite-Ca	2.2359E-04	9.4869E-02	2.9313E-02
Nontronite-K	6.5301E-04	2.8118E-01	8.8333E-02
Nontronite-Mg	2.3093E-04	9.7382E-02	2.9966E-02
Nontronite-Na	9.8963E-05	4.2086E-02	1.3074E-02

--- Summary of Solid Phases (E.S.+P.R.S.) ---

Phase/End-member	Log moles	Moles	Mass, g	Volume, cc
Alunite	-2.5559	2.7801E-03	1.1516E+00	8.1624E-01
Diaspore	-1.6079	2.4665E-02	1.4796E+00	4.3806E-01
Fluorapatite	-4.0543	8.8250E-05	4.4505E-02	4.4125E-02
Hematite	-3.7144	1.9300E-04	3.0820E-02	5.8428E-03
Muscovite	-4.3434	4.5352E-05	1.8064E-02	6.3814E-03
Ni2SiO4	-2.2617	5.4744E-03	1.1467E+00	2.3326E-01
Nontronite-H	-4.9990	1.0023E-05	4.1899E-03	5.0117E-03
Pyrolusite	-3.1431	7.1929E-04	6.2533E-02	3.5965E-01
Quartz	-0.7883	1.6281E-01	9.7824E+00	3.6939E+00
Rutile	-3.7856	1.6383E-04	1.3087E-02	3.0833E-03
fix CO2(g)	2.3010	2.0000E+02	8.8020E+03	0.0000E+00
fix O2(g)	2.3010	2.0000E+02	6.3997E+03	0.0000E+00
Smectite-di	-3.2319	5.8623E-04		
Beidellite-Ca	-9.6337	2.3241E-10	8.5192E-08	3.0104E-08
Beidellite-K	-9.1683	6.7879E-10	2.5309E-07	9.0755E-08
Beidellite-Mg	-9.6192	2.4034E-10	8.7473E-08	2.9607E-08
Beidellite-Na	-9.9907	1.0216E-10	3.7546E-08	1.3335E-08
Montmor-Ca	-9.7998	1.5856E-10	5.8039E-08	7.9279E-08
Montmor-K	-9.1170	7.6376E-10	2.8437E-07	3.8188E-07
Montmor-Mg	-9.5749	2.6613E-10	9.6722E-08	1.3306E-07
Montmor-Na	-9.9529	1.1147E-10	4.0910E-08	5.5733E-08
Nontronite-Ca	-3.9420	1.1428E-04	4.8488E-02	1.4982E-02
Nontronite-K	-3.5155	3.0512E-04	1.3138E-01	4.1274E-02
Nontronite-Mg	-3.9258	1.1864E-04	5.0028E-02	1.5394E-02
Nontronite-Na	-4.3171	4.8187E-05	2.0492E-02	6.3660E-03

	Mass, grams	Volume, cc
Created	1.521568E+04	5.683532E+00
Destroyed	0.000000E+00	0.000000E+00
Net	1.521568E+04	5.683532E+00

Warning-- these volume totals may be incomplete because of missing partial molar volume data in the data base

- -

```
Stepping to zi=  6.4755E-01, delzi=  1.0000E-07, nord= 1
  time =  6.2457E+03 d, dltime =  9.6451E-04 d
Steps completed =   236, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Muscovite              ) =     -6.0946
--- shifting e.s. solid(s) to the p.r.s. (shftz) ---

      shifted -- Diaspore
              - old mass=  2.28839E-04, new mass=  2.28839E-06
      shifted -- Fluorapatite
              - old mass=  8.00002E-07, new mass=  8.00000E-07
      shifted -- Muscovite
              - old mass=  8.04297E-07, new mass=  8.00000E-07
      shifted -- Ni2SiO4
              - old mass=  5.47439E-05, new mass=  8.00000E-07
      shifted -- Pyrolusite
              - old mass=  8.81686E-07, new mass=  8.00000E-07
      shifted -- Quartz
              - old mass=  1.11123E-03, new mass=  1.11123E-05
      shifted -- Rutile
              - old mass=  1.14739E-06, new mass=  8.00000E-07
      shifted -- Smectite-di
              - old mass=  5.44154E-06, new mass=  8.00000E-07

Stepping to zi=  6.4755E-01, delzi=  1.0000E-09, nord= 0
  time =  6.2457E+03 d, dltime =  9.6451E-06 d
Steps completed =   237, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Muscovite              ) =     -6.0969

Stepping to zi=  6.4755E-01, delzi=  1.0000E-09, nord= 0
  time =  6.2457E+03 d, dltime =  9.6451E-06 d
Steps completed =   238, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Muscovite              ) =     -6.0969

Stepping to zi=  6.4755E-01, delzi=  1.0000E-09, nord= 0
  time =  6.2457E+03 d, dltime =  9.6451E-06 d
Steps completed =   239, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Muscovite              ) =     -6.0968

Stepping to zi=  6.4755E-01, delzi=  3.6328E-09, nord= 1
  time =  6.2457E+03 d, dltime =  3.5038E-05 d
Steps completed =   240, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Muscovite              ) =     -6.0968
--- shifting e.s. solid(s) to the p.r.s. (shftz) ---

      shifted -- Diaspore
              - old mass=  2.28797E-06, new mass=  8.00000E-07
      shifted -- Fluorapatite
              - old mass=  8.00000E-07, new mass=  8.00000E-07
      shifted -- Muscovite
              - old mass=  8.00252E-07, new mass=  8.00000E-07
      shifted -- Ni2SiO4
              - old mass=  8.00019E-07, new mass=  8.00000E-07
      shifted -- Pyrolusite
              - old mass=  8.00001E-07, new mass=  8.00000E-07
      shifted -- Quartz
              - old mass=  1.11132E-05, new mass=  8.00000E-07
      shifted -- Rutile
              - old mass=  8.00002E-07, new mass=  8.00000E-07
      shifted -- Smectite-di
              - old mass=  8.00008E-07, new mass=  8.00000E-07

Stepping to zi=  6.4755E-01, delzi=  1.0000E-09, nord= 0
```

```
  time =  6.2457E+03 d, dltime =  9.6451E-06 d
Steps completed =   241, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -6.0968

Stepping to zi=  6.4755E-01, delzi=  1.0000E-09, nord= 0
  time =  6.2457E+03 d, dltime =  9.6451E-06 d
Steps completed =   242, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -6.0968

Stepping to zi=  6.4755E-01, delzi=  1.0000E-09, nord= 0
  time =  6.2457E+03 d, dltime =  9.6451E-06 d
Steps completed =   243, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -6.0967

Stepping to zi=  6.4755E-01, delzi=  1.0000E-08, nord= 1
  time =  6.2457E+03 d, dltime =  9.6451E-05 d
Steps completed =   244, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -6.0959

Stepping to zi=  6.4755E-01, delzi=  1.0000E-07, nord= 1
  time =  6.2457E+03 d, dltime =  9.6451E-04 d
Steps completed =   245, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -6.0883

Stepping to zi=  6.4755E-01, delzi=  1.0000E-06, nord= 1
  time =  6.2457E+03 d, dltime =  9.6451E-03 d
Steps completed =   246, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -6.0185

Stepping to zi=  6.4756E-01, delzi=  1.0000E-05, nord= 1
  time =  6.2458E+03 d, dltime =  9.6451E-02 d
Steps completed =   247, iter =  9, ncorr = 0
Most rapidly changing is zvclg1(Diaspore                ) =     -6.9999

Stepping to zi=  6.4759E-01, delzi=  2.5000E-05, nord= 2
  time =  6.2460E+03 d, dltime =  2.4113E-01 d
--- Iteration has gone sour (iter=  16) ---
     The phase to be dropped is Diaspore                  (  192)


  Attempted species assemblage no.   2

            1      1  H2O
            2      3  Al+++
            3      7  B(OH)3(aq)
            4      8  Ba++
            5     11  Ca++
            6     13  Ce+++
            7     14  Cl-
            8     16  CrO4--
            9     17  Cs+
           10     18  Cu++
           11     22  F-
           12     23  Fe++
           13     25  Gd+++
           14     26  H+
           15     28  HCO3-
           16     29  HPO4--
           17     35  K+
           18     37  La+++
           19     38  Li+
           20     40  Mg++
           21     41  Mn++
```

```
            22     42  MoO4--
            23     43  NO3-
            24     44  Na+
            25     45  Nd+++
            26     47  Ni++
            27     49  Pb++
            28     52  Pu++++
            29     58  SO4--
            30     62  SiO2(aq)
            31     63  Sm+++
            32     65  Sr++
            33     69  Ti(OH)4(aq)
            34     72  UO2++
            35     73  VO++
            36     78  Zn++
            37     79  Zr(OH)2++
            38     80  O2(g)
            39    222  Fluorapatite
            40    368  Muscovite
            41    405  Ni2SiO4
            42    470  Pyrolusite
            43    475  Quartz
            44    482  Rutile
            45    689  fix     CO2(g)
            46    690  fix     O2(g)
            47      1  SmectiteBeidellite-Ca
            48      2  SmectiteBeidellite-K
            49      3  SmectiteBeidellite-Mg
            50      4  SmectiteBeidellite-Na
            51      5  SmectiteMontmor-Ca
            52      6  SmectiteMontmor-K
            53      7  SmectiteMontmor-Mg
            54      8  SmectiteMontmor-Na
            55      9  SmectiteNontronite-Ca
            56     10  SmectiteNontronite-K
            57     11  SmectiteNontronite-Mg
            58     12  SmectiteNontronite-Na

Steps completed =   248, iter =  9, ncorr = 0

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                    Reaction progress        =  6.47585535641693E-01
                    Log of reaction progress =      -0.1887029



                    Time =  5.397E+08 sec
                         =  6.246E+03 days
                         =  1.710E+01 years

                    Log sec =        8.732
                    Log days =       3.796
                    Log years =      1.233

                    Temperature    =     25.000 degrees C
                    total pressure =      1.013 bars


Change in the product phase assemblage
```

--- Reactant Summary ---

Reactant	Moles	Delta moles	Mass, g	Delta Mass, g
Tuff	9.9352E+01	6.4759E-01	2.0453E+03	1.3331E+01

Current total mass = 2.04532E+03 grams
Delta total mass = 1.33315E+01 grams
Delta total volume = 0.00000 cc

Reactant	Rel. Rate mol/mol	Rate mol/s	Rate mol/s/cm2
Tuff	1.0000E+00	1.2000E-09	2.5000E-15

Reactant	Affinity kcal/mol	Surface Area mol/s/cm2
Tuff	999.00000	4.8000E+05

Reactant	Rate Constants, mol/s/cm2	
Tuff		
	Forward	2.5000E-15

Affinity of the overall irreversible reaction= 0.000 kcal
Contributions from irreversible reactions
with no thermodynamic data are not included

--- Element Totals for the Aqueous Solution ---

Element	mg/kg soln.	Molality	Moles
O	8.865346E+05	5.558865E+01	5.555989E+01
Al	4.425994E-04	1.645653E-08	1.644802E-08
B	1.335665E-01	1.239441E-05	1.238800E-05
Ba	1.369577E-05	1.000518E-10	1.000000E-10
Ca	4.781816E+01	1.196963E-03	1.196344E-03
Ce	1.397381E-19	1.000517E-24	9.999993E-25
Cl	7.120974E+00	2.015042E-04	2.014000E-04
Cr	2.998230E+02	5.784799E-03	5.781806E-03
Cs	1.325480E-05	1.000518E-10	1.000000E-10
Cu	6.654388E-10	1.050543E-14	1.050000E-14
F	5.020970E-01	2.651336E-05	2.649964E-05
Fe	4.993855E-08	8.970780E-13	8.966139E-13
Gd	1.568271E-09	1.000517E-14	9.999998E-15
H	1.115427E+05	1.110198E+02	1.109624E+02
C	2.325714E-01	1.942546E-05	1.941541E-05
P	2.213286E-02	7.168655E-07	7.164947E-07
K	4.353371E+02	1.117023E-02	1.116445E-02
La	1.385320E-09	1.000517E-14	9.999998E-15
Li	6.922336E-07	1.000518E-10	1.000000E-10
Mg	2.118300E+01	8.743514E-04	8.738991E-04
Mn	1.793365E-07	3.274835E-12	3.273141E-12

Mo	2.180752E+02	2.280345E-03	2.279166E-03
N	1.983609E+00	1.420735E-04	1.420000E-04
Na	3.998484E+02	1.744837E-02	1.743934E-02
Nd	1.438521E-09	1.000517E-14	9.999998E-15
Ni	1.097987E+02	1.876839E-03	1.875869E-03
Pb	2.066428E-05	1.000518E-10	1.000000E-10
Pu	2.433438E-09	1.000517E-14	9.999997E-15
S	3.732695E+02	1.167809E-02	1.167205E-02
Si	2.804899E+00	1.001911E-04	1.001393E-04
Sm	1.499557E-09	1.000517E-14	9.999998E-15
Sr	8.738438E-06	1.000517E-10	1.000000E-10
Ti	1.078587E-05	2.259931E-10	2.258762E-10
U	2.373888E-09	1.000517E-14	9.999998E-15
V	4.771061E+00	9.395878E-05	9.391018E-05
Zn	6.521417E-06	1.000518E-10	1.000000E-10
Zr	9.097875E-16	1.000518E-20	1.000000E-20

Single ion activities and activity coefficients are here defined
with respect to the modified NBS pH scale

	pH	Eh	pe
modified NBS pH scale	6.1676	0.8542	1.4439E+01
rational pH scale	6.0941	0.8585	1.4513E+01

pHCl = 9.9509

Oxygen fugacity = 2.09991E-01
Log oxygen fugacity = -0.67780

Activity of water = 0.99919
Log activity of water = -0.00035

Ionic strength = 5.152612E-02 molal
Sum of molalities = 0.0509696613138
Osmotic coefficient = 0.88380

Mass of solution = 1.002696 kg
Mass of solutes = 0.003214 kg
Conc. of solutes = 0.320488 per cent (w/w)

Moles of solvent H2O = 5.54797E+01
Mass of solvent H2O = 9.99483E-01 kg

Species	Molality	Log molality	Log gamma	Log activity
Na+	1.6961E-02	-1.7706	-0.0934	-1.8640
K+	1.0818E-02	-1.9658	-0.0989	-2.0647
SO4--	9.8555E-03	-2.0063	-0.3432	-2.3495
HCrO4-	2.7035E-03	-2.5681	-0.0811	-2.6492
CrO4--	2.3288E-03	-2.6329	-0.3432	-2.9761
MoO4--	2.2803E-03	-2.6420	-0.3332	-2.9752
Ni++	1.4674E-03	-2.8334	-0.3309	-3.1643
Ca++	9.4244E-04	-3.0257	-0.3309	-3.3566
Mg++	5.5423E-04	-3.2563	-0.3009	-3.5572

NaSO4-	4.8714E-04	-3.3123	-0.0811	-3.3935
NiSO4(aq)	4.0913E-04	-3.3881	0.0000	-3.3881
Cr2O7--	3.7627E-04	-3.4245	-0.3432	-3.7677
KSO4-	3.5198E-04	-3.4535	-0.0811	-3.5346
MgSO4(aq)	3.1987E-04	-3.4950	0.0000	-3.4950
O2(aq)	2.6212E-04	-3.5815	0.0054	-3.5761
CaSO4(aq)	2.5407E-04	-3.5950	0.0000	-3.5950
Cl-	2.0101E-04	-3.6968	-0.0866	-3.7834
NO3-	1.4151E-04	-3.8492	-0.0866	-3.9358
SiO2(aq)	1.0016E-04	-3.9993	0.0000	-3.9993
H2VO4-	5.0450E-05	-4.2971	-0.0811	-4.3783
VO2(OH)2-	3.1265E-05	-4.5049	-0.0811	-4.5861
F-	2.6208E-05	-4.5816	-0.0838	-4.6654
B(OH)3(aq)	1.2381E-05	-4.9072	0.0000	-4.9072
VO3OH--	1.0894E-05	-4.9628	-0.3432	-5.3060
CO2(aq)	1.0609E-05	-4.9743	0.0054	-4.9689
HCO3-	8.6051E-06	-5.0652	-0.0811	-5.1464
HVO4--	1.1735E-06	-5.9305	-0.3432	-6.2737
H+	8.0520E-07	-6.0941	-0.0735	-6.1676
H2PO4-	5.8828E-07	-6.2304	-0.0811	-6.3116
NaCl(aq)	3.7639E-07	-6.4244	0.0000	-6.4244
HSO4-	3.4928E-07	-6.4568	-0.0811	-6.5380
CaNO3+	3.1694E-07	-6.4990	-0.0934	-6.5924
NiNO3+	2.4734E-07	-6.6067	-0.0934	-6.7001
VO(OH)3(aq)	1.7634E-07	-6.7536	0.0000	-6.7536
MgF+	1.6721E-07	-6.7767	-0.0934	-6.8702
NaHCO3(aq)	1.3923E-07	-6.8563	0.0000	-6.8563
HPO4--	9.8582E-08	-7.0062	-0.3432	-7.3494
CaF+	5.6642E-08	-7.2469	-0.0934	-7.3403
KCl(aq)	4.5426E-08	-7.3427	0.0000	-7.3427
CaHCO3+	4.3362E-08	-7.3629	-0.0934	-7.4563
MgCl+	4.1489E-08	-7.3821	-0.0934	-7.4755
NaF(aq)	2.9721E-08	-7.5269	0.0000	-7.5269
MgHCO3+	2.6639E-08	-7.5745	-0.0934	-7.6679
HF(aq)	2.1636E-08	-7.6648	0.0000	-7.6648
HSiO3-	1.9795E-08	-7.7034	-0.0811	-7.7846
CaCl+	1.8106E-08	-7.7422	-0.0934	-7.8356
OH-	1.8026E-08	-7.7441	-0.0838	-7.8279
NiCl+	1.4110E-08	-7.8505	-0.0934	-7.9439
BO2-	1.2500E-08	-7.9031	-0.0811	-7.9842
CaHPO4(aq)	1.0814E-08	-7.9660	0.0000	-7.9660
AlF2+	1.0496E-08	-7.9790	-0.0934	-8.0724
MgHPO4(aq)	1.0078E-08	-7.9966	0.0000	-7.9966
NaHSiO3(aq)	9.9984E-09	-8.0001	0.0000	-8.0001
NaHPO4-	6.1343E-09	-8.2122	-0.0811	-8.2934
KHPO4-	2.7992E-09	-8.5530	-0.0811	-8.6341
AlF3(aq)	2.3027E-09	-8.6378	0.0000	-8.6378
AlF++	2.2424E-09	-8.6493	-0.3578	-9.0070
CO3--	1.0607E-09	-8.9744	-0.3332	-9.3076
HAlO2(aq)	5.3381E-10	-9.2726	0.0000	-9.2726
CaCO3(aq)	4.6009E-10	-9.3372	0.0000	-9.3372
CaB(OH)4+	3.7546E-10	-9.4254	-0.0934	-9.5189
AlO2-	3.3550E-10	-9.4743	-0.0811	-9.5555
Al(OH)2+	3.1020E-10	-9.5084	-0.0934	-9.6018
VO2+	2.9711E-10	-9.5271	-0.0934	-9.6205
MgB(OH)4+	2.8150E-10	-9.5505	-0.0934	-9.6439
NaB(OH)4(aq)	2.6423E-10	-9.5780	0.0000	-9.5780
Ti(OH)4(aq)	2.2599E-10	-9.6459	0.0000	-9.6459
KHSO4(aq)	1.7053E-10	-9.7682	0.0000	-9.7682
AlOH++	1.6834E-10	-9.7738	-0.3578	-10.1316
MgCO3(aq)	1.3003E-10	-9.8859	0.0000	-9.8859
CaOH+	1.1324E-10	-9.9460	-0.0934	-10.0394
Cs+	1.0004E-10	-9.9998	-0.1019	-10.1017

--- Summary of Instantaneously Precipitated Solid Phases ---
(defined by derivatives)

--- Theoretical Rock Composition ---
g/kg

O	4.868195E+01
Al	6.604282E+00
Ca	2.198586E-02
F	1.421005E-03
Fe	6.407077E-01
H	7.414921E-02
P	6.950143E-03
K	7.108604E+00
Mg	4.384908E-03
Mn	5.067313E-02
Na	3.545766E-03
Ni	1.562897E+00
Si	3.518164E+01
Ti	5.759402E-02

--- Oxide Percentages ---

Oxide	Theoretical rock

Total = 0.0000

Phase/end-member	d mol/d zi	d grams/d zi	d vol (cc)/d zi
Fluorapatite	-6.2988E-02	-3.1765E+01	-3.1494E+01
Muscovite	1.5732E-05	6.2661E-03	2.2136E-03
Ni2SiO4	3.8024E-02	7.9647E+00	1.6202E+00
Pyrolusite	2.8005E-03	2.4347E-01	1.4002E+00
Quartz	1.9400E-04	1.1656E-02	4.4015E-03
Rutile	1.4217E-01	1.1356E+01	2.6756E+00
fix CO2(g)	2.5300E-04	1.1134E-02	0.0000E+00
fix O2(g)	-1.3610E-05	-4.3552E-04	0.0000E+00
Smectite-di			
Beidellite-Ca	-7.0693E-04	-2.5913E-01	-9.1569E-02
Beidellite-K	5.0911E-10	1.8982E-07	6.8068E-08
Beidellite-Mg	1.4999E-09	5.4589E-07	1.8477E-07
Beidellite-Na	5.2568E-10	1.9321E-07	6.8623E-08
Montmor-Ca	2.2486E-10	8.2310E-08	1.1243E-07
Montmor-K	3.5304E-10	1.3145E-07	1.7652E-07
Montmor-Mg	1.6986E-09	6.1734E-07	8.4930E-07
Montmor-Na	5.9244E-10	2.1743E-07	2.9622E-07
Nontronite-Ca	2.4834E-10	1.0537E-07	3.2558E-08
Nontronite-K	2.2256E-04	9.5831E-02	3.0106E-02
Nontronite-Mg	6.5567E-04	2.7649E-01	8.5080E-02
Nontronite-Na	2.2997E-04	9.7797E-02	3.0381E-02

--- Summary of Solid Phases (E.S.+P.R.S.) ---

Phase/End-member	Log moles	Moles	Mass, g	Volume, cc
Alunite	-2.5559	2.7801E-03	1.1516E+00	8.1624E-01
Diaspore	-1.6079	2.4665E-02	1.4796E+00	4.3804E-01
Fluorapatite	-4.0543	8.8250E-05	4.4505E-02	4.4125E-02

Hematite	-3.7144	1.9300E-04	3.0820E-02	5.8428E-03
Muscovite	-4.3350	4.6237E-05	1.8417E-02	6.5061E-03
Ni2SiO4	-2.2616	5.4746E-03	1.1467E+00	2.3327E-01
Nontronite-H	-4.9990	1.0023E-05	4.1899E-03	5.0117E-03
Pyrolusite	-3.1431	7.1930E-04	6.2534E-02	3.5965E-01
Quartz	-0.7883	1.6282E-01	9.7828E+00	3.6940E+00
Rutile	-3.7856	1.6384E-04	1.3087E-02	3.0835E-03
fix CO2(g)	2.3010	2.0000E+02	8.8020E+03	0.0000E+00
fix O2(g)	2.3010	2.0000E+02	6.3997E+03	0.0000E+00
Smectite-di	-3.2319	5.8627E-04		
Beidellite-Ca	-9.6337	2.3243E-10	8.5199E-08	3.0106E-08
Beidellite-K	-9.1682	6.7885E-10	2.5311E-07	9.0762E-08
Beidellite-Mg	-9.6191	2.4035E-10	8.7480E-08	2.9609E-08
Beidellite-Na	-9.9907	1.0216E-10	3.7549E-08	1.3337E-08
Montmor-Ca	-9.7998	1.5857E-10	5.8044E-08	7.9286E-08
Montmor-K	-9.1170	7.6382E-10	2.8440E-07	3.8191E-07
Montmor-Mg	-9.5749	2.6615E-10	9.6729E-08	1.3307E-07
Montmor-Na	-9.9528	1.1148E-10	4.0913E-08	5.5738E-08
Nontronite-Ca	-3.9420	1.1429E-04	4.8491E-02	1.4983E-02
Nontronite-K	-3.5155	3.0515E-04	1.3139E-01	4.1277E-02
Nontronite-Mg	-3.9258	1.1865E-04	5.0032E-02	1.5395E-02
Nontronite-Na	-4.3170	4.8191E-05	2.0494E-02	6.3665E-03

	Mass, grams	Volume, cc
Created	1.521568E+04	5.683808E+00
Destroyed	1.333150E+01	0.000000E+00
Net	1.520235E+04	5.683808E+00

Warning-- these volume totals may be incomplete because of missing partial molar volume data in the data base

--- Summary of Pure Mineral Saturation States ---

Mineral	Log Q/K	Aff, kcal	State
Albite	-3.299	-4.500	
Albite_high	-4.617	-6.299	
Albite_low	-3.299	-4.500	
Alunite	-3.438	-4.690	
Analcime	-3.293	-4.493	
Andalusite	-5.623	-7.671	
Anglesite	-4.855	-6.624	
Anhydrite	-1.400	-1.910	
Aragonite	-4.329	-5.905	
Arcanite	-4.678	-6.382	
BaCrO4	-3.392	-4.628	
BaZrO3	77.687	105.987	ssatd
Barite	-2.727	-3.720	
Bassanite	-2.045	-2.790	
Beidellite-Ca	-2.104	-2.870	
Beidellite-Cs	-4.446	-6.066	
Beidellite-H	-2.627	-3.585	
Beidellite-K	-1.949	-2.659	
Beidellite-Mg	-2.099	-2.864	
Beidellite-Na	-2.221	-3.030	
Berlinite	-5.315	-7.251	
Boehmite	-0.404	-0.551	

Boric_acid	-4.749	-6.479	
Bunsenite	-3.301	-4.504	
Ca2V2O7	-6.132	-8.366	
CaSO4:0.5H2O(beta)	-2.213	-3.019	
CaV2O6	-3.461	-4.722	
CaZrO3	138.709	189.238	ssatd
Calcite	-4.184	-5.708	
Carnotite	-6.906	-9.421	
Celadonite	-3.414	-4.658	
Celestite	-7.167	-9.778	
Cerussite	-6.128	-8.361	
Chalcedony	-0.271	-0.370	
Coesite	-0.810	-1.105	
Corundum	-3.991	-5.445	
CrO2	-5.208	-7.106	
Cristobalite(alpha)	-0.551	-0.751	
Cristobalite(beta)	-0.994	-1.356	
Crocoite	-0.617	-0.842	
Dawsonite	-4.196	-5.725	
Diaspore	0.000	0.000	
Enstatite	-6.549	-8.934	
Epsomite	-3.947	-5.385	
Fe(OH)3	-6.152	-8.393	
Fluorapatite	0.000	0.000	satd
Fluorite	-2.650	-3.616	
GdPO4:H2O	-4.607	-6.285	
Gibbsite	-0.596	-0.813	
Glauberite	-6.315	-8.615	
Goethite	-1.030	-1.406	
Gypsum	-1.225	-1.671	
Halite	-7.233	-9.868	
Hematite	-1.100	-1.500	
Heulandite	-7.292	-9.949	
Hexahydrite	-4.182	-5.705	
Ice	-0.139	-0.190	
Illite	-1.899	-2.591	
Jadeite	-4.924	-6.717	
K-Feldspar	-0.459	-0.627	
Kalsilite	-3.635	-4.959	
Kaolinite	-0.488	-0.666	
Kieserite	-5.640	-7.695	
Kyanite	-5.352	-7.302	
LaPO4:H2O	-4.164	-5.681	
Laumontite	-6.366	-8.685	
Lawsonite	-6.913	-9.432	
Lopezite	-4.980	-6.794	
Magnesite	-4.830	-6.589	
Manganite	-4.459	-6.084	
Maximum_Microcline	-0.459	-0.627	
Mesolite	-2.601	-3.548	
Mirabilite	-4.941	-6.741	
MnHPO4	-6.386	-8.712	
MnO2(gamma)	-1.518	-2.071	
Monohydrocalcite	-5.018	-6.846	
Montmor-Ca	-2.157	-2.942	
Montmor-Cs	-4.433	-6.047	
Montmor-K	-1.931	-2.635	
Montmor-Mg	-2.083	-2.841	
Montmor-Na	-2.207	-3.011	
Mordenite	-4.157	-5.672	
Morenosite	-3.502	-4.778	
Muscovite	0.000	0.000	satd
Nahcolite	-6.899	-9.412	

NdPO4:H2O	-4.436	-6.052	
Nepheline	-6.336	-8.644	
Ni(OH)2	-3.578	-4.882	
Ni2SiO4	0.000	0.000	satd
Ni3(PO4)2	-5.215	-7.115	
NiCO3	-5.655	-7.715	
NiSO4:6H2O(alpha)	-3.509	-4.787	
Niter	-5.794	-7.905	
Nontronite-Ca	-0.242	-0.331	
Nontronite-H	-0.766	-1.045	
Nontronite-K	-0.087	-0.119	
Nontronite-Mg	-0.238	-0.324	
Nontronite-Na	-0.360	-0.491	
Paragonite	-3.735	-5.096	
PbHPO4	-6.141	-8.378	
Pentahydrite	-4.521	-6.168	
Plattnerite	-6.031	-8.229	
PuO2	-2.804	-3.825	
Pyrolusite	0.000	0.000	satd
Pyrophyllite	-2.116	-2.887	
Quartz	0.000	0.000	satd
Rutile	0.000	0.000	satd
Sanidine_high	-1.659	-2.263	
Scolecite	-4.577	-6.244	
Sellaite	-3.504	-4.780	
Shcherbinaite	-5.454	-7.441	
SiO2(am)	-1.286	-1.754	
Sillimanite	-5.986	-8.167	
SmPO4:H2O	-4.450	-6.072	
SrZrO3	114.536	156.260	ssatd
Starkeyite	-4.908	-6.696	
Stilbite	-2.964	-4.044	
Sylvite	-6.694	-9.133	
Syngenite	-4.585	-6.256	
Tarapacaite	-6.702	-9.143	
Thenardite	-5.768	-7.870	
Trevorite	-1.608	-2.194	
Tridymite	-0.172	-0.234	
Witherite	-6.331	-8.637	
fix CO2(g)	0.000	0.000	satd
fix O2(g)	0.000	0.000	satd

--- Summary of Solid Solutions ---

--- Carbonate-Calcite ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Calcite	8.1551E-01	-0.0886	0.0000	-0.0886
Magnesite	1.8448E-01	-0.7341	0.0000	-0.7341
Rhodochrosite	2.1193E-07	-6.6738	0.0000	-6.6738
Siderite	7.6290E-16	-15.1175	0.0000	-15.1175
Smithsonite	2.0957E-06	-5.6787	0.0000	-5.6787
Strontianite	8.6310E-06	-5.0639	0.0000	-5.0639

Mineral	Log Q/K	Aff, kcal	State
Carbonate-Calcite	-4.096	-5.588	
Calcite	-4.096	-5.588	

Magnesite	-4.096	-5.588
Rhodochrosite	-4.096	-5.588
Siderite	-4.096	-5.588
Smithsonite	-4.096	-5.588
Strontianite	-4.096	-5.588

--- Clinoptilolite-hy-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-hy-Ca	2.4848E-03	-2.6047	0.0000	-2.6047
Clinoptilolite-hy-Cs	1.7568E-26	-25.7553	0.0000	-25.7553
Clinoptilolite-hy-K	9.9676E-01	-0.0014	0.0000	-0.0014
Clinoptilolite-hy-Na	7.5764E-04	-3.1205	0.0000	-3.1205
Clinoptilolite-hy-Sr	1.4460E-15	-14.8398	0.0000	-14.8398

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-hy-ss	-8.252	-11.258	
Clinoptilolite-hy-Ca	-8.252	-11.258	
Clinoptilolite-hy-Cs	-8.252	-11.258	
Clinoptilolite-hy-K	-8.252	-11.258	
Clinoptilolite-hy-Na	-8.252	-11.258	
Clinoptilolite-hy-Sr	-8.252	-11.258	

--- Clinoptilolite-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-Ca	1.3608E-01	-0.8662	-2.1309	-2.9971
Clinoptilolite-Cs	2.7634E-08	-7.5586	-18.5941	-26.1526
Clinoptilolite-K	7.6742E-01	-0.1150	-0.2828	-0.3978
Clinoptilolite-NH4	5.0530E-61	-60.2965	-148.3293	-208.6257
Clinoptilolite-Na	9.6468E-02	-1.0156	-2.4984	-3.5140
Clinoptilolite-Sr	3.9630E-05	-4.4020	-10.8289	-15.2308

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-ss	-7.860	-10.724	
Clinoptilolite-Ca	-7.860	-10.724	
Clinoptilolite-Cs	-7.860	-10.724	
Clinoptilolite-K	-7.860	-10.724	
Clinoptilolite-NH4	-7.860	-10.724	
Clinoptilolite-Na	-7.860	-10.724	
Clinoptilolite-Sr	-7.860	-10.724	

--- Saponite-tri ---

Ideal solution

Component	x	Log x	Log lambda	Log activity

Saponite-Ca	1.8352E-01	-0.7363	0.4933	-0.2430
Saponite-H	4.7552E-03	-2.3228	1.5563	-0.7665
Saponite-K	5.4118E-01	-0.2667	0.1787	-0.0880
Saponite-Mg	1.8951E-01	-0.7224	0.4840	-0.2384
Saponite-Na	8.1027E-02	-1.0914	0.7312	-0.3602

Mineral	Log Q/K	Aff, kcal	State
Saponite-tri	-10.548	-14.390	
Saponite-Ca	-10.548	-14.390	
Saponite-H	-10.548	-14.390	
Saponite-K	-10.548	-14.390	
Saponite-Mg	-10.548	-14.390	
Saponite-Na	-10.548	-14.390	

--- Smectite-di ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Beidellite-Ca	4.2122E-07	-6.3755	4.2716	-2.1039
Beidellite-K	1.2430E-06	-5.9055	3.9567	-1.9488
Beidellite-Mg	4.3497E-07	-6.3615	4.2622	-2.0993
Beidellite-Na	1.8597E-07	-6.7306	4.5095	-2.2211
Montmor-Ca	2.9125E-07	-6.5357	4.3789	-2.1568
Montmor-K	1.4036E-06	-5.8527	3.9213	-1.9314
Montmor-Mg	4.8879E-07	-6.3109	4.2283	-2.0826
Montmor-Na	2.0480E-07	-6.6887	4.4814	-2.2073
Nontronite-Ca	1.8430E-01	-0.7345	0.4921	-0.2424
Nontronite-K	5.4387E-01	-0.2645	0.1772	-0.0873
Nontronite-Mg	1.9045E-01	-0.7202	0.4825	-0.2377
Nontronite-Na	8.1372E-02	-1.0895	0.7300	-0.3595

Mineral	Log Q/K	Aff, kcal	State
Smectite-di	0.000	0.000	satd
Beidellite-Ca	0.000	0.000	satd
Beidellite-K	0.000	0.000	satd
Beidellite-Mg	0.000	0.000	satd
Beidellite-Na	0.000	0.000	satd
Montmor-Ca	0.000	0.000	satd
Montmor-K	0.000	0.000	satd
Montmor-Mg	0.000	0.000	satd
Montmor-Na	0.000	0.000	satd
Nontronite-Ca	0.000	0.000	satd
Nontronite-K	0.000	0.000	satd
Nontronite-Mg	0.000	0.000	satd
Nontronite-Na	0.000	0.000	satd

--- Lanthanide hydroxide ---

Ideal solution

Component	x	Log x	Log lambda	Log activity

La(OH)3	1.2921E-05	-4.8887	0.0000	-4.8887
Ce(OH)3	3.6556E-15	-14.4370	0.0000	-14.4370
Nd(OH)3(c)	3.4632E-01	-0.4605	0.0000	-0.4605
Gd(OH)3	5.8680E-01	-0.2315	0.0000	-0.2315
Sm(OH)3	6.6872E-02	-1.1748	0.0000	-1.1748

Mineral	Log Q/K	Aff, kcal	State
Lanthanide hydroxide	-12.271	-16.742	
La(OH)3	-12.271	-16.742	
Ce(OH)3	-12.271	-16.742	
Nd(OH)3(c)	-12.271	-16.742	
Gd(OH)3	-12.271	-16.742	
Sm(OH)3	-12.271	-16.742	

--- Rhabdophane-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaPO4:H2O	4.1441E-01	-0.3826	0.0000	-0.3826
CePO4:H2O	3.7076E-11	-10.4309	0.0000	-10.4309
NdPO4:H2O	2.2162E-01	-0.6544	0.0000	-0.6544
GdPO4:H2O	1.4949E-01	-0.8254	0.0000	-0.8254
SmPO4:H2O	2.1448E-01	-0.6686	0.0000	-0.6686

Mineral	Log Q/K	Aff, kcal	State
Rhabdophane-ss	-3.782	-5.159	
LaPO4:H2O	-3.782	-5.159	
CePO4:H2O	-3.782	-5.159	
NdPO4:H2O	-3.782	-5.159	
GdPO4:H2O	-3.782	-5.159	
SmPO4:H2O	-3.782	-5.159	

--- Lanthanide fluoride ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaF3:0.5H2O	5.7491E-01	-0.2404	0.0000	-0.2404
CeF3:0.5H2O	8.1522E-11	-10.0887	0.0000	-10.0887
NdF3:0.5H2O	3.8707E-01	-0.4122	0.0000	-0.4122
GdF3:0.5H2O	8.2566E-03	-2.0832	0.0000	-2.0832
SmF3:0.5H2O	2.9755E-02	-1.5264	0.0000	-1.5264

Mineral	Log Q/K	Aff, kcal	State
Lanthanide fluoride	-10.388	-14.172	
LaF3:0.5H2O	-10.388	-14.172	
CeF3:0.5H2O	-10.388	-14.172	
NdF3:0.5H2O	-10.388	-14.172	
GdF3:0.5H2O	-10.388	-14.172	
SmF3:0.5H2O	-10.388	-14.172	

--- Summary of Gases ---

Gas	Fugacity	Log fugacity
Al(g)	1.6471-191	-190.7833
B(g)	8.5592-204	-203.0676
BF3(g)	3.6430E-35	-34.4385
C(g)	3.0917-190	-189.5098
CH4(g)	3.5237-146	-145.4530
CO(g)	6.0395E-49	-48.2190
CO2(g)	3.1623E-04	-3.5000
Ca(g)	4.8791-155	-154.3117
Chlorine	2.0416E-25	-24.6900
Cs(g)	4.7771E-85	-84.3208
Cu(g)	1.3544E-84	-83.8683
Fluorine	6.7099E-80	-79.1733
H2(g)	6.1101E-42	-41.2140
H2O(g)	2.5957E-02	-1.5858
H2S(g)	1.3383-138	-137.8734
HCl(g)	5.5406E-17	-16.2564
HF(g)	1.1337E-12	-11.9455
K(g)	2.6015E-77	-76.5848
Li(g)	1.0567E-98	-97.9761
Mg(g)	2.0709-132	-131.6838
Nitrogen	1.5171E-16	-15.8190
NH3(g)	1.4183E-67	-66.8482
NO(g)	3.8784E-24	-23.4113
NO2(g)	2.6519E-18	-17.5764
Na(g)	2.1550E-76	-75.6665
O2(g)	2.0999E-01	-0.6778
Pb(g)	1.4296E-72	-71.8448
S2(g)	1.0697-219	-218.9707
SO2(g)	2.3715E-51	-50.6250
Si(g)	4.2257-221	-220.3741
SiF4(g)	7.2917E-33	-32.1372
Ti(g)	3.8019-231	-230.4200
TiCl4(g)	3.1618E-78	-77.5001
U(g)	1.4950-297	-296.8254
U2Cl10(g)	6.2171-229	-228.2064
U2Cl8(g)	9.4411-235	-234.0250
U2F10(g)	1.0586-142	-141.9753
UCl(g)	7.3843-252	-251.1317
UCl2(g)	1.0912-204	-203.9621
UCl3(g)	3.5316-155	-154.4520
UCl4(g)	6.1896-123	-122.2083
UCl5(g)	5.5814-128	-127.2533
UCl6(g)	9.3503-128	-127.0292
UF(g)	3.2110-237	-236.4934
UF2(g)	5.1150-195	-194.2912
UF3(g)	2.0052-146	-145.6979
UF4(g)	1.1603E-94	-93.9354
UF5(g)	3.0751E-84	-83.5121
UF6(g)	8.0255E-88	-87.0955
UO(g)	1.1807-212	-211.9279
UO2(g)	2.1874-128	-127.6601
UO2Cl2(g)	1.9498E-72	-71.7100
UO2F2(g)	6.6304E-61	-60.1785
UO3(g)	1.6089E-75	-74.7935
UOF4(g)	3.4575E-72	-71.4612

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Zn(g)                        2.3809E-82    -81.6233


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--- shifting e.s. solid(s) to the p.r.s. (shftz) ---

      shifted -- Fluorapatite
              - old mass=  8.00591E-07, new mass=  8.00000E-07
      shifted -- Muscovite
              - old mass=  1.68160E-06, new mass=  8.00000E-07
      shifted -- Ni2SiO4
              - old mass=  1.00307E-06, new mass=  8.00000E-07
      shifted -- Pyrolusite
              - old mass=  8.07006E-07, new mass=  8.00000E-07
      shifted -- Quartz
              - old mass=  7.30692E-06, new mass=  8.00000E-07
      shifted -- Rutile
              - old mass=  8.09137E-07, new mass=  8.00000E-07
      shifted -- Smectite-di
              - old mass=  8.43571E-07, new mass=  8.00000E-07

Stepping to zi=  6.4759E-01, delzi=  1.0000E-09, nord= 0
  time =  6.2460E+03 d, dltime =  9.6451E-06 d
Steps completed =   249, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -6.0968

Stepping to zi=  6.4759E-01, delzi=  1.0000E-09, nord= 0
  time =  6.2460E+03 d, dltime =  9.6451E-06 d
Steps completed =   250, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -6.0967

Stepping to zi=  6.4759E-01, delzi=  1.0000E-09, nord= 0
  time =  6.2460E+03 d, dltime =  9.6451E-06 d
Steps completed =   251, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -6.0966

Stepping to zi=  6.4759E-01, delzi=  1.0000E-08, nord= 1
  time =  6.2460E+03 d, dltime =  9.6451E-05 d
Steps completed =   252, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -6.0955

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                     Reaction progress        =  6.47585548641693E-01
                     Log of reaction progress =      -0.1887029



                     Time =  5.397E+08 sec
                          =  6.246E+03 days
                          =  1.710E+01 years

                     Log sec =        8.732
                     Log days =       3.796
                     Log years =      1.233

                     Temperature    =     25.000 degrees C
                     total pressure =      1.013 bars
```

Flow-through system print following a discontinuity

--- Summary of Instantaneously Precipitated Solid Phases ---
(defined by derivatives)

--- Theoretical Rock Composition ---
g/kg

O	4.968424E+01
Al	6.652961E+00
Ca	2.309849E-02
F	1.522104E-03
Fe	6.454286E-01
H	1.760557E-01
P	7.444617E-03
K	3.229239E+00
Mg	4.413915E-03
Mn	5.104651E-02
Na	3.569169E-03
Ni	4.022112E+00
Si	3.544085E+01
Ti	5.801839E-02

--- Oxide Percentages ---

Oxide Theoretical rock

Total = 0.0000

Phase/end-member	d mol/d zi	d grams/d zi	d vol (cc)/d zi
Fluorapatite	1.6728E-05	8.4358E-03	8.3638E-03
Muscovite	1.7028E-02	6.7824E+00	2.3960E+00
Ni2SiO4	7.1543E-03	1.4986E+00	3.0485E-01
Pyrolusite	1.9400E-04	1.6866E-02	9.7000E-02
Quartz	2.0080E-01	1.2065E+01	4.5558E+00
Rutile	2.5300E-04	2.0209E-02	4.7615E-03
fix CO2(g)	0.0000E+00	0.0000E+00	0.0000E+00
fix O2(g)	-8.8107E-04	-2.8193E-02	0.0000E+00
Smectite-di			
Beidellite-Ca	5.0642E-10	1.8563E-07	6.5596E-08
Beidellite-K	1.4940E-09	5.5704E-07	1.9975E-07
Beidellite-Mg	5.2291E-10	1.9032E-07	6.4417E-08
Beidellite-Na	2.2367E-10	8.2208E-08	2.9198E-08
Montmor-Ca	3.5291E-10	1.2918E-07	1.7646E-07
Montmor-K	1.7004E-09	6.3310E-07	8.5018E-07
Montmor-Mg	5.9224E-10	2.1524E-07	2.9612E-07
Montmor-Na	2.4825E-10	9.1113E-08	1.2413E-07
Nontronite-Ca	2.2239E-04	9.4360E-02	2.9156E-02
Nontronite-K	6.5609E-04	2.8250E-01	8.8749E-02
Nontronite-Mg	2.2979E-04	9.6902E-02	2.9818E-02
Nontronite-Na	9.8226E-05	4.1772E-02	1.2977E-02

--- Summary of Solid Phases (E.S.+P.R.S.) ---

Phase/End-member	Log moles	Moles	Mass, g	Volume, cc
Alunite	-2.5559	2.7801E-03	1.1516E+00	8.1624E-01

```
Diaspore                    -1.6079   2.4665E-02   1.4796E+00   4.3804E-01
Fluorapatite                -4.0543   8.8250E-05   4.4505E-02   4.4125E-02
Hematite                    -3.7144   1.9300E-04   3.0820E-02   5.8428E-03
Muscovite                   -4.3350   4.6238E-05   1.8417E-02   6.5061E-03
Ni2SiO4                     -2.2616   5.4746E-03   1.1467E+00   2.3327E-01
Nontronite-H                -4.9990   1.0023E-05   4.1899E-03   5.0117E-03
Pyrolusite                  -3.1431   7.1930E-04   6.2534E-02   3.5965E-01
Quartz                      -0.7883   1.6282E-01   9.7828E+00   3.6940E+00
Rutile                      -3.7856   1.6384E-04   1.3087E-02   3.0835E-03
fix     CO2(g)               2.3010   2.0000E+02   8.8020E+03   0.0000E+00
fix     O2(g)                2.3010   2.0000E+02   6.3997E+03   0.0000E+00

Smectite-di                 -3.2319   5.8627E-04
  Beidellite-Ca             -9.6337   2.3243E-10   8.5199E-08   3.0106E-08
  Beidellite-K              -9.1682   6.7885E-10   2.5311E-07   9.0762E-08
  Beidellite-Mg             -9.6191   2.4035E-10   8.7480E-08   2.9609E-08
  Beidellite-Na             -9.9907   1.0216E-10   3.7549E-08   1.3337E-08
  Montmor-Ca                -9.7998   1.5857E-10   5.8044E-08   7.9286E-08
  Montmor-K                 -9.1170   7.6382E-10   2.8440E-07   3.8191E-07
  Montmor-Mg                -9.5749   2.6615E-10   9.6729E-08   1.3307E-07
  Montmor-Na                -9.9528   1.1148E-10   4.0913E-08   5.5738E-08
  Nontronite-Ca             -3.9420   1.1429E-04   4.8491E-02   1.4983E-02
  Nontronite-K              -3.5155   3.0515E-04   1.3139E-01   4.1277E-02
  Nontronite-Mg             -3.9258   1.1865E-04   5.0032E-02   1.5395E-02
  Nontronite-Na             -4.3170   4.8191E-05   2.0494E-02   6.3665E-03


                         Mass, grams        Volume, cc

          Created        1.521568E+04       5.683808E+00
          Destroyed      0.000000E+00       0.000000E+00
          Net            1.521568E+04       5.683808E+00

         Warning-- these volume totals may be incomplete because
         of missing partial molar volume data in the data base




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Stepping to zi=  6.4759E-01, delzi=  1.0000E-07, nord= 1
  time =  6.2460E+03 d, dltime =  9.6451E-04 d
Steps completed =   253, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -6.0848

Stepping to zi=  6.4759E-01, delzi=  1.0000E-06, nord= 1
  time =  6.2460E+03 d, dltime =  9.6451E-03 d
Steps completed =   254, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -5.9899

Stepping to zi=  6.4760E-01, delzi=  1.0000E-05, nord= 2
  time =  6.2461E+03 d, dltime =  9.6451E-02 d
Steps completed =   255, iter =  8, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -5.5183

Stepping to zi=  6.4770E-01, delzi=  1.0000E-04, nord= 2
  time =  6.2471E+03 d, dltime =  9.6451E-01 d
Steps completed =   256, iter = 15, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -4.6362
```

```
Stepping to zi=  6.4800E-01, delzi=  3.0115E-04, nord= 3
  time =  6.2500E+03 d, dltime =  2.9046E+00 d
Steps completed =   257, iter =  8, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -4.0779

Stepping to zi=  6.4832E-01, delzi=  3.2144E-04, nord= 3
  time =  6.2531E+03 d, dltime =  3.1003E+00 d
Steps completed =   258, iter =  8, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -3.8293

Stepping to zi=  6.4896E-01, delzi=  6.4288E-04, nord= 3
  time =  6.2593E+03 d, dltime =  6.2006E+00 d
Steps completed =   259, iter =  8, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -3.5572

Stepping to zi=  6.5025E-01, delzi=  1.2858E-03, nord= 3
  time =  6.2717E+03 d, dltime =  1.2401E+01 d
Steps completed =   260, iter =  7, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -3.2713

Stepping to zi=  6.5282E-01, delzi=  2.5715E-03, nord= 3
  time =  6.2965E+03 d, dltime =  2.4803E+01 d
Steps completed =   261, iter = 11, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -2.9780

Stepping to zi=  6.5796E-01, delzi=  5.1431E-03, nord= 3
  time =  6.3461E+03 d, dltime =  4.9605E+01 d
Steps completed =   262, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -2.6809

Stepping to zi=  6.6825E-01, delzi=  1.0286E-02, nord= 4
  time =  6.4453E+03 d, dltime =  9.9210E+01 d
Steps completed =   263, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Montmor-Na              ) =    -11.2117

Stepping to zi=  6.8882E-01, delzi=  2.0572E-02, nord= 4
  time =  6.6437E+03 d, dltime =  1.9842E+02 d
Steps completed =   264, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Montmor-Na              ) =    -10.8455

Stepping to zi=  7.2885E-01, delzi=  4.0032E-02, nord= 6
  time =  7.0298E+03 d, dltime =  3.8611E+02 d
Steps completed =   265, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Montmor-Na              ) =    -10.3845

Stepping to zi=  7.7095E-01, delzi=  4.2100E-02, nord= 6
  time =  7.4359E+03 d, dltime =  4.0606E+02 d
Steps completed =   266, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Al+++                   ) =    -11.8552

Stepping to zi=  8.0808E-01, delzi=  3.7128E-02, nord= 6
  time =  7.7940E+03 d, dltime =  3.5810E+02 d
Steps completed =   267, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Al+++                   ) =    -12.6433

Stepping to zi=  8.1487E-01, delzi=  6.7943E-03, nord= 6
  time =  7.8595E+03 d, dltime =  6.5532E+01 d
Steps completed =   268, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(VO++                    ) =    -21.2036

Stepping to zi=  8.1797E-01, delzi=  3.0938E-03, nord= 5
  time =  7.8894E+03 d, dltime =  2.9839E+01 d
iter =    8
```

```
      2 supersaturated pure minerals
      0 supersaturated solid solutions

               The most supersaturated phases          Affinity, kcal

                 1     323   Maximum_Microcline           0.01121478
                 2     273   K-Feldspar                   0.01121478
--- Go back to reduce the extent of supersaturation ---
--- Cutting step size and trying again ---

Stepping to zi=  8.1565E-01, delzi=  7.7344E-04, nord= 5
  time =  7.8670E+03 d, dltime =  7.4599E+00 d
Steps completed =   269, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(VO++                    ) =    -21.2292

Stepping to zi=  8.1719E-01, delzi=  1.5469E-03, nord= 3
  time =  7.8819E+03 d, dltime =  1.4920E+01 d
Steps completed =   270, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(VO++                    ) =    -21.2817

Stepping to zi=  8.1777E-01, delzi=  5.8008E-04, nord= 4
  time =  7.8875E+03 d, dltime =  5.5949E+00 d
iter =    3
      2 supersaturated pure minerals
      0 supersaturated solid solutions

               The most supersaturated phases          Affinity, kcal

                 1     323   Maximum_Microcline           0.00938072
                 2     273   K-Feldspar                   0.00938072


  Attempted species assemblage no.   2

            1      1  H2O
            2      3  Al+++
            3      7  B(OH)3(aq)
            4      8  Ba++
            5     11  Ca++
            6     13  Ce+++
            7     14  Cl-
            8     16  CrO4--
            9     17  Cs+
           10     18  Cu++
           11     22  F-
           12     23  Fe++
           13     25  Gd+++
           14     26  H+
           15     28  HCO3-
           16     29  HPO4--
           17     35  K+
           18     37  La+++
           19     38  Li+
           20     40  Mg++
           21     41  Mn++
           22     42  MoO4--
           23     43  NO3-
           24     44  Na+
           25     45  Nd+++
           26     47  Ni++
           27     49  Pb++
           28     52  Pu++++
           29     58  SO4--
```

```
 30     62  SiO2(aq)
 31     63  Sm+++
 32     65  Sr++
 33     69  Ti(OH)4(aq)
 34     72  UO2++
 35     73  VO++
 36     78  Zn++
 37     79  Zr(OH)2++
 38     80  O2(g)
 39    222  Fluorapatite
 40    323  Maximum_Microcline
 41    368  Muscovite
 42    405  Ni2SiO4
 43    470  Pyrolusite
 44    475  Quartz
 45    482  Rutile
 46    689  fix     CO2(g)
 47    690  fix     O2(g)
 48      1  SmectiteBeidellite-Ca
 49      2  SmectiteBeidellite-K
 50      3  SmectiteBeidellite-Mg
 51      4  SmectiteBeidellite-Na
 52      5  SmectiteMontmor-Ca
 53      6  SmectiteMontmor-K
 54      7  SmectiteMontmor-Mg
 55      8  SmectiteMontmor-Na
 56      9  SmectiteNontronite-Ca
 57     10  SmectiteNontronite-K
 58     11  SmectiteNontronite-Mg
 59     12  SmectiteNontronite-Na

--- Some of Muscovite                was unexpectedly destroyed in eqcalc ---
     Previous mass was  2.88890E-03
     Current mass is    2.88318E-03
     Amount destroyed was  5.71448E-06
                    That's too much--go back and first do a P.R.S. transfer
--- shifting e.s. solid(s) to the p.r.s. (shftz) ---

      shifted -- Fluorapatite
              - old mass=  3.48479E-06, new mass=  8.00000E-07
      shifted -- Muscovite
              - old mass=  2.88890E-03, new mass=  2.88890E-05
      shifted -- Ni2SiO4
              - old mass=  8.95014E-04, new mass=  8.95014E-06
      shifted -- Pyrolusite
              - old mass=  3.37042E-05, new mass=  8.00000E-07
      shifted -- Quartz
              - old mass=  3.43781E-02, new mass=  3.43781E-04
      shifted -- Rutile
              - old mass=  4.37111E-05, new mass=  8.00000E-07
      shifted -- Smectite-di
              - old mass=  2.05438E-04, new mass=  2.05438E-06

Stepping to zi=  8.1734E-01, delzi=  1.4502E-04, nord= 4
  time =  7.8833E+03 d, dltime =  1.3987E+00 d
iter =    3
      2 supersaturated pure minerals
      0 supersaturated solid solutions

               The most supersaturated phases           Affinity, kcal

                 1     323   Maximum_Microcline            0.00528149
                 2     273   K-Feldspar                    0.00528149
```

Attempted species assemblage no. 2

1	1	H2O
2	3	Al+++
3	7	B(OH)3(aq)
4	8	Ba++
5	11	Ca++
6	13	Ce+++
7	14	Cl-
8	16	CrO4--
9	17	Cs+
10	18	Cu++
11	22	F-
12	23	Fe++
13	25	Gd+++
14	26	H+
15	28	HCO3-
16	29	HPO4--
17	35	K+
18	37	La+++
19	38	Li+
20	40	Mg++
21	41	Mn++
22	42	MoO4--
23	43	NO3-
24	44	Na+
25	45	Nd+++
26	47	Ni++
27	49	Pb++
28	52	Pu++++
29	58	SO4--
30	62	SiO2(aq)
31	63	Sm+++
32	65	Sr++
33	69	Ti(OH)4(aq)
34	72	UO2++
35	73	VO++
36	78	Zn++
37	79	Zr(OH)2++
38	80	O2(g)
39	222	Fluorapatite
40	323	Maximum_Microcline
41	368	Muscovite
42	405	Ni2SiO4
43	470	Pyrolusite
44	475	Quartz
45	482	Rutile
46	689	fix CO2(g)
47	690	fix O2(g)
48	1	SmectiteBeidellite-Ca
49	2	SmectiteBeidellite-K
50	3	SmectiteBeidellite-Mg
51	4	SmectiteBeidellite-Na
52	5	SmectiteMontmor-Ca
53	6	SmectiteMontmor-K
54	7	SmectiteMontmor-Mg
55	8	SmectiteMontmor-Na
56	9	SmectiteNontronite-Ca
57	10	SmectiteNontronite-K
58	11	SmectiteNontronite-Mg
59	12	SmectiteNontronite-Na

```
--- Some of Muscovite                was unexpectedly destroyed in eqcalc ---
     Previous mass was  2.88890E-05
     Current mass is    2.25407E-05
     Amount destroyed was  6.34827E-06
                    That's too much--go back and first do a P.R.S. transfer
--- Some of Quartz                   was unexpectedly destroyed in eqcalc ---
     Previous mass was  3.43781E-04
     Current mass is    3.21784E-04
     Amount destroyed was  2.19967E-05
                    That's too much--go back and first do a P.R.S. transfer
--- shifting e.s. solid(s) to the p.r.s. (shftz) ---

  not shifted -- Fluorapatite
              - mass=  8.00000E-07
      shifted -- Muscovite
              - old mass=  2.88890E-05, new mass=  8.00000E-07
      shifted -- Ni2SiO4
              - old mass=  8.95014E-06, new mass=  8.00000E-07
  not shifted -- Pyrolusite
              - mass=  8.00000E-07
      shifted -- Quartz
              - old mass=  3.43781E-04, new mass=  3.43781E-06
  not shifted -- Rutile
              - mass=  8.00000E-07
      shifted -- Smectite-di
              - old mass=  2.05438E-06, new mass=  8.00000E-07

Stepping to zi=  8.1723E-01, delzi=  3.6255E-05, nord= 4
  time =  7.8822E+03 d, dltime =  3.4968E-01 d
Steps completed =   271, iter =  9, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -4.9624

Stepping to zi=  8.1730E-01, delzi=  7.2510E-05, nord= 2
  time =  7.8829E+03 d, dltime =  6.9936E-01 d
Steps completed =   272, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -4.5878

Stepping to zi=  8.1745E-01, delzi=  1.4502E-04, nord= 3
  time =  7.8843E+03 d, dltime =  1.3987E+00 d
iter =    7
      2 supersaturated pure minerals
      0 supersaturated solid solutions

               The most supersaturated phases           Affinity, kcal

                 1     323   Maximum_Microcline            0.00630273
                 2     273   K-Feldspar                    0.00630273


  Attempted species assemblage no.   2

            1      1  H2O
            2      3  Al+++
            3      7  B(OH)3(aq)
            4      8  Ba++
            5     11  Ca++
            6     13  Ce+++
            7     14  Cl-
            8     16  CrO4--
            9     17  Cs+
           10     18  Cu++
           11     22  F-
```

```
          12     23  Fe++
          13     25  Gd+++
          14     26  H+
          15     28  HCO3-
          16     29  HPO4--
          17     35  K+
          18     37  La+++
          19     38  Li+
          20     40  Mg++
          21     41  Mn++
          22     42  MoO4--
          23     43  NO3-
          24     44  Na+
          25     45  Nd+++
          26     47  Ni++
          27     49  Pb++
          28     52  Pu++++
          29     58  SO4--
          30     62  SiO2(aq)
          31     63  Sm+++
          32     65  Sr++
          33     69  Ti(OH)4(aq)
          34     72  UO2++
          35     73  VO++
          36     78  Zn++
          37     79  Zr(OH)2++
          38     80  O2(g)
          39    222  Fluorapatite
          40    323  Maximum_Microcline
          41    368  Muscovite
          42    405  Ni2SiO4
          43    470  Pyrolusite
          44    475  Quartz
          45    482  Rutile
          46    689  fix     CO2(g)
          47    690  fix     O2(g)
          48      1  SmectiteBeidellite-Ca
          49      2  SmectiteBeidellite-K
          50      3  SmectiteBeidellite-Mg
          51      4  SmectiteBeidellite-Na
          52      5  SmectiteMontmor-Ca
          53      6  SmectiteMontmor-K
          54      7  SmectiteMontmor-Mg
          55      8  SmectiteMontmor-Na
          56      9  SmectiteNontronite-Ca
          57     10  SmectiteNontronite-K
          58     11  SmectiteNontronite-Mg
          59     12  SmectiteNontronite-Na

--- Iteration has gone sour (iter=  16) ---
     The phase to be dropped is Muscovite                  (  368)


  Attempted species assemblage no.   3

           1      1  H2O
           2      3  Al+++
           3      7  B(OH)3(aq)
           4      8  Ba++
           5     11  Ca++
           6     13  Ce+++
           7     14  Cl-
           8     16  CrO4--
```

```
  9     17  Cs+
 10     18  Cu++
 11     22  F-
 12     23  Fe++
 13     25  Gd+++
 14     26  H+
 15     28  HCO3-
 16     29  HPO4--
 17     35  K+
 18     37  La+++
 19     38  Li+
 20     40  Mg++
 21     41  Mn++
 22     42  MoO4--
 23     43  NO3-
 24     44  Na+
 25     45  Nd+++
 26     47  Ni++
 27     49  Pb++
 28     52  Pu++++
 29     58  SO4--
 30     62  SiO2(aq)
 31     63  Sm+++
 32     65  Sr++
 33     69  Ti(OH)4(aq)
 34     72  UO2++
 35     73  VO++
 36     78  Zn++
 37     79  Zr(OH)2++
 38     80  O2(g)
 39    222  Fluorapatite
 40    323  Maximum_Microcline
 41    405  Ni2SiO4
 42    470  Pyrolusite
 43    475  Quartz
 44    482  Rutile
 45    689  fix     CO2(g)
 46    690  fix     O2(g)
 47      1  SmectiteBeidellite-Ca
 48      2  SmectiteBeidellite-K
 49      3  SmectiteBeidellite-Mg
 50      4  SmectiteBeidellite-Na
 51      5  SmectiteMontmor-Ca
 52      6  SmectiteMontmor-K
 53      7  SmectiteMontmor-Mg
 54      8  SmectiteMontmor-Na
 55      9  SmectiteNontronite-Ca
 56     10  SmectiteNontronite-K
 57     11  SmectiteNontronite-Mg
 58     12  SmectiteNontronite-Na

--- Some of Muscovite                was unexpectedly destroyed in eqcalc ---
     Previous mass was  2.65204E-06
     Current mass is    0.00000E+00
     Amount destroyed was  2.65204E-06
                    That's too much--go back and first do a P.R.S. transfer
--- shifting e.s. solid(s) to the p.r.s. (shftz) ---

      shifted -- Fluorapatite
              - old mass=  8.01629E-07, new mass=  8.00000E-07
      shifted -- Muscovite
              - old mass=  2.65204E-06, new mass=  8.00000E-07
      shifted -- Ni2SiO4
```

```
            - old mass=  1.02146E-06, new mass=  8.00000E-07
      shifted -- Pyrolusite
            - old mass=  8.21100E-07, new mass=  8.00000E-07
      shifted -- Quartz
            - old mass=  2.58345E-05, new mass=  8.00000E-07
      shifted -- Rutile
            - old mass=  8.27517E-07, new mass=  8.00000E-07
      shifted -- Smectite-di
            - old mass=  9.31228E-07, new mass=  8.00000E-07

Stepping to zi=  8.1734E-01, delzi=  3.6255E-05, nord= 3
  time =  7.8833E+03 d, dltime =  3.4968E-01 d
iter =   13
      2 supersaturated pure minerals
      0 supersaturated solid solutions

               The most supersaturated phases          Affinity, kcal

                 1     323   Maximum_Microcline            0.00528149
                 2     273   K-Feldspar                    0.00528149


  Attempted species assemblage no.   2

            1      1  H2O
            2      3  Al+++
            3      7  B(OH)3(aq)
            4      8  Ba++
            5     11  Ca++
            6     13  Ce+++
            7     14  Cl-
            8     16  CrO4--
            9     17  Cs+
           10     18  Cu++
           11     22  F-
           12     23  Fe++
           13     25  Gd+++
           14     26  H+
           15     28  HCO3-
           16     29  HPO4--
           17     35  K+
           18     37  La+++
           19     38  Li+
           20     40  Mg++
           21     41  Mn++
           22     42  MoO4--
           23     43  NO3-
           24     44  Na+
           25     45  Nd+++
           26     47  Ni++
           27     49  Pb++
           28     52  Pu++++
           29     58  SO4--
           30     62  SiO2(aq)
           31     63  Sm+++
           32     65  Sr++
           33     69  Ti(OH)4(aq)
           34     72  UO2++
           35     73  VO++
           36     78  Zn++
           37     79  Zr(OH)2++
           38     80  O2(g)
           39    222  Fluorapatite
```

```
 40    323  Maximum_Microcline
 41    368  Muscovite
 42    405  Ni2SiO4
 43    470  Pyrolusite
 44    475  Quartz
 45    482  Rutile
 46    689  fix     CO2(g)
 47    690  fix     O2(g)
 48      1  SmectiteBeidellite-Ca
 49      2  SmectiteBeidellite-K
 50      3  SmectiteBeidellite-Mg
 51      4  SmectiteBeidellite-Na
 52      5  SmectiteMontmor-Ca
 53      6  SmectiteMontmor-K
 54      7  SmectiteMontmor-Mg
 55      8  SmectiteMontmor-Na
 56      9  SmectiteNontronite-Ca
 57     10  SmectiteNontronite-K
 58     11  SmectiteNontronite-Mg
 59     12  SmectiteNontronite-Na

--- Iteration has gone sour (iter=  16) ---
     The phase to be dropped is Quartz                    (  475)


  Attempted species assemblage no.   3

  1      1  H2O
  2      3  Al+++
  3      7  B(OH)3(aq)
  4      8  Ba++
  5     11  Ca++
  6     13  Ce+++
  7     14  Cl-
  8     16  CrO4--
  9     17  Cs+
 10     18  Cu++
 11     22  F-
 12     23  Fe++
 13     25  Gd+++
 14     26  H+
 15     28  HCO3-
 16     29  HPO4--
 17     35  K+
 18     37  La+++
 19     38  Li+
 20     40  Mg++
 21     41  Mn++
 22     42  MoO4--
 23     43  NO3-
 24     44  Na+
 25     45  Nd+++
 26     47  Ni++
 27     49  Pb++
 28     52  Pu++++
 29     58  SO4--
 30     62  SiO2(aq)
 31     63  Sm+++
 32     65  Sr++
 33     69  Ti(OH)4(aq)
 34     72  UO2++
 35     73  VO++
 36     78  Zn++
```

```
 37     79  Zr(OH)2++
 38     80  O2(g)
 39    222  Fluorapatite
 40    323  Maximum_Microcline
 41    368  Muscovite
 42    405  Ni2SiO4
 43    470  Pyrolusite
 44    482  Rutile
 45    689  fix     CO2(g)
 46    690  fix     O2(g)
 47      1  SmectiteBeidellite-Ca
 48      2  SmectiteBeidellite-K
 49      3  SmectiteBeidellite-Mg
 50      4  SmectiteBeidellite-Na
 51      5  SmectiteMontmor-Ca
 52      6  SmectiteMontmor-K
 53      7  SmectiteMontmor-Mg
 54      8  SmectiteMontmor-Na
 55      9  SmectiteNontronite-Ca
 56     10  SmectiteNontronite-K
 57     11  SmectiteNontronite-Mg
 58     12  SmectiteNontronite-Na

--- Iteration has gone sour (iter=  17) ---
     The phase to be dropped is Muscovite                 (  368)


  Attempted species assemblage no.   4

  1      1  H2O
  2      3  Al+++
  3      7  B(OH)3(aq)
  4      8  Ba++
  5     11  Ca++
  6     13  Ce+++
  7     14  Cl-
  8     16  CrO4--
  9     17  Cs+
 10     18  Cu++
 11     22  F-
 12     23  Fe++
 13     25  Gd+++
 14     26  H+
 15     28  HCO3-
 16     29  HPO4--
 17     35  K+
 18     37  La+++
 19     38  Li+
 20     40  Mg++
 21     41  Mn++
 22     42  MoO4--
 23     43  NO3-
 24     44  Na+
 25     45  Nd+++
 26     47  Ni++
 27     49  Pb++
 28     52  Pu++++
 29     58  SO4--
 30     62  SiO2(aq)
 31     63  Sm+++
 32     65  Sr++
 33     69  Ti(OH)4(aq)
 34     72  UO2++
```

```
35     73  VO++
36     78  Zn++
37     79  Zr(OH)2++
38     80  O2(g)
39    222  Fluorapatite
40    323  Maximum_Microcline
41    405  Ni2SiO4
42    470  Pyrolusite
43    482  Rutile
44    689  fix     CO2(g)
45    690  fix     O2(g)
46      1  SmectiteBeidellite-Ca
47      2  SmectiteBeidellite-K
48      3  SmectiteBeidellite-Mg
49      4  SmectiteBeidellite-Na
50      5  SmectiteMontmor-Ca
51      6  SmectiteMontmor-K
52      7  SmectiteMontmor-Mg
53      8  SmectiteMontmor-Na
54      9  SmectiteNontronite-Ca
55     10  SmectiteNontronite-K
56     11  SmectiteNontronite-Mg
57     12  SmectiteNontronite-Na

Steps completed =   273, iter = 11, ncorr = 0

- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -


                    Reaction progress        =  8.17339698596051E-01
                    Log of reaction progress =      -0.0875974



                    Time =  6.811E+08 sec
                         =  7.883E+03 days
                         =  2.158E+01 years

                    Log sec =        8.833
                    Log days =       3.897
                    Log years =      1.334

                    Temperature    =     25.000 degrees C
                    total pressure =      1.013 bars


Change in the product phase assemblage


                              --- Reactant Summary ---


    Reactant                  Moles     Delta moles    Mass, g    Delta Mass, g

 Tuff                      9.9183E+01   8.1734E-01   2.0418E+03   1.6826E+01


               Current total mass =  2.04182E+03 grams
               Delta total mass   =  1.68261E+01 grams
               Delta total volume =      0.00000 cc
```

Reactant	Rel. Rate mol/mol	Rate mol/s	Rate mol/s/cm2
Tuff	1.0000E+00	1.2000E-09	2.5000E-15

Reactant	Affinity kcal/mol	Surface Area mol/s/cm2
Tuff	999.00000	4.8000E+05

Reactant	Rate Constants, mol/s/cm2	
Tuff		
	Forward	2.5000E-15

Affinity of the overall irreversible reaction= 0.000 kcal
Contributions from irreversible reactions
with no thermodynamic data are not included

--- Element Totals for the Aqueous Solution ---

Element	mg/kg soln.	Molality	Moles
O	8.865056E+05	5.558906E+01	5.555800E+01
Al	3.619719E-05	1.345921E-09	1.345169E-09
B	1.335667E-01	1.239493E-05	1.238800E-05
Ba	1.369579E-05	1.000559E-10	1.000000E-10
Ca	6.098280E+01	1.526556E-03	1.525704E-03
Ce	1.397383E-19	1.000558E-24	9.999993E-25
Cl	7.120983E+00	2.015126E-04	2.014000E-04
Cr	2.998234E+02	5.785038E-03	5.781806E-03
Cs	1.325482E-05	1.000559E-10	1.000000E-10
Cu	6.654397E-10	1.050587E-14	1.050000E-14
F	4.511877E-01	2.382603E-05	2.381272E-05
Fe	2.065617E-08	3.710748E-13	3.708675E-13
Gd	1.568273E-09	1.000559E-14	9.999998E-15
H	1.115366E+05	1.110182E+02	1.109562E+02
C	6.250519E-01	5.220937E-05	5.218020E-05
P	1.236622E-03	4.005481E-08	4.003243E-08
K	4.638443E+02	1.190216E-02	1.189551E-02
La	1.385321E-09	1.000559E-14	9.999999E-15
Li	6.922345E-07	1.000559E-10	1.000000E-10
Mg	2.617666E+01	1.080513E-03	1.079910E-03
Mn	8.313696E-09	1.518212E-13	1.517364E-13
Mo	2.180755E+02	2.280440E-03	2.279166E-03
N	1.983611E+00	1.420794E-04	1.420000E-04
Na	4.926437E+02	2.149858E-02	2.148657E-02
Nd	1.438523E-09	1.000559E-14	9.999998E-15
Ni	5.104284E+00	8.725338E-05	8.720463E-05
Pb	2.066431E-05	1.000559E-10	1.000000E-10
Pu	2.433443E-09	1.000559E-14	1.000000E-14
S	3.732700E+02	1.167857E-02	1.167205E-02
Si	2.806446E+00	1.002504E-04	1.001944E-04
Sm	1.499559E-09	1.000559E-14	9.999998E-15
Sr	8.738450E-06	1.000559E-10	1.000000E-10
Ti	1.078410E-05	2.259651E-10	2.258388E-10
U	2.373893E-09	1.000560E-14	1.000000E-14
V	4.771072E+00	9.396276E-05	9.391026E-05

Zn	6.521425E-06	1.000559E-10	1.000000E-10
Zr	9.097894E-16	1.000560E-20	1.000001E-20

Single ion activities and activity coefficients are here defined
with respect to the modified NBS pH scale

	pH	Eh	pe
modified NBS pH scale	6.8368	0.8146	1.3770E+01
rational pH scale	6.7618	0.8190	1.3845E+01

pHCl = 10.6227

Oxygen fugacity = 2.09991E-01
Log oxygen fugacity = -0.67780

Activity of water = 0.99913
Log activity of water = -0.00038

Ionic strength = 5.525164E-02 molal
Sum of molalities = 0.0549684873037
Osmotic coefficient = 0.88209

Mass of solution = 1.002695 kg
Mass of solutes = 0.003254 kg
Conc. of solutes = 0.324487 per cent (w/w)

Moles of solvent H2O = 5.54774E+01
Mass of solvent H2O = 9.99441E-01 kg

Species	Molality	Log molality	Log gamma	Log activity
Na+	2.0902E-02	-1.6798	-0.0960	-1.7758
K+	1.1531E-02	-1.9382	-0.1018	-2.0399
SO4--	9.9864E-03	-2.0006	-0.3521	-2.3527
CrO4--	4.5445E-03	-2.3425	-0.3521	-2.6946
MoO4--	2.2804E-03	-2.6420	-0.3416	-2.9836
Ca++	1.2085E-03	-2.9178	-0.3391	-3.2569
HCrO4-	1.1118E-03	-2.9540	-0.0831	-3.0371
Mg++	6.9064E-04	-3.1607	-0.3077	-3.4685
NaSO4-	5.9508E-04	-3.2254	-0.0831	-3.3085
MgSO4(aq)	3.8948E-04	-3.4095	0.0000	-3.4095
KSO4-	3.7160E-04	-3.4299	-0.0831	-3.5130
CaSO4(aq)	3.1732E-04	-3.4985	0.0000	-3.4985
O2(aq)	2.6188E-04	-3.5819	0.0058	-3.5761
Cl-	2.0093E-04	-3.6970	-0.0889	-3.7858
NO3-	1.4167E-04	-3.8487	-0.0889	-3.9376
SiO2(aq)	1.0010E-04	-3.9996	0.0000	-3.9996
Ni++	6.8610E-05	-4.1636	-0.3391	-4.5027
Cr2O7--	6.4376E-05	-4.1913	-0.3521	-4.5434
HCO3-	4.0363E-05	-4.3940	-0.0831	-4.4771
VO3OH--	3.4940E-05	-4.4567	-0.3521	-4.8088
H2VO4-	3.4100E-05	-4.4672	-0.0831	-4.5504
F-	2.3541E-05	-4.6282	-0.0859	-4.7141
VO2(OH)2-	2.1133E-05	-4.6750	-0.0831	-4.7582

NiSO4(aq)	1.8631E-05	-4.7298	0.0000	-4.7298
B(OH)3(aq)	1.2331E-05	-4.9090	0.0000	-4.9090
CO2(aq)	1.0600E-05	-4.9747	0.0058	-4.9689
HVO4--	3.7638E-06	-5.4244	-0.3521	-5.7765
NaHCO3(aq)	7.9645E-07	-6.0988	0.0000	-6.0988
NaCl(aq)	4.5853E-07	-6.3386	0.0000	-6.3386
CaNO3+	3.9950E-07	-6.3985	-0.0960	-6.4945
CaHCO3+	2.5626E-07	-6.5913	-0.0960	-6.6873
MgF+	1.8443E-07	-6.7342	-0.0960	-6.8302
H+	1.7307E-07	-6.7618	-0.0751	-6.8368
MgHCO3+	1.5349E-07	-6.8139	-0.0960	-6.9099
HSiO3-	9.2793E-08	-7.0325	-0.0831	-7.1156
OH-	8.4581E-08	-7.0727	-0.0859	-7.1586
HSO4-	7.4583E-08	-7.1274	-0.0831	-7.2105
CaF+	6.4081E-08	-7.1933	-0.0960	-7.2893
BO2-	5.8404E-08	-7.2336	-0.0831	-7.3167
NaHSiO3(aq)	5.7160E-08	-7.2429	0.0000	-7.2429
MgCl+	5.0908E-08	-7.2932	-0.0960	-7.3892
KCl(aq)	4.7826E-08	-7.3203	0.0000	-7.3203
NaF(aq)	3.2547E-08	-7.4875	0.0000	-7.4875
VO(OH)3(aq)	2.5410E-08	-7.5950	0.0000	-7.5950
CO3--	2.3579E-08	-7.6275	-0.3416	-7.9691
CaCl+	2.2787E-08	-7.6423	-0.0960	-7.7383
H2PO4-	1.9186E-08	-7.7170	-0.0831	-7.8001
HPO4--	1.5256E-08	-7.8165	-0.3521	-8.1687
CaCO3(aq)	1.2622E-08	-7.8989	0.0000	-7.8989
NiNO3+	1.1368E-08	-7.9443	-0.0960	-8.0403
HF(aq)	4.1416E-09	-8.3828	0.0000	-8.3828
MgCO3(aq)	3.4779E-09	-8.4587	0.0000	-8.4587
CaB(OH)4+	2.2100E-09	-8.6556	-0.0960	-8.7516
CaHPO4(aq)	2.0627E-09	-8.6856	0.0000	-8.6856
MgHPO4(aq)	1.8742E-09	-8.7272	0.0000	-8.7272
MgB(OH)4+	1.6154E-09	-8.7917	-0.0960	-8.8877
NaB(OH)4(aq)	1.5054E-09	-8.8223	0.0000	-8.8223
NaHPO4-	1.1445E-09	-8.9414	-0.0831	-9.0245
AlO2-	9.1858E-10	-9.0369	-0.0831	-9.1200
NaCO3-	7.1223E-10	-9.1474	-0.0831	-9.2305
CaOH+	6.6925E-10	-9.1744	-0.0960	-9.2704
NiCl+	6.4750E-10	-9.1888	-0.0960	-9.2848
KHPO4-	4.5136E-10	-9.3455	-0.0831	-9.4286
HAlO2(aq)	3.1157E-10	-9.5064	0.0000	-9.5064
Ti(OH)4(aq)	2.2597E-10	-9.6460	0.0000	-9.6460
KOH(aq)	2.1705E-10	-9.6634	0.0000	-9.6634
NaOH(aq)	1.8444E-10	-9.7341	0.0000	-9.7341
Cs+	1.0005E-10	-9.9998	-0.1049	-10.1047
Ba++	1.0000E-10	-10.0000	-0.3574	-10.3574

--- Summary of Instantaneously Precipitated Solid Phases ---
(defined by derivatives)

--- Theoretical Rock Composition ---
g/kg

O	5.072701E+01
Al	6.919388E+00
Ca	2.246949E-02
F	1.417609E-03
Fe	6.712785E-01
H	1.831063E-01
P	6.933536E-03
K	3.357223E+00
Mg	4.652211E-03

Mn	5.309096E-02
Na	4.163308E-03
Ni	1.187853E+00
Si	3.685980E+01
Ti	6.034207E-02

--- Oxide Percentages ---

Oxide Theoretical rock

Total = 0.0000

Phase/end-member	d mol/d zi	d grams/d zi	d vol (cc)/d zi
Fluorapatite	1.4979E-05	7.5541E-03	7.4897E-03
Maximum_Microcline	1.7028E-02	4.7394E+00	1.8516E+00
Ni2SiO4	2.0315E-03	4.2553E-01	8.6563E-02
Pyrolusite	1.9400E-04	1.6866E-02	9.7000E-02
Rutile	2.0592E-01	1.6449E+01	3.8755E+00
fix CO2(g)	2.5300E-04	1.1134E-02	0.0000E+00
fix O2(g)	-9.8166E-04	-3.1412E-02	0.0000E+00
Smectite-di			
Beidellite-Ca	-7.0432E-04	-2.5818E-01	-9.1230E-02
Beidellite-K	5.6904E-11	2.1217E-08	7.6080E-09
Beidellite-Mg	1.5842E-10	5.7658E-08	1.9515E-08
Beidellite-Na	5.8017E-11	2.1323E-08	7.5735E-09
Montmor-Ca	2.7475E-11	1.0057E-08	1.3738E-08
Montmor-K	3.5786E-09	1.3324E-06	1.7893E-06
Montmor-Mg	1.6273E-08	5.9144E-06	8.1366E-06
Montmor-Na	5.9298E-09	2.1763E-06	2.9649E-06
Nontronite-Ca	2.7512E-09	1.1673E-06	3.6068E-07
Nontronite-K	2.2819E-04	9.8255E-02	3.0867E-02
Nontronite-Mg	6.3533E-04	2.6791E-01	8.2440E-02
Nontronite-Na	2.3282E-04	9.9010E-02	3.0758E-02

--- Summary of Solid Phases (E.S.+P.R.S.) ---

Phase/End-member	Log moles	Moles	Mass, g	Volume, cc
Alunite	-2.5559	2.7801E-03	1.1516E+00	8.1624E-01
Diaspore	-1.6079	2.4665E-02	1.4796E+00	4.3804E-01
Fluorapatite	-4.0413	9.0937E-05	4.5860E-02	4.5469E-02
Hematite	-3.7144	1.9300E-04	3.0820E-02	5.8428E-03
Maximum_Microcline	-5.3714	4.2520E-06	1.1835E-03	4.6237E-04
Muscovite	-2.5323	2.9354E-03	1.1692E+00	4.1304E-01
Ni2SiO4	-2.1959	6.3689E-03	1.3341E+00	2.7138E-01
Nontronite-H	-4.9990	1.0023E-05	4.1899E-03	5.0117E-03
Pyrolusite	-3.1236	7.5223E-04	6.5397E-02	3.7612E-01
Quartz	-0.7051	1.9722E-01	1.1850E+01	4.4744E+00
Rutile	-3.6845	2.0679E-04	1.6518E-02	3.8917E-03
fix CO2(g)	2.3010	2.0000E+02	8.8020E+03	0.0000E+00
fix O2(g)	2.3010	2.0000E+02	6.3997E+03	0.0000E+00
Smectite-di	-3.1018	7.9108E-04		
Beidellite-Ca	-9.6150	2.4265E-10	8.8947E-08	3.1431E-08
Beidellite-K	-9.1504	7.0728E-10	2.6371E-07	9.4563E-08
Beidellite-Mg	-9.6007	2.5078E-10	9.1272E-08	3.0893E-08
Beidellite-Na	-9.9702	1.0711E-10	3.9366E-08	1.3982E-08
Montmor-Ca	-9.1409	7.2289E-10	2.6461E-07	3.6144E-07
Montmor-K	-8.4773	3.3316E-09	1.2405E-06	1.6658E-06

Montmor-Mg	-8.9204	1.2013E-09	4.3659E-07	6.0064E-07
Montmor-Na	-9.2637	5.4485E-10	1.9997E-07	2.7243E-07
Nontronite-Ca	-3.8153	1.5302E-04	6.4924E-02	2.0060E-02
Nontronite-K	-3.3840	4.1303E-04	1.7784E-01	5.5871E-02
Nontronite-Mg	-3.8009	1.5816E-04	6.6695E-02	2.0523E-02
Nontronite-Na	-4.1748	6.6871E-05	2.8438E-02	8.8343E-03

	Mass, grams	Volume, cc
Created	1.521918E+04	6.955238E+00
Destroyed	1.682614E+01	0.000000E+00
Net	1.520235E+04	6.955238E+00

Warning-- these volume totals may be incomplete because
of missing partial molar volume data in the data base

--- Summary of Pure Mineral Saturation States ---

Mineral	Log Q/K	Aff, kcal	State
Alamosite	-6.368	-8.687	
Albite	-2.776	-3.787	
Albite_high	-4.094	-5.586	
Albite_low	-2.776	-3.787	
Alunite	-6.129	-8.361	
Analcime	-2.791	-3.808	
Andalusite	-6.091	-8.310	
Anglesite	-4.868	-6.642	
Anhydrite	-1.303	-1.778	
Aragonite	-2.890	-3.943	
Arcanite	-4.632	-6.319	
BaCrO4	-3.120	-4.256	
BaZrO3	79.017	107.801	ssatd
Barite	-2.739	-3.737	
Bassanite	-1.948	-2.658	
Beidellite-Ca	-2.412	-3.291	
Beidellite-Cs	-4.772	-6.511	
Beidellite-H	-3.173	-4.329	
Beidellite-K	-2.266	-3.091	
Beidellite-Mg	-2.410	-3.287	
Beidellite-Na	-2.517	-3.434	
Boehmite	-0.638	-0.870	
Boric_acid	-4.751	-6.481	
Brucite	-6.094	-8.313	
Bunsenite	-3.301	-4.504	
Ca2V2O7	-4.938	-6.737	
CaSO4:0.5H2O(beta)	-2.116	-2.887	
CaV2O6	-3.706	-5.056	
CaZrO3	140.147	191.201	ssatd
Calcite	-2.746	-3.746	
Carnotite	-6.940	-9.468	
CeO2	-5.475	-7.469	
Celadonite	-1.528	-2.085	
Celestite	-7.176	-9.790	
Cerussite	-4.799	-6.548	
Chalcedony	-0.271	-0.370	
Clinoptilolite-K	-6.664	-9.091	
Clinoptilolite-hy-K	-6.659	-9.084	
Coesite	-0.810	-1.105	

Corundum	-4.459	-6.083	
CrO2	-6.265	-8.548	
Cristobalite(alpha)	-0.551	-0.751	
Cristobalite(beta)	-0.994	-1.356	
Crocoite	-0.345	-0.471	
Dawsonite	-3.673	-5.011	
Diaspore	-0.234	-0.319	
Dolomite	-4.519	-6.166	
Dolomite-dis	-6.064	-8.273	
Dolomite-ord	-4.519	-6.166	
Enstatite	-5.122	-6.987	
Epsomite	-3.862	-5.268	
Fe(OH)3	-6.229	-8.499	
Fluorapatite	0.000	0.000	satd
Fluorite	-2.648	-3.613	
GdPO4:H2O	-4.777	-6.517	
Gibbsite	-0.830	-1.132	
Glauberite	-6.045	-8.247	
Goethite	-1.108	-1.512	
Gypsum	-1.128	-1.539	
Halite	-7.147	-9.751	
Hematite	-1.255	-1.712	
Heulandite	-6.258	-8.537	
Hexahydrite	-4.097	-5.589	
Ice	-0.139	-0.190	
Illite	-1.664	-2.271	
Jadeite	-4.400	-6.003	
K-Feldspar	0.000	0.000	ssatd
Kalicinite	-6.801	-9.278	
Kalsilite	-3.175	-4.331	
Kaolinite	-0.957	-1.305	
Kieserite	-5.555	-7.578	
Kyanite	-5.820	-7.941	
LaPO4:H2O	-4.322	-5.896	
Lansfordite	-5.952	-8.120	
Laumontite	-5.397	-7.363	
Lawsonite	-5.943	-8.108	
Lopezite	-5.706	-7.785	
Magnesite	-3.402	-4.642	
Manganite	-4.459	-6.084	
Maximum_Microcline	0.000	0.000	satd
Mesolite	-1.610	-2.197	
Mirabilite	-4.768	-6.505	
MnO2(gamma)	-1.518	-2.071	
Monohydrocalcite	-3.580	-4.884	
Montmor-Ca	-1.840	-2.510	
Montmor-Cs	-4.133	-5.639	
Montmor-K	-1.623	-2.214	
Montmor-Mg	-1.768	-2.412	
Montmor-Na	-1.878	-2.562	
Mordenite	-3.689	-5.032	
Morenosite	-4.844	-6.609	
Muscovite	-0.008	-0.011	
Nahcolite	-6.141	-8.378	
Natrolite	-6.545	-8.929	
NdPO4:H2O	-4.597	-6.272	
Nepheline	-5.813	-7.930	
Nesquehonite	-6.105	-8.330	
Ni(OH)2	-3.578	-4.882	
Ni2SiO4	0.000	0.000	satd
NiCO3	-5.655	-7.715	
NiSO4:6H2O(alpha)	-4.851	-6.618	
Niter	-5.771	-7.874	

Nontronite-Ca	-0.239	-0.326	
Nontronite-H	-1.000	-1.364	
Nontronite-K	-0.092	-0.125	
Nontronite-Mg	-0.236	-0.322	
Nontronite-Na	-0.343	-0.468	
Paragonite	-3.680	-5.021	
PbHPO4	-6.970	-9.509	
Pentahydrite	-4.436	-6.052	
Phlogopite	-7.101	-9.688	
Plattnerite	-4.702	-6.415	
PuO2	-2.075	-2.831	
PuO2(OH)2	-6.651	-9.074	
Pyrolusite	0.000	0.000	satd
Pyrophyllite	-2.585	-3.527	
Quartz	0.000	0.000	
Rutile	0.000	0.000	satd
Sanidine_high	-1.199	-1.636	
Saponite-Ca	-6.350	-8.663	
Saponite-H	-7.111	-9.701	
Saponite-K	-6.203	-8.463	
Saponite-Mg	-6.347	-8.659	
Saponite-Na	-6.454	-8.806	
Scolecite	-3.607	-4.921	
Sellaite	-3.512	-4.792	
Shcherbinaite	-7.137	-9.737	
SiO2(am)	-1.286	-1.754	
Sillimanite	-6.454	-8.805	
SmPO4:H2O	-4.616	-6.298	
SrZrO3	115.869	158.078	ssatd
Starkeyite	-4.823	-6.580	
Stilbite	-1.903	-2.596	
Sylvite	-6.672	-9.102	
Syngenite	-4.442	-6.061	
Talc	-6.522	-8.899	
Tarapacaite	-6.371	-8.692	
Thenardite	-5.595	-7.634	
Trevorite	-1.764	-2.406	
Tridymite	-0.172	-0.234	
Witherite	-5.001	-6.823	
fix CO2(g)	0.000	0.000	satd
fix O2(g)	0.000	0.000	satd

--- Summary of Solid Solutions ---

--- Carbonate-Calcite ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Calcite	8.1930E-01	-0.0866	0.0000	-0.0866
Magnesite	1.8069E-01	-0.7431	0.0000	-0.7431
Rhodochrosite	7.7609E-09	-8.1101	0.0000	-8.1101
Siderite	2.3359E-17	-16.6315	0.0000	-16.6315
Smithsonite	1.6361E-06	-5.7862	0.0000	-5.7862
Strontianite	6.8033E-06	-5.1673	0.0000	-5.1673

Mineral	Log Q/K	Aff, kcal	State
Carbonate-Calcite	-2.659	-3.628	
Calcite	-2.659	-3.628	

Magnesite	-2.659	-3.628
Rhodochrosite	-2.659	-3.628
Siderite	-2.659	-3.628
Smithsonite	-2.659	-3.628
Strontianite	-2.659	-3.628

--- Clinoptilolite-hy-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-hy-Ca	3.0313E-03	-2.5184	0.0000	-2.5184
Clinoptilolite-hy-Cs	1.4052E-26	-25.8523	0.0000	-25.8523
Clinoptilolite-hy-K	9.9571E-01	-0.0019	0.0000	-0.0019
Clinoptilolite-hy-Na	1.2549E-03	-2.9014	0.0000	-2.9014
Clinoptilolite-hy-Sr	1.1583E-15	-14.9362	0.0000	-14.9362

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-hy-ss	-6.657	-9.082	
Clinoptilolite-hy-Ca	-6.657	-9.082	
Clinoptilolite-hy-Cs	-6.657	-9.082	
Clinoptilolite-hy-K	-6.657	-9.082	
Clinoptilolite-hy-Na	-6.657	-9.082	
Clinoptilolite-hy-Sr	-6.657	-9.082	

--- Clinoptilolite-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-Ca	1.4090E-01	-0.8511	-2.0937	-2.9448
Clinoptilolite-Cs	2.5324E-08	-7.5965	-18.6873	-26.2838
Clinoptilolite-K	7.4995E-01	-0.1250	-0.3074	-0.4324
Clinoptilolite-NH4	2.1164E-62	-61.6744	-151.7190	-213.3935
Clinoptilolite-Na	1.0911E-01	-0.9621	-2.3668	-3.3289
Clinoptilolite-Sr	3.6337E-05	-4.4396	-10.9215	-15.3612

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-ss	-6.231	-8.501	
Clinoptilolite-Ca	-6.231	-8.501	
Clinoptilolite-Cs	-6.231	-8.501	
Clinoptilolite-K	-6.231	-8.501	
Clinoptilolite-NH4	-6.231	-8.501	
Clinoptilolite-Na	-6.231	-8.501	
Clinoptilolite-Sr	-6.231	-8.501	

--- Saponite-tri ---

Ideal solution

Component	x	Log x	Log lambda	Log activity

Saponite-Ca	1.8903E-01	-0.7235	0.4847	-0.2387
Saponite-H	9.3507E-04	-3.0292	2.0295	-0.9996
Saponite-K	5.2615E-01	-0.2789	0.1869	-0.0920
Saponite-Mg	1.9273E-01	-0.7150	0.4791	-0.2360
Saponite-Na	9.1151E-02	-1.0402	0.6970	-0.3433

Mineral	Log Q/K	Aff, kcal	State
Saponite-tri	-6.111	-8.337	
Saponite-Ca	-6.111	-8.337	
Saponite-H	-6.111	-8.337	
Saponite-K	-6.111	-8.337	
Saponite-Mg	-6.111	-8.337	
Saponite-Na	-6.111	-8.337	

--- Smectite-di ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Beidellite-Ca	4.8950E-08	-7.3102	4.8979	-2.4124
Beidellite-K	1.3635E-07	-6.8654	4.5998	-2.2656
Beidellite-Mg	4.9910E-08	-7.3018	4.8922	-2.4096
Beidellite-Na	2.3604E-08	-7.6270	5.1101	-2.5169
Montmor-Ca	2.6555E-06	-5.5759	3.7358	-1.8400
Montmor-K	1.2080E-05	-4.9179	3.2950	-1.6229
Montmor-Mg	4.4004E-06	-5.3565	3.5889	-1.7676
Montmor-Na	2.0394E-06	-5.6905	3.8126	-1.8779
Nontronite-Ca	1.8910E-01	-0.7233	0.4846	-0.2387
Nontronite-K	5.2674E-01	-0.2784	0.1865	-0.0919
Nontronite-Mg	1.9295E-01	-0.7146	0.4788	-0.2358
Nontronite-Na	9.1188E-02	-1.0401	0.6968	-0.3432

Mineral	Log Q/K	Aff, kcal	State
Smectite-di	0.000	0.000	satd
Beidellite-Ca	0.000	0.000	satd
Beidellite-K	0.000	0.000	satd
Beidellite-Mg	0.000	0.000	satd
Beidellite-Na	0.000	0.000	satd
Montmor-Ca	0.000	0.000	satd
Montmor-K	0.000	0.000	satd
Montmor-Mg	0.000	0.000	satd
Montmor-Na	0.000	0.000	satd
Nontronite-Ca	0.000	0.000	satd
Nontronite-K	0.000	0.000	satd
Nontronite-Mg	0.000	0.000	satd
Nontronite-Na	0.000	0.000	satd

--- Lanthanide hydroxide ---

Ideal solution

Component	x	Log x	Log lambda	Log activity

La(OH)3	1.3186E-05	-4.8799	0.0000	-4.8799
Ce(OH)3	3.3450E-15	-14.4756	0.0000	-14.4756
Nd(OH)3(c)	3.5050E-01	-0.4553	0.0000	-0.4553
Gd(OH)3	5.8258E-01	-0.2346	0.0000	-0.2346
Sm(OH)3	6.6904E-02	-1.1746	0.0000	-1.1746

Mineral	Log Q/K	Aff, kcal	State
Lanthanide hydroxide	-10.280	-14.025	
La(OH)3	-10.280	-14.025	
Ce(OH)3	-10.280	-14.025	
Nd(OH)3(c)	-10.280	-14.025	
Gd(OH)3	-10.280	-14.025	
Sm(OH)3	-10.280	-14.025	

--- Rhabdophane-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaPO4:H2O	4.1863E-01	-0.3782	0.0000	-0.3782
CePO4:H2O	3.3583E-11	-10.4739	0.0000	-10.4739
NdPO4:H2O	2.2204E-01	-0.6536	0.0000	-0.6536
GdPO4:H2O	1.4692E-01	-0.8329	0.0000	-0.8329
SmPO4:H2O	2.1241E-01	-0.6728	0.0000	-0.6728

Mineral	Log Q/K	Aff, kcal	State
Rhabdophane-ss	-3.944	-5.380	
LaPO4:H2O	-3.944	-5.380	
CePO4:H2O	-3.944	-5.380	
NdPO4:H2O	-3.944	-5.380	
GdPO4:H2O	-3.944	-5.380	
SmPO4:H2O	-3.944	-5.380	

--- Lanthanide fluoride ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaF3:0.5H2O	5.7722E-01	-0.2387	0.0000	-0.2387
CeF3:0.5H2O	7.3390E-11	-10.1344	0.0000	-10.1344
NdF3:0.5H2O	3.8542E-01	-0.4141	0.0000	-0.4141
GdF3:0.5H2O	8.0649E-03	-2.0934	0.0000	-2.0934
SmF3:0.5H2O	2.9288E-02	-1.5333	0.0000	-1.5333

Mineral	Log Q/K	Aff, kcal	State
Lanthanide fluoride	-10.543	-14.384	
LaF3:0.5H2O	-10.543	-14.384	
CeF3:0.5H2O	-10.543	-14.384	
NdF3:0.5H2O	-10.543	-14.384	
GdF3:0.5H2O	-10.543	-14.384	
SmF3:0.5H2O	-10.543	-14.384	

--- Summary of Gases ---

Gas	Fugacity	Log fugacity
Al(g)	9.6138-192	-191.0171
B(g)	8.5256-204	-203.0693
BF3(g)	2.5453E-37	-36.5943
C(g)	3.0917-190	-189.5098
CH4(g)	3.5232-146	-145.4531
CO(g)	6.0395E-49	-48.2190
CO2(g)	3.1623E-04	-3.5000
Ca(g)	1.3385-153	-152.8734
Chlorine	9.2584E-27	-26.0335
Cs(g)	2.2151E-84	-83.6546
Cu(g)	2.4322E-83	-82.6140
Fluorine	2.4587E-81	-80.6093
H2(g)	6.1097E-42	-41.2140
H2O(g)	2.5955E-02	-1.5858
H2S(g)	6.0923-140	-139.2152
HCl(g)	1.1799E-17	-16.9282
HF(g)	2.1700E-13	-12.6635
K(g)	1.2862E-76	-75.8907
Li(g)	4.9116E-98	-97.3088
Mg(g)	5.5389-131	-130.2566
Nitrogen	6.9006E-18	-17.1611
NH3(g)	3.0246E-68	-67.5193
NO(g)	8.2716E-25	-24.0824
NO2(g)	5.6558E-19	-18.2475
Na(g)	1.2328E-75	-74.9091
O2(g)	2.0999E-01	-0.6778
Pb(g)	3.0493E-71	-70.5158
S2(g)	2.2170-222	-221.6542
SO2(g)	1.0796E-52	-51.9667
Si(g)	4.2231-221	-220.3744
SiF4(g)	9.7850E-36	-35.0094
Ti(g)	3.8019-231	-230.4200
TiCl4(g)	6.5023E-81	-80.1869
U(g)	2.0168-297	-296.6953
U2Cl10(g)	2.1701-235	-234.6635
U2Cl8(g)	7.2668-240	-239.1387
U2F10(g)	1.2728-149	-148.8952
UCl(g)	2.1214-252	-251.6734
UCl2(g)	6.6756-206	-205.1755
UCl3(g)	4.6010-157	-156.3371
UCl4(g)	1.7172-125	-124.7652
UCl5(g)	3.2975-131	-130.4818
UCl6(g)	1.1764-131	-130.9294
UF(g)	8.2920-238	-237.0813
UF2(g)	2.5285-196	-195.5971
UF3(g)	1.8975-148	-147.7218
UF4(g)	2.1017E-97	-96.6774
UF5(g)	1.0663E-87	-86.9721
UF6(g)	5.3271E-92	-91.2735
UO(g)	1.5928-212	-211.7978
UO2(g)	2.9509-128	-127.5300
UO2Cl2(g)	1.1929E-73	-72.9234
UO2F2(g)	3.2777E-62	-61.4844
UO3(g)	2.1705E-75	-74.6634
UOF4(g)	6.2629E-75	-74.2032

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Zn(g)                        5.0757E-81    -80.2945



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--- shifting e.s. solid(s) to the p.r.s. (shftz) ---

      shifted -- Fluorapatite
              - old mass=  8.00506E-07, new mass=  8.00000E-07
      shifted -- Maximum_Microcline
              - old mass=  4.25205E-06, new mass=  8.00000E-07
  not shifted -- Ni2SiO4
              - mass=  6.96483E-07
      shifted -- Pyrolusite
              - old mass=  8.07033E-07, new mass=  8.00000E-07
      shifted -- Rutile
              - old mass=  8.09173E-07, new mass=  8.00000E-07
      shifted -- Smectite-di
              - old mass=  8.43742E-07, new mass=  8.00000E-07

Stepping to zi=  8.1734E-01, delzi=  1.0000E-09, nord= 0
  time =  7.8833E+03 d, dltime =  9.6451E-06 d
Steps completed =   274, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Maximum_Microcline      ) =     -6.0969

Stepping to zi=  8.1734E-01, delzi=  1.0000E-09, nord= 0
  time =  7.8833E+03 d, dltime =  9.6451E-06 d
Steps completed =   275, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Maximum_Microcline      ) =     -6.0969

Stepping to zi=  8.1734E-01, delzi=  1.0000E-09, nord= 0
  time =  7.8833E+03 d, dltime =  9.6451E-06 d
Steps completed =   276, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Maximum_Microcline      ) =     -6.0968

Stepping to zi=  8.1734E-01, delzi=  1.0000E-08, nord= 1
  time =  7.8833E+03 d, dltime =  9.6451E-05 d
Steps completed =   277, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Maximum_Microcline      ) =     -6.0965

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                     Reaction progress        =  8.17339711596050E-01
                     Log of reaction progress =      -0.0875974



                     Time =  6.811E+08 sec
                          =  7.883E+03 days
                          =  2.158E+01 years

                     Log sec =        8.833
                     Log days =       3.897
                     Log years =      1.334

                     Temperature    =     25.000 degrees C
                     total pressure =      1.013 bars


Flow-through system print following a discontinuity
```

--- Summary of Instantaneously Precipitated Solid Phases ---
(defined by derivatives)

--- Theoretical Rock Composition ---
g/kg

O	4.331255E+01
Al	7.709489E+00
Ca	2.337805E-02
F	1.421700E-03
Fe	7.478770E-01
H	1.349763E-02
C	1.534572E-01
P	6.953542E-03
K	1.113071E+01
Mg	5.185037E-03
Mn	5.914907E-02
Na	4.638760E-03
Ni	9.832970E+00
Si	2.693150E+01
Ti	6.722760E-02

--- Oxide Percentages ---

Oxide	Theoretical rock

Total = 0.0000

Phase/end-member	d mol/d zi	d grams/d zi	d vol (cc)/d zi
Fluorapatite	1.3484E-05	6.8000E-03	6.7420E-03
Maximum_Microcline	5.1088E-02	1.4219E+01	5.5553E+00
Ni2SiO4	1.5094E-02	3.1617E+00	6.4318E-01
Pyrolusite	1.9400E-04	1.6866E-02	9.7000E-02
Rutile	2.5300E-04	2.0209E-02	4.7615E-03
fix CO2(g)	2.3022E-03	1.0132E-01	0.0000E+00
fix O2(g)	-7.1054E-04	-2.2737E-02	0.0000E+00
Smectite-di			
Beidellite-Ca	-2.8422E-10	-1.0419E-07	-3.6815E-08
Beidellite-K	-7.9202E-10	-2.9531E-07	-1.0589E-07
Beidellite-Mg	-2.8981E-10	-1.0548E-07	-3.5701E-08
Beidellite-Na	-1.3705E-10	-5.0369E-08	-1.7890E-08
Montmor-Ca	-2.4192E-09	-8.8555E-07	-1.2096E-06
Montmor-K	-1.1035E-08	-4.1088E-06	-5.5176E-06
Montmor-Mg	-4.0098E-09	-1.4573E-06	-2.0049E-06
Montmor-Na	-1.8572E-09	-6.8161E-07	-9.2858E-07
Nontronite-Ca	2.2841E-04	9.6911E-02	2.9944E-02
Nontronite-K	6.3491E-04	2.7338E-01	8.5884E-02
Nontronite-Mg	2.3301E-04	9.8259E-02	3.0236E-02
Nontronite-Na	1.1018E-04	4.6854E-02	1.4555E-02

--- Summary of Solid Phases (E.S.+P.R.S.) ---

Phase/End-member	Log moles	Moles	Mass, g	Volume, cc
Alunite	-2.5559	2.7801E-03	1.1516E+00	8.1624E-01
Diaspore	-1.6079	2.4665E-02	1.4796E+00	4.3804E-01
Fluorapatite	-4.0413	9.0937E-05	4.5860E-02	4.5469E-02

```
Hematite                    -3.7144   1.9300E-04   3.0820E-02   5.8428E-03
Maximum_Microcline          -5.3713   4.2527E-06   1.1837E-03   4.6244E-04
Muscovite                   -2.5323   2.9354E-03   1.1692E+00   4.1304E-01
Ni2SiO4                     -2.1959   6.3689E-03   1.3341E+00   2.7138E-01
Nontronite-H                -4.9990   1.0023E-05   4.1899E-03   5.0117E-03
Pyrolusite                  -3.1236   7.5223E-04   6.5397E-02   3.7612E-01
Quartz                      -0.7051   1.9722E-01   1.1850E+01   4.4744E+00
Rutile                      -3.6845   2.0679E-04   1.6518E-02   3.8917E-03
fix     CO2(g)               2.3010   2.0000E+02   8.8020E+03   0.0000E+00
fix     O2(g)                2.3010   2.0000E+02   6.3997E+03   0.0000E+00

Smectite-di                 -3.1018   7.9108E-04
  Beidellite-Ca             -9.6150   2.4265E-10   8.8947E-08   3.1431E-08
  Beidellite-K              -9.1504   7.0728E-10   2.6371E-07   9.4563E-08
  Beidellite-Mg             -9.6007   2.5078E-10   9.1272E-08   3.0893E-08
  Beidellite-Na             -9.9702   1.0711E-10   3.9366E-08   1.3982E-08
  Montmor-Ca                -9.1409   7.2289E-10   2.6461E-07   3.6144E-07
  Montmor-K                 -8.4773   3.3316E-09   1.2405E-06   1.6658E-06
  Montmor-Mg                -8.9204   1.2013E-09   4.3659E-07   6.0064E-07
  Montmor-Na                -9.2637   5.4485E-10   1.9997E-07   2.7243E-07
  Nontronite-Ca             -3.8153   1.5302E-04   6.4924E-02   2.0060E-02
  Nontronite-K              -3.3840   4.1303E-04   1.7784E-01   5.5871E-02
  Nontronite-Mg             -3.8009   1.5816E-04   6.6695E-02   2.0523E-02
  Nontronite-Na             -4.1748   6.6871E-05   2.8438E-02   8.8343E-03


                          Mass, grams        Volume, cc

          Created         1.521918E+04       6.955238E+00
          Destroyed       0.000000E+00       0.000000E+00
          Net             1.521918E+04       6.955238E+00

         Warning-- these volume totals may be incomplete because
         of missing partial molar volume data in the data base




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Stepping to zi=  8.1734E-01, delzi=  1.0000E-07, nord= 2
  time =  7.8833E+03 d, dltime =  9.6451E-04 d
Steps completed =   278, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Maximum_Microcline      ) =     -6.0938

Stepping to zi=  8.1734E-01, delzi=  1.0000E-06, nord= 2
  time =  7.8833E+03 d, dltime =  9.6451E-03 d
Steps completed =   279, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Maximum_Microcline      ) =     -6.0671

Stepping to zi=  8.1735E-01, delzi=  1.0000E-05, nord= 3
  time =  7.8834E+03 d, dltime =  9.6451E-02 d
iter =    9
      1 supersaturated pure minerals
      0 supersaturated solid solutions

               The most supersaturated phases           Affinity, kcal

                 1     475   Quartz                        0.00557555
```

Attempted species assemblage no. 2

1	1	H2O
2	3	Al+++
3	7	B(OH)3(aq)
4	8	Ba++
5	11	Ca++
6	13	Ce+++
7	14	Cl-
8	16	CrO4--
9	17	Cs+
10	18	Cu++
11	22	F-
12	23	Fe++
13	25	Gd+++
14	26	H+
15	28	HCO3-
16	29	HPO4--
17	35	K+
18	37	La+++
19	38	Li+
20	40	Mg++
21	41	Mn++
22	42	MoO4--
23	43	NO3-
24	44	Na+
25	45	Nd+++
26	47	Ni++
27	49	Pb++
28	52	Pu++++
29	58	SO4--
30	62	SiO2(aq)
31	63	Sm+++
32	65	Sr++
33	69	Ti(OH)4(aq)
34	72	UO2++
35	73	VO++
36	78	Zn++
37	79	Zr(OH)2++
38	80	O2(g)
39	222	Fluorapatite
40	323	Maximum_Microcline
41	405	Ni2SiO4
42	470	Pyrolusite
43	475	Quartz
44	482	Rutile
45	689	fix CO2(g)
46	690	fix O2(g)
47	1	SmectiteBeidellite-Ca
48	2	SmectiteBeidellite-K
49	3	SmectiteBeidellite-Mg
50	4	SmectiteBeidellite-Na
51	5	SmectiteMontmor-Ca
52	6	SmectiteMontmor-K
53	7	SmectiteMontmor-Mg
54	8	SmectiteMontmor-Na
55	9	SmectiteNontronite-Ca
56	10	SmectiteNontronite-K
57	11	SmectiteNontronite-Mg
58	12	SmectiteNontronite-Na

Steps completed = 280, iter = 15, ncorr = 0

```
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

                    Reaction progress        =  8.17350811595736E-01
                    Log of reaction progress =      -0.0875915


                    Time =  6.811E+08 sec
                         =  7.883E+03 days
                         =  2.158E+01 years

                    Log sec =        8.833
                    Log days =       3.897
                    Log years =      1.334

                    Temperature    =     25.000 degrees C
                    total pressure =      1.013 bars

Change in the product phase assemblage

                              --- Reactant Summary ---


   Reactant                   Moles     Delta moles    Mass, g    Delta Mass, g

 Tuff                       9.9183E+01   8.1735E-01   2.0418E+03   1.6826E+01


               Current total mass =  2.04182E+03 grams
               Delta total mass   =  1.68264E+01 grams
               Delta total volume =      0.00000 cc


   Reactant                Rel. Rate      Rate         Rate
                            mol/mol       mol/s      mol/s/cm2

 Tuff                      1.0000E+00   1.2000E-09   2.5000E-15


   Reactant                  Affinity   Surface Area
                             kcal/mol     mol/s/cm2

 Tuff                       999.00000   4.8000E+05


   Reactant                Rate Constants, mol/s/cm2

 Tuff
                  Forward    2.5000E-15


        Affinity of the overall irreversible reaction=     0.000 kcal
        Contributions from irreversible reactions
        with no thermodynamic data are not included


    --- Element Totals for the Aqueous Solution ---
```

Element	mg/kg soln.	Molality	Moles
O	8.865056E+05	5.558906E+01	5.555800E+01
Al	3.613282E-05	1.343528E-09	1.342777E-09
B	1.335667E-01	1.239493E-05	1.238800E-05
Ba	1.369579E-05	1.000559E-10	1.000000E-10
Ca	6.098367E+01	1.526578E-03	1.525725E-03
Ce	1.397383E-19	1.000558E-24	9.999993E-25
Cl	7.120983E+00	2.015126E-04	2.014000E-04
Cr	2.998234E+02	5.785038E-03	5.781806E-03
Cs	1.325482E-05	1.000559E-10	1.000000E-10
Cu	6.654397E-10	1.050587E-14	1.050000E-14
F	4.511846E-01	2.382587E-05	2.381256E-05
Fe	2.063948E-08	3.707750E-13	3.705678E-13
Gd	1.568273E-09	1.000559E-14	9.999998E-15
H	1.115366E+05	1.110182E+02	1.109562E+02
C	6.250358E-01	5.220802E-05	5.217885E-05
P	1.236657E-03	4.005592E-08	4.003354E-08
K	4.638314E+02	1.190183E-02	1.189518E-02
La	1.385321E-09	1.000559E-14	9.999999E-15
Li	6.922345E-07	1.000559E-10	1.000000E-10
Mg	2.617699E+01	1.080527E-03	1.079923E-03
Mn	8.314238E-09	1.518311E-13	1.517463E-13
Mo	2.180755E+02	2.280440E-03	2.279166E-03
N	1.983611E+00	1.420794E-04	1.420000E-04
Na	4.926497E+02	2.149885E-02	2.148683E-02
Nd	1.438523E-09	1.000559E-14	9.999998E-15
Ni	5.103065E+00	8.723255E-05	8.718381E-05
Pb	2.066431E-05	1.000559E-10	1.000000E-10
Pu	2.433443E-09	1.000559E-14	1.000000E-14
S	3.732700E+02	1.167857E-02	1.167205E-02
Si	2.808153E+00	1.003114E-04	1.002553E-04
Sm	1.499559E-09	1.000559E-14	9.999998E-15
Sr	8.738450E-06	1.000559E-10	1.000000E-10
Ti	1.078410E-05	2.259651E-10	2.258388E-10
U	2.373893E-09	1.000560E-14	1.000000E-14
V	4.771072E+00	9.396276E-05	9.391026E-05
Zn	6.521425E-06	1.000559E-10	1.000000E-10
Zr	9.097894E-16	1.000560E-20	1.000001E-20

Single ion activities and activity coefficients are here defined
with respect to the modified NBS pH scale

	pH	Eh	pe
modified NBS pH scale	6.8368	0.8146	1.3770E+01
rational pH scale	6.7618	0.8190	1.3845E+01

pHCl = 10.6227

Oxygen fugacity = 2.09991E-01
Log oxygen fugacity = -0.67780

Activity of water = 0.99913
Log activity of water = -0.00038

Ionic strength = 5.525157E-02 molal
Sum of molalities = 0.0549684899845
Osmotic coefficient = 0.88209

Mass of solution = 1.002695 kg
Mass of solutes = 0.003254 kg
Conc. of solutes = 0.324487 per cent (w/w)

Moles of solvent H2O = 5.54774E+01
Mass of solvent H2O = 9.99441E-01 kg

Species	Molality	Log molality	Log gamma	Log activity
Na+	2.0902E-02	-1.6798	-0.0960	-1.7758
K+	1.1530E-02	-1.9382	-0.1018	-2.0399
SO4--	9.9864E-03	-2.0006	-0.3521	-2.3527
CrO4--	4.5445E-03	-2.3425	-0.3521	-2.6946
MoO4--	2.2804E-03	-2.6420	-0.3416	-2.9836
Ca++	1.2085E-03	-2.9178	-0.3391	-3.2569
HCrO4-	1.1118E-03	-2.9540	-0.0831	-3.0371
Mg++	6.9065E-04	-3.1607	-0.3077	-3.4685
NaSO4-	5.9509E-04	-3.2254	-0.0831	-3.3085
MgSO4(aq)	3.8948E-04	-3.4095	0.0000	-3.4095
KSO4-	3.7159E-04	-3.4299	-0.0831	-3.5130
CaSO4(aq)	3.1732E-04	-3.4985	0.0000	-3.4985
O2(aq)	2.6188E-04	-3.5819	0.0058	-3.5761
Cl-	2.0093E-04	-3.6970	-0.0889	-3.7858
NO3-	1.4167E-04	-3.8487	-0.0889	-3.9376
SiO2(aq)	1.0016E-04	-3.9993	0.0000	-3.9993
Ni++	6.8594E-05	-4.1637	-0.3391	-4.5028
Cr2O7--	6.4379E-05	-4.1913	-0.3521	-4.5434
HCO3-	4.0361E-05	-4.3940	-0.0831	-4.4771
VO3OH--	3.4940E-05	-4.4567	-0.3521	-4.8088
H2VO4-	3.4101E-05	-4.4672	-0.0831	-4.5503
F-	2.3541E-05	-4.6282	-0.0859	-4.7141
VO2(OH)2-	2.1133E-05	-4.6750	-0.0831	-4.7581
NiSO4(aq)	1.8627E-05	-4.7299	0.0000	-4.7299
B(OH)3(aq)	1.2331E-05	-4.9090	0.0000	-4.9090
CO2(aq)	1.0600E-05	-4.9747	0.0058	-4.9689
HVO4--	3.7637E-06	-5.4244	-0.3521	-5.7765
NaHCO3(aq)	7.9643E-07	-6.0988	0.0000	-6.0988
NaCl(aq)	4.5853E-07	-6.3386	0.0000	-6.3386
CaNO3+	3.9951E-07	-6.3985	-0.0960	-6.4945
CaHCO3+	2.5626E-07	-6.5913	-0.0960	-6.6873
MgF+	1.8443E-07	-6.7342	-0.0960	-6.8302
H+	1.7308E-07	-6.7618	-0.0751	-6.8368
MgHCO3+	1.5349E-07	-6.8139	-0.0960	-6.9099
HSiO3-	9.2847E-08	-7.0322	-0.0831	-7.1153
OH-	8.4578E-08	-7.0727	-0.0859	-7.1586
HSO4-	7.4585E-08	-7.1273	-0.0831	-7.2105
CaF+	6.4082E-08	-7.1933	-0.0960	-7.2893
BO2-	5.8402E-08	-7.2336	-0.0831	-7.3167
NaHSiO3(aq)	5.7194E-08	-7.2426	0.0000	-7.2426
MgCl+	5.0908E-08	-7.2932	-0.0960	-7.3892
KCl(aq)	4.7825E-08	-7.3203	0.0000	-7.3203
NaF(aq)	3.2547E-08	-7.4875	0.0000	-7.4875
VO(OH)3(aq)	2.5411E-08	-7.5950	0.0000	-7.5950
CO3--	2.3577E-08	-7.6275	-0.3416	-7.9691
CaCl+	2.2788E-08	-7.6423	-0.0960	-7.7383
H2PO4-	1.9187E-08	-7.7170	-0.0831	-7.8001
HPO4--	1.5257E-08	-7.8165	-0.3521	-8.1687
CaCO3(aq)	1.2622E-08	-7.8989	0.0000	-7.8989

NiNO3+	1.1365E-08	-7.9444	-0.0960	-8.0404
HF(aq)	4.1417E-09	-8.3828	0.0000	-8.3828
MgCO3(aq)	3.4778E-09	-8.4587	0.0000	-8.4587
CaB(OH)4+	2.2100E-09	-8.6556	-0.0960	-8.7516
CaHPO4(aq)	2.0628E-09	-8.6856	0.0000	-8.6856
MgHPO4(aq)	1.8743E-09	-8.7272	0.0000	-8.7272
MgB(OH)4+	1.6154E-09	-8.7917	-0.0960	-8.8877
NaB(OH)4(aq)	1.5054E-09	-8.8223	0.0000	-8.8223
NaHPO4-	1.1445E-09	-8.9414	-0.0831	-9.0245
AlO2-	9.1693E-10	-9.0377	-0.0831	-9.1208
NaCO3-	7.1219E-10	-9.1474	-0.0831	-9.2305
CaOH+	6.6923E-10	-9.1744	-0.0960	-9.2704
NiCl+	6.4735E-10	-9.1889	-0.0960	-9.2849
KHPO4-	4.5135E-10	-9.3455	-0.0831	-9.4286
HAlO2(aq)	3.1102E-10	-9.5072	0.0000	-9.5072
Ti(OH)4(aq)	2.2597E-10	-9.6460	0.0000	-9.6460
KOH(aq)	2.1703E-10	-9.6635	0.0000	-9.6635
NaOH(aq)	1.8444E-10	-9.7341	0.0000	-9.7341
Cs+	1.0005E-10	-9.9998	-0.1049	-10.1047
Ba++	1.0000E-10	-10.0000	-0.3574	-10.3574

--- Summary of Instantaneously Precipitated Solid Phases ---
(defined by derivatives)

--- Theoretical Rock Composition ---
g/kg

O	2.951415E+01
Al	9.706274E+00
Ca	2.969665E-02
F	1.814765E-03
Fe	9.415824E-01
H	1.699362E-02
P	8.876027E-03
K	1.401362E+01
Mg	6.524181E-03
Mn	7.446909E-02
Na	5.840821E-03
Ni	1.251867E+01
Si	3.394010E+01
Ti	8.463996E-02

--- Oxide Percentages ---

Oxide Theoretical rock

Total = 0.0000

Phase/end-member	d mol/d zi	d grams/d zi	d vol (cc)/d zi
Fluorapatite	1.3671E-05	6.8944E-03	6.8355E-03
Maximum_Microcline	5.1087E-02	1.4219E+01	5.5553E+00
Ni2SiO4	1.5264E-02	3.1972E+00	6.5039E-01
Pyrolusite	1.9400E-04	1.6866E-02	9.7000E-02
Quartz	2.5300E-04	1.5201E-02	5.7401E-03
Rutile	-1.0286E-02	-8.2166E-01	-1.9359E-01
fix CO2(g)	-1.0035E-01	-4.4165E+00	0.0000E+00
fix O2(g)	-2.6048E-10	-8.3349E-09	0.0000E+00
Smectite-di			
Beidellite-Ca	-7.2582E-10	-2.6606E-07	-9.4015E-08

Beidellite-K	-2.6564E-10	-9.9044E-08	-3.5516E-08
Beidellite-Mg	-1.2560E-10	-4.5713E-08	-1.5473E-08
Beidellite-Na	-2.4008E-09	-8.8237E-07	-3.1340E-07
Montmor-Ca	-1.0950E-08	-4.0080E-06	-5.4748E-06
Montmor-K	-3.9830E-09	-1.4830E-06	-1.9915E-06
Montmor-Mg	-1.8432E-09	-6.6988E-07	-9.2158E-07
Montmor-Na	2.2844E-04	8.3841E-02	1.1422E-01
Nontronite-Ca	6.3500E-04	2.6942E-01	8.3248E-02
Nontronite-K	2.3288E-04	1.0027E-01	3.1501E-02
Nontronite-Mg	1.1019E-04	4.6465E-02	1.4298E-02
Nontronite-Na	1.1016E-04	4.6848E-02	1.4554E-02

--- Summary of Solid Phases (E.S.+P.R.S.) ---

Phase/End-member	Log moles	Moles	Mass, g	Volume, cc
Alunite	-2.5559	2.7801E-03	1.1516E+00	8.1624E-01
Diaspore	-1.6079	2.4665E-02	1.4796E+00	4.3804E-01
Fluorapatite	-4.0413	9.0937E-05	4.5860E-02	4.5469E-02
Hematite	-3.7144	1.9300E-04	3.0820E-02	5.8428E-03
Maximum_Microcline	-5.3170	4.8197E-06	1.3415E-03	5.2410E-04
Muscovite	-2.5323	2.9354E-03	1.1692E+00	4.1304E-01
Ni2SiO4	-2.1959	6.3689E-03	1.3341E+00	2.7138E-01
Nontronite-H	-4.9990	1.0023E-05	4.1899E-03	5.0117E-03
Pyrolusite	-3.1236	7.5224E-04	6.5397E-02	3.7612E-01
Quartz	-0.7051	1.9722E-01	1.1850E+01	4.4745E+00
Rutile	-3.6845	2.0679E-04	1.6518E-02	3.8918E-03
fix CO2(g)	2.3010	2.0000E+02	8.8020E+03	0.0000E+00
fix O2(g)	2.3010	2.0000E+02	6.3997E+03	0.0000E+00
Smectite-di	-3.1018	7.9110E-04		
Beidellite-Ca	-9.6150	2.4265E-10	8.8947E-08	3.1431E-08
Beidellite-K	-9.1504	7.0728E-10	2.6371E-07	9.4563E-08
Beidellite-Mg	-9.6007	2.5078E-10	9.1272E-08	3.0893E-08
Beidellite-Na	-9.9702	1.0711E-10	3.9366E-08	1.3982E-08
Montmor-Ca	-9.1409	7.2292E-10	2.6462E-07	3.6146E-07
Montmor-K	-8.4773	3.3317E-09	1.2405E-06	1.6659E-06
Montmor-Mg	-8.9203	1.2013E-09	4.3661E-07	6.0066E-07
Montmor-Na	-9.2637	5.4488E-10	1.9998E-07	2.7244E-07
Nontronite-Ca	-3.8153	1.5302E-04	6.4925E-02	2.0061E-02
Nontronite-K	-3.3840	4.1304E-04	1.7785E-01	5.5872E-02
Nontronite-Mg	-3.8009	1.5816E-04	6.6696E-02	2.0523E-02
Nontronite-Na	-4.1748	6.6872E-05	2.8439E-02	8.8345E-03

	Mass, grams	Volume, cc
Created	1.521918E+04	6.955329E+00
Destroyed	1.682637E+01	0.000000E+00
Net	1.520235E+04	6.955329E+00

Warning-- these volume totals may be incomplete because of missing partial molar volume data in the data base

--- Summary of Pure Mineral Saturation States ---

Mineral	Log Q/K	Aff, kcal	State
Alamosite	-6.368	-8.687	

Albite	-2.776	-3.787	
Albite_high	-4.094	-5.586	
Albite_low	-2.776	-3.787	
Alunite	-6.131	-8.364	
Analcime	-2.791	-3.808	
Andalusite	-6.092	-8.311	
Anglesite	-4.868	-6.642	
Anhydrite	-1.303	-1.778	
Aragonite	-2.890	-3.943	
Arcanite	-4.632	-6.319	
BaCrO4	-3.120	-4.256	
BaZrO3	79.017	107.801	ssatd
Barite	-2.739	-3.737	
Bassanite	-1.948	-2.658	
Beidellite-Ca	-2.413	-3.292	
Beidellite-Cs	-4.773	-6.512	
Beidellite-H	-3.174	-4.330	
Beidellite-K	-2.266	-3.092	
Beidellite-Mg	-2.410	-3.288	
Beidellite-Na	-2.518	-3.435	
Boehmite	-0.639	-0.871	
Boric_acid	-4.751	-6.481	
Brucite	-6.094	-8.313	
Bunsenite	-3.301	-4.504	
Ca2V2O7	-4.938	-6.737	
CaSO4:0.5H2O(beta)	-2.116	-2.887	
CaV2O6	-3.706	-5.056	
CaZrO3	140.147	191.201	ssatd
Calcite	-2.746	-3.746	
Carnotite	-6.940	-9.468	
CeO2	-5.475	-7.469	
Celadonite	-1.528	-2.084	
Celestite	-7.176	-9.790	
Cerussite	-4.799	-6.548	
Chalcedony	-0.271	-0.370	
Clinoptilolite-K	-6.663	-9.090	
Clinoptilolite-hy-K	-6.658	-9.083	
Coesite	-0.810	-1.105	
Corundum	-4.460	-6.085	
CrO2	-6.265	-8.548	
Cristobalite(alpha)	-0.551	-0.751	
Cristobalite(beta)	-0.994	-1.356	
Crocoite	-0.345	-0.471	
Dawsonite	-3.674	-5.012	
Diaspore	-0.235	-0.320	
Dolomite	-4.519	-6.166	
Dolomite-dis	-6.064	-8.273	
Dolomite-ord	-4.519	-6.166	
Enstatite	-5.121	-6.987	
Epsomite	-3.862	-5.268	
Fe(OH)3	-6.230	-8.499	
Fluorapatite	0.000	0.000	satd
Fluorite	-2.648	-3.613	
GdPO4:H2O	-4.777	-6.517	
Gibbsite	-0.831	-1.133	
Glauberite	-6.045	-8.247	
Goethite	-1.108	-1.512	
Gypsum	-1.128	-1.539	
Halite	-7.147	-9.751	
Hematite	-1.256	-1.713	
Heulandite	-6.258	-8.537	
Hexahydrite	-4.097	-5.589	
Ice	-0.139	-0.190	

Illite	-1.665	-2.272	
Jadeite	-4.401	-6.004	
K-Feldspar	0.000	0.000	ssatd
Kalicinite	-6.801	-9.278	
Kalsilite	-3.175	-4.332	
Kaolinite	-0.958	-1.307	
Kieserite	-5.555	-7.578	
Kyanite	-5.822	-7.942	
LaPO4:H2O	-4.322	-5.896	
Lansfordite	-5.952	-8.120	
Laumontite	-5.397	-7.363	
Lawsonite	-5.944	-8.110	
Lopezite	-5.706	-7.785	
Magnesite	-3.402	-4.642	
Manganite	-4.459	-6.084	
Maximum_Microcline	0.000	0.000	satd
Mesolite	-1.611	-2.198	
Mirabilite	-4.768	-6.505	
MnO2(gamma)	-1.518	-2.071	
Monohydrocalcite	-3.580	-4.884	
Montmor-Ca	-1.840	-2.511	
Montmor-Cs	-4.134	-5.639	
Montmor-K	-1.623	-2.214	
Montmor-Mg	-1.768	-2.412	
Montmor-Na	-1.878	-2.562	
Mordenite	-3.688	-5.032	
Morenosite	-4.844	-6.609	
Muscovite	-0.010	-0.013	
Nahcolite	-6.141	-8.378	
Natrolite	-6.546	-8.930	
NdPO4:H2O	-4.597	-6.272	
Nepheline	-5.813	-7.931	
Nesquehonite	-6.105	-8.330	
Ni(OH)2	-3.578	-4.882	
Ni2SiO4	0.000	0.000	satd
NiCO3	-5.655	-7.715	
NiSO4:6H2O(alpha)	-4.851	-6.618	
Niter	-5.771	-7.874	
Nontronite-Ca	-0.239	-0.326	
Nontronite-H	-1.000	-1.364	
Nontronite-K	-0.092	-0.125	
Nontronite-Mg	-0.236	-0.322	
Nontronite-Na	-0.343	-0.468	
Paragonite	-3.682	-5.023	
PbHPO4	-6.970	-9.509	
Pentahydrite	-4.436	-6.052	
Phlogopite	-7.101	-9.688	
Plattnerite	-4.702	-6.415	
PuO2	-2.075	-2.831	
PuO2(OH)2	-6.651	-9.074	
Pyrolusite	0.000	0.000	satd
Pyrophyllite	-2.586	-3.527	
Quartz	0.000	0.000	satd
Rutile	0.000	0.000	satd
Sanidine_high	-1.199	-1.636	
Saponite-Ca	-6.349	-8.662	
Saponite-H	-7.110	-9.700	
Saponite-K	-6.202	-8.462	
Saponite-Mg	-6.346	-8.658	
Saponite-Na	-6.454	-8.805	
Scolecite	-3.608	-4.922	
Sellaite	-3.512	-4.792	
Shcherbinaite	-7.137	-9.737	

SiO2(am)	-1.286	-1.754	
Sillimanite	-6.456	-8.807	
SmPO4:H2O	-4.616	-6.298	
SrZrO3	115.869	158.078	ssatd
Starkeyite	-4.823	-6.580	
Stilbite	-1.903	-2.596	
Sylvite	-6.672	-9.102	
Syngenite	-4.442	-6.061	
Talc	-6.521	-8.897	
Tarapacaite	-6.371	-8.692	
Thenardite	-5.595	-7.633	
Trevorite	-1.764	-2.407	
Tridymite	-0.172	-0.234	
Witherite	-5.001	-6.823	
fix CO2(g)	0.000	0.000	satd
fix O2(g)	0.000	0.000	satd

--- Summary of Solid Solutions ---

--- Carbonate-Calcite ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Calcite	8.1930E-01	-0.0866	0.0000	-0.0866
Magnesite	1.8069E-01	-0.7431	0.0000	-0.7431
Rhodochrosite	7.7613E-09	-8.1101	0.0000	-8.1101
Siderite	2.3341E-17	-16.6319	0.0000	-16.6319
Smithsonite	1.6361E-06	-5.7862	0.0000	-5.7862
Strontianite	6.8032E-06	-5.1673	0.0000	-5.1673

Mineral	Log Q/K	Aff, kcal	State
Carbonate-Calcite	-2.659	-3.628	
Calcite	-2.659	-3.628	
Magnesite	-2.659	-3.628	
Rhodochrosite	-2.659	-3.628	
Siderite	-2.659	-3.628	
Smithsonite	-2.659	-3.628	
Strontianite	-2.659	-3.628	

--- Clinoptilolite-hy-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-hy-Ca	3.0317E-03	-2.5183	0.0000	-2.5183
Clinoptilolite-hy-Cs	1.4053E-26	-25.8522	0.0000	-25.8522
Clinoptilolite-hy-K	9.9571E-01	-0.0019	0.0000	-0.0019
Clinoptilolite-hy-Na	1.2550E-03	-2.9013	0.0000	-2.9013
Clinoptilolite-hy-Sr	1.1584E-15	-14.9361	0.0000	-14.9361

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-hy-ss	-6.656	-9.080	
Clinoptilolite-hy-Ca	-6.656	-9.080	

Clinoptilolite-hy-Cs	-6.656	-9.080
Clinoptilolite-hy-K	-6.656	-9.080
Clinoptilolite-hy-Na	-6.656	-9.080
Clinoptilolite-hy-Sr	-6.656	-9.080

--- Clinoptilolite-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-Ca	1.4090E-01	-0.8511	-2.0937	-2.9448
Clinoptilolite-Cs	2.5325E-08	-7.5965	-18.6873	-26.2837
Clinoptilolite-K	7.4995E-01	-0.1250	-0.3074	-0.4324
Clinoptilolite-NH4	2.1166E-62	-61.6744	-151.7190	-213.3933
Clinoptilolite-Na	1.0912E-01	-0.9621	-2.3668	-3.3289
Clinoptilolite-Sr	3.6338E-05	-4.4396	-10.9215	-15.3611

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-ss	-6.230	-8.500	
Clinoptilolite-Ca	-6.230	-8.500	
Clinoptilolite-Cs	-6.230	-8.500	
Clinoptilolite-K	-6.230	-8.500	
Clinoptilolite-NH4	-6.230	-8.500	
Clinoptilolite-Na	-6.230	-8.500	
Clinoptilolite-Sr	-6.230	-8.500	

--- Saponite-tri ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Saponite-Ca	1.8903E-01	-0.7235	0.4847	-0.2387
Saponite-H	9.3511E-04	-3.0291	2.0295	-0.9996
Saponite-K	5.2614E-01	-0.2789	0.1869	-0.0920
Saponite-Mg	1.9274E-01	-0.7150	0.4791	-0.2360
Saponite-Na	9.1153E-02	-1.0402	0.6970	-0.3433

Mineral	Log Q/K	Aff, kcal	State
Saponite-tri	-6.110	-8.336	
Saponite-Ca	-6.110	-8.336	
Saponite-H	-6.110	-8.336	
Saponite-K	-6.110	-8.336	
Saponite-Mg	-6.110	-8.336	
Saponite-Na	-6.110	-8.336	

--- Smectite-di ---

Ideal solution

Component	x	Log x	Log lambda	Log activity

Beidellite-Ca	4.8671E-08	-7.3127	4.8995	-2.4132
Beidellite-K	1.3557E-07	-6.8679	4.6015	-2.2664
Beidellite-Mg	4.9626E-08	-7.3043	4.8939	-2.4104
Beidellite-Na	2.3470E-08	-7.6295	5.1118	-2.5177
Montmor-Ca	2.6511E-06	-5.5766	3.7363	-1.8403
Montmor-K	1.2060E-05	-4.9187	3.2955	-1.6232
Montmor-Mg	4.3932E-06	-5.3572	3.5893	-1.7679
Montmor-Na	2.0361E-06	-5.6912	3.8131	-1.8781
Nontronite-Ca	1.8911E-01	-0.7233	0.4846	-0.2387
Nontronite-K	5.2673E-01	-0.2784	0.1865	-0.0919
Nontronite-Mg	1.9295E-01	-0.7146	0.4787	-0.2358
Nontronite-Na	9.1191E-02	-1.0401	0.6968	-0.3432

Mineral	Log Q/K	Aff, kcal	State
Smectite-di	0.000	0.000	satd
Beidellite-Ca	0.000	0.000	satd
Beidellite-K	0.000	0.000	satd
Beidellite-Mg	0.000	0.000	satd
Beidellite-Na	0.000	0.000	satd
Montmor-Ca	0.000	0.000	satd
Montmor-K	0.000	0.000	satd
Montmor-Mg	0.000	0.000	satd
Montmor-Na	0.000	0.000	satd
Nontronite-Ca	0.000	0.000	satd
Nontronite-K	0.000	0.000	satd
Nontronite-Mg	0.000	0.000	satd
Nontronite-Na	0.000	0.000	satd

--- Lanthanide hydroxide ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
La(OH)3	1.3186E-05	-4.8799	0.0000	-4.8799
Ce(OH)3	3.3450E-15	-14.4756	0.0000	-14.4756
Nd(OH)3(c)	3.5050E-01	-0.4553	0.0000	-0.4553
Gd(OH)3	5.8258E-01	-0.2346	0.0000	-0.2346
Sm(OH)3	6.6904E-02	-1.1746	0.0000	-1.1746

Mineral	Log Q/K	Aff, kcal	State
Lanthanide hydroxide	-10.280	-14.025	
La(OH)3	-10.280	-14.025	
Ce(OH)3	-10.280	-14.025	
Nd(OH)3(c)	-10.280	-14.025	
Gd(OH)3	-10.280	-14.025	
Sm(OH)3	-10.280	-14.025	

--- Rhabdophane-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaPO4:H2O	4.1863E-01	-0.3782	0.0000	-0.3782

CePO4:H2O	3.3583E-11	-10.4739	0.0000	-10.4739
NdPO4:H2O	2.2204E-01	-0.6536	0.0000	-0.6536
GdPO4:H2O	1.4692E-01	-0.8329	0.0000	-0.8329
SmPO4:H2O	2.1241E-01	-0.6728	0.0000	-0.6728

Mineral	Log Q/K	Aff, kcal	State
Rhabdophane-ss	-3.944	-5.380	
LaPO4:H2O	-3.944	-5.380	
CePO4:H2O	-3.944	-5.380	
NdPO4:H2O	-3.944	-5.380	
GdPO4:H2O	-3.944	-5.380	
SmPO4:H2O	-3.944	-5.380	

--- Lanthanide fluoride ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaF3:0.5H2O	5.7722E-01	-0.2387	0.0000	-0.2387
CeF3:0.5H2O	7.3390E-11	-10.1344	0.0000	-10.1344
NdF3:0.5H2O	3.8542E-01	-0.4141	0.0000	-0.4141
GdF3:0.5H2O	8.0649E-03	-2.0934	0.0000	-2.0934
SmF3:0.5H2O	2.9288E-02	-1.5333	0.0000	-1.5333

Mineral	Log Q/K	Aff, kcal	State
Lanthanide fluoride	-10.543	-14.384	
LaF3:0.5H2O	-10.543	-14.384	
CeF3:0.5H2O	-10.543	-14.384	
NdF3:0.5H2O	-10.543	-14.384	
GdF3:0.5H2O	-10.543	-14.384	
SmF3:0.5H2O	-10.543	-14.384	

--- Summary of Gases ---

Gas	Fugacity	Log fugacity
Al(g)	9.5969-192	-191.0179
B(g)	8.5256-204	-203.0693
BF3(g)	2.5455E-37	-36.5942
C(g)	3.0917-190	-189.5098
CH4(g)	3.5232-146	-145.4531
CO(g)	6.0395E-49	-48.2190
CO2(g)	3.1623E-04	-3.5000
Ca(g)	1.3385-153	-152.8734
Chlorine	9.2590E-27	-26.0334
Cs(g)	2.2150E-84	-83.6546
Cu(g)	2.4321E-83	-82.6140
Fluorine	2.4589E-81	-80.6093
H2(g)	6.1097E-42	-41.2140
H2O(g)	2.5955E-02	-1.5858
H2S(g)	6.0927-140	-139.2152
HCl(g)	1.1799E-17	-16.9282
HF(g)	2.1701E-13	-12.6635

```
K(g)                        1.2861E-76    -75.8907
Li(g)                       4.9114E-98    -97.3088
Mg(g)                       5.5386-131   -130.2566
Nitrogen                    6.9010E-18    -17.1611
NH3(g)                      3.0247E-68    -67.5193
NO(g)                       8.2719E-25    -24.0824
NO2(g)                      5.6560E-19    -18.2475
Na(g)                       1.2328E-75    -74.9091
O2(g)                       2.0999E-01     -0.6778
Pb(g)                       3.0492E-71    -70.5158
S2(g)                       2.2173-222   -221.6542
SO2(g)                      1.0797E-52    -51.9667
Si(g)                       4.2257-221   -220.3741
SiF4(g)                     9.7919E-36    -35.0091
Ti(g)                       3.8019-231   -230.4200
TiCl4(g)                    6.5032E-81    -80.1869
U(g)                        2.0168-297   -296.6953
U2Cl10(g)                   2.1708-235   -234.6634
U2Cl8(g)                    7.2687-240   -239.1385
U2F10(g)                    1.2731-149   -148.8951
UCl(g)                      2.1215-252   -251.6734
UCl2(g)                     6.6760-206   -205.1755
UCl3(g)                     4.6015-157   -156.3371
UCl4(g)                     1.7174-125   -124.7651
UCl5(g)                     3.2981-131   -130.4817
UCl6(g)                     1.1766-131   -130.9294
UF(g)                       8.2922-238   -237.0813
UF2(g)                      2.5286-196   -195.5971
UF3(g)                      1.8976-148   -147.7218
UF4(g)                      2.1019E-97    -96.6774
UF5(g)                      1.0664E-87    -86.9721
UF6(g)                      5.3279E-92    -91.2734
UO(g)                       1.5928-212   -211.7978
UO2(g)                      2.9509-128   -127.5300
UO2Cl2(g)                   1.1929E-73    -72.9234
UO2F2(g)                    3.2778E-62    -61.4844
UO3(g)                      2.1705E-75    -74.6634
UOF4(g)                     6.2636E-75    -74.2032
Zn(g)                       5.0754E-81    -80.2945



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--- shifting e.s. solid(s) to the p.r.s. (shftz) ---

      shifted -- Fluorapatite
              - old mass=  8.00161E-07, new mass=  8.00000E-07
      shifted -- Maximum_Microcline
              - old mass=  1.36770E-06, new mass=  8.00000E-07
  not shifted -- Ni2SiO4
              - mass=  7.06894E-07
      shifted -- Pyrolusite
              - old mass=  8.02156E-07, new mass=  8.00000E-07
      shifted -- Quartz
              - old mass=  1.10431E-06, new mass=  8.00000E-07
      shifted -- Rutile
              - old mass=  8.02812E-07, new mass=  8.00000E-07
      shifted -- Smectite-di
              - old mass=  8.13408E-07, new mass=  8.00000E-07

Stepping to zi=  8.1735E-01, delzi=  1.0000E-09, nord= 0
```

```
  time =  7.8834E+03 d, dltime =  9.6451E-06 d
Steps completed =   281, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -6.0969

Stepping to zi=  8.1735E-01, delzi=  1.0000E-09, nord= 0
  time =  7.8834E+03 d, dltime =  9.6451E-06 d
Steps completed =   282, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -6.0968

Stepping to zi=  8.1735E-01, delzi=  1.0000E-09, nord= 0
  time =  7.8834E+03 d, dltime =  9.6451E-06 d
Steps completed =   283, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -6.0967

Stepping to zi=  8.1735E-01, delzi=  1.0000E-08, nord= 1
  time =  7.8834E+03 d, dltime =  9.6451E-05 d
Steps completed =   284, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -6.0962

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                    Reaction progress        =  8.17350824595736E-01
                    Log of reaction progress =      -0.0875915



                    Time =  6.811E+08 sec
                         =  7.883E+03 days
                         =  2.158E+01 years

                    Log sec =        8.833
                    Log days =       3.897
                    Log years =      1.334

                    Temperature    =     25.000 degrees C
                    total pressure =      1.013 bars


Flow-through system print following a discontinuity


     --- Summary of Instantaneously Precipitated Solid Phases ---
                  (defined by derivatives)

     --- Theoretical Rock Composition ---
                   g/kg

      O      4.807109E+01
      Al     6.578379E+00
      Ca     2.094239E-02
      F      1.307304E-03
      Fe     6.381958E-01
      H      1.151856E-02
      P      6.394030E-03
      K      9.497635E+00
      Mg     4.427060E-03
      Mn     5.047447E-02
      Na     3.958622E-03
      Ni     1.461455E-02
      Si     3.504370E+01
      Ti     5.736823E-02
```

--- Oxide Percentages ---

Oxide	Theoretical rock

Total = 0.0000

Phase/end-member	d mol/d zi	d grams/d zi	d vol (cc)/d zi
Fluorapatite	1.4530E-05	7.3275E-03	7.2650E-03
Maximum_Microcline	5.1084E-02	1.4218E+01	5.5549E+00
Ni2SiO4	2.6290E-05	5.5068E-03	1.1202E-03
Pyrolusite	1.9400E-04	1.6866E-02	9.7000E-02
Quartz	1.0576E-01	6.3548E+00	2.3996E+00
Rutile	2.5300E-04	2.0209E-02	4.7615E-03
fix CO2(g)	0.0000E+00	0.0000E+00	0.0000E+00
fix O2(g)	-7.1054E-04	-2.2737E-02	0.0000E+00
Smectite-di			
Beidellite-Ca	5.9365E-11	2.1761E-08	7.6895E-09
Beidellite-K	1.6501E-10	6.1524E-08	2.2062E-08
Beidellite-Mg	6.0526E-11	2.2029E-08	7.4563E-09
Beidellite-Na	2.8635E-11	1.0525E-08	3.7381E-09
Montmor-Ca	3.2280E-09	1.1816E-06	1.6140E-06
Montmor-K	1.4654E-08	5.4560E-06	7.3268E-06
Montmor-Mg	5.3488E-09	1.9440E-06	2.6744E-06
Montmor-Na	2.4799E-09	9.1015E-07	1.2399E-06
Nontronite-Ca	2.2841E-04	9.6913E-02	2.9944E-02
Nontronite-K	6.3487E-04	2.7337E-01	8.5879E-02
Nontronite-Mg	2.3304E-04	9.8271E-02	3.0239E-02
Nontronite-Na	1.1018E-04	4.6854E-02	1.4555E-02

--- Summary of Solid Phases (E.S.+P.R.S.) ---

Phase/End-member	Log moles	Moles	Mass, g	Volume, cc
Alunite	-2.5559	2.7801E-03	1.1516E+00	8.1624E-01
Diaspore	-1.6079	2.4665E-02	1.4796E+00	4.3804E-01
Fluorapatite	-4.0413	9.0937E-05	4.5860E-02	4.5469E-02
Hematite	-3.7144	1.9300E-04	3.0820E-02	5.8428E-03
Maximum_Microcline	-5.3169	4.8204E-06	1.3417E-03	5.2418E-04
Muscovite	-2.5323	2.9354E-03	1.1692E+00	4.1304E-01
Ni2SiO4	-2.1959	6.3689E-03	1.3341E+00	2.7138E-01
Nontronite-H	-4.9990	1.0023E-05	4.1899E-03	5.0117E-03
Pyrolusite	-3.1236	7.5224E-04	6.5397E-02	3.7612E-01
Quartz	-0.7051	1.9722E-01	1.1850E+01	4.4745E+00
Rutile	-3.6845	2.0679E-04	1.6518E-02	3.8918E-03
fix CO2(g)	2.3010	2.0000E+02	8.8020E+03	0.0000E+00
fix O2(g)	2.3010	2.0000E+02	6.3997E+03	0.0000E+00
Smectite-di	-3.1018	7.9110E-04		
Beidellite-Ca	-9.6150	2.4265E-10	8.8947E-08	3.1431E-08
Beidellite-K	-9.1504	7.0728E-10	2.6371E-07	9.4563E-08
Beidellite-Mg	-9.6007	2.5078E-10	9.1272E-08	3.0893E-08
Beidellite-Na	-9.9702	1.0711E-10	3.9366E-08	1.3982E-08
Montmor-Ca	-9.1409	7.2292E-10	2.6462E-07	3.6146E-07
Montmor-K	-8.4773	3.3317E-09	1.2405E-06	1.6659E-06
Montmor-Mg	-8.9203	1.2013E-09	4.3661E-07	6.0066E-07
Montmor-Na	-9.2637	5.4488E-10	1.9998E-07	2.7244E-07
Nontronite-Ca	-3.8153	1.5302E-04	6.4925E-02	2.0061E-02
Nontronite-K	-3.3840	4.1304E-04	1.7785E-01	5.5872E-02
Nontronite-Mg	-3.8009	1.5816E-04	6.6696E-02	2.0523E-02

```
  Nontronite-Na              -4.1748   6.6872E-05   2.8439E-02   8.8345E-03


                          Mass, grams        Volume, cc

          Created         1.521918E+04       6.955329E+00
          Destroyed       0.000000E+00       0.000000E+00
          Net             1.521918E+04       6.955329E+00

         Warning-- these volume totals may be incomplete because
         of missing partial molar volume data in the data base




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Stepping to zi=  8.1735E-01, delzi=  1.0000E-07, nord= 1
  time =  7.8834E+03 d, dltime =  9.6451E-04 d
Steps completed =   285, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -6.0905

Stepping to zi=  8.1735E-01, delzi=  1.0000E-06, nord= 1
  time =  7.8834E+03 d, dltime =  9.6451E-03 d
Steps completed =   286, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -6.0373

Stepping to zi=  8.1736E-01, delzi=  1.0000E-05, nord= 1
  time =  7.8835E+03 d, dltime =  9.6451E-02 d
Steps completed =   287, iter =  9, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -5.7044

Stepping to zi=  8.1739E-01, delzi=  2.5000E-05, nord= 2
  time =  7.8837E+03 d, dltime =  2.4113E-01 d
Steps completed =   288, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -5.3354

Stepping to zi=  8.1744E-01, delzi=  5.0000E-05, nord= 2
  time =  7.8842E+03 d, dltime =  4.8225E-01 d
Steps completed =   289, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -5.0040

Stepping to zi=  8.1754E-01, delzi=  1.0000E-04, nord= 2
  time =  7.8852E+03 d, dltime =  9.6451E-01 d
Steps completed =   290, iter =  7, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -4.6886

Stepping to zi=  8.1774E-01, delzi=  2.0000E-04, nord= 2
  time =  7.8871E+03 d, dltime =  1.9290E+00 d
Steps completed =   291, iter =  8, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -4.3805

Stepping to zi=  8.1814E-01, delzi=  4.0000E-04, nord= 2
  time =  7.8910E+03 d, dltime =  3.8580E+00 d
Steps completed =   292, iter =  8, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -4.0760

Stepping to zi=  8.1894E-01, delzi=  8.0000E-04, nord= 2
  time =  7.8987E+03 d, dltime =  7.7160E+00 d
Steps completed =   293, iter =  9, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -3.7733
```

```
Stepping to zi=  8.2054E-01, delzi=  1.6000E-03, nord= 3
  time =  7.9141E+03 d, dltime =  1.5432E+01 d
Steps completed =   294, iter =  8, ncorr = 0
Most rapidly changing is zvclg1(Quartz                 ) =     -3.4714

Stepping to zi=  8.2454E-01, delzi=  4.0000E-03, nord= 4
  time =  7.9527E+03 d, dltime =  3.8580E+01 d
iter =    8
      1 supersaturated pure minerals
      0 supersaturated solid solutions

               The most supersaturated phases          Affinity, kcal

                 1     368   Muscovite                     0.00568085


  Attempted species assemblage no.   2

            1      1  H2O
            2      3  Al+++
            3      7  B(OH)3(aq)
            4      8  Ba++
            5     11  Ca++
            6     13  Ce+++
            7     14  Cl-
            8     16  CrO4--
            9     17  Cs+
           10     18  Cu++
           11     22  F-
           12     23  Fe++
           13     25  Gd+++
           14     26  H+
           15     28  HCO3-
           16     29  HPO4--
           17     35  K+
           18     37  La+++
           19     38  Li+
           20     40  Mg++
           21     41  Mn++
           22     42  MoO4--
           23     43  NO3-
           24     44  Na+
           25     45  Nd+++
           26     47  Ni++
           27     49  Pb++
           28     52  Pu++++
           29     58  SO4--
           30     62  SiO2(aq)
           31     63  Sm+++
           32     65  Sr++
           33     69  Ti(OH)4(aq)
           34     72  UO2++
           35     73  VO++
           36     78  Zn++
           37     79  Zr(OH)2++
           38     80  O2(g)
           39    222  Fluorapatite
           40    323  Maximum_Microcline
           41    368  Muscovite
           42    405  Ni2SiO4
           43    470  Pyrolusite
           44    475  Quartz
```

```
45    482  Rutile
46    689  fix     CO2(g)
47    690  fix     O2(g)
48      1  SmectiteBeidellite-Ca
49      2  SmectiteBeidellite-K
50      3  SmectiteBeidellite-Mg
51      4  SmectiteBeidellite-Na
52      5  SmectiteMontmor-Ca
53      6  SmectiteMontmor-K
54      7  SmectiteMontmor-Mg
55      8  SmectiteMontmor-Na
56      9  SmectiteNontronite-Ca
57     10  SmectiteNontronite-K
58     11  SmectiteNontronite-Mg
59     12  SmectiteNontronite-Na

Steps completed =   295, iter =  7, ncorr = 0

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                    Reaction progress        =  8.24536924392499E-01
                    Log of reaction progress =      -0.0837899



                    Time =  6.871E+08 sec
                         =  7.953E+03 days
                         =  2.177E+01 years

                    Log sec =        8.837
                    Log days =       3.901
                    Log years =      1.338

                    Temperature    =     25.000 degrees C
                    total pressure =      1.013 bars


Change in the product phase assemblage


                              --- Reactant Summary ---


    Reactant                   Moles     Delta moles    Mass, g    Delta Mass, g

 Tuff                       9.9175E+01   8.2454E-01   2.0417E+03   1.6974E+01


                Current total mass =  2.04167E+03 grams
                Delta total mass   =  1.69743E+01 grams
                Delta total volume =      0.00000 cc


    Reactant                Rel. Rate      Rate         Rate
                             mol/mol       mol/s      mol/s/cm2

 Tuff                       1.0000E+00   1.2000E-09   2.5000E-15


    Reactant                   Affinity   Surface Area
                               kcal/mol     mol/s/cm2
```

Tuff 999.00000 4.8000E+05

Reactant Rate Constants, mol/s/cm2

Tuff
Forward 2.5000E-15

Affinity of the overall irreversible reaction= 0.000 kcal
Contributions from irreversible reactions
with no thermodynamic data are not included

--- Element Totals for the Aqueous Solution ---

Element	mg/kg soln.	Molality	Moles
O	8.865087E+05	5.558906E+01	5.555799E+01
Al	3.664055E-05	1.362402E-09	1.361641E-09
B	1.335672E-01	1.239493E-05	1.238800E-05
Ba	1.369584E-05	1.000559E-10	1.000000E-10
Ca	6.154289E+01	1.540572E-03	1.539711E-03
Ce	1.397388E-19	1.000559E-24	9.999993E-25
Cl	7.121009E+00	2.015126E-04	2.014000E-04
Cr	2.998245E+02	5.785039E-03	5.781806E-03
Cs	1.325487E-05	1.000559E-10	1.000000E-10
Cu	6.654421E-10	1.050587E-14	1.050000E-14
F	4.492064E-01	2.372132E-05	2.370807E-05
Fe	2.056639E-08	3.694608E-13	3.692543E-13
Gd	1.568279E-09	1.000559E-14	9.999998E-15
H	1.115370E+05	1.110182E+02	1.109562E+02
C	6.283780E-01	5.248701E-05	5.245768E-05
P	1.209441E-03	3.917427E-08	3.915237E-08
K	4.557468E+02	1.169434E-02	1.168781E-02
La	1.385326E-09	1.000559E-14	9.999998E-15
Li	6.922370E-07	1.000559E-10	1.000000E-10
Mg	2.638840E+01	1.089250E-03	1.088641E-03
Mn	8.207656E-09	1.498842E-13	1.498005E-13
Mo	2.180763E+02	2.280440E-03	2.279166E-03
N	1.983619E+00	1.420794E-04	1.420000E-04
Na	4.965797E+02	2.167027E-02	2.165816E-02
Nd	1.438528E-09	1.000559E-14	9.999998E-15
Ni	5.037901E+00	8.611831E-05	8.607019E-05
Pb	2.066439E-05	1.000559E-10	1.000000E-10
Pu	2.433451E-09	1.000559E-14	1.000000E-14
S	3.732713E+02	1.167857E-02	1.167205E-02
Si	2.808202E+00	1.003128E-04	1.002567E-04
Sm	1.499564E-09	1.000559E-14	9.999998E-15
Sr	8.738482E-06	1.000559E-10	1.000000E-10
Ti	1.078414E-05	2.259652E-10	2.258389E-10
U	2.373901E-09	1.000560E-14	1.000000E-14
V	4.771089E+00	9.396277E-05	9.391026E-05
Zn	6.521449E-06	1.000559E-10	1.000000E-10
Zr	9.097927E-16	1.000560E-20	1.000001E-20

Single ion activities and activity coefficients are here defined
with respect to the modified NBS pH scale

	pH	Eh	pe
modified NBS pH scale	6.8396	0.8144	1.3767E+01
rational pH scale	6.7645	0.8189	1.3842E+01

pHCl = 10.6255

Oxygen fugacity = 2.09991E-01
Log oxygen fugacity = -0.67780

Activity of water = 0.99913
Log activity of water = -0.00038

Ionic strength = 5.526868E-02 molal
Sum of molalities = 0.0549514083195
Osmotic coefficient = 0.88201

Mass of solution = 1.002691 kg
Mass of solutes = 0.003250 kg
Conc. of solutes = 0.324145 per cent (w/w)

Moles of solvent H2O = 5.54774E+01
Mass of solvent H2O = 9.99441E-01 kg

Species	Molality	Log molality	Log gamma	Log activity
Na+	2.1069E-02	-1.6763	-0.0960	-1.7724
K+	1.1329E-02	-1.9458	-0.1018	-2.0476
SO4--	9.9830E-03	-2.0007	-0.3522	-2.3529
CrO4--	4.5513E-03	-2.3419	-0.3522	-2.6940
MoO4--	2.2804E-03	-2.6420	-0.3416	-2.9836
Ca++	1.2197E-03	-2.9137	-0.3392	-3.2529
HCrO4-	1.1063E-03	-2.9561	-0.0831	-3.0393
Mg++	6.9635E-04	-3.1572	-0.3078	-3.4649
NaSO4-	5.9958E-04	-3.2222	-0.0831	-3.3053
MgSO4(aq)	3.9250E-04	-3.4062	0.0000	-3.4062
KSO4-	3.6495E-04	-3.4378	-0.0831	-3.5209
CaSO4(aq)	3.2010E-04	-3.4947	0.0000	-3.4947
O2(aq)	2.6188E-04	-3.5819	0.0058	-3.5761
Cl-	2.0093E-04	-3.6970	-0.0889	-3.7858
NO3-	1.4167E-04	-3.8487	-0.0889	-3.9376
SiO2(aq)	1.0016E-04	-3.9993	0.0000	-3.9993
Ni++	6.7725E-05	-4.1693	-0.3392	-4.5084
Cr2O7--	6.3743E-05	-4.1956	-0.3522	-4.5477
HCO3-	4.0622E-05	-4.3912	-0.0831	-4.4744
VO3OH--	3.5073E-05	-4.4550	-0.3522	-4.8072
H2VO4-	3.4010E-05	-4.4684	-0.0831	-4.5515
F-	2.3435E-05	-4.6301	-0.0859	-4.7161
VO2(OH)2-	2.1077E-05	-4.6762	-0.0831	-4.7593
NiSO4(aq)	1.8381E-05	-4.7356	0.0000	-4.7356
B(OH)3(aq)	1.2331E-05	-4.9090	0.0000	-4.9090
CO2(aq)	1.0600E-05	-4.9747	0.0058	-4.9689
HVO4--	3.7781E-06	-5.4227	-0.3522	-5.7749
NaHCO3(aq)	8.0794E-07	-6.0926	0.0000	-6.0926
NaCl(aq)	4.6216E-07	-6.3352	0.0000	-6.3352
CaNO3+	4.0317E-07	-6.3945	-0.0960	-6.4905
CaHCO3+	2.6028E-07	-6.5846	-0.0960	-6.6806

MgF+	1.8510E-07	-6.7326	-0.0960	-6.8286
H+	1.7197E-07	-6.7645	-0.0751	-6.8396
MgHCO3+	1.5574E-07	-6.8076	-0.0960	-6.9036
HSiO3-	9.3446E-08	-7.0294	-0.0831	-7.1126
OH-	8.5125E-08	-7.0699	-0.0859	-7.1559
HSO4-	7.4078E-08	-7.1303	-0.0831	-7.2134
CaF+	6.4381E-08	-7.1912	-0.0960	-7.2873
BO2-	5.8777E-08	-7.2308	-0.0831	-7.3139
NaHSiO3(aq)	5.8020E-08	-7.2364	0.0000	-7.2364
MgCl+	5.1324E-08	-7.2897	-0.0960	-7.3857
KCl(aq)	4.6988E-08	-7.3280	0.0000	-7.3280
NaF(aq)	3.2658E-08	-7.4860	0.0000	-7.4860
VO(OH)3(aq)	2.5180E-08	-7.5989	0.0000	-7.5989
CO3--	2.3884E-08	-7.6219	-0.3416	-7.9635
CaCl+	2.2997E-08	-7.6383	-0.0960	-7.7343
H2PO4-	1.8684E-08	-7.7285	-0.0831	-7.8116
HPO4--	1.4954E-08	-7.8253	-0.3522	-8.1774
CaCO3(aq)	1.2902E-08	-7.8893	0.0000	-7.8893
NiNO3+	1.1220E-08	-7.9500	-0.0960	-8.0460
HF(aq)	4.0967E-09	-8.3876	0.0000	-8.3876
MgCO3(aq)	3.5515E-09	-8.4496	0.0000	-8.4496
CaB(OH)4+	2.2446E-09	-8.6489	-0.0960	-8.7449
CaHPO4(aq)	2.0402E-09	-8.6903	0.0000	-8.6903
MgHPO4(aq)	1.8519E-09	-8.7324	0.0000	-8.7324
MgB(OH)4+	1.6391E-09	-8.7854	-0.0960	-8.8814
NaB(OH)4(aq)	1.5271E-09	-8.8161	0.0000	-8.8161
NaHPO4-	1.1307E-09	-8.9467	-0.0831	-9.0298
AlO2-	9.3323E-10	-9.0300	-0.0831	-9.1131
NaCO3-	7.2714E-10	-9.1384	-0.0831	-9.2215
CaOH+	6.7975E-10	-9.1677	-0.0960	-9.2637
NiCl+	6.3909E-10	-9.1944	-0.0960	-9.2905
KHPO4-	4.3463E-10	-9.3619	-0.0831	-9.4450
HAlO2(aq)	3.1452E-10	-9.5024	0.0000	-9.5024
Ti(OH)4(aq)	2.2597E-10	-9.6460	0.0000	-9.6460
KOH(aq)	2.1462E-10	-9.6683	0.0000	-9.6683
NaOH(aq)	1.8710E-10	-9.7279	0.0000	-9.7279
Cs+	1.0005E-10	-9.9998	-0.1049	-10.1047
Ba++	1.0000E-10	-10.0000	-0.3575	-10.3575

--- Summary of Instantaneously Precipitated Solid Phases ---
(defined by derivatives)

--- Theoretical Rock Composition ---
g/kg

O	4.807084E+01
Al	6.578580E+00
Ca	2.111101E-02
F	1.307277E-03
Fe	6.382153E-01
H	1.151896E-02
P	6.393897E-03
K	9.497068E+00
Mg	4.527219E-03
Mn	5.047601E-02
Na	4.079105E-03
Ni	1.457921E-02
Si	3.504477E+01
Ti	5.736998E-02

--- Oxide Percentages ---

Oxide Theoretical rock

Total = 0.0000

Phase/end-member	d mol/d zi	d grams/d zi	d vol (cc)/d zi
Fluorapatite	1.4529E-05	7.3271E-03	7.2646E-03
Maximum_Microcline	5.1084E-02	1.4218E+01	5.5549E+00
Muscovite	2.6226E-05	1.0446E-02	3.6902E-03
Ni2SiO4	1.9400E-04	4.0636E-02	8.2663E-03
Pyrolusite	1.0576E-01	9.1948E+00	5.2882E+01
Quartz	2.5300E-04	1.5201E-02	5.7401E-03
Rutile	-1.4676E-05	-1.1723E-03	-2.7621E-04
fix CO2(g)	-7.0709E-04	-3.1119E-02	0.0000E+00
fix O2(g)	7.4904E-11	2.3969E-09	0.0000E+00
Smectite-di			
Beidellite-Ca	1.9945E-10	7.3112E-08	2.5835E-08
Beidellite-K	7.6298E-11	2.8448E-08	1.0201E-08
Beidellite-Mg	3.6358E-11	1.3233E-08	4.4790E-09
Beidellite-Na	3.9246E-09	1.4424E-06	5.1231E-07
Montmor-Ca	1.7059E-08	6.2445E-06	8.5297E-06
Montmor-K	6.4969E-09	2.4190E-06	3.2484E-06
Montmor-Mg	3.0341E-09	1.1027E-06	1.5171E-06
Montmor-Na	2.3379E-04	8.5807E-02	1.1690E-01
Nontronite-Ca	6.2088E-04	2.6344E-01	8.1398E-02
Nontronite-K	2.3830E-04	1.0261E-01	3.2234E-02
Nontronite-Mg	1.1353E-04	4.7873E-02	1.4731E-02
Nontronite-Na	9.8301E-05	4.1804E-02	1.2987E-02

--- Summary of Solid Phases (E.S.+P.R.S.) ---

Phase/End-member	Log moles	Moles	Mass, g	Volume, cc
Alunite	-2.5559	2.7801E-03	1.1516E+00	8.1624E-01
Diaspore	-1.6079	2.4665E-02	1.4796E+00	4.3804E-01
Fluorapatite	-4.0408	9.1042E-05	4.5913E-02	4.5521E-02
Hematite	-3.7144	1.9300E-04	3.0820E-02	5.8428E-03
Maximum_Microcline	-3.4407	3.6251E-04	1.0090E-01	3.9420E-02
Muscovite	-2.5319	2.9385E-03	1.1704E+00	4.1348E-01
Ni2SiO4	-2.1959	6.3695E-03	1.3342E+00	2.7140E-01
Nontronite-H	-4.9990	1.0023E-05	4.1899E-03	5.0117E-03
Pyrolusite	-3.1228	7.5363E-04	6.5518E-02	3.7682E-01
Quartz	-0.7033	1.9800E-01	1.1896E+01	4.4921E+00
Rutile	-3.6807	2.0861E-04	1.6663E-02	3.9260E-03
fix CO2(g)	2.3010	2.0000E+02	8.8020E+03	0.0000E+00
fix O2(g)	2.3010	2.0000E+02	6.3997E+03	0.0000E+00
Smectite-di	-3.0970	7.9977E-04		
Beidellite-Ca	-9.6142	2.4312E-10	8.9117E-08	3.1491E-08
Beidellite-K	-9.1496	7.0854E-10	2.6418E-07	9.4732E-08
Beidellite-Mg	-9.5999	2.5125E-10	9.1445E-08	3.0951E-08
Beidellite-Na	-9.9693	1.0733E-10	3.9449E-08	1.4011E-08
Montmor-Ca	-9.1260	7.4823E-10	2.7389E-07	3.7412E-07
Montmor-K	-8.4629	3.4441E-09	1.2824E-06	1.7221E-06
Montmor-Mg	-8.9054	1.2432E-09	4.5185E-07	6.2162E-07
Montmor-Na	-9.2484	5.6439E-10	2.0714E-07	2.8219E-07
Nontronite-Ca	-3.8106	1.5468E-04	6.5629E-02	2.0278E-02
Nontronite-K	-3.3793	4.1755E-04	1.7979E-01	5.6482E-02
Nontronite-Mg	-3.7963	1.5986E-04	6.7410E-02	2.0743E-02
Nontronite-Na	-4.1696	6.7676E-05	2.8780E-02	8.9406E-03

	Mass, grams	Volume, cc
Created	1.521933E+04	7.014289E+00
Destroyed	1.697430E+01	0.000000E+00
Net	1.520235E+04	7.014289E+00

Warning-- these volume totals may be incomplete because of missing partial molar volume data in the data base

--- Summary of Pure Mineral Saturation States ---

Mineral	Log Q/K	Aff, kcal	State
Alamosite	-6.362	-8.680	
Albite	-2.765	-3.772	
Albite_high	-4.083	-5.571	
Albite_low	-2.765	-3.772	
Alunite	-6.133	-8.367	
Analcime	-2.781	-3.794	
Andalusite	-6.082	-8.298	
Anglesite	-4.868	-6.642	
Anhydrite	-1.299	-1.773	
Aragonite	-2.881	-3.930	
Arcanite	-4.647	-6.340	
BaCrO4	-3.119	-4.256	
BaZrO3	79.022	107.809	ssatd
Barite	-2.739	-3.737	
Bassanite	-1.945	-2.653	
Beidellite-Ca	-2.400	-3.275	
Beidellite-Cs	-4.761	-6.495	
Beidellite-H	-3.163	-4.315	
Beidellite-K	-2.257	-3.079	
Beidellite-Mg	-2.398	-3.271	
Beidellite-Na	-2.504	-3.417	
Boehmite	-0.634	-0.864	
Boric_acid	-4.751	-6.481	
Brucite	-6.084	-8.301	
Bunsenite	-3.301	-4.504	
Ca2V2O7	-4.927	-6.722	
CaSO4:0.5H2O(beta)	-2.113	-2.882	
CaV2O6	-3.704	-5.053	
CaZrO3	140.157	191.214	ssatd
Calcite	-2.736	-3.733	
Carnotite	-6.958	-9.492	
CeO2	-5.467	-7.458	
Celadonite	-1.519	-2.072	
Celestite	-7.176	-9.790	
Cerussite	-4.794	-6.540	
Chalcedony	-0.271	-0.370	
Clinoptilolite-K	-6.663	-9.090	
Clinoptilolite-hy-K	-6.658	-9.083	
Coesite	-0.810	-1.105	
Corundum	-4.451	-6.072	
CrO2	-6.270	-8.554	
Cristobalite(alpha)	-0.551	-0.751	
Cristobalite(beta)	-0.994	-1.356	
Crocoite	-0.345	-0.470	
Dawsonite	-3.663	-4.997	

Diaspore	-0.230	-0.313	
Dolomite	-4.501	-6.140	
Dolomite-dis	-6.045	-8.247	
Dolomite-ord	-4.501	-6.140	
Enstatite	-5.112	-6.975	
Epsomite	-3.858	-5.264	
Fe(OH)3	-6.231	-8.500	
Fluorapatite	0.000	0.000	satd
Fluorite	-2.648	-3.613	
GdPO4:H2O	-4.783	-6.525	
Gibbsite	-0.826	-1.127	
Glauberite	-6.034	-8.233	
Goethite	-1.109	-1.513	
Gypsum	-1.124	-1.534	
Halite	-7.144	-9.746	
Hematite	-1.257	-1.716	
Heulandite	-6.238	-8.511	
Hexahydrite	-4.093	-5.584	
Ice	-0.139	-0.190	
Illite	-1.655	-2.257	
Jadeite	-4.390	-5.989	
K-Feldspar	0.000	0.000	
Kalicinite	-6.806	-9.285	
Kalsilite	-3.175	-4.332	
Kaolinite	-0.948	-1.293	
Kieserite	-5.551	-7.573	
Kyanite	-5.812	-7.929	
LaPO4:H2O	-4.328	-5.904	
Lansfordite	-5.942	-8.107	
Laumontite	-5.378	-7.337	
Lawsonite	-5.925	-8.084	
Lopezite	-5.726	-7.811	
Magnesite	-3.393	-4.629	
Manganite	-4.459	-6.084	
Maximum_Microcline	0.000	0.000	satd
Mesolite	-1.591	-2.170	
Mirabilite	-4.762	-6.496	
MnO2(gamma)	-1.518	-2.071	
Monohydrocalcite	-3.570	-4.871	
Montmor-Ca	-1.828	-2.493	
Montmor-Cs	-4.122	-5.623	
Montmor-K	-1.614	-2.201	
Montmor-Mg	-1.755	-2.395	
Montmor-Na	-1.865	-2.544	
Mordenite	-3.678	-5.018	
Morenosite	-4.850	-6.617	
Muscovite	0.000	0.000	satd
Nahcolite	-6.135	-8.370	
Natrolite	-6.523	-8.900	
NdPO4:H2O	-4.603	-6.280	
Nepheline	-5.802	-7.916	
Nesquehonite	-6.096	-8.317	
Ni(OH)2	-3.578	-4.882	
Ni2SiO4	0.000	0.000	satd
NiCO3	-5.655	-7.715	
NiSO4:6H2O(alpha)	-4.856	-6.626	
Niter	-5.779	-7.884	
Nontronite-Ca	-0.237	-0.323	
Nontronite-H	-0.999	-1.364	
Nontronite-K	-0.093	-0.127	
Nontronite-Mg	-0.234	-0.320	
Nontronite-Na	-0.341	-0.465	
Paragonite	-3.661	-4.995	

PbHPO4	-6.979	-9.521	
Pentahydrite	-4.433	-6.047	
Phlogopite	-7.074	-9.651	
Plattnerite	-4.697	-6.408	
PuO2	-2.073	-2.828	
PuO2(OH)2	-6.648	-9.070	
Pyrolusite	0.000	0.000	satd
Pyrophyllite	-2.576	-3.514	
Quartz	0.000	0.000	satd
Rutile	0.000	0.000	satd
Sanidine_high	-1.199	-1.636	
Saponite-Ca	-6.319	-8.620	
Saponite-H	-7.081	-9.661	
Saponite-K	-6.175	-8.425	
Saponite-Mg	-6.316	-8.617	
Saponite-Na	-6.423	-8.762	
Scolecite	-3.588	-4.895	
Sellaite	-3.513	-4.792	
Shcherbinaite	-7.145	-9.747	
SiO2(am)	-1.286	-1.754	
Sillimanite	-6.446	-8.794	
SmPO4:H2O	-4.622	-6.306	
SrZrO3	115.874	158.086	ssatd
Starkeyite	-4.819	-6.575	
Stilbite	-1.882	-2.567	
Sylvite	-6.679	-9.112	
Syngenite	-4.454	-6.077	
Talc	-6.494	-8.860	
Tarapacaite	-6.385	-8.712	
Thenardite	-5.589	-7.624	
Trevorite	-1.766	-2.409	
Tridymite	-0.172	-0.234	
Witherite	-4.996	-6.816	
fix CO2(g)	0.000	0.000	satd
fix O2(g)	0.000	0.000	satd

--- Summary of Solid Solutions ---

--- Carbonate-Calcite ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Calcite	8.1945E-01	-0.0865	0.0000	-0.0865
Magnesite	1.8054E-01	-0.7434	0.0000	-0.7434
Rhodochrosite	7.5939E-09	-8.1195	0.0000	-8.1195
Siderite	2.2797E-17	-16.6421	0.0000	-16.6421
Smithsonite	1.6213E-06	-5.7901	0.0000	-5.7901
Strontianite	6.7428E-06	-5.1712	0.0000	-5.1712

Mineral	Log Q/K	Aff, kcal	State
Carbonate-Calcite	-2.650	-3.615	
Calcite	-2.650	-3.615	
Magnesite	-2.650	-3.615	
Rhodochrosite	-2.650	-3.615	
Siderite	-2.650	-3.615	
Smithsonite	-2.650	-3.615	
Strontianite	-2.650	-3.615	

--- Clinoptilolite-hy-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-hy-Ca	3.2728E-03	-2.4851	0.0000	-2.4851
Clinoptilolite-hy-Cs	1.4930E-26	-25.8259	0.0000	-25.8259
Clinoptilolite-hy-K	9.9536E-01	-0.0020	0.0000	-0.0020
Clinoptilolite-hy-Na	1.3707E-03	-2.8631	0.0000	-2.8631
Clinoptilolite-hy-Sr	1.2310E-15	-14.9097	0.0000	-14.9097

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-hy-ss	-6.656	-9.080	
Clinoptilolite-hy-Ca	-6.656	-9.080	
Clinoptilolite-hy-Cs	-6.656	-9.080	
Clinoptilolite-hy-K	-6.656	-9.080	
Clinoptilolite-hy-Na	-6.656	-9.080	
Clinoptilolite-hy-Sr	-6.656	-9.080	

--- Clinoptilolite-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-Ca	1.4321E-01	-0.8440	-2.0763	-2.9204
Clinoptilolite-Cs	2.5621E-08	-7.5914	-18.6749	-26.2663
Clinoptilolite-K	7.4548E-01	-0.1276	-0.3138	-0.4414
Clinoptilolite-NH4	2.1139E-62	-61.6749	-151.7203	-213.3952
Clinoptilolite-Na	1.1128E-01	-0.9536	-2.3458	-3.2994
Clinoptilolite-Sr	3.6765E-05	-4.4346	-10.9090	-15.3436

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-ss	-6.221	-8.488	
Clinoptilolite-Ca	-6.221	-8.488	
Clinoptilolite-Cs	-6.221	-8.488	
Clinoptilolite-K	-6.221	-8.488	
Clinoptilolite-NH4	-6.221	-8.488	
Clinoptilolite-Na	-6.221	-8.488	
Clinoptilolite-Sr	-6.221	-8.488	

--- Saponite-tri ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Saponite-Ca	1.9120E-01	-0.7185	0.4814	-0.2371
Saponite-H	9.3550E-04	-3.0290	2.0294	-0.9996
Saponite-K	5.2051E-01	-0.2836	0.1900	-0.0936
Saponite-Mg	1.9485E-01	-0.7103	0.4759	-0.2344
Saponite-Na	9.2508E-02	-1.0338	0.6927	-0.3412

Mineral	Log Q/K	Aff, kcal	State
Saponite-tri	-6.082	-8.297	
Saponite-Ca	-6.082	-8.297	
Saponite-H	-6.082	-8.297	
Saponite-K	-6.082	-8.297	
Saponite-Mg	-6.082	-8.297	
Saponite-Na	-6.082	-8.297	

--- Smectite-di ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Beidellite-Ca	5.3254E-08	-7.2736	4.8733	-2.4003
Beidellite-K	1.4508E-07	-6.8384	4.5817	-2.2567
Beidellite-Mg	5.4271E-08	-7.2654	4.8678	-2.3976
Beidellite-Na	2.5766E-08	-7.5890	5.0846	-2.5044
Montmor-Ca	2.8967E-06	-5.5381	3.7105	-1.8276
Montmor-K	1.2888E-05	-4.8898	3.2762	-1.6136
Montmor-Mg	4.7977E-06	-5.3190	3.5637	-1.7553
Montmor-Na	2.2322E-06	-5.6513	3.7864	-1.8649
Nontronite-Ca	1.9128E-01	-0.7183	0.4813	-0.2371
Nontronite-K	5.2109E-01	-0.2831	0.1897	-0.0934
Nontronite-Mg	1.9507E-01	-0.7098	0.4756	-0.2342
Nontronite-Na	9.2546E-02	-1.0336	0.6925	-0.3411

Mineral	Log Q/K	Aff, kcal	State
Smectite-di	0.000	0.000	satd
Beidellite-Ca	0.000	0.000	satd
Beidellite-K	0.000	0.000	satd
Beidellite-Mg	0.000	0.000	satd
Beidellite-Na	0.000	0.000	satd
Montmor-Ca	0.000	0.000	satd
Montmor-K	0.000	0.000	satd
Montmor-Mg	0.000	0.000	satd
Montmor-Na	0.000	0.000	satd
Nontronite-Ca	0.000	0.000	satd
Nontronite-K	0.000	0.000	satd
Nontronite-Mg	0.000	0.000	satd
Nontronite-Na	0.000	0.000	satd

--- Lanthanide hydroxide ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
La(OH)3	1.3188E-05	-4.8798	0.0000	-4.8798
Ce(OH)3	3.3424E-15	-14.4759	0.0000	-14.4759
Nd(OH)3(c)	3.5055E-01	-0.4553	0.0000	-0.4553
Gd(OH)3	5.8254E-01	-0.2347	0.0000	-0.2347
Sm(OH)3	6.6903E-02	-1.1746	0.0000	-1.1746

Mineral	Log Q/K	Aff, kcal	State
Lanthanide hydroxide	-10.271	-14.013	
La(OH)3	-10.271	-14.013	
Ce(OH)3	-10.271	-14.013	
Nd(OH)3(c)	-10.271	-14.013	
Gd(OH)3	-10.271	-14.013	
Sm(OH)3	-10.271	-14.013	

--- Rhabdophane-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaPO4:H2O	4.1867E-01	-0.3781	0.0000	-0.3781
CePO4:H2O	3.3554E-11	-10.4742	0.0000	-10.4742
NdPO4:H2O	2.2204E-01	-0.6536	0.0000	-0.6536
GdPO4:H2O	1.4690E-01	-0.8330	0.0000	-0.8330
SmPO4:H2O	2.1239E-01	-0.6729	0.0000	-0.6729

Mineral	Log Q/K	Aff, kcal	State
Rhabdophane-ss	-3.950	-5.388	
LaPO4:H2O	-3.950	-5.388	
CePO4:H2O	-3.950	-5.388	
NdPO4:H2O	-3.950	-5.388	
GdPO4:H2O	-3.950	-5.388	
SmPO4:H2O	-3.950	-5.388	

--- Lanthanide fluoride ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaF3:0.5H2O	5.7725E-01	-0.2386	0.0000	-0.2386
CeF3:0.5H2O	7.3322E-11	-10.1348	0.0000	-10.1348
NdF3:0.5H2O	3.8541E-01	-0.4141	0.0000	-0.4141
GdF3:0.5H2O	8.0630E-03	-2.0935	0.0000	-2.0935
SmF3:0.5H2O	2.9283E-02	-1.5334	0.0000	-1.5334

Mineral	Log Q/K	Aff, kcal	State
Lanthanide fluoride	-10.549	-14.392	
LaF3:0.5H2O	-10.549	-14.392	
CeF3:0.5H2O	-10.549	-14.392	
NdF3:0.5H2O	-10.549	-14.392	
GdF3:0.5H2O	-10.549	-14.392	
SmF3:0.5H2O	-10.549	-14.392	

--- Summary of Gases ---

Gas	Fugacity	Log fugacity
Al(g)	9.7049-192	-191.0130
B(g)	8.5253-204	-203.0693
BF3(g)	2.4633E-37	-36.6085
C(g)	3.0917-190	-189.5098
CH4(g)	3.5232-146	-145.4531
CO(g)	6.0395E-49	-48.2190
CO2(g)	3.1623E-04	-3.5000
Ca(g)	1.3682-153	-152.8638
Chlorine	9.1402E-27	-26.0390
Cs(g)	2.2292E-84	-83.6519
Cu(g)	2.4596E-83	-82.6091
Fluorine	2.4057E-81	-80.6188
H2(g)	6.1097E-42	-41.2140
H2O(g)	2.5955E-02	-1.5858
H2S(g)	6.0124-140	-139.2210
HCl(g)	1.1723E-17	-16.9310
HF(g)	2.1465E-13	-12.6683
K(g)	1.2718E-76	-75.8956
Li(g)	4.9430E-98	-97.3060
Mg(g)	5.6560-131	-130.2475
Nitrogen	6.8124E-18	-17.1667
NH3(g)	3.0052E-68	-67.5221
NO(g)	8.2186E-25	-24.0852
NO2(g)	5.6195E-19	-18.2503
Na(g)	1.2506E-75	-74.9029
O2(g)	2.0999E-01	-0.6778
Pb(g)	3.0882E-71	-70.5103
S2(g)	2.1593-222	-221.6657
SO2(g)	1.0654E-52	-51.9725
Si(g)	4.2257-221	-220.3741
SiF4(g)	9.3730E-36	-35.0281
Ti(g)	3.8019-231	-230.4200
TiCl4(g)	6.3374E-81	-80.1981
U(g)	2.0170-297	-296.6953
U2Cl10(g)	2.0356-235	-234.6913
U2Cl8(g)	6.9046-240	-239.1609
U2F10(g)	1.1416-149	-148.9425
UCl(g)	2.1081-252	-251.6761
UCl2(g)	6.5912-206	-205.1810
UCl3(g)	4.5138-157	-156.3455
UCl4(g)	1.6739-125	-124.7763
UCl5(g)	3.1937-131	-130.4957
UCl6(g)	1.1321-131	-130.9461
UF(g)	8.2030-238	-237.0860
UF2(g)	2.4743-196	-195.6066
UF3(g)	1.8366-148	-147.7360
UF4(g)	2.0123E-97	-96.6963
UF5(g)	1.0098E-87	-86.9957
UF6(g)	4.9903E-92	-91.3019
UO(g)	1.5930-212	-211.7978
UO2(g)	2.9512-128	-127.5300
UO2Cl2(g)	1.1778E-73	-72.9289
UO2F2(g)	3.2073E-62	-61.4939
UO3(g)	2.1707E-75	-74.6634
UOF4(g)	5.9963E-75	-74.2221
Zn(g)	5.1403E-81	-80.2890

```
--- shifting e.s. solid(s) to the p.r.s. (shftz) ---

      shifted -- Fluorapatite
              - old mass=  9.04492E-07, new mass=  8.00000E-07
      shifted -- Maximum_Microcline
              - old mass=  3.58492E-04, new mass=  3.58492E-06
      shifted -- Muscovite
              - old mass=  3.13407E-06, new mass=  8.00000E-07
      shifted -- Ni2SiO4
              - old mass=  1.26371E-06, new mass=  8.00000E-07
      shifted -- Pyrolusite
              - old mass=  2.19411E-06, new mass=  8.00000E-07
      shifted -- Quartz
              - old mass=  7.79270E-04, new mass=  7.79270E-06
      shifted -- Rutile
              - old mass=  2.61809E-06, new mass=  8.00000E-07
      shifted -- Smectite-di
              - old mass=  9.47025E-06, new mass=  8.00000E-07

Stepping to zi=  8.2454E-01, delzi=  1.0000E-09, nord= 0
  time =  7.9527E+03 d, dltime =  9.6451E-06 d
Steps completed =   296, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -5.1083

Stepping to zi=  8.2454E-01, delzi=  1.0000E-09, nord= 0
  time =  7.9527E+03 d, dltime =  9.6451E-06 d
Steps completed =   297, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -5.1083

Stepping to zi=  8.2454E-01, delzi=  1.0000E-09, nord= 0
  time =  7.9527E+03 d, dltime =  9.6451E-06 d
Steps completed =   298, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -5.1083

Stepping to zi=  8.2454E-01, delzi=  6.8133E-09, nord= 1
  time =  7.9527E+03 d, dltime =  6.5714E-05 d
Steps completed =   299, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -5.1082

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                    Reaction progress        =  8.24536934205752E-01
                    Log of reaction progress =      -0.0837899



                    Time =  6.871E+08 sec
                         =  7.953E+03 days
                         =  2.177E+01 years

                    Log sec =        8.837
                    Log days =       3.901
                    Log years =      1.338

                    Temperature    =     25.000 degrees C
                    total pressure =      1.013 bars


Flow-through system print following a discontinuity
```

--- Summary of Instantaneously Precipitated Solid Phases ---
(defined by derivatives)

--- Theoretical Rock Composition ---
g/kg

O	4.825597E+01
Al	6.611363E+00
Ca	2.116467E-02
F	1.317216E-03
Fe	6.413957E-01
H	2.562959E-02
P	6.442512E-03
K	8.999709E+00
Mg	4.497763E-03
Mn	5.072754E-02
Na	4.037287E-03
Ni	1.104752E-01
Si	3.521936E+01
Ti	5.765587E-02

--- Oxide Percentages ---

Oxide Theoretical rock

Total = 0.0000

Phase/end-member	d mol/d zi	d grams/d zi	d vol (cc)/d zi
Fluorapatite	1.4567E-05	7.3462E-03	7.2835E-03
Maximum_Microcline	4.6690E-02	1.2995E+01	5.0771E+00
Muscovite	1.4647E-03	5.8339E-01	2.0610E-01
Ni2SiO4	1.9774E-04	4.1420E-02	8.4258E-03
Pyrolusite	1.9400E-04	1.6866E-02	9.7000E-02
Quartz	1.1438E-01	6.8725E+00	2.5951E+00
Rutile	2.5300E-04	2.0209E-02	4.7615E-03
fix CO2(g)	-1.7053E-04	-7.5050E-03	0.0000E+00
fix O2(g)	-1.0800E-03	-3.4560E-02	0.0000E+00
Smectite-di			
Beidellite-Ca	6.4377E-11	2.3598E-08	8.3387E-09
Beidellite-K	1.7504E-10	6.5264E-08	2.3403E-08
Beidellite-Mg	6.5604E-11	2.3877E-08	8.0818E-09
Beidellite-Na	3.1157E-11	1.1451E-08	4.0673E-09
Montmor-Ca	3.5150E-09	1.2867E-06	1.7575E-06
Montmor-K	1.5609E-08	5.8116E-06	7.8044E-06
Montmor-Mg	5.8216E-09	2.1158E-06	2.9108E-06
Montmor-Na	2.7095E-09	9.9442E-07	1.3547E-06
Nontronite-Ca	2.3101E-04	9.8016E-02	3.0285E-02
Nontronite-K	6.2811E-04	2.7045E-01	8.4964E-02
Nontronite-Mg	2.3558E-04	9.9341E-02	3.0569E-02
Nontronite-Na	1.1181E-04	4.7547E-02	1.4771E-02

--- Summary of Solid Phases (E.S.+P.R.S.) ---

Phase/End-member	Log moles	Moles	Mass, g	Volume, cc
Alunite	-2.5559	2.7801E-03	1.1516E+00	8.1624E-01
Diaspore	-1.6079	2.4665E-02	1.4796E+00	4.3804E-01
Fluorapatite	-4.0408	9.1042E-05	4.5913E-02	4.5521E-02
Hematite	-3.7144	1.9300E-04	3.0820E-02	5.8428E-03

```
Maximum_Microcline          -3.4407   3.6251E-04   1.0090E-01   3.9420E-02
Muscovite                   -2.5319   2.9385E-03   1.1704E+00   4.1348E-01
Ni2SiO4                     -2.1959   6.3695E-03   1.3342E+00   2.7140E-01
Nontronite-H                -4.9990   1.0023E-05   4.1899E-03   5.0117E-03
Pyrolusite                  -3.1228   7.5363E-04   6.5518E-02   3.7682E-01
Quartz                      -0.7033   1.9800E-01   1.1896E+01   4.4921E+00
Rutile                      -3.6807   2.0861E-04   1.6663E-02   3.9260E-03
fix     CO2(g)               2.3010   2.0000E+02   8.8020E+03   0.0000E+00
fix     O2(g)                2.3010   2.0000E+02   6.3997E+03   0.0000E+00

Smectite-di                 -3.0970   7.9977E-04
  Beidellite-Ca             -9.6142   2.4312E-10   8.9117E-08   3.1491E-08
  Beidellite-K              -9.1496   7.0854E-10   2.6418E-07   9.4732E-08
  Beidellite-Mg             -9.5999   2.5125E-10   9.1445E-08   3.0951E-08
  Beidellite-Na             -9.9693   1.0733E-10   3.9449E-08   1.4011E-08
  Montmor-Ca                -9.1260   7.4823E-10   2.7389E-07   3.7412E-07
  Montmor-K                 -8.4629   3.4441E-09   1.2824E-06   1.7221E-06
  Montmor-Mg                -8.9054   1.2432E-09   4.5185E-07   6.2162E-07
  Montmor-Na                -9.2484   5.6439E-10   2.0714E-07   2.8219E-07
  Nontronite-Ca             -3.8106   1.5468E-04   6.5629E-02   2.0278E-02
  Nontronite-K              -3.3793   4.1755E-04   1.7979E-01   5.6482E-02
  Nontronite-Mg             -3.7963   1.5986E-04   6.7410E-02   2.0743E-02
  Nontronite-Na             -4.1696   6.7676E-05   2.8780E-02   8.9406E-03


                          Mass, grams        Volume, cc

          Created         1.521933E+04       7.014289E+00
          Destroyed       0.000000E+00       0.000000E+00
          Net             1.521933E+04       7.014289E+00

         Warning-- these volume totals may be incomplete because
         of missing partial molar volume data in the data base




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Stepping to zi=  8.2454E-01, delzi=  6.8133E-08, nord= 2
  time =  7.9527E+03 d, dltime =  6.5714E-04 d
Steps completed =   300, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -5.1078

Stepping to zi=  8.2454E-01, delzi=  6.8133E-07, nord= 2
  time =  7.9527E+03 d, dltime =  6.5714E-03 d
Steps completed =   301, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -5.1035

Stepping to zi=  8.2454E-01, delzi=  6.8133E-06, nord= 2
  time =  7.9528E+03 d, dltime =  6.5714E-02 d
Steps completed =   302, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -5.0625

Stepping to zi=  8.2461E-01, delzi=  6.8133E-05, nord= 2
  time =  7.9534E+03 d, dltime =  6.5714E-01 d
Steps completed =   303, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -4.7838

Stepping to zi=  8.2478E-01, delzi=  1.7033E-04, nord= 2
  time =  7.9551E+03 d, dltime =  1.6429E+00 d
```

```
Steps completed =   304, iter =  8, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -4.4445

Stepping to zi=  8.2512E-01, delzi=  3.4066E-04, nord= 2
  time =  7.9584E+03 d, dltime =  3.2857E+00 d
Steps completed =   305, iter = 11, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -4.1255

Stepping to zi=  8.2580E-01, delzi=  6.8133E-04, nord= 2
  time =  7.9649E+03 d, dltime =  6.5714E+00 d
Steps completed =   306, iter =  9, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -3.8158

Stepping to zi=  8.2717E-01, delzi=  1.3627E-03, nord= 3
  time =  7.9781E+03 d, dltime =  1.3143E+01 d
Steps completed =   307, iter =  8, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -3.5105

Stepping to zi=  8.2989E-01, delzi=  2.7253E-03, nord= 3
  time =  8.0044E+03 d, dltime =  2.6286E+01 d
Steps completed =   308, iter =  8, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -3.2073

Stepping to zi=  8.3534E-01, delzi=  5.4506E-03, nord= 3
  time =  8.0569E+03 d, dltime =  5.2571E+01 d
Steps completed =   309, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -2.9052

Stepping to zi=  8.4624E-01, delzi=  1.0901E-02, nord= 4
  time =  8.1621E+03 d, dltime =  1.0514E+02 d
Steps completed =   310, iter = 23, ncorr = 0
Most rapidly changing is zvclg1(Montmor-Na              ) =    -10.1327

Stepping to zi=  8.8453E-01, delzi=  3.8289E-02, nord= 5
  time =  8.5314E+03 d, dltime =  3.6930E+02 d
Steps completed =   311, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Montmor-Na              ) =     -9.5378

Stepping to zi=  9.5333E-01, delzi=  6.8801E-02, nord= 5
  time =  9.1950E+03 d, dltime =  6.6359E+02 d
Steps completed =   312, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Montmor-Na              ) =     -8.8863

Stepping to zi=  1.0000E+00, delzi=  4.6665E-02, nord= 6
  time =  9.6451E+03 d, dltime =  4.5009E+02 d
Steps completed =   313, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Montmor-Na              ) =     -8.5019

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                    Reaction progress        =  9.99999999999944E-01
                    Log of reaction progress =       0.0000000


                    Time =  8.333E+08 sec
                         =  9.645E+03 days
                         =  2.641E+01 years

                    Log sec =        8.921
                    Log days =       3.984
                    Log years =      1.422
```

```
Temperature    =     25.000 degrees C
total pressure =      1.013 bars

Step size is limited by the print requirement

--- Reactant Summary ---

   Reactant                  Moles     Delta moles    Mass, g    Delta Mass, g

 Tuff                      9.9000E+01   1.0000E+00   2.0381E+03   2.0586E+01

              Current total mass =  2.03806E+03 grams
              Delta total mass   =  2.05865E+01 grams
              Delta total volume =      0.00000 cc

   Reactant                Rel. Rate      Rate         Rate
                            mol/mol       mol/s      mol/s/cm2

 Tuff                      1.0000E+00   1.2000E-09   2.5000E-15

   Reactant                  Affinity   Surface Area
                             kcal/mol     mol/s/cm2

 Tuff                       999.00000   4.8000E+05

   Reactant                Rate Constants, mol/s/cm2

 Tuff
                  Forward    2.5000E-15

        Affinity of the overall irreversible reaction=     0.000 kcal
        Contributions from irreversible reactions
        with no thermodynamic data are not included


    --- Element Totals for the Aqueous Solution ---

 Element        mg/kg soln.          Molality             Moles

     O          8.865720E+05        5.558918E+01        5.555782E+01
     Al         5.153961E-05        1.916260E-09        1.915179E-09
     B          1.335772E-01        1.239499E-05        1.238800E-05
     Ba         1.369686E-05        1.000564E-10        1.000000E-10
     Ca         7.511634E+01        1.880218E-03        1.879158E-03
     Ce         1.397492E-19        1.000564E-24        9.999993E-25
     Cl         7.121540E+00        2.015137E-04        2.014000E-04
     Cr         2.998468E+02        5.785070E-03        5.781806E-03
     Cs         1.325586E-05        1.000564E-10        1.000000E-10
     Cu         6.654917E-10        1.050593E-14        1.050000E-14
     F          4.008752E-01        2.116762E-05        2.115568E-05
     Fe         1.727955E-08        3.103934E-13        3.102183E-13
     Gd         1.568396E-09        1.000564E-14        9.999998E-15
```

H	1.115443E+05	1.110178E+02	1.109552E+02
C	9.708182E-01	8.108466E-05	8.103892E-05
P	4.521530E-04	1.464439E-08	1.463613E-08
K	2.733041E+02	7.012424E-03	7.008468E-03
La	1.385430E-09	1.000564E-14	9.999999E-15
Li	6.922886E-07	1.000564E-10	1.000000E-10
Mg	3.150204E+01	1.300238E-03	1.299505E-03
Mn	2.942446E-09	5.372979E-14	5.369948E-14
Mo	2.180925E+02	2.280452E-03	2.279166E-03
N	1.983766E+00	1.420802E-04	1.420000E-04
Na	5.924769E+02	2.585334E-02	2.583876E-02
Nd	1.438636E-09	1.000564E-14	9.999998E-15
Ni	1.808759E+00	3.091693E-05	3.089949E-05
Pb	2.066593E-05	1.000564E-10	1.000000E-10
Pu	2.433633E-09	1.000565E-14	1.000000E-14
S	3.732991E+02	1.167864E-02	1.167205E-02
Si	2.811762E+00	1.004330E-04	1.003763E-04
Sm	1.499676E-09	1.000564E-14	9.999998E-15
Sr	8.739133E-06	1.000564E-10	1.000000E-10
Ti	1.078496E-05	2.259666E-10	2.258392E-10
U	2.374078E-09	1.000565E-14	1.000000E-14
V	4.771445E+00	9.396327E-05	9.391026E-05
Zn	6.521935E-06	1.000564E-10	1.000000E-10
Zr	9.098605E-16	1.000566E-20	1.000001E-20

Single ion activities and activity coefficients are here defined
with respect to the modified NBS pH scale

	pH	Eh	pe
modified NBS pH scale	7.0623	0.8013	1.3545E+01
rational pH scale	6.9868	0.8057	1.3620E+01

pHCl = 10.8489

Oxygen fugacity = 2.09991E-01
Log oxygen fugacity = -0.67780

Activity of water = 0.99913
Log activity of water = -0.00038

Ionic strength = 5.627426E-02 molal
Sum of molalities = 0.0549281297780
Osmotic coefficient = 0.87919

Mass of solution = 1.002617 kg
Mass of solutes = 0.003181 kg
Conc. of solutes = 0.317240 per cent (w/w)

Moles of solvent H2O = 5.54771E+01
Mass of solvent H2O = 9.99436E-01 kg

Species	Molality	Log molality	Log gamma	Log activity
Na+	2.5145E-02	-1.5995	-0.0967	-1.6962

SO4--	9.9023E-03	-2.0043	-0.3545	-2.3588
K+	6.7965E-03	-2.1677	-0.1025	-2.2702
CrO4--	5.0046E-03	-2.3006	-0.3545	-2.6551
MoO4--	2.2805E-03	-2.6420	-0.3438	-2.9858
Ca++	1.4941E-03	-2.8256	-0.3413	-3.1669
Mg++	8.3642E-04	-3.0776	-0.3096	-3.3871
HCrO4-	7.2545E-04	-3.1394	-0.0836	-3.2230
NaSO4-	7.0572E-04	-3.1514	-0.0836	-3.2350
MgSO4(aq)	4.6323E-04	-3.3342	0.0000	-3.3342
CaSO4(aq)	3.8495E-04	-3.4146	0.0000	-3.4146
O2(aq)	2.6182E-04	-3.5820	0.0059	-3.5761
KSO4-	2.1588E-04	-3.6658	-0.0836	-3.7494
Cl-	2.0085E-04	-3.6971	-0.0895	-3.7866
NO3-	1.4158E-04	-3.8490	-0.0895	-3.9385
SiO2(aq)	1.0016E-04	-3.9993	0.0000	-3.9993
HCO3-	6.7912E-05	-4.1681	-0.0836	-4.2517
VO3OH--	4.5956E-05	-4.3377	-0.3545	-4.6922
Cr2O7--	2.7493E-05	-4.5608	-0.3545	-4.9153
H2VO4-	2.6575E-05	-4.5755	-0.0836	-4.6592
Ni++	2.4409E-05	-4.6125	-0.3413	-4.9538
F-	2.0864E-05	-4.6806	-0.0865	-4.7671
VO2(OH)2-	1.6469E-05	-4.7833	-0.0836	-4.8670
B(OH)3(aq)	1.2286E-05	-4.9106	0.0000	-4.9106
CO2(aq)	1.0597E-05	-4.9748	0.0059	-4.9689
NiSO4(aq)	6.5039E-06	-5.1868	0.0000	-5.1868
HVO4--	4.9505E-06	-5.3054	-0.3545	-5.6599
NaHCO3(aq)	1.6076E-06	-5.7938	0.0000	-5.7938
NaCl(aq)	5.4974E-07	-6.2598	0.0000	-6.2598
CaHCO3+	5.3061E-07	-6.2752	-0.0967	-6.3719
CaNO3+	4.9124E-07	-6.3087	-0.0967	-6.4054
MgHCO3+	3.1158E-07	-6.5064	-0.0967	-6.6031
MgF+	1.9719E-07	-6.7051	-0.0967	-6.8018
HSiO3-	1.5622E-07	-6.8063	-0.0836	-6.8899
OH-	1.4233E-07	-6.8467	-0.0865	-6.9332
NaHSiO3(aq)	1.1545E-07	-6.9376	0.0000	-6.9376
H+	1.0309E-07	-6.9868	-0.0755	-7.0623
BO2-	9.7909E-08	-7.0092	-0.0836	-7.0928
CaF+	6.9885E-08	-7.1556	-0.0967	-7.2523
CO3--	6.6933E-08	-7.1744	-0.3438	-7.5182
MgCl+	6.1382E-08	-7.2120	-0.0967	-7.3086
CaCO3(aq)	4.3851E-08	-7.3580	0.0000	-7.3580
HSO4-	4.3820E-08	-7.3583	-0.0836	-7.4420
NaF(aq)	3.4602E-08	-7.4609	0.0000	-7.4609
KCl(aq)	2.8089E-08	-7.5515	0.0000	-7.5515
CaCl+	2.8025E-08	-7.5525	-0.0967	-7.6491
MgCO3(aq)	1.1846E-08	-7.9264	0.0000	-7.9264
VO(OH)3(aq)	1.1769E-08	-7.9292	0.0000	-7.9292
HPO4--	6.7316E-09	-8.1719	-0.3545	-8.5264
H2PO4-	5.0159E-09	-8.2997	-0.0836	-8.3833
CaB(OH)4+	4.5592E-09	-8.3411	-0.0967	-8.4378
NiNO3+	4.0222E-09	-8.3955	-0.0967	-8.4922
MgB(OH)4+	3.2673E-09	-8.4858	-0.0967	-8.5825
NaB(OH)4(aq)	3.0277E-09	-8.5189	0.0000	-8.5189
NaCO3-	2.4189E-09	-8.6164	-0.0836	-8.7000
HF(aq)	2.1814E-09	-8.6613	0.0000	-8.6613
AlO2-	1.5602E-09	-8.8068	-0.0836	-8.8905
CaOH+	1.3857E-09	-8.8583	-0.0967	-8.9550
CaHPO4(aq)	1.1135E-09	-8.9533	0.0000	-8.9533
MgHPO4(aq)	9.9193E-10	-9.0035	0.0000	-9.0035
NaHPO4-	6.0397E-10	-9.2190	-0.0836	-9.3026
NaOH(aq)	3.7230E-10	-9.4291	0.0000	-9.4291
HAlO2(aq)	3.1452E-10	-9.5023	0.0000	-9.5023
NiCl+	2.2915E-10	-9.6399	-0.0967	-9.7366

Ti(OH)4(aq)	2.2597E-10	-9.6460	0.0000	-9.6460
KOH(aq)	2.1462E-10	-9.6683	0.0000	-9.6683
KHPO4-	1.1668E-10	-9.9330	-0.0836	-10.0166
Cs+	1.0005E-10	-9.9998	-0.1057	-10.1055
Ba++	1.0000E-10	-10.0000	-0.3599	-10.3598

--- Summary of Instantaneously Precipitated Solid Phases ---
(defined by derivatives)

--- Theoretical Rock Composition ---
g/kg

O	4.831740E+01
Al	6.616051E+00
Ca	2.591811E-02
F	1.314881E-03
Fe	6.418506E-01
H	2.653906E-02
P	6.431090E-03
K	8.947015E+00
Mg	7.351916E-03
Mn	5.076352E-02
Na	7.626537E-03
Ni	6.535189E-02
Si	3.524425E+01
Ti	5.769676E-02

--- Oxide Percentages ---

Oxide	Theoretical rock

Total = 0.0000

Phase/end-member	d mol/d zi	d grams/d zi	d vol (cc)/d zi
Fluorapatite	1.4531E-05	7.3280E-03	7.2655E-03
Maximum_Microcline	4.6412E-02	1.2918E+01	5.0469E+00
Muscovite	1.5572E-03	6.2024E-01	2.1911E-01
Ni2SiO4	1.1689E-04	2.4485E-02	4.9808E-03
Pyrolusite	1.9400E-04	1.6866E-02	9.7000E-02
Quartz	1.1502E-01	6.9107E+00	2.6095E+00
Rutile	2.5300E-04	2.0209E-02	4.7615E-03
fix CO2(g)	-2.7203E-04	-1.1972E-02	0.0000E+00
fix O2(g)	-7.1831E-04	-2.2985E-02	0.0000E+00
Smectite-di			
Beidellite-Ca	2.0669E-10	7.5766E-08	2.6773E-08
Beidellite-K	1.7509E-10	6.5281E-08	2.3409E-08
Beidellite-Mg	2.0777E-10	7.5619E-08	2.5595E-08
Beidellite-Na	1.1230E-10	4.1273E-08	1.4659E-08
Montmor-Ca	6.5597E-08	2.4011E-05	3.2798E-05
Montmor-K	1.2618E-07	4.6980E-05	6.3089E-05
Montmor-Mg	1.0740E-07	3.9035E-05	5.3702E-05
Montmor-Na	5.5590E-08	2.0403E-05	2.7795E-05
Nontronite-Ca	3.8248E-04	1.6229E-01	5.0144E-02
Nontronite-K	2.2893E-04	9.8575E-02	3.0968E-02
Nontronite-Mg	3.8408E-04	1.6196E-01	4.9838E-02
Nontronite-Na	2.1100E-04	8.9732E-02	2.7876E-02

--- Summary of Solid Phases (E.S.+P.R.S.) ---

Phase/End-member	Log moles	Moles	Mass, g	Volume, cc
Alunite	-2.5559	2.7801E-03	1.1516E+00	8.1624E-01
Diaspore	-1.6079	2.4665E-02	1.4796E+00	4.3804E-01
Fluorapatite	-4.0288	9.3594E-05	4.7200E-02	4.6797E-02
Hematite	-3.7144	1.9300E-04	3.0820E-02	5.8428E-03
Maximum_Microcline	-2.0687	8.5361E-03	2.3759E+00	9.2822E-01
Muscovite	-2.4946	3.2018E-03	1.2753E+00	4.5052E-01
Ni2SiO4	-2.1940	6.3971E-03	1.3400E+00	2.7258E-01
Nontronite-H	-4.9990	1.0023E-05	4.1899E-03	5.0117E-03
Pyrolusite	-3.1037	7.8767E-04	6.8478E-02	3.9384E-01
Quartz	-0.6613	2.1811E-01	1.3105E+01	4.9485E+00
Rutile	-3.5969	2.5300E-04	2.0209E-02	4.7615E-03
fix CO2(g)	2.3010	2.0000E+02	8.8020E+03	0.0000E+00
fix O2(g)	2.3010	2.0000E+02	6.3997E+03	0.0000E+00
Smectite-di	-2.9950	1.0115E-03		
Beidellite-Ca	-9.5785	2.6394E-10	9.6750E-08	3.4188E-08
Beidellite-K	-9.1312	7.3926E-10	2.7563E-07	9.8839E-08
Beidellite-Mg	-9.5650	2.7227E-10	9.9096E-08	3.3541E-08
Beidellite-Na	-9.9274	1.1821E-10	4.3446E-08	1.5431E-08
Montmor-Ca	-8.3438	4.5315E-09	1.6587E-06	2.2658E-06
Montmor-K	-7.9007	1.2570E-08	4.6801E-06	6.2849E-06
Montmor-Mg	-8.1278	7.4508E-09	2.7079E-06	3.7254E-06
Montmor-Na	-8.4305	3.7111E-09	1.3620E-06	1.8555E-06
Nontronite-Ca	-3.6830	2.0751E-04	8.8047E-02	2.7205E-02
Nontronite-K	-3.3050	4.9544E-04	2.1333E-01	6.7018E-02
Nontronite-Mg	-3.6711	2.1323E-04	8.9919E-02	2.7669E-02
Nontronite-Na	-4.0210	9.5273E-05	4.0516E-02	1.2587E-02

	Mass, grams	Volume, cc
Created	1.522301E+04	8.444832E+00
Destroyed	2.058647E+01	0.000000E+00
Net	1.520243E+04	8.444832E+00

Warning-- these volume totals may be incomplete because
of missing partial molar volume data in the data base

--- Summary of Pure Mineral Saturation States ---

Mineral	Log Q/K	Aff, kcal	State
Alamosite	-5.919	-8.075	
Albite	-2.466	-3.364	
Albite_high	-3.784	-5.163	
Albite_low	-2.466	-3.364	
Alunite	-7.035	-9.598	
Analcime	-2.494	-3.402	
Andalusite	-6.082	-8.298	
Anglesite	-4.877	-6.653	
Anhydrite	-1.219	-1.663	
Aragonite	-2.349	-3.205	
Arcanite	-5.098	-6.956	
BaCrO4	-3.083	-4.206	
BaZrO3	79.465	108.413	ssatd
Barite	-2.748	-3.748	
Bassanite	-1.864	-2.544	

Beidellite-Ca	-2.313	-3.155	
Beidellite-Cs	-4.688	-6.395	
Beidellite-H	-3.163	-4.315	
Beidellite-K	-2.257	-3.079	
Beidellite-Mg	-2.311	-3.153	
Beidellite-Na	-2.406	-3.282	
Boehmite	-0.634	-0.864	
Boric_acid	-4.752	-6.483	
Brucite	-5.561	-7.587	
Bunsenite	-3.301	-4.504	
Ca2V2O7	-4.525	-6.173	
CaSO4:0.5H2O(beta)	-2.032	-2.773	
CaV2O6	-3.833	-5.230	
CaZrO3	140.688	191.938	ssatd
Calcite	-2.205	-3.008	
CeO2	-4.845	-6.609	
Celadonite	-0.995	-1.358	
Celestite	-7.182	-9.798	
Cerussite	-4.351	-5.936	
Chalcedony	-0.271	-0.370	
Chrysotile	-6.914	-9.432	
Clinoptilolite	-6.684	-9.118	
Clinoptilolite-K	-6.663	-9.091	
Clinoptilolite-hy-K	-6.658	-9.084	
Coesite	-0.810	-1.105	
Corundum	-4.451	-6.072	
CrO2	-6.677	-9.109	
Cristobalite(alpha)	-0.551	-0.751	
Cristobalite(beta)	-0.994	-1.356	
Crocoite	-0.308	-0.421	
Dawsonite	-3.364	-4.589	
Diaspore	-0.230	-0.313	
Diopside	-7.269	-9.916	
Dolomite	-3.446	-4.702	
Dolomite-dis	-4.991	-6.809	
Dolomite-ord	-3.446	-4.702	
Enstatite	-4.589	-6.261	
Epsomite	-3.786	-5.166	
Fe(OH)3	-6.255	-8.534	
Fluorapatite	0.000	0.000	satd
Fluorite	-2.664	-3.635	
GdPO4:H2O	-4.933	-6.730	
Gibbsite	-0.826	-1.127	
Glauberite	-5.808	-7.924	
Goethite	-1.134	-1.547	
Gypsum	-1.044	-1.425	
Halite	-7.068	-9.643	
Hematite	-1.307	-1.783	
Heulandite	-5.706	-7.785	
Hexahydrite	-4.021	-5.486	
Ice	-0.139	-0.190	
Illite	-1.524	-2.079	
Jadeite	-4.091	-5.581	
K-Feldspar	0.000	0.000	ssatd
Kalicinite	-6.806	-9.285	
Kalsilite	-3.175	-4.332	
Kaolinite	-0.948	-1.293	
Kieserite	-5.479	-7.475	
Kyanite	-5.812	-7.929	
LaPO4:H2O	-4.460	-6.085	
Lansfordite	-5.419	-7.393	
Laumontite	-4.847	-6.612	
Lawsonite	-5.394	-7.359	

Lopezite	-6.538	-8.920	
Magnesite	-2.870	-3.916	
Manganite	-4.459	-6.084	
Maximum_Microcline	0.000	0.000	satd
Mesolite	-1.040	-1.418	
Mirabilite	-4.615	-6.296	
MnO2(gamma)	-1.518	-2.071	
Monohydrocalcite	-3.039	-4.146	
Montmor-Ca	-1.567	-2.138	
Montmor-Cs	-3.876	-5.287	
Montmor-K	-1.441	-1.966	
Montmor-Mg	-1.496	-2.041	
Montmor-Na	-1.594	-2.174	
Mordenite	-3.417	-4.661	
Morenosite	-5.301	-7.232	
Muscovite	0.000	0.000	satd
Nahcolite	-5.836	-7.962	
Natrolite	-5.926	-8.085	
NdPO4:H2O	-4.742	-6.470	
Nepheline	-5.503	-7.508	
Nesquehonite	-5.573	-7.603	
Ni(OH)2	-3.578	-4.882	
Ni2SiO4	0.000	0.000	satd
NiCO3	-5.655	-7.715	
NiSO4:6H2O(alpha)	-5.308	-7.241	
Niter	-6.003	-8.189	
Nontronite-Ca	-0.199	-0.272	
Nontronite-H	-1.049	-1.431	
Nontronite-K	-0.143	-0.195	
Nontronite-Mg	-0.198	-0.270	
Nontronite-Na	-0.292	-0.399	
Paragonite	-3.362	-4.587	
Paralaurionite	-7.299	-9.958	
Pentahydrite	-4.361	-5.949	
Phlogopite	-5.504	-7.510	
Plattnerite	-4.254	-5.804	
Pseudowollastonite	-7.042	-9.607	
PuO2	-1.869	-2.549	
PuO2(OH)2	-6.444	-8.792	
Pyrolusite	0.000	0.000	satd
Pyrophyllite	-2.576	-3.514	
Quartz	0.000	0.000	satd
Rutile	0.000	0.000	satd
Sanidine_high	-1.199	-1.636	
Saponite-Ca	-4.661	-6.360	
Saponite-Cs	-7.037	-9.600	
Saponite-H	-5.512	-7.519	
Saponite-K	-4.606	-6.283	
Saponite-Mg	-4.660	-6.358	
Saponite-Na	-4.755	-6.487	
Scolecite	-3.057	-4.171	
Sellaite	-3.537	-4.825	
SiO2(am)	-1.286	-1.754	
Sillimanite	-6.446	-8.794	
SmPO4:H2O	-4.770	-6.508	
SrZrO3	116.320	158.693	ssatd
Starkeyite	-4.748	-6.477	
Stilbite	-1.300	-1.773	
Sylvite	-6.903	-9.417	
Syngenite	-4.825	-6.583	
Talc	-4.925	-6.719	
Tarapacaite	-6.792	-9.266	
Thenardite	-5.442	-7.425	

Trevorite	-1.816	-2.477	
Tridymite	-0.172	-0.234	
Witherite	-4.553	-6.211	
Wollastonite	-6.803	-9.281	
fix CO2(g)	0.000	0.000	satd
fix O2(g)	0.000	0.000	satd

--- Summary of Solid Solutions ---

--- Carbonate-Calcite ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Calcite	8.2221E-01	-0.0850	0.0000	-0.0850
Magnesite	1.7778E-01	-0.7501	0.0000	-0.7501
Rhodochrosite	2.2418E-09	-8.6494	0.0000	-8.6494
Siderite	6.3559E-18	-17.1968	0.0000	-17.1968
Smithsonite	1.3239E-06	-5.8782	0.0000	-5.8782
Strontianite	5.5493E-06	-5.2558	0.0000	-5.2558

Mineral	Log Q/K	Aff, kcal	State
Carbonate-Calcite	-2.120	-2.892	
Calcite	-2.120	-2.892	
Magnesite	-2.120	-2.892	
Rhodochrosite	-2.120	-2.892	
Siderite	-2.120	-2.892	
Smithsonite	-2.120	-2.892	
Strontianite	-2.120	-2.892	

--- Clinoptilolite-hy-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-hy-Ca	2.6301E-02	-1.5800	0.0000	-1.5800
Clinoptilolite-hy-Cs	8.4587E-26	-25.0727	0.0000	-25.0727
Clinoptilolite-hy-K	9.5935E-01	-0.0180	0.0000	-0.0180
Clinoptilolite-hy-Na	1.4352E-02	-1.8431	0.0000	-1.8431
Clinoptilolite-hy-Sr	7.0164E-15	-14.1539	0.0000	-14.1539

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-hy-ss	-6.640	-9.059	
Clinoptilolite-hy-Ca	-6.640	-9.059	
Clinoptilolite-hy-Cs	-6.640	-9.059	
Clinoptilolite-hy-K	-6.640	-9.059	
Clinoptilolite-hy-Na	-6.640	-9.059	
Clinoptilolite-hy-Sr	-6.640	-9.059	

--- Clinoptilolite-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-Ca	2.1463E-01	-0.6683	-1.6440	-2.3123
Clinoptilolite-Cs	3.4709E-08	-7.4596	-18.3505	-25.8101
Clinoptilolite-K	6.0529E-01	-0.2180	-0.5364	-0.7544
Clinoptilolite-NH4	1.0248E-62	-61.9893	-152.4938	-214.4831
Clinoptilolite-Na	1.8003E-01	-0.7447	-1.8318	-2.5765
Clinoptilolite-Sr	4.9894E-05	-4.3020	-10.5828	-14.8848

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-ss	-5.909	-8.061	
Clinoptilolite-Ca	-5.909	-8.061	
Clinoptilolite-Cs	-5.909	-8.061	
Clinoptilolite-K	-5.909	-8.061	
Clinoptilolite-NH4	-5.909	-8.061	
Clinoptilolite-Na	-5.909	-8.061	
Clinoptilolite-Sr	-5.909	-8.061	

--- Saponite-tri ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Saponite-Ca	2.4931E-01	-0.6033	0.4042	-0.1991
Saponite-H	6.6166E-04	-3.1794	2.1302	-1.0492
Saponite-K	3.6814E-01	-0.4340	0.2908	-0.1432
Saponite-Mg	2.5170E-01	-0.5991	0.4014	-0.1977
Saponite-Na	1.3019E-01	-0.8854	0.5932	-0.2922

Mineral	Log Q/K	Aff, kcal	State
Saponite-tri	-4.462	-6.088	
Saponite-Ca	-4.462	-6.088	
Saponite-H	-4.462	-6.088	
Saponite-K	-4.462	-6.088	
Saponite-Mg	-4.462	-6.088	
Saponite-Na	-4.462	-6.088	

--- Smectite-di ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Beidellite-Ca	9.8178E-08	-7.0080	4.6954	-2.3126
Beidellite-K	1.4508E-07	-6.8384	4.5817	-2.2567
Beidellite-Mg	9.9118E-08	-7.0038	4.6926	-2.3113
Beidellite-Na	5.1269E-08	-7.2901	4.8844	-2.4057
Montmor-Ca	1.7813E-05	-4.7493	3.1820	-1.5673
Montmor-K	4.2989E-05	-4.3666	2.9257	-1.4410
Montmor-Mg	2.9227E-05	-4.5342	3.0379	-1.4963
Montmor-Na	1.4815E-05	-4.8293	3.2356	-1.5937
Nontronite-Ca	2.4934E-01	-0.6032	0.4042	-0.1991
Nontronite-K	3.6845E-01	-0.4336	0.2905	-0.1431

Nontronite-Mg	2.5190E-01	-0.5988	0.4012	-0.1976
Nontronite-Na	1.3021E-01	-0.8854	0.5932	-0.2922

Mineral	Log Q/K	Aff, kcal	State
Smectite-di	0.000	0.000	satd
Beidellite-Ca	0.000	0.000	satd
Beidellite-K	0.000	0.000	satd
Beidellite-Mg	0.000	0.000	satd
Beidellite-Na	0.000	0.000	satd
Montmor-Ca	0.000	0.000	satd
Montmor-K	0.000	0.000	satd
Montmor-Mg	0.000	0.000	satd
Montmor-Na	0.000	0.000	satd
Nontronite-Ca	0.000	0.000	satd
Nontronite-K	0.000	0.000	satd
Nontronite-Mg	0.000	0.000	satd
Nontronite-Na	0.000	0.000	satd

--- Lanthanide hydroxide ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
La(OH)3	1.3620E-05	-4.8658	0.0000	-4.8658
Ce(OH)3	3.1496E-15	-14.5017	0.0000	-14.5017
Nd(OH)3(c)	3.5642E-01	-0.4480	0.0000	-0.4480
Gd(OH)3	5.7687E-01	-0.2389	0.0000	-0.2389
Sm(OH)3	6.6695E-02	-1.1759	0.0000	-1.1759

Mineral	Log Q/K	Aff, kcal	State
Lanthanide hydroxide	-9.623	-13.129	
La(OH)3	-9.623	-13.129	
Ce(OH)3	-9.623	-13.129	
Nd(OH)3(c)	-9.623	-13.129	
Gd(OH)3	-9.623	-13.129	
Sm(OH)3	-9.623	-13.129	

--- Rhabdophane-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaPO4:H2O	4.2585E-01	-0.3707	0.0000	-0.3707
CePO4:H2O	3.1141E-11	-10.5067	0.0000	-10.5067
NdPO4:H2O	2.2235E-01	-0.6530	0.0000	-0.6530
GdPO4:H2O	1.4327E-01	-0.8438	0.0000	-0.8438
SmPO4:H2O	2.0853E-01	-0.6808	0.0000	-0.6808

Mineral	Log Q/K	Aff, kcal	State
Rhabdophane-ss	-4.089	-5.579	
LaPO4:H2O	-4.089	-5.579	

CePO4:H2O	-4.089	-5.579
NdPO4:H2O	-4.089	-5.579
GdPO4:H2O	-4.089	-5.579
SmPO4:H2O	-4.089	-5.579

--- Lanthanide fluoride ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaF3:0.5H2O	5.8150E-01	-0.2355	0.0000	-0.2355
CeF3:0.5H2O	6.7394E-11	-10.1714	0.0000	-10.1714
NdF3:0.5H2O	3.8224E-01	-0.4177	0.0000	-0.4177
GdF3:0.5H2O	7.7884E-03	-2.1086	0.0000	-2.1086
SmF3:0.5H2O	2.8475E-02	-1.5455	0.0000	-1.5455

Mineral	Log Q/K	Aff, kcal	State
Lanthanide fluoride	-10.712	-14.614	
LaF3:0.5H2O	-10.712	-14.614	
CeF3:0.5H2O	-10.712	-14.614	
NdF3:0.5H2O	-10.712	-14.614	
GdF3:0.5H2O	-10.712	-14.614	
SmF3:0.5H2O	-10.712	-14.614	

--- Summary of Gases ---

Gas	Fugacity	Log fugacity
Al(g)	9.7049-192	-191.0130
B(g)	8.4945-204	-203.0709
BF3(g)	3.7055E-38	-37.4311
C(g)	3.0917-190	-189.5098
CH4(g)	3.5233-146	-145.4531
CO(g)	6.0395E-49	-48.2190
CO2(g)	3.1623E-04	-3.5000
Ca(g)	4.6503-153	-152.3325
Chlorine	3.2663E-27	-26.4859
Cs(g)	3.7155E-84	-83.4300
Cu(g)	5.8228E-83	-82.2349
Fluorine	6.8209E-82	-81.1662
H2(g)	6.1097E-42	-41.2140
H2O(g)	2.5955E-02	-1.5858
H2S(g)	2.1274-140	-139.6722
HCl(g)	7.0080E-18	-17.1544
HF(g)	1.1430E-13	-12.9420
K(g)	1.2718E-76	-75.8956
Li(g)	8.2464E-98	-97.0837
Mg(g)	1.8866-130	-129.7243
Nitrogen	2.4337E-18	-17.6137
NH3(g)	1.7963E-68	-67.7456
NO(g)	4.9123E-25	-24.3087
NO2(g)	3.3588E-19	-18.4738
Na(g)	2.4884E-75	-74.6041
O2(g)	2.0999E-01	-0.6778
Pb(g)	8.5617E-71	-70.0674

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S2(g)                       2.7033-223   -222.5681
SO2(g)                      3.7698E-53    -52.4237
Si(g)                       4.2257-221   -220.3741
SiF4(g)                     7.5351E-37    -36.1229
Ti(g)                       3.8019-231   -230.4200
TiCl4(g)                    8.0933E-82    -81.0919
U(g)                        1.9999-297   -296.6990
U2Cl10(g)                   1.1664-237   -236.9332
U2Cl8(g)                    1.1071-241   -240.9558
U2F10(g)                    2.0566-152   -151.6869
UCl(g)                      1.2495-252   -251.9033
UCl2(g)                     2.3355-206   -205.6316
UCl3(g)                     9.5611-158   -157.0195
UCl4(g)                     2.1195-126   -125.6738
UCl5(g)                     2.4175-132   -131.6166
UCl6(g)                     5.1227-133   -132.2905
UF(g)                       4.3310-238   -237.3634
UF2(g)                      6.9560-197   -196.1576
UF3(g)                      2.7493-149   -148.5608
UF4(g)                      1.6040E-98    -97.7948
UF5(g)                      4.2862E-89    -88.3679
UF6(g)                      1.1278E-93    -92.9478
UO(g)                       1.5795-212   -211.8015
UO2(g)                      2.9263-128   -127.5337
UO2Cl2(g)                   4.1733E-74    -73.3795
UO2F2(g)                    9.0169E-63    -62.0449
UO3(g)                      2.1524E-75    -74.6671
UOF4(g)                     4.7797E-76    -75.3206
Zn(g)                       1.4218E-80    -79.8472



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Stepping to zi=  1.0000E+00, delzi=  1.0000E-10, nord= 0
  time =  9.6451E+03 d, dltime =  9.6451E-07 d
Steps completed =   314, iter =  1, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -36.0998

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                    Reaction progress        =  1.00000000009994E+00
                    Log of reaction progress =       0.0000000



                    Time =  8.333E+08 sec
                         =  9.645E+03 days
                         =  2.641E+01 years

                    Log sec =        8.921
                    Log days =       3.984
                    Log years =      1.422

                    Temperature    =     25.000 degrees C
                    total pressure =      1.013 bars


Step size is limited by the P.R.S. shift requirement
```

--- Reactant Summary ---

Reactant	Moles	Delta moles	Mass, g	Delta Mass, g
Tuff	9.9000E+01	1.0000E+00	2.0381E+03	2.0586E+01

Current total mass = 2.03806E+03 grams
Delta total mass = 2.05865E+01 grams
Delta total volume = 0.00000 cc

Reactant	Rel. Rate mol/mol	Rate mol/s	Rate mol/s/cm2
Tuff	1.0000E+00	1.2000E-09	2.5000E-15

Reactant	Affinity kcal/mol	Surface Area mol/s/cm2
Tuff	999.00000	4.8000E+05

Reactant	Rate Constants, mol/s/cm2	
Tuff		
	Forward	2.5000E-15

Affinity of the overall irreversible reaction= 0.000 kcal
Contributions from irreversible reactions
with no thermodynamic data are not included

--- Element Totals for the Aqueous Solution ---

Element	mg/kg soln.	Molality	Moles
O	8.865720E+05	5.558918E+01	5.555782E+01
Al	5.153961E-05	1.916260E-09	1.915179E-09
B	1.335772E-01	1.239499E-05	1.238800E-05
Ba	1.369686E-05	1.000564E-10	1.000000E-10
Ca	7.511634E+01	1.880218E-03	1.879158E-03
Ce	1.397492E-19	1.000564E-24	9.999993E-25
Cl	7.121540E+00	2.015137E-04	2.014000E-04
Cr	2.998468E+02	5.785070E-03	5.781806E-03
Cs	1.325586E-05	1.000564E-10	1.000000E-10
Cu	6.654917E-10	1.050593E-14	1.050000E-14
F	4.008752E-01	2.116762E-05	2.115568E-05
Fe	1.727955E-08	3.103934E-13	3.102183E-13
Gd	1.568396E-09	1.000564E-14	9.999998E-15
H	1.115443E+05	1.110178E+02	1.109552E+02
C	9.708182E-01	8.108466E-05	8.103892E-05
P	4.521530E-04	1.464439E-08	1.463613E-08
K	2.733041E+02	7.012424E-03	7.008468E-03
La	1.385430E-09	1.000564E-14	9.999998E-15
Li	6.922886E-07	1.000564E-10	1.000000E-10
Mg	3.150204E+01	1.300238E-03	1.299505E-03

Mn	2.942446E-09	5.372979E-14	5.369948E-14
Mo	2.180925E+02	2.280452E-03	2.279166E-03
N	1.983766E+00	1.420802E-04	1.420000E-04
Na	5.924769E+02	2.585334E-02	2.583876E-02
Nd	1.438635E-09	1.000564E-14	9.999998E-15
Ni	1.808759E+00	3.091693E-05	3.089949E-05
Pb	2.066593E-05	1.000564E-10	1.000000E-10
Pu	2.433633E-09	1.000565E-14	1.000000E-14
S	3.732991E+02	1.167864E-02	1.167205E-02
Si	2.811762E+00	1.004330E-04	1.003763E-04
Sm	1.499676E-09	1.000564E-14	9.999998E-15
Sr	8.739133E-06	1.000564E-10	1.000000E-10
Ti	1.078496E-05	2.259666E-10	2.258392E-10
U	2.374078E-09	1.000565E-14	1.000000E-14
V	4.771445E+00	9.396327E-05	9.391026E-05
Zn	6.521935E-06	1.000564E-10	1.000000E-10
Zr	9.098605E-16	1.000566E-20	1.000001E-20

Single ion activities and activity coefficients are here defined
with respect to the modified NBS pH scale

	pH	Eh	pe
modified NBS pH scale	7.0623	0.8013	1.3545E+01
rational pH scale	6.9868	0.8057	1.3620E+01

pHCl = 10.8489

Oxygen fugacity = 2.09991E-01
Log oxygen fugacity = -0.67780

Activity of water = 0.99913
Log activity of water = -0.00038

Ionic strength = 5.627426E-02 molal
Sum of molalities = 0.0549281297690
Osmotic coefficient = 0.87919

Mass of solution = 1.002617 kg
Mass of solutes = 0.003181 kg
Conc. of solutes = 0.317240 per cent (w/w)

Moles of solvent H2O = 5.54771E+01
Mass of solvent H2O = 9.99436E-01 kg

Species	Molality	Log molality	Log gamma	Log activity
Na+	2.5145E-02	-1.5995	-0.0967	-1.6962
SO4--	9.9023E-03	-2.0043	-0.3545	-2.3588
K+	6.7965E-03	-2.1677	-0.1025	-2.2702
CrO4--	5.0046E-03	-2.3006	-0.3545	-2.6551
MoO4--	2.2805E-03	-2.6420	-0.3438	-2.9858
Ca++	1.4941E-03	-2.8256	-0.3413	-3.1669
Mg++	8.3642E-04	-3.0776	-0.3096	-3.3871
HCrO4-	7.2545E-04	-3.1394	-0.0836	-3.2230

NaSO4-	7.0572E-04	-3.1514	-0.0836	-3.2350
MgSO4(aq)	4.6323E-04	-3.3342	0.0000	-3.3342
CaSO4(aq)	3.8495E-04	-3.4146	0.0000	-3.4146
O2(aq)	2.6182E-04	-3.5820	0.0059	-3.5761
KSO4-	2.1588E-04	-3.6658	-0.0836	-3.7494
Cl-	2.0085E-04	-3.6971	-0.0895	-3.7866
NO3-	1.4158E-04	-3.8490	-0.0895	-3.9385
SiO2(aq)	1.0016E-04	-3.9993	0.0000	-3.9993
HCO3-	6.7912E-05	-4.1681	-0.0836	-4.2517
VO3OH--	4.5956E-05	-4.3377	-0.3545	-4.6922
Cr2O7--	2.7493E-05	-4.5608	-0.3545	-4.9153
H2VO4-	2.6575E-05	-4.5755	-0.0836	-4.6592
Ni++	2.4409E-05	-4.6125	-0.3413	-4.9538
F-	2.0864E-05	-4.6806	-0.0865	-4.7671
VO2(OH)2-	1.6469E-05	-4.7833	-0.0836	-4.8670
B(OH)3(aq)	1.2286E-05	-4.9106	0.0000	-4.9106
CO2(aq)	1.0597E-05	-4.9748	0.0059	-4.9689
NiSO4(aq)	6.5039E-06	-5.1868	0.0000	-5.1868
HVO4--	4.9505E-06	-5.3054	-0.3545	-5.6599
NaHCO3(aq)	1.6076E-06	-5.7938	0.0000	-5.7938
NaCl(aq)	5.4974E-07	-6.2598	0.0000	-6.2598
CaHCO3+	5.3061E-07	-6.2752	-0.0967	-6.3719
CaNO3+	4.9124E-07	-6.3087	-0.0967	-6.4054
MgHCO3+	3.1158E-07	-6.5064	-0.0967	-6.6031
MgF+	1.9719E-07	-6.7051	-0.0967	-6.8018
HSiO3-	1.5622E-07	-6.8063	-0.0836	-6.8899
OH-	1.4233E-07	-6.8467	-0.0865	-6.9332
NaHSiO3(aq)	1.1545E-07	-6.9376	0.0000	-6.9376
H+	1.0309E-07	-6.9868	-0.0755	-7.0623
BO2-	9.7909E-08	-7.0092	-0.0836	-7.0928
CaF+	6.9885E-08	-7.1556	-0.0967	-7.2523
CO3--	6.6933E-08	-7.1744	-0.3438	-7.5182
MgCl+	6.1382E-08	-7.2120	-0.0967	-7.3086
CaCO3(aq)	4.3851E-08	-7.3580	0.0000	-7.3580
HSO4-	4.3820E-08	-7.3583	-0.0836	-7.4420
NaF(aq)	3.4602E-08	-7.4609	0.0000	-7.4609
KCl(aq)	2.8089E-08	-7.5515	0.0000	-7.5515
CaCl+	2.8025E-08	-7.5525	-0.0967	-7.6491
MgCO3(aq)	1.1846E-08	-7.9264	0.0000	-7.9264
VO(OH)3(aq)	1.1769E-08	-7.9292	0.0000	-7.9292
HPO4--	6.7316E-09	-8.1719	-0.3545	-8.5264
H2PO4-	5.0159E-09	-8.2997	-0.0836	-8.3833
CaB(OH)4+	4.5592E-09	-8.3411	-0.0967	-8.4378
NiNO3+	4.0222E-09	-8.3955	-0.0967	-8.4922
MgB(OH)4+	3.2673E-09	-8.4858	-0.0967	-8.5825
NaB(OH)4(aq)	3.0277E-09	-8.5189	0.0000	-8.5189
NaCO3-	2.4189E-09	-8.6164	-0.0836	-8.7000
HF(aq)	2.1814E-09	-8.6613	0.0000	-8.6613
AlO2-	1.5602E-09	-8.8068	-0.0836	-8.8905
CaOH+	1.3857E-09	-8.8583	-0.0967	-8.9550
CaHPO4(aq)	1.1135E-09	-8.9533	0.0000	-8.9533
MgHPO4(aq)	9.9193E-10	-9.0035	0.0000	-9.0035
NaHPO4-	6.0397E-10	-9.2190	-0.0836	-9.3026
NaOH(aq)	3.7230E-10	-9.4291	0.0000	-9.4291
HAlO2(aq)	3.1452E-10	-9.5023	0.0000	-9.5023
NiCl+	2.2915E-10	-9.6399	-0.0967	-9.7366
Ti(OH)4(aq)	2.2597E-10	-9.6460	0.0000	-9.6460
KOH(aq)	2.1462E-10	-9.6683	0.0000	-9.6683
KHPO4-	1.1668E-10	-9.9330	-0.0836	-10.0166
Cs+	1.0005E-10	-9.9998	-0.1057	-10.1055
Ba++	1.0000E-10	-10.0000	-0.3599	-10.3598

--- Summary of Instantaneously Precipitated Solid Phases ---
(defined by derivatives)

--- Theoretical Rock Composition ---
g/kg

O	4.831740E+01
Al	6.616051E+00
Ca	2.591811E-02
F	1.314881E-03
Fe	6.418506E-01
H	2.653906E-02
P	6.431090E-03
K	8.947015E+00
Mg	7.351916E-03
Mn	5.076352E-02
Na	7.626537E-03
Ni	6.535189E-02
Si	3.524425E+01
Ti	5.769676E-02

--- Oxide Percentages ---

Oxide	Theoretical rock

Total = 0.0000

Phase/end-member	d mol/d zi	d grams/d zi	d vol (cc)/d zi
Fluorapatite	1.4531E-05	7.3280E-03	7.2655E-03
Maximum_Microcline	4.6412E-02	1.2918E+01	5.0469E+00
Muscovite	1.5572E-03	6.2024E-01	2.1911E-01
Ni2SiO4	1.1689E-04	2.4485E-02	4.9808E-03
Pyrolusite	1.9400E-04	1.6866E-02	9.7000E-02
Quartz	1.1502E-01	6.9107E+00	2.6095E+00
Rutile	2.5300E-04	2.0209E-02	4.7615E-03
fix CO2(g)	-2.7203E-04	-1.1972E-02	0.0000E+00
fix O2(g)	-7.1831E-04	-2.2985E-02	0.0000E+00
Smectite-di			
Beidellite-Ca	2.0669E-10	7.5766E-08	2.6773E-08
Beidellite-K	1.7509E-10	6.5281E-08	2.3409E-08
Beidellite-Mg	2.0777E-10	7.5619E-08	2.5595E-08
Beidellite-Na	1.1230E-10	4.1273E-08	1.4659E-08
Montmor-Ca	6.5597E-08	2.4011E-05	3.2798E-05
Montmor-K	1.2618E-07	4.6980E-05	6.3089E-05
Montmor-Mg	1.0740E-07	3.9035E-05	5.3702E-05
Montmor-Na	5.5590E-08	2.0403E-05	2.7795E-05
Nontronite-Ca	3.8248E-04	1.6229E-01	5.0144E-02
Nontronite-K	2.2893E-04	9.8575E-02	3.0968E-02
Nontronite-Mg	3.8408E-04	1.6196E-01	4.9838E-02
Nontronite-Na	2.1100E-04	8.9732E-02	2.7876E-02

--- Summary of Solid Phases (E.S.+P.R.S.) ---

Phase/End-member	Log moles	Moles	Mass, g	Volume, cc
Alunite	-2.5559	2.7801E-03	1.1516E+00	8.1624E-01
Diaspore	-1.6079	2.4665E-02	1.4796E+00	4.3804E-01
Fluorapatite	-4.0288	9.3594E-05	4.7200E-02	4.6797E-02
Hematite	-3.7144	1.9300E-04	3.0820E-02	5.8428E-03

Maximum_Microcline	-2.0687	8.5361E-03	2.3759E+00	9.2822E-01
Muscovite	-2.4946	3.2018E-03	1.2753E+00	4.5052E-01
Ni2SiO4	-2.1940	6.3971E-03	1.3400E+00	2.7258E-01
Nontronite-H	-4.9990	1.0023E-05	4.1899E-03	5.0117E-03
Pyrolusite	-3.1037	7.8767E-04	6.8478E-02	3.9384E-01
Quartz	-0.6613	2.1811E-01	1.3105E+01	4.9485E+00
Rutile	-3.5969	2.5300E-04	2.0209E-02	4.7615E-03
fix CO2(g)	2.3010	2.0000E+02	8.8020E+03	0.0000E+00
fix O2(g)	2.3010	2.0000E+02	6.3997E+03	0.0000E+00
Smectite-di	-2.9950	1.0115E-03		
Beidellite-Ca	-9.5785	2.6394E-10	9.6750E-08	3.4188E-08
Beidellite-K	-9.1312	7.3926E-10	2.7563E-07	9.8839E-08
Beidellite-Mg	-9.5650	2.7227E-10	9.9096E-08	3.3541E-08
Beidellite-Na	-9.9274	1.1821E-10	4.3446E-08	1.5431E-08
Montmor-Ca	-8.3438	4.5315E-09	1.6587E-06	2.2658E-06
Montmor-K	-7.9007	1.2570E-08	4.6801E-06	6.2849E-06
Montmor-Mg	-8.1278	7.4508E-09	2.7079E-06	3.7254E-06
Montmor-Na	-8.4305	3.7111E-09	1.3620E-06	1.8555E-06
Nontronite-Ca	-3.6830	2.0751E-04	8.8047E-02	2.7205E-02
Nontronite-K	-3.3050	4.9544E-04	2.1333E-01	6.7018E-02
Nontronite-Mg	-3.6711	2.1323E-04	8.9919E-02	2.7669E-02
Nontronite-Na	-4.0210	9.5273E-05	4.0516E-02	1.2587E-02

	Mass, grams	Volume, cc
Created	1.522301E+04	8.444832E+00
Destroyed	2.058647E+01	0.000000E+00
Net	1.520243E+04	8.444832E+00

Warning-- these volume totals may be incomplete because of missing partial molar volume data in the data base

--- Summary of Pure Mineral Saturation States ---

Mineral	Log Q/K	Aff, kcal	State
Alamosite	-5.919	-8.075	
Albite	-2.466	-3.364	
Albite_high	-3.784	-5.163	
Albite_low	-2.466	-3.364	
Alunite	-7.035	-9.598	
Analcime	-2.494	-3.402	
Andalusite	-6.082	-8.298	
Anglesite	-4.877	-6.653	
Anhydrite	-1.219	-1.663	
Aragonite	-2.349	-3.205	
Arcanite	-5.098	-6.956	
BaCrO4	-3.083	-4.206	
BaZrO3	79.465	108.413	ssatd
Barite	-2.748	-3.748	
Bassanite	-1.864	-2.544	
Beidellite-Ca	-2.313	-3.155	
Beidellite-Cs	-4.688	-6.395	
Beidellite-H	-3.163	-4.315	
Beidellite-K	-2.257	-3.079	
Beidellite-Mg	-2.311	-3.153	
Beidellite-Na	-2.406	-3.282	
Boehmite	-0.634	-0.864	

Boric_acid	-4.752	-6.483	
Brucite	-5.561	-7.587	
Bunsenite	-3.301	-4.504	
Ca2V2O7	-4.525	-6.173	
CaSO4:0.5H2O(beta)	-2.032	-2.773	
CaV2O6	-3.833	-5.230	
CaZrO3	140.688	191.938	ssatd
Calcite	-2.205	-3.008	
CeO2	-4.845	-6.609	
Celadonite	-0.995	-1.358	
Celestite	-7.182	-9.798	
Cerussite	-4.351	-5.936	
Chalcedony	-0.271	-0.370	
Chrysotile	-6.914	-9.432	
Clinoptilolite	-6.684	-9.118	
Clinoptilolite-K	-6.663	-9.091	
Clinoptilolite-hy-K	-6.658	-9.084	
Coesite	-0.810	-1.105	
Corundum	-4.451	-6.072	
CrO2	-6.677	-9.109	
Cristobalite(alpha)	-0.551	-0.751	
Cristobalite(beta)	-0.994	-1.356	
Crocoite	-0.308	-0.421	
Dawsonite	-3.364	-4.589	
Diaspore	-0.230	-0.313	
Diopside	-7.269	-9.916	
Dolomite	-3.446	-4.702	
Dolomite-dis	-4.991	-6.809	
Dolomite-ord	-3.446	-4.702	
Enstatite	-4.589	-6.261	
Epsomite	-3.786	-5.166	
Fe(OH)3	-6.255	-8.534	
Fluorapatite	0.000	0.000	satd
Fluorite	-2.664	-3.635	
GdPO4:H2O	-4.933	-6.730	
Gibbsite	-0.826	-1.127	
Glauberite	-5.808	-7.924	
Goethite	-1.134	-1.547	
Gypsum	-1.044	-1.425	
Halite	-7.068	-9.643	
Hematite	-1.307	-1.783	
Heulandite	-5.706	-7.785	
Hexahydrite	-4.021	-5.486	
Ice	-0.139	-0.190	
Illite	-1.524	-2.079	
Jadeite	-4.091	-5.581	
K-Feldspar	0.000	0.000	ssatd
Kalicinite	-6.806	-9.285	
Kalsilite	-3.175	-4.332	
Kaolinite	-0.948	-1.293	
Kieserite	-5.479	-7.475	
Kyanite	-5.812	-7.929	
LaPO4:H2O	-4.460	-6.085	
Lansfordite	-5.419	-7.393	
Laumontite	-4.847	-6.612	
Lawsonite	-5.394	-7.359	
Lopezite	-6.538	-8.920	
Magnesite	-2.870	-3.916	
Manganite	-4.459	-6.084	
Maximum_Microcline	0.000	0.000	satd
Mesolite	-1.040	-1.418	
Mirabilite	-4.615	-6.296	
MnO2(gamma)	-1.518	-2.071	

Monohydrocalcite	-3.039	-4.146	
Montmor-Ca	-1.567	-2.138	
Montmor-Cs	-3.876	-5.287	
Montmor-K	-1.441	-1.966	
Montmor-Mg	-1.496	-2.041	
Montmor-Na	-1.594	-2.174	
Mordenite	-3.417	-4.661	
Morenosite	-5.301	-7.232	
Muscovite	0.000	0.000	satd
Nahcolite	-5.836	-7.962	
Natrolite	-5.926	-8.085	
NdPO4:H2O	-4.742	-6.470	
Nepheline	-5.503	-7.508	
Nesquehonite	-5.573	-7.603	
Ni(OH)2	-3.578	-4.882	
Ni2SiO4	0.000	0.000	satd
NiCO3	-5.655	-7.715	
NiSO4:6H2O(alpha)	-5.308	-7.241	
Niter	-6.003	-8.189	
Nontronite-Ca	-0.199	-0.272	
Nontronite-H	-1.049	-1.431	
Nontronite-K	-0.143	-0.195	
Nontronite-Mg	-0.198	-0.270	
Nontronite-Na	-0.292	-0.399	
Paragonite	-3.362	-4.587	
Paralaurionite	-7.299	-9.958	
Pentahydrite	-4.361	-5.949	
Phlogopite	-5.504	-7.510	
Plattnerite	-4.254	-5.804	
Pseudowollastonite	-7.042	-9.607	
PuO2	-1.869	-2.549	
PuO2(OH)2	-6.444	-8.792	
Pyrolusite	0.000	0.000	satd
Pyrophyllite	-2.576	-3.514	
Quartz	0.000	0.000	satd
Rutile	0.000	0.000	satd
Sanidine_high	-1.199	-1.636	
Saponite-Ca	-4.661	-6.360	
Saponite-Cs	-7.037	-9.600	
Saponite-H	-5.512	-7.519	
Saponite-K	-4.606	-6.283	
Saponite-Mg	-4.660	-6.358	
Saponite-Na	-4.755	-6.487	
Scolecite	-3.057	-4.171	
Sellaite	-3.537	-4.825	
SiO2(am)	-1.286	-1.754	
Sillimanite	-6.446	-8.794	
SmPO4:H2O	-4.770	-6.508	
SrZrO3	116.320	158.693	ssatd
Starkeyite	-4.748	-6.477	
Stilbite	-1.300	-1.773	
Sylvite	-6.903	-9.417	
Syngenite	-4.825	-6.583	
Talc	-4.925	-6.719	
Tarapacaite	-6.792	-9.266	
Thenardite	-5.442	-7.425	
Trevorite	-1.816	-2.477	
Tridymite	-0.172	-0.234	
Witherite	-4.553	-6.211	
Wollastonite	-6.803	-9.281	
fix CO2(g)	0.000	0.000	satd
fix O2(g)	0.000	0.000	satd

--- Summary of Solid Solutions ---

--- Carbonate-Calcite ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Calcite	8.2221E-01	-0.0850	0.0000	-0.0850
Magnesite	1.7778E-01	-0.7501	0.0000	-0.7501
Rhodochrosite	2.2418E-09	-8.6494	0.0000	-8.6494
Siderite	6.3559E-18	-17.1968	0.0000	-17.1968
Smithsonite	1.3239E-06	-5.8782	0.0000	-5.8782
Strontianite	5.5493E-06	-5.2558	0.0000	-5.2558

Mineral	Log Q/K	Aff, kcal	State
Carbonate-Calcite	-2.120	-2.892	
Calcite	-2.120	-2.892	
Magnesite	-2.120	-2.892	
Rhodochrosite	-2.120	-2.892	
Siderite	-2.120	-2.892	
Smithsonite	-2.120	-2.892	
Strontianite	-2.120	-2.892	

--- Clinoptilolite-hy-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-hy-Ca	2.6301E-02	-1.5800	0.0000	-1.5800
Clinoptilolite-hy-Cs	8.4587E-26	-25.0727	0.0000	-25.0727
Clinoptilolite-hy-K	9.5935E-01	-0.0180	0.0000	-0.0180
Clinoptilolite-hy-Na	1.4352E-02	-1.8431	0.0000	-1.8431
Clinoptilolite-hy-Sr	7.0164E-15	-14.1539	0.0000	-14.1539

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-hy-ss	-6.640	-9.059	
Clinoptilolite-hy-Ca	-6.640	-9.059	
Clinoptilolite-hy-Cs	-6.640	-9.059	
Clinoptilolite-hy-K	-6.640	-9.059	
Clinoptilolite-hy-Na	-6.640	-9.059	
Clinoptilolite-hy-Sr	-6.640	-9.059	

--- Clinoptilolite-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-Ca	2.1463E-01	-0.6683	-1.6440	-2.3123
Clinoptilolite-Cs	3.4709E-08	-7.4596	-18.3505	-25.8101
Clinoptilolite-K	6.0529E-01	-0.2180	-0.5364	-0.7544
Clinoptilolite-NH4	1.0248E-62	-61.9893	-152.4938	-214.4831

Clinoptilolite-Na	1.8003E-01	-0.7447	-1.8318	-2.5765
Clinoptilolite-Sr	4.9894E-05	-4.3020	-10.5828	-14.8848

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-ss	-5.909	-8.061	
Clinoptilolite-Ca	-5.909	-8.061	
Clinoptilolite-Cs	-5.909	-8.061	
Clinoptilolite-K	-5.909	-8.061	
Clinoptilolite-NH4	-5.909	-8.061	
Clinoptilolite-Na	-5.909	-8.061	
Clinoptilolite-Sr	-5.909	-8.061	

--- Saponite-tri ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Saponite-Ca	2.4931E-01	-0.6033	0.4042	-0.1991
Saponite-H	6.6166E-04	-3.1794	2.1302	-1.0492
Saponite-K	3.6814E-01	-0.4340	0.2908	-0.1432
Saponite-Mg	2.5170E-01	-0.5991	0.4014	-0.1977
Saponite-Na	1.3019E-01	-0.8854	0.5932	-0.2922

Mineral	Log Q/K	Aff, kcal	State
Saponite-tri	-4.462	-6.088	
Saponite-Ca	-4.462	-6.088	
Saponite-H	-4.462	-6.088	
Saponite-K	-4.462	-6.088	
Saponite-Mg	-4.462	-6.088	
Saponite-Na	-4.462	-6.088	

--- Smectite-di ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Beidellite-Ca	9.8178E-08	-7.0080	4.6954	-2.3126
Beidellite-K	1.4508E-07	-6.8384	4.5817	-2.2567
Beidellite-Mg	9.9118E-08	-7.0038	4.6926	-2.3113
Beidellite-Na	5.1269E-08	-7.2901	4.8844	-2.4057
Montmor-Ca	1.7813E-05	-4.7493	3.1820	-1.5673
Montmor-K	4.2989E-05	-4.3666	2.9257	-1.4410
Montmor-Mg	2.9227E-05	-4.5342	3.0379	-1.4963
Montmor-Na	1.4815E-05	-4.8293	3.2356	-1.5937
Nontronite-Ca	2.4934E-01	-0.6032	0.4042	-0.1991
Nontronite-K	3.6845E-01	-0.4336	0.2905	-0.1431
Nontronite-Mg	2.5190E-01	-0.5988	0.4012	-0.1976
Nontronite-Na	1.3021E-01	-0.8854	0.5932	-0.2922

Mineral	Log Q/K	Aff, kcal	State
Smectite-di	0.000	0.000	satd

Beidellite-Ca	0.000	0.000	satd
Beidellite-K	0.000	0.000	satd
Beidellite-Mg	0.000	0.000	satd
Beidellite-Na	0.000	0.000	satd
Montmor-Ca	0.000	0.000	satd
Montmor-K	0.000	0.000	satd
Montmor-Mg	0.000	0.000	satd
Montmor-Na	0.000	0.000	satd
Nontronite-Ca	0.000	0.000	satd
Nontronite-K	0.000	0.000	satd
Nontronite-Mg	0.000	0.000	satd
Nontronite-Na	0.000	0.000	satd

--- Lanthanide hydroxide ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
La(OH)3	1.3620E-05	-4.8658	0.0000	-4.8658
Ce(OH)3	3.1496E-15	-14.5017	0.0000	-14.5017
Nd(OH)3(c)	3.5642E-01	-0.4480	0.0000	-0.4480
Gd(OH)3	5.7687E-01	-0.2389	0.0000	-0.2389
Sm(OH)3	6.6695E-02	-1.1759	0.0000	-1.1759

Mineral	Log Q/K	Aff, kcal	State
Lanthanide hydroxide	-9.623	-13.129	
La(OH)3	-9.623	-13.129	
Ce(OH)3	-9.623	-13.129	
Nd(OH)3(c)	-9.623	-13.129	
Gd(OH)3	-9.623	-13.129	
Sm(OH)3	-9.623	-13.129	

--- Rhabdophane-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaPO4:H2O	4.2585E-01	-0.3707	0.0000	-0.3707
CePO4:H2O	3.1141E-11	-10.5067	0.0000	-10.5067
NdPO4:H2O	2.2235E-01	-0.6530	0.0000	-0.6530
GdPO4:H2O	1.4327E-01	-0.8438	0.0000	-0.8438
SmPO4:H2O	2.0853E-01	-0.6808	0.0000	-0.6808

Mineral	Log Q/K	Aff, kcal	State
Rhabdophane-ss	-4.089	-5.579	
LaPO4:H2O	-4.089	-5.579	
CePO4:H2O	-4.089	-5.579	
NdPO4:H2O	-4.089	-5.579	
GdPO4:H2O	-4.089	-5.579	
SmPO4:H2O	-4.089	-5.579	

--- Lanthanide fluoride ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaF3:0.5H2O	5.8150E-01	-0.2355	0.0000	-0.2355
CeF3:0.5H2O	6.7394E-11	-10.1714	0.0000	-10.1714
NdF3:0.5H2O	3.8224E-01	-0.4177	0.0000	-0.4177
GdF3:0.5H2O	7.7884E-03	-2.1086	0.0000	-2.1086
SmF3:0.5H2O	2.8475E-02	-1.5455	0.0000	-1.5455

Mineral	Log Q/K	Aff, kcal	State
Lanthanide fluoride	-10.712	-14.614	
LaF3:0.5H2O	-10.712	-14.614	
CeF3:0.5H2O	-10.712	-14.614	
NdF3:0.5H2O	-10.712	-14.614	
GdF3:0.5H2O	-10.712	-14.614	
SmF3:0.5H2O	-10.712	-14.614	

--- Summary of Gases ---

Gas	Fugacity	Log fugacity
Al(g)	9.7049-192	-191.0130
B(g)	8.4945-204	-203.0709
BF3(g)	3.7055E-38	-37.4311
C(g)	3.0917-190	-189.5098
CH4(g)	3.5233-146	-145.4531
CO(g)	6.0395E-49	-48.2190
CO2(g)	3.1623E-04	-3.5000
Ca(g)	4.6503-153	-152.3325
Chlorine	3.2663E-27	-26.4859
Cs(g)	3.7155E-84	-83.4300
Cu(g)	5.8228E-83	-82.2349
Fluorine	6.8209E-82	-81.1662
H2(g)	6.1097E-42	-41.2140
H2O(g)	2.5955E-02	-1.5858
H2S(g)	2.1274-140	-139.6722
HCl(g)	7.0080E-18	-17.1544
HF(g)	1.1430E-13	-12.9420
K(g)	1.2718E-76	-75.8956
Li(g)	8.2464E-98	-97.0837
Mg(g)	1.8866-130	-129.7243
Nitrogen	2.4337E-18	-17.6137
NH3(g)	1.7963E-68	-67.7456
NO(g)	4.9123E-25	-24.3087
NO2(g)	3.3588E-19	-18.4738
Na(g)	2.4884E-75	-74.6041
O2(g)	2.0999E-01	-0.6778
Pb(g)	8.5617E-71	-70.0674
S2(g)	2.7033-223	-222.5681
SO2(g)	3.7698E-53	-52.4237
Si(g)	4.2257-221	-220.3741
SiF4(g)	7.5351E-37	-36.1229
Ti(g)	3.8019-231	-230.4200
TiCl4(g)	8.0933E-82	-81.0919
U(g)	1.9999-297	-296.6990

```
U2Cl10(g)                   1.1664-237   -236.9332
U2Cl8(g)                    1.1071-241   -240.9558
U2F10(g)                    2.0566-152   -151.6869
UCl(g)                      1.2495-252   -251.9033
UCl2(g)                     2.3355-206   -205.6316
UCl3(g)                     9.5611-158   -157.0195
UCl4(g)                     2.1195-126   -125.6738
UCl5(g)                     2.4175-132   -131.6166
UCl6(g)                     5.1227-133   -132.2905
UF(g)                       4.3310-238   -237.3634
UF2(g)                      6.9560-197   -196.1576
UF3(g)                      2.7493-149   -148.5608
UF4(g)                      1.6040E-98    -97.7948
UF5(g)                      4.2862E-89    -88.3679
UF6(g)                      1.1278E-93    -92.9478
UO(g)                       1.5795-212   -211.8015
UO2(g)                      2.9263-128   -127.5337
UO2Cl2(g)                   4.1733E-74    -73.3795
UO2F2(g)                    9.0169E-63    -62.0449
UO3(g)                      2.1524E-75    -74.6671
UOF4(g)                     4.7797E-76    -75.3206
Zn(g)                       1.4218E-80    -79.8472



- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

--- shifting e.s. solid(s) to the p.r.s. (shftz) ---

      shifted -- Fluorapatite
              - old mass=  3.35239E-06, new mass=  8.00000E-07
      shifted -- Maximum_Microcline
              - old mass=  8.17713E-03, new mass=  8.17713E-05
      shifted -- Muscovite
              - old mass=  2.64050E-04, new mass=  2.64050E-06
      shifted -- Ni2SiO4
              - old mass=  2.83853E-05, new mass=  8.00000E-07
      shifted -- Pyrolusite
              - old mass=  3.48398E-05, new mass=  8.00000E-07
      shifted -- Quartz
              - old mass=  2.01220E-02, new mass=  2.01220E-04
      shifted -- Rutile
              - old mass=  4.51922E-05, new mass=  8.00000E-07
      shifted -- Smectite-di
              - old mass=  2.12519E-04, new mass=  2.12519E-06
--- shifting e.s. solid(s) to the p.r.s. (shftz) ---

  not shifted -- Fluorapatite
              - mass=  8.00000E-07
      shifted -- Maximum_Microcline
              - old mass=  8.17713E-05, new mass=  8.17713E-07
      shifted -- Muscovite
              - old mass=  2.64050E-06, new mass=  8.00000E-07
  not shifted -- Ni2SiO4
              - mass=  8.00000E-07
  not shifted -- Pyrolusite
              - mass=  8.00000E-07
      shifted -- Quartz
              - old mass=  2.01220E-04, new mass=  2.01220E-06
  not shifted -- Rutile
              - mass=  8.00000E-07
      shifted -- Smectite-di
```

```
- old mass=  2.12519E-06, new mass=  8.00000E-07

Stepping to zi=  1.0000E+00, delzi=  1.0000E-09, nord= 0
  time =  9.6451E+03 d, dltime =  9.6451E-06 d
Steps completed =   315, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -5.6963

Stepping to zi=  1.0000E+00, delzi=  1.0000E-09, nord= 0
  time =  9.6451E+03 d, dltime =  9.6451E-06 d
Steps completed =   316, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -5.6963

Stepping to zi=  1.0000E+00, delzi=  1.0000E-09, nord= 0
  time =  9.6451E+03 d, dltime =  9.6451E-06 d
Steps completed =   317, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -5.6963

Stepping to zi=  1.0000E+00, delzi=  1.7495E-09, nord= 1
  time =  9.6451E+03 d, dltime =  1.6874E-05 d
Steps completed =   318, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -5.6962

Stepping to zi=  1.0000E+00, delzi=  3.4989E-09, nord= 2
  time =  9.6451E+03 d, dltime =  3.3747E-05 d
Steps completed =   319, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -5.6961

Stepping to zi=  1.0000E+00, delzi=  6.9979E-09, nord= 2
  time =  9.6451E+03 d, dltime =  6.7495E-05 d
Steps completed =   320, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -5.6960

Stepping to zi=  1.0000E+00, delzi=  1.3996E-08, nord= 2
  time =  9.6451E+03 d, dltime =  1.3499E-04 d
Steps completed =   321, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -5.6956

Stepping to zi=  1.0000E+00, delzi=  1.3996E-07, nord= 2
  time =  9.6451E+03 d, dltime =  1.3499E-03 d
Steps completed =   322, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -5.6921

Stepping to zi=  1.0000E+00, delzi=  1.3996E-06, nord= 2
  time =  9.6451E+03 d, dltime =  1.3499E-02 d
Steps completed =   323, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -5.6590

Stepping to zi=  1.0000E+00, delzi=  1.3996E-05, nord= 2
  time =  9.6452E+03 d, dltime =  1.3499E-01 d
Steps completed =   324, iter =  8, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -5.4199

Stepping to zi=  1.0002E+00, delzi=  1.3996E-04, nord= 2
  time =  9.6466E+03 d, dltime =  1.3499E+00 d
Steps completed =   325, iter =  7, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -4.7011

Stepping to zi=  1.0003E+00, delzi=  1.1598E-04, nord= 3
  time =  9.6477E+03 d, dltime =  1.1186E+00 d
Steps completed =   326, iter = 11, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -4.4783

Stepping to zi=  1.0005E+00, delzi=  2.3196E-04, nord= 2
```

```
  time =  9.6499E+03 d, dltime =  2.2373E+00 d
Steps completed =   327, iter =  8, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -4.2224

Stepping to zi=  1.0010E+00, delzi=  4.6392E-04, nord= 2
  time =  9.6544E+03 d, dltime =  4.4745E+00 d
Steps completed =   328, iter =  8, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -3.9458

Stepping to zi=  1.0019E+00, delzi=  9.2784E-04, nord= 3
  time =  9.6633E+03 d, dltime =  8.9491E+00 d
Steps completed =   329, iter =  9, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -3.6575

Stepping to zi=  1.0038E+00, delzi=  1.8557E-03, nord= 3
  time =  9.6812E+03 d, dltime =  1.7898E+01 d
Steps completed =   330, iter =  8, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -3.3630

Stepping to zi=  1.0075E+00, delzi=  3.7114E-03, nord= 3
  time =  9.7170E+03 d, dltime =  3.5796E+01 d
Steps completed =   331, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -3.0652

Stepping to zi=  1.0149E+00, delzi=  7.4227E-03, nord= 4
  time =  9.7886E+03 d, dltime =  7.1593E+01 d
Steps completed =   332, iter =  7, ncorr = 0
Most rapidly changing is zvclg1(Montmor-Na              ) =     -9.4685

Stepping to zi=  1.0241E+00, delzi=  9.1690E-03, nord= 6
  time =  9.8771E+03 d, dltime =  8.8436E+01 d
Steps completed =   333, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Montmor-Na              ) =     -9.2111

Stepping to zi=  1.0424E+00, delzi=  1.8338E-02, nord= 4
  time =  1.0054E+04 d, dltime =  1.7687E+02 d
Steps completed =   334, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Montmor-Na              ) =     -8.8524

Stepping to zi=  1.0791E+00, delzi=  3.6676E-02, nord= 5
  time =  1.0408E+04 d, dltime =  3.5374E+02 d
Steps completed =   335, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Montmor-Na              ) =     -8.3233

Stepping to zi=  1.1345E+00, delzi=  5.5450E-02, nord= 6
  time =  1.0943E+04 d, dltime =  5.3482E+02 d
Steps completed =   336, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Montmor-Na              ) =     -7.6018

Stepping to zi=  1.1773E+00, delzi=  4.2746E-02, nord= 6
  time =  1.1355E+04 d, dltime =  4.1229E+02 d
Steps completed =   337, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Montmor-Na              ) =     -6.9690
--- shifting e.s. solid(s) to the p.r.s. (shftz) ---

      shifted -- Fluorapatite
              - old mass=  3.37413E-06, new mass=  8.00000E-07
      shifted -- Maximum_Microcline
              - old mass=  8.09846E-03, new mass=  8.09846E-05
      shifted -- Muscovite
              - old mass=  3.19754E-04, new mass=  3.19754E-06
      shifted -- Ni2SiO4
              - old mass=  1.44364E-05, new mass=  8.00000E-07
```

```
      shifted -- Pyrolusite
              - old mass=  3.51894E-05, new mass=  8.00000E-07
      shifted -- Quartz
              - old mass=  2.06550E-02, new mass=  2.06550E-04
      shifted -- Rutile
              - old mass=  4.56480E-05, new mass=  8.00000E-07
      shifted -- Smectite-di
              - old mass=  2.15187E-04, new mass=  2.15187E-06

Stepping to zi=  1.1773E+00, delzi=  1.0000E-09, nord= 0
  time =  1.1355E+04 d, dltime =  9.6451E-06 d
Steps completed =   338, iter =  1, ncorr = 0
Most rapidly changing is zvclg1(Montmor-Na              ) =     -8.9690

Stepping to zi=  1.1773E+00, delzi=  1.0000E-09, nord= 0
  time =  1.1355E+04 d, dltime =  9.6451E-06 d
Steps completed =   339, iter =  1, ncorr = 0
Most rapidly changing is zvclg1(Muscovite               ) =     -5.4952

Stepping to zi=  1.1773E+00, delzi=  1.0000E-09, nord= 0
  time =  1.1355E+04 d, dltime =  9.6451E-06 d
Steps completed =   340, iter =  1, ncorr = 0
Most rapidly changing is zvclg1(Muscovite               ) =     -5.4952

Stepping to zi=  1.1773E+00, delzi=  1.0000E-08, nord= 1
  time =  1.1355E+04 d, dltime =  9.6451E-05 d
Steps completed =   341, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Muscovite               ) =     -5.4952

Stepping to zi=  1.1773E+00, delzi=  1.0000E-07, nord= 1
  time =  1.1355E+04 d, dltime =  9.6451E-04 d
Steps completed =   342, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Muscovite               ) =     -5.4951

Stepping to zi=  1.1773E+00, delzi=  1.0000E-06, nord= 2
  time =  1.1355E+04 d, dltime =  9.6451E-03 d
Steps completed =   343, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Muscovite               ) =     -5.4948

Stepping to zi=  1.1773E+00, delzi=  1.0000E-05, nord= 2
  time =  1.1355E+04 d, dltime =  9.6451E-02 d
Steps completed =   344, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Muscovite               ) =     -5.4915

Stepping to zi=  1.1774E+00, delzi=  1.0000E-04, nord= 2
  time =  1.1356E+04 d, dltime =  9.6451E-01 d
Steps completed =   345, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Muscovite               ) =     -5.4598

Stepping to zi=  1.1777E+00, delzi=  3.3886E-04, nord= 3
  time =  1.1359E+04 d, dltime =  3.2683E+00 d
iter =    7
      1 supersaturated pure minerals
      0 supersaturated solid solutions

               The most supersaturated phases           Affinity, kcal

                 1     120   Celadonite                    0.00777100


  Attempted species assemblage no.   2

            1      1  H2O
```

```
  2      3  Al+++
  3      7  B(OH)3(aq)
  4      8  Ba++
  5     11  Ca++
  6     13  Ce+++
  7     14  Cl-
  8     16  CrO4--
  9     17  Cs+
 10     18  Cu++
 11     22  F-
 12     23  Fe++
 13     25  Gd+++
 14     26  H+
 15     28  HCO3-
 16     29  HPO4--
 17     35  K+
 18     37  La+++
 19     38  Li+
 20     40  Mg++
 21     41  Mn++
 22     42  MoO4--
 23     43  NO3-
 24     44  Na+
 25     45  Nd+++
 26     47  Ni++
 27     49  Pb++
 28     52  Pu++++
 29     58  SO4--
 30     62  SiO2(aq)
 31     63  Sm+++
 32     65  Sr++
 33     69  Ti(OH)4(aq)
 34     72  UO2++
 35     73  VO++
 36     78  Zn++
 37     79  Zr(OH)2++
 38     80  O2(g)
 39    120  Celadonite
 40    222  Fluorapatite
 41    323  Maximum_Microcline
 42    368  Muscovite
 43    405  Ni2SiO4
 44    470  Pyrolusite
 45    475  Quartz
 46    482  Rutile
 47    689  fix     CO2(g)
 48    690  fix     O2(g)
 49      1  SmectiteBeidellite-Ca
 50      2  SmectiteBeidellite-K
 51      3  SmectiteBeidellite-Mg
 52      4  SmectiteBeidellite-Na
 53      5  SmectiteMontmor-Ca
 54      6  SmectiteMontmor-K
 55      7  SmectiteMontmor-Mg
 56      8  SmectiteMontmor-Na
 57      9  SmectiteNontronite-Ca
 58     10  SmectiteNontronite-K
 59     11  SmectiteNontronite-Mg
 60     12  SmectiteNontronite-Na

--- Some of Maximum_Microcline       was unexpectedly destroyed in eqcalc ---
     Previous mass was  8.58449E-05
     Current mass is    7.84111E-05
```

```
     Amount destroyed was  7.43376E-06
                    That's too much--go back and first do a P.R.S. transfer
--- shifting e.s. solid(s) to the p.r.s. (shftz) ---

      shifted -- Fluorapatite
              - old mass=  8.01613E-07, new mass=  8.00000E-07
      shifted -- Maximum_Microcline
              - old mass=  8.58449E-05, new mass=  8.58449E-07
      shifted -- Muscovite
              - old mass=  3.46928E-06, new mass=  8.00000E-07
      shifted -- Ni2SiO4
              - old mass=  8.04139E-07, new mass=  8.00000E-07
      shifted -- Pyrolusite
              - old mass=  8.21556E-07, new mass=  8.00000E-07
      shifted -- Quartz
              - old mass=  2.19930E-04, new mass=  2.19930E-06
      shifted -- Rutile
              - old mass=  8.28112E-07, new mass=  8.00000E-07
      shifted -- Smectite-di
              - old mass=  2.28627E-06, new mass=  8.00000E-07

Stepping to zi=  1.1775E+00, delzi=  8.4714E-05, nord= 3
  time =  1.1357E+04 d, dltime =  8.1708E-01 d
Steps completed =   346, iter = 17, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -4.9065

Stepping to zi=  1.1776E+00, delzi=  1.6943E-04, nord= 3
  time =  1.1358E+04 d, dltime =  1.6342E+00 d
iter =    8
      1 supersaturated pure minerals
      0 supersaturated solid solutions

               The most supersaturated phases           Affinity, kcal

                 1     120   Celadonite                    0.00669544


  Attempted species assemblage no.   2

            1      1  H2O
            2      3  Al+++
            3      7  B(OH)3(aq)
            4      8  Ba++
            5     11  Ca++
            6     13  Ce+++
            7     14  Cl-
            8     16  CrO4--
            9     17  Cs+
           10     18  Cu++
           11     22  F-
           12     23  Fe++
           13     25  Gd+++
           14     26  H+
           15     28  HCO3-
           16     29  HPO4--
           17     35  K+
           18     37  La+++
           19     38  Li+
           20     40  Mg++
           21     41  Mn++
           22     42  MoO4--
           23     43  NO3-
           24     44  Na+
```

```
          25     45  Nd+++
          26     47  Ni++
          27     49  Pb++
          28     52  Pu++++
          29     58  SO4--
          30     62  SiO2(aq)
          31     63  Sm+++
          32     65  Sr++
          33     69  Ti(OH)4(aq)
          34     72  UO2++
          35     73  VO++
          36     78  Zn++
          37     79  Zr(OH)2++
          38     80  O2(g)
          39    120  Celadonite
          40    222  Fluorapatite
          41    323  Maximum_Microcline
          42    368  Muscovite
          43    405  Ni2SiO4
          44    470  Pyrolusite
          45    475  Quartz
          46    482  Rutile
          47    689  fix     CO2(g)
          48    690  fix     O2(g)
          49      1  SmectiteBeidellite-Ca
          50      2  SmectiteBeidellite-K
          51      3  SmectiteBeidellite-Mg
          52      4  SmectiteBeidellite-Na
          53      5  SmectiteMontmor-Ca
          54      6  SmectiteMontmor-K
          55      7  SmectiteMontmor-Mg
          56      8  SmectiteMontmor-Na
          57      9  SmectiteNontronite-Ca
          58     10  SmectiteNontronite-K
          59     11  SmectiteNontronite-Mg
          60     12  SmectiteNontronite-Na

--- Iteration has gone sour (iter=  16) ---
     The phase to be dropped is Maximum_Microcline        (  323)


  Attempted species assemblage no.   3

           1      1  H2O
           2      3  Al+++
           3      7  B(OH)3(aq)
           4      8  Ba++
           5     11  Ca++
           6     13  Ce+++
           7     14  Cl-
           8     16  CrO4--
           9     17  Cs+
          10     18  Cu++
          11     22  F-
          12     23  Fe++
          13     25  Gd+++
          14     26  H+
          15     28  HCO3-
          16     29  HPO4--
          17     35  K+
          18     37  La+++
          19     38  Li+
          20     40  Mg++
```

```
          21     41  Mn++
          22     42  MoO4--
          23     43  NO3-
          24     44  Na+
          25     45  Nd+++
          26     47  Ni++
          27     49  Pb++
          28     52  Pu++++
          29     58  SO4--
          30     62  SiO2(aq)
          31     63  Sm+++
          32     65  Sr++
          33     69  Ti(OH)4(aq)
          34     72  UO2++
          35     73  VO++
          36     78  Zn++
          37     79  Zr(OH)2++
          38     80  O2(g)
          39    120  Celadonite
          40    222  Fluorapatite
          41    368  Muscovite
          42    405  Ni2SiO4
          43    470  Pyrolusite
          44    475  Quartz
          45    482  Rutile
          46    689  fix     CO2(g)
          47    690  fix     O2(g)
          48      1  SmectiteBeidellite-Ca
          49      2  SmectiteBeidellite-K
          50      3  SmectiteBeidellite-Mg
          51      4  SmectiteBeidellite-Na
          52      5  SmectiteMontmor-Ca
          53      6  SmectiteMontmor-K
          54      7  SmectiteMontmor-Mg
          55      8  SmectiteMontmor-Na
          56      9  SmectiteNontronite-Ca
          57     10  SmectiteNontronite-K
          58     11  SmectiteNontronite-Mg
          59     12  SmectiteNontronite-Na

--- Some of Maximum_Microcline       was unexpectedly destroyed in eqcalc ---
     Previous mass was  4.56356E-06
     Current mass is    0.00000E+00
     Amount destroyed was  4.56356E-06
                    That's too much--go back and first do a P.R.S. transfer
--- shifting e.s. solid(s) to the p.r.s. (shftz) ---

      shifted -- Fluorapatite
              - old mass=  8.01230E-07, new mass=  8.00000E-07
      shifted -- Maximum_Microcline
              - old mass=  4.56356E-06, new mass=  8.00000E-07
      shifted -- Muscovite
              - old mass=  1.00733E-06, new mass=  8.00000E-07
      shifted -- Ni2SiO4
              - old mass=  8.03152E-07, new mass=  8.00000E-07
      shifted -- Pyrolusite
              - old mass=  8.16435E-07, new mass=  8.00000E-07
      shifted -- Quartz
              - old mass=  1.24016E-05, new mass=  8.00000E-07
      shifted -- Rutile
              - old mass=  8.21433E-07, new mass=  8.00000E-07
      shifted -- Smectite-di
              - old mass=  9.02460E-07, new mass=  8.00000E-07
```

```
Stepping to zi=  1.1775E+00, delzi=  4.2357E-05, nord= 3
  time =  1.1357E+04 d, dltime =  4.0854E-01 d
iter =    9
      1 supersaturated pure minerals
      0 supersaturated solid solutions

               The most supersaturated phases           Affinity, kcal

                 1     120   Celadonite                    0.00508330


  Attempted species assemblage no.   2

            1      1  H2O
            2      3  Al+++
            3      7  B(OH)3(aq)
            4      8  Ba++
            5     11  Ca++
            6     13  Ce+++
            7     14  Cl-
            8     16  CrO4--
            9     17  Cs+
           10     18  Cu++
           11     22  F-
           12     23  Fe++
           13     25  Gd+++
           14     26  H+
           15     28  HCO3-
           16     29  HPO4--
           17     35  K+
           18     37  La+++
           19     38  Li+
           20     40  Mg++
           21     41  Mn++
           22     42  MoO4--
           23     43  NO3-
           24     44  Na+
           25     45  Nd+++
           26     47  Ni++
           27     49  Pb++
           28     52  Pu++++
           29     58  SO4--
           30     62  SiO2(aq)
           31     63  Sm+++
           32     65  Sr++
           33     69  Ti(OH)4(aq)
           34     72  UO2++
           35     73  VO++
           36     78  Zn++
           37     79  Zr(OH)2++
           38     80  O2(g)
           39    120  Celadonite
           40    222  Fluorapatite
           41    323  Maximum_Microcline
           42    368  Muscovite
           43    405  Ni2SiO4
           44    470  Pyrolusite
           45    475  Quartz
           46    482  Rutile
           47    689  fix     CO2(g)
           48    690  fix     O2(g)
           49      1  SmectiteBeidellite-Ca
```

```
 50      2  SmectiteBeidellite-K
 51      3  SmectiteBeidellite-Mg
 52      4  SmectiteBeidellite-Na
 53      5  SmectiteMontmor-Ca
 54      6  SmectiteMontmor-K
 55      7  SmectiteMontmor-Mg
 56      8  SmectiteMontmor-Na
 57      9  SmectiteNontronite-Ca
 58     10  SmectiteNontronite-K
 59     11  SmectiteNontronite-Mg
 60     12  SmectiteNontronite-Na

--- Iteration has gone sour (iter=  16) ---
     The phase to be dropped is Maximum_Microcline        (  323)


  Attempted species assemblage no.   3

  1      1  H2O
  2      3  Al+++
  3      7  B(OH)3(aq)
  4      8  Ba++
  5     11  Ca++
  6     13  Ce+++
  7     14  Cl-
  8     16  CrO4--
  9     17  Cs+
 10     18  Cu++
 11     22  F-
 12     23  Fe++
 13     25  Gd+++
 14     26  H+
 15     28  HCO3-
 16     29  HPO4--
 17     35  K+
 18     37  La+++
 19     38  Li+
 20     40  Mg++
 21     41  Mn++
 22     42  MoO4--
 23     43  NO3-
 24     44  Na+
 25     45  Nd+++
 26     47  Ni++
 27     49  Pb++
 28     52  Pu++++
 29     58  SO4--
 30     62  SiO2(aq)
 31     63  Sm+++
 32     65  Sr++
 33     69  Ti(OH)4(aq)
 34     72  UO2++
 35     73  VO++
 36     78  Zn++
 37     79  Zr(OH)2++
 38     80  O2(g)
 39    120  Celadonite
 40    222  Fluorapatite
 41    368  Muscovite
 42    405  Ni2SiO4
 43    470  Pyrolusite
 44    475  Quartz
 45    482  Rutile
```

```
46    689  fix     CO2(g)
47    690  fix     O2(g)
48      1  SmectiteBeidellite-Ca
49      2  SmectiteBeidellite-K
50      3  SmectiteBeidellite-Mg
51      4  SmectiteBeidellite-Na
52      5  SmectiteMontmor-Ca
53      6  SmectiteMontmor-K
54      7  SmectiteMontmor-Mg
55      8  SmectiteMontmor-Na
56      9  SmectiteNontronite-Ca
57     10  SmectiteNontronite-K
58     11  SmectiteNontronite-Mg
59     12  SmectiteNontronite-Na

Steps completed =   347, iter = 24, ncorr = 0

- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -


                    Reaction progress        =  1.17750302086035E+00
                    Log of reaction progress =       0.0709620



                    Time =  9.813E+08 sec
                         =  1.136E+04 days
                         =  3.109E+01 years

                    Log sec =        8.992
                    Log days =       4.055
                    Log years =      1.493

                    Temperature    =     25.000 degrees C
                    total pressure =      1.013 bars


Change in the product phase assemblage


                              --- Reactant Summary ---


    Reactant                   Moles     Delta moles    Mass, g    Delta Mass, g

 Tuff                       9.8822E+01   1.1775E+00   2.0344E+03   2.4241E+01


                Current total mass =  2.03441E+03 grams
                Delta total mass   =  2.42406E+01 grams
                Delta total volume =      0.00000 cc


    Reactant                Rel. Rate      Rate         Rate
                             mol/mol       mol/s      mol/s/cm2

 Tuff                       1.0000E+00   1.2000E-09   2.5000E-15


    Reactant                   Affinity   Surface Area
                               kcal/mol     mol/s/cm2
```

Tuff 999.00000 4.8000E+05

Reactant Rate Constants, mol/s/cm2

Tuff
Forward 2.5000E-15

Affinity of the overall irreversible reaction= 0.000 kcal
Contributions from irreversible reactions
with no thermodynamic data are not included

--- Element Totals for the Aqueous Solution ---

Element	mg/kg soln.	Molality	Moles
O	8.866300E+05	5.558962E+01	5.555789E+01
Al	1.319379E-04	4.905213E-09	4.902414E-09
B	1.335857E-01	1.239507E-05	1.238800E-05
Ba	1.369774E-05	1.000571E-10	1.000000E-10
Ca	8.873452E+01	2.220964E-03	2.219696E-03
Ce	1.397582E-19	1.000570E-24	9.999993E-25
Cl	7.121997E+00	2.015150E-04	2.014000E-04
Cr	2.998660E+02	5.785108E-03	5.781806E-03
Cs	1.325671E-05	1.000571E-10	1.000000E-10
Cu	6.655344E-10	1.050600E-14	1.050000E-14
F	3.520555E-01	1.858870E-05	1.857809E-05
Fe	1.319453E-08	2.370004E-13	2.368652E-13
Gd	1.568497E-09	1.000571E-14	9.999998E-15
H	1.115504E+05	1.110175E+02	1.109541E+02
C	2.618210E+00	2.186655E-04	2.185407E-04
P	1.005008E-04	3.254845E-09	3.252987E-09
K	9.352302E+01	2.399472E-03	2.398102E-03
La	1.385519E-09	1.000571E-14	9.999998E-15
Li	6.923330E-07	1.000571E-10	1.000000E-10
Mg	3.657233E+01	1.509426E-03	1.508565E-03
Mn	3.468678E-10	6.333529E-15	6.329914E-15
Mo	2.181065E+02	2.280467E-03	2.279166E-03
N	1.983894E+00	1.420811E-04	1.420000E-04
Na	6.894069E+02	3.008126E-02	3.006409E-02
Nd	1.438728E-09	1.000571E-14	9.999998E-15
Ni	2.125444E-01	3.632793E-06	3.630719E-06
Pb	2.066725E-05	1.000571E-10	1.000000E-10
Pu	2.433788E-09	1.000571E-14	9.999999E-15
S	3.733231E+02	1.167871E-02	1.167205E-02
Si	2.828070E+00	1.010097E-04	1.009520E-04
Sm	1.499772E-09	1.000571E-14	9.999998E-15
Sr	8.739694E-06	1.000571E-10	1.000000E-10
Ti	1.078557E-05	2.259665E-10	2.258375E-10
U	2.374230E-09	1.000571E-14	1.000000E-14
V	4.771749E+00	9.396385E-05	9.391022E-05
Zn	6.522353E-06	1.000571E-10	1.000000E-10
Zr	9.099186E-16	1.000572E-20	1.000001E-20

Single ion activities and activity coefficients are here defined
with respect to the modified NBS pH scale

	pH	Eh	pe
modified NBS pH scale	7.5276	0.7737	1.3079E+01
rational pH scale	7.4516	0.7782	1.3155E+01

pHCl = 11.3152

Oxygen fugacity = 2.09991E-01
Log oxygen fugacity = -0.67780

Activity of water = 0.99913
Log activity of water = -0.00038

Ionic strength = 5.753351E-02 molal
Sum of molalities = 0.0551350193455
Osmotic coefficient = 0.87617

Mass of solution = 1.002552 kg
Mass of solutes = 0.003123 kg
Conc. of solutes = 0.311505 per cent (w/w)

Moles of solvent H2O = 5.54768E+01
Mass of solvent H2O = 9.99429E-01 kg

Species	Molality	Log molality	Log gamma	Log activity
Na+	2.9266E-02	-1.5336	-0.0975	-1.6312
SO4--	9.8191E-03	-2.0079	-0.3574	-2.3653
CrO4--	5.5054E-03	-2.2592	-0.3574	-2.6166
K+	2.3267E-03	-2.6333	-0.1035	-2.7367
MoO4--	2.2805E-03	-2.6420	-0.3465	-2.9885
Ca++	1.7712E-03	-2.7517	-0.3440	-3.0957
Mg++	9.7741E-04	-3.0099	-0.3117	-3.3217
NaSO4-	8.0873E-04	-3.0922	-0.0843	-3.1765
MgSO4(aq)	5.3055E-04	-3.2753	0.0000	-3.2753
CaSO4(aq)	4.4679E-04	-3.3499	0.0000	-3.3499
HCrO4-	2.7192E-04	-3.5656	-0.0843	-3.6498
O2(aq)	2.6174E-04	-3.5821	0.0060	-3.5761
Cl-	2.0076E-04	-3.6973	-0.0902	-3.7875
HCO3-	1.9857E-04	-3.7021	-0.0843	-3.7863
NO3-	1.4150E-04	-3.8492	-0.0902	-3.9394
SiO2(aq)	1.0016E-04	-3.9993	0.0000	-3.9993
KSO4-	7.2750E-05	-4.1382	-0.0843	-4.2224
VO3OH--	6.5852E-05	-4.1814	-0.3574	-4.5388
F-	1.8280E-05	-4.7380	-0.0871	-4.8252
H2VO4-	1.2975E-05	-4.8869	-0.0843	-4.9711
B(OH)3(aq)	1.2077E-05	-4.9180	0.0000	-4.9180
CO2(aq)	1.0594E-05	-4.9749	0.0060	-4.9689
VO2(OH)2-	8.0411E-06	-5.0947	-0.0843	-5.1789
HVO4--	7.0936E-06	-5.1491	-0.3574	-5.5065
NaHCO3(aq)	5.4526E-06	-5.2634	0.0000	-5.2634
Cr2O7--	3.8771E-06	-5.4115	-0.3574	-5.7689
Ni++	2.8808E-06	-5.5405	-0.3440	-5.8844
CaHCO3+	1.8289E-06	-5.7378	-0.0975	-5.8353
MgHCO3+	1.0598E-06	-5.9748	-0.0975	-6.0723
NiSO4(aq)	7.5153E-07	-6.1241	0.0000	-6.1241
NaCl(aq)	6.3727E-07	-6.1957	0.0000	-6.1957
CaNO3+	5.7861E-07	-6.2376	-0.0975	-6.3351

CO3--	5.7415E-07	-6.2410	-0.3465	-6.5875
HSiO3-	4.5680E-07	-6.3403	-0.0843	-6.4245
CaCO3(aq)	4.4046E-07	-6.3561	0.0000	-6.3561
OH-	4.1620E-07	-6.3807	-0.0871	-6.4678
NaHSiO3(aq)	3.9157E-07	-6.4072	0.0000	-6.4072
BO2-	2.8141E-07	-6.5507	-0.0843	-6.6349
MgF+	2.0095E-07	-6.6969	-0.0975	-6.7944
MgCO3(aq)	1.1742E-07	-6.9303	0.0000	-6.9303
CaF+	7.2170E-08	-7.1416	-0.0975	-7.2392
MgCl+	7.1356E-08	-7.1466	-0.0975	-7.2441
H+	3.5349E-08	-7.4516	-0.0760	-7.5276
NaF(aq)	3.5162E-08	-7.4539	0.0000	-7.4539
CaCl+	3.3015E-08	-7.4813	-0.0975	-7.5788
NaCO3-	2.3989E-08	-7.6200	-0.0843	-7.7043
CaB(OH)4+	1.5447E-08	-7.8111	-0.0975	-7.9087
HSO4-	1.4805E-08	-7.8296	-0.0843	-7.9138
MgB(OH)4+	1.0924E-08	-7.9616	-0.0975	-8.0591
NaB(OH)4(aq)	1.0094E-08	-7.9959	0.0000	-7.9959
KCl(aq)	9.5753E-09	-8.0188	0.0000	-8.0188
CaOH+	4.7763E-09	-8.3209	-0.0975	-8.4184
AlO2-	4.5659E-09	-8.3405	-0.0843	-8.4247
VO(OH)3(aq)	1.9652E-09	-8.7066	0.0000	-8.7066
HPO4--	1.8462E-09	-8.7337	-0.3574	-9.0911
NaOH(aq)	1.2627E-09	-8.8987	0.0000	-8.8987
HF(aq)	6.5357E-10	-9.1847	0.0000	-9.1847
NiNO3+	4.7165E-10	-9.3264	-0.0975	-9.4239
H2PO4-	4.6873E-10	-9.3291	-0.0843	-9.4133
CaHPO4(aq)	3.5745E-10	-9.4468	0.0000	-9.4468
HAlO2(aq)	3.1479E-10	-9.5020	0.0000	-9.5020
MgHPO4(aq)	3.1422E-10	-9.5028	0.0000	-9.5028
Ti(OH)4(aq)	2.2597E-10	-9.6460	0.0000	-9.6460
KOH(aq)	2.1406E-10	-9.6695	0.0000	-9.6695
NaHPO4-	1.9143E-10	-9.7180	-0.0843	-9.8023
Cs+	1.0005E-10	-9.9998	-0.1067	-10.1065

--- Summary of Instantaneously Precipitated Solid Phases ---
(defined by derivatives)

--- Theoretical Rock Composition ---
g/kg

O	4.839427E+01
Al	6.668102E+00
Ca	2.659469E-02
F	1.323639E-03
Fe	6.469008E-01
H	3.539960E-02
P	6.473924E-03
K	8.679458E+00
Mg	7.806604E-03
Mn	5.116294E-02
Na	8.102108E-03
Ni	2.094899E-02
Si	3.552048E+01
Ti	5.815073E-02

--- Oxide Percentages ---

Oxide Theoretical rock

Total = 0.0000

Phase/end-member	d mol/d zi	d grams/d zi	d vol (cc)/d zi
Celadonite	1.4513E-05	5.7580E-03	2.2801E-03
Fluorapatite	4.3733E-02	2.2055E+01	2.1866E+01
Muscovite	2.4488E-03	9.7538E-01	3.4457E-01
Ni2SiO4	3.7178E-05	7.7875E-03	1.5842E-03
Pyrolusite	1.9400E-04	1.6866E-02	9.7000E-02
Quartz	1.2044E-01	7.2366E+00	2.7325E+00
Rutile	2.5300E-04	2.0209E-02	4.7615E-03
fix CO2(g)	-2.1711E-03	-9.5551E-02	0.0000E+00
fix O2(g)	-7.0672E-04	-2.2614E-02	0.0000E+00
Smectite-di			
Beidellite-Ca	3.6999E-10	1.3562E-07	4.7925E-08
Beidellite-K	1.7544E-10	6.5412E-08	2.3456E-08
Beidellite-Mg	3.7123E-10	1.3511E-07	4.5732E-08
Beidellite-Na	2.0663E-10	7.5944E-08	2.6973E-08
Montmor-Ca	6.4332E-07	2.3548E-04	3.2166E-04
Montmor-K	4.9851E-07	1.8561E-04	2.4925E-04
Montmor-Mg	1.0490E-06	3.8126E-04	5.2452E-04
Montmor-Na	5.7219E-07	2.1000E-04	2.8610E-04
Nontronite-Ca	3.9732E-04	1.6858E-01	5.2089E-02
Nontronite-K	1.8835E-04	8.1099E-02	2.5478E-02
Nontronite-Mg	3.9893E-04	1.6823E-01	5.1766E-02
Nontronite-Na	2.2190E-04	9.4365E-02	2.9315E-02

--- Summary of Solid Phases (E.S.+P.R.S.) ---

Phase/End-member	Log moles	Moles	Mass, g	Volume, cc
Alunite	-2.5559	2.7801E-03	1.1516E+00	8.1624E-01
Celadonite	-5.9043	1.2466E-06	4.9456E-04	1.9584E-04
Diaspore	-1.6079	2.4665E-02	1.4796E+00	4.3804E-01
Fluorapatite	-4.0170	9.6172E-05	4.8500E-02	4.8086E-02
Hematite	-3.7144	1.9300E-04	3.0820E-02	5.8428E-03
Maximum_Microcline	-1.7788	1.6641E-02	4.6318E+00	1.8096E+00
Muscovite	-2.4532	3.5218E-03	1.4028E+00	4.9555E-01
Ni2SiO4	-2.1931	6.4107E-03	1.3428E+00	2.7316E-01
Nontronite-H	-4.9990	1.0023E-05	4.1899E-03	5.0117E-03
Pyrolusite	-3.0851	8.2211E-04	7.1471E-02	4.1105E-01
Quartz	-0.6220	2.3879E-01	1.4348E+01	5.4177E+00
Rutile	-3.5259	2.9791E-04	2.3797E-02	5.6066E-03
fix CO2(g)	2.3010	2.0000E+02	8.8020E+03	0.0000E+00
fix O2(g)	2.3010	2.0000E+02	6.3997E+03	0.0000E+00
Smectite-di	-2.9115	1.2262E-03		
Beidellite-Ca	-9.4803	3.3094E-10	1.2131E-07	4.2866E-08
Beidellite-K	-9.1133	7.7040E-10	2.8725E-07	1.0300E-07
Beidellite-Mg	-9.4692	3.3949E-10	1.2356E-07	4.1822E-08
Beidellite-Na	-9.8078	1.5565E-10	5.7207E-08	2.0319E-08
Montmor-Ca	-6.9018	1.2536E-07	4.5888E-05	6.2681E-05
Montmor-K	-6.9808	1.0451E-07	3.8913E-05	5.2255E-05
Montmor-Mg	-6.6894	2.0447E-07	7.4314E-05	1.0224E-04
Montmor-Na	-6.9537	1.1125E-07	4.0830E-05	5.5624E-05
Nontronite-Ca	-3.5555	2.7829E-04	1.1807E-01	3.6483E-02
Nontronite-K	-3.2772	5.2821E-04	2.2744E-01	7.1452E-02
Nontronite-Mg	-3.5462	2.8429E-04	1.1988E-01	3.6889E-02
Nontronite-Na	-3.8702	1.3483E-04	5.7337E-02	1.7812E-02

Mass, grams Volume, cc

Created	1.522673E+04	9.889057E+00
Destroyed	2.424063E+01	0.000000E+00
Net	1.520249E+04	9.889057E+00

Warning-- these volume totals may be incomplete because of missing partial molar volume data in the data base

--- Summary of Pure Mineral Saturation States ---

Mineral	Log Q/K	Aff, kcal	State
Alamosite	-4.992	-6.810	
Albite	-1.935	-2.640	
Albite_high	-3.254	-4.439	
Albite_low	-1.935	-2.640	
Analcime	-1.984	-2.707	
Andalusite	-6.082	-8.297	
Anglesite	-4.886	-6.667	
Anhydrite	-1.155	-1.575	
Aragonite	-1.347	-1.838	
Arcanite	-6.038	-8.237	
BaCrO4	-3.047	-4.157	
BaZrO3	80.393	109.679	ssatd
Barite	-2.757	-3.761	
Bassanite	-1.800	-2.455	
Beidellite-Ca	-2.146	-2.928	
Beidellite-Cs	-4.534	-6.185	
Beidellite-H	-3.162	-4.314	
Beidellite-K	-2.256	-3.078	
Beidellite-Mg	-2.146	-2.928	
Beidellite-Na	-2.230	-3.042	
Boehmite	-0.633	-0.864	
Boric_acid	-4.760	-6.494	
Brucite	-4.565	-6.228	
Bunsenite	-3.301	-4.504	
Ca2V2O7	-4.076	-5.560	
CaSO4:0.5H2O(beta)	-1.968	-2.685	
CaV2O6	-4.386	-5.984	
CaZrO3	141.690	193.305	ssatd
Calcite	-1.203	-1.641	
CeO2	-3.688	-5.031	
Celadonite	0.000	0.000	satd
Celestite	-7.189	-9.807	
Cerussite	-3.423	-4.671	
Chalcedony	-0.271	-0.370	
Chrysotile	-3.925	-5.355	
Clinochlore-14A	-6.710	-9.155	
Clinoptilolite	-5.201	-7.095	
Clinoptilolite-Ca	-6.484	-8.846	
Clinoptilolite-K	-6.667	-9.096	
Clinoptilolite-Na	-6.646	-9.067	
Clinoptilolite-hy-Ca	-6.483	-8.845	
Clinoptilolite-hy-K	-6.662	-9.089	
Clinoptilolite-hy-Na	-6.644	-9.064	
Coesite	-0.810	-1.105	
Corundum	-4.450	-6.071	
Cristobalite(alpha)	-0.551	-0.751	
Cristobalite(beta)	-0.994	-1.356	
Crocoite	-0.273	-0.372	

Dawsonite	-2.833	-3.865	
Diaspore	-0.229	-0.313	
Diopside	-5.270	-7.190	
Dolomite	-1.448	-1.976	
Dolomite-dis	-2.993	-4.083	
Dolomite-ord	-1.448	-1.976	
Enstatite	-3.593	-4.902	
Epsomite	-3.727	-5.085	
Fe(OH)3	-6.318	-8.620	
Fluorapatite	0.000	0.000	satd
Fluorite	-2.709	-3.696	
GdOHCO3	-7.230	-9.864	
GdPO4:H2O	-5.272	-7.193	
Gibbsite	-0.825	-1.126	
Gismondine	-6.075	-8.288	
Glauberite	-5.620	-7.667	
Goethite	-1.197	-1.633	
Gypsum	-0.979	-1.336	
Halite	-7.004	-9.556	
Hematite	-1.433	-1.955	
Heulandite	-4.693	-6.403	
Hexahydrite	-3.962	-5.406	
Ice	-0.139	-0.190	
Illite	-1.275	-1.739	
Jadeite	-3.560	-4.857	
K-Feldspar	-0.001	-0.001	
Kalicinite	-6.807	-9.286	
Kalsilite	-3.176	-4.333	
Kaolinite	-0.947	-1.292	
Kieserite	-5.420	-7.395	
Kyanite	-5.811	-7.928	
LaPO4:H2O	-4.658	-6.355	
Lansfordite	-4.423	-6.034	
Laumontite	-3.844	-5.244	
Lawsonite	-4.391	-5.991	
Magnesite	-1.874	-2.557	
Manganite	-4.459	-6.084	
Maximum_Microcline	-0.001	-0.001	
Mesolite	-0.022	-0.030	
Mirabilite	-4.492	-6.128	
MnO2(gamma)	-1.518	-2.071	
Monohydrocalcite	-2.037	-2.779	
Montmor-Ca	-1.073	-1.463	
Montmor-Cs	-3.393	-4.629	
Montmor-K	-1.112	-1.517	
Montmor-Mg	-1.003	-1.368	
Montmor-Na	-1.089	-1.486	
Mordenite	-2.935	-4.004	
Morenosite	-6.238	-8.511	
Muscovite	0.000	0.000	satd
Nahcolite	-5.306	-7.238	
Natrolite	-4.864	-6.636	
NdOHCO3	-7.158	-9.766	
NdPO4:H2O	-5.000	-6.821	
Nepheline	-4.972	-6.784	
Nesquehonite	-4.577	-6.244	
Ni(OH)2	-3.578	-4.882	
Ni2SiO4	0.000	0.000	satd
NiCO3	-5.655	-7.715	
NiSO4:6H2O(alpha)	-6.245	-8.520	
Niter	-6.470	-8.827	
Nontronite-Ca	-0.159	-0.217	
Nontronite-H	-1.175	-1.602	

Nontronite-K	-0.269	-0.367	
Nontronite-Mg	-0.159	-0.216	
Nontronite-Na	-0.242	-0.331	
Okenite	-6.422	-8.761	
Paragonite	-2.831	-3.862	
Paralaurionite	-6.838	-9.328	
Pentahydrite	-4.302	-5.869	
Phlogopite	-2.517	-3.434	
Plattnerite	-3.326	-4.538	
Prehnite	-7.148	-9.752	
Pseudowollastonite	-6.040	-8.240	
PuO2	-1.521	-2.075	
PuO2(OH)2	-6.096	-8.317	
Pyrolusite	0.000	0.000	satd
Pyrophyllite	-2.575	-3.513	
Quartz	0.000	0.000	satd
Rutile	0.000	0.000	satd
Sanidine_high	-1.200	-1.637	
Saponite-Ca	-1.508	-2.057	
Saponite-Cs	-3.895	-5.314	
Saponite-H	-2.523	-3.442	
Saponite-K	-1.617	-2.207	
Saponite-Mg	-1.507	-2.056	
Saponite-Na	-1.591	-2.171	
Scolecite	-2.054	-2.803	
Sellaite	-3.588	-4.895	
SiO2(am)	-1.286	-1.754	
Sillimanite	-6.445	-8.793	
SmPO4:H2O	-5.089	-6.943	
Smectite-low-Fe-Mg	-7.233	-9.868	
Smithsonite	-7.077	-9.655	
SrZrO3	117.250	159.962	ssatd
Starkeyite	-4.689	-6.397	
Stilbite	-0.206	-0.280	
Strontianite	-6.445	-8.793	
Syngenite	-5.700	-7.776	
Talc	-1.936	-2.641	
Thenardite	-5.319	-7.256	
Trevorite	-1.941	-2.648	
Tridymite	-0.172	-0.234	
Witherite	-3.625	-4.946	
Wollastonite	-5.801	-7.914	
Zincite	-6.508	-8.879	
Zn(OH)2(beta)	-7.234	-9.870	
Zn(OH)2(epsilon)	-6.963	-9.499	
Zn(OH)2(gamma)	-7.183	-9.800	
fix CO2(g)	0.000	0.000	satd
fix O2(g)	0.000	0.000	satd

--- Summary of Solid Solutions ---

--- Carbonate-Calcite ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Calcite	8.2415E-01	-0.0840	0.0000	-0.0840
Magnesite	1.7584E-01	-0.7549	0.0000	-0.7549
Rhodochrosite	2.2371E-10	-9.6503	0.0000	-9.6503
Siderite	5.4895E-19	-18.2605	0.0000	-18.2605
Smithsonite	1.1027E-06	-5.9575	0.0000	-5.9575

Strontianite	4.7169E-06	-5.3263	0.0000	-5.3263

Mineral	Log Q/K	Aff, kcal	State
Carbonate-Calcite	-1.119	-1.527	
Calcite	-1.119	-1.527	
Magnesite	-1.119	-1.527	
Rhodochrosite	-1.119	-1.527	
Siderite	-1.119	-1.527	
Smithsonite	-1.119	-1.527	
Strontianite	-1.119	-1.527	

--- Clinoptilolite-hy-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-hy-Ca	4.2501E-01	-0.3716	0.0000	-0.3716
Clinoptilolite-hy-Cs	1.0205E-24	-23.9912	0.0000	-23.9912
Clinoptilolite-hy-K	2.8160E-01	-0.5504	0.0000	-0.5504
Clinoptilolite-hy-Na	2.9339E-01	-0.5325	0.0000	-0.5325
Clinoptilolite-hy-Sr	8.5195E-14	-13.0696	0.0000	-13.0696

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-hy-ss	-6.111	-8.338	
Clinoptilolite-hy-Ca	-6.111	-8.338	
Clinoptilolite-hy-Cs	-6.111	-8.338	
Clinoptilolite-hy-K	-6.111	-8.338	
Clinoptilolite-hy-Na	-6.111	-8.338	
Clinoptilolite-hy-Sr	-6.111	-8.338	

--- Clinoptilolite-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-Ca	3.5927E-01	-0.4446	-1.0937	-1.5382
Clinoptilolite-Cs	5.3394E-08	-7.2725	-17.8904	-25.1629
Clinoptilolite-K	3.1811E-01	-0.4974	-1.2237	-1.7211
Clinoptilolite-NH4	1.8413E-63	-62.7349	-154.3278	-217.0627
Clinoptilolite-Na	3.2254E-01	-0.4914	-1.2089	-1.7003
Clinoptilolite-Sr	7.6896E-05	-4.1141	-10.1207	-14.2348

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-ss	-4.946	-6.748	
Clinoptilolite-Ca	-4.946	-6.748	
Clinoptilolite-Cs	-4.946	-6.748	
Clinoptilolite-K	-4.946	-6.748	
Clinoptilolite-NH4	-4.946	-6.748	
Clinoptilolite-Na	-4.946	-6.748	
Clinoptilolite-Sr	-4.946	-6.748	

--- Saponite-tri ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Saponite-Ca	3.3033E-01	-0.4811	0.3223	-0.1587
Saponite-H	2.7662E-04	-3.5581	2.3839	-1.1742
Saponite-K	1.5351E-01	-0.8139	0.5453	-0.2686
Saponite-Mg	3.3128E-01	-0.4798	0.3215	-0.1583
Saponite-Na	1.8460E-01	-0.7338	0.4916	-0.2421

Mineral	Log Q/K	Aff, kcal	State
Saponite-tri	-1.349	-1.840	
Saponite-Ca	-1.349	-1.840	
Saponite-H	-1.349	-1.840	
Saponite-K	-1.349	-1.840	
Saponite-Mg	-1.349	-1.840	
Saponite-Na	-1.349	-1.840	

--- Smectite-di ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Beidellite-Ca	3.1307E-07	-6.5044	4.3579	-2.1464
Beidellite-K	1.4559E-07	-6.8369	4.5807	-2.2562
Beidellite-Mg	3.1398E-07	-6.5031	4.3571	-2.1460
Beidellite-Na	1.7496E-07	-6.7571	4.5272	-2.2298
Montmor-Ca	5.6204E-04	-3.2502	2.1777	-1.0726
Montmor-K	4.2686E-04	-3.3697	2.2577	-1.1120
Montmor-Mg	9.1608E-04	-3.0381	2.0355	-1.0026
Montmor-Na	5.0025E-04	-3.3008	2.2115	-1.0893
Nontronite-Ca	3.2951E-01	-0.4821	0.3230	-0.1591
Nontronite-K	1.5324E-01	-0.8146	0.5458	-0.2688
Nontronite-Mg	3.3070E-01	-0.4806	0.3220	-0.1586
Nontronite-Na	1.8415E-01	-0.7348	0.4923	-0.2425

Mineral	Log Q/K	Aff, kcal	State
Smectite-di	0.000	0.000	satd
Beidellite-Ca	0.000	0.000	satd
Beidellite-K	0.000	0.000	satd
Beidellite-Mg	0.000	0.000	satd
Beidellite-Na	0.000	0.000	satd
Montmor-Ca	0.000	0.000	satd
Montmor-K	0.000	0.000	satd
Montmor-Mg	0.000	0.000	satd
Montmor-Na	0.000	0.000	satd
Nontronite-Ca	0.000	0.000	satd
Nontronite-K	0.000	0.000	satd
Nontronite-Mg	0.000	0.000	satd
Nontronite-Na	0.000	0.000	satd

--- Lanthanide hydroxide ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
La(OH)3	1.7498E-05	-4.7570	0.0000	-4.7570
Ce(OH)3	2.9309E-15	-14.5330	0.0000	-14.5330
Nd(OH)3(c)	3.9932E-01	-0.3987	0.0000	-0.3987
Gd(OH)3	5.3581E-01	-0.2710	0.0000	-0.2710
Sm(OH)3	6.4852E-02	-1.1881	0.0000	-1.1881

Mineral	Log Q/K	Aff, kcal	State
Lanthanide hydroxide	-8.435	-11.508	
La(OH)3	-8.435	-11.508	
Ce(OH)3	-8.435	-11.508	
Nd(OH)3(c)	-8.435	-11.508	
Gd(OH)3	-8.435	-11.508	
Sm(OH)3	-8.435	-11.508	

--- Rhabdophane-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaPO4:H2O	4.8329E-01	-0.3158	0.0000	-0.3158
CePO4:H2O	2.5598E-11	-10.5918	0.0000	-10.5918
NdPO4:H2O	2.2005E-01	-0.6575	0.0000	-0.6575
GdPO4:H2O	1.1755E-01	-0.9298	0.0000	-0.9298
SmPO4:H2O	1.7911E-01	-0.7469	0.0000	-0.7469

Mineral	Log Q/K	Aff, kcal	State
Rhabdophane-ss	-4.343	-5.924	
LaPO4:H2O	-4.343	-5.924	
CePO4:H2O	-4.343	-5.924	
NdPO4:H2O	-4.343	-5.924	
GdPO4:H2O	-4.343	-5.924	
SmPO4:H2O	-4.343	-5.924	

--- Lanthanide fluoride ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaF3:0.5H2O	6.1730E-01	-0.2095	0.0000	-0.2095
CeF3:0.5H2O	5.1819E-11	-10.2855	0.0000	-10.2855
NdF3:0.5H2O	3.5385E-01	-0.4512	0.0000	-0.4512
GdF3:0.5H2O	5.9774E-03	-2.2235	0.0000	-2.2235
SmF3:0.5H2O	2.2878E-02	-1.6406	0.0000	-1.6406

Mineral	Log Q/K	Aff, kcal	State

Lanthanide fluoride	-11.011	-15.022
LaF3:0.5H2O	-11.011	-15.022
CeF3:0.5H2O	-11.011	-15.022
NdF3:0.5H2O	-11.011	-15.022
GdF3:0.5H2O	-11.011	-15.022
SmF3:0.5H2O	-11.011	-15.022

--- Summary of Gases ---

Gas	Fugacity	Log fugacity
Al(g)	9.7133-192	-191.0126
B(g)	8.3499-204	-203.0783
BF3(g)	9.7964E-40	-39.0089
C(g)	3.0917-190	-189.5098
CH4(g)	3.5233-146	-145.4531
CO(g)	6.0395E-49	-48.2190
CO2(g)	3.1623E-04	-3.5000
Ca(g)	4.6710-152	-151.3306
Chlorine	3.8155E-28	-27.4184
Cs(g)	1.0824E-83	-82.9656
Cu(g)	2.3737E-82	-81.6246
Fluorine	6.1229E-83	-82.2130
H2(g)	6.1097E-42	-41.2140
H2O(g)	2.5955E-02	-1.5858
H2S(g)	2.4582-141	-140.6094
HCl(g)	2.3952E-18	-17.6207
HF(g)	3.4244E-14	-13.4654
K(g)	1.2685E-76	-75.8967
Li(g)	2.4049E-97	-96.6189
Mg(g)	1.8700-129	-128.7282
Nitrogen	2.8419E-19	-18.5464
NH3(g)	6.1381E-69	-68.2120
NO(g)	1.6786E-25	-24.7750
NO2(g)	1.1478E-19	-18.9401
Na(g)	8.4401E-75	-74.0737
O2(g)	2.0999E-01	-0.6778
Pb(g)	7.2470E-70	-69.1398
S2(g)	3.6094-225	-224.4426
SO2(g)	4.3561E-54	-53.3609
Si(g)	4.2257-221	-220.3741
SiF4(g)	6.0717E-39	-38.2167
Ti(g)	3.8019-231	-230.4200
TiCl4(g)	1.1044E-83	-82.9569
U(g)	1.6201-297	-296.7904
U2Cl10(g)	1.6648-242	-241.7786
U2Cl8(g)	1.3528-245	-244.8688
U2F10(g)	7.8665-158	-157.1042
UCl(g)	3.4596-253	-252.4610
UCl2(g)	2.2101-207	-206.6556
UCl3(g)	3.0923-159	-158.5097
UCl4(g)	2.3429-128	-127.6302
UCl5(g)	9.1335-135	-134.0394
UCl6(g)	6.6148-136	-135.1795
UF(g)	1.0512-238	-237.9783
UF2(g)	5.0583-198	-197.2960
UF3(g)	5.9901-151	-150.2226
UF4(g)	1.0470-100	-99.9800
UF5(g)	8.3828E-92	-91.0766

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UF6(g)                      6.6087E-97    -96.1799
UO(g)                       1.2795-212   -211.8929
UO2(g)                      2.3706-128   -127.6251
UO2Cl2(g)                   3.9492E-75    -74.4035
UO2F2(g)                    6.5570E-64    -63.1833
UO3(g)                      1.7436E-75    -74.7585
UOF4(g)                     3.1201E-78    -77.5058
Zn(g)                       1.1868E-79    -78.9256



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--- shifting e.s. solid(s) to the p.r.s. (shftz) ---

      shifted -- Celadonite
              - old mass=  1.24656E-06, new mass=  8.00000E-07
      shifted -- Fluorapatite
              - old mass=  8.00611E-07, new mass=  8.00000E-07
      shifted -- Muscovite
              - old mass=  1.37234E-06, new mass=  8.00000E-07
  not shifted -- Ni2SiO4
              - mass=  7.90703E-07
      shifted -- Pyrolusite
              - old mass=  8.08217E-07, new mass=  8.00000E-07
      shifted -- Quartz
              - old mass=  7.48003E-06, new mass=  8.00000E-07
      shifted -- Rutile
              - old mass=  8.10716E-07, new mass=  8.00000E-07
      shifted -- Smectite-di
              - old mass=  8.51219E-07, new mass=  8.00000E-07

Stepping to zi=  1.1775E+00, delzi=  1.0000E-09, nord= 0
  time =  1.1357E+04 d, dltime =  9.6451E-06 d
Steps completed =   348, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -6.0968

Stepping to zi=  1.1775E+00, delzi=  1.0000E-09, nord= 0
  time =  1.1357E+04 d, dltime =  9.6451E-06 d
Steps completed =   349, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -6.0967

Stepping to zi=  1.1775E+00, delzi=  1.0000E-09, nord= 0
  time =  1.1357E+04 d, dltime =  9.6451E-06 d
Steps completed =   350, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -6.0966

Stepping to zi=  1.1775E+00, delzi=  1.0000E-08, nord= 1
  time =  1.1357E+04 d, dltime =  9.6451E-05 d
Steps completed =   351, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -6.0957

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                    Reaction progress        =  1.17750303386035E+00
                    Log of reaction progress =       0.0709620



                    Time =  9.813E+08 sec
                         =  1.136E+04 days
```

= 3.109E+01 years

Log sec = 8.992
Log days = 4.055
Log years = 1.493

Temperature = 25.000 degrees C
total pressure = 1.013 bars

Flow-through system print following a discontinuity

--- Summary of Instantaneously Precipitated Solid Phases ---
(defined by derivatives)

--- Theoretical Rock Composition ---
g/kg

O	5.056993E+01
Al	6.668942E+00
Ca	2.664306E-02
F	1.323100E-03
Fe	6.469818E-01
H	2.559551E-01
P	6.471288E-03
K	4.748776E+00
Mg	1.444938E+00
Mn	5.116935E-02
Na	8.144652E-03
Ni	6.472635E-03
Si	3.552576E+01
Ti	5.815802E-02

--- Oxide Percentages ---

Oxide Theoretical rock

Total = 0.0000

Phase/end-member	d mol/d zi	d grams/d zi	d vol (cc)/d zi
Celadonite	1.2316E-02	4.8861E+00	1.9348E+00
Fluorapatite	1.4506E-05	7.3153E-03	7.2529E-03
Muscovite	1.2921E-02	5.1466E+00	1.8181E+00
Ni2SiO4	1.1486E-05	2.4058E-03	4.8940E-04
Pyrolusite	1.9400E-04	1.6866E-02	9.7000E-02
Quartz	1.7099E-01	1.0274E+01	3.8794E+00
Rutile	2.5300E-04	2.0209E-02	4.7615E-03
fix CO2(g)	-3.4106E-04	-1.5010E-02	0.0000E+00
fix O2(g)	-7.1054E-04	-2.2737E-02	0.0000E+00
Smectite-di			
Beidellite-Ca	3.7858E-10	1.3877E-07	4.9037E-08
Beidellite-K	1.7582E-10	6.5555E-08	2.3507E-08
Beidellite-Mg	3.7863E-10	1.3781E-07	4.6644E-08
Beidellite-Na	2.1162E-10	7.7778E-08	2.7625E-08
Montmor-Ca	6.7964E-07	2.4878E-04	3.3982E-04
Montmor-K	5.1550E-07	1.9194E-04	2.5775E-04
Montmor-Mg	1.1047E-06	4.0150E-04	5.5236E-04
Montmor-Na	6.0507E-07	2.2207E-04	3.0253E-04
Nontronite-Ca	3.9894E-04	1.6927E-01	5.2301E-02

Nontronite-K	1.8528E-04	7.9778E-02	2.5063E-02
Nontronite-Mg	3.9928E-04	1.6837E-01	5.1810E-02
Nontronite-Na	2.2300E-04	9.4836E-02	2.9461E-02

--- Summary of Solid Phases (E.S.+P.R.S.) ---

Phase/End-member	Log moles	Moles	Mass, g	Volume, cc
Alunite	-2.5559	2.7801E-03	1.1516E+00	8.1624E-01
Celadonite	-5.9042	1.2467E-06	4.9462E-04	1.9586E-04
Diaspore	-1.6079	2.4665E-02	1.4796E+00	4.3804E-01
Fluorapatite	-4.0170	9.6172E-05	4.8500E-02	4.8086E-02
Hematite	-3.7144	1.9300E-04	3.0820E-02	5.8428E-03
Maximum_Microcline	-1.7788	1.6641E-02	4.6318E+00	1.8096E+00
Muscovite	-2.4532	3.5218E-03	1.4028E+00	4.9555E-01
Ni2SiO4	-2.1931	6.4107E-03	1.3428E+00	2.7316E-01
Nontronite-H	-4.9990	1.0023E-05	4.1899E-03	5.0117E-03
Pyrolusite	-3.0851	8.2211E-04	7.1471E-02	4.1105E-01
Quartz	-0.6220	2.3879E-01	1.4348E+01	5.4177E+00
Rutile	-3.5259	2.9791E-04	2.3797E-02	5.6066E-03
fix CO2(g)	2.3010	2.0000E+02	8.8020E+03	0.0000E+00
fix O2(g)	2.3010	2.0000E+02	6.3997E+03	0.0000E+00
Smectite-di	-2.9115	1.2262E-03		
Beidellite-Ca	-9.4803	3.3094E-10	1.2131E-07	4.2866E-08
Beidellite-K	-9.1133	7.7040E-10	2.8725E-07	1.0300E-07
Beidellite-Mg	-9.4692	3.3949E-10	1.2356E-07	4.1822E-08
Beidellite-Na	-9.8078	1.5565E-10	5.7207E-08	2.0319E-08
Montmor-Ca	-6.9018	1.2536E-07	4.5888E-05	6.2681E-05
Montmor-K	-6.9808	1.0451E-07	3.8913E-05	5.2255E-05
Montmor-Mg	-6.6894	2.0447E-07	7.4314E-05	1.0224E-04
Montmor-Na	-6.9537	1.1125E-07	4.0830E-05	5.5624E-05
Nontronite-Ca	-3.5555	2.7829E-04	1.1807E-01	3.6483E-02
Nontronite-K	-3.2772	5.2821E-04	2.2744E-01	7.1452E-02
Nontronite-Mg	-3.5462	2.8429E-04	1.1988E-01	3.6889E-02
Nontronite-Na	-3.8702	1.3483E-04	5.7337E-02	1.7812E-02

	Mass, grams	Volume, cc
Created	1.522673E+04	9.889057E+00
Destroyed	0.000000E+00	0.000000E+00
Net	1.522673E+04	9.889057E+00

Warning-- these volume totals may be incomplete because
of missing partial molar volume data in the data base

- -

```
Stepping to zi=  1.1775E+00, delzi=  1.0000E-07, nord= 1
  time =  1.1357E+04 d, dltime =  9.6451E-04 d
Steps completed =   352, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -6.0865

Stepping to zi=  1.1775E+00, delzi=  1.0000E-06, nord= 1
  time =  1.1357E+04 d, dltime =  9.6451E-03 d
Steps completed =   353, iter =  4, ncorr = 0
```

```
Most rapidly changing is zvclg1(Quartz                  ) =     -6.0042

Stepping to zi=  1.1775E+00, delzi=  1.0000E-05, nord= 2
  time =  1.1357E+04 d, dltime =  9.6451E-02 d
Steps completed =   354, iter =  8, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -5.5686

Stepping to zi=  1.1776E+00, delzi=  1.0000E-04, nord= 2
  time =  1.1358E+04 d, dltime =  9.6451E-01 d
Steps completed =   355, iter = 12, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -4.7034

Stepping to zi=  1.1778E+00, delzi=  1.8445E-04, nord= 3
  time =  1.1360E+04 d, dltime =  1.7791E+00 d
Steps completed =   356, iter =  8, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -4.2895

Stepping to zi=  1.1782E+00, delzi=  3.6891E-04, nord= 2
  time =  1.1363E+04 d, dltime =  3.5581E+00 d
Steps completed =   357, iter =  8, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -3.9415

Stepping to zi=  1.1789E+00, delzi=  7.3782E-04, nord= 3
  time =  1.1371E+04 d, dltime =  7.1163E+00 d
Steps completed =   358, iter =  9, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -3.6187

Stepping to zi=  1.1804E+00, delzi=  1.4756E-03, nord= 3
  time =  1.1385E+04 d, dltime =  1.4233E+01 d
Steps completed =   359, iter =  9, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -3.3072

Stepping to zi=  1.1833E+00, delzi=  2.9513E-03, nord= 3
  time =  1.1413E+04 d, dltime =  2.8465E+01 d
Steps completed =   360, iter =  7, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -3.0010

Stepping to zi=  1.1872E+00, delzi=  3.8934E-03, nord= 4
  time =  1.1451E+04 d, dltime =  3.7552E+01 d
iter =    3
      3 supersaturated pure minerals
      0 supersaturated solid solutions

               The most supersaturated phases           Affinity, kcal

                 1     323   Maximum_Microcline            0.00556774
                 2     273   K-Feldspar                    0.00556774
                 3     328   Mesolite                      0.00726755


  Attempted species assemblage no.   2

            1      1  H2O
            2      3  Al+++
            3      7  B(OH)3(aq)
            4      8  Ba++
            5     11  Ca++
            6     13  Ce+++
            7     14  Cl-
            8     16  CrO4--
            9     17  Cs+
           10     18  Cu++
           11     22  F-
```

```
          12     23  Fe++
          13     25  Gd+++
          14     26  H+
          15     28  HCO3-
          16     29  HPO4--
          17     35  K+
          18     37  La+++
          19     38  Li+
          20     40  Mg++
          21     41  Mn++
          22     42  MoO4--
          23     43  NO3-
          24     44  Na+
          25     45  Nd+++
          26     47  Ni++
          27     49  Pb++
          28     52  Pu++++
          29     58  SO4--
          30     62  SiO2(aq)
          31     63  Sm+++
          32     65  Sr++
          33     69  Ti(OH)4(aq)
          34     72  UO2++
          35     73  VO++
          36     78  Zn++
          37     79  Zr(OH)2++
          38     80  O2(g)
          39    120  Celadonite
          40    222  Fluorapatite
          41    323  Maximum_Microcline
          42    368  Muscovite
          43    405  Ni2SiO4
          44    470  Pyrolusite
          45    475  Quartz
          46    482  Rutile
          47    689  fix     CO2(g)
          48    690  fix     O2(g)
          49      1  SmectiteBeidellite-Ca
          50      2  SmectiteBeidellite-K
          51      3  SmectiteBeidellite-Mg
          52      4  SmectiteBeidellite-Na
          53      5  SmectiteMontmor-Ca
          54      6  SmectiteMontmor-K
          55      7  SmectiteMontmor-Mg
          56      8  SmectiteMontmor-Na
          57      9  SmectiteNontronite-Ca
          58     10  SmectiteNontronite-K
          59     11  SmectiteNontronite-Mg
          60     12  SmectiteNontronite-Na

iter =    9
      1 supersaturated pure minerals
      0 supersaturated solid solutions

               The most supersaturated phases          Affinity, kcal

                 1     328   Mesolite                     0.01186905


  Attempted species assemblage no.   3

            1      1  H2O
            2      3  Al+++
```

```
  3      7  B(OH)3(aq)
  4      8  Ba++
  5     11  Ca++
  6     13  Ce+++
  7     14  Cl-
  8     16  CrO4--
  9     17  Cs+
 10     18  Cu++
 11     22  F-
 12     23  Fe++
 13     25  Gd+++
 14     26  H+
 15     28  HCO3-
 16     29  HPO4--
 17     35  K+
 18     37  La+++
 19     38  Li+
 20     40  Mg++
 21     41  Mn++
 22     42  MoO4--
 23     43  NO3-
 24     44  Na+
 25     45  Nd+++
 26     47  Ni++
 27     49  Pb++
 28     52  Pu++++
 29     58  SO4--
 30     62  SiO2(aq)
 31     63  Sm+++
 32     65  Sr++
 33     69  Ti(OH)4(aq)
 34     72  UO2++
 35     73  VO++
 36     78  Zn++
 37     79  Zr(OH)2++
 38     80  O2(g)
 39    120  Celadonite
 40    222  Fluorapatite
 41    323  Maximum_Microcline
 42    328  Mesolite
 43    368  Muscovite
 44    405  Ni2SiO4
 45    470  Pyrolusite
 46    475  Quartz
 47    482  Rutile
 48    689  fix     CO2(g)
 49    690  fix     O2(g)
 50      1  SmectiteBeidellite-Ca
 51      2  SmectiteBeidellite-K
 52      3  SmectiteBeidellite-Mg
 53      4  SmectiteBeidellite-Na
 54      5  SmectiteMontmor-Ca
 55      6  SmectiteMontmor-K
 56      7  SmectiteMontmor-Mg
 57      8  SmectiteMontmor-Na
 58      9  SmectiteNontronite-Ca
 59     10  SmectiteNontronite-K
 60     11  SmectiteNontronite-Mg
 61     12  SmectiteNontronite-Na

Steps completed =   361, iter = 11, ncorr = 0

- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
```

```
Reaction progress        =  1.18722557032652E+00
Log of reaction progress =       0.0745332


Time =  9.894E+08 sec
     =  1.145E+04 days
     =  3.135E+01 years

Log sec =        8.995
Log days =       4.059
Log years =      1.496

Temperature    =     25.000 degrees C
total pressure =      1.013 bars
```

Change in the product phase assemblage

--- Reactant Summary ---

Reactant	Moles	Delta moles	Mass, g	Delta Mass, g
Tuff	9.8813E+01	1.1872E+00	2.0342E+03	2.4441E+01

```
Current total mass =  2.03421E+03 grams
Delta total mass   =  2.44408E+01 grams
Delta total volume =      0.00000 cc
```

Reactant	Rel. Rate mol/mol	Rate mol/s	Rate mol/s/cm2
Tuff	1.0000E+00	1.2000E-09	2.5000E-15

Reactant	Affinity kcal/mol	Surface Area mol/s/cm2
Tuff	999.00000	4.8000E+05

Reactant	Rate Constants, mol/s/cm2	
Tuff		
	Forward	2.5000E-15

```
Affinity of the overall irreversible reaction=     0.000 kcal
Contributions from irreversible reactions
with no thermodynamic data are not included
```

--- Element Totals for the Aqueous Solution ---

Element	mg/kg soln.	Molality	Moles

O	8.866291E+05	5.558964E+01	5.555764E+01
Al	1.348485E-04	5.013431E-09	5.010546E-09
B	1.335862E-01	1.239513E-05	1.238800E-05
Ba	1.369779E-05	1.000576E-10	1.000000E-10
Ca	8.869644E+01	2.220014E-03	2.218736E-03
Ce	1.397587E-19	1.000575E-24	9.999993E-25
Cl	7.122021E+00	2.015160E-04	2.014000E-04
Cr	2.998671E+02	5.785136E-03	5.781806E-03
Cs	1.325675E-05	1.000576E-10	1.000000E-10
Cu	6.655366E-10	1.050605E-14	1.050000E-14
F	3.493846E-01	1.844770E-05	1.843709E-05
Fe	1.314638E-08	2.361358E-13	2.359999E-13
Gd	1.568502E-09	1.000576E-14	9.999998E-15
H	1.115503E+05	1.110175E+02	1.109536E+02
C	2.679558E+00	2.237894E-04	2.236606E-04
P	9.771005E-05	3.164469E-09	3.162648E-09
K	9.152957E+01	2.348330E-03	2.346979E-03
La	1.385523E-09	1.000576E-14	9.999998E-15
Li	6.923353E-07	1.000576E-10	1.000000E-10
Mg	3.480493E+01	1.436484E-03	1.435657E-03
Mn	3.307651E-10	6.039514E-15	6.036038E-15
Mo	2.181072E+02	2.280478E-03	2.279166E-03
N	1.983900E+00	1.420818E-04	1.420000E-04
Na	6.942535E+02	3.029277E-02	3.027534E-02
Nd	1.438733E-09	1.000576E-14	9.999998E-15
Ni	2.025767E-01	3.462430E-06	3.460438E-06
Pb	2.066732E-05	1.000576E-10	1.000000E-10
Pu	2.433796E-09	1.000576E-14	9.999999E-15
S	3.733243E+02	1.167877E-02	1.167205E-02
Si	2.828728E+00	1.010333E-04	1.009752E-04
Sm	1.499777E-09	1.000576E-14	9.999998E-15
Sr	8.739723E-06	1.000576E-10	1.000000E-10
Ti	1.078552E-05	2.259657E-10	2.258356E-10
U	2.374238E-09	1.000576E-14	1.000000E-14
V	4.771765E+00	9.396430E-05	9.391022E-05
Zn	6.522375E-06	1.000576E-10	1.000000E-10
Zr	9.099216E-16	1.000577E-20	1.000001E-20

Single ion activities and activity coefficients are here defined
with respect to the modified NBS pH scale

	pH	Eh	pe
modified NBS pH scale	7.5382	0.7731	1.3069E+01
rational pH scale	7.4622	0.7776	1.3145E+01

pHCl = 11.3257

Oxygen fugacity = 2.09991E-01
Log oxygen fugacity = -0.67780

Activity of water = 0.99913
Log activity of water = -0.00038

Ionic strength = 5.756612E-02 molal

Sum of molalities = 0.0552455137466
Osmotic coefficient = 0.87632

Mass of solution = 1.002549 kg
Mass of solutes = 0.003124 kg
Conc. of solutes = 0.311640 per cent (w/w)

Moles of solvent H2O = 5.54765E+01
Mass of solvent H2O = 9.99425E-01 kg

Species	Molality	Log molality	Log gamma	Log activity
Na+	2.9470E-02	-1.5306	-0.0975	-1.6282
SO4--	9.8383E-03	-2.0071	-0.3575	-2.3645
CrO4--	5.5121E-03	-2.2587	-0.3575	-2.6161
MoO4--	2.2805E-03	-2.6420	-0.3466	-2.9886
K+	2.2770E-03	-2.6426	-0.1035	-2.7461
Ca++	1.7698E-03	-2.7521	-0.3440	-3.0961
Mg++	9.2962E-04	-3.0317	-0.3118	-3.3435
NaSO4-	8.1581E-04	-3.0884	-0.0843	-3.1727
MgSO4(aq)	5.0544E-04	-3.2963	0.0000	-3.2963
CaSO4(aq)	4.4717E-04	-3.3495	0.0000	-3.3495
HCrO4-	2.6568E-04	-3.5756	-0.0843	-3.6599
O2(aq)	2.6174E-04	-3.5821	0.0060	-3.5761
HCO3-	2.0346E-04	-3.6915	-0.0843	-3.7758
Cl-	2.0076E-04	-3.6973	-0.0902	-3.7875
NO3-	1.4150E-04	-3.8492	-0.0902	-3.9395
SiO2(aq)	1.0016E-04	-3.9993	0.0000	-3.9993
KSO4-	7.1321E-05	-4.1468	-0.0843	-4.2311
VO3OH--	6.6209E-05	-4.1791	-0.3575	-4.5365
F-	1.8151E-05	-4.7411	-0.0872	-4.8283
H2VO4-	1.2731E-05	-4.8951	-0.0843	-4.9794
B(OH)3(aq)	1.2070E-05	-4.9183	0.0000	-4.9183
CO2(aq)	1.0594E-05	-4.9749	0.0060	-4.9689
VO2(OH)2-	7.8898E-06	-5.1029	-0.0843	-5.1872
HVO4--	7.1321E-06	-5.1468	-0.3575	-5.5042
NaHCO3(aq)	5.6252E-06	-5.2499	0.0000	-5.2499
Cr2O7--	3.7017E-06	-5.4316	-0.3575	-5.7891
Ni++	2.7447E-06	-5.5615	-0.3440	-5.9055
CaHCO3+	1.8721E-06	-5.7277	-0.0975	-5.8252
MgHCO3+	1.0326E-06	-5.9861	-0.0975	-6.0836
NiSO4(aq)	7.1721E-07	-6.1444	0.0000	-6.1444
NaCl(aq)	6.4166E-07	-6.1927	0.0000	-6.1927
CO3--	6.0279E-07	-6.2198	-0.3466	-6.5664
CaNO3+	5.7807E-07	-6.2380	-0.0975	-6.3356
HSiO3-	4.6803E-07	-6.3297	-0.0843	-6.4140
CaCO3(aq)	4.6193E-07	-6.3354	0.0000	-6.3354
OH-	4.2644E-07	-6.3701	-0.0872	-6.4573
NaHSiO3(aq)	4.0396E-07	-6.3937	0.0000	-6.3937
BO2-	2.8817E-07	-6.5404	-0.0843	-6.6246
MgF+	1.8975E-07	-6.7218	-0.0975	-6.8194
MgCO3(aq)	1.1721E-07	-6.9310	0.0000	-6.9310
CaF+	7.1593E-08	-7.1451	-0.0975	-7.2427
MgCl+	6.7858E-08	-7.1684	-0.0975	-7.2659
NaF(aq)	3.5154E-08	-7.4540	0.0000	-7.4540
H+	3.4502E-08	-7.4622	-0.0760	-7.5382
CaCl+	3.2984E-08	-7.4817	-0.0975	-7.5792
NaCO3-	2.5357E-08	-7.5959	-0.0843	-7.6802
CaB(OH)4+	1.5803E-08	-7.8012	-0.0975	-7.8988
HSO4-	1.4477E-08	-7.8393	-0.0843	-7.9236
MgB(OH)4+	1.0638E-08	-7.9731	-0.0975	-8.0707
NaB(OH)4(aq)	1.0408E-08	-7.9826	0.0000	-7.9826

KCl(aq)	9.3699E-09	-8.0283	0.0000	-8.0283
CaOH+	4.8892E-09	-8.3108	-0.0975	-8.4083
AlO2-	4.6742E-09	-8.3303	-0.0843	-8.4146
VO(OH)3(aq)	1.8820E-09	-8.7254	0.0000	-8.7254
HPO4--	1.8094E-09	-8.7425	-0.3575	-9.0999
NaOH(aq)	1.3027E-09	-8.8852	0.0000	-8.8852
HF(aq)	6.3336E-10	-9.1983	0.0000	-9.1983
NiNO3+	4.4932E-10	-9.3474	-0.0975	-9.4450
H2PO4-	4.4831E-10	-9.3484	-0.0843	-9.4327
CaHPO4(aq)	3.4993E-10	-9.4560	0.0000	-9.4560
HAlO2(aq)	3.1452E-10	-9.5023	0.0000	-9.5023
MgHPO4(aq)	2.9281E-10	-9.5334	0.0000	-9.5334
Ti(OH)4(aq)	2.2597E-10	-9.6460	0.0000	-9.6460
KOH(aq)	2.1462E-10	-9.6683	0.0000	-9.6683
NaHPO4-	1.8889E-10	-9.7238	-0.0843	-9.8081
Cs+	1.0005E-10	-9.9998	-0.1068	-10.1065

--- Summary of Instantaneously Precipitated Solid Phases ---
(defined by derivatives)

--- Theoretical Rock Composition ---
g/kg

O	5.055356E+01
Al	6.675415E+00
Ca	2.707822E-02
F	1.324376E-03
Fe	6.476098E-01
H	2.559647E-01
P	6.477531E-03
K	4.748702E+00
Mg	1.441628E+00
Mn	5.121901E-02
Na	8.476765E-03
Ni	6.476278E-03
Si	3.556020E+01
Ti	5.821446E-02

--- Oxide Percentages ---

Oxide	Theoretical rock

Total = 0.0000

Phase/end-member	d mol/d zi	d grams/d zi	d vol (cc)/d zi
Celadonite	1.2279E-02	4.8715E+00	1.9290E+00
Fluorapatite	1.4506E-05	7.3152E-03	7.2528E-03
Maximum_Microcline	1.2933E-02	3.5998E+00	1.4064E+00
Mesolite	1.1481E-05	4.4521E-03	1.9655E-03
Muscovite	1.9400E-04	7.7272E-02	2.7298E-02
Ni2SiO4	1.7110E-01	3.5839E+01	7.2906E+00
Pyrolusite	2.5300E-04	2.1995E-02	1.2650E-01
Quartz	-7.3367E-04	-4.4082E-02	-1.6645E-02
Rutile	-7.0635E-04	-5.6423E-02	-1.3294E-02
fix CO2(g)	3.7542E-10	1.6522E-08	0.0000E+00
fix O2(g)	1.6773E-10	5.3671E-09	0.0000E+00
Smectite-di			
Beidellite-Ca	3.4462E-10	1.2632E-07	4.4639E-08
Beidellite-K	2.1142E-10	7.8827E-08	2.8266E-08

Beidellite-Mg	6.7398E-07	2.4530E-04	8.3027E-05
Beidellite-Na	4.9176E-07	1.8074E-04	6.4195E-05
Montmor-Ca	1.0055E-06	3.6805E-04	5.0274E-04
Montmor-K	6.0448E-07	2.2507E-04	3.0224E-04
Montmor-Mg	4.1183E-04	1.4967E-01	2.0591E-01
Montmor-Na	1.8408E-04	6.7559E-02	9.2038E-02
Nontronite-Ca	3.7870E-04	1.6068E-01	4.9648E-02
Nontronite-K	2.3190E-04	9.9851E-02	3.1369E-02
Nontronite-Mg	0.0000E+00	0.0000E+00	0.0000E+00
Nontronite-Na	0.0000E+00	0.0000E+00	0.0000E+00

--- Summary of Solid Phases (E.S.+P.R.S.) ---

Phase/End-member	Log moles	Moles	Mass, g	Volume, cc
Alunite	-2.5559	2.7801E-03	1.1516E+00	8.1624E-01
Celadonite	-4.0671	8.5685E-05	3.3994E-02	1.3461E-02
Diaspore	-1.6079	2.4665E-02	1.4796E+00	4.3804E-01
Fluorapatite	-4.0163	9.6313E-05	4.8571E-02	4.8156E-02
Hematite	-3.7144	1.9300E-04	3.0820E-02	5.8428E-03
Maximum_Microcline	-1.7765	1.6729E-02	4.6561E+00	1.8191E+00
Mesolite	-4.5252	2.9843E-05	1.1573E-02	5.1092E-03
Muscovite	-2.4425	3.6103E-03	1.4380E+00	5.0801E-01
Ni2SiO4	-2.1931	6.4108E-03	1.3428E+00	2.7316E-01
Nontronite-H	-4.9990	1.0023E-05	4.1899E-03	5.0117E-03
Pyrolusite	-3.0841	8.2399E-04	7.1635E-02	4.1200E-01
Quartz	-0.6191	2.4036E-01	1.4442E+01	5.4532E+00
Rutile	-3.5223	3.0037E-04	2.3993E-02	5.6529E-03
fix CO2(g)	2.3010	2.0000E+02	8.8020E+03	0.0000E+00
fix O2(g)	2.3010	2.0000E+02	6.3997E+03	0.0000E+00
Smectite-di	-2.9073	1.2379E-03		
Beidellite-Ca	-9.4754	3.3469E-10	1.2268E-07	4.3352E-08
Beidellite-K	-9.1123	7.7211E-10	2.8788E-07	1.0323E-07
Beidellite-Mg	-9.4645	3.4316E-10	1.2490E-07	4.2274E-08
Beidellite-Na	-9.8020	1.5776E-10	5.7984E-08	2.0594E-08
Montmor-Ca	-6.8791	1.3210E-07	4.8353E-05	6.6048E-05
Montmor-K	-6.9605	1.0951E-07	4.0775E-05	5.4755E-05
Montmor-Mg	-6.6672	2.1517E-07	7.8200E-05	1.0758E-04
Montmor-Na	-6.9307	1.1729E-07	4.3047E-05	5.8645E-05
Nontronite-Ca	-3.5494	2.8220E-04	1.1974E-01	3.6997E-02
Nontronite-K	-3.2757	5.3000E-04	2.2821E-01	7.1692E-02
Nontronite-Mg	-3.5404	2.8812E-04	1.2150E-01	3.7386E-02
Nontronite-Na	-3.8632	1.3703E-04	5.8276E-02	1.8103E-02

	Mass, grams	Volume, cc
Created	1.522694E+04	9.967465E+00
Destroyed	2.444078E+01	0.000000E+00
Net	1.520250E+04	9.967465E+00

Warning-- these volume totals may be incomplete because of missing partial molar volume data in the data base

--- Summary of Pure Mineral Saturation States ---

Mineral	Log Q/K	Aff, kcal	State

Alamosite	-4.971	-6.781	
Albite	-1.922	-2.622	
Albite_high	-3.241	-4.421	
Albite_low	-1.922	-2.622	
Analcime	-1.972	-2.690	
Andalusite	-6.082	-8.298	
Anglesite	-4.886	-6.666	
Anhydrite	-1.154	-1.575	
Aragonite	-1.327	-1.810	
Arcanite	-6.056	-8.262	
BaCrO4	-3.047	-4.157	
BaZrO3	80.414	109.707	ssatd
Barite	-2.756	-3.760	
Bassanite	-1.799	-2.455	
Beidellite-Ca	-2.144	-2.925	
Beidellite-Cs	-4.531	-6.181	
Beidellite-H	-3.163	-4.315	
Beidellite-K	-2.257	-3.079	
Beidellite-Mg	-2.147	-2.929	
Beidellite-Na	-2.226	-3.037	
Boehmite	-0.634	-0.864	
Boric_acid	-4.760	-6.494	
Brucite	-4.566	-6.229	
Bunsenite	-3.301	-4.504	
Ca2V2O7	-4.072	-5.555	
CaSO4:0.5H2O(beta)	-1.967	-2.684	
CaV2O6	-4.403	-6.007	
CaZrO3	141.710	193.334	ssatd
Calcite	-1.182	-1.613	
CeO2	-3.665	-5.000	
Celadonite	0.000	0.000	satd
Celestite	-7.188	-9.807	
Cerussite	-3.402	-4.642	
Chalcedony	-0.271	-0.370	
Chrysotile	-3.927	-5.358	
Clinochlore-14A	-6.715	-9.161	
Clinoptilolite	-5.171	-7.055	
Clinoptilolite-Ca	-6.450	-8.799	
Clinoptilolite-K	-6.664	-9.092	
Clinoptilolite-Na	-6.600	-9.005	
Clinoptilolite-hy-Ca	-6.449	-8.798	
Clinoptilolite-hy-K	-6.659	-9.085	
Clinoptilolite-hy-Na	-6.598	-9.002	
Coesite	-0.810	-1.105	
Corundum	-4.451	-6.072	
Cristobalite(alpha)	-0.551	-0.751	
Cristobalite(beta)	-0.994	-1.356	
Crocoite	-0.272	-0.372	
Dawsonite	-2.820	-3.847	
Diaspore	-0.230	-0.313	
Diopside	-5.251	-7.163	
Dolomite	-1.428	-1.949	
Dolomite-dis	-2.973	-4.056	
Dolomite-ord	-1.428	-1.949	
Enstatite	-3.594	-4.903	
Epsomite	-3.748	-5.114	
Fe(OH)3	-6.319	-8.621	
Fluorapatite	0.000	0.000	satd
Fluorite	-2.716	-3.705	
GdOHCO3	-7.210	-9.836	
GdPO4:H2O	-5.282	-7.206	
Gibbsite	-0.826	-1.127	
Gismondine	-6.035	-8.233	

Glauberite	-5.612	-7.657	
Goethite	-1.198	-1.634	
Gypsum	-0.979	-1.336	
Halite	-7.001	-9.552	
Hematite	-1.434	-1.957	
Heulandite	-4.672	-6.374	
Hexahydrite	-3.983	-5.435	
Ice	-0.139	-0.190	
Illite	-1.275	-1.739	
Jadeite	-3.547	-4.839	
K-Feldspar	0.000	0.000	ssatd
Kalicinite	-6.806	-9.285	
Kalsilite	-3.175	-4.332	
Kaolinite	-0.948	-1.293	
Kieserite	-5.441	-7.424	
Kyanite	-5.812	-7.929	
LaPO4:H2O	-4.662	-6.361	
Lansfordite	-4.424	-6.035	
Laumontite	-3.824	-5.217	
Lawsonite	-4.371	-5.964	
Magnesite	-1.875	-2.558	
Manganite	-4.459	-6.084	
Maximum_Microcline	0.000	0.000	satd
Mesolite	0.000	0.000	satd
Mirabilite	-4.485	-6.119	
MnO2(gamma)	-1.518	-2.071	
Monohydrocalcite	-2.017	-2.751	
Montmor-Ca	-1.070	-1.460	
Montmor-Cs	-3.390	-4.626	
Montmor-K	-1.113	-1.518	
Montmor-Mg	-1.004	-1.369	
Montmor-Na	-1.086	-1.481	
Mordenite	-2.924	-3.990	
Morenosite	-6.259	-8.539	
Muscovite	0.000	0.000	satd
Nahcolite	-5.292	-7.220	
Natrolite	-4.838	-6.600	
NdOHCO3	-7.135	-9.734	
NdPO4:H2O	-5.006	-6.830	
Nepheline	-4.959	-6.766	
Nesquehonite	-4.578	-6.245	
Ni(OH)2	-3.578	-4.882	
Ni2SiO4	0.000	0.000	satd
NiCO3	-5.655	-7.715	
NiSO4:6H2O(alpha)	-6.265	-8.547	
Niter	-6.479	-8.840	
Nontronite-Ca	-0.158	-0.215	
Nontronite-H	-1.177	-1.605	
Nontronite-K	-0.270	-0.369	
Nontronite-Mg	-0.161	-0.219	
Nontronite-Na	-0.240	-0.327	
Okenite	-6.401	-8.733	
Paragonite	-2.818	-3.845	
Paralaurionite	-6.827	-9.314	
Pentahydrite	-4.323	-5.897	
Phlogopite	-2.518	-3.436	
Plattnerite	-3.305	-4.510	
Prehnite	-7.108	-9.697	
Pseudowollastonite	-6.019	-8.212	
PuO2	-1.515	-2.067	
PuO2(OH)2	-6.091	-8.309	
Pyrolusite	0.000	0.000	satd
Pyrophyllite	-2.576	-3.514	

Quartz	0.000	0.000	satd
Rutile	0.000	0.000	satd
Sanidine_high	-1.199	-1.636	
Saponite-Ca	-1.507	-2.055	
Saponite-Cs	-3.894	-5.312	
Saponite-H	-2.525	-3.445	
Saponite-K	-1.619	-2.209	
Saponite-Mg	-1.510	-2.060	
Saponite-Na	-1.589	-2.168	
Scolecite	-2.034	-2.775	
Sellaite	-3.616	-4.933	
SiO2(am)	-1.286	-1.754	
Sillimanite	-6.446	-8.794	
SmPO4:H2O	-5.098	-6.955	
Smectite-low-Fe-Mg	-7.232	-9.867	
Smithsonite	-7.056	-9.626	
SrZrO3	117.271	159.991	ssatd
Starkeyite	-4.710	-6.425	
Stilbite	-0.184	-0.250	
Strontianite	-6.425	-8.765	
Syngenite	-5.718	-7.801	
Talc	-1.938	-2.645	
Thenardite	-5.312	-7.247	
Trevorite	-1.943	-2.651	
Tridymite	-0.172	-0.234	
Witherite	-3.604	-4.917	
Wollastonite	-5.780	-7.885	
Zincite	-6.488	-8.851	
Zn(OH)2(beta)	-7.213	-9.841	
Zn(OH)2(epsilon)	-6.942	-9.471	
Zn(OH)2(gamma)	-7.163	-9.772	
fix CO2(g)	0.000	0.000	satd
fix O2(g)	0.000	0.000	satd

--- Summary of Solid Solutions ---

--- Carbonate-Calcite ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Calcite	8.3118E-01	-0.0803	0.0000	-0.0803
Magnesite	1.6881E-01	-0.7726	0.0000	-0.7726
Rhodochrosite	2.1514E-10	-9.6673	0.0000	-9.6673
Siderite	5.2678E-19	-18.2784	0.0000	-18.2784
Smithsonite	1.1124E-06	-5.9537	0.0000	-5.9537
Strontianite	4.7587E-06	-5.3225	0.0000	-5.3225

Mineral	Log Q/K	Aff, kcal	State
Carbonate-Calcite	-1.102	-1.504	
Calcite	-1.102	-1.504	
Magnesite	-1.102	-1.504	
Rhodochrosite	-1.102	-1.504	
Siderite	-1.102	-1.504	
Smithsonite	-1.102	-1.504	
Strontianite	-1.102	-1.504	

--- Clinoptilolite-hy-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-hy-Ca	4.3032E-01	-0.3662	0.0000	-0.3662
Clinoptilolite-hy-Cs	1.0347E-24	-23.9852	0.0000	-23.9852
Clinoptilolite-hy-K	2.6493E-01	-0.5769	0.0000	-0.5769
Clinoptilolite-hy-Na	3.0475E-01	-0.5161	0.0000	-0.5161
Clinoptilolite-hy-Sr	8.6309E-14	-13.0639	0.0000	-13.0639

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-hy-ss	-6.082	-8.298	
Clinoptilolite-hy-Ca	-6.082	-8.298	
Clinoptilolite-hy-Cs	-6.082	-8.298	
Clinoptilolite-hy-K	-6.082	-8.298	
Clinoptilolite-hy-Na	-6.082	-8.298	
Clinoptilolite-hy-Sr	-6.082	-8.298	

--- Clinoptilolite-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-Ca	3.6082E-01	-0.4427	-1.0891	-1.5318
Clinoptilolite-Cs	5.3646E-08	-7.2705	-17.8853	-25.1558
Clinoptilolite-K	3.1277E-01	-0.5048	-1.2417	-1.7465
Clinoptilolite-NH4	1.7622E-63	-62.7539	-154.3747	-217.1286
Clinoptilolite-Na	3.2634E-01	-0.4863	-1.1964	-1.6827
Clinoptilolite-Sr	7.7240E-05	-4.1122	-10.1159	-14.2281

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-ss	-4.918	-6.709	
Clinoptilolite-Ca	-4.918	-6.709	
Clinoptilolite-Cs	-4.918	-6.709	
Clinoptilolite-K	-4.918	-6.709	
Clinoptilolite-NH4	-4.918	-6.709	
Clinoptilolite-Na	-4.918	-6.709	
Clinoptilolite-Sr	-4.918	-6.709	

--- Saponite-tri ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Saponite-Ca	3.3364E-01	-0.4767	0.3194	-0.1573
Saponite-H	2.7282E-04	-3.5641	2.3880	-1.1762
Saponite-K	1.5180E-01	-0.8187	0.5486	-0.2702
Saponite-Mg	3.2645E-01	-0.4862	0.3257	-0.1604
Saponite-Na	1.8784E-01	-0.7262	0.4866	-0.2397

Mineral	Log Q/K	Aff, kcal	State
Saponite-tri	-1.349	-1.841	
Saponite-Ca	-1.349	-1.841	
Saponite-H	-1.349	-1.841	
Saponite-K	-1.349	-1.841	
Saponite-Mg	-1.349	-1.841	
Saponite-Na	-1.349	-1.841	

--- Smectite-di ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Beidellite-Ca	3.1865E-07	-6.4967	4.3528	-2.1439
Beidellite-K	1.4508E-07	-6.8384	4.5817	-2.2567
Beidellite-Mg	3.1178E-07	-6.5061	4.3591	-2.1470
Beidellite-Na	1.7939E-07	-6.7462	4.5199	-2.2262
Montmor-Ca	5.7205E-04	-3.2426	2.1725	-1.0700
Montmor-K	4.2535E-04	-3.3712	2.2587	-1.1125
Montmor-Mg	9.0968E-04	-3.0411	2.0375	-1.0036
Montmor-Na	5.1293E-04	-3.2899	2.2043	-1.0857
Nontronite-Ca	3.3281E-01	-0.4778	0.3201	-0.1577
Nontronite-K	1.5153E-01	-0.8195	0.5491	-0.2704
Nontronite-Mg	3.2587E-01	-0.4870	0.3263	-0.1607
Nontronite-Na	1.8737E-01	-0.7273	0.4873	-0.2400

Mineral	Log Q/K	Aff, kcal	State
Smectite-di	0.000	0.000	satd
Beidellite-Ca	0.000	0.000	satd
Beidellite-K	0.000	0.000	satd
Beidellite-Mg	0.000	0.000	satd
Beidellite-Na	0.000	0.000	satd
Montmor-Ca	0.000	0.000	satd
Montmor-K	0.000	0.000	satd
Montmor-Mg	0.000	0.000	satd
Montmor-Na	0.000	0.000	satd
Nontronite-Ca	0.000	0.000	satd
Nontronite-K	0.000	0.000	satd
Nontronite-Mg	0.000	0.000	satd
Nontronite-Na	0.000	0.000	satd

--- Lanthanide hydroxide ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
La(OH)3	1.7666E-05	-4.7529	0.0000	-4.7529
Ce(OH)3	2.9361E-15	-14.5322	0.0000	-14.5322
Nd(OH)3(c)	4.0088E-01	-0.3970	0.0000	-0.3970
Gd(OH)3	5.3431E-01	-0.2722	0.0000	-0.2722
Sm(OH)3	6.4786E-02	-1.1885	0.0000	-1.1885

Mineral	Log Q/K	Aff, kcal	State

Lanthanide hydroxide	-8.413	-11.478
La(OH)3	-8.413	-11.478
Ce(OH)3	-8.413	-11.478
Nd(OH)3(c)	-8.413	-11.478
Gd(OH)3	-8.413	-11.478
Sm(OH)3	-8.413	-11.478

--- Rhabdophane-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaPO4:H2O	4.8550E-01	-0.3138	0.0000	-0.3138
CePO4:H2O	2.5516E-11	-10.5932	0.0000	-10.5932
NdPO4:H2O	2.1982E-01	-0.6579	0.0000	-0.6579
GdPO4:H2O	1.1664E-01	-0.9332	0.0000	-0.9332
SmPO4:H2O	1.7805E-01	-0.7495	0.0000	-0.7495

Mineral	Log Q/K	Aff, kcal	State
Rhabdophane-ss	-4.349	-5.933	
LaPO4:H2O	-4.349	-5.933	
CePO4:H2O	-4.349	-5.933	
NdPO4:H2O	-4.349	-5.933	
GdPO4:H2O	-4.349	-5.933	
SmPO4:H2O	-4.349	-5.933	

--- Lanthanide fluoride ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaF3:0.5H2O	6.1872E-01	-0.2085	0.0000	-0.2085
CeF3:0.5H2O	5.1538E-11	-10.2879	0.0000	-10.2879
NdF3:0.5H2O	3.5267E-01	-0.4526	0.0000	-0.4526
GdF3:0.5H2O	5.9176E-03	-2.2279	0.0000	-2.2279
SmF3:0.5H2O	2.2690E-02	-1.6442	0.0000	-1.6442

Mineral	Log Q/K	Aff, kcal	State
Lanthanide fluoride	-11.027	-15.044	
LaF3:0.5H2O	-11.027	-15.044	
CeF3:0.5H2O	-11.027	-15.044	
NdF3:0.5H2O	-11.027	-15.044	
GdF3:0.5H2O	-11.027	-15.044	
SmF3:0.5H2O	-11.027	-15.044	

--- Summary of Gases ---

Gas	Fugacity	Log fugacity

Al(g)	9.7049-192	-191.0130
B(g)	8.3451-204	-203.0786
BF3(g)	8.9107E-40	-39.0501
C(g)	3.0917-190	-189.5098
CH4(g)	3.5232-146	-145.4531
CO(g)	6.0395E-49	-48.2190
CO2(g)	3.1623E-04	-3.5000
Ca(g)	4.8986-152	-151.3099
Chlorine	3.6345E-28	-27.4396
Cs(g)	1.1089E-83	-82.9551
Cu(g)	2.4302E-82	-81.6144
Fluorine	5.7502E-83	-82.2403
H2(g)	6.1097E-42	-41.2140
H2O(g)	2.5955E-02	-1.5858
H2S(g)	2.3459-141	-140.6297
HCl(g)	2.3377E-18	-17.6312
HF(g)	3.3186E-14	-13.4790
K(g)	1.2718E-76	-75.8956
Li(g)	2.4638E-97	-96.6084
Mg(g)	1.8667-129	-128.7289
Nitrogen	2.7071E-19	-18.5675
NH3(g)	5.9908E-69	-68.2225
NO(g)	1.6383E-25	-24.7856
NO2(g)	1.1202E-19	-18.9507
Na(g)	8.7072E-75	-74.0601
O2(g)	2.0999E-01	-0.6778
Pb(g)	7.6060E-70	-69.1188
S2(g)	3.2873-225	-224.4832
SO2(g)	4.1571E-54	-53.3812
Si(g)	4.2257-221	-220.3741
SiF4(g)	5.3552E-39	-38.2712
Ti(g)	3.8019-231	-230.4200
TiCl4(g)	1.0020E-83	-82.9991
U(g)	1.6013-297	-296.7955
U2Cl10(g)	1.2754-242	-241.8944
U2Cl8(g)	1.0879-245	-244.9634
U2F10(g)	5.6138-158	-157.2507
UCl(g)	3.3372-253	-252.4766
UCl2(g)	2.0807-207	-206.6818
UCl3(g)	2.8414-159	-158.5465
UCl4(g)	2.1011-128	-127.6775
UCl5(g)	7.9942-135	-134.0972
UCl6(g)	5.6506-136	-135.2479
UF(g)	1.0068-238	-237.9970
UF2(g)	4.6952-198	-197.3283
UF3(g)	5.3882-151	-150.2686
UF4(g)	9.1272-101	-100.0397
UF5(g)	7.0816E-92	-91.1499
UF6(g)	5.4103E-97	-96.2668
UO(g)	1.2646-212	-211.8980
UO2(g)	2.3430-128	-127.6302
UO2Cl2(g)	3.7180E-75	-74.4297
UO2F2(g)	6.0863E-64	-63.2156
UO3(g)	1.7233E-75	-74.7636
UOF4(g)	2.7198E-78	-77.5655
Zn(g)	1.2449E-79	-78.9049

- -

--- shifting e.s. solid(s) to the p.r.s. (shftz) ---

```
      shifted -- Celadonite
              - old mass=  8.52379E-05, new mass=  8.52379E-07
      shifted -- Fluorapatite
              - old mass=  9.41007E-07, new mass=  8.00000E-07
      shifted -- Maximum_Microcline
              - old mass=  8.71908E-05, new mass=  8.71908E-07
      shifted -- Mesolite
              - old mass=  2.98432E-05, new mass=  8.00000E-07
      shifted -- Muscovite
              - old mass=  8.93337E-05, new mass=  8.93337E-07
      shifted -- Ni2SiO4
              - old mass=  8.75843E-07, new mass=  8.00000E-07
      shifted -- Pyrolusite
              - old mass=  2.68617E-06, new mass=  8.00000E-07
      shifted -- Quartz
              - old mass=  1.56437E-03, new mass=  1.56437E-05
      shifted -- Rutile
              - old mass=  3.25981E-06, new mass=  8.00000E-07
      shifted -- Smectite-di
              - old mass=  1.25587E-05, new mass=  8.00000E-07

Stepping to zi=  1.1872E+00, delzi=  1.0000E-09, nord= 0
  time =  1.1451E+04 d, dltime =  9.6451E-06 d
Steps completed =   362, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Maximum_Microcline      ) =     -6.0595

Stepping to zi=  1.1872E+00, delzi=  1.0000E-09, nord= 0
  time =  1.1451E+04 d, dltime =  9.6451E-06 d
Steps completed =   363, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Maximum_Microcline      ) =     -6.0595

Stepping to zi=  1.1872E+00, delzi=  1.0000E-09, nord= 0
  time =  1.1451E+04 d, dltime =  9.6451E-06 d
Steps completed =   364, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Maximum_Microcline      ) =     -6.0595

Stepping to zi=  1.1872E+00, delzi=  1.0000E-08, nord= 1
  time =  1.1451E+04 d, dltime =  9.6451E-05 d
Steps completed =   365, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Maximum_Microcline      ) =     -6.0594

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                    Reaction progress        =  1.18722558332652E+00
                    Log of reaction progress =       0.0745332



                    Time =  9.894E+08 sec
                         =  1.145E+04 days
                         =  3.135E+01 years

                    Log sec =        8.995
                    Log days =       4.059
                    Log years =      1.496

                    Temperature    =     25.000 degrees C
                    total pressure =      1.013 bars


Flow-through system print following a discontinuity
```

```
--- Summary of Instantaneously Precipitated Solid Phases ---
             (defined by derivatives)

--- Theoretical Rock Composition ---
              g/kg

 O      5.055863E+01
 Al     6.558520E+00
 Ca     1.419994E+00
 F      1.300366E-03
 Fe     6.362692E-01
 H      3.495676E-01
 P      6.360100E-03
 K      4.255219E+00
 Mg     3.465395E-01
 Mn     5.032209E-02
 Na     8.307242E-01
 Ni     1.199675E-03
 Si     3.493783E+01
 Ti     5.719504E-02

 --- Oxide Percentages ---

Oxide   Theoretical rock


 Total =     0.0000


Phase/end-member     d mol/d zi    d grams/d zi   d vol (cc)/d zi

Celadonite                  2.9536E-03   1.1718E+00   4.6401E-01
Fluorapatite                1.4497E-05   7.3107E-03   7.2483E-03
Maximum_Microcline          1.7146E-02   4.7722E+00   1.8645E+00
Mesolite                    1.1210E-02   4.3471E+00   1.9192E+00
Muscovite                   2.8904E-03   1.1513E+00   4.0671E-01
Ni2SiO4                     2.1646E-06   4.5341E-04   9.2235E-05
Pyrolusite                  1.9400E-04   1.6866E-02   9.7000E-02
Quartz                      1.5336E-01   9.2146E+00   3.4795E+00
Rutile                      2.5300E-04   2.0209E-02   4.7615E-03
fix     CO2(g)             -1.7053E-04  -7.5050E-03   0.0000E+00
fix     O2(g)              -8.8107E-04  -2.8193E-02   0.0000E+00
Smectite-di
  Beidellite-Ca             3.8523E-10   1.4121E-07   4.9899E-08
  Beidellite-K              1.7546E-10   6.5420E-08   2.3459E-08
  Beidellite-Mg             3.7708E-10   1.3724E-07   4.6453E-08
  Beidellite-Na             2.1713E-10   7.9804E-08   2.8345E-08
  Montmor-Ca                6.9158E-07   2.5315E-04   3.4579E-04
  Montmor-K                 5.1444E-07   1.9154E-04   2.5722E-04
  Montmor-Mg                1.1002E-06   3.9985E-04   5.5010E-04
  Montmor-Na                6.2083E-07   2.2785E-04   3.1041E-04
  Nontronite-Ca             4.0235E-04   1.7071E-01   5.2748E-02
  Nontronite-K              1.8326E-04   7.8907E-02   2.4789E-02
  Nontronite-Mg             3.9411E-04   1.6619E-01   5.1140E-02
  Nontronite-Na             2.2678E-04   9.6443E-02   2.9960E-02


             --- Summary of Solid Phases (E.S.+P.R.S.) ---

Phase/End-member        Log moles     Moles       Mass, g     Volume, cc
```

```
Alunite                      -2.5559   2.7801E-03   1.1516E+00   8.1624E-01
Celadonite                   -4.0671   8.5685E-05   3.3994E-02   1.3461E-02
Diaspore                     -1.6079   2.4665E-02   1.4796E+00   4.3804E-01
Fluorapatite                 -4.0163   9.6313E-05   4.8571E-02   4.8156E-02
Hematite                     -3.7144   1.9300E-04   3.0820E-02   5.8428E-03
Maximum_Microcline           -1.7765   1.6729E-02   4.6561E+00   1.8191E+00
Mesolite                     -4.5252   2.9843E-05   1.1573E-02   5.1092E-03
Muscovite                    -2.4425   3.6103E-03   1.4380E+00   5.0801E-01
Ni2SiO4                      -2.1931   6.4108E-03   1.3428E+00   2.7316E-01
Nontronite-H                 -4.9990   1.0023E-05   4.1899E-03   5.0117E-03
Pyrolusite                   -3.0841   8.2399E-04   7.1635E-02   4.1200E-01
Quartz                       -0.6191   2.4036E-01   1.4442E+01   5.4532E+00
Rutile                       -3.5223   3.0037E-04   2.3993E-02   5.6529E-03
fix     CO2(g)                2.3010   2.0000E+02   8.8020E+03   0.0000E+00
fix     O2(g)                 2.3010   2.0000E+02   6.3997E+03   0.0000E+00

Smectite-di                  -2.9073   1.2379E-03
  Beidellite-Ca              -9.4754   3.3469E-10   1.2268E-07   4.3352E-08
  Beidellite-K               -9.1123   7.7211E-10   2.8788E-07   1.0323E-07
  Beidellite-Mg              -9.4645   3.4316E-10   1.2490E-07   4.2274E-08
  Beidellite-Na              -9.8020   1.5776E-10   5.7984E-08   2.0594E-08
  Montmor-Ca                 -6.8791   1.3210E-07   4.8353E-05   6.6048E-05
  Montmor-K                  -6.9605   1.0951E-07   4.0775E-05   5.4755E-05
  Montmor-Mg                 -6.6672   2.1517E-07   7.8200E-05   1.0758E-04
  Montmor-Na                 -6.9307   1.1729E-07   4.3047E-05   5.8645E-05
  Nontronite-Ca              -3.5494   2.8220E-04   1.1974E-01   3.6997E-02
  Nontronite-K               -3.2757   5.3000E-04   2.2821E-01   7.1692E-02
  Nontronite-Mg              -3.5404   2.8812E-04   1.2150E-01   3.7386E-02
  Nontronite-Na              -3.8632   1.3703E-04   5.8276E-02   1.8103E-02


                         Mass, grams        Volume, cc

          Created        1.522694E+04       9.967465E+00
          Destroyed      0.000000E+00       0.000000E+00
          Net            1.522694E+04       9.967465E+00

         Warning-- these volume totals may be incomplete because
         of missing partial molar volume data in the data base




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Stepping to zi=  1.1872E+00, delzi=  1.0000E-07, nord= 2
  time =  1.1451E+04 d, dltime =  9.6451E-04 d
Steps completed =   366, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Maximum_Microcline      ) =     -6.0586

Stepping to zi=  1.1872E+00, delzi=  1.0000E-06, nord= 2
  time =  1.1451E+04 d, dltime =  9.6451E-03 d
Steps completed =   367, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Maximum_Microcline      ) =     -6.0501

Stepping to zi=  1.1872E+00, delzi=  1.0000E-05, nord= 2
  time =  1.1451E+04 d, dltime =  9.6451E-02 d
Steps completed =   368, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Maximum_Microcline      ) =     -5.9737

Stepping to zi=  1.1873E+00, delzi=  1.0000E-04, nord= 2
```

```
  time =  1.1452E+04 d, dltime =  9.6451E-01 d
Steps completed =   369, iter = 10, ncorr = 0
Most rapidly changing is zvclg1(Maximum_Microcline      ) =     -5.5564

Stepping to zi=  1.1876E+00, delzi=  2.5000E-04, nord= 3
  time =  1.1454E+04 d, dltime =  2.4113E+00 d
Steps completed =   370, iter =  8, ncorr = 0
Most rapidly changing is zvclg1(Maximum_Microcline      ) =     -5.1510

Stepping to zi=  1.1881E+00, delzi=  5.0000E-04, nord= 3
  time =  1.1459E+04 d, dltime =  4.8225E+00 d
Steps completed =   371, iter =  8, ncorr = 0
Most rapidly changing is zvclg1(Maximum_Microcline      ) =     -4.8059

Stepping to zi=  1.1891E+00, delzi=  1.0000E-03, nord= 3
  time =  1.1469E+04 d, dltime =  9.6451E+00 d
Steps completed =   372, iter =  9, ncorr = 0
Most rapidly changing is zvclg1(Maximum_Microcline      ) =     -4.4844

Stepping to zi=  1.1911E+00, delzi=  2.0000E-03, nord= 3
  time =  1.1488E+04 d, dltime =  1.9290E+01 d
Steps completed =   373, iter =  8, ncorr = 0
Most rapidly changing is zvclg1(Maximum_Microcline      ) =     -4.1736

Stepping to zi=  1.1951E+00, delzi=  4.0000E-03, nord= 3
  time =  1.1527E+04 d, dltime =  3.8580E+01 d
Steps completed =   374, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Maximum_Microcline      ) =     -3.8678

Stepping to zi=  1.2031E+00, delzi=  8.0000E-03, nord= 3
  time =  1.1604E+04 d, dltime =  7.7160E+01 d
Steps completed =   375, iter = 20, ncorr = 0
Most rapidly changing is zvclg1(Maximum_Microcline      ) =     -3.5646

Stepping to zi=  1.2191E+00, delzi=  1.6000E-02, nord= 4
  time =  1.1758E+04 d, dltime =  1.5432E+02 d
Steps completed =   376, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-Na           ) =    -11.1349

Stepping to zi=  1.2554E+00, delzi=  3.6353E-02, nord= 4
  time =  1.2109E+04 d, dltime =  3.5063E+02 d
Steps completed =   377, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Montmor-Na              ) =     -7.3330

Stepping to zi=  1.3018E+00, delzi=  4.6364E-02, nord= 5
  time =  1.2556E+04 d, dltime =  4.4719E+02 d
Steps completed =   378, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-Na           ) =    -10.5389

Stepping to zi=  1.3614E+00, delzi=  5.9558E-02, nord= 5
  time =  1.3130E+04 d, dltime =  5.7444E+02 d
Steps completed =   379, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-Na           ) =    -10.3201

Stepping to zi=  1.4389E+00, delzi=  7.7550E-02, nord= 6
  time =  1.3878E+04 d, dltime =  7.4798E+02 d
Steps completed =   380, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Montmor-Na              ) =     -6.6470

Stepping to zi=  1.5182E+00, delzi=  7.9316E-02, nord= 6
  time =  1.4643E+04 d, dltime =  7.6501E+02 d
Steps completed =   381, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(HPO4--                  ) =     -7.9329
```

```
Stepping to zi=  1.5849E+00, delzi=  6.6664E-02, nord= 6
  time =  1.5286E+04 d, dltime =  6.4298E+02 d
Steps completed =   382, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(HPO4--                  ) =     -7.6225

- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -


                    Reaction progress        =  1.58489319246102E+00
                    Log of reaction progress =       0.2000000



                    Time =  1.321E+09 sec
                         =  1.529E+04 days
                         =  4.185E+01 years

                    Log sec =        9.121
                    Log days =       4.184
                    Log years =      1.622

                    Temperature    =     25.000 degrees C
                    total pressure =      1.013 bars


Step size is limited by the print requirement


                              --- Reactant Summary ---


    Reactant                  Moles     Delta moles    Mass, g    Delta Mass, g

 Tuff                       9.8415E+01   1.5849E+00   2.0260E+03   3.2627E+01


               Current total mass =  2.02602E+03 grams
               Delta total mass   =  3.26274E+01 grams
               Delta total volume =      0.00000 cc


    Reactant                Rel. Rate      Rate         Rate
                             mol/mol       mol/s      mol/s/cm2

 Tuff                       1.0000E+00   1.2000E-09   2.5000E-15


    Reactant                  Affinity   Surface Area
                              kcal/mol     mol/s/cm2

 Tuff                        999.00000   4.8000E+05


    Reactant                Rate Constants, mol/s/cm2

 Tuff
                   Forward    2.5000E-15


         Affinity of the overall irreversible reaction=     0.000 kcal
         Contributions from irreversible reactions
```

with no thermodynamic data are not included

--- Element Totals for the Aqueous Solution ---

Element	mg/kg soln.	Molality	Moles
O	8.866091E+05	5.559009E+01	5.554421E+01
Al	2.215057E-04	8.235445E-09	8.228648E-09
B	1.336155E-01	1.239823E-05	1.238800E-05
Ba	1.370079E-05	1.000826E-10	1.000000E-10
Ca	1.499075E+01	3.752202E-04	3.749104E-04
Ce	1.397893E-19	1.000825E-24	9.999993E-25
Cl	7.123583E+00	2.015664E-04	2.014000E-04
Cr	2.999328E+02	5.786583E-03	5.781806E-03
Cs	1.325966E-05	1.000826E-10	1.000000E-10
Cu	6.656826E-10	1.050867E-14	1.050000E-14
F	2.403558E-01	1.269131E-05	1.268084E-05
Fe	1.265797E-08	2.273699E-13	2.271822E-13
Gd	1.568846E-09	1.000826E-14	9.999998E-15
H	1.115469E+05	1.110175E+02	1.109259E+02
C	4.412680E+00	3.685464E-04	3.682422E-04
P	1.018564E-03	3.298856E-08	3.296133E-08
K	5.435036E+01	1.394484E-03	1.393333E-03
La	1.385827E-09	1.000826E-14	9.999998E-15
Li	6.924872E-07	1.000826E-10	1.000000E-10
Mg	1.245932E+01	5.142420E-04	5.138175E-04
Mn	1.198982E-10	2.189315E-15	2.187508E-15
Mo	2.181551E+02	2.281049E-03	2.279166E-03
N	1.984336E+00	1.421173E-04	1.420000E-04
Na	8.491645E+02	3.705323E-02	3.702265E-02
Nd	1.439048E-09	1.000826E-14	9.999998E-15
Ni	7.195366E-02	1.229866E-06	1.228851E-06
Pb	2.067186E-05	1.000826E-10	1.000000E-10
Pu	2.434330E-09	1.000826E-14	9.999999E-15
S	3.734062E+02	1.168169E-02	1.167205E-02
Si	2.849619E+00	1.017826E-04	1.016986E-04
Sm	1.500106E-09	1.000826E-14	9.999998E-15
Sr	8.741640E-06	1.000826E-10	1.000000E-10
Ti	1.078376E-05	2.259358E-10	2.257493E-10
U	2.374759E-09	1.000826E-14	1.000000E-14
V	4.772812E+00	9.398781E-05	9.391022E-05
Zn	6.523806E-06	1.000826E-10	1.000000E-10
Zr	9.101212E-16	1.000827E-20	1.000001E-20

Single ion activities and activity coefficients are here defined
with respect to the modified NBS pH scale

	pH	Eh	pe
modified NBS pH scale	7.7652	0.7597	1.2842E+01
rational pH scale	7.6891	0.7642	1.2918E+01

pHCl = 11.5527

Oxygen fugacity = 2.09991E-01
Log oxygen fugacity = -0.67780

```
    Activity of water =   0.99906
Log activity of water =  -0.00041

     Ionic strength =  5.753016E-02 molal
  Sum of molalities =    0.0589112354436
Osmotic coefficient =    0.88411

          Mass of solution =   1.002329 kg
          Mass of solutes  =   0.003154 kg
          Conc. of solutes  =   0.314711 per cent (w/w)

     Moles of solvent H2O =  5.54626E+01
     Mass of solvent H2O  =  9.99175E-01 kg
```

Species	Molality	Log molality	Log gamma	Log activity
Na+	3.5994E-02	-1.4438	-0.0975	-1.5413
SO4--	1.0326E-02	-1.9861	-0.3574	-2.3434
CrO4--	5.6231E-03	-2.2500	-0.3574	-2.6074
MoO4--	2.2810E-03	-2.6419	-0.3465	-2.9884
K+	1.3501E-03	-2.8696	-0.1035	-2.9731
NaSO4-	1.0460E-03	-2.9805	-0.0843	-3.0647
HCO3-	3.4309E-04	-3.4646	-0.0843	-3.5489
Mg++	3.2685E-04	-3.4856	-0.3117	-3.7974
Ca++	2.9587E-04	-3.5289	-0.3439	-3.8729
O2(aq)	2.6174E-04	-3.5821	0.0060	-3.5761
Cl-	2.0075E-04	-3.6973	-0.0902	-3.7876
MgSO4(aq)	1.8658E-04	-3.7291	0.0000	-3.7291
HCrO4-	1.6074E-04	-3.7939	-0.0843	-3.8781
NO3-	1.4202E-04	-3.8477	-0.0902	-3.9379
SiO2(aq)	1.0016E-04	-3.9993	0.0000	-3.9993
CaSO4(aq)	7.8489E-05	-4.1052	0.0000	-4.1052
VO3OH--	7.2721E-05	-4.1383	-0.3574	-4.4957
KSO4-	4.4393E-05	-4.3527	-0.0843	-4.4369
F-	1.2607E-05	-4.8994	-0.0871	-4.9865
B(OH)3(aq)	1.1888E-05	-4.9249	0.0000	-4.9249
NaHCO3(aq)	1.1587E-05	-4.9360	0.0000	-4.9360
CO2(aq)	1.0594E-05	-4.9749	0.0060	-4.9689
H2VO4-	8.2928E-06	-5.0813	-0.0843	-5.1656
HVO4--	7.8336E-06	-5.1060	-0.3574	-5.4634
VO2(OH)2-	5.1392E-06	-5.2891	-0.0843	-5.3734
CO3--	1.7140E-06	-5.7660	-0.3465	-6.1125
Cr2O7--	1.3548E-06	-5.8681	-0.3574	-6.2255
Ni++	9.6495E-07	-6.0155	-0.3439	-6.3594
NaHSiO3(aq)	8.3206E-07	-6.0798	0.0000	-6.0798
HSiO3-	7.8923E-07	-6.1028	-0.0843	-6.1871
NaCl(aq)	7.8371E-07	-6.1058	0.0000	-6.1058
OH-	7.1909E-07	-6.1432	-0.0871	-6.2304
MgHCO3+	6.1231E-07	-6.2130	-0.0975	-6.3105
CaHCO3+	5.2785E-07	-6.2775	-0.0975	-6.3750
BO2-	4.7865E-07	-6.3200	-0.0843	-6.4042
NiSO4(aq)	2.6474E-07	-6.5772	0.0000	-6.5772
CaCO3(aq)	2.1966E-07	-6.6583	0.0000	-6.6583
MgCO3(aq)	1.1722E-07	-6.9310	0.0000	-6.9310
CaNO3+	9.7008E-08	-7.0132	-0.0975	-7.1107
NaCO3-	8.8078E-08	-7.0551	-0.0843	-7.1394
MgF+	4.6343E-08	-7.3340	-0.0975	-7.4315
NaF(aq)	2.9824E-08	-7.5254	0.0000	-7.5254
HPO4--	2.3868E-08	-7.6222	-0.3574	-7.9795

MgCl+	2.3860E-08	-7.6223	-0.0975	-7.7198
NaB(OH)4(aq)	2.1114E-08	-7.6754	0.0000	-7.6754
H+	2.0458E-08	-7.6891	-0.0760	-7.7652
HSO4-	9.0109E-09	-8.0452	-0.0843	-8.1295
CaF+	8.3142E-09	-8.0802	-0.0975	-8.1777
AlO2-	7.8824E-09	-8.1033	-0.0843	-8.1876
MgB(OH)4+	6.2126E-09	-8.2067	-0.0975	-8.3042
KCl(aq)	5.5558E-09	-8.2553	0.0000	-8.2553
CaCl+	5.5145E-09	-8.2585	-0.0975	-8.3560
CaB(OH)4+	4.3884E-09	-8.3577	-0.0975	-8.4552
H2PO4-	3.5072E-09	-8.4550	-0.0843	-8.5393
NaHPO4-	3.0439E-09	-8.5166	-0.0843	-8.6008
NaOH(aq)	2.6832E-09	-8.5713	0.0000	-8.5713
CaOH+	1.3785E-09	-8.8606	-0.0975	-8.9581
MgHPO4(aq)	1.3585E-09	-8.8669	0.0000	-8.8669
CaHPO4(aq)	7.7197E-10	-9.1124	0.0000	-9.1124
VO(OH)3(aq)	7.2692E-10	-9.1385	0.0000	-9.1385
HAlO2(aq)	3.1452E-10	-9.5024	0.0000	-9.5024
HF(aq)	2.6086E-10	-9.5836	0.0000	-9.5836
Ti(OH)4(aq)	2.2594E-10	-9.6460	0.0000	-9.6460
MgPO4-	2.1861E-10	-9.6603	-0.0843	-9.7446
KOH(aq)	2.1461E-10	-9.6684	0.0000	-9.6684
NiNO3+	1.5857E-10	-9.7998	-0.0975	-9.8973
CaPO4-	1.3652E-10	-9.8648	-0.0843	-9.9491
Cs+	1.0007E-10	-9.9997	-0.1067	-10.1064
Ba++	1.0001E-10	-9.9999	-0.3628	-10.3627

--- Summary of Instantaneously Precipitated Solid Phases ---
(defined by derivatives)

--- Theoretical Rock Composition ---
g/kg

O	5.034947E+01
Al	6.598493E+00
Ca	1.041633E+00
F	1.299528E-03
Fe	6.401474E-01
H	3.037254E-01
P	6.356001E-03
K	4.735233E+00
Mg	4.809014E-01
Mn	5.062882E-02
Na	6.366969E-01
Ni	1.948967E-03
Si	3.515026E+01
Ti	5.754366E-02

--- Oxide Percentages ---

Oxide Theoretical rock

Total = 0.0000

Phase/end-member	d mol/d zi	d grams/d zi	d vol (cc)/d zi
Celadonite	4.1218E-03	1.6353E+00	6.4754E-01
Fluorapatite	1.4399E-05	7.2617E-03	7.1997E-03
Maximum_Microcline	1.6700E-02	4.6483E+00	1.8160E+00
Mesolite	8.2169E-03	3.1864E+00	1.4067E+00

Muscovite	4.6341E-03	1.8458E+00	6.5206E-01
Ni2SiO4	3.4953E-06	7.3214E-04	1.4894E-04
Pyrolusite	1.9400E-04	1.6866E-02	9.7000E-02
Quartz	1.5379E-01	9.2405E+00	3.4892E+00
Rutile	2.5300E-04	2.0209E-02	4.7615E-03
fix CO2(g)	-9.5233E-04	-4.1912E-02	0.0000E+00
fix O2(g)	-7.0662E-04	-2.2611E-02	0.0000E+00
Smectite-di			
Beidellite-Ca	8.8771E-11	3.2540E-08	1.1498E-08
Beidellite-K	1.7570E-10	6.5511E-08	2.3491E-08
Beidellite-Mg	3.7765E-10	1.3745E-07	4.6523E-08
Beidellite-Na	9.8496E-10	3.6201E-07	1.2858E-07
Montmor-Ca	1.5937E-07	5.8335E-05	7.9683E-05
Montmor-K	5.1514E-07	1.9181E-04	2.5757E-04
Montmor-Mg	1.1019E-06	4.0046E-04	5.5093E-04
Montmor-Na	2.8162E-06	1.0336E-03	1.4081E-03
Nontronite-Ca	4.3619E-06	1.8507E-03	5.7185E-04
Nontronite-K	1.1749E-04	5.0588E-02	1.5892E-02
Nontronite-Mg	2.5271E-04	1.0657E-01	3.2792E-02
Nontronite-Na	8.3194E-04	3.5380E-01	1.0991E-01

--- Summary of Solid Phases (E.S.+P.R.S.) ---

Phase/End-member	Log moles	Moles	Mass, g	Volume, cc
Alunite	-2.5559	2.7801E-03	1.1516E+00	8.1624E-01
Celadonite	-2.8294	1.4813E-03	5.8768E-01	2.3271E-01
Diaspore	-1.6079	2.4665E-02	1.4796E+00	4.3804E-01
Fluorapatite	-3.9911	1.0207E-04	5.1474E-02	5.1035E-02
Hematite	-3.7144	1.9300E-04	3.0820E-02	5.8428E-03
Maximum_Microcline	-1.6308	2.3398E-02	6.5124E+00	2.5443E+00
Mesolite	-2.3966	4.0122E-03	1.5559E+00	6.8689E-01
Muscovite	-2.2966	5.0511E-03	2.0119E+00	7.1074E-01
Ni2SiO4	-2.1930	6.4119E-03	1.3431E+00	2.7321E-01
Nontronite-H	-4.9990	1.0023E-05	4.1899E-03	5.0117E-03
Pyrolusite	-3.0452	9.0114E-04	7.8342E-02	4.5057E-01
Quartz	-0.5208	3.0146E-01	1.8113E+01	6.8396E+00
Rutile	-3.3969	4.0098E-04	3.2030E-02	7.5464E-03
fix CO2(g)	2.3010	2.0000E+02	8.8019E+03	0.0000E+00
fix O2(g)	2.3010	2.0000E+02	6.3997E+03	0.0000E+00
Smectite-di	-2.7647	1.7190E-03		
Beidellite-Ca	-9.3562	4.4033E-10	1.6141E-07	5.7036E-08
Beidellite-K	-9.0747	8.4191E-10	3.1391E-07	1.1256E-07
Beidellite-Mg	-9.3070	4.9318E-10	1.7950E-07	6.0754E-08
Beidellite-Na	-9.4740	3.3571E-10	1.2339E-07	4.3823E-08
Montmor-Ca	-6.4925	3.2175E-07	1.1778E-04	1.6088E-04
Montmor-K	-6.5028	3.1416E-07	1.1697E-04	1.5708E-04
Montmor-Mg	-6.1852	6.5287E-07	2.3728E-04	3.2643E-04
Montmor-Na	-6.2034	6.2607E-07	2.2978E-04	3.1303E-04
Nontronite-Ca	-3.4170	3.8286E-04	1.6244E-01	5.0193E-02
Nontronite-K	-3.2244	5.9651E-04	2.5684E-01	8.0689E-02
Nontronite-Mg	-3.3654	4.3116E-04	1.8182E-01	5.5948E-02
Nontronite-Na	-3.5134	3.0660E-04	1.3039E-01	4.0506E-02

	Mass, grams	Volume, cc
Created	1.523534E+04	1.329004E+01
Destroyed	3.262735E+01	0.000000E+00
Net	1.520272E+04	1.329004E+01

Warning-- these volume totals may be incomplete because
of missing partial molar volume data in the data base

--- Summary of Pure Mineral Saturation States ---

Mineral	Log Q/K	Aff, kcal	State
Alamosite	-4.516	-6.162	
Albite	-1.608	-2.194	
Albite_high	-2.927	-3.993	
Albite_low	-1.608	-2.194	
Analcime	-1.670	-2.279	
Andalusite	-6.082	-8.298	
Anglesite	-4.864	-6.637	
Anhydrite	-1.910	-2.606	
Aragonite	-1.650	-2.251	
Arcanite	-6.489	-8.853	
BaCrO4	-3.038	-4.145	
BaZrO3	80.868	110.327	ssatd
Barite	-2.735	-3.731	
Bassanite	-2.555	-3.486	
Beidellite-Ca	-2.197	-2.998	
Beidellite-Cs	-4.456	-6.079	
Beidellite-H	-3.163	-4.315	
Beidellite-K	-2.257	-3.079	
Beidellite-Mg	-2.147	-2.929	
Beidellite-Na	-2.123	-2.896	
Boehmite	-0.634	-0.864	
Boric_acid	-4.767	-6.503	
Brucite	-4.566	-6.229	
Bunsenite	-3.301	-4.504	
Ca2V2O7	-5.544	-7.563	
CaSO4:0.5H2O(beta)	-2.723	-3.715	
CaV2O6	-5.552	-7.575	
CaZrO3	141.388	192.893	ssatd
Calcite	-1.505	-2.054	
CeO2	-3.225	-4.399	
Celadonite	0.000	0.000	satd
Celestite	-7.173	-9.786	
Cerussite	-2.948	-4.022	
Chalcedony	-0.271	-0.370	
Chrysotile	-3.927	-5.358	
Clinochlore-14A	-6.715	-9.161	
Clinoptilolite	-5.073	-6.922	
Clinoptilolite-Ca	-7.010	-9.563	
Clinoptilolite-K	-6.665	-9.093	
Clinoptilolite-Na	-5.513	-7.521	
Clinoptilolite-hy-Ca	-7.009	-9.562	
Clinoptilolite-hy-K	-6.660	-9.086	
Clinoptilolite-hy-Na	-5.511	-7.518	
Coesite	-0.810	-1.105	
Corundum	-4.451	-6.072	
Cristobalite(alpha)	-0.551	-0.751	
Cristobalite(beta)	-0.994	-1.356	
Crocoite	-0.264	-0.359	
Dawsonite	-2.506	-3.419	
Diaspore	-0.230	-0.313	
Diopside	-5.573	-7.604	
Dolomite	-1.751	-2.389	
Dolomite-dis	-3.296	-4.496	

Dolomite-ord	-1.751	-2.389	
Enstatite	-3.594	-4.903	
Epsomite	-4.181	-5.705	
Fe(OH)3	-6.326	-8.630	
Fluorapatite	0.000	0.000	satd
Fluorite	-3.809	-5.196	
GdOHCO3	-6.842	-9.334	
GdPO4:H2O	-4.247	-5.794	
Gibbsite	-0.826	-1.127	
Gismondine	-6.681	-9.114	
Glauberite	-6.173	-8.422	
Goethite	-1.204	-1.643	
Gypsum	-1.735	-2.367	
Halite	-6.914	-9.433	
Hematite	-1.448	-1.975	
Heulandite	-4.633	-6.320	
Hexahydrite	-4.416	-6.025	
Ice	-0.139	-0.190	
Illite	-1.275	-1.739	
Jadeite	-3.233	-4.411	
K-Feldspar	0.000	0.000	
Kalicinite	-6.806	-9.285	
Kalsilite	-3.175	-4.332	
Kaolinite	-0.948	-1.293	
Kieserite	-5.874	-8.014	
Kyanite	-5.812	-7.929	
LaPO4:H2O	-3.490	-4.761	
Lanarkite	-7.092	-9.675	
Lansfordite	-4.424	-6.036	
Laumontite	-4.147	-5.658	
Lawsonite	-4.694	-6.404	
Magnesite	-1.875	-2.558	
Manganite	-4.459	-6.084	
Maximum_Microcline	0.000	0.000	satd
Mesolite	0.000	0.000	satd
Mirabilite	-4.290	-5.853	
MnO2(gamma)	-1.518	-2.071	
Monohydrocalcite	-2.339	-3.192	
Montmor-Ca	-1.123	-1.533	
Montmor-Cs	-3.316	-4.523	
Montmor-K	-1.113	-1.518	
Montmor-Mg	-1.004	-1.369	
Montmor-Na	-0.982	-1.340	
Mordenite	-2.905	-3.963	
Morenosite	-6.692	-9.129	
Muscovite	0.000	0.000	satd
Nahcolite	-4.978	-6.792	
Natrolite	-4.210	-5.744	
NdOHCO3	-6.694	-9.133	
NdPO4:H2O	-3.899	-5.320	
Nepheline	-4.645	-6.338	
Nesquehonite	-4.578	-6.245	
Ni(OH)2	-3.578	-4.882	
Ni2SiO4	0.000	0.000	satd
NiCO3	-5.655	-7.715	
NiSO4:6H2O(alpha)	-6.698	-9.138	
Niter	-6.705	-9.147	
Nontronite-Ca	-0.224	-0.306	
Nontronite-H	-1.190	-1.623	
Nontronite-K	-0.284	-0.387	
Nontronite-Mg	-0.174	-0.237	
Nontronite-Na	-0.150	-0.204	
Okenite	-6.724	-9.173	

Paragonite	-2.504	-3.417	
Paralaurionite	-6.600	-9.004	
PbHPO4	-6.786	-9.259	
Pentahydrite	-4.756	-6.488	
Phlogopite	-2.518	-3.436	
Plattnerite	-2.851	-3.890	
Pseudowollastonite	-6.342	-8.652	
PuO2	-1.420	-1.938	
PuO2(OH)2	-5.996	-8.180	
Pyrolusite	0.000	0.000	satd
Pyrophyllite	-2.576	-3.514	
Quartz	0.000	0.000	satd
Rutile	0.000	0.000	satd
Sanidine_high	-1.199	-1.636	
Saponite-Ca	-1.560	-2.128	
Saponite-Cs	-3.819	-5.210	
Saponite-H	-2.525	-3.445	
Saponite-K	-1.619	-2.209	
Saponite-Mg	-1.510	-2.060	
Saponite-Na	-1.485	-2.026	
Scolecite	-2.357	-3.216	
Sellaite	-4.386	-5.984	
SiO2(am)	-1.286	-1.754	
Sillimanite	-6.446	-8.794	
SmPO4:H2O	-4.038	-5.509	
Smectite-low-Fe-Mg	-7.195	-9.816	
Smithsonite	-6.609	-9.016	
SrZrO3	117.719	160.603	ssatd
Starkeyite	-5.143	-7.016	
Stilbite	-0.470	-0.641	
Strontianite	-5.976	-8.154	
Syngenite	-6.906	-9.422	
Talc	-1.938	-2.645	
Tenorite	-7.217	-9.846	
Thenardite	-5.117	-6.981	
Trevorite	-1.956	-2.669	
Tridymite	-0.172	-0.234	
Witherite	-3.150	-4.297	
Wollastonite	-6.103	-8.326	
Zincite	-6.041	-8.241	
Zn(OH)2(beta)	-6.766	-9.231	
Zn(OH)2(epsilon)	-6.495	-8.861	
Zn(OH)2(gamma)	-6.715	-9.162	
fix CO2(g)	0.000	0.000	satd
fix O2(g)	0.000	0.000	satd

--- Summary of Solid Solutions ---

--- Carbonate-Calcite ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Calcite	7.0068E-01	-0.1545	0.0000	-0.1545
Magnesite	2.9929E-01	-0.5239	0.0000	-0.5239
Rhodochrosite	3.8140E-10	-9.4186	0.0000	-9.4186
Siderite	9.1989E-19	-18.0363	0.0000	-18.0363
Smithsonite	5.5218E-06	-5.2579	0.0000	-5.2579
Strontianite	2.3678E-05	-4.6256	0.0000	-4.6256

Mineral	Log Q/K	Aff, kcal	State
Carbonate-Calcite	-1.351	-1.843	
Calcite	-1.351	-1.843	
Magnesite	-1.351	-1.843	
Rhodochrosite	-1.351	-1.843	
Siderite	-1.351	-1.843	
Smithsonite	-1.351	-1.843	
Strontianite	-1.351	-1.843	

--- Clinoptilolite-hy-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-hy-Ca	2.8817E-02	-1.5403	0.0000	-1.5403
Clinoptilolite-hy-Cs	1.5411E-24	-23.8122	0.0000	-23.8122
Clinoptilolite-hy-K	6.4371E-02	-1.1913	0.0000	-1.1913
Clinoptilolite-hy-Na	9.0681E-01	-0.0425	0.0000	-0.0425
Clinoptilolite-hy-Sr	1.2544E-13	-12.9016	0.0000	-12.9016

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-hy-ss	-5.468	-7.460	
Clinoptilolite-hy-Ca	-5.468	-7.460	
Clinoptilolite-hy-Cs	-5.468	-7.460	
Clinoptilolite-hy-K	-5.468	-7.460	
Clinoptilolite-hy-Na	-5.468	-7.460	
Clinoptilolite-hy-Sr	-5.468	-7.460	

--- Clinoptilolite-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-Ca	2.0137E-01	-0.6960	-1.7122	-2.4082
Clinoptilolite-Cs	7.3373E-08	-7.1345	-17.5508	-24.6852
Clinoptilolite-K	2.5331E-01	-0.5963	-1.4670	-2.0634
Clinoptilolite-NH4	8.4847E-64	-63.0714	-155.1556	-218.2269
Clinoptilolite-Na	5.4522E-01	-0.2634	-0.6480	-0.9115
Clinoptilolite-Sr	1.0491E-04	-3.9792	-9.7887	-13.7679

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-ss	-4.601	-6.278	
Clinoptilolite-Ca	-4.601	-6.278	
Clinoptilolite-Cs	-4.601	-6.278	
Clinoptilolite-K	-4.601	-6.278	
Clinoptilolite-NH4	-4.601	-6.278	
Clinoptilolite-Na	-4.601	-6.278	
Clinoptilolite-Sr	-4.601	-6.278	

--- Saponite-tri ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Saponite-Ca	2.1001E-01	-0.6778	0.4541	-0.2237
Saponite-H	2.4903E-04	-3.6038	2.4145	-1.1892
Saponite-K	1.3856E-01	-0.8584	0.5751	-0.2833
Saponite-Mg	2.9800E-01	-0.5258	0.3523	-0.1735
Saponite-Na	3.5318E-01	-0.4520	0.3028	-0.1492

Mineral	Log Q/K	Aff, kcal	State
Saponite-tri	-1.336	-1.823	
Saponite-Ca	-1.336	-1.823	
Saponite-H	-1.336	-1.823	
Saponite-K	-1.336	-1.823	
Saponite-Mg	-1.336	-1.823	
Saponite-Na	-1.336	-1.823	

--- Smectite-di ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Beidellite-Ca	2.1974E-07	-6.6581	4.4609	-2.1972
Beidellite-K	1.4508E-07	-6.8384	4.5817	-2.2567
Beidellite-Mg	3.1181E-07	-6.5061	4.3591	-2.1470
Beidellite-Na	3.6953E-07	-6.4323	4.3097	-2.1227
Montmor-Ca	3.9449E-04	-3.4040	2.2807	-1.1233
Montmor-K	4.2535E-04	-3.3712	2.2587	-1.1125
Montmor-Mg	9.0974E-04	-3.0411	2.0375	-1.0036
Montmor-Na	1.0566E-03	-2.9761	1.9940	-0.9821
Nontronite-Ca	2.0942E-01	-0.6790	0.4549	-0.2241
Nontronite-K	1.3826E-01	-0.8593	0.5757	-0.2836
Nontronite-Mg	2.9736E-01	-0.5267	0.3529	-0.1738
Nontronite-Na	3.5217E-01	-0.4532	0.3037	-0.1496

Mineral	Log Q/K	Aff, kcal	State
Smectite-di	0.000	0.000	satd
Beidellite-Ca	0.000	0.000	satd
Beidellite-K	0.000	0.000	satd
Beidellite-Mg	0.000	0.000	satd
Beidellite-Na	0.000	0.000	satd
Montmor-Ca	0.000	0.000	satd
Montmor-K	0.000	0.000	satd
Montmor-Mg	0.000	0.000	satd
Montmor-Na	0.000	0.000	satd
Nontronite-Ca	0.000	0.000	satd
Nontronite-K	0.000	0.000	satd
Nontronite-Mg	0.000	0.000	satd
Nontronite-Na	0.000	0.000	satd

--- Lanthanide hydroxide ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
La(OH)3	2.2536E-05	-4.6471	0.0000	-4.6471
Ce(OH)3	3.2206E-15	-14.4921	0.0000	-14.4921
Nd(OH)3(c)	4.3988E-01	-0.3567	0.0000	-0.3567
Gd(OH)3	4.9634E-01	-0.3042	0.0000	-0.3042
Sm(OH)3	6.3757E-02	-1.1955	0.0000	-1.1955

Mineral	Log Q/K	Aff, kcal	State
Lanthanide hydroxide	-8.013	-10.932	
La(OH)3	-8.013	-10.932	
Ce(OH)3	-8.013	-10.932	
Nd(OH)3(c)	-8.013	-10.932	
Gd(OH)3	-8.013	-10.932	
Sm(OH)3	-8.013	-10.932	

--- Rhabdophane-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaPO4:H2O	5.4133E-01	-0.2665	0.0000	-0.2665
CePO4:H2O	2.4463E-11	-10.6115	0.0000	-10.6115
NdPO4:H2O	2.1082E-01	-0.6761	0.0000	-0.6761
GdPO4:H2O	9.4703E-02	-1.0236	0.0000	-1.0236
SmPO4:H2O	1.5315E-01	-0.8149	0.0000	-0.8149

Mineral	Log Q/K	Aff, kcal	State
Rhabdophane-ss	-3.223	-4.398	
LaPO4:H2O	-3.223	-4.398	
CePO4:H2O	-3.223	-4.398	
NdPO4:H2O	-3.223	-4.398	
GdPO4:H2O	-3.223	-4.398	
SmPO4:H2O	-3.223	-4.398	

--- Lanthanide fluoride ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaF3:0.5H2O	6.5550E-01	-0.1834	0.0000	-0.1834
CeF3:0.5H2O	4.6949E-11	-10.3284	0.0000	-10.3284
NdF3:0.5H2O	3.2139E-01	-0.4930	0.0000	-0.4930
GdF3:0.5H2O	4.5654E-03	-2.3405	0.0000	-2.3405
SmF3:0.5H2O	1.8545E-02	-1.7318	0.0000	-1.7318

Mineral	Log Q/K	Aff, kcal	State
Lanthanide fluoride	-11.702	-15.964	
LaF3:0.5H2O	-11.702	-15.964	

CeF3:0.5H2O	-11.702	-15.964
NdF3:0.5H2O	-11.702	-15.964
GdF3:0.5H2O	-11.702	-15.964
SmF3:0.5H2O	-11.702	-15.964

--- Summary of Gases ---

Gas	Fugacity	Log fugacity
Al(g)	9.7052-192	-191.0130
B(g)	8.2199-204	-203.0851
BF3(g)	6.1325E-41	-40.2124
C(g)	3.0917-190	-189.5098
CH4(g)	3.5228-146	-145.4531
CO(g)	6.0395E-49	-48.2190
CO2(g)	3.1623E-04	-3.5000
Ca(g)	2.3294-152	-151.6328
Chlorine	1.2779E-28	-27.8935
Cs(g)	1.8706E-83	-82.7280
Cu(g)	3.6764E-82	-81.4346
Fluorine	9.7548E-84	-83.0108
H2(g)	6.1093E-42	-41.2140
H2O(g)	2.5953E-02	-1.5858
H2S(g)	8.6588-142	-141.0625
HCl(g)	1.3861E-18	-17.8582
HF(g)	1.3668E-14	-13.8643
K(g)	1.2717E-76	-75.8956
Li(g)	4.1511E-97	-96.3818
Mg(g)	1.8668-129	-128.7289
Nitrogen	9.5894E-20	-19.0182
NH3(g)	3.5652E-69	-68.4479
NO(g)	9.7509E-26	-25.0110
NO2(g)	6.6672E-20	-19.1761
Na(g)	1.7935E-74	-73.7463
O2(g)	2.0999E-01	-0.6778
Pb(g)	2.1641E-69	-68.6647
S2(g)	4.4790-226	-225.3488
SO2(g)	1.5345E-54	-53.8140
Si(g)	4.2257-221	-220.3741
SiF4(g)	1.5411E-40	-39.8122
Ti(g)	3.8019-231	-230.4200
TiCl4(g)	1.2388E-84	-83.9070
U(g)	1.0413-297	-296.9824
U2Cl10(g)	2.8981-245	-244.5379
U2Cl8(g)	7.0311-248	-247.1530
U2F10(g)	3.3353-162	-161.4769
UCl(g)	1.2868-253	-252.8905
UCl2(g)	4.7574-208	-207.3226
UCl3(g)	3.8523-160	-159.4143
UCl4(g)	1.6891-129	-128.7723
UCl5(g)	3.8107-136	-135.4190
UCl6(g)	1.5972-137	-136.7966
UF(g)	2.6967-239	-238.5692
UF2(g)	5.1796-199	-198.2857
UF3(g)	2.4482-152	-151.6111
UF4(g)	1.7081-102	-101.7675
UF5(g)	5.4584E-94	-93.2629
UF6(g)	1.7176E-99	-98.7651
UO(g)	8.2239-213	-212.0849
UO2(g)	1.5236-128	-127.8171

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UO2Cl2(g)                    8.5010E-76    -75.0705
UO2F2(g)                     6.7142E-65    -64.1730
UO3(g)                       1.1207E-75    -74.9505
UOF4(g)                      5.0899E-80    -79.2933
Zn(g)                        3.4858E-79    -78.4577



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Stepping to zi=  1.6508E+00, delzi=  6.5943E-02, nord= 6
  time =  1.5922E+04 d, dltime =  6.3602E+02 d
Steps completed =   383, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(HPO4--                  ) =     -7.1696
--- shifting e.s. solid(s) to the p.r.s. (shftz) ---

      shifted -- Celadonite
              - old mass=  1.67048E-03, new mass=  1.67048E-05
      shifted -- Fluorapatite
              - old mass=  7.49382E-06, new mass=  8.00000E-07
      shifted -- Maximum_Microcline
              - old mass=  7.78353E-03, new mass=  7.78353E-05
      shifted -- Mesolite
              - old mass=  4.48520E-03, new mass=  4.48520E-05
      shifted -- Muscovite
              - old mass=  1.76885E-03, new mass=  1.76885E-05
      shifted -- Ni2SiO4
              - old mass=  2.14758E-06, new mass=  8.00000E-07
      shifted -- Pyrolusite
              - old mass=  9.07404E-05, new mass=  9.07404E-07
      shifted -- Quartz
              - old mass=  7.12724E-02, new mass=  7.12724E-04
      shifted -- Rutile
              - old mass=  1.18093E-04, new mass=  1.18093E-06
      shifted -- Smectite-di
              - old mass=  5.61865E-04, new mass=  5.61865E-06

Stepping to zi=  1.6508E+00, delzi=  1.0000E-09, nord= 0
  time =  1.5922E+04 d, dltime =  9.6451E-06 d
Steps completed =   384, iter =  1, ncorr = 0
Most rapidly changing is zvclg1(Muscovite               ) =     -4.7523

Stepping to zi=  1.6508E+00, delzi=  1.0000E-09, nord= 0
  time =  1.5922E+04 d, dltime =  9.6451E-06 d
Steps completed =   385, iter =  1, ncorr = 0
Most rapidly changing is zvclg1(Muscovite               ) =     -4.7523

Stepping to zi=  1.6508E+00, delzi=  1.0000E-09, nord= 0
  time =  1.5922E+04 d, dltime =  9.6451E-06 d
Steps completed =   386, iter =  1, ncorr = 0
Most rapidly changing is zvclg1(Muscovite               ) =     -4.7523

Stepping to zi=  1.6508E+00, delzi=  1.0000E-08, nord= 1
  time =  1.5922E+04 d, dltime =  9.6451E-05 d
Steps completed =   387, iter =  1, ncorr = 0
Most rapidly changing is zvclg1(Muscovite               ) =     -4.7523

Stepping to zi=  1.6508E+00, delzi=  1.0000E-07, nord= 1
  time =  1.5922E+04 d, dltime =  9.6451E-04 d
Steps completed =   388, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Muscovite               ) =     -4.7523
```

```
Stepping to zi=  1.6508E+00, delzi=  1.0000E-06, nord= 2
  time =  1.5922E+04 d, dltime =  9.6451E-03 d
Steps completed =   389, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Muscovite              ) =     -4.7522

Stepping to zi=  1.6508E+00, delzi=  1.0000E-05, nord= 2
  time =  1.5923E+04 d, dltime =  9.6451E-02 d
Steps completed =   390, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Muscovite              ) =     -4.7508

Stepping to zi=  1.6509E+00, delzi=  1.0000E-04, nord= 2
  time =  1.5923E+04 d, dltime =  9.6451E-01 d
Steps completed =   391, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Muscovite              ) =     -4.7379

Stepping to zi=  1.6519E+00, delzi=  1.0000E-03, nord= 3
  time =  1.5933E+04 d, dltime =  9.6451E+00 d
Steps completed =   392, iter =  6, ncorr = 0
Most rapidly changing is zvclg1(Muscovite              ) =     -4.6262

Stepping to zi=  1.6551E+00, delzi=  3.1168E-03, nord= 3
  time =  1.5963E+04 d, dltime =  3.0062E+01 d
Steps completed =   393, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Muscovite              ) =     -4.3929

Stepping to zi=  1.6627E+00, delzi=  7.5938E-03, nord= 4
  time =  1.6036E+04 d, dltime =  7.3243E+01 d
Steps completed =   394, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Muscovite              ) =     -4.0860

Stepping to zi=  1.6730E+00, delzi=  1.0303E-02, nord= 5
  time =  1.6136E+04 d, dltime =  9.9374E+01 d
Steps completed =   395, iter =  6, ncorr = 0
Most rapidly changing is zvclg1(Montmor-Na             ) =     -7.2943

Stepping to zi=  1.6859E+00, delzi=  1.2937E-02, nord= 5
  time =  1.6261E+04 d, dltime =  1.2478E+02 d
Steps completed =   396, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Montmor-Na             ) =     -7.0864

Stepping to zi=  1.7049E+00, delzi=  1.8965E-02, nord= 6
  time =  1.6443E+04 d, dltime =  1.8291E+02 d
Steps completed =   397, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(UO2++                  ) =    -20.1127

Stepping to zi=  1.7242E+00, delzi=  1.9343E-02, nord= 6
  time =  1.6630E+04 d, dltime =  1.8656E+02 d
Steps completed =   398, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(UO2++                  ) =    -20.4443

Stepping to zi=  1.7439E+00, delzi=  1.9714E-02, nord= 6
  time =  1.6820E+04 d, dltime =  1.9015E+02 d
Steps completed =   399, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(UO2++                  ) =    -20.8609

Stepping to zi=  1.7645E+00, delzi=  2.0554E-02, nord= 6
  time =  1.7018E+04 d, dltime =  1.9825E+02 d
Steps completed =   400, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(UO2++                  ) =    -21.3562
--- shifting e.s. solid(s) to the p.r.s. (shftz) ---

      shifted -- Celadonite
```

```
            - old mass=  4.20533E-04, new mass=  4.20533E-06
      shifted -- Fluorapatite
            - old mass=  1.37689E-06, new mass=  8.00000E-07
      shifted -- Maximum_Microcline
            - old mass=  2.00860E-03, new mass=  2.00860E-05
      shifted -- Mesolite
            - old mass=  6.46116E-04, new mass=  6.46116E-06
      shifted -- Muscovite
            - old mass=  7.75256E-04, new mass=  7.75256E-06
      shifted -- Ni2SiO4
            - old mass=  1.11745E-06, new mass=  8.00000E-07
      shifted -- Pyrolusite
            - old mass=  2.29530E-05, new mass=  8.00000E-07
      shifted -- Quartz
            - old mass=  1.86531E-02, new mass=  1.86531E-04
      shifted -- Rutile
            - old mass=  2.99311E-05, new mass=  8.00000E-07
      shifted -- Smectite-di
            - old mass=  1.43436E-04, new mass=  1.43436E-06

Stepping to zi=  1.7645E+00, delzi=  1.0000E-09, nord= 0
  time =  1.7018E+04 d, dltime =  9.6451E-06 d
Steps completed =   401, iter =  1, ncorr = 0
Most rapidly changing is zvclg1(Muscovite              ) =     -5.1106

Stepping to zi=  1.7645E+00, delzi=  1.0000E-09, nord= 0
  time =  1.7018E+04 d, dltime =  9.6451E-06 d
Steps completed =   402, iter =  1, ncorr = 0
Most rapidly changing is zvclg1(Muscovite              ) =     -5.1106

Stepping to zi=  1.7645E+00, delzi=  1.0000E-09, nord= 0
  time =  1.7018E+04 d, dltime =  9.6451E-06 d
Steps completed =   403, iter =  1, ncorr = 0
Most rapidly changing is zvclg1(Muscovite              ) =     -5.1106

Stepping to zi=  1.7645E+00, delzi=  1.0000E-08, nord= 1
  time =  1.7018E+04 d, dltime =  9.6451E-05 d
Steps completed =   404, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Muscovite              ) =     -5.1105

Stepping to zi=  1.7645E+00, delzi=  1.0000E-07, nord= 2
  time =  1.7018E+04 d, dltime =  9.6451E-04 d
Steps completed =   405, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Muscovite              ) =     -5.1105

Stepping to zi=  1.7645E+00, delzi=  1.0000E-06, nord= 2
  time =  1.7018E+04 d, dltime =  9.6451E-03 d
Steps completed =   406, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Muscovite              ) =     -5.1100

Stepping to zi=  1.7645E+00, delzi=  1.0000E-05, nord= 2
  time =  1.7019E+04 d, dltime =  9.6451E-02 d
Steps completed =   407, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Muscovite              ) =     -5.1053

Stepping to zi=  1.7646E+00, delzi=  1.0000E-04, nord= 2
  time =  1.7020E+04 d, dltime =  9.6451E-01 d
Steps completed =   408, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Muscovite              ) =     -5.0605

Stepping to zi=  1.7655E+00, delzi=  8.6630E-04, nord= 3
  time =  1.7028E+04 d, dltime =  8.3555E+00 d
Steps completed =   409, iter =  7, ncorr = 0
```

```
Most rapidly changing is zvclg1(Muscovite              ) =     -4.7934

Stepping to zi=  1.7670E+00, delzi=  1.5142E-03, nord= 3
  time =  1.7042E+04 d, dltime =  1.4604E+01 d
Steps completed =   410, iter =  7, ncorr = 0
Most rapidly changing is zvclg1(Muscovite              ) =     -4.5366

Stepping to zi=  1.7712E+00, delzi=  4.2657E-03, nord= 4
  time =  1.7084E+04 d, dltime =  4.1143E+01 d
Steps completed =   411, iter =  7, ncorr = 0
Most rapidly changing is zvclg1(Muscovite              ) =     -4.1807

Stepping to zi=  1.7760E+00, delzi=  4.7772E-03, nord= 5
  time =  1.7130E+04 d, dltime =  4.6076E+01 d
iter =    6
      1 supersaturated pure minerals
      0 supersaturated solid solutions

               The most supersaturated phases          Affinity, kcal

                 1     471   Pyromorphite                 0.00580941


  Attempted species assemblage no.   2

            1      1  H2O
            2      3  Al+++
            3      7  B(OH)3(aq)
            4      8  Ba++
            5     11  Ca++
            6     13  Ce+++
            7     14  Cl-
            8     16  CrO4--
            9     17  Cs+
           10     18  Cu++
           11     22  F-
           12     23  Fe++
           13     25  Gd+++
           14     26  H+
           15     28  HCO3-
           16     29  HPO4--
           17     35  K+
           18     37  La+++
           19     38  Li+
           20     40  Mg++
           21     41  Mn++
           22     42  MoO4--
           23     43  NO3-
           24     44  Na+
           25     45  Nd+++
           26     47  Ni++
           27     49  Pb++
           28     52  Pu++++
           29     58  SO4--
           30     62  SiO2(aq)
           31     63  Sm+++
           32     65  Sr++
           33     69  Ti(OH)4(aq)
           34     72  UO2++
           35     73  VO++
           36     78  Zn++
           37     79  Zr(OH)2++
           38     80  O2(g)
```

```
39    120  Celadonite
40    222  Fluorapatite
41    323  Maximum_Microcline
42    328  Mesolite
43    368  Muscovite
44    405  Ni2SiO4
45    470  Pyrolusite
46    471  Pyromorphite
47    475  Quartz
48    482  Rutile
49    689  fix     CO2(g)
50    690  fix     O2(g)
51      1  SmectiteBeidellite-Ca
52      2  SmectiteBeidellite-K
53      3  SmectiteBeidellite-Mg
54      4  SmectiteBeidellite-Na
55      5  SmectiteMontmor-Ca
56      6  SmectiteMontmor-K
57      7  SmectiteMontmor-Mg
58      8  SmectiteMontmor-Na
59      9  SmectiteNontronite-Ca
60     10  SmectiteNontronite-K
61     11  SmectiteNontronite-Mg
62     12  SmectiteNontronite-Na

Steps completed =   412, iter = 14, ncorr = 0

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                    Reaction progress        =  1.77600749579485E+00
                    Log of reaction progress =       0.2494448



                    Time =  1.480E+09 sec
                         =  1.713E+04 days
                         =  4.690E+01 years

                    Log sec =        9.170
                    Log days =       4.234
                    Log years =      1.671

                    Temperature    =     25.000 degrees C
                    total pressure =      1.013 bars


Change in the product phase assemblage


                              --- Reactant Summary ---


    Reactant                  Moles     Delta moles    Mass, g    Delta Mass, g

 Tuff                      9.8224E+01   1.7760E+00   2.0221E+03   3.6562E+01


               Current total mass =  2.02208E+03 grams
               Delta total mass   =  3.65617E+01 grams
               Delta total volume =      0.00000 cc
```

Reactant	Rel. Rate mol/mol	Rate mol/s	Rate mol/s/cm2
Tuff	1.0000E+00	1.2000E-09	2.5000E-15

Reactant	Affinity kcal/mol	Surface Area mol/s/cm2
Tuff	999.00000	4.8000E+05

Reactant	Rate Constants, mol/s/cm2	
Tuff		
	Forward	2.5000E-15

Affinity of the overall irreversible reaction= 0.000 kcal
Contributions from irreversible reactions
with no thermodynamic data are not included

--- Element Totals for the Aqueous Solution ---

Element	mg/kg soln.	Molality	Moles
O	8.865850E+05	5.559284E+01	5.554140E+01
Al	7.484239E-04	2.782807E-08	2.780232E-08
B	1.336186E-01	1.239947E-05	1.238800E-05
Ba	1.370111E-05	1.000926E-10	1.000000E-10
Ca	3.200197E-01	8.010744E-06	8.003332E-06
Ce	1.397926E-19	1.000925E-24	9.999993E-25
Cl	7.123750E+00	2.015865E-04	2.014000E-04
Cr	2.999399E+02	5.787161E-03	5.781806E-03
Cs	1.325997E-05	1.000926E-10	1.000000E-10
Cu	6.656982E-10	1.050972E-14	1.050000E-14
F	2.210985E-01	1.167538E-05	1.166457E-05
Fe	1.151145E-08	2.067913E-13	2.066000E-13
Gd	1.568883E-09	1.000926E-14	9.999998E-15
H	1.115391E+05	1.110183E+02	1.109156E+02
C	1.519098E+01	1.268846E-03	1.267672E-03
P	1.637104E-01	5.302545E-06	5.297639E-06
K	1.569984E+01	4.028464E-04	4.024737E-04
La	1.385860E-09	1.000926E-14	9.999998E-15
Li	6.925034E-07	1.000926E-10	1.000000E-10
Mg	1.048318E+00	4.327125E-05	4.323121E-05
Mn	1.603739E-11	2.928618E-16	2.925908E-16
Mo	2.181602E+02	2.281277E-03	2.279166E-03
N	1.984382E+00	1.421315E-04	1.420000E-04
Na	9.347201E+02	4.078957E-02	4.075183E-02
Nd	1.439082E-09	1.000926E-14	9.999998E-15
Ni	6.017224E-03	1.028571E-07	1.027619E-07
Pb	2.063184E-05	9.989653E-11	9.980409E-11
Pu	2.434387E-09	1.000926E-14	9.999999E-15
S	3.734150E+02	1.168286E-02	1.167205E-02
Si	2.969473E+00	1.060717E-04	1.059735E-04
Sm	1.500141E-09	1.000926E-14	9.999998E-15
Sr	8.741845E-06	1.000926E-10	1.000000E-10
Ti	1.078186E-05	2.259132E-10	2.257042E-10
U	2.374814E-09	1.000926E-14	1.000000E-14

V	4.772924E+00	9.399720E-05	9.391022E-05
Zn	6.523959E-06	1.000926E-10	1.000000E-10
Zr	9.101426E-16	1.000927E-20	1.000001E-20

Single ion activities and activity coefficients are here defined
with respect to the modified NBS pH scale

	pH	Eh	pe
modified NBS pH scale	8.3054	0.7277	1.2302E+01
rational pH scale	8.2289	0.7322	1.2378E+01

pHCl = 12.0937

Oxygen fugacity = 2.09991E-01
Log oxygen fugacity = -0.67780

Activity of water = 0.99901
Log activity of water = -0.00043

Ionic strength = 5.869705E-02 molal
Sum of molalities = 0.0618593433155
Osmotic coefficient = 0.88676

Mass of solution = 1.002306 kg
Mass of solutes = 0.003231 kg
Conc. of solutes = 0.322337 per cent (w/w)

Moles of solvent H2O = 5.54571E+01
Mass of solvent H2O = 9.99075E-01 kg

Species	Molality	Log molality	Log gamma	Log activity
Na+	3.9578E-02	-1.4025	-0.0983	-1.5008
SO4--	1.0491E-02	-1.9792	-0.3600	-2.3392
CrO4--	5.7399E-03	-2.2411	-0.3600	-2.6011
MoO4--	2.2813E-03	-2.6418	-0.3490	-2.9908
HCO3-	1.1918E-03	-2.9238	-0.0848	-3.0086
NaSO4-	1.1611E-03	-2.9351	-0.0848	-3.0200
K+	3.8990E-04	-3.4090	-0.1043	-3.5134
O2(aq)	2.6167E-04	-3.5823	0.0062	-3.5761
Cl-	2.0072E-04	-3.6974	-0.0909	-3.7883
NO3-	1.4213E-04	-3.8473	-0.0909	-3.9382
SiO2(aq)	1.0016E-04	-3.9993	0.0000	-3.9993
VO3OH--	8.0982E-05	-4.0916	-0.3600	-4.4516
HCrO4-	4.7069E-05	-4.3273	-0.0848	-4.4121
NaHCO3(aq)	4.4123E-05	-4.3553	0.0000	-4.3553
Mg++	2.7281E-05	-4.5641	-0.3137	-4.8779
CO3--	2.0747E-05	-4.6830	-0.3490	-5.0320
MgSO4(aq)	1.5656E-05	-4.8053	0.0000	-4.8053
KSO4-	1.2939E-05	-4.8881	-0.0848	-4.9729
F-	1.1641E-05	-4.9340	-0.0878	-5.0218
B(OH)3(aq)	1.0812E-05	-4.9661	0.0000	-4.9661
CO2(aq)	1.0591E-05	-4.9751	0.0062	-4.9689
HVO4--	8.7235E-06	-5.0593	-0.3600	-5.4193

Ca++	6.2453E-06	-5.2045	-0.3464	-5.5508
HPO4--	4.4516E-06	-5.3515	-0.3600	-5.7115
NaHSiO3(aq)	3.1686E-06	-5.4991	0.0000	-5.4991
HSiO3-	2.7417E-06	-5.5620	-0.0848	-5.6468
H2VO4-	2.6492E-06	-5.5769	-0.0848	-5.6617
OH-	2.4983E-06	-5.6024	-0.0878	-5.6901
CaSO4(aq)	1.6639E-06	-5.7789	0.0000	-5.7789
VO2(OH)2-	1.6418E-06	-5.7847	-0.0848	-5.8695
BO2-	1.5124E-06	-5.8203	-0.0848	-5.9052
NaCO3-	1.1652E-06	-5.9336	-0.0848	-6.0184
NaCl(aq)	8.5884E-07	-6.0661	0.0000	-6.0661
NaHPO4-	6.2021E-07	-6.2075	-0.0848	-6.2923
H2PO4-	1.8765E-07	-6.7267	-0.0848	-6.8115
MgHCO3+	1.7680E-07	-6.7525	-0.0983	-6.8508
MgCO3(aq)	1.1723E-07	-6.9310	0.0000	-6.9310
Cr2O7--	1.1658E-07	-6.9334	-0.3600	-7.2934
Ni++	8.0615E-08	-7.0936	-0.3464	-7.4399
NaB(OH)4(aq)	7.3126E-08	-7.1359	0.0000	-7.1359
CaCO3(aq)	5.5499E-08	-7.2557	0.0000	-7.2557
CaHCO3+	3.8508E-08	-7.4145	-0.0983	-7.5127
NaF(aq)	3.0188E-08	-7.5202	0.0000	-7.5202
AlO2-	2.7384E-08	-7.5625	-0.0848	-7.6473
NiSO4(aq)	2.2213E-08	-7.6534	0.0000	-7.6534
MgHPO4(aq)	2.0925E-08	-7.6793	0.0000	-7.6793
MgPO4-	1.1698E-08	-7.9319	-0.0848	-8.0167
NaOH(aq)	1.0218E-08	-7.9906	0.0000	-7.9906
H+	5.9029E-09	-8.2289	-0.0765	-8.3054
KHPO4-	4.3651E-09	-8.3600	-0.0848	-8.4448
MgF+	3.5568E-09	-8.4489	-0.0983	-8.5472
CaHPO4(aq)	3.0041E-09	-8.5223	0.0000	-8.5223
HSO4-	2.6264E-09	-8.5806	-0.0848	-8.6655
CaNO3+	2.0383E-09	-8.6907	-0.0983	-8.7890
MgCl+	1.9826E-09	-8.7028	-0.0983	-8.8010
CaPO4-	1.8457E-09	-8.7338	-0.0848	-8.8187
MgB(OH)4+	1.6315E-09	-8.7874	-0.0983	-8.8857
KCl(aq)	1.5987E-09	-8.7962	0.0000	-8.7962
PO4---	1.2451E-09	-8.9048	-0.8231	-9.7279
HAlO2(aq)	3.1452E-10	-9.5024	0.0000	-9.5024
CaB(OH)4+	2.9117E-10	-9.5358	-0.0983	-9.6341
VO4---	2.6114E-10	-9.5831	-0.8231	-10.4062
Ti(OH)4(aq)	2.2591E-10	-9.6461	0.0000	-9.6461
KOH(aq)	2.1460E-10	-9.6684	0.0000	-9.6684
CaF+	1.6122E-10	-9.7926	-0.0983	-9.8909
NaAlO2(aq)	1.2839E-10	-9.8915	0.0000	-9.8915
CaCl+	1.1577E-10	-9.9364	-0.0983	-10.0347
H2SiO4--	1.0248E-10	-9.9893	-0.3600	-10.3493
CaOH+	1.0056E-10	-9.9976	-0.0983	-10.0958
Cs+	1.0008E-10	-9.9996	-0.1076	-10.1073

--- Summary of Instantaneously Precipitated Solid Phases ---
(defined by derivatives)

--- Theoretical Rock Composition ---
g/kg

O	4.978404E+01
Al	6.946937E+00
Ca	4.620560E-01
Fe	6.739546E-01
H	2.269910E-01
K	5.014170E+00
Mg	2.583268E-01

Mn	5.330262E-02
Na	3.390779E-01
Ni	6.118647E-04
Si	3.699861E+01
Ti	6.058264E-02

--- Oxide Percentages ---

Oxide Theoretical rock

Total = 0.0000

Phase/end-member	d mol/d zi	d grams/d zi	d vol (cc)/d zi
Celadonite	2.0940E-03	8.3078E-01	3.2897E-01
Fluorapatite	-5.6203E-05	-2.8344E-02	-2.8102E-02
Maximum_Microcline	1.4697E-02	4.0907E+00	1.5982E+00
Mesolite	3.9222E-03	1.5210E+00	6.7148E-01
Muscovite	8.8249E-03	3.5150E+00	1.2418E+00
Ni2SiO4	1.0423E-06	2.1832E-04	4.4412E-05
Pyrolusite	1.9400E-04	1.6866E-02	9.7000E-02
Pyromorphite	1.6820E-01	2.2814E+02	3.2406E+01
Quartz	2.5300E-04	1.5201E-02	5.7401E-03
Rutile	-1.3105E-02	-1.0468E+00	-2.4663E-01
fix CO2(g)	-5.0894E-04	-2.2398E-02	0.0000E+00
fix O2(g)	1.2474E-10	3.9916E-09	0.0000E+00
Smectite-di			
Beidellite-Ca	1.7611E-10	6.4554E-08	2.2811E-08
Beidellite-K	3.7852E-10	1.4113E-07	5.0608E-08
Beidellite-Mg	1.9396E-09	7.0595E-07	2.3894E-07
Beidellite-Na	2.2394E-07	8.2307E-05	2.9234E-05
Montmor-Ca	5.1634E-07	1.8900E-04	2.5817E-04
Montmor-K	1.1044E-06	4.1120E-04	5.5219E-04
Montmor-Mg	5.5458E-06	2.0156E-03	2.7729E-03
Montmor-Na	5.6525E-05	2.0746E-02	2.8262E-02
Nontronite-Ca	8.0420E-05	3.4122E-02	1.0543E-02
Nontronite-K	1.7297E-04	7.4479E-02	2.3398E-02
Nontronite-Mg	8.9658E-04	3.7808E-01	1.1634E-01
Nontronite-Na	0.0000E+00	0.0000E+00	0.0000E+00

--- Summary of Solid Phases (E.S.+P.R.S.) ---

Phase/End-member	Log moles	Moles	Mass, g	Volume, cc
Alunite	-2.5559	2.7801E-03	1.1516E+00	8.1624E-01
Celadonite	-2.6606	2.1848E-03	8.6677E-01	3.4322E-01
Diaspore	-1.6079	2.4665E-02	1.4796E+00	4.3804E-01
Fluorapatite	-3.9868	1.0309E-04	5.1986E-02	5.1543E-02
Hematite	-3.7144	1.9300E-04	3.0820E-02	5.8428E-03
Maximum_Microcline	-1.5749	2.6616E-02	7.4080E+00	2.8942E+00
Mesolite	-2.2873	5.1606E-03	2.0012E+00	8.8349E-01
Muscovite	-2.2051	6.2359E-03	2.4838E+00	8.7746E-01
Ni2SiO4	-2.1930	6.4125E-03	1.3432E+00	2.7324E-01
Nontronite-H	-4.9990	1.0023E-05	4.1899E-03	5.0117E-03
Pyrolusite	-3.0277	9.3822E-04	8.1565E-02	4.6911E-01
Pyromorphite	-13.4069	3.9181E-14	5.3144E-11	7.5486E-12
Quartz	-0.4795	3.3148E-01	1.9917E+01	7.5207E+00
Rutile	-3.3474	4.4933E-04	3.5892E-02	8.4564E-03
fix CO2(g)	2.3010	2.0000E+02	8.8019E+03	0.0000E+00
fix O2(g)	2.3010	2.0000E+02	6.3997E+03	0.0000E+00

Smectite-di	-2.7098	1.9508E-03		
Beidellite-Ca	-9.3379	4.5927E-10	1.6835E-07	5.9489E-08
Beidellite-K	-9.0577	8.7553E-10	3.2644E-07	1.1706E-07
Beidellite-Mg	-9.2476	5.6544E-10	2.0580E-07	6.9657E-08
Beidellite-Na	-9.2042	6.2486E-10	2.2966E-07	8.1570E-08
Montmor-Ca	-6.4489	3.5575E-07	1.3022E-04	1.7787E-04
Montmor-K	-6.3843	4.1274E-07	1.5368E-04	2.0637E-04
Montmor-Mg	-6.0636	8.6371E-07	3.1391E-04	4.3186E-04
Montmor-Na	-5.8378	1.4528E-06	5.3321E-04	7.2641E-04
Nontronite-Ca	-3.4138	3.8564E-04	1.6362E-01	5.0557E-02
Nontronite-K	-3.2123	6.1333E-04	2.6409E-01	8.2966E-02
Nontronite-Mg	-3.3303	4.6736E-04	1.9708E-01	6.0645E-02
Nontronite-Na	-3.3175	4.8137E-04	2.0471E-01	6.3594E-02

	Mass, grams	Volume, cc
Created	1.523930E+04	1.484584E+01
Destroyed	3.656172E+01	0.000000E+00
Net	1.520274E+04	1.484584E+01

Warning-- these volume totals may be incomplete because
of missing partial molar volume data in the data base

--- Summary of Pure Mineral Saturation States ---

Mineral	Log Q/K	Aff, kcal	State
Alamosite	-3.440	-4.693	
Albite	-1.027	-1.401	
Albite_high	-2.346	-3.201	
Albite_low	-1.027	-1.401	
Analcime	-1.113	-1.518	
Andalusite	-6.082	-8.298	
Anglesite	-4.864	-6.636	
Anhydrite	-3.584	-4.889	
Aragonite	-2.247	-3.066	
BaCrO4	-3.035	-4.141	
BaZrO3	81.945	111.797	ssatd
Barite	-2.734	-3.730	
Bassanite	-4.229	-5.769	
Beidellite-Ca	-2.296	-3.132	
Beidellite-Cs	-4.278	-5.836	
Beidellite-H	-3.163	-4.315	
Beidellite-K	-2.257	-3.079	
Beidellite-Mg	-2.147	-2.929	
Beidellite-Na	-1.931	-2.634	
Boehmite	-0.634	-0.864	
Boric_acid	-4.808	-6.559	
Brucite	-4.566	-6.229	
Bunsenite	-3.301	-4.504	
CaSO4:0.5H2O(beta)	-4.397	-5.998	
CaZrO3	140.790	192.078	ssatd
Calcite	-2.103	-2.869	
CeO2	-2.655	-3.622	
Celadonite	0.000	0.000	satd
Celestite	-7.172	-9.785	
Cerussite	-1.872	-2.554	
Chalcedony	-0.271	-0.370	

Chrysotile	-3.927	-5.358	
Clinochlore-14A	-6.715	-9.161	
Clinoptilolite	-4.869	-6.643	
Clinoptilolite-K	-6.666	-9.094	
Clinoptilolite-Na	-3.500	-4.776	
Clinoptilolite-hy-K	-6.660	-9.087	
Clinoptilolite-hy-Na	-3.498	-4.773	
Coesite	-0.810	-1.105	
Corundum	-4.451	-6.072	
Cristobalite(alpha)	-0.551	-0.751	
Cristobalite(beta)	-0.994	-1.356	
Crocoite	-0.261	-0.356	
Dawsonite	-1.925	-2.627	
Diaspore	-0.230	-0.313	
Diopside	-6.171	-8.419	
Dolomite	-2.349	-3.204	
Dolomite-dis	-3.893	-5.311	
Dolomite-ord	-2.349	-3.204	
Enstatite	-3.594	-4.903	
Epsomite	-5.258	-7.173	
Fe(OH)3	-6.371	-8.692	
Ferrite-Zn	-6.962	-9.499	
Fluorapatite	0.000	0.000	satd
Fluorite	-5.557	-7.582	
GdOHCO3	-6.629	-9.044	
GdPO4:H2O	-2.847	-3.884	
Gibbsite	-0.826	-1.127	
Goethite	-1.250	-1.705	
Gypsum	-3.409	-4.650	
Halite	-6.875	-9.379	
Hematite	-1.539	-2.100	
Heulandite	-4.501	-6.141	
Hexahydrite	-5.493	-7.494	
Ice	-0.139	-0.190	
Illite	-1.275	-1.739	
Jadeite	-2.652	-3.618	
K-Feldspar	0.000	0.000	ssatd
Kalicinite	-6.806	-9.285	
Kalsilite	-3.175	-4.332	
Kaolinite	-0.948	-1.293	
Kieserite	-6.950	-9.482	
Kyanite	-5.812	-7.929	
LaPO4:H2O	-1.584	-2.161	
Lanarkite	-6.015	-8.206	
Lansfordite	-4.424	-6.036	
Laumontite	-4.745	-6.473	
Lawsonite	-5.292	-7.219	
Litharge	-6.411	-8.747	
Magnesite	-1.875	-2.558	
Manganite	-4.459	-6.084	
Massicot	-6.587	-8.986	
Maximum_Microcline	0.000	0.000	satd
Mesolite	0.000	0.000	satd
Mirabilite	-4.205	-5.737	
MnO2(gamma)	-1.518	-2.071	
Monohydrocalcite	-2.937	-4.007	
Montmor-Ca	-1.222	-1.667	
Montmor-Cs	-3.138	-4.280	
Montmor-K	-1.113	-1.518	
Montmor-Mg	-1.004	-1.369	
Montmor-Na	-0.790	-1.078	
Mordenite	-2.868	-3.913	
Muscovite	0.000	0.000	satd

Nahcolite	-4.398	-6.000	
Natrolite	-3.049	-4.160	
Natron	-7.319	-9.986	
NdOHCO3	-6.249	-8.525	
NdPO4:H2O	-2.267	-3.092	
Nepheline	-4.065	-5.545	
Nesquehonite	-4.578	-6.246	
Ni(OH)2	-3.578	-4.882	
Ni2SiO4	0.000	0.000	satd
NiCO3	-5.655	-7.715	
Niter	-7.245	-9.885	
Nontronite-Ca	-0.414	-0.565	
Nontronite-H	-1.281	-1.748	
Nontronite-K	-0.375	-0.512	
Nontronite-Mg	-0.265	-0.362	
Nontronite-Na	-0.049	-0.067	
Okenite	-7.321	-9.989	
Paragonite	-1.924	-2.624	
Paralaurionite	-6.065	-8.274	
Pb3(PO4)2	-5.971	-8.146	
Pb4O(PO4)2	-7.140	-9.741	
PbHPO4	-4.522	-6.170	
Pentahydrite	-5.832	-7.956	
Petalite	-7.045	-9.612	
Phlogopite	-2.518	-3.435	
Plattnerite	-1.775	-2.421	
Pseudowollastonite	-6.939	-9.467	
PuO2	-1.664	-2.271	
PuO2(OH)2	-6.240	-8.513	
Pyrolusite	0.000	0.000	satd
Pyromorphite	0.000	0.000	satd
Pyrophyllite	-2.576	-3.514	
Quartz	0.000	0.000	satd
Rutile	0.000	0.000	satd
Sanidine_high	-1.199	-1.636	
Saponite-Ca	-1.658	-2.262	
Saponite-Cs	-3.641	-4.967	
Saponite-H	-2.525	-3.445	
Saponite-K	-1.619	-2.209	
Saponite-Mg	-1.510	-2.059	
Saponite-Na	-1.294	-1.765	
Scolecite	-2.955	-4.031	
Sellaite	-5.537	-7.554	
SiO2(am)	-1.286	-1.754	
Sillimanite	-6.446	-8.794	
SmPO4:H2O	-2.486	-3.391	
Smectite-low-Fe-Mg	-7.140	-9.741	
Smithsonite	-5.575	-7.606	
SrZrO3	118.796	162.071	ssatd
Starkeyite	-6.219	-8.484	
Stilbite	-1.000	-1.364	
Strontianite	-4.900	-6.685	
Talc	-1.938	-2.644	
Tenorite	-7.040	-9.605	
Thenardite	-5.032	-6.865	
Trevorite	-2.048	-2.793	
Tridymite	-0.172	-0.234	
Whitlockite	-7.240	-9.877	
Witherite	-2.073	-2.828	
Wollastonite	-6.700	-9.141	
Zincite	-5.007	-6.830	
Zn(OH)2(beta)	-5.732	-7.821	
Zn(OH)2(epsilon)	-5.461	-7.450	

```
Zn(OH)2(gamma)                  -5.681      -7.751
fix     CO2(g)                   0.000       0.000   satd
fix     O2(g)                    0.000       0.000   satd
```

--- Summary of Solid Solutions ---

--- Carbonate-Calcite ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Calcite	3.7139E-01	-0.4302	0.0000	-0.4302
Magnesite	6.2789E-01	-0.2021	0.0000	-0.2021
Rhodochrosite	8.0012E-10	-9.0968	0.0000	-9.0968
Siderite	1.7370E-18	-17.7602	0.0000	-17.7602
Smithsonite	1.2527E-04	-3.9022	0.0000	-3.9022
Strontianite	5.9247E-04	-3.2273	0.0000	-3.2273

Mineral	Log Q/K	Aff, kcal	State
Carbonate-Calcite	-1.673	-2.282	
Calcite	-1.673	-2.282	
Magnesite	-1.673	-2.282	
Rhodochrosite	-1.673	-2.282	
Siderite	-1.673	-2.282	
Smithsonite	-1.673	-2.282	
Strontianite	-1.673	-2.282	

--- Clinoptilolite-hy-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-hy-Ca	2.8363E-05	-4.5472	0.0000	-4.5472
Clinoptilolite-hy-Cs	1.2212E-24	-23.9132	0.0000	-23.9132
Clinoptilolite-hy-K	6.8793E-04	-3.1625	0.0000	-3.1625
Clinoptilolite-hy-Na	9.9928E-01	-0.0003	0.0000	-0.0003
Clinoptilolite-hy-Sr	9.8488E-14	-13.0066	0.0000	-13.0066

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-hy-ss	-3.498	-4.772	
Clinoptilolite-hy-Ca	-3.498	-4.772	
Clinoptilolite-hy-Cs	-3.498	-4.772	
Clinoptilolite-hy-K	-3.498	-4.772	
Clinoptilolite-hy-Na	-3.498	-4.772	
Clinoptilolite-hy-Sr	-3.498	-4.772	

--- Clinoptilolite-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity

Clinoptilolite-Ca	4.1481E-02	-1.3821	-3.4001	-4.7822
Clinoptilolite-Cs	1.0452E-07	-6.9808	-17.1727	-24.1535
Clinoptilolite-K	1.0395E-01	-0.9832	-2.4186	-3.4017
Clinoptilolite-NH4	1.0003E-64	-63.9999	-157.4397	-221.4396
Clinoptilolite-Na	8.5441E-01	-0.0683	-0.1681	-0.2364
Clinoptilolite-Sr	1.4907E-04	-3.8266	-9.4134	-13.2400

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-ss	-3.264	-4.453	
Clinoptilolite-Ca	-3.264	-4.453	
Clinoptilolite-Cs	-3.264	-4.453	
Clinoptilolite-K	-3.264	-4.453	
Clinoptilolite-NH4	-3.264	-4.453	
Clinoptilolite-Na	-3.264	-4.453	
Clinoptilolite-Sr	-3.264	-4.453	

--- Saponite-tri ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Saponite-Ca	5.5933E-02	-1.2523	0.8391	-0.4133
Saponite-H	1.3194E-04	-3.8796	2.5993	-1.2803
Saponite-K	7.3412E-02	-1.1342	0.7599	-0.3743
Saponite-Mg	1.5790E-01	-0.8016	0.5371	-0.2645
Saponite-Na	7.1262E-01	-0.1471	0.0986	-0.0486

Mineral	Log Q/K	Aff, kcal	State
Saponite-tri	-1.245	-1.699	
Saponite-Ca	-1.245	-1.699	
Saponite-H	-1.245	-1.699	
Saponite-K	-1.245	-1.699	
Saponite-Mg	-1.245	-1.699	
Saponite-Na	-1.245	-1.699	

--- Smectite-di ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Beidellite-Ca	1.1046E-07	-6.9568	4.6611	-2.2957
Beidellite-K	1.4508E-07	-6.8384	4.5817	-2.2567
Beidellite-Mg	3.1182E-07	-6.5061	4.3591	-2.1470
Beidellite-Na	1.4073E-06	-5.8516	3.9206	-1.9310
Montmor-Ca	1.9830E-04	-3.7027	2.4808	-1.2219
Montmor-K	4.2535E-04	-3.3712	2.2587	-1.1125
Montmor-Mg	9.0978E-04	-3.0411	2.0375	-1.0036
Montmor-Na	4.0237E-03	-2.3954	1.6049	-0.7905
Nontronite-Ca	5.5620E-02	-1.2548	0.8407	-0.4141
Nontronite-K	7.3053E-02	-1.1364	0.7614	-0.3750
Nontronite-Mg	1.5713E-01	-0.8038	0.5385	-0.2652
Nontronite-Na	7.0864E-01	-0.1496	0.1002	-0.0494

Mineral	Log Q/K	Aff, kcal	State
Smectite-di	0.000	0.000	satd
Beidellite-Ca	0.000	0.000	satd
Beidellite-K	0.000	0.000	satd
Beidellite-Mg	0.000	0.000	satd
Beidellite-Na	0.000	0.000	satd
Montmor-Ca	0.000	0.000	satd
Montmor-K	0.000	0.000	satd
Montmor-Mg	0.000	0.000	satd
Montmor-Na	0.000	0.000	satd
Nontronite-Ca	0.000	0.000	satd
Nontronite-K	0.000	0.000	satd
Nontronite-Mg	0.000	0.000	satd
Nontronite-Na	0.000	0.000	satd

--- Lanthanide hydroxide ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
La(OH)3	5.3902E-05	-4.2684	0.0000	-4.2684
Ce(OH)3	5.4797E-15	-14.2612	0.0000	-14.2612
Nd(OH)3(c)	5.6146E-01	-0.2507	0.0000	-0.2507
Gd(OH)3	3.7082E-01	-0.4308	0.0000	-0.4308
Sm(OH)3	6.7662E-02	-1.1697	0.0000	-1.1697

Mineral	Log Q/K	Aff, kcal	State
Lanthanide hydroxide	-7.674	-10.469	
La(OH)3	-7.674	-10.469	
Ce(OH)3	-7.674	-10.469	
Nd(OH)3(c)	-7.674	-10.469	
Gd(OH)3	-7.674	-10.469	
Sm(OH)3	-7.674	-10.469	

--- Rhabdophane-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaPO4:H2O	7.2046E-01	-0.1424	0.0000	-0.1424
CePO4:H2O	2.3161E-11	-10.6352	0.0000	-10.6352
NdPO4:H2O	1.4973E-01	-0.8247	0.0000	-0.8247
GdPO4:H2O	3.9370E-02	-1.4048	0.0000	-1.4048
SmPO4:H2O	9.0437E-02	-1.0437	0.0000	-1.0437

Mineral	Log Q/K	Aff, kcal	State
Rhabdophane-ss	-1.442	-1.967	
LaPO4:H2O	-1.442	-1.967	
CePO4:H2O	-1.442	-1.967	
NdPO4:H2O	-1.442	-1.967	
GdPO4:H2O	-1.442	-1.967	

SmPO4:H2O	-1.442	-1.967

--- Lanthanide fluoride ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaF3:0.5H2O	7.8347E-01	-0.1060	0.0000	-0.1060
CeF3:0.5H2O	3.9918E-11	-10.3988	0.0000	-10.3988
NdF3:0.5H2O	2.0499E-01	-0.6883	0.0000	-0.6883
GdF3:0.5H2O	1.7044E-03	-2.7684	0.0000	-2.7684
SmF3:0.5H2O	9.8347E-03	-2.0072	0.0000	-2.0072

Mineral	Log Q/K	Aff, kcal	State
Lanthanide fluoride	-12.787	-17.446	
LaF3:0.5H2O	-12.787	-17.446	
CeF3:0.5H2O	-12.787	-17.446	
NdF3:0.5H2O	-12.787	-17.446	
GdF3:0.5H2O	-12.787	-17.446	
SmF3:0.5H2O	-12.787	-17.446	

--- Summary of Gases ---

Gas	Fugacity	Log fugacity
Al(g)	9.7054-192	-191.0130
B(g)	7.4765-204	-203.1263
BF3(g)	1.0474E-42	-41.9799
C(g)	3.0917-190	-189.5098
CH4(g)	3.5224-146	-145.4532
CO(g)	6.0395E-49	-48.2190
CO2(g)	3.1623E-04	-3.5000
Ca(g)	5.8855-153	-152.2302
Chlorine	1.0582E-29	-28.9754
Cs(g)	6.4770E-83	-82.1886
Cu(g)	5.5225E-82	-81.2579
Fluorine	6.8913E-85	-84.1617
H2(g)	6.1090E-42	-41.2140
H2O(g)	2.5952E-02	-1.5858
H2S(g)	7.2648-143	-142.1388
HCl(g)	3.9885E-19	-18.3992
HF(g)	3.6327E-15	-14.4398
K(g)	1.2717E-76	-75.8956
Li(g)	1.4379E-96	-95.8423
Mg(g)	1.8669-129	-128.7289
Nitrogen	7.9548E-21	-20.0994
NH3(g)	1.0268E-69	-68.9885
NO(g)	2.8084E-26	-25.5515
NO2(g)	1.9203E-20	-19.7166
Na(g)	6.8302E-74	-73.1656
O2(g)	2.0999E-01	-0.6778
Pb(g)	2.5805E-68	-67.5883
S2(g)	3.1532-228	-227.5012
SO2(g)	1.2875E-55	-54.8902
Si(g)	4.2257-221	-220.3741

```
SiF4(g)                    7.6913E-43    -42.1140
Ti(g)                      3.8019-231   -230.4200
TiCl4(g)                   8.4941E-87    -86.0709
U(g)                       4.0816-299   -298.3892
U2Cl10(g)                  1.7336-253   -252.7611
U2Cl8(g)                   5.0791-255   -254.2942
U2F10(g)                   9.0168-171   -170.0449
UCl(g)                     1.4515-255   -254.8382
UCl2(g)                    1.5441-210   -209.8113
UCl3(g)                    3.5980-163   -162.4439
UCl4(g)                    4.5399-133   -132.3430
UCl5(g)                    2.9473-140   -139.5306
UCl6(g)                    3.5547-142   -141.4492
UF(g)                      2.8095-241   -240.5514
UF2(g)                     1.4343-201   -200.8434
UF3(g)                     1.8019-155   -154.7443
UF4(g)                     3.3414-106   -105.4761
UF5(g)                     2.8381E-98    -97.5470
UF6(g)                     2.3737-104   -103.6246
UO(g)                      3.2235-214   -213.4917
UO2(g)                     5.9721-130   -129.2239
UO2Cl2(g)                  2.7592E-78    -77.5592
UO2F2(g)                   1.8592E-67    -66.7307
UO3(g)                     4.3927E-77    -76.3573
UOF4(g)                    9.9570E-84    -83.0019
Zn(g)                      3.7695E-78    -77.4237



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--- shifting e.s. solid(s) to the p.r.s. (shftz) ---

      shifted -- Celadonite
              - old mass=  2.98220E-05, new mass=  8.00000E-07
  not shifted -- Fluorapatite
              - mass=  3.01802E-07
      shifted -- Maximum_Microcline
              - old mass=  1.93596E-04, new mass=  1.93596E-06
      shifted -- Mesolite
              - old mass=  5.15255E-05, new mass=  8.00000E-07
      shifted -- Muscovite
              - old mass=  1.07847E-04, new mass=  1.07847E-06
      shifted -- Ni2SiO4
              - old mass=  8.13809E-07, new mass=  8.00000E-07
      shifted -- Pyrolusite
              - old mass=  3.03768E-06, new mass=  8.00000E-07
  not shifted -- Pyromorphite
              - mass=  3.91811E-14
      shifted -- Quartz
              - old mass=  2.11450E-03, new mass=  2.11450E-05
      shifted -- Rutile
              - old mass=  3.71821E-06, new mass=  8.00000E-07
      shifted -- Smectite-di
              - old mass=  1.54291E-05, new mass=  8.00000E-07

Stepping to zi=  1.7760E+00, delzi=  1.0000E-09, nord= 0
  time =  1.7130E+04 d, dltime =  9.6451E-06 d
Steps completed =   413, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Pyromorphite            ) =    -13.4069

Stepping to zi=  1.7760E+00, delzi=  1.0000E-09, nord= 0
```

```
  time =  1.7130E+04 d, dltime =  9.6451E-06 d
Steps completed =   414, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Pyromorphite            ) =    -13.4069

Stepping to zi=  1.7760E+00, delzi=  1.0000E-09, nord= 0
  time =  1.7130E+04 d, dltime =  9.6451E-06 d
Steps completed =   415, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Pyromorphite            ) =    -13.4069

Stepping to zi=  1.7760E+00, delzi=  1.0000E-08, nord= 1
  time =  1.7130E+04 d, dltime =  9.6451E-05 d
Steps completed =   416, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Pyromorphite            ) =    -13.4068

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                    Reaction progress        =  1.77600750879485E+00
                    Log of reaction progress =       0.2494448



                    Time =  1.480E+09 sec
                         =  1.713E+04 days
                         =  4.690E+01 years

                    Log sec =        9.170
                    Log days =       4.234
                    Log years =      1.671

                    Temperature    =     25.000 degrees C
                    total pressure =      1.013 bars


Flow-through system print following a discontinuity


     --- Summary of Instantaneously Precipitated Solid Phases ---
                 (defined by derivatives)

     --- Theoretical Rock Composition ---
                  g/kg

      O      4.977484E+01
      Al     6.947023E+00
      Ca     4.621518E-01
      Cl     1.070238E-07
      Fe     6.739631E-01
      H      2.269293E-01
      K      5.015491E+00
      Mg     2.584413E-01
      Mn     5.330328E-02
      Na     3.376055E-01
      Ni     6.128692E-04
      Pb     3.127453E-06
      Si     3.699906E+01
      Ti     6.058340E-02

      --- Oxide Percentages ---

   Oxide   Theoretical rock
```

Total = 0.0000

Phase/end-member	d mol/d zi	d grams/d zi	d vol (cc)/d zi
Celadonite	2.0924E-03	8.3013E-01	3.2872E-01
Fluorapatite	-5.6241E-05	-2.8362E-02	-2.8120E-02
Maximum_Microcline	1.4703E-02	4.0922E+00	1.5988E+00
Mesolite	3.9206E-03	1.5203E+00	6.7120E-01
Muscovite	8.8251E-03	3.5151E+00	1.2418E+00
Ni2SiO4	1.0440E-06	2.1868E-04	4.4484E-05
Pyrolusite	1.9400E-04	1.6866E-02	9.7000E-02
Pyromorphite	6.0360E-10	8.1871E-07	1.1629E-07
Quartz	1.6820E-01	1.0106E+01	3.8161E+00
Rutile	2.5300E-04	2.0209E-02	4.7615E-03
fix CO2(g)	-1.2960E-02	-5.7038E-01	0.0000E+00
fix O2(g)	-7.1054E-04	-2.2737E-02	0.0000E+00
Smectite-di			
Beidellite-Ca	1.3353E-10	4.8947E-08	1.7296E-08
Beidellite-K	1.7602E-10	6.5629E-08	2.3534E-08
Beidellite-Mg	3.7833E-10	1.3770E-07	4.6606E-08
Beidellite-Na	1.7194E-09	6.3196E-07	2.2446E-07
Montmor-Ca	2.3972E-07	8.7747E-05	1.1986E-04
Montmor-K	5.1607E-07	1.9215E-04	2.5804E-04
Montmor-Mg	1.1038E-06	4.0117E-04	5.5191E-04
Montmor-Na	4.9162E-06	1.8043E-03	2.4581E-03
Nontronite-Ca	6.6912E-05	2.8390E-02	8.7722E-03
Nontronite-K	8.8205E-05	3.7980E-02	1.1932E-02
Nontronite-Mg	1.8972E-04	8.0002E-02	2.4618E-02
Nontronite-Na	8.6167E-04	3.6644E-01	1.1383E-01

--- Summary of Solid Phases (E.S.+P.R.S.) ---

Phase/End-member	Log moles	Moles	Mass, g	Volume, cc
Alunite	-2.5559	2.7801E-03	1.1516E+00	8.1624E-01
Celadonite	-2.6606	2.1848E-03	8.6677E-01	3.4322E-01
Diaspore	-1.6079	2.4665E-02	1.4796E+00	4.3804E-01
Fluorapatite	-3.9868	1.0309E-04	5.1986E-02	5.1543E-02
Hematite	-3.7144	1.9300E-04	3.0820E-02	5.8428E-03
Maximum_Microcline	-1.5749	2.6616E-02	7.4080E+00	2.8942E+00
Mesolite	-2.2873	5.1606E-03	2.0012E+00	8.8349E-01
Muscovite	-2.2051	6.2359E-03	2.4838E+00	8.7746E-01
Ni2SiO4	-2.1930	6.4125E-03	1.3432E+00	2.7324E-01
Nontronite-H	-4.9990	1.0023E-05	4.1899E-03	5.0117E-03
Pyrolusite	-3.0277	9.3822E-04	8.1565E-02	4.6911E-01
Pyromorphite	-13.4068	3.9189E-14	5.3155E-11	7.5501E-12
Quartz	-0.4795	3.3148E-01	1.9917E+01	7.5207E+00
Rutile	-3.3474	4.4933E-04	3.5892E-02	8.4564E-03
fix CO2(g)	2.3010	2.0000E+02	8.8019E+03	0.0000E+00
fix O2(g)	2.3010	2.0000E+02	6.3997E+03	0.0000E+00
Smectite-di	-2.7098	1.9508E-03		
Beidellite-Ca	-9.3379	4.5927E-10	1.6835E-07	5.9489E-08
Beidellite-K	-9.0577	8.7553E-10	3.2644E-07	1.1706E-07
Beidellite-Mg	-9.2476	5.6544E-10	2.0580E-07	6.9657E-08
Beidellite-Na	-9.2042	6.2486E-10	2.2966E-07	8.1570E-08
Montmor-Ca	-6.4489	3.5575E-07	1.3022E-04	1.7787E-04
Montmor-K	-6.3843	4.1274E-07	1.5368E-04	2.0637E-04
Montmor-Mg	-6.0636	8.6371E-07	3.1391E-04	4.3186E-04
Montmor-Na	-5.8378	1.4528E-06	5.3321E-04	7.2641E-04
Nontronite-Ca	-3.4138	3.8564E-04	1.6362E-01	5.0557E-02

```
  Nontronite-K              -3.2123   6.1333E-04   2.6409E-01   8.2966E-02
  Nontronite-Mg             -3.3303   4.6736E-04   1.9708E-01   6.0645E-02
  Nontronite-Na             -3.3175   4.8137E-04   2.0471E-01   6.3594E-02


                          Mass, grams        Volume, cc

          Created         1.523930E+04       1.484584E+01
          Destroyed       0.000000E+00       0.000000E+00
          Net             1.523930E+04       1.484584E+01

         Warning-- these volume totals may be incomplete because
         of missing partial molar volume data in the data base




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Stepping to zi=  1.7760E+00, delzi=  1.0000E-07, nord= 2
  time =  1.7130E+04 d, dltime =  9.6451E-04 d
Steps completed =   417, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Pyromorphite            ) =    -13.4062

Stepping to zi=  1.7760E+00, delzi=  1.0000E-06, nord= 2
  time =  1.7130E+04 d, dltime =  9.6451E-03 d
Steps completed =   418, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Pyromorphite            ) =    -13.3995

Stepping to zi=  1.7760E+00, delzi=  1.0000E-05, nord= 2
  time =  1.7130E+04 d, dltime =  9.6451E-02 d
Steps completed =   419, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Pyromorphite            ) =    -13.3383

Stepping to zi=  1.7761E+00, delzi=  1.0000E-04, nord= 3
  time =  1.7131E+04 d, dltime =  9.6451E-01 d
Steps completed =   420, iter =  9, ncorr = 0
Most rapidly changing is zvclg1(Pyromorphite            ) =    -12.9742

Stepping to zi=  1.7764E+00, delzi=  2.3852E-04, nord= 3
  time =  1.7133E+04 d, dltime =  2.3005E+00 d
Steps completed =   421, iter =  8, ncorr = 0
Most rapidly changing is zvclg1(Pyromorphite            ) =    -12.6039

Stepping to zi=  1.7768E+00, delzi=  4.7704E-04, nord= 3
  time =  1.7138E+04 d, dltime =  4.6011E+00 d
Steps completed =   422, iter =  8, ncorr = 0
Most rapidly changing is zvclg1(Pyromorphite            ) =    -12.2749

Stepping to zi=  1.7778E+00, delzi=  9.5408E-04, nord= 3
  time =  1.7147E+04 d, dltime =  9.2021E+00 d
Steps completed =   423, iter =  7, ncorr = 0
Most rapidly changing is zvclg1(Pyromorphite            ) =    -11.9662

Stepping to zi=  1.7797E+00, delzi=  1.9082E-03, nord= 4
  time =  1.7165E+04 d, dltime =  1.8404E+01 d
Steps completed =   424, iter =  8, ncorr = 0
Most rapidly changing is zvclg1(Fluorapatite            ) =     -7.1133

Stepping to zi=  1.7835E+00, delzi=  3.8163E-03, nord= 5
  time =  1.7202E+04 d, dltime =  3.6808E+01 d
```

```
--- Iteration has gone sour (iter=  16) ---
     The phase to be dropped is Fluorapatite              (  222)


  Attempted species assemblage no.   2

            1      1  H2O
            2      3  Al+++
            3      7  B(OH)3(aq)
            4      8  Ba++
            5     11  Ca++
            6     13  Ce+++
            7     14  Cl-
            8     16  CrO4--
            9     17  Cs+
           10     18  Cu++
           11     22  F-
           12     23  Fe++
           13     25  Gd+++
           14     26  H+
           15     28  HCO3-
           16     29  HPO4--
           17     35  K+
           18     37  La+++
           19     38  Li+
           20     40  Mg++
           21     41  Mn++
           22     42  MoO4--
           23     43  NO3-
           24     44  Na+
           25     45  Nd+++
           26     47  Ni++
           27     49  Pb++
           28     52  Pu++++
           29     58  SO4--
           30     62  SiO2(aq)
           31     63  Sm+++
           32     65  Sr++
           33     69  Ti(OH)4(aq)
           34     72  UO2++
           35     73  VO++
           36     78  Zn++
           37     79  Zr(OH)2++
           38     80  O2(g)
           39    120  Celadonite
           40    323  Maximum_Microcline
           41    328  Mesolite
           42    368  Muscovite
           43    405  Ni2SiO4
           44    470  Pyrolusite
           45    471  Pyromorphite
           46    475  Quartz
           47    482  Rutile
           48    689  fix     CO2(g)
           49    690  fix     O2(g)
           50      1  SmectiteBeidellite-Ca
           51      2  SmectiteBeidellite-K
           52      3  SmectiteBeidellite-Mg
           53      4  SmectiteBeidellite-Na
           54      5  SmectiteMontmor-Ca
           55      6  SmectiteMontmor-K
           56      7  SmectiteMontmor-Mg
           57      8  SmectiteMontmor-Na
```

```
           58      9  SmectiteNontronite-Ca
           59     10  SmectiteNontronite-K
           60     11  SmectiteNontronite-Mg
           61     12  SmectiteNontronite-Na

Steps completed =   425, iter = 16, ncorr = 0

- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -


                    Reaction progress        =  1.78351269118216E+00
                    Log of reaction progress =       0.2512762



                    Time =  1.486E+09 sec
                         =  1.720E+04 days
                         =  4.710E+01 years

                    Log sec =        9.172
                    Log days =       4.236
                    Log years =      1.673

                    Temperature    =     25.000 degrees C
                    total pressure =      1.013 bars


Change in the product phase assemblage


                              --- Reactant Summary ---


    Reactant                   Moles     Delta moles    Mass, g    Delta Mass, g

 Tuff                       9.8216E+01   1.7835E+00   2.0219E+03   3.6716E+01


               Current total mass =  2.02193E+03 grams
               Delta total mass   =  3.67162E+01 grams
               Delta total volume =      0.00000 cc


    Reactant                Rel. Rate      Rate         Rate
                             mol/mol       mol/s      mol/s/cm2

 Tuff                       1.0000E+00   1.2000E-09   2.5000E-15


    Reactant                   Affinity   Surface Area
                               kcal/mol     mol/s/cm2

 Tuff                        999.00000   4.8000E+05


    Reactant                Rate Constants, mol/s/cm2

 Tuff
                   Forward    2.5000E-15


         Affinity of the overall irreversible reaction=     0.000 kcal
```

Contributions from irreversible reactions
with no thermodynamic data are not included

--- Element Totals for the Aqueous Solution ---

Element	mg/kg soln.	Molality	Moles
O	8.865824E+05	5.559315E+01	5.554150E+01
Al	8.072530E-04	3.001572E-08	2.998784E-08
B	1.336180E-01	1.239952E-05	1.238800E-05
Ba	1.370105E-05	1.000930E-10	1.000000E-10
Ca	2.534916E-01	6.345465E-06	6.339569E-06
Ce	1.397919E-19	1.000929E-24	9.999993E-25
Cl	7.123716E+00	2.015873E-04	2.014000E-04
Cr	2.999384E+02	5.787184E-03	5.781806E-03
Cs	1.325991E-05	1.000930E-10	1.000000E-10
Cu	6.656951E-10	1.050977E-14	1.050000E-14
F	2.268180E-01	1.197750E-05	1.196637E-05
Fe	1.144737E-08	2.056419E-13	2.054509E-13
Gd	1.568875E-09	1.000930E-14	9.999998E-15
H	1.115382E+05	1.110184E+02	1.109152E+02
C	1.641242E+01	1.370879E-03	1.369606E-03
P	2.017774E-01	6.535584E-06	6.529511E-06
K	1.454784E+01	3.732903E-04	3.729434E-04
La	1.385853E-09	1.000930E-14	9.999998E-15
Li	6.925001E-07	1.000930E-10	1.000000E-10
Mg	9.007643E-01	3.718103E-05	3.714648E-05
Mn	1.506402E-11	2.750892E-16	2.748336E-16
Mo	2.181592E+02	2.281286E-03	2.279166E-03
N	1.984373E+00	1.421321E-04	1.420000E-04
Na	9.383382E+02	4.094781E-02	4.090976E-02
Nd	1.439075E-09	1.000930E-14	9.999998E-15
Ni	5.166506E-03	8.831587E-08	8.823381E-08
Pb	1.737275E-05	8.411720E-11	8.403904E-11
Pu	2.434376E-09	1.000930E-14	9.999999E-15
S	3.734132E+02	1.168290E-02	1.167205E-02
Si	2.982937E+00	1.065535E-04	1.064545E-04
Sm	1.500134E-09	1.000930E-14	9.999998E-15
Sr	8.741804E-06	1.000930E-10	1.000000E-10
Ti	1.078169E-05	2.259116E-10	2.257017E-10
U	2.374803E-09	1.000930E-14	1.000000E-14
V	4.772901E+00	9.399756E-05	9.391022E-05
Zn	6.523928E-06	1.000930E-10	1.000000E-10
Zr	9.101382E-16	1.000931E-20	1.000001E-20

Single ion activities and activity coefficients are here defined
with respect to the modified NBS pH scale

	pH	Eh	pe
modified NBS pH scale	8.3386	0.7258	1.2268E+01
rational pH scale	8.2621	0.7303	1.2345E+01

pHCl = 12.1269

Oxygen fugacity = 2.09991E-01

Log oxygen fugacity = -0.67780

Activity of water = 0.99901
Log activity of water = -0.00043

Ionic strength = 5.881140E-02 molal
Sum of molalities = 0.0620801931120
Osmotic coefficient = 0.88688

Mass of solution = 1.002310 kg
Mass of solutes = 0.003239 kg
Conc. of solutes = 0.323197 per cent (w/w)

Moles of solvent H2O = 5.54569E+01
Mass of solvent H2O = 9.99071E-01 kg

Species	Molality	Log molality	Log gamma	Log activity
Na+	3.9729E-02	-1.4009	-0.0983	-1.4992
SO4--	1.0491E-02	-1.9792	-0.3602	-2.3394
CrO4--	5.7434E-03	-2.2408	-0.3602	-2.6011
MoO4--	2.2813E-03	-2.6418	-0.3492	-2.9910
HCO3-	1.2866E-03	-2.8906	-0.0849	-2.9755
NaSO4-	1.1647E-03	-2.9338	-0.0849	-3.0187
K+	3.6130E-04	-3.4421	-0.1044	-3.5465
O2(aq)	2.6166E-04	-3.5823	0.0062	-3.5761
Cl-	2.0072E-04	-3.6974	-0.0909	-3.7883
NO3-	1.4213E-04	-3.8473	-0.0909	-3.9383
SiO2(aq)	1.0016E-04	-3.9993	0.0000	-3.9993
VO3OH--	8.1257E-05	-4.0901	-0.3602	-4.4504
NaHCO3(aq)	4.7797E-05	-4.3206	0.0000	-4.3206
HCrO4-	4.3614E-05	-4.3604	-0.0849	-4.4453
CO3--	2.4185E-05	-4.6165	-0.3492	-4.9657
Mg++	2.3428E-05	-4.6303	-0.3139	-4.9442
MgSO4(aq)	1.3430E-05	-4.8719	0.0000	-4.8719
KSO4-	1.1982E-05	-4.9215	-0.0849	-5.0063
F-	1.1943E-05	-4.9229	-0.0878	-5.0107
B(OH)3(aq)	1.0703E-05	-4.9705	0.0000	-4.9705
CO2(aq)	1.0591E-05	-4.9751	0.0062	-4.9689
HVO4--	8.7531E-06	-5.0578	-0.3602	-5.4181
HPO4--	5.5043E-06	-5.2593	-0.3602	-5.6195
Ca++	4.9398E-06	-5.3063	-0.3466	-5.6529
NaHSiO3(aq)	3.4325E-06	-5.4644	0.0000	-5.4644
HSiO3-	2.9596E-06	-5.5288	-0.0849	-5.6137
OH-	2.6969E-06	-5.5691	-0.0878	-5.6570
H2VO4-	2.4616E-06	-5.6088	-0.0849	-5.6937
BO2-	1.6162E-06	-5.7915	-0.0849	-5.8764
VO2(OH)2-	1.5255E-06	-5.8166	-0.0849	-5.9015
NaCO3-	1.3626E-06	-5.8656	-0.0849	-5.9505
CaSO4(aq)	1.3146E-06	-5.8812	0.0000	-5.8812
NaCl(aq)	8.6181E-07	-6.0646	0.0000	-6.0646
NaHPO4-	7.6931E-07	-6.1139	-0.0849	-6.1988
H2PO4-	2.1486E-07	-6.6678	-0.0849	-6.7527
MgHCO3+	1.6383E-07	-6.7856	-0.0983	-6.8839
MgCO3(aq)	1.1723E-07	-6.9310	0.0000	-6.9310
Cr2O7--	1.0013E-07	-6.9994	-0.3602	-7.3597
NaB(OH)4(aq)	7.8418E-08	-7.1056	0.0000	-7.1056
Ni++	6.9234E-08	-7.1597	-0.3466	-7.5063
CaCO3(aq)	5.1114E-08	-7.2915	0.0000	-7.2915
CaHCO3+	3.2863E-08	-7.4833	-0.0983	-7.5816

NaF(aq)	3.1078E-08	-7.5075	0.0000	-7.5075
AlO2-	2.9561E-08	-7.5293	-0.0849	-7.6142
MgHPO4(aq)	2.2195E-08	-7.6537	0.0000	-7.6537
NiSO4(aq)	1.9055E-08	-7.7200	0.0000	-7.7200
MgPO4-	1.3394E-08	-7.8731	-0.0849	-7.9580
NaOH(aq)	1.1069E-08	-7.9559	0.0000	-7.9559
H+	5.4694E-09	-8.2621	-0.0765	-8.3386
KHPO4-	4.9982E-09	-8.3012	-0.0849	-8.3861
MgF+	3.1322E-09	-8.5042	-0.0983	-8.6025
CaHPO4(aq)	2.9347E-09	-8.5324	0.0000	-8.5324
HSO4-	2.4322E-09	-8.6140	-0.0849	-8.6989
CaPO4-	1.9464E-09	-8.7108	-0.0849	-8.7957
MgCl+	1.7018E-09	-8.7691	-0.0983	-8.8674
PO4---	1.6630E-09	-8.7791	-0.8237	-9.6028
CaNO3+	1.6114E-09	-8.7928	-0.0983	-8.8911
MgB(OH)4+	1.4966E-09	-8.8249	-0.0983	-8.9232
KCl(aq)	1.4809E-09	-8.8295	0.0000	-8.8295
HAlO2(aq)	3.1452E-10	-9.5024	0.0000	-9.5024
VO4---	2.8305E-10	-9.5481	-0.8237	-10.3718
CaB(OH)4+	2.4599E-10	-9.6091	-0.0983	-9.7074
Ti(OH)4(aq)	2.2591E-10	-9.6461	0.0000	-9.6461
KOH(aq)	2.1459E-10	-9.6684	0.0000	-9.6684
NaAlO2(aq)	1.3909E-10	-9.8567	0.0000	-9.8567
CaF+	1.3076E-10	-9.8835	-0.0983	-9.9819
H2SiO4--	1.1947E-10	-9.9228	-0.3602	-10.2830
Cs+	1.0008E-10	-9.9996	-0.1077	-10.1074

--- Summary of Instantaneously Precipitated Solid Phases ---
(defined by derivatives)

--- Theoretical Rock Composition ---
g/kg

O	4.978208E+01
Al	6.967703E+00
Ca	4.519764E-01
Cl	8.227784E-08
Fe	6.759696E-01
H	2.293943E-01
K	4.948692E+00
Mg	2.414082E-01
Mn	5.346197E-02
Na	3.455377E-01
Ni	5.121235E-04
Pb	2.404326E-06
Si	3.710880E+01
Ti	6.076376E-02

--- Oxide Percentages ---

Oxide Theoretical rock

Total = 0.0000

Phase/end-member	d mol/d zi	d grams/d zi	d vol (cc)/d zi
Celadonite	1.9494E-03	7.7340E-01	3.0625E-01
Maximum_Microcline	-7.6328E-05	-2.1244E-02	-8.2999E-03
Mesolite	1.4294E-02	5.5429E+00	2.4471E+00
Muscovite	3.9890E-03	1.5888E+00	5.6129E-01

Ni2SiO4	8.9632E-03	1.8775E+00	3.8192E-01
Pyrolusite	8.6978E-07	7.5616E-05	4.3489E-04
Pyromorphite	1.9400E-04	2.6314E-01	3.7376E-02
Quartz	4.6266E-10	2.7799E-08	1.0497E-08
Rutile	1.6937E-01	1.3529E+01	3.1876E+00
fix CO2(g)	2.5300E-04	1.1134E-02	0.0000E+00
fix O2(g)	-1.3668E-02	-4.3735E-01	0.0000E+00
Smectite-di			
Beidellite-Ca	-7.0546E-04	-2.5859E-01	-9.1378E-02
Beidellite-K	1.2319E-10	4.5930E-08	1.6470E-08
Beidellite-Mg	1.7613E-10	6.4106E-08	2.1698E-08
Beidellite-Na	3.7858E-10	1.3914E-07	4.9419E-08
Montmor-Ca	2.0046E-09	7.3379E-07	1.0023E-06
Montmor-K	2.2115E-07	8.2341E-05	1.1057E-04
Montmor-Mg	5.1641E-07	1.8769E-04	2.5821E-04
Montmor-Na	1.1046E-06	4.0539E-04	5.5228E-04
Nontronite-Ca	5.7317E-06	2.4319E-03	7.5143E-04
Nontronite-K	5.5043E-05	2.3701E-02	7.4456E-03
Nontronite-Mg	7.8929E-05	3.3284E-02	1.0242E-02
Nontronite-Na	1.6977E-04	7.2196E-02	2.2428E-02

--- Summary of Solid Phases (E.S.+P.R.S.) ---

Phase/End-member	Log moles	Moles	Mass, g	Volume, cc
Alunite	-2.5559	2.7801E-03	1.1516E+00	8.1624E-01
Celadonite	-2.6576	2.2000E-03	8.7282E-01	3.4562E-01
Diaspore	-1.6079	2.4665E-02	1.4796E+00	4.3804E-01
Fluorapatite	-3.9881	1.0278E-04	5.1834E-02	5.1392E-02
Hematite	-3.7144	1.9300E-04	3.0820E-02	5.8428E-03
Maximum_Microcline	-1.5731	2.6723E-02	7.4380E+00	2.9059E+00
Mesolite	-2.2849	5.1888E-03	2.0121E+00	8.8832E-01
Muscovite	-2.2004	6.3039E-03	2.5109E+00	8.8703E-01
Ni2SiO4	-2.1930	6.4125E-03	1.3432E+00	2.7324E-01
Nontronite-H	-4.9990	1.0023E-05	4.1899E-03	5.0117E-03
Pyrolusite	-3.0270	9.3967E-04	8.1692E-02	4.6984E-01
Pyromorphite	-11.4959	3.1922E-12	4.3298E-09	6.1501E-10
Quartz	-0.4779	3.3275E-01	1.9993E+01	7.5495E+00
Rutile	-3.3456	4.5123E-04	3.6044E-02	8.4921E-03
fix CO2(g)	2.3010	2.0000E+02	8.8019E+03	0.0000E+00
fix O2(g)	2.3010	2.0000E+02	6.3997E+03	0.0000E+00
Smectite-di	-2.7078	1.9599E-03		
Beidellite-Ca	-9.3370	4.6023E-10	1.6870E-07	5.9614E-08
Beidellite-K	-9.0571	8.7685E-10	3.2694E-07	1.1724E-07
Beidellite-Mg	-9.2454	5.6828E-10	2.0683E-07	7.0006E-08
Beidellite-Na	-9.1946	6.3884E-10	2.3480E-07	8.3395E-08
Montmor-Ca	-6.4468	3.5747E-07	1.3085E-04	1.7874E-04
Montmor-K	-6.3803	4.1661E-07	1.5512E-04	2.0831E-04
Montmor-Mg	-6.0595	8.7200E-07	3.1692E-04	4.3600E-04
Montmor-Na	-5.8260	1.4928E-06	5.4788E-04	7.4640E-04
Nontronite-Ca	-3.4133	3.8610E-04	1.6382E-01	5.0617E-02
Nontronite-K	-3.2119	6.1396E-04	2.6436E-01	8.3051E-02
Nontronite-Mg	-3.3291	4.6871E-04	1.9765E-01	6.0820E-02
Nontronite-Na	-3.3116	4.8800E-04	2.0753E-01	6.4470E-02

	Mass, grams	Volume, cc
Created	1.523945E+04	1.490501E+01
Destroyed	3.671622E+01	0.000000E+00
Net	1.520273E+04	1.490501E+01

Warning-- these volume totals may be incomplete because
of missing partial molar volume data in the data base

--- Summary of Pure Mineral Saturation States ---

Mineral	Log Q/K	Aff, kcal	State
Alamosite	-3.449	-4.705	
Albite	-0.993	-1.354	
Albite_high	-2.311	-3.153	
Albite_low	-0.993	-1.354	
Analcime	-1.080	-1.473	
Andalusite	-6.082	-8.298	
Anglesite	-4.940	-6.739	
Anhydrite	-3.686	-5.029	
Aragonite	-2.283	-3.114	
BaCrO4	-3.035	-4.141	
BaZrO3	82.011	111.887	ssatd
Barite	-2.735	-3.731	
Bassanite	-4.331	-5.909	
Beidellite-Ca	-2.302	-3.140	
Beidellite-Cs	-4.267	-5.821	
Beidellite-H	-3.163	-4.315	
Beidellite-K	-2.257	-3.079	
Beidellite-Mg	-2.147	-2.929	
Beidellite-Na	-1.920	-2.619	
Boehmite	-0.634	-0.864	
Boric_acid	-4.812	-6.565	
Brucite	-4.566	-6.229	
Bunsenite	-3.301	-4.504	
CaSO4:0.5H2O(beta)	-4.499	-6.138	
CaZrO3	140.755	192.030	ssatd
Calcite	-2.138	-2.917	
CeO2	-2.648	-3.612	
Celadonite	0.000	0.000	satd
Celestite	-7.173	-9.786	
Cerussite	-1.881	-2.566	
Chalcedony	-0.271	-0.370	
Chrysotile	-3.927	-5.358	
Clinochlore-14A	-6.715	-9.161	
Clinoptilolite	-4.857	-6.627	
Clinoptilolite-K	-6.666	-9.094	
Clinoptilolite-Na	-3.380	-4.611	
Clinoptilolite-hy-K	-6.661	-9.087	
Clinoptilolite-hy-Na	-3.378	-4.609	
Coesite	-0.810	-1.105	
Corundum	-4.451	-6.072	
Cristobalite(alpha)	-0.551	-0.751	
Cristobalite(beta)	-0.994	-1.356	
Crocoite	-0.336	-0.459	
Dawsonite	-1.891	-2.579	
Diaspore	-0.230	-0.313	
Diopside	-6.207	-8.467	
Dolomite	-2.384	-3.253	
Dolomite-dis	-3.929	-5.360	
Dolomite-ord	-2.384	-3.253	
Enstatite	-3.594	-4.903	
Epsomite	-5.324	-7.264	
Fe(OH)3	-6.375	-8.698	

Ferrite-Zn	-6.910	-9.427	
Fluorapatite	-0.124	-0.169	
Fluorite	-5.637	-7.691	
GdOHCO3	-6.647	-9.068	
GdPO4:H2O	-2.839	-3.873	
Gibbsite	-0.826	-1.127	
Goethite	-1.254	-1.711	
Gypsum	-3.511	-4.790	
Halite	-6.873	-9.377	
Hematite	-1.547	-2.111	
Heulandite	-4.493	-6.130	
Hexahydrite	-5.559	-7.585	
Ice	-0.139	-0.190	
Illite	-1.275	-1.739	
Jadeite	-2.618	-3.571	
K-Feldspar	0.000	0.000	ssatd
Kalicinite	-6.806	-9.285	
Kalsilite	-3.175	-4.332	
Kaolinite	-0.948	-1.293	
Kieserite	-7.017	-9.573	
Kyanite	-5.812	-7.929	
LaPO4:H2O	-1.538	-2.098	
Lanarkite	-6.099	-8.321	
Lansfordite	-4.424	-6.036	
Laumontite	-4.780	-6.522	
Lawsonite	-5.327	-7.268	
Litharge	-6.420	-8.759	
Magnesite	-1.875	-2.558	
Manganite	-4.459	-6.084	
Massicot	-6.595	-8.998	
Maximum_Microcline	0.000	0.000	satd
Mesolite	0.000	0.000	satd
Mirabilite	-4.202	-5.733	
MnO2(gamma)	-1.518	-2.071	
Monohydrocalcite	-2.973	-4.055	
Montmor-Ca	-1.228	-1.675	
Montmor-Cs	-3.127	-4.266	
Montmor-K	-1.113	-1.518	
Montmor-Mg	-1.004	-1.369	
Montmor-Na	-0.779	-1.063	
Mordenite	-2.866	-3.910	
Muscovite	0.000	0.000	satd
Nahcolite	-4.363	-5.952	
Natrolite	-2.979	-4.065	
Natron	-7.250	-9.891	
NdOHCO3	-6.250	-8.527	
NdPO4:H2O	-2.242	-3.059	
Nepheline	-4.030	-5.498	
Nesquehonite	-4.578	-6.246	
Ni(OH)2	-3.578	-4.882	
Ni2SiO4	0.000	0.000	satd
NiCO3	-5.655	-7.715	
Niter	-7.279	-9.930	
Nontronite-Ca	-0.428	-0.584	
Nontronite-H	-1.289	-1.759	
Nontronite-K	-0.383	-0.523	
Nontronite-Mg	-0.273	-0.373	
Nontronite-Na	-0.046	-0.063	
Paragonite	-1.889	-2.577	
Paralaurionite	-6.107	-8.331	
Pb3(PO4)2	-5.946	-8.112	
Pb4O(PO4)2	-7.124	-9.719	
PbHPO4	-4.506	-6.147	

Pentahydrite	-5.899	-8.047	
Petalite	-7.012	-9.566	
Phlogopite	-2.518	-3.435	
Plattnerite	-1.784	-2.433	
Pseudowollastonite	-6.975	-9.516	
PuO2	-1.721	-2.348	
PuO2(OH)2	-6.297	-8.590	
Pyrolusite	0.000	0.000	satd
Pyromorphite	0.000	0.000	satd
Pyrophyllite	-2.576	-3.514	
Quartz	0.000	0.000	satd
Rutile	0.000	0.000	satd
Sanidine_high	-1.199	-1.636	
Saponite-Ca	-1.664	-2.270	
Saponite-Cs	-3.630	-4.952	
Saponite-H	-2.525	-3.445	
Saponite-K	-1.619	-2.209	
Saponite-Mg	-1.510	-2.059	
Saponite-Na	-1.282	-1.749	
Scolecite	-2.991	-4.080	
Sellaite	-5.581	-7.614	
SiO2(am)	-1.286	-1.754	
Sillimanite	-6.446	-8.794	
SmPO4:H2O	-2.467	-3.365	
Smectite-low-Fe-Mg	-7.137	-9.737	
Smithsonite	-5.514	-7.523	
SrZrO3	118.862	162.161	ssatd
Starkeyite	-6.285	-8.575	
Stilbite	-1.032	-1.407	
Strontianite	-4.834	-6.595	
Talc	-1.938	-2.644	
Tenorite	-7.038	-9.602	
Thenardite	-5.029	-6.861	
Trevorite	-2.056	-2.804	
Tridymite	-0.172	-0.234	
Whitlockite	-7.296	-9.953	
Witherite	-2.007	-2.738	
Wollastonite	-6.736	-9.190	
Zincite	-4.946	-6.748	
Zn(OH)2(beta)	-5.672	-7.738	
Zn(OH)2(epsilon)	-5.400	-7.367	
Zn(OH)2(gamma)	-5.621	-7.669	
fix CO2(g)	0.000	0.000	satd
fix O2(g)	0.000	0.000	satd

--- Summary of Solid Solutions ---

--- Carbonate-Calcite ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Calcite	3.5235E-01	-0.4530	0.0000	-0.4530
Magnesite	6.4679E-01	-0.1892	0.0000	-0.1892
Rhodochrosite	8.2420E-10	-9.0840	0.0000	-9.0840
Siderite	1.7729E-18	-17.7513	0.0000	-17.7513
Smithsonite	1.4833E-04	-3.8288	0.0000	-3.8288
Strontianite	7.1058E-04	-3.1484	0.0000	-3.1484

Mineral	Log Q/K	Aff, kcal	State

Carbonate-Calcite	-1.685	-2.299
Calcite	-1.685	-2.299
Magnesite	-1.685	-2.299
Rhodochrosite	-1.685	-2.299
Siderite	-1.685	-2.299
Smithsonite	-1.685	-2.299
Strontianite	-1.685	-2.299

--- Clinoptilolite-hy-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-hy-Ca	1.8640E-05	-4.7296	0.0000	-4.7296
Clinoptilolite-hy-Cs	1.2054E-24	-23.9189	0.0000	-23.9189
Clinoptilolite-hy-K	5.2141E-04	-3.2828	0.0000	-3.2828
Clinoptilolite-hy-Na	9.9946E-01	-0.0002	0.0000	-0.0002
Clinoptilolite-hy-Sr	9.7171E-14	-13.0125	0.0000	-13.0125

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-hy-ss	-3.378	-4.608	
Clinoptilolite-hy-Ca	-3.378	-4.608	
Clinoptilolite-hy-Cs	-3.378	-4.608	
Clinoptilolite-hy-K	-3.378	-4.608	
Clinoptilolite-hy-Na	-3.378	-4.608	
Clinoptilolite-hy-Sr	-3.378	-4.608	

--- Clinoptilolite-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-Ca	3.7214E-02	-1.4293	-3.5161	-4.9453
Clinoptilolite-Cs	1.0547E-07	-6.9769	-17.1631	-24.1400
Clinoptilolite-K	9.7186E-02	-1.0124	-2.4905	-3.5029
Clinoptilolite-NH4	8.6613E-65	-64.0624	-157.5935	-221.6560
Clinoptilolite-Na	8.6545E-01	-0.0628	-0.1544	-0.2171
Clinoptilolite-Sr	1.5040E-04	-3.8227	-9.4039	-13.2267

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-ss	-3.163	-4.315	
Clinoptilolite-Ca	-3.163	-4.315	
Clinoptilolite-Cs	-3.163	-4.315	
Clinoptilolite-K	-3.163	-4.315	
Clinoptilolite-NH4	-3.163	-4.315	
Clinoptilolite-Na	-3.163	-4.315	
Clinoptilolite-Sr	-3.163	-4.315	

--- Saponite-tri ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Saponite-Ca	5.0779E-02	-1.2943	0.8672	-0.4271
Saponite-H	1.2482E-04	-3.9037	2.6155	-1.2882
Saponite-K	6.9447E-02	-1.1583	0.7761	-0.3823
Saponite-Mg	1.4937E-01	-0.8257	0.5532	-0.2725
Saponite-Na	7.3028E-01	-0.1365	0.0915	-0.0450

Mineral	Log Q/K	Aff, kcal	State
Saponite-tri	-1.237	-1.688	
Saponite-Ca	-1.237	-1.688	
Saponite-H	-1.237	-1.688	
Saponite-K	-1.237	-1.688	
Saponite-Mg	-1.237	-1.688	
Saponite-Na	-1.237	-1.688	

--- Smectite-di ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Beidellite-Ca	1.0600E-07	-6.9747	4.6730	-2.3016
Beidellite-K	1.4508E-07	-6.8384	4.5817	-2.2567
Beidellite-Mg	3.1182E-07	-6.5061	4.3591	-2.1470
Beidellite-Na	1.5245E-06	-5.8169	3.8973	-1.9196
Montmor-Ca	1.9030E-04	-3.7206	2.4928	-1.2278
Montmor-K	4.2535E-04	-3.3712	2.2587	-1.1125
Montmor-Mg	9.0979E-04	-3.0411	2.0375	-1.0035
Montmor-Na	4.3588E-03	-2.3606	1.5816	-0.7790
Nontronite-Ca	5.0479E-02	-1.2969	0.8689	-0.4280
Nontronite-K	6.9085E-02	-1.1606	0.7776	-0.3830
Nontronite-Mg	1.4859E-01	-0.8280	0.5548	-0.2732
Nontronite-Na	7.2596E-01	-0.1391	0.0932	-0.0459

Mineral	Log Q/K	Aff, kcal	State
Smectite-di	0.000	0.000	satd
Beidellite-Ca	0.000	0.000	satd
Beidellite-K	0.000	0.000	satd
Beidellite-Mg	0.000	0.000	satd
Beidellite-Na	0.000	0.000	satd
Montmor-Ca	0.000	0.000	satd
Montmor-K	0.000	0.000	satd
Montmor-Mg	0.000	0.000	satd
Montmor-Na	0.000	0.000	satd
Nontronite-Ca	0.000	0.000	satd
Nontronite-K	0.000	0.000	satd
Nontronite-Mg	0.000	0.000	satd
Nontronite-Na	0.000	0.000	satd

--- Lanthanide hydroxide ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
La(OH)3	5.7515E-05	-4.2402	0.0000	-4.2402
Ce(OH)3	5.6662E-15	-14.2467	0.0000	-14.2467
Nd(OH)3(c)	5.7007E-01	-0.2441	0.0000	-0.2441
Gd(OH)3	3.6208E-01	-0.4412	0.0000	-0.4412
Sm(OH)3	6.7794E-02	-1.1688	0.0000	-1.1688

Mineral	Log Q/K	Aff, kcal	State
Lanthanide hydroxide	-7.682	-10.480	
La(OH)3	-7.682	-10.480	
Ce(OH)3	-7.682	-10.480	
Nd(OH)3(c)	-7.682	-10.480	
Gd(OH)3	-7.682	-10.480	
Sm(OH)3	-7.682	-10.480	

--- Rhabdophane-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaPO4:H2O	7.3226E-01	-0.1353	0.0000	-0.1353
CePO4:H2O	2.2813E-11	-10.6418	0.0000	-10.6418
NdPO4:H2O	1.4481E-01	-0.8392	0.0000	-0.8392
GdPO4:H2O	3.6618E-02	-1.4363	0.0000	-1.4363
SmPO4:H2O	8.6313E-02	-1.0639	0.0000	-1.0639

Mineral	Log Q/K	Aff, kcal	State
Rhabdophane-ss	-1.403	-1.914	
LaPO4:H2O	-1.403	-1.914	
CePO4:H2O	-1.403	-1.914	
NdPO4:H2O	-1.403	-1.914	
GdPO4:H2O	-1.403	-1.914	
SmPO4:H2O	-1.403	-1.914	

--- Lanthanide fluoride ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaF3:0.5H2O	7.9192E-01	-0.1013	0.0000	-0.1013
CeF3:0.5H2O	3.9102E-11	-10.4078	0.0000	-10.4078
NdF3:0.5H2O	1.9717E-01	-0.7052	0.0000	-0.7052
GdF3:0.5H2O	1.5766E-03	-2.8023	0.0000	-2.8023
SmF3:0.5H2O	9.3347E-03	-2.0299	0.0000	-2.0299

Mineral	Log Q/K	Aff, kcal	State
Lanthanide fluoride	-12.838	-17.515	
LaF3:0.5H2O	-12.838	-17.515	
CeF3:0.5H2O	-12.838	-17.515	

NdF3:0.5H2O	-12.838	-17.515
GdF3:0.5H2O	-12.838	-17.515
SmF3:0.5H2O	-12.838	-17.515

--- Summary of Gases ---

Gas	Fugacity	Log fugacity
Al(g)	9.7054-192	-191.0130
B(g)	7.4013-204	-203.1307
BF3(g)	8.8994E-43	-42.0506
C(g)	3.0917-190	-189.5098
CH4(g)	3.5224-146	-145.4532
CO(g)	6.0395E-49	-48.2190
CO2(g)	3.1623E-04	-3.5000
Ca(g)	5.4205-153	-152.2660
Chlorine	9.0800E-30	-29.0419
Cs(g)	6.9896E-83	-82.1555
Cu(g)	5.5507E-82	-81.2557
Fluorine	6.2240E-85	-84.2059
H2(g)	6.1090E-42	-41.2140
H2O(g)	2.5952E-02	-1.5858
H2S(g)	6.2320-143	-142.2054
HCl(g)	3.6947E-19	-18.4324
HF(g)	3.4524E-15	-14.4619
K(g)	1.2717E-76	-75.8956
Li(g)	1.5518E-96	-95.8092
Mg(g)	1.8669-129	-128.7289
Nitrogen	6.8261E-21	-20.1658
NH3(g)	9.5113E-70	-69.0218
NO(g)	2.6016E-26	-25.5848
NO2(g)	1.7788E-20	-19.7499
Na(g)	7.3990E-74	-73.1308
O2(g)	2.0999E-01	-0.6778
Pb(g)	2.5293E-68	-67.5970
S2(g)	2.3204-228	-227.6344
SO2(g)	1.1045E-55	-54.9568
Si(g)	4.2257-221	-220.3741
SiF4(g)	6.2739E-43	-42.2025
Ti(g)	3.8019-231	-230.4200
TiCl4(g)	6.2542E-87	-86.2038
U(g)	3.0875-299	-298.5104
U2Cl10(g)	4.6148-254	-253.3358
U2Cl8(g)	1.5757-255	-254.8025
U2F10(g)	3.1007-171	-170.5085
UCl(g)	1.0171-255	-254.9926
UCl2(g)	1.0023-210	-209.9990
UCl3(g)	2.1634-163	-162.6649
UCl4(g)	2.5286-133	-132.5971
UCl5(g)	1.5206-140	-139.8180
UCl6(g)	1.6989-142	-141.7698
UF(g)	2.0197-241	-240.6947
UF2(g)	9.7989-202	-201.0088
UF3(g)	1.1699-155	-154.9318
UF4(g)	2.0618-106	-105.6858
UF5(g)	1.6643E-98	-97.7788
UF6(g)	1.3229-104	-103.8785
UO(g)	2.4384-214	-213.6129
UO2(g)	4.5176-130	-129.3451
UO2Cl2(g)	1.7910E-78	-77.7469

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UO2F2(g)                    1.2702E-67    -66.8961
UO3(g)                      3.3228E-77    -76.4785
UOF4(g)                     6.1439E-84    -83.2116
Zn(g)                       4.3330E-78    -77.3632



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--- shifting e.s. solid(s) to the p.r.s. (shftz) ---

      shifted -- Celadonite
              - old mass=  1.60399E-05, new mass=  8.00000E-07
      shifted -- Maximum_Microcline
              - old mass=  1.09829E-04, new mass=  1.09829E-06
      shifted -- Mesolite
              - old mass=  2.90123E-05, new mass=  8.00000E-07
      shifted -- Muscovite
              - old mass=  6.90873E-05, new mass=  8.00000E-07
      shifted -- Ni2SiO4
              - old mass=  8.07264E-07, new mass=  8.00000E-07
      shifted -- Pyrolusite
              - old mass=  2.25601E-06, new mass=  8.00000E-07
  not shifted -- Pyromorphite
              - mass=  3.19219E-12
      shifted -- Quartz
              - old mass=  1.29102E-03, new mass=  1.29102E-05
      shifted -- Rutile
              - old mass=  2.69881E-06, new mass=  8.00000E-07
      shifted -- Smectite-di
              - old mass=  9.90890E-06, new mass=  8.00000E-07

Stepping to zi=  1.7835E+00, delzi=  1.0000E-09, nord= 0
  time =  1.7202E+04 d, dltime =  9.6451E-06 d
Steps completed =   426, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -4.8891

Stepping to zi=  1.7835E+00, delzi=  1.0000E-09, nord= 0
  time =  1.7202E+04 d, dltime =  9.6451E-06 d
Steps completed =   427, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -4.8891

Stepping to zi=  1.7835E+00, delzi=  1.0000E-09, nord= 0
  time =  1.7202E+04 d, dltime =  9.6451E-06 d
Steps completed =   428, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -4.8891

Stepping to zi=  1.7835E+00, delzi=  7.5689E-09, nord= 1
  time =  1.7202E+04 d, dltime =  7.3002E-05 d
Steps completed =   429, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -4.8890

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                    Reaction progress        =  1.78351270175104E+00
                    Log of reaction progress =       0.2512762



                    Time =  1.486E+09 sec
                         =  1.720E+04 days
```

```
=  4.710E+01 years

Log sec =        9.172
Log days =       4.236
Log years =      1.673

Temperature    =     25.000 degrees C
total pressure =      1.013 bars
```

Flow-through system print following a discontinuity

--- Summary of Instantaneously Precipitated Solid Phases ---
(defined by derivatives)

--- Theoretical Rock Composition ---
g/kg

O	4.972030E+01
Al	6.977437E+00
Ca	4.542202E-01
Cl	3.075690E-08
Fe	6.769141E-01
H	2.196809E-01
P	8.061363E-08
K	4.987240E+00
Mg	2.456852E-01
Mn	5.353667E-02
Na	3.007418E-01
Ni	5.347048E-04
Pb	8.987793E-07
Si	3.716024E+01
Ti	6.084866E-02

--- Oxide Percentages ---

Oxide Theoretical rock

Total = 0.0000

Phase/end-member	d mol/d zi	d grams/d zi	d vol (cc)/d zi
Celadonite	1.9802E-03	7.8562E-01	3.1109E-01
Maximum_Microcline	1.3935E-02	3.8785E+00	1.5153E+00
Mesolite	3.4188E-03	1.3258E+00	5.8530E-01
Muscovite	9.4510E-03	3.7644E+00	1.3299E+00
Ni2SiO4	9.0687E-07	1.8996E-04	3.8642E-05
Pyrolusite	1.9400E-04	1.6866E-02	9.7000E-02
Pyromorphite	1.7271E-10	2.3426E-07	3.3274E-08
Quartz	1.7058E-01	1.0249E+01	3.8700E+00
Rutile	2.5300E-04	2.0209E-02	4.7615E-03
fix CO2(g)	-1.4211E-02	-6.2542E-01	0.0000E+00
fix O2(g)	-7.1054E-04	-2.2737E-02	0.0000E+00
Smectite-di			
Beidellite-Ca	1.2818E-10	4.6987E-08	1.6604E-08
Beidellite-K	1.7608E-10	6.5650E-08	2.3541E-08
Beidellite-Mg	3.7845E-10	1.3774E-07	4.6622E-08
Beidellite-Na	1.8634E-09	6.8487E-07	2.4325E-07
Montmor-Ca	2.3012E-07	8.4235E-05	1.1506E-04
Montmor-K	5.1625E-07	1.9222E-04	2.5812E-04

Montmor-Mg	1.1042E-06	4.0131E-04	5.5210E-04
Montmor-Na	5.3278E-06	1.9554E-03	2.6639E-03
Nontronite-Ca	6.0732E-05	2.5768E-02	7.9620E-03
Nontronite-K	8.3425E-05	3.5921E-02	1.1285E-02
Nontronite-Mg	1.7944E-04	7.5666E-02	2.3284E-02
Nontronite-Na	8.8291E-04	3.7547E-01	1.1664E-01

--- Summary of Solid Phases (E.S.+P.R.S.) ---

Phase/End-member	Log moles	Moles	Mass, g	Volume, cc
Alunite	-2.5559	2.7801E-03	1.1516E+00	8.1624E-01
Celadonite	-2.6576	2.2000E-03	8.7282E-01	3.4562E-01
Diaspore	-1.6079	2.4665E-02	1.4796E+00	4.3804E-01
Fluorapatite	-3.9881	1.0278E-04	5.1834E-02	5.1392E-02
Hematite	-3.7144	1.9300E-04	3.0820E-02	5.8428E-03
Maximum_Microcline	-1.5731	2.6723E-02	7.4380E+00	2.9059E+00
Mesolite	-2.2849	5.1888E-03	2.0121E+00	8.8832E-01
Muscovite	-2.2004	6.3039E-03	2.5109E+00	8.8703E-01
Ni2SiO4	-2.1930	6.4125E-03	1.3432E+00	2.7324E-01
Nontronite-H	-4.9990	1.0023E-05	4.1899E-03	5.0117E-03
Pyrolusite	-3.0270	9.3967E-04	8.1692E-02	4.6984E-01
Pyromorphite	-11.4959	3.1922E-12	4.3298E-09	6.1501E-10
Quartz	-0.4779	3.3275E-01	1.9993E+01	7.5495E+00
Rutile	-3.3456	4.5123E-04	3.6044E-02	8.4921E-03
fix CO2(g)	2.3010	2.0000E+02	8.8019E+03	0.0000E+00
fix O2(g)	2.3010	2.0000E+02	6.3997E+03	0.0000E+00
Smectite-di	-2.7078	1.9599E-03		
Beidellite-Ca	-9.3370	4.6023E-10	1.6870E-07	5.9614E-08
Beidellite-K	-9.0571	8.7685E-10	3.2694E-07	1.1724E-07
Beidellite-Mg	-9.2454	5.6828E-10	2.0683E-07	7.0006E-08
Beidellite-Na	-9.1946	6.3884E-10	2.3480E-07	8.3395E-08
Montmor-Ca	-6.4468	3.5747E-07	1.3085E-04	1.7874E-04
Montmor-K	-6.3803	4.1661E-07	1.5512E-04	2.0831E-04
Montmor-Mg	-6.0595	8.7200E-07	3.1692E-04	4.3600E-04
Montmor-Na	-5.8260	1.4928E-06	5.4788E-04	7.4640E-04
Nontronite-Ca	-3.4133	3.8610E-04	1.6382E-01	5.0617E-02
Nontronite-K	-3.2119	6.1396E-04	2.6436E-01	8.3051E-02
Nontronite-Mg	-3.3291	4.6871E-04	1.9765E-01	6.0820E-02
Nontronite-Na	-3.3116	4.8800E-04	2.0753E-01	6.4470E-02

	Mass, grams	Volume, cc
Created	1.523945E+04	1.490501E+01
Destroyed	0.000000E+00	0.000000E+00
Net	1.523945E+04	1.490501E+01

Warning-- these volume totals may be incomplete because
of missing partial molar volume data in the data base

- -

Stepping to zi= 1.7835E+00, delzi= 7.5689E-08, nord= 2
time = 1.7202E+04 d, dltime = 7.3002E-04 d
Steps completed = 430, iter = 2, ncorr = 0

```
Most rapidly changing is zvclg1(Quartz                  ) =     -4.8886

Stepping to zi=  1.7835E+00, delzi=  7.5689E-07, nord= 2
  time =  1.7202E+04 d, dltime =  7.3002E-03 d
Steps completed =   431, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -4.8843

Stepping to zi=  1.7835E+00, delzi=  7.5689E-06, nord= 2
  time =  1.7202E+04 d, dltime =  7.3002E-02 d
Steps completed =   432, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -4.8433

Stepping to zi=  1.7836E+00, delzi=  7.5689E-05, nord= 3
  time =  1.7203E+04 d, dltime =  7.3002E-01 d
Steps completed =   433, iter = 16, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -4.5645

Stepping to zi=  1.7838E+00, delzi=  1.8922E-04, nord= 3
  time =  1.7205E+04 d, dltime =  1.8251E+00 d
Steps completed =   434, iter =  8, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -4.2252

Stepping to zi=  1.7842E+00, delzi=  3.7844E-04, nord= 3
  time =  1.7208E+04 d, dltime =  3.6501E+00 d
Steps completed =   435, iter =  8, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -3.9061

Stepping to zi=  1.7849E+00, delzi=  7.5689E-04, nord= 3
  time =  1.7216E+04 d, dltime =  7.3002E+00 d
Steps completed =   436, iter =  7, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -3.5962

Stepping to zi=  1.7864E+00, delzi=  1.5138E-03, nord= 4
  time =  1.7230E+04 d, dltime =  1.4600E+01 d
Steps completed =   437, iter =  7, ncorr = 0
Most rapidly changing is zvclg1(Quartz                  ) =     -3.2905

Stepping to zi=  1.7895E+00, delzi=  3.0275E-03, nord= 4
  time =  1.7259E+04 d, dltime =  2.9201E+01 d
Steps completed =   438, iter =  7, ncorr = 0
Most rapidly changing is zvclg1(Muscovite               ) =     -4.2392

Stepping to zi=  1.7955E+00, delzi=  6.0551E-03, nord= 5
  time =  1.7318E+04 d, dltime =  5.8402E+01 d
Steps completed =   439, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-Na           ) =    -10.5750

Stepping to zi=  1.8076E+00, delzi=  1.2110E-02, nord= 6
  time =  1.7435E+04 d, dltime =  1.1680E+02 d
Steps completed =   440, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-Na           ) =    -10.2308

Stepping to zi=  1.8185E+00, delzi=  1.0848E-02, nord= 6
  time =  1.7539E+04 d, dltime =  1.0463E+02 d
Steps completed =   441, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -41.9360

Stepping to zi=  1.8281E+00, delzi=  9.6463E-03, nord= 6
  time =  1.7632E+04 d, dltime =  9.3039E+01 d
Steps completed =   442, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -42.1736

Stepping to zi=  1.8371E+00, delzi=  8.9841E-03, nord= 6
```

```
  time =  1.7719E+04 d, dltime =  8.6652E+01 d
Steps completed =   443, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -42.3875

Stepping to zi=  1.8458E+00, delzi=  8.6901E-03, nord= 6
  time =  1.7803E+04 d, dltime =  8.3816E+01 d
Steps completed =   444, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -42.5869

Stepping to zi=  1.8544E+00, delzi=  8.6407E-03, nord= 6
  time =  1.7886E+04 d, dltime =  8.3340E+01 d
Steps completed =   445, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -42.7776

Stepping to zi=  1.8629E+00, delzi=  8.4615E-03, nord= 6
  time =  1.7968E+04 d, dltime =  8.1612E+01 d
Steps completed =   446, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -42.9569

Stepping to zi=  1.8714E+00, delzi=  8.5270E-03, nord= 6
  time =  1.8050E+04 d, dltime =  8.2243E+01 d
Steps completed =   447, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -43.1303

Stepping to zi=  1.8801E+00, delzi=  8.6900E-03, nord= 6
  time =  1.8134E+04 d, dltime =  8.3815E+01 d
Steps completed =   448, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -43.2996

Stepping to zi=  1.8890E+00, delzi=  8.9051E-03, nord= 6
  time =  1.8220E+04 d, dltime =  8.5890E+01 d
Steps completed =   449, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -43.4658

Stepping to zi=  1.8982E+00, delzi=  9.1604E-03, nord= 6
  time =  1.8308E+04 d, dltime =  8.8353E+01 d
Steps completed =   450, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -43.6292

Stepping to zi=  1.9076E+00, delzi=  9.4516E-03, nord= 6
  time =  1.8399E+04 d, dltime =  9.1161E+01 d
Steps completed =   451, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -43.7903

Stepping to zi=  1.9174E+00, delzi=  9.7758E-03, nord= 6
  time =  1.8494E+04 d, dltime =  9.4288E+01 d
Steps completed =   452, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -43.9494

Stepping to zi=  1.9275E+00, delzi=  1.0130E-02, nord= 6
  time =  1.8591E+04 d, dltime =  9.7707E+01 d
Steps completed =   453, iter =  6, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -44.1067

Stepping to zi=  1.9381E+00, delzi=  1.0518E-02, nord= 6
  time =  1.8693E+04 d, dltime =  1.0145E+02 d
Steps completed =   454, iter =  6, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -44.2624
--- shifting e.s. solid(s) to the p.r.s. (shftz) ---

      shifted -- Celadonite
              - old mass=  2.24034E-04, new mass=  2.24034E-06
      shifted -- Maximum_Microcline
```

```
                - old mass=  1.68334E-03, new mass=  1.68334E-05
        shifted -- Mesolite
                - old mass=  4.93393E-04, new mass=  4.93393E-06
        shifted -- Muscovite
                - old mass=  1.66886E-03, new mass=  1.66886E-05
        shifted -- Ni2SiO4
                - old mass=  8.38773E-07, new mass=  8.00000E-07
        shifted -- Pyrolusite
                - old mass=  3.07815E-05, new mass=  8.00000E-07
    not shifted -- Pyromorphite
                - mass=  1.40892E-11
        shifted -- Quartz
                - old mass=  2.75956E-02, new mass=  2.75956E-04
        shifted -- Rutile
                - old mass=  3.98996E-05, new mass=  8.00000E-07
        shifted -- Smectite-di
                - old mass=  1.90095E-04, new mass=  1.90095E-06

Stepping to zi=  1.9381E+00, delzi=  1.0000E-09, nord= 0
  time =  1.8693E+04 d, dltime =  9.6451E-06 d
Steps completed =   455, iter =  1, ncorr = 0
Most rapidly changing is zvclg1(Muscovite              ) =     -4.7776

Stepping to zi=  1.9381E+00, delzi=  1.0000E-09, nord= 0
  time =  1.8693E+04 d, dltime =  9.6451E-06 d
Steps completed =   456, iter =  1, ncorr = 0
Most rapidly changing is zvclg1(Muscovite              ) =     -4.7776

Stepping to zi=  1.9381E+00, delzi=  1.0000E-09, nord= 0
  time =  1.8693E+04 d, dltime =  9.6451E-06 d
Steps completed =   457, iter =  1, ncorr = 0
Most rapidly changing is zvclg1(Muscovite              ) =     -4.7776

Stepping to zi=  1.9381E+00, delzi=  1.0000E-08, nord= 1
  time =  1.8693E+04 d, dltime =  9.6451E-05 d
Steps completed =   458, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Muscovite              ) =     -4.7776

Stepping to zi=  1.9381E+00, delzi=  1.0000E-07, nord= 1
  time =  1.8693E+04 d, dltime =  9.6451E-04 d
Steps completed =   459, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Muscovite              ) =     -4.7775

Stepping to zi=  1.9381E+00, delzi=  1.0000E-06, nord= 2
  time =  1.8693E+04 d, dltime =  9.6451E-03 d
Steps completed =   460, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Muscovite              ) =     -4.7773

Stepping to zi=  1.9381E+00, delzi=  1.0000E-05, nord= 2
  time =  1.8693E+04 d, dltime =  9.6451E-02 d
Steps completed =   461, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Muscovite              ) =     -4.7743

Stepping to zi=  1.9382E+00, delzi=  1.0000E-04, nord= 2
  time =  1.8694E+04 d, dltime =  9.6451E-01 d
Steps completed =   462, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Muscovite              ) =     -4.7459

Stepping to zi=  1.9392E+00, delzi=  1.0000E-03, nord= 3
  time =  1.8703E+04 d, dltime =  9.6451E+00 d
Steps completed =   463, iter =  7, ncorr = 0
Most rapidly changing is zvclg1(Muscovite              ) =     -4.5330
```

```
Stepping to zi=  1.9414E+00, delzi=  2.2282E-03, nord= 3
  time =  1.8725E+04 d, dltime =  2.1491E+01 d
Steps completed =   464, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Muscovite              ) =     -4.2626

Stepping to zi=  1.9470E+00, delzi=  5.6066E-03, nord= 4
  time =  1.8779E+04 d, dltime =  5.4076E+01 d
Steps completed =   465, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-Na          ) =    -10.1984

Stepping to zi=  1.9562E+00, delzi=  9.1646E-03, nord= 5
  time =  1.8867E+04 d, dltime =  8.8393E+01 d
Steps completed =   466, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Montmor-Na             ) =     -6.4516

Stepping to zi=  1.9661E+00, delzi=  9.9623E-03, nord= 6
  time =  1.8963E+04 d, dltime =  9.6087E+01 d
Steps completed =   467, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-Na          ) =     -9.7110

Stepping to zi=  1.9800E+00, delzi=  1.3883E-02, nord= 6
  time =  1.9097E+04 d, dltime =  1.3390E+02 d
Steps completed =   468, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-Na          ) =     -9.5191

Stepping to zi=  1.9937E+00, delzi=  1.3681E-02, nord= 6
  time =  1.9229E+04 d, dltime =  1.3195E+02 d
Steps completed =   469, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                 ) =    -44.9787

Stepping to zi=  2.0000E+00, delzi=  6.3068E-03, nord= 6
  time =  1.9290E+04 d, dltime =  6.0829E+01 d
Steps completed =   470, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                 ) =    -45.0501

- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -


                    Reaction progress        =  2.00000000000000E+00
                    Log of reaction progress =       0.3010300



                    Time =  1.667E+09 sec
                         =  1.929E+04 days
                         =  5.281E+01 years

                    Log sec =        9.222
                    Log days =       4.285
                    Log years =      1.723

                    Temperature    =     25.000 degrees C
                    total pressure =      1.013 bars


Step size is limited by the P.R.S. shift requirement


                              --- Reactant Summary ---


    Reactant                   Moles     Delta moles    Mass, g    Delta Mass, g
```

```
Tuff                        9.8000E+01   2.0000E+00   2.0175E+03   4.1173E+01


              Current total mass =  2.01747E+03 grams
              Delta total mass   =  4.11729E+01 grams
              Delta total volume =      0.00000 cc


   Reactant                Rel. Rate      Rate         Rate
                            mol/mol       mol/s      mol/s/cm2

Tuff                        1.0000E+00   1.2000E-09   2.5000E-15


   Reactant                  Affinity   Surface Area
                             kcal/mol     mol/s/cm2

Tuff                        999.00000   4.8000E+05


   Reactant                Rate Constants, mol/s/cm2

Tuff
                  Forward    2.5000E-15


        Affinity of the overall irreversible reaction=     0.000 kcal
        Contributions from irreversible reactions
        with no thermodynamic data are not included


    --- Element Totals for the Aqueous Solution ---

 Element        mg/kg soln.          Molality             Moles

    O          8.864746E+05        5.560489E+01        5.554668E+01
    Al         2.926674E-03        1.088574E-07        1.087435E-07
    B          1.335893E-01        1.240098E-05        1.238800E-05
    Ba         1.369810E-05        1.001048E-10        1.000000E-10
    Ca         5.168551E-03        1.294235E-07        1.292880E-07
    Ce         1.397619E-19        1.001047E-24        9.999993E-25
    Cl         7.122185E+00        2.016110E-04        2.014000E-04
    Cr         2.998740E+02        5.787865E-03        5.781806E-03
    Cs         1.325706E-05        1.001048E-10        1.000000E-10
    Cu         6.655521E-10        1.051100E-14        1.050000E-14
    F          2.267692E-01        1.197891E-05        1.196637E-05
    Fe         1.090250E-08        1.959190E-13        1.957139E-13
    Gd         1.568538E-09        1.001048E-14        9.999998E-15
    H          1.115047E+05        1.110219E+02        1.109057E+02
    C          6.280633E+01        5.247768E-03        5.242274E-03
    P          4.926841E-01        1.596338E-05        1.594667E-05
    K          4.024193E+00        1.032931E-04        1.031850E-04
    La         1.385555E-09        1.001048E-14        9.999998E-15
    Li         6.923514E-07        1.001048E-10        1.000000E-10
    Mg         7.183912E-02        2.966304E-06        2.963199E-06
    Mn         2.230001E-11        4.073635E-16        4.069371E-16
    Mo         2.181123E+02        2.281554E-03        2.279166E-03
    N          1.983946E+00        1.421488E-04        1.420000E-04
    Na         1.044210E+03        4.558306E-02        4.553534E-02
    Nd         1.438766E-09        1.001048E-14        9.999998E-15
    Ni         3.953466E-04        6.760273E-09        6.753196E-09
```

Pb	4.813853E-06	2.331596E-11	2.329156E-11
Pu	2.433853E-09	1.001048E-14	9.999999E-15
S	3.733330E+02	1.168428E-02	1.167205E-02
Si	3.490848E+00	1.247381E-04	1.246075E-04
Sm	1.499812E-09	1.001048E-14	9.999998E-15
Sr	8.739926E-06	1.001048E-10	1.000000E-10
Ti	1.077525E-05	2.258519E-10	2.256155E-10
U	2.374293E-09	1.001048E-14	1.000000E-14
V	4.771876E+00	9.400864E-05	9.391022E-05
Zn	6.522527E-06	1.001048E-10	1.000000E-10
Zr	9.099427E-16	1.001049E-20	1.000001E-20

Single ion activities and activity coefficients are here defined
with respect to the modified NBS pH scale

	pH	Eh	pe
modified NBS pH scale	8.8992	0.6926	1.1708E+01
rational pH scale	8.8210	0.6972	1.1786E+01

pHCl = 12.6900

Oxygen fugacity = 2.09991E-01
Log oxygen fugacity = -0.67780

Activity of water = 0.99888
Log activity of water = -0.00049

Ionic strength = 6.311971E-02 molal
Sum of molalities = 0.0700765765716
Osmotic coefficient = 0.89031

Mass of solution = 1.002526 kg
Mass of solutes = 0.003572 kg
Conc. of solutes = 0.356346 per cent (w/w)

Moles of solvent H2O = 5.54503E+01
Mass of solvent H2O = 9.98953E-01 kg

Species	Molality	Log molality	Log gamma	Log activity
Na+	4.4099E-02	-1.3556	-0.1010	-1.4566
SO4--	1.0425E-02	-1.9819	-0.3696	-2.3515
CrO4--	5.7760E-03	-2.2384	-0.3696	-2.6080
HCO3-	4.6992E-03	-2.3280	-0.0869	-2.4149
MoO4--	2.2816E-03	-2.6418	-0.3579	-2.9997
NaSO4-	1.2554E-03	-2.9012	-0.0869	-2.9881
CO3--	3.2617E-04	-3.4866	-0.3579	-3.8445
O2(aq)	2.6139E-04	-3.5827	0.0066	-3.5761
Cl-	2.0067E-04	-3.6975	-0.0933	-3.7908
NaHCO3(aq)	1.9168E-04	-3.7174	0.0000	-3.7174
NO3-	1.4215E-04	-3.8473	-0.0933	-3.9406
SiO2(aq)	1.0016E-04	-3.9993	0.0000	-3.9993
K+	1.0007E-04	-3.9997	-0.1074	-4.1071
VO3OH--	8.3861E-05	-4.0764	-0.3696	-4.4460

NaCO3-	1.9962E-05	-4.6998	-0.0869	-4.7867
NaHSiO3(aq)	1.3765E-05	-4.8612	0.0000	-4.8612
HPO4--	1.3708E-05	-4.8630	-0.3696	-5.2326
F-	1.1945E-05	-4.9228	-0.0900	-5.0128
HCrO4-	1.1863E-05	-4.9258	-0.0869	-5.0127
HSiO3-	1.0810E-05	-4.9662	-0.0869	-5.0531
CO2(aq)	1.0580E-05	-4.9755	0.0066	-4.9689
OH-	9.8541E-06	-5.0064	-0.0900	-5.0964
HVO4--	9.0336E-06	-5.0441	-0.3696	-5.4137
B(OH)3(aq)	7.8432E-06	-5.1055	0.0000	-5.1055
BO2-	4.3270E-06	-5.3638	-0.0869	-5.4507
KSO4-	3.2201E-06	-5.4921	-0.0869	-5.5791
NaHPO4-	2.0783E-06	-5.6823	-0.0869	-5.7692
Mg++	1.8016E-06	-5.7443	-0.3210	-6.0653
MgSO4(aq)	9.8828E-07	-6.0051	0.0000	-6.0051
NaCl(aq)	9.4523E-07	-6.0245	0.0000	-6.0245
H2VO4-	6.8709E-07	-6.1630	-0.0869	-6.2499
VO2(OH)2-	4.2581E-07	-6.3708	-0.0869	-6.4577
NaB(OH)4(aq)	2.3045E-07	-6.6374	0.0000	-6.6374
H2PO4-	1.4472E-07	-6.8395	-0.0869	-6.9264
MgCO3(aq)	1.1724E-07	-6.9309	0.0000	-6.9309
AlO2-	1.0798E-07	-6.9666	-0.0869	-7.0536
Ca++	9.1327E-08	-7.0394	-0.3552	-7.3946
MgHCO3+	4.5347E-08	-7.3435	-0.1010	-7.4445
NaOH(aq)	4.4390E-08	-7.3527	0.0000	-7.3527
NaF(aq)	3.4114E-08	-7.4671	0.0000	-7.4671
CaSO4(aq)	2.3175E-08	-7.6350	0.0000	-7.6350
PO4---	1.5494E-08	-7.8098	-0.8454	-8.6552
CaCO3(aq)	1.2247E-08	-7.9120	0.0000	-7.9120
MgPO4-	9.0241E-09	-8.0446	-0.0869	-8.1315
Cr2O7--	7.4987E-09	-8.1250	-0.3696	-8.4946
Ni++	5.3421E-09	-8.2723	-0.3552	-8.6274
MgHPO4(aq)	4.0935E-09	-8.3879	0.0000	-8.3879
KHPO4-	3.3665E-09	-8.4728	-0.0869	-8.5597
CaHCO3+	2.1792E-09	-8.6617	-0.1010	-8.7628
H2SiO4--	1.6132E-09	-8.7923	-0.3696	-9.1619
H+	1.5100E-09	-8.8210	-0.0782	-8.8992
NiSO4(aq)	1.4020E-09	-8.8533	0.0000	-8.8533
VO4---	1.0928E-09	-8.9615	-0.8454	-9.8068
HSO4-	6.5361E-10	-9.1847	-0.0869	-9.2716
NaAlO2(aq)	5.5785E-10	-9.2535	0.0000	-9.2535
KCl(aq)	4.0496E-10	-9.3926	0.0000	-9.3926
HAlO2(aq)	3.1452E-10	-9.5024	0.0000	-9.5024
CaPO4-	3.1416E-10	-9.5028	-0.0869	-9.5898
MgB(OH)4+	3.0355E-10	-9.5178	-0.1010	-9.6188
MgF+	2.3730E-10	-9.6247	-0.1010	-9.7258
Ti(OH)4(aq)	2.2585E-10	-9.6462	0.0000	-9.6462
KOH(aq)	2.1457E-10	-9.6684	0.0000	-9.6684
CaHPO4(aq)	1.2967E-10	-9.8872	0.0000	-9.8872
MgCl+	1.2882E-10	-9.8900	-0.1010	-9.9910
Cs+	1.0010E-10	-9.9996	-0.1110	-10.1105

--- Summary of Instantaneously Precipitated Solid Phases ---
(defined by derivatives)

--- Theoretical Rock Composition ---
g/kg

O	4.982844E+01
Al	7.115663E+00
Ca	4.225696E-01
Cl	2.876929E-09

Fe	6.903246E-01
H	2.296145E-01
P	7.540410E-09
K	4.385318E+00
Mg	1.581696E-01
Mn	5.459730E-02
Na	2.944211E-01
Ni	1.313825E-05
Pb	8.406971E-08
Si	3.789373E+01
Ti	6.205416E-02

--- Oxide Percentages ---

Oxide Theoretical rock

Total = 0.0000

Phase/end-member	d mol/d zi	d grams/d zi	d vol (cc)/d zi
Celadonite	1.2535E-03	4.9729E-01	1.9692E-01
Maximum_Microcline	9.1762E-03	2.5540E+00	9.9782E-01
Mesolite	3.1312E-03	1.2142E+00	5.3606E-01
Muscovite	1.1458E-02	4.5640E+00	1.6123E+00
Ni2SiO4	2.1850E-08	4.5767E-06	9.3102E-07
Pyrolusite	1.9400E-04	1.6866E-02	9.7000E-02
Pyromorphite	1.5841E-11	2.1486E-08	3.0519E-09
Quartz	1.8250E-01	1.0965E+01	4.1406E+00
Rutile	2.5300E-04	2.0209E-02	4.7615E-03
fix CO2(g)	-1.8445E-02	-8.1178E-01	0.0000E+00
fix O2(g)	-7.0538E-04	-2.2571E-02	0.0000E+00
Smectite-di			
Beidellite-Ca	5.6386E-11	2.0669E-08	7.3037E-09
Beidellite-K	1.7915E-10	6.6798E-08	2.3953E-08
Beidellite-Mg	3.8513E-10	1.4017E-07	4.7444E-08
Beidellite-Na	9.3141E-09	3.4233E-06	1.2159E-06
Montmor-Ca	1.0123E-07	3.7053E-05	5.0613E-05
Montmor-K	5.2527E-07	1.9557E-04	2.6263E-04
Montmor-Mg	1.1237E-06	4.0839E-04	5.6184E-04
Montmor-Na	2.6631E-05	9.7740E-03	1.3315E-02
Nontronite-Ca	6.2744E-06	2.6622E-03	8.2257E-04
Nontronite-K	2.0730E-05	8.9259E-03	2.8041E-03
Nontronite-Mg	4.4595E-05	1.8805E-02	5.7866E-03
Nontronite-Na	1.1349E-03	4.8264E-01	1.4993E-01

--- Summary of Solid Phases (E.S.+P.R.S.) ---

Phase/End-member	Log moles	Moles	Mass, g	Volume, cc
Alunite	-2.5559	2.7801E-03	1.1516E+00	8.1624E-01
Celadonite	-2.6018	2.5014E-03	9.9238E-01	3.9296E-01
Diaspore	-1.6079	2.4665E-02	1.4796E+00	4.3804E-01
Fluorapatite	-3.9881	1.0278E-04	5.1834E-02	5.1392E-02
Hematite	-3.7144	1.9300E-04	3.0820E-02	5.8428E-03
Maximum_Microcline	-1.5379	2.8982E-02	8.0666E+00	3.1515E+00
Mesolite	-2.2310	5.8754E-03	2.2784E+00	1.0059E+00
Muscovite	-2.0615	8.6791E-03	3.4570E+00	1.2212E+00
Ni2SiO4	-2.1930	6.4125E-03	1.3432E+00	2.7324E-01
Nontronite-H	-4.9990	1.0023E-05	4.1899E-03	5.0117E-03
Pyrolusite	-3.0080	9.8167E-04	8.5343E-02	4.9084E-01

Pyromorphite	-10.8141	1.5342E-11	2.0809E-08	2.9557E-09
Quartz	-0.4299	3.7162E-01	2.2329E+01	8.4314E+00
Rutile	-3.2958	5.0600E-04	4.0419E-02	9.5229E-03
fix CO2(g)	2.3010	1.9999E+02	8.8017E+03	0.0000E+00
fix O2(g)	2.3010	2.0000E+02	6.3997E+03	0.0000E+00
Smectite-di	-2.6526	2.2254E-03		
Beidellite-Ca	-9.3230	4.7535E-10	1.7425E-07	6.1572E-08
Beidellite-K	-9.0384	9.1537E-10	3.4130E-07	1.2238E-07
Beidellite-Mg	-9.1864	6.5107E-10	2.3696E-07	8.0205E-08
Beidellite-Na	-8.6981	2.0039E-09	7.3650E-07	2.6159E-07
Montmor-Ca	-6.4150	3.8462E-07	1.4079E-04	1.9231E-04
Montmor-K	-6.2761	5.2953E-07	1.9716E-04	2.6477E-04
Montmor-Mg	-5.9533	1.1136E-06	4.0471E-04	5.5678E-04
Montmor-Na	-5.2679	5.3958E-06	1.9803E-03	2.6979E-03
Nontronite-Ca	-3.4103	3.8875E-04	1.6494E-01	5.0965E-02
Nontronite-K	-3.2071	6.2072E-04	2.6727E-01	8.3964E-02
Nontronite-Mg	-3.3158	4.8324E-04	2.0378E-01	6.2705E-02
Nontronite-Na	-3.1395	7.2525E-04	3.0842E-01	9.5813E-02

	Mass, grams	Volume, cc
Created	1.524369E+04	1.659027E+01
Destroyed	4.117293E+01	0.000000E+00
Net	1.520252E+04	1.659027E+01

Warning-- these volume totals may be incomplete because of missing partial molar volume data in the data base

--- Summary of Pure Mineral Saturation States ---

Mineral	Log Q/K	Aff, kcal	State
Alamosite	-2.896	-3.950	
Albite	-0.389	-0.531	
Albite_high	-1.708	-2.330	
Albite_low	-0.389	-0.531	
Analcime	-0.500	-0.683	
Analcime-dehy	-6.863	-9.363	
Andalusite	-6.082	-8.298	
Anglesite	-5.520	-7.530	
Anhydrite	-5.440	-7.421	
Aragonite	-2.903	-3.961	
BaCrO4	-3.062	-4.178	
BaZrO3	83.113	113.389	ssatd
Barite	-2.767	-3.775	
Bassanite	-6.085	-8.301	
Beidellite-Ca	-2.404	-3.280	
Beidellite-Cs	-4.083	-5.571	
Beidellite-H	-3.163	-4.315	
Beidellite-K	-2.257	-3.079	
Beidellite-Mg	-2.147	-2.929	
Beidellite-Na	-1.721	-2.347	
Boehmite	-0.634	-0.864	
Boric_acid	-4.947	-6.749	
Brucite	-4.566	-6.229	
Bunsenite	-3.301	-4.504	
CaSO4:0.5H2O(beta)	-6.253	-8.531	
CaZrO3	140.134	191.183	ssatd

Calcite	-2.759	-3.764	
CeO2	-2.881	-3.931	
Celadonite	0.000	0.000	satd
Celestite	-7.201	-9.825	
Cerussite	-1.327	-1.811	
Chalcedony	-0.271	-0.370	
Chrysotile	-3.927	-5.358	
Clinochlore-14A	-6.714	-9.160	
Clinoptilolite	-4.648	-6.341	
Clinoptilolite-K	-6.668	-9.097	
Clinoptilolite-Na	-1.291	-1.761	
Clinoptilolite-hy-K	-6.662	-9.089	
Clinoptilolite-hy-Na	-1.289	-1.758	
Coesite	-0.810	-1.105	
Corundum	-4.451	-6.072	
Cristobalite(alpha)	-0.551	-0.751	
Cristobalite(beta)	-0.994	-1.356	
Crocoite	-0.911	-1.243	
Dawsonite	-1.287	-1.756	
Diaspore	-0.230	-0.313	
Diopside	-6.827	-9.314	
Dolomite	-3.005	-4.099	
Dolomite-dis	-4.549	-6.206	
Dolomite-ord	-3.005	-4.099	
Enstatite	-3.594	-4.903	
Epsomite	-6.458	-8.810	
Fe(OH)3	-6.459	-8.812	
Ferrite-Zn	-6.121	-8.351	
Fluorapatite	-5.992	-8.175	
GdOHCO3	-6.991	-9.538	
GdPO4:H2O	-3.918	-5.345	
Gibbsite	-0.826	-1.127	
Goethite	-1.338	-1.825	
Gypsum	-5.265	-7.183	
Halite	-6.833	-9.322	
Hematite	-1.714	-2.339	
Heulandite	-4.361	-5.949	
Hexahydrite	-6.693	-9.131	
Hydrocerussite	-5.715	-7.797	
Ice	-0.139	-0.190	
Illite	-1.275	-1.739	
Jadeite	-2.014	-2.748	
K-Feldspar	0.000	0.000	
Kalicinite	-6.806	-9.285	
Kalsilite	-3.175	-4.332	
Kaolinite	-0.948	-1.293	
Kyanite	-5.812	-7.929	
LaPO4:H2O	-2.273	-3.100	
Lanarkite	-6.126	-8.358	
Lansfordite	-4.424	-6.036	
Laumontite	-5.401	-7.368	
Lawsonite	-5.948	-8.115	
Litharge	-5.867	-8.004	
Magnesite	-1.875	-2.558	
Manganite	-4.459	-6.084	
Massicot	-6.042	-8.243	
Maximum_Microcline	0.000	0.000	satd
Mesolite	0.000	0.000	satd
Mirabilite	-4.130	-5.634	
MnO2(gamma)	-1.518	-2.071	
Monohydrocalcite	-3.593	-4.902	
Montmor-Ca	-1.330	-1.815	
Montmor-Cs	-2.943	-4.015	

Montmor-K	-1.113	-1.518	
Montmor-Mg	-1.004	-1.369	
Montmor-Na	-0.580	-0.791	
Mordenite	-2.828	-3.858	
Muscovite	0.000	0.000	satd
Na2CO3:7H2O	-6.378	-8.702	
Nahcolite	-3.760	-5.129	
Natrolite	-1.773	-2.419	
Natron	-6.044	-8.246	
NdOHCO3	-6.491	-8.856	
NdPO4:H2O	-3.217	-4.390	
Nepheline	-3.427	-4.675	
Nesquehonite	-4.578	-6.246	
Ni(OH)2	-3.579	-4.882	
Ni2SiO4	0.000	0.000	satd
NiCO3	-5.655	-7.715	
Nontronite-Ca	-0.698	-0.952	
Nontronite-H	-1.456	-1.987	
Nontronite-K	-0.550	-0.751	
Nontronite-Mg	-0.441	-0.601	
Nontronite-Na	-0.014	-0.019	
Paragonite	-1.286	-1.754	
Paralaurionite	-6.117	-8.345	
Pb3(PO4)2	-5.755	-7.851	
Pb4O(PO4)2	-6.380	-8.704	
PbHPO4	-4.687	-6.394	
Pentahydrite	-7.032	-9.594	
Petalite	-6.453	-8.804	
Phlogopite	-2.518	-3.435	
Plattnerite	-1.230	-1.679	
PuO2	-3.528	-4.814	
Pyrolusite	0.000	0.000	satd
Pyromorphite	0.000	0.000	satd
Pyrophyllite	-2.576	-3.514	
Quartz	0.000	0.000	satd
Rutile	0.000	0.000	satd
Sanidine_high	-1.199	-1.636	
Saponite-Ca	-1.766	-2.410	
Saponite-Cs	-3.446	-4.701	
Saponite-H	-2.525	-3.445	
Saponite-K	-1.619	-2.209	
Saponite-Mg	-1.509	-2.059	
Saponite-Na	-1.083	-1.477	
Scolecite	-3.611	-4.927	
Sellaite	-6.707	-9.150	
SiO2(am)	-1.286	-1.754	
Sillimanite	-6.446	-8.794	
SmPO4:H2O	-3.434	-4.685	
Smectite-low-Fe-Mg	-7.097	-9.682	
Smithsonite	-4.558	-6.218	
SrZrO3	119.967	163.669	ssatd
Stilbite	-1.582	-2.159	
Strontianite	-3.729	-5.087	
Talc	-1.938	-2.644	
Tenorite	-7.160	-9.769	
Thenardite	-4.956	-6.761	
Trevorite	-2.223	-3.033	
Tridymite	-0.172	-0.234	
Witherite	-0.906	-1.236	
Zincite	-3.990	-5.443	
Zn(OH)2(beta)	-4.716	-6.433	
Zn(OH)2(epsilon)	-4.444	-6.063	
Zn(OH)2(gamma)	-4.665	-6.364	

```
fix     CO2(g)                  0.000       0.000   satd
fix     O2(g)                   0.000       0.000   satd
```

--- Summary of Solid Solutions ---

--- Carbonate-Calcite ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Calcite	1.1383E-01	-0.9438	0.0000	-0.9438
Magnesite	8.7216E-01	-0.0594	0.0000	-0.0594
Rhodochrosite	1.1112E-09	-8.9542	0.0000	-8.9542
Siderite	1.9715E-18	-17.7052	0.0000	-17.7052
Smithsonite	1.8085E-03	-2.7427	0.0000	-2.7427
Strontianite	1.2200E-02	-1.9137	0.0000	-1.9137

Mineral	Log Q/K	Aff, kcal	State
Carbonate-Calcite	-1.815	-2.476	
Calcite	-1.815	-2.476	
Magnesite	-1.815	-2.476	
Rhodochrosite	-1.815	-2.476	
Siderite	-1.815	-2.476	
Smithsonite	-1.815	-2.476	
Strontianite	-1.815	-2.476	

--- Clinoptilolite-hy-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-hy-Ca	1.2696E-08	-7.8963	0.0000	-7.8963
Clinoptilolite-hy-Cs	8.3712E-25	-24.0772	0.0000	-24.0772
Clinoptilolite-hy-K	4.2285E-06	-5.3738	0.0000	-5.3738
Clinoptilolite-hy-Na	1.0000E+00	0.0000	0.0000	0.0000
Clinoptilolite-hy-Sr	6.4822E-14	-13.1883	0.0000	-13.1883

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-hy-ss	-1.289	-1.758	
Clinoptilolite-hy-Ca	-1.289	-1.758	
Clinoptilolite-hy-Cs	-1.289	-1.758	
Clinoptilolite-hy-K	-1.289	-1.758	
Clinoptilolite-hy-Na	-1.289	-1.758	
Clinoptilolite-hy-Sr	-1.289	-1.758	

--- Clinoptilolite-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-Ca	5.0575E-03	-2.2961	-5.6483	-7.9444

Clinoptilolite-Cs	1.0611E-07	-6.9742	-17.1567	-24.1309
Clinoptilolite-K	2.7020E-02	-1.5683	-3.8581	-5.4264
Clinoptilolite-NH4	6.5695E-66	-65.1825	-160.3489	-225.5313
Clinoptilolite-Na	9.6777E-01	-0.0142	-0.0350	-0.0492
Clinoptilolite-Sr	1.4961E-04	-3.8250	-9.4096	-13.2346

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-ss	-1.241	-1.694	
Clinoptilolite-Ca	-1.241	-1.694	
Clinoptilolite-Cs	-1.241	-1.694	
Clinoptilolite-K	-1.241	-1.694	
Clinoptilolite-NH4	-1.241	-1.694	
Clinoptilolite-Na	-1.241	-1.694	
Clinoptilolite-Sr	-1.241	-1.694	

--- Saponite-tri ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Saponite-Ca	7.8345E-03	-2.1060	1.4110	-0.6950
Saponite-H	3.9339E-05	-4.4052	2.9515	-1.4537
Saponite-K	2.1888E-02	-1.6598	1.1121	-0.5477
Saponite-Mg	4.7084E-02	-1.3271	0.8892	-0.4380
Saponite-Na	9.2315E-01	-0.0347	0.0233	-0.0115

Mineral	Log Q/K	Aff, kcal	State
Saponite-tri	-1.071	-1.462	
Saponite-Ca	-1.071	-1.462	
Saponite-H	-1.071	-1.462	
Saponite-K	-1.071	-1.462	
Saponite-Mg	-1.071	-1.462	
Saponite-Na	-1.071	-1.462	

--- Smectite-di ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Beidellite-Ca	5.1891E-08	-7.2849	4.8809	-2.4040
Beidellite-K	1.4508E-07	-6.8384	4.5817	-2.2567
Beidellite-Mg	3.1186E-07	-6.5060	4.3590	-2.1470
Beidellite-Na	6.1145E-06	-5.2136	3.4931	-1.7205
Montmor-Ca	9.3158E-05	-4.0308	2.7006	-1.3302
Montmor-K	4.2535E-04	-3.3712	2.2587	-1.1125
Montmor-Mg	9.0991E-04	-3.0410	2.0375	-1.0035
Montmor-Na	1.7483E-02	-1.7574	1.1775	-0.5799
Nontronite-Ca	7.6862E-03	-2.1143	1.4166	-0.6977
Nontronite-K	2.1489E-02	-1.6678	1.1174	-0.5504
Nontronite-Mg	4.6226E-02	-1.3351	0.8945	-0.4406
Nontronite-Na	9.0568E-01	-0.0430	0.0288	-0.0142

Mineral	Log Q/K	Aff, kcal	State
Smectite-di	0.000	0.000	satd
Beidellite-Ca	0.000	0.000	satd
Beidellite-K	0.000	0.000	satd
Beidellite-Mg	0.000	0.000	satd
Beidellite-Na	0.000	0.000	satd
Montmor-Ca	0.000	0.000	satd
Montmor-K	0.000	0.000	satd
Montmor-Mg	0.000	0.000	satd
Montmor-Na	0.000	0.000	satd
Nontronite-Ca	0.000	0.000	satd
Nontronite-K	0.000	0.000	satd
Nontronite-Mg	0.000	0.000	satd
Nontronite-Na	0.000	0.000	satd

--- Lanthanide hydroxide ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
La(OH)3	1.0833E-04	-3.9652	0.0000	-3.9652
Ce(OH)3	6.2317E-15	-14.2054	0.0000	-14.2054
Nd(OH)3(c)	6.1633E-01	-0.2102	0.0000	-0.2102
Gd(OH)3	3.0884E-01	-0.5103	0.0000	-0.5103
Sm(OH)3	7.4720E-02	-1.1266	0.0000	-1.1266

Mineral	Log Q/K	Aff, kcal	State
Lanthanide hydroxide	-7.957	-10.855	
La(OH)3	-7.957	-10.855	
Ce(OH)3	-7.957	-10.855	
Nd(OH)3(c)	-7.957	-10.855	
Gd(OH)3	-7.957	-10.855	
Sm(OH)3	-7.957	-10.855	

--- Rhabdophane-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaPO4:H2O	8.2979E-01	-0.0810	0.0000	-0.0810
CePO4:H2O	1.5094E-11	-10.8212	0.0000	-10.8212
NdPO4:H2O	9.4193E-02	-1.0260	0.0000	-1.0260
GdPO4:H2O	1.8790E-02	-1.7261	0.0000	-1.7261
SmPO4:H2O	5.7232E-02	-1.2424	0.0000	-1.2424

Mineral	Log Q/K	Aff, kcal	State
Rhabdophane-ss	-2.191	-2.990	
LaPO4:H2O	-2.191	-2.990	
CePO4:H2O	-2.191	-2.990	
NdPO4:H2O	-2.191	-2.990	
GdPO4:H2O	-2.191	-2.990	
SmPO4:H2O	-2.191	-2.990	

--- Lanthanide fluoride ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaF3:0.5H2O	8.6903E-01	-0.0610	0.0000	-0.0610
CeF3:0.5H2O	2.5054E-11	-10.6011	0.0000	-10.6011
NdF3:0.5H2O	1.2419E-01	-0.9059	0.0000	-0.9059
GdF3:0.5H2O	7.8344E-04	-3.1060	0.0000	-3.1060
SmF3:0.5H2O	5.9939E-03	-2.2223	0.0000	-2.2223

Mineral	Log Q/K	Aff, kcal	State
Lanthanide fluoride	-14.567	-19.873	
LaF3:0.5H2O	-14.567	-19.873	
CeF3:0.5H2O	-14.567	-19.873	
NdF3:0.5H2O	-14.567	-19.873	
GdF3:0.5H2O	-14.567	-19.873	
SmF3:0.5H2O	-14.567	-19.873	

--- Summary of Gases ---

Gas	Fugacity	Log fugacity
Al(g)	9.7061-192	-191.0130
B(g)	5.4247-204	-203.2656
BF3(g)	1.3374E-44	-43.8738
C(g)	3.0917-190	-189.5098
CH4(g)	3.5215-146	-145.4533
CO(g)	6.0395E-49	-48.2190
CO2(g)	3.1623E-04	-3.5000
Ca(g)	1.2988-153	-152.8865
Chlorine	6.7908E-31	-30.1681
Cs(g)	2.5226E-82	-81.5982
Cu(g)	4.1870E-82	-81.3781
Fluorine	4.6625E-86	-85.3314
H2(g)	6.1082E-42	-41.2141
H2O(g)	2.5948E-02	-1.5859
H2S(g)	4.5846-144	-143.3387
HCl(g)	1.0103E-19	-18.9955
HF(g)	9.4485E-16	-15.0246
K(g)	1.2716E-76	-75.8956
Li(g)	5.6184E-96	-95.2504
Mg(g)	1.8672-129	-128.7288
Nitrogen	5.1093E-22	-21.2916
NH3(g)	2.6017E-70	-69.5848
NO(g)	7.1176E-27	-26.1477
NO2(g)	4.8667E-21	-20.3128
Na(g)	2.9674E-73	-72.5276
O2(g)	2.0999E-01	-0.6778
Pb(g)	9.0392E-68	-67.0439
S2(g)	1.2561-230	-229.9010
SO2(g)	8.1263E-57	-56.0901
Si(g)	4.2257-221	-220.3741
SiF4(g)	3.5207E-45	-44.4534

```
Ti(g)                       3.8019-231   -230.4200
TiCl4(g)                    3.4982E-89    -88.4562
U(g)                        1.8900-301   -300.7235
U2Cl10(g)                   4.0462-264   -263.3929
U2Cl8(g)                    1.8473-264   -263.7335
U2F10(g)                    2.7410-181   -180.5621
UCl(g)                      1.7027-258   -257.7689
UCl2(g)                     4.5887-214   -213.3383
UCl3(g)                     2.7087-167   -166.5672
UCl4(g)                     8.6579-138   -137.0626
UCl5(g)                     1.4239-145   -144.8465
UCl6(g)                     4.3505-148   -147.3615
UF(g)                       3.3840-244   -243.4706
UF2(g)                      4.4935-205   -204.3474
UF3(g)                      1.4684-159   -158.8332
UF4(g)                      7.0827-111   -110.1498
UF5(g)                      1.5648-103   -102.8055
UF6(g)                      3.4042-110   -109.4680
UO(g)                       1.4927-216   -215.8260
UO2(g)                      2.7655-132   -131.5582
UO2Cl2(g)                   8.1996E-82    -81.0862
UO2F2(g)                    5.8249E-71    -70.2347
UO3(g)                      2.0341E-79    -78.6916
UOF4(g)                     2.1106E-88    -87.6756
Zn(g)                       3.9184E-77    -76.4069



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--- shifting e.s. solid(s) to the p.r.s. (shftz) ---

      shifted -- Celadonite
              - old mass=  8.03804E-05, new mass=  8.03804E-07
      shifted -- Maximum_Microcline
              - old mass=  5.93244E-04, new mass=  5.93244E-06
      shifted -- Mesolite
              - old mass=  1.98919E-04, new mass=  1.98919E-06
      shifted -- Muscovite
              - old mass=  7.23783E-04, new mass=  7.23783E-06
      shifted -- Ni2SiO4
              - old mass=  8.01967E-07, new mass=  8.00000E-07
      shifted -- Pyrolusite
              - old mass=  1.28170E-05, new mass=  8.00000E-07
  not shifted -- Pyromorphite
              - mass=  1.53417E-11
      shifted -- Quartz
              - old mass=  1.15638E-02, new mass=  1.15638E-04
      shifted -- Rutile
              - old mass=  1.64717E-05, new mass=  8.00000E-07
      shifted -- Smectite-di
              - old mass=  7.80844E-05, new mass=  8.00000E-07

Stepping to zi=  2.0009E+00, delzi=  9.0027E-04, nord= 6
  time =  1.9299E+04 d, dltime =  8.6832E+00 d
Steps completed =   471, iter = 10, ncorr = 0
Most rapidly changing is zvclg1(Muscovite               ) =     -4.7555

Stepping to zi=  2.0027E+00, delzi=  1.8005E-03, nord= 4
  time =  1.9316E+04 d, dltime =  1.7366E+01 d
Steps completed =   472, iter =  7, ncorr = 0
Most rapidly changing is zvclg1(Muscovite               ) =     -4.4179
```

```
Stepping to zi=  2.0063E+00, delzi=  3.6011E-03, nord= 6
  time =  1.9351E+04 d, dltime =  3.4733E+01 d
Steps completed =   473, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-Na           ) =    -10.2715

Stepping to zi=  2.0111E+00, delzi=  4.8318E-03, nord= 6
  time =  1.9398E+04 d, dltime =  4.6603E+01 d
Steps completed =   474, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-Na           ) =    -10.0347

Stepping to zi=  2.0180E+00, delzi=  6.9161E-03, nord= 4
  time =  1.9464E+04 d, dltime =  6.6706E+01 d
Steps completed =   475, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-Na           ) =     -9.8234

Stepping to zi=  2.0302E+00, delzi=  1.2177E-02, nord= 5
  time =  1.9582E+04 d, dltime =  1.1744E+02 d
Steps completed =   476, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Montmor-Na              ) =     -6.1310

Stepping to zi=  2.0481E+00, delzi=  1.7879E-02, nord= 6
  time =  1.9754E+04 d, dltime =  1.7245E+02 d
Steps completed =   477, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-Na           ) =     -9.3632

Stepping to zi=  2.0657E+00, delzi=  1.7557E-02, nord= 6
  time =  1.9923E+04 d, dltime =  1.6934E+02 d
Steps completed =   478, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -45.7048

Stepping to zi=  2.0833E+00, delzi=  1.7590E-02, nord= 6
  time =  2.0093E+04 d, dltime =  1.6966E+02 d
Steps completed =   479, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -45.8570

Stepping to zi=  2.1012E+00, delzi=  1.7924E-02, nord= 6
  time =  2.0266E+04 d, dltime =  1.7288E+02 d
Steps completed =   480, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -46.0039

Stepping to zi=  2.1197E+00, delzi=  1.8516E-02, nord= 6
  time =  2.0445E+04 d, dltime =  1.7859E+02 d
Steps completed =   481, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -46.1476

Stepping to zi=  2.1390E+00, delzi=  1.9354E-02, nord= 6
  time =  2.0631E+04 d, dltime =  1.8667E+02 d
Steps completed =   482, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -46.2901

Stepping to zi=  2.1595E+00, delzi=  2.0416E-02, nord= 6
  time =  2.0828E+04 d, dltime =  1.9691E+02 d
Steps completed =   483, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -46.4325

Stepping to zi=  2.1811E+00, delzi=  2.1603E-02, nord= 6
  time =  2.1037E+04 d, dltime =  2.0837E+02 d
Steps completed =   484, iter = 19, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -46.5751

Stepping to zi=  2.2039E+00, delzi=  2.2794E-02, nord= 6
  time =  2.1256E+04 d, dltime =  2.1985E+02 d
```

```
Steps completed =   485, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -46.7176

Stepping to zi=  2.2279E+00, delzi=  2.4020E-02, nord= 6
  time =  2.1488E+04 d, dltime =  2.3167E+02 d
Steps completed =   486, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -46.8596

Stepping to zi=  2.2532E+00, delzi=  2.5302E-02, nord= 6
  time =  2.1732E+04 d, dltime =  2.4404E+02 d
Steps completed =   487, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -47.0010

Stepping to zi=  2.2798E+00, delzi=  2.6659E-02, nord= 6
  time =  2.1989E+04 d, dltime =  2.5713E+02 d
Steps completed =   488, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -47.1418

Stepping to zi=  2.3079E+00, delzi=  2.8104E-02, nord= 6
  time =  2.2260E+04 d, dltime =  2.7106E+02 d
Steps completed =   489, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -47.2820

Stepping to zi=  2.3376E+00, delzi=  2.9645E-02, nord= 6
  time =  2.2546E+04 d, dltime =  2.8593E+02 d
Steps completed =   490, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -47.4217

* note - (eq6/search) A search for where a phase supersaturates
      indicates that the event being searched for does not
      take place in the interval being examined:
           the phase is Clinoptilolite-ss
           delzi will not be decreased

Stepping to zi=  2.3616E+00, delzi=  2.3978E-02, nord= 6
  time =  2.2777E+04 d, dltime =  2.3127E+02 d
iter =    3
      0 supersaturated pure minerals
      1 supersaturated solid solutions

               The most supersaturated phases           Affinity, kcal

                 1   50500   Clinoptilolite-ss             0.02592550
--- Go back to reduce the extent of supersaturation ---
--- Cutting step size and trying again ---

Stepping to zi=  2.3436E+00, delzi=  5.9944E-03, nord= 6
  time =  2.2604E+04 d, dltime =  5.7816E+01 d
Steps completed =   491, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -47.4490

Stepping to zi=  2.3556E+00, delzi=  1.1989E-02, nord= 4
  time =  2.2720E+04 d, dltime =  1.1563E+02 d
iter =    3
      0 supersaturated pure minerals
      1 supersaturated solid solutions

               The most supersaturated phases           Affinity, kcal

                 1   50500   Clinoptilolite-ss             0.00623640


  Attempted species assemblage no.   2
```

```
 1      1  H2O
 2      3  Al+++
 3      7  B(OH)3(aq)
 4      8  Ba++
 5     11  Ca++
 6     13  Ce+++
 7     14  Cl-
 8     16  CrO4--
 9     17  Cs+
10     18  Cu++
11     22  F-
12     23  Fe++
13     25  Gd+++
14     26  H+
15     28  HCO3-
16     29  HPO4--
17     35  K+
18     37  La+++
19     38  Li+
20     40  Mg++
21     41  Mn++
22     42  MoO4--
23     43  NO3-
24     44  Na+
25     45  Nd+++
26     47  Ni++
27     49  Pb++
28     52  Pu++++
29     58  SO4--
30     62  SiO2(aq)
31     63  Sm+++
32     65  Sr++
33     69  Ti(OH)4(aq)
34     72  UO2++
35     73  VO++
36     78  Zn++
37     79  Zr(OH)2++
38     80  O2(g)
39    120  Celadonite
40    323  Maximum_Microcline
41    328  Mesolite
42    368  Muscovite
43    405  Ni2SiO4
44    470  Pyrolusite
45    471  Pyromorphite
46    475  Quartz
47    482  Rutile
48    689  fix     CO2(g)
49    690  fix     O2(g)
50      1  ClinoptiClinoptilolite-C
51      2  ClinoptiClinoptilolite-C
52      3  ClinoptiClinoptilolite-K
53      4  ClinoptiClinoptilolite-N
54      5  ClinoptiClinoptilolite-N
55      6  ClinoptiClinoptilolite-S
56      1  SmectiteBeidellite-Ca
57      2  SmectiteBeidellite-K
58      3  SmectiteBeidellite-Mg
59      4  SmectiteBeidellite-Na
60      5  SmectiteMontmor-Ca
61      6  SmectiteMontmor-K
62      7  SmectiteMontmor-Mg
```

```
           63      8  SmectiteMontmor-Na
           64      9  SmectiteNontronite-Ca
           65     10  SmectiteNontronite-K
           66     11  SmectiteNontronite-Mg
           67     12  SmectiteNontronite-Na

Steps completed =   492, iter = 17, ncorr = 0

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                    Reaction progress        =  2.35557383281297E+00
                    Log of reaction progress =       0.3720967



                    Time =  1.963E+09 sec
                         =  2.272E+04 days
                         =  6.220E+01 years

                    Log sec =        9.293
                    Log days =       4.356
                    Log years =      1.794

                    Temperature    =     25.000 degrees C
                    total pressure =      1.013 bars


Change in the product phase assemblage


                              --- Reactant Summary ---


    Reactant                   Moles     Delta moles    Mass, g    Delta Mass, g

 Tuff                       9.7644E+01   2.3556E+00   2.0102E+03   4.8493E+01


               Current total mass =  2.01015E+03 grams
               Delta total mass   =  4.84929E+01 grams
               Delta total volume =      0.00000 cc


    Reactant                Rel. Rate      Rate         Rate
                             mol/mol       mol/s      mol/s/cm2

 Tuff                       1.0000E+00   1.2000E-09   2.5000E-15


    Reactant                   Affinity   Surface Area
                               kcal/mol     mol/s/cm2

 Tuff                        999.00000   4.8000E+05


    Reactant                Rate Constants, mol/s/cm2

 Tuff
                   Forward    2.5000E-15
```

Affinity of the overall irreversible reaction= 0.000 kcal
Contributions from irreversible reactions
with no thermodynamic data are not included

--- Element Totals for the Aqueous Solution ---

Element	mg/kg soln.	Molality	Moles
O	8.862845E+05	5.562394E+01	5.555506E+01
Al	5.973644E-03	2.223130E-07	2.220377E-07
B	1.335405E-01	1.240336E-05	1.238800E-05
Ba	1.369310E-05	1.001240E-10	1.000000E-10
Ca	7.039311E-04	1.763666E-08	1.761482E-08
Ce	1.397109E-19	1.001239E-24	9.999993E-25
Cl	7.119584E+00	2.016497E-04	2.014000E-04
Cr	2.997645E+02	5.788975E-03	5.781806E-03
Cs	1.278602E-05	9.660175E-11	9.648212E-11
Cu	6.653090E-10	1.051302E-14	1.050000E-14
F	2.266864E-01	1.198121E-05	1.196637E-05
Fe	1.143213E-08	2.055511E-13	2.052965E-13
Gd	1.567965E-09	1.001240E-14	9.999998E-15
H	1.114478E+05	1.110271E+02	1.108896E+02
C	1.380565E+02	1.154171E-02	1.152741E-02
P	9.702079E-01	3.145308E-05	3.141413E-05
K	2.004759E+00	5.148688E-05	5.142312E-05
La	1.385049E-09	1.001240E-14	9.999998E-15
Li	6.920985E-07	1.001240E-10	1.000000E-10
Mg	2.009473E-02	8.301927E-07	8.291646E-07
Mn	4.383194E-11	8.011425E-16	8.001504E-16
Mo	2.180326E+02	2.281992E-03	2.279166E-03
N	1.983222E+00	1.421761E-04	1.420000E-04
Na	1.217046E+03	5.315752E-02	5.309169E-02
Nd	1.438240E-09	1.001240E-14	9.999998E-15
Ni	9.848732E-05	1.685033E-09	1.682947E-09
Pb	2.254435E-06	1.092547E-11	1.091194E-11
Pu	2.432964E-09	1.001240E-14	9.999999E-15
S	3.731966E+02	1.168652E-02	1.167205E-02
Si	4.315843E+00	1.543035E-04	1.541124E-04
Sm	1.499264E-09	1.001240E-14	9.999998E-15
Sr	1.446348E-08	1.657531E-13	1.655479E-13
Ti	1.076454E-05	2.257531E-10	2.254735E-10
U	2.373426E-09	1.001240E-14	1.000000E-14
V	4.770133E+00	9.402667E-05	9.391022E-05
Zn	6.520144E-06	1.001240E-10	1.000000E-10
Zr	9.096104E-16	1.001241E-20	1.000001E-20

Single ion activities and activity coefficients are here defined
with respect to the modified NBS pH scale

	pH	Eh	pe
modified NBS pH scale	9.2061	0.6744	1.1401E+01
rational pH scale	9.1252	0.6792	1.1482E+01

pHCl = 13.0013

Oxygen fugacity = 2.09991E-01
Log oxygen fugacity = -0.67780

Activity of water = 0.99866
Log activity of water = -0.00058

Ionic strength = 7.111958E-02 molal
Sum of molalities = 0.0834730962751
Osmotic coefficient = 0.89286

Mass of solution = 1.002892 kg
Mass of solutes = 0.004130 kg
Conc. of solutes = 0.411843 per cent (w/w)

Moles of solvent H2O = 5.54397E+01
Mass of solvent H2O = 9.98762E-01 kg

Species	Molality	Log molality	Log gamma	Log activity
Na+	5.1194E-02	-1.2908	-0.1057	-1.3965
SO4--	1.0301E-02	-1.9871	-0.3857	-2.3728
HCO3-	9.6021E-03	-2.0176	-0.0904	-2.1080
CrO4--	5.7833E-03	-2.2378	-0.3857	-2.6235
MoO4--	2.2820E-03	-2.6417	-0.3730	-3.0146
CO3--	1.3876E-03	-2.8577	-0.3730	-3.2307
NaSO4-	1.3840E-03	-2.8589	-0.0904	-2.9493
NaHCO3(aq)	4.4626E-04	-3.3504	0.0000	-3.3504
O2(aq)	2.6089E-04	-3.5835	0.0074	-3.5761
Cl-	2.0057E-04	-3.6977	-0.0974	-3.7951
NO3-	1.4218E-04	-3.8472	-0.0974	-3.9446
SiO2(aq)	1.0016E-04	-3.9993	0.0000	-3.9993
NaCO3-	9.4981E-05	-4.0224	-0.0904	-4.1128
VO3OH--	8.4396E-05	-4.0737	-0.3857	-4.4593
K+	4.9959E-05	-4.3014	-0.1127	-4.4141
NaHSiO3(aq)	3.2047E-05	-4.4942	0.0000	-4.4942
HPO4--	2.6720E-05	-4.5732	-0.3857	-4.9588
HSiO3-	2.2089E-05	-4.6558	-0.0904	-4.7462
OH-	2.0149E-05	-4.6957	-0.0938	-4.7895
F-	1.1942E-05	-4.9229	-0.0938	-5.0167
CO2(aq)	1.0560E-05	-4.9763	0.0074	-4.9689
HVO4--	9.0913E-06	-5.0414	-0.3857	-5.4270
BO2-	6.3694E-06	-5.1959	-0.0904	-5.2863
HCrO4-	5.6908E-06	-5.2448	-0.0904	-5.3352
B(OH)3(aq)	5.6476E-06	-5.2481	0.0000	-5.2481
NaHPO4-	4.5197E-06	-5.3449	-0.0904	-5.4353
KSO4-	1.5245E-06	-5.8169	-0.0904	-5.9073
NaCl(aq)	1.0749E-06	-5.9686	0.0000	-5.9686
Mg++	4.5079E-07	-6.3460	-0.3330	-6.6790
NaB(OH)4(aq)	3.8632E-07	-6.4131	0.0000	-6.4131
H2VO4-	3.3130E-07	-6.4798	-0.0904	-6.5702
MgSO4(aq)	2.2902E-07	-6.6401	0.0000	-6.6401
AlO2-	2.2070E-07	-6.6562	-0.0904	-6.7466
VO2(OH)2-	2.0532E-07	-6.6876	-0.0904	-6.7780
H2PO4-	1.3516E-07	-6.8692	-0.0904	-6.9596
MgCO3(aq)	1.1727E-07	-6.9308	0.0000	-6.9308
NaOH(aq)	1.0334E-07	-6.9857	0.0000	-6.9857
PO4---	6.4325E-08	-7.1916	-0.8829	-8.0745
NaF(aq)	3.8834E-08	-7.4108	0.0000	-7.4108
MgHCO3+	2.2612E-08	-7.6457	-0.1057	-7.7514
Ca++	9.6392E-09	-8.0160	-0.3698	-8.3858

MgPO4-	8.4315E-09	-8.0741	-0.0904	-8.1645
H2SiO4--	6.8784E-09	-8.1625	-0.3857	-8.5482
CaCO3(aq)	5.1358E-09	-8.2894	0.0000	-8.2894
KHPO4-	3.1440E-09	-8.5025	-0.0904	-8.5929
VO4---	2.3424E-09	-8.6303	-0.8829	-9.5132
CaSO4(aq)	2.2517E-09	-8.6475	0.0000	-8.6475
MgHPO4(aq)	1.8713E-09	-8.7278	0.0000	-8.7278
Cr2O7--	1.7627E-09	-8.7538	-0.3857	-9.1395
Ni++	1.3446E-09	-8.8714	-0.3698	-9.2413
NaAlO2(aq)	1.2990E-09	-8.8864	0.0000	-8.8864
H+	7.4957E-10	-9.1252	-0.0810	-9.2061
CaHCO3+	4.5558E-10	-9.3414	-0.1057	-9.4471
NiSO4(aq)	3.2482E-10	-9.4884	0.0000	-9.4884
HAlO2(aq)	3.1452E-10	-9.5023	0.0000	-9.5023
HSO4-	3.0943E-10	-9.5094	-0.0904	-9.5998
Ti(OH)4(aq)	2.2575E-10	-9.6464	0.0000	-9.6464
KOH(aq)	2.1452E-10	-9.6685	0.0000	-9.6685
KCl(aq)	1.9777E-10	-9.7038	0.0000	-9.7038
CaPO4-	1.2306E-10	-9.9099	-0.0904	-10.0003
MgB(OH)4+	1.0899E-10	-9.9626	-0.1057	-10.0683

--- Summary of Instantaneously Precipitated Solid Phases ---
(defined by derivatives)

--- Theoretical Rock Composition ---
g/kg

O	4.992147E+01
Al	7.097992E+00
Ca	4.212779E-01
Cl	5.483222E-10
Fe	6.886094E-01
H	2.301953E-01
P	1.437149E-09
K	4.320410E+00
Mg	1.557115E-01
Mn	5.446164E-02
Na	2.979623E-01
Ni	1.241385E-06
Pb	1.602309E-08
Si	3.780034E+01
Ti	6.189997E-02

--- Oxide Percentages ---

Oxide Theoretical rock

Total = 0.0000

Phase/end-member	d mol/d zi	d grams/d zi	d vol (cc)/d zi
Celadonite	1.2239E-03	4.8555E-01	1.9227E-01
Maximum_Microcline	8.8544E-03	2.4645E+00	9.6284E-01
Mesolite	3.1309E-03	1.2141E+00	5.3601E-01
Muscovite	1.1545E-02	4.5983E+00	1.6244E+00
Ni2SiO4	2.0696E-09	4.3352E-07	8.8188E-08
Pyrolusite	1.9400E-04	1.6866E-02	9.7000E-02
Pyromorphite	3.0267E-12	4.1053E-09	5.8313E-10
Quartz	1.8311E-01	1.1002E+01	4.1543E+00
Rutile	2.5300E-04	2.0209E-02	4.7615E-03

fix CO2(g)	-1.7113E-02	-7.5315E-01	0.0000E+00
fix O2(g)	-7.0529E-04	-2.2568E-02	0.0000E+00
Clinoptilolite-ss			
Clinoptilolite-Ca	3.0691E-11	4.1262E-08	1.5346E-08
Clinoptilolite-Cs	1.8728E-10	3.2507E-07	9.3641E-08
Clinoptilolite-K	4.0277E-10	5.6810E-07	2.0138E-07
Clinoptilolite-NH4	2.8895E-08	3.8647E-05	1.4448E-05
Clinoptilolite-Na	5.5098E-08	7.4638E-05	2.7549E-05
Clinoptilolite-Sr	5.4910E-07	7.8348E-04	2.7455E-04
Smectite-di			
Beidellite-Ca	1.1751E-06	4.3076E-04	1.5221E-04
Beidellite-K	8.2617E-05	3.0804E-02	1.1046E-02
Beidellite-Mg	3.8287E-07	1.3935E-04	4.7166E-05
Beidellite-Na	5.1958E-06	1.9097E-03	6.7826E-04
Montmor-Ca	1.1185E-05	4.0942E-03	5.5925E-03
Montmor-K	1.1897E-03	4.4298E-01	5.9487E-01
Montmor-Mg	9.0276E-04	3.2810E-01	4.5138E-01
Montmor-Na	0.0000E+00	0.0000E+00	0.0000E+00
Nontronite-Ca	0.0000E+00	0.0000E+00	0.0000E+00
Nontronite-K	0.0000E+00	0.0000E+00	0.0000E+00
Nontronite-Mg	0.0000E+00	0.0000E+00	0.0000E+00
Nontronite-Na	0.0000E+00	0.0000E+00	0.0000E+00

--- Summary of Solid Phases (E.S.+P.R.S.) ---

Phase/End-member	Log moles	Moles	Mass, g	Volume, cc
Alunite	-2.5559	2.7801E-03	1.1516E+00	8.1624E-01
Celadonite	-2.5315	2.9409E-03	1.1668E+00	4.6201E-01
Diaspore	-1.6079	2.4665E-02	1.4796E+00	4.3804E-01
Fluorapatite	-3.9881	1.0278E-04	5.1834E-02	5.1392E-02
Hematite	-3.7144	1.9300E-04	3.0820E-02	5.8428E-03
Maximum_Microcline	-1.4924	3.2178E-02	8.9562E+00	3.4991E+00
Mesolite	-2.1556	6.9885E-03	2.7100E+00	1.1964E+00
Muscovite	-1.8941	1.2760E-02	5.0824E+00	1.7955E+00
Ni2SiO4	-2.1930	6.4125E-03	1.3432E+00	2.7324E-01
Nontronite-H	-4.9990	1.0023E-05	4.1899E-03	5.0117E-03
Pyrolusite	-2.9785	1.0507E-03	9.1340E-02	5.2533E-01
Pyromorphite	-10.7492	1.7818E-11	2.4167E-08	3.4327E-09
Quartz	-0.3600	4.3652E-01	2.6228E+01	9.9038E+00
Rutile	-3.2248	5.9596E-04	4.7605E-02	1.1216E-02
fix CO2(g)	2.3010	1.9999E+02	8.8015E+03	0.0000E+00
fix O2(g)	2.3010	2.0000E+02	6.3997E+03	0.0000E+00
Clinoptilolite-ss	-4.9465	1.1312E-05		
Clinoptilolite-Ca	-7.7910	1.6182E-08	2.1755E-05	8.0909E-06
Clinoptilolite-Cs	-11.9937	1.0147E-12	1.7612E-09	5.0734E-10
Clinoptilolite-K	-6.8742	1.3360E-07	1.8845E-04	6.6802E-05
Clinoptilolite-NH4	-70.8000	1.5848E-71	2.1196E-68	7.9240E-69
Clinoptilolite-Na	-4.9523	1.1162E-05	1.5121E-02	5.5811E-03
Clinoptilolite-Sr	-10.2396	5.7591E-11	8.2173E-08	2.8796E-08
Smectite-di	-2.5730	2.6732E-03		
Beidellite-Ca	-9.3095	4.9038E-10	1.7976E-07	6.3519E-08
Beidellite-K	-9.0086	9.8033E-10	3.6552E-07	1.3107E-07
Beidellite-Mg	-9.1020	7.9075E-10	2.8780E-07	9.7412E-08
Beidellite-Na	-8.0764	8.3860E-09	3.0822E-06	1.0947E-06
Montmor-Ca	-6.3855	4.1161E-07	1.5067E-04	2.0580E-04
Montmor-K	-6.1427	7.2000E-07	2.6808E-04	3.6000E-04
Montmor-Mg	-5.8178	1.5211E-06	5.5282E-04	7.6054E-04
Montmor-Na	-4.6263	2.3644E-05	8.6776E-03	1.1822E-02
Nontronite-Ca	-3.4092	3.8973E-04	1.6536E-01	5.1093E-02

Nontronite-K	-3.2042	6.2493E-04	2.6908E-01	8.4535E-02
Nontronite-Mg	-3.3078	4.9231E-04	2.0760E-01	6.3882E-02
Nontronite-Na	-2.9431	1.1399E-03	4.8476E-01	1.5059E-01

	Mass, grams	Volume, cc
Created	1.525065E+04	1.935203E+01
Destroyed	4.849294E+01	0.000000E+00
Net	1.520215E+04	1.935203E+01

Warning-- these volume totals may be incomplete because of missing partial molar volume data in the data base

--- Summary of Pure Mineral Saturation States ---

Mineral	Log Q/K	Aff, kcal	State
Alamosite	-2.629	-3.587	
Albite	-0.022	-0.030	
Albite_high	-1.341	-1.829	
Albite_low	-0.022	-0.030	
Alstonite	-7.209	-9.835	
Analcime	-0.148	-0.202	
Analcime-dehy	-6.510	-8.882	
Andalusite	-6.082	-8.298	
Anglesite	-5.889	-8.034	
Anhydrite	-6.452	-8.803	
Aragonite	-3.281	-4.476	
BaCrO4	-3.126	-4.265	
BaZrO3	83.678	114.161	ssatd
Barite	-2.837	-3.870	
Bassanite	-7.097	-9.683	
Beidellite-Ca	-2.466	-3.365	
Beidellite-Cs	-3.989	-5.442	
Beidellite-H	-3.163	-4.315	
Beidellite-K	-2.257	-3.079	
Beidellite-Mg	-2.147	-2.929	
Beidellite-Na	-1.599	-2.182	
Boehmite	-0.634	-0.864	
Boric_acid	-5.090	-6.944	
Brucite	-4.566	-6.229	
Bunsenite	-3.301	-4.504	
CaSO4:0.5H2O(beta)	-7.265	-9.912	
CaZrO3	139.757	190.669	ssatd
Calcite	-3.136	-4.279	
CeO2	-3.166	-4.319	
Celadonite	0.000	0.000	satd
Cerussite	-1.061	-1.448	
Chalcedony	-0.271	-0.370	
Chrysotile	-3.927	-5.358	
Clinochlore-14A	-6.714	-9.160	
Clinoptilolite	-4.631	-6.318	
Clinoptilolite-K	-6.670	-9.100	
Clinoptilolite-Na	-0.020	-0.027	
Clinoptilolite-hy-K	-6.664	-9.092	
Clinoptilolite-hy-Na	-0.018	-0.024	
Coesite	-0.810	-1.105	
Corundum	-4.450	-6.072	
Cristobalite(alpha)	-0.551	-0.751	

Cristobalite(beta)	-0.994	-1.356	
Crocoite	-1.274	-1.739	
Dawsonite	-0.920	-1.256	
Diaspore	-0.230	-0.313	
Diopside	-7.204	-9.829	
Dolomite	-3.382	-4.614	
Dolomite-dis	-4.927	-6.721	
Dolomite-ord	-3.382	-4.614	
Enstatite	-3.594	-4.903	
Epsomite	-7.094	-9.678	
Fe(OH)3	-6.518	-8.893	
Ferrite-Zn	-5.826	-7.949	
GdOHCO3	-7.286	-9.940	
GdPO4:H2O	-4.552	-6.210	
Gibbsite	-0.826	-1.127	
Goethite	-1.397	-1.905	
Gypsum	-6.277	-8.564	
Halite	-6.777	-9.246	
Hematite	-1.832	-2.500	
Heulandite	-4.792	-6.537	
Hexahydrite	-7.329	-9.998	
Hydrocerussite	-4.917	-6.708	
Ice	-0.139	-0.190	
Illite	-1.275	-1.739	
Jadeite	-1.647	-2.247	
K-Feldspar	0.000	0.000	ssatd
Kalicinite	-6.806	-9.285	
Kalsilite	-3.175	-4.332	
Kaolinite	-0.948	-1.294	
Kyanite	-5.812	-7.929	
LaPO4:H2O	-2.853	-3.893	
Lanarkite	-6.229	-8.498	
Lansfordite	-4.425	-6.037	
Laumontite	-5.779	-7.884	
Lawsonite	-6.325	-8.630	
Litharge	-5.601	-7.641	
Magnesite	-1.875	-2.557	
Manganite	-4.459	-6.084	
Massicot	-5.776	-7.880	
Maximum_Microcline	0.000	0.000	satd
Mesolite	0.000	0.000	satd
Mirabilite	-4.032	-5.500	
MnO2(gamma)	-1.518	-2.071	
Monohydrocalcite	-3.971	-5.417	
Montmor-Ca	-1.392	-1.900	
Montmor-Cs	-2.848	-3.886	
Montmor-K	-1.113	-1.518	
Montmor-Mg	-1.003	-1.369	
Montmor-Na	-0.459	-0.626	
Mordenite	-2.805	-3.827	
Muscovite	0.000	0.000	satd
Na2CO3	-6.877	-9.382	
Na2CO3:7H2O	-5.645	-7.701	
Nahcolite	-3.393	-4.629	
Natrolite	-1.039	-1.418	
Natron	-5.311	-7.246	
NdOHCO3	-6.774	-9.242	
NdPO4:H2O	-3.841	-5.240	
Nepheline	-3.060	-4.174	
Nesquehonite	-4.578	-6.246	
Ni(OH)2	-3.579	-4.882	
Ni2SiO4	0.000	0.000	satd
NiCO3	-5.655	-7.715	

Nontronite-Ca	-0.878	-1.198	
Nontronite-H	-1.574	-2.148	
Nontronite-K	-0.668	-0.912	
Nontronite-Mg	-0.559	-0.762	
Nontronite-Na	-0.011	-0.015	
Paragonite	-0.919	-1.253	
Paralaurionite	-6.162	-8.406	
Pb3(PO4)2	-5.636	-7.690	
Pb4O(PO4)2	-5.995	-8.179	
PbCO3.PbO	-6.898	-9.411	
PbHPO4	-4.760	-6.495	
Petalite	-6.149	-8.390	
Phlogopite	-2.518	-3.435	
Plattnerite	-0.964	-1.315	
PuO2	-4.806	-6.557	
Pyrolusite	0.000	0.000	satd
Pyromorphite	0.000	0.000	satd
Pyrophyllite	-2.576	-3.514	
Quartz	0.000	0.000	satd
Rutile	0.000	0.000	satd
Sanidine_high	-1.199	-1.636	
Saponite-Ca	-1.829	-2.495	
Saponite-Cs	-3.351	-4.572	
Saponite-H	-2.525	-3.445	
Saponite-K	-1.619	-2.209	
Saponite-Mg	-1.509	-2.059	
Saponite-Na	-0.962	-1.312	
Scolecite	-3.989	-5.442	
Sellaite	-7.328	-9.998	
SiO2(am)	-1.286	-1.754	
Sillimanite	-6.446	-8.794	
SmPO4:H2O	-4.056	-5.533	
Smectite-low-Fe-Mg	-7.076	-9.653	
Smithsonite	-4.145	-5.655	
SrZrO3	117.754	160.650	ssatd
Stilbite	-1.918	-2.616	
Strontianite	-5.942	-8.107	
Talc	-1.938	-2.644	
Thenardite	-4.857	-6.626	
Thermonatrite	-6.658	-9.083	
Trevorite	-2.341	-3.193	
Tridymite	-0.171	-0.234	
Witherite	-0.340	-0.464	
Zincite	-3.577	-4.880	
Zn(OH)2(beta)	-4.303	-5.871	
Zn(OH)2(epsilon)	-4.032	-5.500	
Zn(OH)2(gamma)	-4.252	-5.801	
fix CO2(g)	0.000	0.000	satd
fix O2(g)	0.000	0.000	satd

--- Summary of Solid Solutions ---

--- Carbonate-Calcite ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Calcite	5.1613E-02	-1.2872	0.0000	-1.2872
Magnesite	9.4325E-01	-0.0254	0.0000	-0.0254
Rhodochrosite	1.2016E-09	-8.9203	0.0000	-8.9203
Siderite	1.8612E-18	-17.7302	0.0000	-17.7302

Smithsonite	5.0559E-03	-2.2962	0.0000	-2.2962
Strontianite	8.0756E-05	-4.0928	0.0000	-4.0928

Mineral	Log Q/K	Aff, kcal	State
Carbonate-Calcite	-1.849	-2.523	
Calcite	-1.849	-2.523	
Magnesite	-1.849	-2.523	
Rhodochrosite	-1.849	-2.523	
Siderite	-1.849	-2.523	
Smithsonite	-1.849	-2.523	
Strontianite	-1.849	-2.523	

--- Clinoptilolite-hy-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-hy-Ca	1.5023E-10	-9.8232	0.0000	-9.8232
Clinoptilolite-hy-Cs	4.3812E-25	-24.3584	0.0000	-24.3584
Clinoptilolite-hy-K	2.2584E-07	-6.6462	0.0000	-6.6462
Clinoptilolite-hy-Na	1.0000E+00	0.0000	0.0000	0.0000
Clinoptilolite-hy-Sr	5.0403E-19	-18.2975	0.0000	-18.2975

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-hy-ss	-0.018	-0.024	
Clinoptilolite-hy-Ca	-0.018	-0.024	
Clinoptilolite-hy-Cs	-0.018	-0.024	
Clinoptilolite-hy-K	-0.018	-0.024	
Clinoptilolite-hy-Na	-0.018	-0.024	
Clinoptilolite-hy-Sr	-0.018	-0.024	

--- Clinoptilolite-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-Ca	1.4305E-03	-2.8445	-6.9975	-9.8420
Clinoptilolite-Cs	8.9699E-08	-7.0472	-17.3361	-24.3834
Clinoptilolite-K	1.1811E-02	-1.9277	-4.7422	-6.6699
Clinoptilolite-NH4	1.4010E-66	-65.8536	-161.9998	-227.8533
Clinoptilolite-Na	9.8675E-01	-0.0058	-0.0142	-0.0200
Clinoptilolite-Sr	5.0911E-06	-5.2932	-13.0212	-18.3144

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-ss	0.000	0.000	satd
Clinoptilolite-Ca	0.000	0.000	satd
Clinoptilolite-Cs	0.000	0.000	satd
Clinoptilolite-K	0.000	0.000	satd
Clinoptilolite-NH4	0.000	0.000	satd
Clinoptilolite-Na	0.000	0.000	satd
Clinoptilolite-Sr	0.000	0.000	satd

--- Saponite-tri ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Saponite-Ca	2.2817E-03	-2.6417	1.7700	-0.8718
Saponite-H	1.7690E-05	-4.7523	3.1840	-1.5682
Saponite-K	9.8428E-03	-2.0069	1.3446	-0.6623
Saponite-Mg	2.1178E-02	-1.6741	1.1217	-0.5525
Saponite-Na	9.6668E-01	-0.0147	0.0099	-0.0049

Mineral	Log Q/K	Aff, kcal	State
Saponite-tri	-0.957	-1.305	
Saponite-Ca	-0.957	-1.305	
Saponite-H	-0.957	-1.305	
Saponite-K	-0.957	-1.305	
Saponite-Mg	-0.957	-1.305	
Saponite-Na	-0.957	-1.305	

--- Smectite-di ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Beidellite-Ca	3.3607E-08	-7.4736	5.0073	-2.4663
Beidellite-K	1.4508E-07	-6.8384	4.5817	-2.2567
Beidellite-Mg	3.1193E-07	-6.5059	4.3590	-2.1470
Beidellite-Na	1.4238E-05	-4.8465	3.2472	-1.5994
Montmor-Ca	6.0333E-05	-4.2194	2.8270	-1.3924
Montmor-K	4.2535E-04	-3.3712	2.2587	-1.1125
Montmor-Mg	9.1011E-04	-3.0409	2.0374	-1.0035
Montmor-Na	4.0710E-02	-1.3903	0.9315	-0.4588
Nontronite-Ca	2.1856E-03	-2.6604	1.7825	-0.8779
Nontronite-K	9.4348E-03	-2.0253	1.3569	-0.6683
Nontronite-Mg	2.0300E-02	-1.6925	1.1340	-0.5585
Nontronite-Na	9.2596E-01	-0.0334	0.0224	-0.0110

Mineral	Log Q/K	Aff, kcal	State
Smectite-di	0.000	0.000	satd
Beidellite-Ca	0.000	0.000	satd
Beidellite-K	0.000	0.000	satd
Beidellite-Mg	0.000	0.000	satd
Beidellite-Na	0.000	0.000	satd
Montmor-Ca	0.000	0.000	satd
Montmor-K	0.000	0.000	satd
Montmor-Mg	0.000	0.000	satd
Montmor-Na	0.000	0.000	satd
Nontronite-Ca	0.000	0.000	satd
Nontronite-K	0.000	0.000	satd
Nontronite-Mg	0.000	0.000	satd
Nontronite-Na	0.000	0.000	satd

--- Lanthanide hydroxide ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
La(OH)3	1.2043E-04	-3.9193	0.0000	-3.9193
Ce(OH)3	6.2654E-15	-14.2031	0.0000	-14.2031
Nd(OH)3(c)	6.2105E-01	-0.2069	0.0000	-0.2069
Gd(OH)3	3.0334E-01	-0.5181	0.0000	-0.5181
Sm(OH)3	7.5493E-02	-1.1221	0.0000	-1.1221

Mineral	Log Q/K	Aff, kcal	State
Lanthanide hydroxide	-8.243	-11.246	
La(OH)3	-8.243	-11.246	
Ce(OH)3	-8.243	-11.246	
Nd(OH)3(c)	-8.243	-11.246	
Gd(OH)3	-8.243	-11.246	
Sm(OH)3	-8.243	-11.246	

--- Rhabdophane-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaPO4:H2O	8.4346E-01	-0.0739	0.0000	-0.0739
CePO4:H2O	1.3877E-11	-10.8577	0.0000	-10.8577
NdPO4:H2O	8.6789E-02	-1.0615	0.0000	-1.0615
GdPO4:H2O	1.6876E-02	-1.7727	0.0000	-1.7727
SmPO4:H2O	5.2874E-02	-1.2768	0.0000	-1.2768

Mineral	Log Q/K	Aff, kcal	State
Rhabdophane-ss	-2.779	-3.792	
LaPO4:H2O	-2.779	-3.792	
CePO4:H2O	-2.779	-3.792	
NdPO4:H2O	-2.779	-3.792	
GdPO4:H2O	-2.779	-3.792	
SmPO4:H2O	-2.779	-3.792	

--- Lanthanide fluoride ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaF3:0.5H2O	8.7981E-01	-0.0556	0.0000	-0.0556
CeF3:0.5H2O	2.2941E-11	-10.6394	0.0000	-10.6394
NdF3:0.5H2O	1.1397E-01	-0.9432	0.0000	-0.9432
GdF3:0.5H2O	7.0080E-04	-3.1544	0.0000	-3.1544
SmF3:0.5H2O	5.5153E-03	-2.2584	0.0000	-2.2584

Mineral	Log Q/K	Aff, kcal	State
Lanthanide fluoride	-15.745	-21.480	
LaF3:0.5H2O	-15.745	-21.480	
CeF3:0.5H2O	-15.745	-21.480	
NdF3:0.5H2O	-15.745	-21.480	
GdF3:0.5H2O	-15.745	-21.480	
SmF3:0.5H2O	-15.745	-21.480	

--- Summary of Gases ---

Gas	Fugacity	Log fugacity
Al(g)	9.7071-192	-191.0129
B(g)	3.9074-204	-203.4081
BF3(g)	1.1258E-45	-44.9485
C(g)	3.0917-190	-189.5098
CH4(g)	3.5199-146	-145.4535
CO(g)	6.0395E-49	-48.2190
CO2(g)	3.1623E-04	-3.5000
Ca(g)	5.4464-154	-153.2639
Chlorine	1.6200E-31	-30.7905
Cs(g)	4.8715E-82	-81.3123
Cu(g)	1.9574E-82	-81.7083
Fluorine	1.1145E-86	-85.9529
H2(g)	6.1068E-42	-41.2142
H2O(g)	2.5943E-02	-1.5860
H2S(g)	1.0620-144	-143.9739
HCl(g)	4.9342E-20	-19.3068
HF(g)	4.6190E-16	-15.3354
K(g)	1.2715E-76	-75.8957
Li(g)	1.1309E-95	-94.9466
Mg(g)	1.8676-129	-128.7287
Nitrogen	1.2204E-22	-21.9135
NH3(g)	1.2711E-70	-69.8958
NO(g)	3.4786E-27	-26.4586
NO2(g)	2.3785E-21	-20.6237
Na(g)	6.9092E-73	-72.1606
O2(g)	2.0999E-01	-0.6778
Pb(g)	1.6686E-67	-66.7776
S2(g)	6.7429-232	-231.1712
SO2(g)	1.8828E-57	-56.7252
Si(g)	4.2257-221	-220.3741
SiF4(g)	2.0117E-46	-45.6964
Ti(g)	3.8019-231	-230.4200
TiCl4(g)	1.9908E-90	-89.7010
U(g)	9.6643-303	-302.0148
U2Cl10(g)	8.1735-270	-269.0876
U2Cl8(g)	1.5642-269	-268.8057
U2F10(g)	5.5931-187	-186.2523
UCl(g)	4.2523-260	-259.3714
UCl2(g)	5.5974-216	-215.2520
UCl3(g)	1.6138-169	-168.7922
UCl4(g)	2.5194-140	-139.5987
UCl5(g)	2.0237-148	-147.6938
UCl6(g)	3.0200-151	-150.5200
UF(g)	8.4598-246	-245.0726
UF2(g)	5.4923-207	-206.2602
UF3(g)	8.7749-162	-161.0568
UF4(g)	2.0694-113	-112.6842

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UF5(g)                      2.2353-106   -105.6507
UF6(g)                      2.3775-113   -112.6239
UO(g)                       7.6325-218   -217.1173
UO2(g)                      1.4141-133   -132.8495
UO2Cl2(g)                   1.0002E-83    -82.9999
UO2F2(g)                    7.1196E-73    -72.1475
UO3(g)                      1.0401E-80    -79.9829
UOF4(g)                     6.1665E-91    -90.2100
Zn(g)                       1.0131E-76    -75.9943



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--- shifting e.s. solid(s) to the p.r.s. (shftz) ---

      shifted -- Celadonite
              - old mass=  4.40325E-04, new mass=  4.40325E-06
      shifted -- Maximum_Microcline
              - old mass=  3.20183E-03, new mass=  3.20183E-05
      shifted -- Mesolite
              - old mass=  1.11513E-03, new mass=  1.11513E-05
      shifted -- Muscovite
              - old mass=  4.08820E-03, new mass=  4.08820E-05
      shifted -- Ni2SiO4
              - old mass=  8.02535E-07, new mass=  8.00000E-07
      shifted -- Pyrolusite
              - old mass=  6.97813E-05, new mass=  8.00000E-07
  not shifted -- Pyromorphite
              - mass=  1.78176E-11
      shifted -- Quartz
              - old mass=  6.50160E-02, new mass=  6.50160E-04
      shifted -- Rutile
              - old mass=  9.07602E-05, new mass=  9.07602E-07
      shifted -- Clinoptilolite-ss
              - old mass=  1.13120E-05, new mass=  8.00000E-07
      shifted -- Smectite-di
              - old mass=  4.48583E-04, new mass=  4.48583E-06

Stepping to zi=  2.3556E+00, delzi=  1.0000E-09, nord= 0
  time =  2.2720E+04 d, dltime =  9.6451E-06 d
Steps completed =   493, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -12.9627

Stepping to zi=  2.3556E+00, delzi=  1.0000E-09, nord= 0
  time =  2.2720E+04 d, dltime =  9.6451E-06 d
Steps completed =   494, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -12.9627

Stepping to zi=  2.3556E+00, delzi=  1.0000E-09, nord= 0
  time =  2.2720E+04 d, dltime =  9.6451E-06 d
Steps completed =   495, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -12.9627

Stepping to zi=  2.3556E+00, delzi=  6.8805E-09, nord= 1
  time =  2.2720E+04 d, dltime =  6.6363E-05 d
Steps completed =   496, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -12.9627

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```
Reaction progress        =  2.35557384269349E+00
Log of reaction progress =       0.3720967


Time =  1.963E+09 sec
     =  2.272E+04 days
     =  6.220E+01 years

Log sec =        9.293
Log days =       4.356
Log years =      1.794

Temperature    =     25.000 degrees C
total pressure =      1.013 bars


Flow-through system print following a discontinuity


     --- Summary of Instantaneously Precipitated Solid Phases ---
                 (defined by derivatives)

     --- Theoretical Rock Composition ---
                  g/kg

      O      5.177416E+01
      Al     6.324039E+00
      Ca     3.753298E-01
      Cl     2.946127E-10
      Cs     1.144510E-06
      Fe     6.135213E-01
      H      7.205101E-01
      P      7.721777E-10
      K      3.838204E+00
      Mg     1.385419E-01
      Mn     4.852298E-02
      N      1.888768E-66
      Na     2.443606E+00
      Ni     2.427360E-08
      Pb     8.609181E-09
      Si     3.368861E+01
      Sr     9.597518E-07
      Ti     5.515020E-02

      --- Oxide Percentages ---

   Oxide   Theoretical rock


    Total =     0.0000


   Phase/end-member     d mol/d zi    d grams/d zi   d vol (cc)/d zi

Celadonite                  1.2311E-03   4.8840E-01   1.9340E-01
Maximum_Microcline          1.8835E-02   5.2423E+00   2.0481E+00
Mesolite                    3.1072E-03   1.2049E+00   5.3195E-01
Muscovite                   1.2430E-03   4.9512E-01   1.7491E-01
Ni2SiO4                     4.5422E-11   9.5143E-09   1.9354E-09
Pyrolusite                  1.9400E-04   1.6866E-02   9.7000E-02
Pyromorphite                1.8253E-12   2.4758E-09   3.5166E-10
Quartz                      9.5896E-02   5.7619E+00   2.1757E+00
```

Rutile	2.5300E-04	2.0209E-02	4.7615E-03
fix CO2(g)	-3.6948E-04	-1.6261E-02	0.0000E+00
fix O2(g)	-7.1054E-04	-2.2737E-02	0.0000E+00
Clinoptilolite-ss			
Clinoptilolite-Ca	8.7230E-06	1.1727E-02	4.3615E-03
Clinoptilolite-Cs	5.4557E-10	9.4696E-07	2.7278E-07
Clinoptilolite-K	7.2021E-05	1.0159E-01	3.6011E-02
Clinoptilolite-NH4	8.5431E-69	1.1426E-65	4.2715E-66
Clinoptilolite-Na	6.0172E-03	8.1512E+00	3.0086E+00
Clinoptilolite-Sr	1.3879E-09	1.9803E-06	6.9395E-07
Smectite-di			
Beidellite-Ca	4.0509E-11	1.4849E-08	5.2471E-09
Beidellite-K	1.7488E-10	6.5205E-08	2.3382E-08
Beidellite-Mg	3.7602E-10	1.3686E-07	4.6322E-08
Beidellite-Na	1.7166E-08	6.3091E-06	2.2408E-06
Montmor-Ca	7.2723E-08	2.6620E-05	3.6362E-05
Montmor-K	5.1274E-07	1.9091E-04	2.5637E-04
Montmor-Mg	1.0971E-06	3.9873E-04	5.4854E-04
Montmor-Na	4.9081E-05	1.8013E-02	2.4540E-02
Nontronite-Ca	2.6340E-06	1.1176E-03	3.4532E-04
Nontronite-K	1.1372E-05	4.8964E-03	1.5382E-03
Nontronite-Mg	2.4467E-05	1.0318E-02	3.1749E-03
Nontronite-Na	1.1162E-03	4.7468E-01	1.4746E-01

--- Summary of Solid Phases (E.S.+P.R.S.) ---

Phase/End-member	Log moles	Moles	Mass, g	Volume, cc
Alunite	-2.5559	2.7801E-03	1.1516E+00	8.1624E-01
Celadonite	-2.5315	2.9409E-03	1.1668E+00	4.6201E-01
Diaspore	-1.6079	2.4665E-02	1.4796E+00	4.3804E-01
Fluorapatite	-3.9881	1.0278E-04	5.1834E-02	5.1392E-02
Hematite	-3.7144	1.9300E-04	3.0820E-02	5.8428E-03
Maximum_Microcline	-1.4924	3.2178E-02	8.9562E+00	3.4991E+00
Mesolite	-2.1556	6.9885E-03	2.7100E+00	1.1964E+00
Muscovite	-1.8941	1.2760E-02	5.0824E+00	1.7955E+00
Ni2SiO4	-2.1930	6.4125E-03	1.3432E+00	2.7324E-01
Nontronite-H	-4.9990	1.0023E-05	4.1899E-03	5.0117E-03
Pyrolusite	-2.9785	1.0507E-03	9.1340E-02	5.2533E-01
Pyromorphite	-10.7492	1.7818E-11	2.4167E-08	3.4327E-09
Quartz	-0.3600	4.3652E-01	2.6228E+01	9.9038E+00
Rutile	-3.2248	5.9596E-04	4.7605E-02	1.1216E-02
fix CO2(g)	2.3010	1.9999E+02	8.8015E+03	0.0000E+00
fix O2(g)	2.3010	2.0000E+02	6.3997E+03	0.0000E+00
Clinoptilolite-ss	-4.9465	1.1312E-05		
Clinoptilolite-Ca	-7.7910	1.6182E-08	2.1755E-05	8.0909E-06
Clinoptilolite-Cs	-11.9937	1.0147E-12	1.7612E-09	5.0734E-10
Clinoptilolite-K	-6.8742	1.3360E-07	1.8845E-04	6.6802E-05
Clinoptilolite-NH4	-70.8000	1.5848E-71	2.1197E-68	7.9241E-69
Clinoptilolite-Na	-4.9522	1.1162E-05	1.5121E-02	5.5811E-03
Clinoptilolite-Sr	-10.2396	5.7591E-11	8.2173E-08	2.8796E-08
Smectite-di	-2.5730	2.6732E-03		
Beidellite-Ca	-9.3095	4.9038E-10	1.7976E-07	6.3519E-08
Beidellite-K	-9.0086	9.8033E-10	3.6552E-07	1.3107E-07
Beidellite-Mg	-9.1020	7.9075E-10	2.8780E-07	9.7412E-08
Beidellite-Na	-8.0764	8.3860E-09	3.0822E-06	1.0947E-06
Montmor-Ca	-6.3855	4.1161E-07	1.5067E-04	2.0580E-04
Montmor-K	-6.1427	7.2000E-07	2.6808E-04	3.6000E-04
Montmor-Mg	-5.8178	1.5211E-06	5.5282E-04	7.6054E-04
Montmor-Na	-4.6263	2.3644E-05	8.6776E-03	1.1822E-02

```
  Nontronite-Ca              -3.4092   3.8973E-04   1.6536E-01   5.1093E-02
  Nontronite-K               -3.2042   6.2493E-04   2.6908E-01   8.4535E-02
  Nontronite-Mg              -3.3078   4.9231E-04   2.0760E-01   6.3882E-02
  Nontronite-Na              -2.9431   1.1399E-03   4.8476E-01   1.5059E-01


                          Mass, grams        Volume, cc

          Created         1.525065E+04       1.935204E+01
          Destroyed       0.000000E+00       0.000000E+00
          Net             1.525065E+04       1.935204E+01

         Warning-- these volume totals may be incomplete because
         of missing partial molar volume data in the data base




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Stepping to zi=  2.3556E+00, delzi=  6.8805E-08, nord= 2
  time =  2.2720E+04 d, dltime =  6.6363E-04 d
Steps completed =   497, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -12.9632

Stepping to zi=  2.3556E+00, delzi=  6.8805E-07, nord= 2
  time =  2.2720E+04 d, dltime =  6.6363E-03 d
Steps completed =   498, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -12.9675

Stepping to zi=  2.3556E+00, delzi=  6.8805E-06, nord= 3
  time =  2.2720E+04 d, dltime =  6.6363E-02 d
Steps completed =   499, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -13.0098

Stepping to zi=  2.3556E+00, delzi=  4.6941E-06, nord= 4
  time =  2.2720E+04 d, dltime =  4.5275E-02 d
Steps completed =   500, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -13.0375

Stepping to zi=  2.3556E+00, delzi=  9.5935E-06, nord= 4
  time =  2.2720E+04 d, dltime =  9.2530E-02 d
Steps completed =   501, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -13.0919

Stepping to zi=  2.3556E+00, delzi=  1.6260E-05, nord= 5
  time =  2.2720E+04 d, dltime =  1.5683E-01 d
Steps completed =   502, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -13.1773

Stepping to zi=  2.3556E+00, delzi=  2.3748E-05, nord= 6
  time =  2.2720E+04 d, dltime =  2.2905E-01 d
Steps completed =   503, iter =  7, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -13.2892

Stepping to zi=  2.3557E+00, delzi=  2.3518E-05, nord= 6
  time =  2.2720E+04 d, dltime =  2.2684E-01 d
Steps completed =   504, iter =  7, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -13.3879

Stepping to zi=  2.3557E+00, delzi=  2.4776E-05, nord= 6
```

```
  time =  2.2721E+04 d, dltime =  2.3897E-01 d
Steps completed =   505, iter =  7, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -13.4814

Stepping to zi=  2.3557E+00, delzi=  2.6311E-05, nord= 6
  time =  2.2721E+04 d, dltime =  2.5377E-01 d
Steps completed =   506, iter =  7, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -13.5710

Stepping to zi=  2.3557E+00, delzi=  2.8419E-05, nord= 6
  time =  2.2721E+04 d, dltime =  2.7411E-01 d
Steps completed =   507, iter =  7, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -13.6585

Stepping to zi=  2.3558E+00, delzi=  3.1133E-05, nord= 6
  time =  2.2722E+04 d, dltime =  3.0028E-01 d
Steps completed =   508, iter =  7, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -13.7454

Stepping to zi=  2.3558E+00, delzi=  3.4426E-05, nord= 6
  time =  2.2722E+04 d, dltime =  3.3204E-01 d
Steps completed =   509, iter =  7, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -13.8325

Stepping to zi=  2.3558E+00, delzi=  3.8156E-05, nord= 6
  time =  2.2722E+04 d, dltime =  3.6802E-01 d
Steps completed =   510, iter =  7, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -13.9198

Stepping to zi=  2.3559E+00, delzi=  4.2127E-05, nord= 6
  time =  2.2723E+04 d, dltime =  4.0632E-01 d
Steps completed =   511, iter =  7, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -14.0071

Stepping to zi=  2.3559E+00, delzi=  4.6451E-05, nord= 6
  time =  2.2723E+04 d, dltime =  4.4802E-01 d
Steps completed =   512, iter =  7, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -14.0942

Stepping to zi=  2.3560E+00, delzi=  5.1196E-05, nord= 6
  time =  2.2724E+04 d, dltime =  4.9379E-01 d
Steps completed =   513, iter =  7, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -14.1812

Stepping to zi=  2.3560E+00, delzi=  5.6439E-05, nord= 6
  time =  2.2724E+04 d, dltime =  5.4435E-01 d
Steps completed =   514, iter =  7, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -14.2679

Stepping to zi=  2.3561E+00, delzi=  6.2247E-05, nord= 6
  time =  2.2725E+04 d, dltime =  6.0037E-01 d
Steps completed =   515, iter =  6, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -14.3545

Stepping to zi=  2.3562E+00, delzi=  6.8684E-05, nord= 6
  time =  2.2725E+04 d, dltime =  6.6246E-01 d
Steps completed =   516, iter =  6, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -14.4410

Stepping to zi=  2.3562E+00, delzi=  7.5811E-05, nord= 6
  time =  2.2726E+04 d, dltime =  7.3120E-01 d
Steps completed =   517, iter =  6, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -14.5274
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```
Stepping to zi=  2.3563E+00, delzi=  8.3686E-05, nord= 6
  time =  2.2727E+04 d, dltime =  8.0716E-01 d
Steps completed =   518, iter =  6, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -14.6138

Stepping to zi=  2.3564E+00, delzi=  9.2396E-05, nord= 6
  time =  2.2728E+04 d, dltime =  8.9116E-01 d
Steps completed =   519, iter =  6, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -14.7001

Stepping to zi=  2.3565E+00, delzi=  1.0200E-04, nord= 6
  time =  2.2729E+04 d, dltime =  9.8381E-01 d
Steps completed =   520, iter =  6, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -14.7864

Stepping to zi=  2.3566E+00, delzi=  1.1263E-04, nord= 6
  time =  2.2730E+04 d, dltime =  1.0863E+00 d
Steps completed =   521, iter =  6, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -14.8727

Stepping to zi=  2.3568E+00, delzi=  1.2436E-04, nord= 6
  time =  2.2731E+04 d, dltime =  1.1994E+00 d
Steps completed =   522, iter =  6, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -14.9590

Stepping to zi=  2.3569E+00, delzi=  1.3732E-04, nord= 6
  time =  2.2732E+04 d, dltime =  1.3245E+00 d
Steps completed =   523, iter =  6, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -15.0452

Stepping to zi=  2.3570E+00, delzi=  1.5164E-04, nord= 6
  time =  2.2734E+04 d, dltime =  1.4626E+00 d
Steps completed =   524, iter =  6, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -15.1314

Stepping to zi=  2.3572E+00, delzi=  1.6746E-04, nord= 6
  time =  2.2736E+04 d, dltime =  1.6151E+00 d
Steps completed =   525, iter =  6, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -15.2176

Stepping to zi=  2.3574E+00, delzi=  1.8493E-04, nord= 6
  time =  2.2737E+04 d, dltime =  1.7837E+00 d
Steps completed =   526, iter =  6, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -15.3038

Stepping to zi=  2.3576E+00, delzi=  2.0423E-04, nord= 6
  time =  2.2739E+04 d, dltime =  1.9698E+00 d
Steps completed =   527, iter =  6, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -15.3900

Stepping to zi=  2.3578E+00, delzi=  2.2555E-04, nord= 6
  time =  2.2741E+04 d, dltime =  2.1755E+00 d
Steps completed =   528, iter =  6, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -15.4761

Stepping to zi=  2.3581E+00, delzi=  2.4910E-04, nord= 6
  time =  2.2744E+04 d, dltime =  2.4026E+00 d
Steps completed =   529, iter =  6, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -15.5623

Stepping to zi=  2.3584E+00, delzi=  2.7511E-04, nord= 6
  time =  2.2746E+04 d, dltime =  2.6534E+00 d
```

```
Steps completed =   530, iter =  6, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -15.6485

Stepping to zi=  2.3587E+00, delzi=  3.0384E-04, nord= 6
  time =  2.2749E+04 d, dltime =  2.9305E+00 d
Steps completed =   531, iter =  6, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -15.7346

Stepping to zi=  2.3590E+00, delzi=  3.3557E-04, nord= 6
  time =  2.2753E+04 d, dltime =  3.2366E+00 d
Steps completed =   532, iter =  6, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -15.8208

Stepping to zi=  2.3594E+00, delzi=  3.7061E-04, nord= 6
  time =  2.2756E+04 d, dltime =  3.5746E+00 d
Steps completed =   533, iter =  6, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -15.9069

Stepping to zi=  2.3598E+00, delzi=  4.0932E-04, nord= 6
  time =  2.2760E+04 d, dltime =  3.9479E+00 d
Steps completed =   534, iter =  6, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -15.9931

Stepping to zi=  2.3602E+00, delzi=  4.5208E-04, nord= 6
  time =  2.2765E+04 d, dltime =  4.3603E+00 d
Steps completed =   535, iter =  6, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -16.0792

Stepping to zi=  2.3607E+00, delzi=  4.9930E-04, nord= 6
  time =  2.2769E+04 d, dltime =  4.8157E+00 d
Steps completed =   536, iter =  6, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -16.1654

Stepping to zi=  2.3613E+00, delzi=  5.5145E-04, nord= 6
  time =  2.2775E+04 d, dltime =  5.3188E+00 d
Steps completed =   537, iter =  6, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -16.2515

Stepping to zi=  2.3619E+00, delzi=  6.0906E-04, nord= 6
  time =  2.2781E+04 d, dltime =  5.8744E+00 d
Steps completed =   538, iter =  6, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -16.3376

Stepping to zi=  2.3626E+00, delzi=  6.7268E-04, nord= 6
  time =  2.2787E+04 d, dltime =  6.4881E+00 d
Steps completed =   539, iter =  6, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -16.4238

Stepping to zi=  2.3633E+00, delzi=  7.4295E-04, nord= 6
  time =  2.2794E+04 d, dltime =  7.1658E+00 d
Steps completed =   540, iter =  6, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -16.5099

Stepping to zi=  2.3641E+00, delzi=  8.2057E-04, nord= 6
  time =  2.2802E+04 d, dltime =  7.9144E+00 d
Steps completed =   541, iter =  6, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -16.5960

Stepping to zi=  2.3650E+00, delzi=  9.0629E-04, nord= 6
  time =  2.2811E+04 d, dltime =  8.7412E+00 d
Steps completed =   542, iter =  6, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -16.6822
```

```
Stepping to zi=  2.3660E+00, delzi=  1.0010E-03, nord= 6
  time =  2.2821E+04 d, dltime =  9.6544E+00 d
Steps completed =   543, iter =  6, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -16.7683

Stepping to zi=  2.3671E+00, delzi=  1.1055E-03, nord= 6
  time =  2.2831E+04 d, dltime =  1.0663E+01 d
Steps completed =   544, iter =  6, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -16.8545

Stepping to zi=  2.3684E+00, delzi=  1.2210E-03, nord= 6
  time =  2.2843E+04 d, dltime =  1.1777E+01 d
Steps completed =   545, iter = 19, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -16.9406

Stepping to zi=  2.3697E+00, delzi=  1.3486E-03, nord= 6
  time =  2.2856E+04 d, dltime =  1.3007E+01 d
Steps completed =   546, iter =  6, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -17.0267

Stepping to zi=  2.3712E+00, delzi=  1.4895E-03, nord= 6
  time =  2.2870E+04 d, dltime =  1.4366E+01 d
Steps completed =   547, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -17.1129

Stepping to zi=  2.3728E+00, delzi=  1.6451E-03, nord= 6
  time =  2.2886E+04 d, dltime =  1.5867E+01 d
Steps completed =   548, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -17.1990

Stepping to zi=  2.3747E+00, delzi=  1.8170E-03, nord= 6
  time =  2.2904E+04 d, dltime =  1.7525E+01 d
Steps completed =   549, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -17.2851

Stepping to zi=  2.3767E+00, delzi=  2.0068E-03, nord= 6
  time =  2.2923E+04 d, dltime =  1.9356E+01 d
Steps completed =   550, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -17.3713

Stepping to zi=  2.3789E+00, delzi=  2.2164E-03, nord= 6
  time =  2.2944E+04 d, dltime =  2.1378E+01 d
Steps completed =   551, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -17.4574

Stepping to zi=  2.3813E+00, delzi=  2.4480E-03, nord= 6
  time =  2.2968E+04 d, dltime =  2.3611E+01 d
Steps completed =   552, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -17.5435

Stepping to zi=  2.3840E+00, delzi=  2.7037E-03, nord= 6
  time =  2.2994E+04 d, dltime =  2.6078E+01 d
Steps completed =   553, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -17.6297

Stepping to zi=  2.3870E+00, delzi=  2.9862E-03, nord= 6
  time =  2.3023E+04 d, dltime =  2.8802E+01 d
Steps completed =   554, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -17.7158

Stepping to zi=  2.3903E+00, delzi=  3.2982E-03, nord= 6
  time =  2.3055E+04 d, dltime =  3.1811E+01 d
Steps completed =   555, iter =  5, ncorr = 0
```

```
Most rapidly changing is zvclg1(Sr++                    ) =    -17.8019

Stepping to zi=  2.3940E+00, delzi=  3.6428E-03, nord= 6
  time =  2.3090E+04 d, dltime =  3.5135E+01 d
Steps completed =   556, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -17.8881

Stepping to zi=  2.3980E+00, delzi=  4.0233E-03, nord= 6
  time =  2.3129E+04 d, dltime =  3.8805E+01 d
Steps completed =   557, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -17.9742

Stepping to zi=  2.4024E+00, delzi=  4.4437E-03, nord= 6
  time =  2.3172E+04 d, dltime =  4.2860E+01 d
Steps completed =   558, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -18.0603

Stepping to zi=  2.4073E+00, delzi=  4.9079E-03, nord= 6
  time =  2.3219E+04 d, dltime =  4.7337E+01 d
Steps completed =   559, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -18.1464

Stepping to zi=  2.4128E+00, delzi=  5.4207E-03, nord= 6
  time =  2.3271E+04 d, dltime =  5.2283E+01 d
Steps completed =   560, iter = 12, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -18.2326

Stepping to zi=  2.4187E+00, delzi=  5.9870E-03, nord= 6
  time =  2.3329E+04 d, dltime =  5.7745E+01 d
Steps completed =   561, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -18.3187

Stepping to zi=  2.4254E+00, delzi=  6.6125E-03, nord= 6
  time =  2.3393E+04 d, dltime =  6.3778E+01 d
Steps completed =   562, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -18.4048

Stepping to zi=  2.4327E+00, delzi=  7.3034E-03, nord= 6
  time =  2.3463E+04 d, dltime =  7.0442E+01 d
Steps completed =   563, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -18.4910

Stepping to zi=  2.4407E+00, delzi=  8.0664E-03, nord= 6
  time =  2.3541E+04 d, dltime =  7.7801E+01 d
Steps completed =   564, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -18.5771

Stepping to zi=  2.4496E+00, delzi=  8.9092E-03, nord= 6
  time =  2.3627E+04 d, dltime =  8.5930E+01 d
Steps completed =   565, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -18.6632

Stepping to zi=  2.4595E+00, delzi=  9.8400E-03, nord= 6
  time =  2.3722E+04 d, dltime =  9.4908E+01 d
Steps completed =   566, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -18.7493

Stepping to zi=  2.4703E+00, delzi=  1.0868E-02, nord= 6
  time =  2.3827E+04 d, dltime =  1.0482E+02 d
Steps completed =   567, iter = 11, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -18.8355

Stepping to zi=  2.4823E+00, delzi=  1.2004E-02, nord= 6
```

```
  time =  2.3942E+04 d, dltime =  1.1578E+02 d
Steps completed =   568, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -18.9216

Stepping to zi=  2.4956E+00, delzi=  1.3258E-02, nord= 6
  time =  2.4070E+04 d, dltime =  1.2787E+02 d
Steps completed =   569, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -19.0077

Stepping to zi=  2.5102E+00, delzi=  1.4643E-02, nord= 6
  time =  2.4211E+04 d, dltime =  1.4123E+02 d
Steps completed =   570, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -19.0938

Stepping to zi=  2.5119E+00, delzi=  1.6402E-03, nord= 6
  time =  2.4227E+04 d, dltime =  1.5820E+01 d
Steps completed =   571, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -19.1030

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                    Reaction progress        =  2.51188643150944E+00
                    Log of reaction progress =       0.4000000



                    Time =  2.093E+09 sec
                         =  2.423E+04 days
                         =  6.633E+01 years

                    Log sec =        9.321
                    Log days =       4.384
                    Log years =      1.822

                    Temperature    =     25.000 degrees C
                    total pressure =      1.013 bars


Step size is limited by the print requirement


                              --- Reactant Summary ---


    Reactant                   Moles     Delta moles    Mass, g    Delta Mass, g

 Tuff                       9.7488E+01   2.5119E+00   2.0069E+03   5.1711E+01


               Current total mass =  2.00694E+03 grams
               Delta total mass   =  5.17109E+01 grams
               Delta total volume =      0.00000 cc


    Reactant                Rel. Rate      Rate         Rate
                             mol/mol       mol/s      mol/s/cm2

 Tuff                       1.0000E+00   1.2000E-09   2.5000E-15


    Reactant                   Affinity   Surface Area
```

	kcal/mol	mol/s/cm2
Tuff	999.00000	4.8000E+05

Reactant	Rate Constants, mol/s/cm2	
Tuff		
	Forward	2.5000E-15

Affinity of the overall irreversible reaction= 0.000 kcal
Contributions from irreversible reactions
with no thermodynamic data are not included

--- Element Totals for the Aqueous Solution ---

Element	mg/kg soln.	Molality	Moles
O	8.862839E+05	5.562398E+01	5.554259E+01
Al	5.972039E-03	2.222536E-07	2.219284E-07
B	1.335704E-01	1.240615E-05	1.238800E-05
Ba	1.369616E-05	1.001465E-10	1.000000E-10
Ca	7.055411E-04	1.767703E-08	1.765116E-08
Ce	1.397421E-19	1.001465E-24	9.999993E-25
Cl	7.121177E+00	2.016951E-04	2.014000E-04
Cr	2.998316E+02	5.790279E-03	5.781806E-03
Cs	3.098814E-06	2.341239E-11	2.337813E-11
Cu	6.654579E-10	1.051539E-14	1.050000E-14
F	2.267371E-01	1.198391E-05	1.196637E-05
Fe	1.143108E-08	2.055325E-13	2.052317E-13
Gd	1.568316E-09	1.001465E-14	9.999998E-15
H	1.114477E+05	1.110271E+02	1.108647E+02
C	1.380171E+02	1.153843E-02	1.152155E-02
P	1.180474E+00	3.826972E-05	3.821372E-05
K	2.005453E+00	5.150478E-05	5.142941E-05
La	1.385359E-09	1.001465E-14	9.999998E-15
Li	6.922534E-07	1.001465E-10	1.000000E-10
Mg	2.016011E-02	8.328947E-07	8.316760E-07
Mn	4.382250E-11	8.009711E-16	7.997991E-16
Mo	2.180814E+02	2.282506E-03	2.279166E-03
N	1.983666E+00	1.422081E-04	1.420000E-04
Na	1.217471E+03	5.317616E-02	5.309835E-02
Nd	1.438562E-09	1.001465E-14	9.999998E-15
Ni	9.855454E-05	1.686186E-09	1.683719E-09
Pb	2.007167E-06	9.727174E-12	9.712941E-12
Pu	2.433508E-09	1.001465E-14	9.999999E-15
S	3.732801E+02	1.168915E-02	1.167205E-02
Si	4.315676E+00	1.542978E-04	1.540720E-04
Sm	1.499599E-09	1.001465E-14	9.999998E-15
Sr	1.047352E-14	1.200279E-19	1.198523E-19
Ti	1.076452E-05	2.257529E-10	2.254226E-10
U	2.373957E-09	1.001466E-14	1.000000E-14
V	4.771200E+00	9.404784E-05	9.391022E-05
Zn	6.521603E-06	1.001465E-10	1.000000E-10
Zr	9.098139E-16	1.001466E-20	1.000001E-20

Single ion activities and activity coefficients are here defined
with respect to the modified NBS pH scale

	pH	Eh	pe
modified NBS pH scale	9.2060	0.6744	1.1401E+01
rational pH scale	9.1251	0.6792	1.1482E+01

pHCl = 13.0011

Oxygen fugacity = 2.09991E-01
Log oxygen fugacity = -0.67780

Activity of water = 0.99866
Log activity of water = -0.00058

Ionic strength = 7.114577E-02 molal
Sum of molalities = 0.0834982966274
Osmotic coefficient = 0.89285

Mass of solution = 1.002668 kg
Mass of solutes = 0.004131 kg
Conc. of solutes = 0.411979 per cent (w/w)

Moles of solvent H2O = 5.54272E+01
Mass of solvent H2O = 9.98537E-01 kg

Species	Molality	Log molality	Log gamma	Log activity
Na+	5.1211E-02	-1.2906	-0.1057	-1.3963
SO4--	1.0303E-02	-1.9870	-0.3857	-2.3728
HCO3-	9.5995E-03	-2.0177	-0.0904	-2.1082
CrO4--	5.7846E-03	-2.2377	-0.3857	-2.6234
MoO4--	2.2825E-03	-2.6416	-0.3730	-3.0146
CO3--	1.3870E-03	-2.8579	-0.3730	-3.2309
NaSO4-	1.3846E-03	-2.8587	-0.0904	-2.9491
NaHCO3(aq)	4.4626E-04	-3.3504	0.0000	-3.3504
O2(aq)	2.6089E-04	-3.5835	0.0074	-3.5761
Cl-	2.0062E-04	-3.6976	-0.0974	-3.7951
NO3-	1.4221E-04	-3.8471	-0.0974	-3.9445
SiO2(aq)	1.0016E-04	-3.9993	0.0000	-3.9993
NaCO3-	9.4956E-05	-4.0225	-0.0904	-4.1129
VO3OH--	8.4415E-05	-4.0736	-0.3857	-4.4593
K+	4.9975E-05	-4.3012	-0.1127	-4.4140
HPO4--	3.2510E-05	-4.4880	-0.3857	-4.8737
NaHSiO3(aq)	3.2047E-05	-4.4942	0.0000	-4.4942
HSiO3-	2.2083E-05	-4.6559	-0.0904	-4.7464
OH-	2.0144E-05	-4.6959	-0.0938	-4.7897
F-	1.1945E-05	-4.9228	-0.0938	-5.0166
CO2(aq)	1.0560E-05	-4.9763	0.0074	-4.9689
HVO4--	9.0933E-06	-5.0413	-0.3857	-5.4270
BO2-	6.3700E-06	-5.1959	-0.0904	-5.2863
HCrO4-	5.6932E-06	-5.2446	-0.0904	-5.3351
B(OH)3(aq)	5.6496E-06	-5.2480	0.0000	-5.2480
NaHPO4-	5.5002E-06	-5.2596	-0.0904	-5.3500
KSO4-	1.5251E-06	-5.8167	-0.0904	-5.9071
NaCl(aq)	1.0755E-06	-5.9684	0.0000	-5.9684
Mg++	4.5109E-07	-6.3457	-0.3330	-6.6788
NaB(OH)4(aq)	3.8646E-07	-6.4129	0.0000	-6.4129

H2VO4-	3.3144E-07	-6.4796	-0.0904	-6.5700
MgSO4(aq)	2.2918E-07	-6.6398	0.0000	-6.6398
AlO2-	2.2064E-07	-6.6563	-0.0904	-6.7467
VO2(OH)2-	2.0540E-07	-6.6874	-0.0904	-6.7778
H2PO4-	1.6448E-07	-6.7839	-0.0904	-6.8743
MgCO3(aq)	1.1727E-07	-6.9308	0.0000	-6.9308
NaOH(aq)	1.0334E-07	-6.9857	0.0000	-6.9857
PO4---	7.8252E-08	-7.1065	-0.8830	-7.9895
NaF(aq)	3.8854E-08	-7.4106	0.0000	-7.4106
MgHCO3+	2.2619E-08	-7.6455	-0.1057	-7.7512
MgPO4-	1.0261E-08	-7.9888	-0.0904	-8.0792
Ca++	9.6459E-09	-8.0157	-0.3699	-8.3855
H2SiO4--	6.8751E-09	-8.1627	-0.3857	-8.5484
CaCO3(aq)	5.1358E-09	-8.2894	0.0000	-8.2894
KHPO4-	3.8261E-09	-8.4172	-0.0904	-8.5077
VO4---	2.3426E-09	-8.6303	-0.8830	-9.5133
MgHPO4(aq)	2.2779E-09	-8.6425	0.0000	-8.6425
CaSO4(aq)	2.2532E-09	-8.6472	0.0000	-8.6472
Cr2O7--	1.7643E-09	-8.7534	-0.3857	-9.1391
Ni++	1.3455E-09	-8.8711	-0.3699	-9.2410
NaAlO2(aq)	1.2990E-09	-8.8864	0.0000	-8.8864
H+	7.4980E-10	-9.1251	-0.0810	-9.2060
CaHCO3+	4.5573E-10	-9.3413	-0.1057	-9.4470
NiSO4(aq)	3.2504E-10	-9.4881	0.0000	-9.4881
HAlO2(aq)	3.1452E-10	-9.5024	0.0000	-9.5024
HSO4-	3.0956E-10	-9.5093	-0.0904	-9.5997
Ti(OH)4(aq)	2.2575E-10	-9.6464	0.0000	-9.6464
KOH(aq)	2.1452E-10	-9.6685	0.0000	-9.6685
KCl(aq)	1.9787E-10	-9.7036	0.0000	-9.7036
CaPO4-	1.4976E-10	-9.8246	-0.0904	-9.9150
MgB(OH)4+	1.0907E-10	-9.9623	-0.1057	-10.0680

--- Summary of Instantaneously Precipitated Solid Phases ---
(defined by derivatives)

--- Theoretical Rock Composition ---
g/kg

O	5.181370E+01
Al	6.307665E+00
Ca	3.743577E-01
Cl	2.112681E-10
Cs	6.825536E-08
Fe	6.119327E-01
H	7.307186E-01
C	2.066028E-03
P	5.537322E-10
K	3.828004E+00
Mg	1.381786E-01
Mn	4.839734E-02
N	1.930029E-66
Na	2.488352E+00
Pb	6.173684E-09
Si	3.360162E+01
Sr	5.970005E-16
Ti	5.500740E-02

--- Oxide Percentages ---

Oxide Theoretical rock

Total = 0.0000

Phase/end-member	d mol/d zi	d grams/d zi	d vol (cc)/d zi
Celadonite	1.2310E-03	4.8840E-01	1.9340E-01
Maximum_Microcline	1.9070E-02	5.3078E+00	2.0737E+00
Mesolite	3.1067E-03	1.2047E+00	5.3186E-01
Muscovite	1.0004E-03	3.9848E-01	1.4077E-01
Ni2SiO4	-2.5124E-12	-5.2625E-10	-1.0705E-10
Pyrolusite	1.9400E-04	1.6866E-02	9.7000E-02
Pyromorphite	1.3123E-12	1.7800E-09	2.5283E-10
Quartz	9.3845E-02	5.6386E+00	2.1292E+00
Rutile	2.5300E-04	2.0209E-02	4.7615E-03
fix CO2(g)	3.7880E-05	1.6671E-03	0.0000E+00
fix O2(g)	-7.0649E-04	-2.2607E-02	0.0000E+00
Clinoptilolite-ss			
Clinoptilolite-Ca	8.9279E-06	1.2003E-02	4.4639E-03
Clinoptilolite-Cs	3.2621E-11	5.6621E-08	1.6310E-08
Clinoptilolite-K	7.3713E-05	1.0397E-01	3.6856E-02
Clinoptilolite-NH4	8.7524E-69	1.1706E-65	4.3762E-66
Clinoptilolite-Na	6.1585E-03	8.3426E+00	3.0793E+00
Clinoptilolite-Sr	8.6557E-19	1.2350E-15	4.3278E-16
Smectite-di			
Beidellite-Ca	4.0469E-11	1.4834E-08	5.2419E-09
Beidellite-K	1.7470E-10	6.5136E-08	2.3357E-08
Beidellite-Mg	3.7562E-10	1.3671E-07	4.6272E-08
Beidellite-Na	1.7145E-08	6.3016E-06	2.2382E-06
Montmor-Ca	7.2651E-08	2.6593E-05	3.6326E-05
Montmor-K	5.1220E-07	1.9071E-04	2.5610E-04
Montmor-Mg	1.0959E-06	3.9830E-04	5.4796E-04
Montmor-Na	4.9022E-05	1.7992E-02	2.4511E-02
Nontronite-Ca	2.6318E-06	1.1166E-03	3.4503E-04
Nontronite-K	1.1361E-05	4.8919E-03	1.5368E-03
Nontronite-Mg	2.4445E-05	1.0308E-02	3.1719E-03
Nontronite-Na	1.1150E-03	4.7418E-01	1.4730E-01

--- Summary of Solid Phases (E.S.+P.R.S.) ---

Phase/End-member	Log moles	Moles	Mass, g	Volume, cc
Alunite	-2.5559	2.7801E-03	1.1516E+00	8.1624E-01
Celadonite	-2.5040	3.1333E-03	1.2431E+00	4.9224E-01
Diaspore	-1.6079	2.4665E-02	1.4796E+00	4.3804E-01
Fluorapatite	-3.9881	1.0278E-04	5.1834E-02	5.1392E-02
Hematite	-3.7144	1.9300E-04	3.0820E-02	5.8428E-03
Maximum_Microcline	-1.4540	3.5159E-02	9.7858E+00	3.8232E+00
Mesolite	-2.1264	7.4741E-03	2.8983E+00	1.2796E+00
Muscovite	-1.8889	1.2916E-02	5.1447E+00	1.8175E+00
Ni2SiO4	-2.1930	6.4125E-03	1.3432E+00	2.7324E-01
Nontronite-H	-4.9990	1.0023E-05	4.1899E-03	5.0117E-03
Pyrolusite	-2.9662	1.0810E-03	9.3977E-02	5.4049E-01
Pyromorphite	-10.7433	1.8057E-11	2.4492E-08	3.4789E-09
Quartz	-0.3456	4.5119E-01	2.7110E+01	1.0237E+01
Rutile	-3.1969	6.3551E-04	5.0764E-02	1.1960E-02
fix CO2(g)	2.3010	1.9999E+02	8.8015E+03	0.0000E+00
fix O2(g)	2.3010	2.0000E+02	6.3997E+03	0.0000E+00
Clinoptilolite-ss	-3.0057	9.8687E-04		
Clinoptilolite-Ca	-5.8503	1.4117E-06	1.8979E-03	7.0585E-04
Clinoptilolite-Cs	-10.6556	2.2100E-11	3.8360E-08	1.1050E-08
Clinoptilolite-K	-4.9335	1.1656E-05	1.6440E-02	5.8278E-03

Clinoptilolite-NH4	-68.8591	1.3833E-69	1.8501E-66	6.9163E-67
Clinoptilolite-Na	-3.0115	9.7380E-04	1.3192E+00	4.8690E-01
Clinoptilolite-Sr	-10.2389	5.7687E-11	8.2309E-08	2.8843E-08
Smectite-di	-2.5434	2.8614E-03		
Beidellite-Ca	-9.3039	4.9671E-10	1.8208E-07	6.4339E-08
Beidellite-K	-8.9967	1.0076E-09	3.7570E-07	1.3472E-07
Beidellite-Mg	-9.0709	8.4946E-10	3.0917E-07	1.0465E-07
Beidellite-Na	-7.9560	1.1066E-08	4.0672E-06	1.4446E-06
Montmor-Ca	-6.3737	4.2296E-07	1.5482E-04	2.1148E-04
Montmor-K	-6.0969	8.0006E-07	2.9789E-04	4.0003E-04
Montmor-Mg	-5.7715	1.6924E-06	6.1508E-04	8.4619E-04
Montmor-Na	-4.5044	3.1306E-05	1.1490E-02	1.5653E-02
Nontronite-Ca	-3.4088	3.9014E-04	1.6553E-01	5.1147E-02
Nontronite-K	-3.2029	6.2671E-04	2.6985E-01	8.4775E-02
Nontronite-Mg	-3.3044	4.9613E-04	2.0921E-01	6.4378E-02
Nontronite-Na	-2.8813	1.3142E-03	5.5888E-01	1.7362E-01

	Mass, grams	Volume, cc
Created	1.525409E+04	2.067583E+01
Destroyed	5.171087E+01	0.000000E+00
Net	1.520238E+04	2.067583E+01

Warning-- these volume totals may be incomplete because of missing partial molar volume data in the data base

--- Summary of Pure Mineral Saturation States ---

Mineral	Log Q/K	Aff, kcal	State
Alamosite	-2.681	-3.657	
Albite	-0.022	-0.030	
Albite_high	-1.341	-1.829	
Albite_low	-0.022	-0.030	
Alstonite	-7.209	-9.835	
Analcime	-0.148	-0.202	
Analcime-dehy	-6.510	-8.882	
Andalusite	-6.082	-8.298	
Anglesite	-5.940	-8.103	
Anhydrite	-6.452	-8.802	
Aragonite	-3.281	-4.476	
BaCrO4	-3.126	-4.265	
BaZrO3	83.678	114.161	ssatd
Barite	-2.836	-3.870	
Bassanite	-7.097	-9.682	
Beidellite-Ca	-2.466	-3.365	
Beidellite-Cs	-4.192	-5.719	
Beidellite-H	-3.163	-4.315	
Beidellite-K	-2.257	-3.079	
Beidellite-Mg	-2.147	-2.929	
Beidellite-Na	-1.599	-2.182	
Boehmite	-0.634	-0.864	
Boric_acid	-5.090	-6.944	
Brucite	-4.566	-6.229	
Bunsenite	-3.301	-4.504	
CaSO4:0.5H2O(beta)	-7.265	-9.912	
CaZrO3	139.757	190.669	ssatd
Calcite	-3.136	-4.279	

CeO2	-3.166	-4.319	
Celadonite	0.000	0.000	satd
Cerussite	-1.113	-1.518	
Chalcedony	-0.271	-0.370	
Chrysotile	-3.927	-5.358	
Clinochlore-14A	-6.714	-9.160	
Clinoptilolite	-4.852	-6.620	
Clinoptilolite-K	-6.670	-9.100	
Clinoptilolite-Na	-0.020	-0.027	
Clinoptilolite-hy-K	-6.664	-9.092	
Clinoptilolite-hy-Na	-0.018	-0.024	
Coesite	-0.810	-1.105	
Corundum	-4.450	-6.072	
Cristobalite(alpha)	-0.551	-0.751	
Cristobalite(beta)	-0.994	-1.356	
Crocoite	-1.325	-1.808	
Dawsonite	-0.920	-1.256	
Diaspore	-0.230	-0.313	
Diopside	-7.204	-9.829	
Dolomite	-3.382	-4.614	
Dolomite-dis	-4.927	-6.721	
Dolomite-ord	-3.382	-4.614	
Enstatite	-3.594	-4.903	
Epsomite	-7.093	-9.677	
Fe(OH)3	-6.518	-8.893	
Ferrite-Zn	-5.843	-7.972	
GdOHCO3	-7.294	-9.952	
GdPO4:H2O	-4.475	-6.106	
Gibbsite	-0.826	-1.127	
Goethite	-1.397	-1.905	
Gypsum	-6.277	-8.564	
Halite	-6.777	-9.246	
Hematite	-1.832	-2.500	
Heulandite	-5.866	-8.003	
Hexahydrite	-7.328	-9.998	
Hydrocerussite	-5.071	-6.918	
Ice	-0.139	-0.190	
Illite	-1.275	-1.739	
Jadeite	-1.647	-2.247	
K-Feldspar	0.000	0.000	
Kalicinite	-6.806	-9.285	
Kalsilite	-3.175	-4.332	
Kaolinite	-0.948	-1.294	
Kyanite	-5.812	-7.929	
LaPO4:H2O	-2.768	-3.776	
Lanarkite	-6.331	-8.637	
Lansfordite	-4.425	-6.037	
Laumontite	-5.779	-7.884	
Lawsonite	-6.325	-8.630	
Litharge	-5.652	-7.711	
Magnesite	-1.875	-2.557	
Manganite	-4.459	-6.084	
Massicot	-5.827	-7.950	
Maximum_Microcline	0.000	0.000	satd
Mesolite	0.000	0.000	satd
Mirabilite	-4.031	-5.500	
MnO2(gamma)	-1.518	-2.071	
Monohydrocalcite	-3.971	-5.417	
Montmor-Ca	-1.392	-1.900	
Montmor-Cs	-3.051	-4.163	
Montmor-K	-1.113	-1.518	
Montmor-Mg	-1.003	-1.369	
Montmor-Na	-0.459	-0.626	

Mordenite	-2.805	-3.827	
Muscovite	0.000	0.000	satd
Na2CO3	-6.877	-9.382	
Na2CO3:7H2O	-5.645	-7.701	
Nahcolite	-3.393	-4.629	
Natrolite	-1.039	-1.418	
Natron	-5.311	-7.246	
NdOHCO3	-6.776	-9.245	
NdPO4:H2O	-3.757	-5.126	
Nepheline	-3.060	-4.174	
Nesquehonite	-4.578	-6.246	
Ni(OH)2	-3.579	-4.882	
Ni2SiO4	0.000	0.000	satd
NiCO3	-5.655	-7.715	
Nontronite-Ca	-0.878	-1.198	
Nontronite-H	-1.574	-2.148	
Nontronite-K	-0.668	-0.912	
Nontronite-Mg	-0.559	-0.762	
Nontronite-Na	-0.011	-0.015	
Paragonite	-0.919	-1.253	
Paralaurionite	-6.213	-8.476	
Pb3(PO4)2	-5.619	-7.666	
Pb4O(PO4)2	-6.029	-8.225	
PbCO3.PbO	-7.001	-9.551	
PbHPO4	-4.726	-6.448	
Petalite	-6.149	-8.390	
Phlogopite	-2.518	-3.435	
Plattnerite	-1.016	-1.385	
PuO2	-4.805	-6.556	
Pyrolusite	0.000	0.000	satd
Pyromorphite	0.000	0.000	satd
Pyrophyllite	-2.576	-3.514	
Quartz	0.000	0.000	satd
Rutile	0.000	0.000	satd
Sanidine_high	-1.199	-1.636	
Saponite-Ca	-1.829	-2.495	
Saponite-Cs	-3.554	-4.849	
Saponite-H	-2.525	-3.445	
Saponite-K	-1.619	-2.209	
Saponite-Mg	-1.509	-2.059	
Saponite-Na	-0.962	-1.312	
Scolecite	-3.989	-5.442	
Sellaite	-7.328	-9.997	
SiO2(am)	-1.286	-1.754	
Sillimanite	-6.446	-8.794	
SmPO4:H2O	-3.979	-5.429	
Smectite-low-Fe-Mg	-7.076	-9.653	
Smithsonite	-4.162	-5.679	
SrZrO3	111.614	152.273	ssatd
Stilbite	-1.918	-2.616	
Talc	-1.938	-2.644	
Thenardite	-4.856	-6.625	
Thermonatrite	-6.658	-9.083	
Trevorite	-2.341	-3.193	
Tridymite	-0.172	-0.234	
Witherite	-0.340	-0.464	
Zincite	-3.594	-4.903	
Zn(OH)2(beta)	-4.320	-5.894	
Zn(OH)2(epsilon)	-4.049	-5.523	
Zn(OH)2(gamma)	-4.269	-5.824	
fix CO2(g)	0.000	0.000	satd
fix O2(g)	0.000	0.000	satd

--- Summary of Solid Solutions ---

--- Carbonate-Calcite ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Calcite	5.1627E-02	-1.2871	0.0000	-1.2871
Magnesite	9.4351E-01	-0.0253	0.0000	-0.0253
Rhodochrosite	1.2019E-09	-8.9201	0.0000	-8.9201
Siderite	1.8618E-18	-17.7301	0.0000	-17.7301
Smithsonite	4.8631E-03	-2.3131	0.0000	-2.3131
Strontianite	5.8454E-11	-10.2332	0.0000	-10.2332

Mineral	Log Q/K	Aff, kcal	State
Carbonate-Calcite	-1.849	-2.523	
Calcite	-1.849	-2.523	
Magnesite	-1.849	-2.523	
Rhodochrosite	-1.849	-2.523	
Siderite	-1.849	-2.523	
Smithsonite	-1.849	-2.523	
Strontianite	-1.849	-2.523	

--- Clinoptilolite-hy-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-hy-Ca	1.5023E-10	-9.8232	0.0000	-9.8232
Clinoptilolite-hy-Cs	3.2137E-27	-26.4930	0.0000	-26.4930
Clinoptilolite-hy-K	2.2583E-07	-6.6462	0.0000	-6.6462
Clinoptilolite-hy-Na	1.0000E+00	0.0000	0.0000	0.0000
Clinoptilolite-hy-Sr	1.1427E-29	-28.9421	0.0000	-28.9421

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-hy-ss	-0.018	-0.024	
Clinoptilolite-hy-Ca	-0.018	-0.024	
Clinoptilolite-hy-Cs	-0.018	-0.024	
Clinoptilolite-hy-K	-0.018	-0.024	
Clinoptilolite-hy-Na	-0.018	-0.024	
Clinoptilolite-hy-Sr	-0.018	-0.024	

--- Clinoptilolite-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-Ca	1.4305E-03	-2.8445	-6.9975	-9.8420
Clinoptilolite-Cs	2.1670E-08	-7.6641	-18.8538	-26.5179
Clinoptilolite-K	1.1811E-02	-1.9277	-4.7422	-6.6699
Clinoptilolite-NH4	1.4017E-66	-65.8534	-161.9993	-227.8526

Clinoptilolite-Na	9.8676E-01	-0.0058	-0.0142	-0.0200
Clinoptilolite-Sr	4.2694E-09	-8.3696	-20.5893	-28.9589

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-ss	0.000	0.000	satd
Clinoptilolite-Ca	0.000	0.000	satd
Clinoptilolite-Cs	0.000	0.000	satd
Clinoptilolite-K	0.000	0.000	satd
Clinoptilolite-NH4	0.000	0.000	satd
Clinoptilolite-Na	0.000	0.000	satd
Clinoptilolite-Sr	0.000	0.000	satd

--- Saponite-tri ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Saponite-Ca	2.2817E-03	-2.6417	1.7700	-0.8718
Saponite-H	1.7690E-05	-4.7523	3.1840	-1.5682
Saponite-K	9.8428E-03	-2.0069	1.3446	-0.6623
Saponite-Mg	2.1178E-02	-1.6741	1.1217	-0.5525
Saponite-Na	9.6668E-01	-0.0147	0.0099	-0.0049

Mineral	Log Q/K	Aff, kcal	State
Saponite-tri	-0.957	-1.305	
Saponite-Ca	-0.957	-1.305	
Saponite-H	-0.957	-1.305	
Saponite-K	-0.957	-1.305	
Saponite-Mg	-0.957	-1.305	
Saponite-Na	-0.957	-1.305	

--- Smectite-di ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Beidellite-Ca	3.3607E-08	-7.4736	5.0073	-2.4663
Beidellite-K	1.4508E-07	-6.8384	4.5817	-2.2567
Beidellite-Mg	3.1193E-07	-6.5059	4.3590	-2.1470
Beidellite-Na	1.4238E-05	-4.8465	3.2472	-1.5994
Montmor-Ca	6.0333E-05	-4.2194	2.8270	-1.3924
Montmor-K	4.2535E-04	-3.3712	2.2587	-1.1125
Montmor-Mg	9.1011E-04	-3.0409	2.0374	-1.0035
Montmor-Na	4.0710E-02	-1.3903	0.9315	-0.4588
Nontronite-Ca	2.1856E-03	-2.6604	1.7825	-0.8779
Nontronite-K	9.4347E-03	-2.0253	1.3569	-0.6683
Nontronite-Mg	2.0300E-02	-1.6925	1.1340	-0.5585
Nontronite-Na	9.2596E-01	-0.0334	0.0224	-0.0110

Mineral	Log Q/K	Aff, kcal	State
Smectite-di	0.000	0.000	satd

Beidellite-Ca	0.000	0.000	satd
Beidellite-K	0.000	0.000	satd
Beidellite-Mg	0.000	0.000	satd
Beidellite-Na	0.000	0.000	satd
Montmor-Ca	0.000	0.000	satd
Montmor-K	0.000	0.000	satd
Montmor-Mg	0.000	0.000	satd
Montmor-Na	0.000	0.000	satd
Nontronite-Ca	0.000	0.000	satd
Nontronite-K	0.000	0.000	satd
Nontronite-Mg	0.000	0.000	satd
Nontronite-Na	0.000	0.000	satd

--- Lanthanide hydroxide ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
La(OH)3	1.2163E-04	-3.9150	0.0000	-3.9150
Ce(OH)3	6.3283E-15	-14.1987	0.0000	-14.1987
Nd(OH)3(c)	6.2479E-01	-0.2043	0.0000	-0.2043
Gd(OH)3	3.0035E-01	-0.5224	0.0000	-0.5224
Sm(OH)3	7.4742E-02	-1.1264	0.0000	-1.1264

Mineral	Log Q/K	Aff, kcal	State
Lanthanide hydroxide	-8.248	-11.253	
La(OH)3	-8.248	-11.253	
Ce(OH)3	-8.248	-11.253	
Nd(OH)3(c)	-8.248	-11.253	
Gd(OH)3	-8.248	-11.253	
Sm(OH)3	-8.248	-11.253	

--- Rhabdophane-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaPO4:H2O	8.4491E-01	-0.0732	0.0000	-0.0732
CePO4:H2O	1.3902E-11	-10.8569	0.0000	-10.8569
NdPO4:H2O	8.6599E-02	-1.0625	0.0000	-1.0625
GdPO4:H2O	1.6573E-02	-1.7806	0.0000	-1.7806
SmPO4:H2O	5.1921E-02	-1.2847	0.0000	-1.2847

Mineral	Log Q/K	Aff, kcal	State
Rhabdophane-ss	-2.695	-3.676	
LaPO4:H2O	-2.695	-3.676	
CePO4:H2O	-2.695	-3.676	
NdPO4:H2O	-2.695	-3.676	
GdPO4:H2O	-2.695	-3.676	
SmPO4:H2O	-2.695	-3.676	

--- Lanthanide fluoride ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaF3:0.5H2O	8.8031E-01	-0.0554	0.0000	-0.0554
CeF3:0.5H2O	2.2956E-11	-10.6391	0.0000	-10.6391
NdF3:0.5H2O	1.1359E-01	-0.9447	0.0000	-0.9447
GdF3:0.5H2O	6.8744E-04	-3.1628	0.0000	-3.1628
SmF3:0.5H2O	5.4097E-03	-2.2668	0.0000	-2.2668

Mineral	Log Q/K	Aff, kcal	State
Lanthanide fluoride	-15.745	-21.480	
LaF3:0.5H2O	-15.745	-21.480	
CeF3:0.5H2O	-15.745	-21.480	
NdF3:0.5H2O	-15.745	-21.480	
GdF3:0.5H2O	-15.745	-21.480	
SmF3:0.5H2O	-15.745	-21.480	

--- Summary of Gases ---

Gas	Fugacity	Log fugacity
Al(g)	9.7071-192	-191.0129
B(g)	3.9088-204	-203.4080
BF3(g)	1.1279E-45	-44.9477
C(g)	3.0917-190	-189.5098
CH4(g)	3.5199-146	-145.4535
CO(g)	6.0395E-49	-48.2190
CO2(g)	3.1623E-04	-3.5000
Ca(g)	5.4464-154	-153.2639
Chlorine	1.6216E-31	-30.7901
Cs(g)	1.1803E-82	-81.9280
Cu(g)	1.9568E-82	-81.7085
Fluorine	1.1156E-86	-85.9525
H2(g)	6.1068E-42	-41.2142
H2O(g)	2.5943E-02	-1.5860
H2S(g)	1.0627-144	-143.9736
HCl(g)	4.9366E-20	-19.3066
HF(g)	4.6213E-16	-15.3352
K(g)	1.2715E-76	-75.8957
Li(g)	1.1308E-95	-94.9466
Mg(g)	1.8676-129	-128.7287
Nitrogen	1.2216E-22	-21.9131
NH3(g)	1.2717E-70	-69.8956
NO(g)	3.4803E-27	-26.4584
NO2(g)	2.3797E-21	-20.6235
Na(g)	6.9092E-73	-72.1606
O2(g)	2.0999E-01	-0.6778
Pb(g)	1.4828E-67	-66.8289
S2(g)	6.7520-232	-231.1706
SO2(g)	1.8840E-57	-56.7249
Si(g)	4.2257-221	-220.3741
SiF4(g)	2.0157E-46	-45.6956
Ti(g)	3.8019-231	-230.4200
TiCl4(g)	1.9947E-90	-89.7001
U(g)	9.6731-303	-302.0144

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U2Cl10(g)                   8.2286-270   -269.0847
U2Cl8(g)                    1.5732-269   -268.8032
U2F10(g)                    5.6310-187   -186.2494
UCl(g)                      4.2583-260   -259.3708
UCl2(g)                     5.6080-216   -215.2512
UCl3(g)                     1.6176-169   -168.7911
UCl4(g)                     2.5266-140   -139.5975
UCl5(g)                     2.0305-148   -147.6924
UCl6(g)                     3.0317-151   -150.5183
UF(g)                       8.4717-246   -245.0720
UF2(g)                      5.5027-207   -206.2594
UF3(g)                      8.7959-162   -161.0557
UF4(g)                      2.0753-113   -112.6829
UF5(g)                      2.2428-106   -105.6492
UF6(g)                      2.3867-113   -112.6222
UO(g)                       7.6395-218   -217.1169
UO2(g)                      1.4154-133   -132.8491
UO2Cl2(g)                   1.0021E-83    -82.9991
UO2F2(g)                    7.1331E-73    -72.1467
UO3(g)                      1.0410E-80    -79.9825
UOF4(g)                     6.1842E-91    -90.2087
Zn(g)                       9.7421E-77    -76.0113



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Stepping to zi=  2.5283E+00, delzi=  1.6402E-02, nord= 6
  time =  2.4385E+04 d, dltime =  1.5820E+02 d
Steps completed =   572, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -19.1894

Stepping to zi=  2.5479E+00, delzi=  1.9661E-02, nord= 6
  time =  2.4575E+04 d, dltime =  1.8963E+02 d
Steps completed =   573, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -19.2827

Stepping to zi=  2.5693E+00, delzi=  2.1330E-02, nord= 6
  time =  2.4781E+04 d, dltime =  2.0573E+02 d
Steps completed =   574, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -19.3738

Stepping to zi=  2.5925E+00, delzi=  2.3183E-02, nord= 6
  time =  2.5004E+04 d, dltime =  2.2360E+02 d
Steps completed =   575, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -19.4630

Stepping to zi=  2.6177E+00, delzi=  2.5226E-02, nord= 6
  time =  2.5248E+04 d, dltime =  2.4331E+02 d
Steps completed =   576, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -19.5506

Stepping to zi=  2.6452E+00, delzi=  2.7471E-02, nord= 6
  time =  2.5513E+04 d, dltime =  2.6496E+02 d
Steps completed =   577, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -19.6369

Stepping to zi=  2.6751E+00, delzi=  2.9925E-02, nord= 6
  time =  2.5801E+04 d, dltime =  2.8863E+02 d
Steps completed =   578, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -19.7221
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```
Stepping to zi=  2.7083E+00, delzi=  3.3185E-02, nord= 6
  time =  2.6121E+04 d, dltime =  3.2007E+02 d
Steps completed =   579, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -19.8077

Stepping to zi=  2.7451E+00, delzi=  3.6790E-02, nord= 6
  time =  2.6476E+04 d, dltime =  3.5484E+02 d
Steps completed =   580, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -19.8936

Stepping to zi=  2.7858E+00, delzi=  4.0713E-02, nord= 6
  time =  2.6869E+04 d, dltime =  3.9268E+02 d
Steps completed =   581, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -19.9797

Stepping to zi=  2.8308E+00, delzi=  4.5001E-02, nord= 6
  time =  2.7303E+04 d, dltime =  4.3404E+02 d
Steps completed =   582, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -20.0659

Stepping to zi=  2.8805E+00, delzi=  4.9705E-02, nord= 6
  time =  2.7782E+04 d, dltime =  4.7941E+02 d
Steps completed =   583, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -20.1520

Stepping to zi=  2.9354E+00, delzi=  5.4883E-02, nord= 6
  time =  2.8312E+04 d, dltime =  5.2935E+02 d
Steps completed =   584, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -20.2381

Stepping to zi=  2.9960E+00, delzi=  6.0599E-02, nord= 6
  time =  2.8896E+04 d, dltime =  5.8448E+02 d
Steps completed =   585, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -20.3242

Stepping to zi=  3.0000E+00, delzi=  4.0385E-03, nord= 6
  time =  2.8935E+04 d, dltime =  3.8952E+01 d
Steps completed =   586, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -20.3296

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                    Reaction progress        =  3.00000000000000E+00
                    Log of reaction progress =       0.4771213



                    Time =  2.500E+09 sec
                         =  2.894E+04 days
                         =  7.922E+01 years

                    Log sec =        9.398
                    Log days =       4.461
                    Log years =      1.899

                    Temperature    =     25.000 degrees C
                    total pressure =      1.013 bars


Step size is limited by the P.R.S. shift requirement
```

--- Reactant Summary ---

Reactant	Moles	Delta moles	Mass, g	Delta Mass, g
Tuff	9.7000E+01	3.0000E+00	1.9969E+03	6.1759E+01

Current total mass = 1.99689E+03 grams
Delta total mass = 6.17594E+01 grams
Delta total volume = 0.00000 cc

Reactant	Rel. Rate mol/mol	Rate mol/s	Rate mol/s/cm2
Tuff	1.0000E+00	1.2000E-09	2.5000E-15

Reactant	Affinity kcal/mol	Surface Area mol/s/cm2
Tuff	999.00000	4.8000E+05

Reactant	Rate Constants, mol/s/cm2	
Tuff		
	Forward	2.5000E-15

Affinity of the overall irreversible reaction= 0.000 kcal
Contributions from irreversible reactions
with no thermodynamic data are not included

--- Element Totals for the Aqueous Solution ---

Element	mg/kg soln.	Molality	Moles
O	8.862819E+05	5.562409E+01	5.550365E+01
Al	5.966953E-03	2.220653E-07	2.215844E-07
B	1.336638E-01	1.241488E-05	1.238800E-05
Ba	1.370574E-05	1.002170E-10	1.000000E-10
Ca	7.106021E-04	1.780390E-08	1.776535E-08
Ce	1.398398E-19	1.002169E-24	9.999993E-25
Cl	7.126156E+00	2.018370E-04	2.014000E-04
Cr	3.000412E+02	5.794352E-03	5.781806E-03
Cs	9.236482E-07	6.978444E-12	6.963334E-12
Cu	6.659232E-10	1.052278E-14	1.050000E-14
F	2.268957E-01	1.199234E-05	1.196637E-05
Fe	1.142779E-08	2.054741E-13	2.050292E-13
Gd	1.569413E-09	1.002170E-14	9.999998E-15
H	1.114472E+05	1.110272E+02	1.107868E+02
C	1.378921E+02	1.152802E-02	1.150306E-02
P	1.837672E+00	5.957566E-05	5.944666E-05
K	2.007648E+00	5.156137E-05	5.144973E-05
La	1.386328E-09	1.002170E-14	9.999998E-15
Li	6.927374E-07	1.002170E-10	1.000000E-10
Mg	2.036506E-02	8.413656E-07	8.395439E-07

Mn	4.379249E-11	8.004259E-16	7.986928E-16
Mo	2.182339E+02	2.284111E-03	2.279166E-03
N	1.985053E+00	1.423081E-04	1.420000E-04
Na	1.218795E+03	5.323419E-02	5.311893E-02
Nd	1.439568E-09	1.002170E-14	9.999998E-15
Ni	9.876728E-05	1.689833E-09	1.686174E-09
Pb	1.546388E-06	7.494170E-12	7.477944E-12
Pu	2.435210E-09	1.002170E-14	9.999999E-15
S	3.735412E+02	1.169738E-02	1.167205E-02
Si	4.315132E+00	1.542789E-04	1.539449E-04
Sm	1.500648E-09	1.002170E-14	9.999998E-15
Sr	6.218588E-16	7.126614E-21	7.111184E-21
Ti	1.076445E-05	2.257524E-10	2.252636E-10
U	2.375617E-09	1.002170E-14	1.000000E-14
V	4.774536E+00	9.411400E-05	9.391022E-05
Zn	6.526163E-06	1.002170E-10	1.000000E-10
Zr	9.104501E-16	1.002171E-20	1.000001E-20

Single ion activities and activity coefficients are here defined
with respect to the modified NBS pH scale

	pH	Eh	pe
modified NBS pH scale	9.2056	0.6745	1.1401E+01
rational pH scale	9.1246	0.6793	1.1482E+01

pHCl = 13.0004

Oxygen fugacity = 2.09991E-01
Log oxygen fugacity = -0.67780

Activity of water = 0.99866
Log activity of water = -0.00058

Ionic strength = 7.122739E-02 molal
Sum of molalities = 0.0835767162440
Osmotic coefficient = 0.89279

Mass of solution = 1.001967 kg
Mass of solutes = 0.004132 kg
Conc. of solutes = 0.412404 per cent (w/w)

Moles of solvent H2O = 5.53882E+01
Mass of solvent H2O = 9.97835E-01 kg

Species	Molality	Log molality	Log gamma	Log activity
Na+	5.1265E-02	-1.2902	-0.1058	-1.3959
SO4--	1.0309E-02	-1.9868	-0.3859	-2.3726
HCO3-	9.5913E-03	-2.0181	-0.0904	-2.1086
CrO4--	5.7886E-03	-2.2374	-0.3859	-2.6233
MoO4--	2.2841E-03	-2.6413	-0.3732	-3.0144
NaSO4-	1.3863E-03	-2.8581	-0.0904	-2.9486
CO3--	1.3848E-03	-2.8586	-0.3732	-3.2318
NaHCO3(aq)	4.4626E-04	-3.3504	0.0000	-3.3504

O2(aq)	2.6088E-04	-3.5836	0.0075	-3.5761
Cl-	2.0076E-04	-3.6973	-0.0975	-3.7948
NO3-	1.4231E-04	-3.8468	-0.0975	-3.9442
SiO2(aq)	1.0016E-04	-3.9993	0.0000	-3.9993
NaCO3-	9.4875E-05	-4.0228	-0.0904	-4.1133
VO3OH--	8.4474E-05	-4.0733	-0.3859	-4.4591
HPO4--	5.0605E-05	-4.2958	-0.3859	-4.6817
K+	5.0028E-05	-4.3008	-0.1128	-4.4136
NaHSiO3(aq)	3.2047E-05	-4.4942	0.0000	-4.4942
HSiO3-	2.2064E-05	-4.6563	-0.0904	-4.7468
OH-	2.0127E-05	-4.6962	-0.0938	-4.7901
F-	1.1953E-05	-4.9225	-0.0938	-5.0163
CO2(aq)	1.0560E-05	-4.9764	0.0075	-4.9689
HVO4--	9.0997E-06	-5.0410	-0.3859	-5.4268
NaHPO4-	8.5670E-06	-5.0672	-0.0904	-5.1576
BO2-	6.3718E-06	-5.1957	-0.0904	-5.2862
HCrO4-	5.7009E-06	-5.2441	-0.0904	-5.3345
B(OH)3(aq)	5.6561E-06	-5.2475	0.0000	-5.2475
KSO4-	1.5270E-06	-5.8162	-0.0904	-5.9066
NaCl(aq)	1.0771E-06	-5.9677	0.0000	-5.9677
Mg++	4.5205E-07	-6.3448	-0.3332	-6.6780
NaB(OH)4(aq)	3.8690E-07	-6.4124	0.0000	-6.4124
H2VO4-	3.3189E-07	-6.4790	-0.0904	-6.5695
H2PO4-	2.5619E-07	-6.5914	-0.0904	-6.6819
MgSO4(aq)	2.2967E-07	-6.6389	0.0000	-6.6389
AlO2-	2.2045E-07	-6.6567	-0.0904	-6.7471
VO2(OH)2-	2.0568E-07	-6.6868	-0.0904	-6.7773
PO4---	1.2175E-07	-6.9145	-0.8833	-7.7979
MgCO3(aq)	1.1727E-07	-6.9308	0.0000	-6.9308
NaOH(aq)	1.0334E-07	-6.9857	0.0000	-6.9857
NaF(aq)	3.8914E-08	-7.4099	0.0000	-7.4099
MgHCO3+	2.2643E-08	-7.6451	-0.1058	-7.7508
MgPO4-	1.5982E-08	-7.7964	-0.0904	-7.8868
Ca++	9.6670E-09	-8.0147	-0.3700	-8.3847
H2SiO4--	6.8648E-09	-8.1634	-0.3859	-8.5492
KHPO4-	5.9595E-09	-8.2248	-0.0904	-8.3152
CaCO3(aq)	5.1358E-09	-8.2894	0.0000	-8.2894
MgHPO4(aq)	3.5511E-09	-8.4496	0.0000	-8.4496
VO4---	2.3432E-09	-8.6302	-0.8833	-9.5135
CaSO4(aq)	2.2580E-09	-8.6463	0.0000	-8.6463
Cr2O7--	1.7695E-09	-8.7522	-0.3859	-9.1380
Ni++	1.3484E-09	-8.8702	-0.3700	-9.2402
NaAlO2(aq)	1.2990E-09	-8.8864	0.0000	-8.8864
H+	7.5055E-10	-9.1246	-0.0810	-9.2056
CaHCO3+	4.5620E-10	-9.3408	-0.1058	-9.4466
NiSO4(aq)	3.2574E-10	-9.4871	0.0000	-9.4871
HAlO2(aq)	3.1452E-10	-9.5024	0.0000	-9.5024
HSO4-	3.0995E-10	-9.5087	-0.0904	-9.5992
CaPO4-	2.3327E-10	-9.6321	-0.0904	-9.7226
Ti(OH)4(aq)	2.2575E-10	-9.6464	0.0000	-9.6464
KOH(aq)	2.1452E-10	-9.6685	0.0000	-9.6685
KCl(aq)	1.9817E-10	-9.7030	0.0000	-9.7030
MgB(OH)4+	1.0931E-10	-9.9614	-0.1058	-10.0671

--- Summary of Instantaneously Precipitated Solid Phases ---
(defined by derivatives)

--- Theoretical Rock Composition ---
g/kg

O	5.181369E+01
Al	6.307667E+00

Ca	3.743578E-01
Cl	1.039239E-10
Cs	6.027370E-09
Fe	6.119328E-01
H	7.307176E-01
C	2.064169E-03
P	2.723839E-10
K	3.828005E+00
Mg	1.381786E-01
Mn	4.839735E-02
N	1.935982E-66
Na	2.488348E+00
Pb	3.036869E-09
Si	3.360163E+01
Sr	8.618468E-18
Ti	5.500742E-02

--- Oxide Percentages ---

Oxide Theoretical rock

Total = 0.0000

Phase/end-member	d mol/d zi	d grams/d zi	d vol (cc)/d zi
Celadonite	1.2310E-03	4.8840E-01	1.9340E-01
Maximum_Microcline	1.9070E-02	5.3078E+00	2.0737E+00
Mesolite	3.1067E-03	1.2047E+00	5.3186E-01
Muscovite	1.0005E-03	3.9849E-01	1.4078E-01
Ni2SiO4	-2.5179E-12	-5.2742E-10	-1.0729E-10
Pyrolusite	1.9400E-04	1.6866E-02	9.7000E-02
Pyromorphite	6.4553E-13	8.7558E-10	1.2437E-10
Quartz	9.3845E-02	5.6386E+00	2.1292E+00
Rutile	2.5300E-04	2.0209E-02	4.7615E-03
fix CO2(g)	3.7846E-05	1.6656E-03	0.0000E+00
fix O2(g)	-7.0649E-04	-2.2607E-02	0.0000E+00
Clinoptilolite-ss			
Clinoptilolite-Ca	8.9278E-06	1.2003E-02	4.4639E-03
Clinoptilolite-Cs	2.8806E-12	5.0000E-09	1.4403E-09
Clinoptilolite-K	7.3712E-05	1.0397E-01	3.6856E-02
Clinoptilolite-NH4	8.7794E-69	1.1742E-65	4.3897E-66
Clinoptilolite-Na	6.1585E-03	8.3426E+00	3.0793E+00
Clinoptilolite-Sr	1.2496E-20	1.7829E-17	6.2478E-18
Smectite-di			
Beidellite-Ca	4.0469E-11	1.4834E-08	5.2419E-09
Beidellite-K	1.7470E-10	6.5136E-08	2.3357E-08
Beidellite-Mg	3.7562E-10	1.3671E-07	4.6273E-08
Beidellite-Na	1.7146E-08	6.3016E-06	2.2382E-06
Montmor-Ca	7.2651E-08	2.6593E-05	3.6326E-05
Montmor-K	5.1220E-07	1.9071E-04	2.5610E-04
Montmor-Mg	1.0959E-06	3.9830E-04	5.4796E-04
Montmor-Na	4.9023E-05	1.7992E-02	2.4511E-02
Nontronite-Ca	2.6318E-06	1.1166E-03	3.4502E-04
Nontronite-K	1.1361E-05	4.8918E-03	1.5368E-03
Nontronite-Mg	2.4444E-05	1.0308E-02	3.1719E-03
Nontronite-Na	1.1150E-03	4.7418E-01	1.4730E-01

--- Summary of Solid Phases (E.S.+P.R.S.) ---

Phase/End-member	Log moles	Moles	Mass, g	Volume, cc

Alunite	-2.5559	2.7801E-03	1.1516E+00	8.1624E-01
Celadonite	-2.4278	3.7342E-03	1.4815E+00	5.8664E-01
Diaspore	-1.6079	2.4665E-02	1.4796E+00	4.3804E-01
Fluorapatite	-3.9881	1.0278E-04	5.1834E-02	5.1392E-02
Hematite	-3.7144	1.9300E-04	3.0820E-02	5.8428E-03
Maximum_Microcline	-1.3520	4.4467E-02	1.2377E+01	4.8354E+00
Mesolite	-2.0462	8.9905E-03	3.4864E+00	1.5392E+00
Muscovite	-1.8727	1.3405E-02	5.3392E+00	1.8862E+00
Ni2SiO4	-2.1930	6.4125E-03	1.3432E+00	2.7324E-01
Nontronite-H	-4.9990	1.0023E-05	4.1899E-03	5.0117E-03
Pyrolusite	-2.9297	1.1757E-03	1.0221E-01	5.8784E-01
Pyromorphite	-10.7327	1.8504E-11	2.5099E-08	3.5651E-09
Quartz	-0.3036	4.9700E-01	2.9862E+01	1.1276E+01
Rutile	-3.1198	7.5900E-04	6.0628E-02	1.4284E-02
fix CO2(g)	2.3010	1.9999E+02	8.8015E+03	0.0000E+00
fix O2(g)	2.3010	2.0000E+02	6.3997E+03	0.0000E+00
Clinoptilolite-ss	-2.3943	4.0333E-03		
Clinoptilolite-Ca	-5.2389	5.7695E-06	7.7566E-03	2.8847E-03
Clinoptilolite-Cs	-10.5713	2.6835E-11	4.6578E-08	1.3417E-08
Clinoptilolite-K	-4.3221	4.7636E-05	6.7190E-02	2.3818E-02
Clinoptilolite-NH4	-68.2470	5.6620E-69	7.5728E-66	2.8310E-66
Clinoptilolite-Na	-2.4001	3.9799E-03	5.3913E+00	1.9899E+00
Clinoptilolite-Sr	-10.2389	5.7687E-11	8.2309E-08	2.8843E-08
Smectite-di	-2.4623	3.4492E-03		
Beidellite-Ca	-9.2870	5.1646E-10	1.8932E-07	6.6897E-08
Beidellite-K	-8.9614	1.0929E-09	4.0749E-07	1.4612E-07
Beidellite-Mg	-8.9860	1.0328E-09	3.7590E-07	1.2723E-07
Beidellite-Na	-7.7114	1.9435E-08	7.1431E-06	2.5370E-06
Montmor-Ca	-6.3387	4.5842E-07	1.6780E-04	2.2921E-04
Montmor-K	-5.9788	1.0501E-06	3.9098E-04	5.2504E-04
Montmor-Mg	-5.6522	2.2273E-06	8.0950E-04	1.1137E-03
Montmor-Na	-4.2578	5.5235E-05	2.0272E-02	2.7617E-02
Nontronite-Ca	-3.4074	3.9142E-04	1.6608E-01	5.1315E-02
Nontronite-K	-3.1991	6.3225E-04	2.7224E-01	8.5525E-02
Nontronite-Mg	-3.2941	5.0806E-04	2.1425E-01	6.5926E-02
Nontronite-Na	-2.7309	1.8584E-03	7.9033E-01	2.4552E-01

	Mass, grams	Volume, cc
Created	1.526484E+04	2.480963E+01
Destroyed	6.175940E+01	0.000000E+00
Net	1.520308E+04	2.480963E+01

Warning-- these volume totals may be incomplete because of missing partial molar volume data in the data base

--- Summary of Pure Mineral Saturation States ---

Mineral	Log Q/K	Aff, kcal	State
Alamosite	-2.796	-3.815	
Albite	-0.022	-0.030	
Albite_high	-1.341	-1.829	
Albite_low	-0.022	-0.030	
Alstonite	-7.209	-9.836	
Analcime	-0.148	-0.202	

Analcime-dehy	-6.510	-8.882	
Andalusite	-6.082	-8.298	
Anglesite	-6.054	-8.260	
Anhydrite	-6.451	-8.801	
Aragonite	-3.281	-4.476	
BaCrO4	-3.126	-4.264	
BaZrO3	83.678	114.161	ssatd
Barite	-2.836	-3.869	
Bassanite	-7.096	-9.681	
Beidellite-Ca	-2.466	-3.365	
Beidellite-Cs	-4.366	-5.956	
Beidellite-H	-3.163	-4.315	
Beidellite-K	-2.257	-3.079	
Beidellite-Mg	-2.147	-2.929	
Beidellite-Na	-1.599	-2.182	
Boehmite	-0.634	-0.864	
Boric_acid	-5.089	-6.943	
Brucite	-4.566	-6.229	
Bunsenite	-3.301	-4.504	
CaSO4:0.5H2O(beta)	-7.264	-9.911	
CaZrO3	139.758	190.669	ssatd
Calcite	-3.136	-4.279	
CeO2	-3.167	-4.320	
Celadonite	0.000	0.000	satd
Cerussite	-1.228	-1.676	
Chalcedony	-0.271	-0.370	
Chrysotile	-3.927	-5.358	
Clinochlore-14A	-6.714	-9.160	
Clinoptilolite	-4.897	-6.680	
Clinoptilolite-K	-6.670	-9.100	
Clinoptilolite-Na	-0.020	-0.027	
Clinoptilolite-hy-K	-6.664	-9.092	
Clinoptilolite-hy-Na	-0.018	-0.024	
Coesite	-0.810	-1.105	
Corundum	-4.450	-6.072	
Cristobalite(alpha)	-0.551	-0.751	
Cristobalite(beta)	-0.994	-1.356	
Crocoite	-1.440	-1.965	
Dawsonite	-0.920	-1.256	
Diaspore	-0.230	-0.313	
Diopside	-7.204	-9.829	
Dolomite	-3.382	-4.614	
Dolomite-dis	-4.927	-6.721	
Dolomite-ord	-3.382	-4.614	
Enstatite	-3.594	-4.903	
Epsomite	-7.092	-9.676	
Fe(OH)3	-6.518	-8.893	
Ferrite-Zn	-5.892	-8.039	
GdPO4:H2O	-4.319	-5.892	
Gibbsite	-0.826	-1.127	
Goethite	-1.397	-1.905	
Gypsum	-6.276	-8.563	
Halite	-6.776	-9.245	
Hematite	-1.832	-2.500	
Heulandite	-6.081	-8.296	
Hexahydrite	-7.327	-9.997	
Hydrocerussite	-5.418	-7.392	
Ice	-0.139	-0.190	
Illite	-1.275	-1.739	
Jadeite	-1.647	-2.247	
K-Feldspar	0.000	0.000	
Kalicinite	-6.806	-9.285	
Kalsilite	-3.175	-4.332	

Kaolinite	-0.948	-1.294	
Kyanite	-5.812	-7.929	
LaPO4:H2O	-2.576	-3.514	
Lanarkite	-6.562	-8.952	
Lansfordite	-4.425	-6.037	
Laumontite	-5.779	-7.884	
Lawsonite	-6.325	-8.630	
Litharge	-5.768	-7.869	
Magnesite	-1.875	-2.557	
Manganite	-4.459	-6.084	
Massicot	-5.943	-8.108	
Maximum_Microcline	0.000	0.000	satd
Mesolite	0.000	0.000	satd
Mirabilite	-4.031	-5.499	
MnO2(gamma)	-1.518	-2.071	
Monohydrocalcite	-3.971	-5.417	
Montmor-Ca	-1.392	-1.900	
Montmor-Cs	-3.225	-4.400	
Montmor-K	-1.113	-1.518	
Montmor-Mg	-1.003	-1.369	
Montmor-Na	-0.459	-0.626	
Mordenite	-2.805	-3.827	
Muscovite	0.000	0.000	satd
Na2CO3	-6.877	-9.382	
Na2CO3:7H2O	-5.645	-7.701	
Nahcolite	-3.393	-4.629	
Natrolite	-1.039	-1.418	
Natron	-5.311	-7.246	
NdOHCO3	-6.784	-9.256	
NdPO4:H2O	-3.572	-4.874	
Nepheline	-3.060	-4.174	
Nesquehonite	-4.578	-6.246	
Ni(OH)2	-3.579	-4.882	
Ni2SiO4	0.000	0.000	satd
NiCO3	-5.655	-7.715	
Nontronite-Ca	-0.878	-1.198	
Nontronite-H	-1.574	-2.148	
Nontronite-K	-0.668	-0.912	
Nontronite-Mg	-0.559	-0.762	
Nontronite-Na	-0.011	-0.015	
Paragonite	-0.919	-1.253	
Paralaurionite	-6.328	-8.633	
Pb3(PO4)2	-5.581	-7.614	
Pb4O(PO4)2	-6.107	-8.331	
PbCO3.PbO	-7.232	-9.867	
PbHPO4	-4.649	-6.343	
Petalite	-6.150	-8.390	
Phlogopite	-2.518	-3.435	
Plattnerite	-1.131	-1.543	
PuO2	-4.804	-6.554	
Pyrolusite	0.000	0.000	satd
Pyromorphite	0.000	0.000	satd
Pyrophyllite	-2.576	-3.514	
Quartz	0.000	0.000	satd
Rutile	0.000	0.000	satd
Sanidine_high	-1.199	-1.636	
Saponite-Ca	-1.829	-2.495	
Saponite-Cs	-3.728	-5.086	
Saponite-H	-2.525	-3.445	
Saponite-K	-1.619	-2.209	
Saponite-Mg	-1.509	-2.059	
Saponite-Na	-0.962	-1.312	
Scolecite	-3.989	-5.442	

Sellaite	-7.326	-9.995	
SiO2(am)	-1.286	-1.754	
Sillimanite	-6.446	-8.794	
SmPO4:H2O	-3.823	-5.216	
Smectite-low-Fe-Mg	-7.076	-9.653	
Smithsonite	-4.212	-5.746	
SrZrO3	110.387	150.599	ssatd
Stilbite	-1.918	-2.616	
Talc	-1.938	-2.644	
Thenardite	-4.855	-6.624	
Thermonatrite	-6.658	-9.083	
Trevorite	-2.341	-3.193	
Tridymite	-0.172	-0.234	
Witherite	-0.341	-0.465	
Zincite	-3.643	-4.971	
Zn(OH)2(beta)	-4.369	-5.961	
Zn(OH)2(epsilon)	-4.098	-5.591	
Zn(OH)2(gamma)	-4.318	-5.892	
fix CO2(g)	0.000	0.000	satd
fix O2(g)	0.000	0.000	satd

--- Summary of Solid Solutions ---

--- Carbonate-Calcite ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Calcite	5.1653E-02	-1.2869	0.0000	-1.2869
Magnesite	9.4400E-01	-0.0250	0.0000	-0.0250
Rhodochrosite	1.2025E-09	-8.9199	0.0000	-8.9199
Siderite	1.8627E-18	-17.7299	0.0000	-17.7299
Smithsonite	4.3443E-03	-2.3621	0.0000	-2.3621
Strontianite	3.4649E-12	-11.4603	0.0000	-11.4603

Mineral	Log Q/K	Aff, kcal	State
Carbonate-Calcite	-1.849	-2.523	
Calcite	-1.849	-2.523	
Magnesite	-1.849	-2.523	
Rhodochrosite	-1.849	-2.523	
Siderite	-1.849	-2.523	
Smithsonite	-1.849	-2.523	
Strontianite	-1.849	-2.523	

--- Clinoptilolite-hy-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-hy-Ca	1.5023E-10	-9.8233	0.0000	-9.8233
Clinoptilolite-hy-Cs	4.8178E-29	-28.3172	0.0000	-28.3172
Clinoptilolite-hy-K	2.2583E-07	-6.6462	0.0000	-6.6462
Clinoptilolite-hy-Na	1.0000E+00	0.0000	0.0000	0.0000
Clinoptilolite-hy-Sr	8.5176E-32	-31.0697	0.0000	-31.0697

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-hy-ss	-0.018	-0.024	
Clinoptilolite-hy-Ca	-0.018	-0.024	
Clinoptilolite-hy-Cs	-0.018	-0.024	
Clinoptilolite-hy-K	-0.018	-0.024	
Clinoptilolite-hy-Na	-0.018	-0.024	
Clinoptilolite-hy-Sr	-0.018	-0.024	

--- Clinoptilolite-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-Ca	1.4305E-03	-2.8445	-6.9975	-9.8420
Clinoptilolite-Cs	6.4364E-09	-8.1914	-20.1507	-28.3421
Clinoptilolite-K	1.1811E-02	-1.9277	-4.7422	-6.6699
Clinoptilolite-NH4	1.4038E-66	-65.8527	-161.9976	-227.8503
Clinoptilolite-Na	9.8676E-01	-0.0058	-0.0142	-0.0200
Clinoptilolite-Sr	1.0362E-09	-8.9846	-22.1020	-31.0866

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-ss	0.000	0.000	satd
Clinoptilolite-Ca	0.000	0.000	satd
Clinoptilolite-Cs	0.000	0.000	satd
Clinoptilolite-K	0.000	0.000	satd
Clinoptilolite-NH4	0.000	0.000	satd
Clinoptilolite-Na	0.000	0.000	satd
Clinoptilolite-Sr	0.000	0.000	satd

--- Saponite-tri ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Saponite-Ca	2.2817E-03	-2.6417	1.7700	-0.8718
Saponite-H	1.7690E-05	-4.7523	3.1840	-1.5682
Saponite-K	9.8427E-03	-2.0069	1.3446	-0.6623
Saponite-Mg	2.1178E-02	-1.6741	1.1217	-0.5525
Saponite-Na	9.6668E-01	-0.0147	0.0099	-0.0049

Mineral	Log Q/K	Aff, kcal	State
Saponite-tri	-0.957	-1.305	
Saponite-Ca	-0.957	-1.305	
Saponite-H	-0.957	-1.305	
Saponite-K	-0.957	-1.305	
Saponite-Mg	-0.957	-1.305	
Saponite-Na	-0.957	-1.305	

--- Smectite-di ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Beidellite-Ca	3.3607E-08	-7.4736	5.0073	-2.4663
Beidellite-K	1.4508E-07	-6.8384	4.5817	-2.2567
Beidellite-Mg	3.1193E-07	-6.5059	4.3590	-2.1470
Beidellite-Na	1.4238E-05	-4.8465	3.2472	-1.5994
Montmor-Ca	6.0333E-05	-4.2194	2.8270	-1.3924
Montmor-K	4.2535E-04	-3.3712	2.2587	-1.1125
Montmor-Mg	9.1011E-04	-3.0409	2.0374	-1.0035
Montmor-Na	4.0710E-02	-1.3903	0.9315	-0.4588
Nontronite-Ca	2.1855E-03	-2.6604	1.7825	-0.8779
Nontronite-K	9.4347E-03	-2.0253	1.3569	-0.6683
Nontronite-Mg	2.0300E-02	-1.6925	1.1340	-0.5585
Nontronite-Na	9.2596E-01	-0.0334	0.0224	-0.0110

Mineral	Log Q/K	Aff, kcal	State
Smectite-di	0.000	0.000	satd
Beidellite-Ca	0.000	0.000	satd
Beidellite-K	0.000	0.000	satd
Beidellite-Mg	0.000	0.000	satd
Beidellite-Na	0.000	0.000	satd
Montmor-Ca	0.000	0.000	satd
Montmor-K	0.000	0.000	satd
Montmor-Mg	0.000	0.000	satd
Montmor-Na	0.000	0.000	satd
Nontronite-Ca	0.000	0.000	satd
Nontronite-K	0.000	0.000	satd
Nontronite-Mg	0.000	0.000	satd
Nontronite-Na	0.000	0.000	satd

--- Lanthanide hydroxide ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
La(OH)3	1.2671E-04	-3.8972	0.0000	-3.8972
Ce(OH)3	6.5929E-15	-14.1809	0.0000	-14.1809
Nd(OH)3(c)	6.4004E-01	-0.1938	0.0000	-0.1938
Gd(OH)3	2.8813E-01	-0.5404	0.0000	-0.5404
Sm(OH)3	7.1698E-02	-1.1445	0.0000	-1.1445

Mineral	Log Q/K	Aff, kcal	State
Lanthanide hydroxide	-8.266	-11.278	
La(OH)3	-8.266	-11.278	
Ce(OH)3	-8.266	-11.278	
Nd(OH)3(c)	-8.266	-11.278	
Gd(OH)3	-8.266	-11.278	
Sm(OH)3	-8.266	-11.278	

--- Rhabdophane-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaPO4:H2O	8.5075E-01	-0.0702	0.0000	-0.0702
CePO4:H2O	1.3998E-11	-10.8539	0.0000	-10.8539
NdPO4:H2O	8.5743E-02	-1.0668	0.0000	-1.0668
GdPO4:H2O	1.5367E-02	-1.8134	0.0000	-1.8134
SmPO4:H2O	4.8139E-02	-1.3175	0.0000	-1.3175

Mineral	Log Q/K	Aff, kcal	State
Rhabdophane-ss	-2.506	-3.418	
LaPO4:H2O	-2.506	-3.418	
CePO4:H2O	-2.506	-3.418	
NdPO4:H2O	-2.506	-3.418	
GdPO4:H2O	-2.506	-3.418	
SmPO4:H2O	-2.506	-3.418	

--- Lanthanide fluoride ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaF3:0.5H2O	8.8241E-01	-0.0543	0.0000	-0.0543
CeF3:0.5H2O	2.3011E-11	-10.6381	0.0000	-10.6381
NdF3:0.5H2O	1.1196E-01	-0.9509	0.0000	-0.9509
GdF3:0.5H2O	6.3452E-04	-3.1976	0.0000	-3.1976
SmF3:0.5H2O	4.9930E-03	-2.3016	0.0000	-2.3016

Mineral	Log Q/K	Aff, kcal	State
Lanthanide fluoride	-15.744	-21.480	
LaF3:0.5H2O	-15.744	-21.480	
CeF3:0.5H2O	-15.744	-21.480	
NdF3:0.5H2O	-15.744	-21.480	
GdF3:0.5H2O	-15.744	-21.480	
SmF3:0.5H2O	-15.744	-21.480	

--- Summary of Gases ---

Gas	Fugacity	Log fugacity
Al(g)	9.7072-192	-191.0129
B(g)	3.9133-204	-203.4075
BF3(g)	1.1344E-45	-44.9452
C(g)	3.0917-190	-189.5098
CH4(g)	3.5199-146	-145.4535
CO(g)	6.0395E-49	-48.2190
CO2(g)	3.1623E-04	-3.5000
Ca(g)	5.4464-154	-153.2639
Chlorine	1.6266E-31	-30.7887
Cs(g)	3.5142E-83	-82.4542
Cu(g)	1.9550E-82	-81.7089
Fluorine	1.1191E-86	-85.9511
H2(g)	6.1068E-42	-41.2142

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H2O(g)                      2.5943E-02     -1.5860
H2S(g)                      1.0650-144   -143.9727
HCl(g)                      4.9442E-20    -19.3059
HF(g)                       4.6285E-16    -15.3346
K(g)                        1.2715E-76    -75.8957
Li(g)                       1.1304E-95    -94.9468
Mg(g)                       1.8676-129   -128.7287
Nitrogen                    1.2254E-22    -21.9117
NH3(g)                      1.2737E-70    -69.8949
NO(g)                       3.4857E-27    -26.4577
NO2(g)                      2.3834E-21    -20.6228
Na(g)                       6.9092E-73    -72.1606
O2(g)                       2.0999E-01     -0.6778
Pb(g)                       1.1357E-67    -66.9447
S2(g)                       6.7808-232   -231.1687
SO2(g)                      1.8881E-57    -56.7240
Si(g)                       4.2257-221   -220.3741
SiF4(g)                     2.0282E-46    -45.6929
Ti(g)                       3.8019-231   -230.4200
TiCl4(g)                    2.0070E-90    -89.6974
U(g)                        9.7013-303   -302.0132
U2Cl10(g)                   8.4050-270   -269.0755
U2Cl8(g)                    1.6020-269   -268.7953
U2F10(g)                    5.7522-187   -186.2402
UCl(g)                      4.2773-260   -259.3688
UCl2(g)                     5.6417-216   -215.2486
UCl3(g)                     1.6298-169   -168.7879
UCl4(g)                     2.5497-140   -139.5935
UCl5(g)                     2.0522-148   -147.6878
UCl6(g)                     3.0687-151   -150.5130
UF(g)                       8.5096-246   -245.0701
UF2(g)                      5.5359-207   -206.2568
UF3(g)                      8.8627-162   -161.0524
UF4(g)                      2.0943-113   -112.6790
UF5(g)                      2.2668-106   -105.6446
UF6(g)                      2.4160-113   -112.6169
UO(g)                       7.6618-218   -217.1157
UO2(g)                      1.4195-133   -132.8479
UO2Cl2(g)                   1.0081E-83    -82.9965
UO2F2(g)                    7.1761E-73    -72.1441
UO3(g)                      1.0441E-80    -79.9813
UOF4(g)                     6.2408E-91    -90.2048
Zn(g)                       8.6981E-77    -76.0606



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--- shifting e.s. solid(s) to the p.r.s. (shftz) ---

      shifted -- Celadonite
              - old mass=  7.97716E-04, new mass=  7.97716E-06
      shifted -- Maximum_Microcline
              - old mass=  1.23212E-02, new mass=  1.23212E-04
      shifted -- Mesolite
              - old mass=  2.01317E-03, new mass=  2.01317E-05
      shifted -- Muscovite
              - old mass=  6.85631E-04, new mass=  6.85631E-06
  not shifted -- Ni2SiO4
              - mass=  7.99998E-07
      shifted -- Pyrolusite
              - old mass=  1.25819E-04, new mass=  1.25819E-06
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  not shifted -- Pyromorphite
              - mass=  1.85044E-11
      shifted -- Quartz
              - old mass=  6.11265E-02, new mass=  6.11265E-04
      shifted -- Rutile
              - old mass=  1.63947E-04, new mass=  1.63947E-06
      shifted -- Clinoptilolite-ss
              - old mass=  4.02275E-03, new mass=  4.02275E-05
      shifted -- Smectite-di
              - old mass=  7.80485E-04, new mass=  7.80485E-06

Stepping to zi=  3.0047E+00, delzi=  4.6839E-03, nord= 6
  time =  2.8980E+04 d, dltime =  4.5177E+01 d
Steps completed =   587, iter =  9, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -20.8031

Stepping to zi=  3.0053E+00, delzi=  5.8549E-04, nord= 6
  time =  2.8986E+04 d, dltime =  5.6471E+00 d
Steps completed =   588, iter =  6, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -20.8475

Stepping to zi=  3.0064E+00, delzi=  1.1710E-03, nord= 5
  time =  2.8997E+04 d, dltime =  1.1294E+01 d
Steps completed =   589, iter =  7, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -20.9301

Stepping to zi=  3.0070E+00, delzi=  5.8549E-04, nord= 6
  time =  2.9003E+04 d, dltime =  5.6471E+00 d
Steps completed =   590, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -20.9686

Stepping to zi=  3.0082E+00, delzi=  1.1710E-03, nord= 6
  time =  2.9014E+04 d, dltime =  1.1294E+01 d
Steps completed =   591, iter =  6, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -21.0409

Stepping to zi=  3.0094E+00, delzi=  1.2372E-03, nord= 6
  time =  2.9026E+04 d, dltime =  1.1933E+01 d
Steps completed =   592, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -21.1112

Stepping to zi=  3.0111E+00, delzi=  1.6752E-03, nord= 6
  time =  2.9042E+04 d, dltime =  1.6157E+01 d
Steps completed =   593, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -21.1981

Stepping to zi=  3.0131E+00, delzi=  1.9710E-03, nord= 6
  time =  2.9061E+04 d, dltime =  1.9010E+01 d
Steps completed =   594, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -21.2904

Stepping to zi=  3.0152E+00, delzi=  2.1164E-03, nord= 6
  time =  2.9082E+04 d, dltime =  2.0413E+01 d
Steps completed =   595, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -21.3796

Stepping to zi=  3.0175E+00, delzi=  2.2980E-03, nord= 6
  time =  2.9104E+04 d, dltime =  2.2164E+01 d
Steps completed =   596, iter =  6, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -21.4670

Stepping to zi=  3.0200E+00, delzi=  2.4990E-03, nord= 6
  time =  2.9128E+04 d, dltime =  2.4103E+01 d
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Steps completed =   597, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -21.5531

Stepping to zi=  3.0227E+00, delzi=  2.7484E-03, nord= 6
  time =  2.9155E+04 d, dltime =  2.6508E+01 d
Steps completed =   598, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -21.6388

Stepping to zi=  3.0258E+00, delzi=  3.0323E-03, nord= 6
  time =  2.9184E+04 d, dltime =  2.9247E+01 d
Steps completed =   599, iter =  6, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -21.7245

Stepping to zi=  3.0291E+00, delzi=  3.3575E-03, nord= 6
  time =  2.9216E+04 d, dltime =  3.2383E+01 d
Steps completed =   600, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -21.8104

Stepping to zi=  3.0328E+00, delzi=  3.7165E-03, nord= 6
  time =  2.9252E+04 d, dltime =  3.5846E+01 d
Steps completed =   601, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -21.8966

Stepping to zi=  3.0370E+00, delzi=  4.1078E-03, nord= 6
  time =  2.9292E+04 d, dltime =  3.9620E+01 d
Steps completed =   602, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -21.9827

Stepping to zi=  3.0415E+00, delzi=  4.5372E-03, nord= 6
  time =  2.9335E+04 d, dltime =  4.3762E+01 d
Steps completed =   603, iter =  7, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -22.0689

Stepping to zi=  3.0465E+00, delzi=  5.0100E-03, nord= 6
  time =  2.9384E+04 d, dltime =  4.8322E+01 d
Steps completed =   604, iter =  6, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -22.1551

Stepping to zi=  3.0520E+00, delzi=  5.5321E-03, nord= 6
  time =  2.9437E+04 d, dltime =  5.3358E+01 d
Steps completed =   605, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -22.2412

Stepping to zi=  3.0581E+00, delzi=  6.1093E-03, nord= 6
  time =  2.9496E+04 d, dltime =  5.8925E+01 d
Steps completed =   606, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -22.3273

Stepping to zi=  3.0649E+00, delzi=  6.7475E-03, nord= 6
  time =  2.9561E+04 d, dltime =  6.5080E+01 d
Steps completed =   607, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -22.4135

Stepping to zi=  3.0723E+00, delzi=  7.4527E-03, nord= 6
  time =  2.9633E+04 d, dltime =  7.1882E+01 d
Steps completed =   608, iter =  7, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -22.4996

Stepping to zi=  3.0806E+00, delzi=  8.2315E-03, nord= 6
  time =  2.9712E+04 d, dltime =  7.9393E+01 d
Steps completed =   609, iter =  7, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -22.5857
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```
Stepping to zi=  3.0897E+00, delzi=  9.0917E-03, nord= 6
  time =  2.9800E+04 d, dltime =  8.7690E+01 d
Steps completed =   610, iter =  6, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -22.6718

Stepping to zi=  3.0997E+00, delzi=  1.0042E-02, nord= 6
  time =  2.9897E+04 d, dltime =  9.6852E+01 d
Steps completed =   611, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -22.7580

Stepping to zi=  3.1108E+00, delzi=  1.1091E-02, nord= 6
  time =  3.0004E+04 d, dltime =  1.0697E+02 d
Steps completed =   612, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -22.8441

Stepping to zi=  3.1230E+00, delzi=  1.2249E-02, nord= 6
  time =  3.0122E+04 d, dltime =  1.1815E+02 d
Steps completed =   613, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -22.9302

Stepping to zi=  3.1366E+00, delzi=  1.3529E-02, nord= 6
  time =  3.0252E+04 d, dltime =  1.3049E+02 d
Steps completed =   614, iter =  7, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -23.0163

Stepping to zi=  3.1515E+00, delzi=  1.4943E-02, nord= 6
  time =  3.0397E+04 d, dltime =  1.4412E+02 d
Steps completed =   615, iter =  6, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -23.1024

Stepping to zi=  3.1680E+00, delzi=  1.6504E-02, nord= 6
  time =  3.0556E+04 d, dltime =  1.5918E+02 d
Steps completed =   616, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -23.1886

Stepping to zi=  3.1863E+00, delzi=  1.8229E-02, nord= 6
  time =  3.0732E+04 d, dltime =  1.7582E+02 d
Steps completed =   617, iter =  6, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -23.2747

Stepping to zi=  3.2064E+00, delzi=  2.0133E-02, nord= 6
  time =  3.0926E+04 d, dltime =  1.9419E+02 d
Steps completed =   618, iter = 19, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -23.3608

Stepping to zi=  3.2286E+00, delzi=  2.2237E-02, nord= 6
  time =  3.1140E+04 d, dltime =  2.1448E+02 d
Steps completed =   619, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -23.4469

Stepping to zi=  3.2532E+00, delzi=  2.4560E-02, nord= 6
  time =  3.1377E+04 d, dltime =  2.3689E+02 d
Steps completed =   620, iter = 11, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -23.5330

Stepping to zi=  3.2803E+00, delzi=  2.7127E-02, nord= 6
  time =  3.1639E+04 d, dltime =  2.6164E+02 d
Steps completed =   621, iter = 13, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -23.6191

Stepping to zi=  3.3103E+00, delzi=  2.9961E-02, nord= 6
  time =  3.1928E+04 d, dltime =  2.8898E+02 d
Steps completed =   622, iter = 14, ncorr = 0
```

```
Most rapidly changing is zvclg1(Sr++                    ) =    -23.7052

Stepping to zi=  3.3434E+00, delzi=  3.3092E-02, nord= 6
  time =  3.2247E+04 d, dltime =  3.1918E+02 d
Steps completed =   623, iter = 12, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -23.7913

Stepping to zi=  3.3799E+00, delzi=  3.6550E-02, nord= 6
  time =  3.2599E+04 d, dltime =  3.5253E+02 d
Steps completed =   624, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -23.8774

Stepping to zi=  3.4203E+00, delzi=  4.0370E-02, nord= 6
  time =  3.2989E+04 d, dltime =  3.8937E+02 d
Steps completed =   625, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -23.9635

Stepping to zi=  3.4649E+00, delzi=  4.4588E-02, nord= 6
  time =  3.3419E+04 d, dltime =  4.3006E+02 d
Steps completed =   626, iter =  8, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -24.0496

Stepping to zi=  3.5141E+00, delzi=  4.9248E-02, nord= 6
  time =  3.3894E+04 d, dltime =  4.7500E+02 d
Steps completed =   627, iter = 10, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -24.1357

Stepping to zi=  3.5685E+00, delzi=  5.4395E-02, nord= 6
  time =  3.4419E+04 d, dltime =  5.2464E+02 d
Steps completed =   628, iter = 11, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -24.2217

Stepping to zi=  3.6286E+00, delzi=  6.0080E-02, nord= 6
  time =  3.4998E+04 d, dltime =  5.7948E+02 d
Steps completed =   629, iter = 14, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -24.3078

Stepping to zi=  3.6950E+00, delzi=  6.6360E-02, nord= 6
  time =  3.5638E+04 d, dltime =  6.4004E+02 d
Steps completed =   630, iter =  6, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -24.3939

Stepping to zi=  3.7683E+00, delzi=  7.3296E-02, nord= 6
  time =  3.6345E+04 d, dltime =  7.0694E+02 d
Steps completed =   631, iter = 15, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -24.4799

Stepping to zi=  3.8492E+00, delzi=  8.0957E-02, nord= 6
  time =  3.7126E+04 d, dltime =  7.8084E+02 d
Steps completed =   632, iter =  7, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -24.5660

Stepping to zi=  3.9386E+00, delzi=  8.9420E-02, nord= 6
  time =  3.7988E+04 d, dltime =  8.6246E+02 d
Steps completed =   633, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -24.6520

Stepping to zi=  3.9811E+00, delzi=  4.2443E-02, nord= 6
  time =  3.8398E+04 d, dltime =  4.0937E+02 d
Steps completed =   634, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -24.6900
```

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```
Reaction progress        =  3.98107170553475E+00
Log of reaction progress =       0.6000000


Time =  3.318E+09 sec
     =  3.840E+04 days
     =  1.051E+02 years

Log sec =        9.521
Log days =       4.584
Log years =      2.022

Temperature    =     25.000 degrees C
total pressure =      1.013 bars

Step size is limited by the print requirement

                    --- Reactant Summary ---


   Reactant                  Moles     Delta moles    Mass, g    Delta Mass, g

 Tuff                      9.6019E+01   3.9811E+00   1.9767E+03   8.1956E+01


              Current total mass =  1.97669E+03 grams
              Delta total mass   =  8.19562E+01 grams
              Delta total volume =      0.00000 cc


   Reactant                Rel. Rate      Rate         Rate
                            mol/mol       mol/s      mol/s/cm2

 Tuff                      1.0000E+00   1.2000E-09   2.5000E-15


   Reactant                  Affinity   Surface Area
                             kcal/mol     mol/s/cm2

 Tuff                       999.00000   4.8000E+05


   Reactant                Rate Constants, mol/s/cm2

 Tuff
                  Forward    2.5000E-15


        Affinity of the overall irreversible reaction=     0.000 kcal
        Contributions from irreversible reactions
        with no thermodynamic data are not included


    --- Element Totals for the Aqueous Solution ---

  Element        mg/kg soln.          Molality             Moles
```

O	8.862778E+05	5.562431E+01	5.542539E+01
Al	5.956732E-03	2.216868E-07	2.208940E-07
B	1.338519E-01	1.243246E-05	1.238800E-05
Ba	1.372503E-05	1.003589E-10	1.000000E-10
Ca	7.208175E-04	1.806000E-08	1.799542E-08
Ce	1.400366E-19	1.003588E-24	9.999992E-25
Cl	7.136186E+00	2.021228E-04	2.014000E-04
Cr	3.004635E+02	5.802557E-03	5.781806E-03
Cs	5.063709E-08	3.825820E-13	3.812138E-13
Cu	6.668604E-10	1.053768E-14	1.050000E-14
F	2.272150E-01	1.200932E-05	1.196637E-05
Fe	1.142117E-08	2.053569E-13	2.046225E-13
Gd	1.571622E-09	1.003589E-14	9.999998E-15
H	1.114463E+05	1.110272E+02	1.106301E+02
C	1.376409E+02	1.150712E-02	1.146597E-02
P	3.161376E+00	1.024898E-04	1.021233E-04
K	2.012072E+00	5.167542E-05	5.149062E-05
La	1.388279E-09	1.003589E-14	9.999998E-15
Li	6.937124E-07	1.003589E-10	1.000000E-10
Mg	2.077874E-02	8.584639E-07	8.553939E-07
Mn	4.373224E-11	7.993315E-16	7.964730E-16
Mo	2.185411E+02	2.287346E-03	2.279166E-03
N	1.987846E+00	1.425096E-04	1.420000E-04
Na	1.221462E+03	5.335116E-02	5.316037E-02
Nd	1.441594E-09	1.003589E-14	9.999998E-15
Ni	9.919672E-05	1.697195E-09	1.691125E-09
Pb	1.127406E-06	5.463730E-12	5.444190E-12
Pu	2.438637E-09	1.003589E-14	9.999999E-15
S	3.740669E+02	1.171394E-02	1.167205E-02
Si	4.314038E+00	1.542412E-04	1.536896E-04
Sm	1.502760E-09	1.003589E-14	9.999998E-15
Sr	2.715513E-20	3.112054E-25	3.100925E-25
Ti	1.076431E-05	2.257513E-10	2.249440E-10
U	2.378960E-09	1.003589E-14	1.000000E-14
V	4.781256E+00	9.424727E-05	9.391022E-05
Zn	6.535348E-06	1.003589E-10	1.000000E-10
Zr	9.117315E-16	1.003590E-20	1.000001E-20

Single ion activities and activity coefficients are here defined
with respect to the modified NBS pH scale

	pH	Eh	pe
modified NBS pH scale	9.2048	0.6745	1.1402E+01
rational pH scale	9.1238	0.6793	1.1483E+01

pHCl = 12.9991

Oxygen fugacity = 2.09991E-01
Log oxygen fugacity = -0.67780

Activity of water = 0.99865
Log activity of water = -0.00058

Ionic strength = 7.139186E-02 molal

Sum of molalities = 0.0837347750250
Osmotic coefficient = 0.89268

Mass of solution = 1.000559 kg
Mass of solutes = 0.004135 kg
Conc. of solutes = 0.413261 per cent (w/w)

Moles of solvent H2O = 5.53099E+01
Mass of solvent H2O = 9.96424E-01 kg

Species	Molality	Log molality	Log gamma	Log activity
Na+	5.1372E-02	-1.2893	-0.1059	-1.3951
SO4--	1.0322E-02	-1.9862	-0.3862	-2.3724
HCO3-	9.5749E-03	-2.0189	-0.0905	-2.1094
CrO4--	5.7968E-03	-2.2368	-0.3862	-2.6230
MoO4--	2.2873E-03	-2.6407	-0.3734	-3.0141
NaSO4-	1.3899E-03	-2.8570	-0.0905	-2.9475
CO3--	1.3806E-03	-2.8599	-0.3734	-3.2334
NaHCO3(aq)	4.4626E-04	-3.3504	0.0000	-3.3504
O2(aq)	2.6087E-04	-3.5836	0.0075	-3.5761
Cl-	2.0104E-04	-3.6967	-0.0975	-3.7943
NO3-	1.4251E-04	-3.8462	-0.0975	-3.9437
SiO2(aq)	1.0016E-04	-3.9993	0.0000	-3.9993
NaCO3-	9.4712E-05	-4.0236	-0.0905	-4.1141
HPO4--	8.7040E-05	-4.0603	-0.3862	-4.4465
VO3OH--	8.4593E-05	-4.0727	-0.3862	-4.4588
K+	5.0134E-05	-4.2999	-0.1129	-4.4128
NaHSiO3(aq)	3.2047E-05	-4.4942	0.0000	-4.4942
HSiO3-	2.2026E-05	-4.6571	-0.0905	-4.7476
OH-	2.0092E-05	-4.6970	-0.0939	-4.7909
NaHPO4-	1.4755E-05	-4.8311	-0.0905	-4.9216
F-	1.1970E-05	-4.9219	-0.0939	-5.0158
CO2(aq)	1.0559E-05	-4.9764	0.0075	-4.9689
HVO4--	9.1125E-06	-5.0404	-0.3862	-5.4265
BO2-	6.3755E-06	-5.1955	-0.0905	-5.2860
HCrO4-	5.7164E-06	-5.2429	-0.0905	-5.3334
B(OH)3(aq)	5.6691E-06	-5.2465	0.0000	-5.2465
KSO4-	1.5309E-06	-5.8150	-0.0905	-5.9056
NaCl(aq)	1.0805E-06	-5.9664	0.0000	-5.9664
Mg++	4.5400E-07	-6.3429	-0.3334	-6.6763
H2PO4-	4.4122E-07	-6.3553	-0.0905	-6.4459
NaB(OH)4(aq)	3.8779E-07	-6.4114	0.0000	-6.4114
H2VO4-	3.3279E-07	-6.4778	-0.0905	-6.5683
MgSO4(aq)	2.3065E-07	-6.6370	0.0000	-6.6370
AlO2-	2.2007E-07	-6.6574	-0.0905	-6.7479
PO4---	2.0922E-07	-6.6794	-0.8841	-7.5635
VO2(OH)2-	2.0624E-07	-6.6856	-0.0905	-6.7761
MgCO3(aq)	1.1727E-07	-6.9308	0.0000	-6.9308
NaOH(aq)	1.0335E-07	-6.9857	0.0000	-6.9857
NaF(aq)	3.9036E-08	-7.4085	0.0000	-7.4085
MgPO4-	2.7525E-08	-7.5603	-0.0905	-7.6508
MgHCO3+	2.2690E-08	-7.6442	-0.1059	-7.7500
KHPO4-	1.0264E-08	-7.9887	-0.0905	-8.0792
Ca++	9.7098E-09	-8.0128	-0.3703	-8.3831
H2SiO4--	6.8440E-09	-8.1647	-0.3862	-8.5509
MgHPO4(aq)	6.1264E-09	-8.2128	0.0000	-8.2128
CaCO3(aq)	5.1358E-09	-8.2894	0.0000	-8.2894
VO4---	2.3444E-09	-8.6300	-0.8841	-9.5140
CaSO4(aq)	2.2677E-09	-8.6444	0.0000	-8.6444
Cr2O7--	1.7799E-09	-8.7496	-0.3862	-9.1358
Ni++	1.3544E-09	-8.8682	-0.3703	-9.2386

NaAlO2(aq)	1.2990E-09	-8.8864	0.0000	-8.8864
H+	7.5205E-10	-9.1238	-0.0810	-9.2048
CaHCO3+	4.5715E-10	-9.3399	-0.1059	-9.4458
CaPO4-	4.0174E-10	-9.3961	-0.0905	-9.4866
NiSO4(aq)	3.2714E-10	-9.4853	0.0000	-9.4853
HAlO2(aq)	3.1452E-10	-9.5024	0.0000	-9.5024
HSO4-	3.1075E-10	-9.5076	-0.0905	-9.5981
Ti(OH)4(aq)	2.2575E-10	-9.6464	0.0000	-9.6464
KOH(aq)	2.1452E-10	-9.6685	0.0000	-9.6685
KCl(aq)	1.9879E-10	-9.7016	0.0000	-9.7016
MgB(OH)4+	1.0979E-10	-9.9595	-0.1059	-10.0653

--- Summary of Instantaneously Precipitated Solid Phases ---
(defined by derivatives)

--- Theoretical Rock Composition ---
g/kg

O	5.181369E+01
Al	6.307670E+00
Ca	3.743580E-01
Cl	4.350876E-11
Cs	2.193178E-10
Fe	6.119331E-01
H	7.307156E-01
C	2.060210E-03
P	1.140362E-10
K	3.828007E+00
Mg	1.381787E-01
Mn	4.839737E-02
N	1.944096E-66
Na	2.488339E+00
Pb	1.271414E-09
Si	3.360165E+01
Sr	2.395570E-22
Ti	5.500744E-02

--- Oxide Percentages ---

Oxide Theoretical rock

Total = 0.0000

Phase/end-member	d mol/d zi	d grams/d zi	d vol (cc)/d zi
Celadonite	1.2310E-03	4.8840E-01	1.9340E-01
Maximum_Microcline	1.9070E-02	5.3078E+00	2.0737E+00
Mesolite	3.1067E-03	1.2047E+00	5.3186E-01
Muscovite	1.0005E-03	3.9851E-01	1.4078E-01
Ni2SiO4	-2.5290E-12	-5.2972E-10	-1.0776E-10
Pyrolusite	1.9400E-04	1.6866E-02	9.7000E-02
Pyromorphite	2.7026E-13	3.6657E-10	5.2068E-11
Quartz	9.3845E-02	5.6386E+00	2.1292E+00
Rutile	2.5300E-04	2.0209E-02	4.7615E-03
fix CO2(g)	3.7773E-05	1.6624E-03	0.0000E+00
fix O2(g)	-7.0649E-04	-2.2607E-02	0.0000E+00
Clinoptilolite-ss			
Clinoptilolite-Ca	8.9277E-06	1.2003E-02	4.4638E-03
Clinoptilolite-Cs	1.0482E-13	1.8193E-10	5.2408E-11
Clinoptilolite-K	7.3711E-05	1.0397E-01	3.6856E-02

Clinoptilolite-NH4	8.8162E-69	1.1791E-65	4.4081E-66
Clinoptilolite-Na	6.1585E-03	8.3426E+00	3.0792E+00
Clinoptilolite-Sr	3.4732E-25	4.9557E-22	1.7366E-22
Smectite-di			
Beidellite-Ca	4.0469E-11	1.4834E-08	5.2419E-09
Beidellite-K	1.7470E-10	6.5136E-08	2.3357E-08
Beidellite-Mg	3.7562E-10	1.3671E-07	4.6273E-08
Beidellite-Na	1.7146E-08	6.3017E-06	2.2382E-06
Montmor-Ca	7.2651E-08	2.6594E-05	3.6326E-05
Montmor-K	5.1220E-07	1.9071E-04	2.5610E-04
Montmor-Mg	1.0959E-06	3.9831E-04	5.4797E-04
Montmor-Na	4.9023E-05	1.7992E-02	2.4512E-02
Nontronite-Ca	2.6317E-06	1.1166E-03	3.4502E-04
Nontronite-K	1.1361E-05	4.8918E-03	1.5368E-03
Nontronite-Mg	2.4444E-05	1.0308E-02	3.1719E-03
Nontronite-Na	1.1150E-03	4.7418E-01	1.4730E-01

--- Summary of Solid Phases (E.S.+P.R.S.) ---

Phase/End-member	Log moles	Moles	Mass, g	Volume, cc
Alunite	-2.5559	2.7801E-03	1.1516E+00	8.1624E-01
Celadonite	-2.3061	4.9419E-03	1.9606E+00	7.7638E-01
Diaspore	-1.6079	2.4665E-02	1.4796E+00	4.3804E-01
Fluorapatite	-3.9881	1.0278E-04	5.1834E-02	5.1392E-02
Hematite	-3.7144	1.9300E-04	3.0820E-02	5.8428E-03
Maximum_Microcline	-1.1994	6.3176E-02	1.7584E+01	6.8698E+00
Mesolite	-1.9194	1.2038E-02	4.6683E+00	2.0610E+00
Muscovite	-1.8420	1.4386E-02	5.7302E+00	2.0243E+00
Ni2SiO4	-2.1930	6.4125E-03	1.3432E+00	2.7324E-01
Nontronite-H	-4.9990	1.0023E-05	4.1899E-03	5.0117E-03
Pyrolusite	-2.8645	1.3660E-03	1.1876E-01	6.8300E-01
Pyromorphite	-10.7233	1.8911E-11	2.5650E-08	3.6434E-09
Quartz	-0.2298	5.8907E-01	3.5394E+01	1.3365E+01
Rutile	-2.9969	1.0072E-03	8.0455E-02	1.8956E-02
fix CO2(g)	2.3010	1.9999E+02	8.8015E+03	0.0000E+00
fix O2(g)	2.3010	2.0000E+02	6.3997E+03	0.0000E+00
Clinoptilolite-ss	-1.9933	1.0156E-02		
Clinoptilolite-Ca	-4.8378	1.4528E-05	1.9532E-02	7.2641E-03
Clinoptilolite-Cs	-10.5416	2.8733E-11	4.9873E-08	1.4367E-08
Clinoptilolite-K	-3.9210	1.1995E-04	1.6919E-01	5.9976E-02
Clinoptilolite-NH4	-67.8451	1.4285E-68	1.9105E-65	7.1423E-66
Clinoptilolite-Na	-1.9991	1.0022E-02	1.3576E+01	5.0109E+00
Clinoptilolite-Sr	-10.2389	5.7687E-11	8.2309E-08	2.8843E-08
Smectite-di	-2.3344	4.6305E-03		
Beidellite-Ca	-9.2548	5.5617E-10	2.0387E-07	7.2040E-08
Beidellite-K	-8.8981	1.2643E-09	4.7140E-07	1.6904E-07
Beidellite-Mg	-8.8535	1.4013E-09	5.1002E-07	1.7263E-07
Beidellite-Na	-7.4406	3.6256E-08	1.3325E-05	4.7329E-06
Montmor-Ca	-6.2760	5.2970E-07	1.9389E-04	2.6485E-04
Montmor-K	-5.8089	1.5526E-06	5.7808E-04	7.7629E-04
Montmor-Mg	-5.4812	3.3025E-06	1.2003E-03	1.6513E-03
Montmor-Na	-3.9858	1.0333E-04	3.7924E-02	5.1665E-02
Nontronite-Ca	-3.4045	3.9400E-04	1.6717E-01	5.1654E-02
Nontronite-K	-3.1915	6.4340E-04	2.7704E-01	8.7033E-02
Nontronite-Mg	-3.2741	5.3204E-04	2.2436E-01	6.9038E-02
Nontronite-Na	-2.5298	2.9523E-03	1.2555E+00	3.9003E-01

Mass, grams Volume, cc

Created	1.528644E+04	3.311825E+01
Destroyed	8.195620E+01	0.000000E+00
Net	1.520449E+04	3.311825E+01

Warning-- these volume totals may be incomplete because of missing partial molar volume data in the data base

--- Summary of Pure Mineral Saturation States ---

Mineral	Log Q/K	Aff, kcal	State
Alamosite	-2.939	-4.009	
Albite	-0.022	-0.030	
Albite_high	-1.341	-1.829	
Albite_low	-0.022	-0.030	
Alstonite	-7.211	-9.837	
Analcime	-0.148	-0.202	
Analcime-dehy	-6.510	-8.882	
Andalusite	-6.082	-8.298	
Anglesite	-6.195	-8.452	
Anhydrite	-6.449	-8.798	
Aragonite	-3.281	-4.476	
BaCrO4	-3.125	-4.263	
BaZrO3	83.677	114.160	ssatd
Barite	-2.835	-3.868	
Bassanite	-7.094	-9.679	
Beidellite-Ca	-2.466	-3.365	
Beidellite-Cs	-4.782	-6.524	
Beidellite-H	-3.163	-4.315	
Beidellite-K	-2.257	-3.079	
Beidellite-Mg	-2.147	-2.929	
Beidellite-Na	-1.599	-2.182	
Boehmite	-0.634	-0.864	
Boric_acid	-5.088	-6.942	
Brucite	-4.566	-6.229	
Bunsenite	-3.301	-4.504	
CaSO4:0.5H2O(beta)	-7.262	-9.908	
CaZrO3	139.758	190.670	ssatd
Calcite	-3.136	-4.279	
CeO2	-3.169	-4.324	
Celadonite	0.000	0.000	satd
Cerussite	-1.371	-1.870	
Chalcedony	-0.271	-0.370	
Chrysotile	-3.927	-5.358	
Clinochlore-14A	-6.714	-9.160	
Clinoptilolite	-5.054	-6.895	
Clinoptilolite-K	-6.670	-9.100	
Clinoptilolite-Na	-0.020	-0.027	
Clinoptilolite-hy-K	-6.664	-9.092	
Clinoptilolite-hy-Na	-0.018	-0.024	
Coesite	-0.810	-1.105	
Corundum	-4.450	-6.072	
Cristobalite(alpha)	-0.551	-0.751	
Cristobalite(beta)	-0.994	-1.356	
Crocoite	-1.581	-2.156	
Dawsonite	-0.920	-1.256	
Diaspore	-0.230	-0.313	
Diopside	-7.204	-9.829	
Dolomite	-3.382	-4.614	

Dolomite-dis	-4.927	-6.721	
Dolomite-ord	-3.382	-4.614	
Enstatite	-3.594	-4.903	
Epsomite	-7.091	-9.674	
Fe(OH)3	-6.518	-8.893	
Ferrite-Zn	-5.977	-8.155	
GdPO4:H2O	-4.186	-5.711	
Gibbsite	-0.826	-1.127	
Goethite	-1.397	-1.905	
Gypsum	-6.274	-8.560	
Halite	-6.775	-9.243	
Hematite	-1.832	-2.500	
Heulandite	-6.845	-9.338	
Hexahydrite	-7.325	-9.994	
Hydrocerussite	-5.845	-7.975	
Ice	-0.139	-0.190	
Illite	-1.275	-1.739	
Jadeite	-1.647	-2.247	
K-Feldspar	0.000	0.000	
Kalicinite	-6.806	-9.285	
Kalsilite	-3.175	-4.332	
Kaolinite	-0.948	-1.294	
Kyanite	-5.812	-7.929	
LaPO4:H2O	-2.341	-3.194	
Lanarkite	-6.845	-9.338	
Lansfordite	-4.425	-6.037	
Laumontite	-5.779	-7.884	
Lawsonite	-6.325	-8.630	
Litharge	-5.910	-8.063	
Magnesite	-1.875	-2.557	
Manganite	-4.459	-6.084	
Massicot	-6.085	-8.302	
Maximum_Microcline	0.000	0.000	satd
Mesolite	0.000	0.000	satd
Mirabilite	-4.029	-5.496	
MnO2(gamma)	-1.518	-2.071	
Monohydrocalcite	-3.971	-5.417	
Montmor-Ca	-1.392	-1.900	
Montmor-Cs	-3.642	-4.968	
Montmor-K	-1.113	-1.518	
Montmor-Mg	-1.003	-1.369	
Montmor-Na	-0.459	-0.626	
Mordenite	-2.805	-3.827	
Muscovite	0.000	0.000	satd
Na2CO3	-6.877	-9.382	
Na2CO3:7H2O	-5.645	-7.701	
Nahcolite	-3.393	-4.629	
Natrolite	-1.039	-1.418	
Natron	-5.311	-7.246	
NdOHCO3	-6.810	-9.291	
NdPO4:H2O	-3.361	-4.586	
Nepheline	-3.060	-4.174	
Nesquehonite	-4.578	-6.246	
Ni(OH)2	-3.579	-4.882	
Ni2SiO4	0.000	0.000	satd
NiCO3	-5.655	-7.715	
Nontronite-Ca	-0.878	-1.198	
Nontronite-H	-1.574	-2.148	
Nontronite-K	-0.668	-0.912	
Nontronite-Mg	-0.559	-0.762	
Nontronite-Na	-0.011	-0.015	
Paragonite	-0.919	-1.253	
Paralaurionite	-6.469	-8.825	

Pb3(PO4)2	-5.535	-7.551	
Pb4O(PO4)2	-6.203	-8.462	
PbHPO4	-4.555	-6.214	
Petalite	-6.150	-8.390	
Phlogopite	-2.518	-3.435	
Plattnerite	-1.274	-1.738	
PuO2	-4.802	-6.551	
Pyrolusite	0.000	0.000	satd
Pyromorphite	0.000	0.000	satd
Pyrophyllite	-2.576	-3.514	
Quartz	0.000	0.000	satd
Rutile	0.000	0.000	satd
Sanidine_high	-1.199	-1.636	
Saponite-Ca	-1.829	-2.495	
Saponite-Cs	-4.144	-5.654	
Saponite-H	-2.525	-3.445	
Saponite-K	-1.619	-2.209	
Saponite-Mg	-1.509	-2.059	
Saponite-Na	-0.962	-1.312	
Scolecite	-3.989	-5.442	
Sellaite	-7.324	-9.992	
SiO2(am)	-1.286	-1.754	
Sillimanite	-6.446	-8.794	
SmPO4:H2O	-3.690	-5.034	
Smectite-low-Fe-Mg	-7.076	-9.653	
Smithsonite	-4.296	-5.862	
SrZrO3	106.026	144.649	ssatd
Stilbite	-1.918	-2.616	
Talc	-1.938	-2.644	
Thenardite	-4.854	-6.622	
Thermonatrite	-6.658	-9.083	
Trevorite	-2.341	-3.193	
Tridymite	-0.171	-0.234	
Witherite	-0.342	-0.467	
Zincite	-3.728	-5.086	
Zn(OH)2(beta)	-4.454	-6.077	
Zn(OH)2(epsilon)	-4.183	-5.706	
Zn(OH)2(gamma)	-4.403	-6.007	
fix CO2(g)	0.000	0.000	satd
fix O2(g)	0.000	0.000	satd

--- Summary of Solid Solutions ---

--- Carbonate-Calcite ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Calcite	5.1693E-02	-1.2866	0.0000	-1.2866
Magnesite	9.4473E-01	-0.0247	0.0000	-0.0247
Rhodochrosite	1.2034E-09	-8.9196	0.0000	-8.9196
Siderite	1.8642E-18	-17.7295	0.0000	-17.7295
Smithsonite	3.5760E-03	-2.4466	0.0000	-2.4466
Strontianite	1.5076E-16	-15.8217	0.0000	-15.8217

Mineral	Log Q/K	Aff, kcal	State
Carbonate-Calcite	-1.850	-2.524	
Calcite	-1.850	-2.524	
Magnesite	-1.850	-2.524	

Rhodochrosite	-1.850	-2.524
Siderite	-1.850	-2.524
Smithsonite	-1.850	-2.524
Strontianite	-1.850	-2.524

--- Clinoptilolite-hy-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-hy-Ca	1.5022E-10	-9.8233	0.0000	-9.8233
Clinoptilolite-hy-Cs	2.0306E-33	-32.6924	0.0000	-32.6924
Clinoptilolite-hy-K	2.2582E-07	-6.6462	0.0000	-6.6462
Clinoptilolite-hy-Na	1.0000E+00	0.0000	0.0000	0.0000
Clinoptilolite-hy-Sr	2.3401E-39	-38.6308	0.0000	-38.6308

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-hy-ss	-0.018	-0.024	
Clinoptilolite-hy-Ca	-0.018	-0.024	
Clinoptilolite-hy-Cs	-0.018	-0.024	
Clinoptilolite-hy-K	-0.018	-0.024	
Clinoptilolite-hy-Na	-0.018	-0.024	
Clinoptilolite-hy-Sr	-0.018	-0.024	

--- Clinoptilolite-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-Ca	1.4305E-03	-2.8445	-6.9975	-9.8420
Clinoptilolite-Cs	3.5005E-10	-9.4559	-23.2614	-32.7173
Clinoptilolite-K	1.1811E-02	-1.9277	-4.7422	-6.6699
Clinoptilolite-NH4	1.4082E-66	-65.8513	-161.9943	-227.8456
Clinoptilolite-Na	9.8676E-01	-0.0058	-0.0142	-0.0200
Clinoptilolite-Sr	6.7634E-12	-11.1698	-27.4778	-38.6476

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-ss	0.000	0.000	satd
Clinoptilolite-Ca	0.000	0.000	satd
Clinoptilolite-Cs	0.000	0.000	satd
Clinoptilolite-K	0.000	0.000	satd
Clinoptilolite-NH4	0.000	0.000	satd
Clinoptilolite-Na	0.000	0.000	satd
Clinoptilolite-Sr	0.000	0.000	satd

--- Saponite-tri ---

Ideal solution

Component	x	Log x	Log lambda	Log activity

Saponite-Ca	2.2816E-03	-2.6418	1.7700	-0.8718
Saponite-H	1.7690E-05	-4.7523	3.1840	-1.5682
Saponite-K	9.8427E-03	-2.0069	1.3446	-0.6623
Saponite-Mg	2.1178E-02	-1.6741	1.1217	-0.5525
Saponite-Na	9.6668E-01	-0.0147	0.0099	-0.0049

Mineral	Log Q/K	Aff, kcal	State
Saponite-tri	-0.957	-1.305	
Saponite-Ca	-0.957	-1.305	
Saponite-H	-0.957	-1.305	
Saponite-K	-0.957	-1.305	
Saponite-Mg	-0.957	-1.305	
Saponite-Na	-0.957	-1.305	

--- Smectite-di ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Beidellite-Ca	3.3607E-08	-7.4736	5.0073	-2.4663
Beidellite-K	1.4508E-07	-6.8384	4.5817	-2.2567
Beidellite-Mg	3.1193E-07	-6.5059	4.3590	-2.1470
Beidellite-Na	1.4238E-05	-4.8465	3.2472	-1.5994
Montmor-Ca	6.0333E-05	-4.2194	2.8270	-1.3924
Montmor-K	4.2535E-04	-3.3712	2.2587	-1.1125
Montmor-Mg	9.1011E-04	-3.0409	2.0374	-1.0035
Montmor-Na	4.0711E-02	-1.3903	0.9315	-0.4588
Nontronite-Ca	2.1855E-03	-2.6604	1.7825	-0.8779
Nontronite-K	9.4346E-03	-2.0253	1.3569	-0.6683
Nontronite-Mg	2.0300E-02	-1.6925	1.1340	-0.5585
Nontronite-Na	9.2596E-01	-0.0334	0.0224	-0.0110

Mineral	Log Q/K	Aff, kcal	State
Smectite-di	0.000	0.000	satd
Beidellite-Ca	0.000	0.000	satd
Beidellite-K	0.000	0.000	satd
Beidellite-Mg	0.000	0.000	satd
Beidellite-Na	0.000	0.000	satd
Montmor-Ca	0.000	0.000	satd
Montmor-K	0.000	0.000	satd
Montmor-Mg	0.000	0.000	satd
Montmor-Na	0.000	0.000	satd
Nontronite-Ca	0.000	0.000	satd
Nontronite-K	0.000	0.000	satd
Nontronite-Mg	0.000	0.000	satd
Nontronite-Na	0.000	0.000	satd

--- Lanthanide hydroxide ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
La(OH)3	1.4210E-04	-3.8474	0.0000	-3.8474

Ce(OH)3	7.3847E-15	-14.1317	0.0000	-14.1317
Nd(OH)3(c)	6.8025E-01	-0.1673	0.0000	-0.1673
Gd(OH)3	2.5589E-01	-0.5920	0.0000	-0.5920
Sm(OH)3	6.3721E-02	-1.1957	0.0000	-1.1957

Mineral	Log Q/K	Aff, kcal	State
Lanthanide hydroxide	-8.319	-11.349	
La(OH)3	-8.319	-11.349	
Ce(OH)3	-8.319	-11.349	
Nd(OH)3(c)	-8.319	-11.349	
Gd(OH)3	-8.319	-11.349	
Sm(OH)3	-8.319	-11.349	

--- Rhabdophane-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaPO4:H2O	8.6605E-01	-0.0625	0.0000	-0.0625
CePO4:H2O	1.4233E-11	-10.8467	0.0000	-10.8467
NdPO4:H2O	8.2724E-02	-1.0824	0.0000	-1.0824
GdPO4:H2O	1.2388E-02	-1.9070	0.0000	-1.9070
SmPO4:H2O	3.8837E-02	-1.4108	0.0000	-1.4108

Mineral	Log Q/K	Aff, kcal	State
Rhabdophane-ss	-2.279	-3.109	
LaPO4:H2O	-2.279	-3.109	
CePO4:H2O	-2.279	-3.109	
NdPO4:H2O	-2.279	-3.109	
GdPO4:H2O	-2.279	-3.109	
SmPO4:H2O	-2.279	-3.109	

--- Lanthanide fluoride ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaF3:0.5H2O	8.8865E-01	-0.0513	0.0000	-0.0513
CeF3:0.5H2O	2.3146E-11	-10.6355	0.0000	-10.6355
NdF3:0.5H2O	1.0686E-01	-0.9712	0.0000	-0.9712
GdF3:0.5H2O	5.0605E-04	-3.2958	0.0000	-3.2958
SmF3:0.5H2O	3.9850E-03	-2.3996	0.0000	-2.3996

Mineral	Log Q/K	Aff, kcal	State
Lanthanide fluoride	-15.746	-21.482	
LaF3:0.5H2O	-15.746	-21.482	
CeF3:0.5H2O	-15.746	-21.482	
NdF3:0.5H2O	-15.746	-21.482	
GdF3:0.5H2O	-15.746	-21.482	
SmF3:0.5H2O	-15.746	-21.482	

--- Summary of Gases ---

Gas	Fugacity	Log fugacity
Al(g)	9.7072-192	-191.0129
B(g)	3.9223-204	-203.4065
BF3(g)	1.1477E-45	-44.9402
C(g)	3.0917-190	-189.5098
CH4(g)	3.5199-146	-145.4535
CO(g)	6.0395E-49	-48.2190
CO2(g)	3.1623E-04	-3.5000
Ca(g)	5.4464-154	-153.2639
Chlorine	1.6367E-31	-30.7860
Cs(g)	1.9225E-84	-83.7161
Cu(g)	1.9513E-82	-81.7097
Fluorine	1.1261E-86	-85.9484
H2(g)	6.1068E-42	-41.2142
H2O(g)	2.5943E-02	-1.5860
H2S(g)	1.0695-144	-143.9708
HCl(g)	4.9595E-20	-19.3046
HF(g)	4.6429E-16	-15.3332
K(g)	1.2715E-76	-75.8957
Li(g)	1.1297E-95	-94.9470
Mg(g)	1.8676-129	-128.7287
Nitrogen	1.2330E-22	-21.9090
NH3(g)	1.2777E-70	-69.8936
NO(g)	3.4966E-27	-26.4564
NO2(g)	2.3908E-21	-20.6215
Na(g)	6.9093E-73	-72.1606
O2(g)	2.0999E-01	-0.6778
Pb(g)	8.1825E-68	-67.0871
S2(g)	6.8392-232	-231.1650
SO2(g)	1.8962E-57	-56.7221
Si(g)	4.2257-221	-220.3741
SiF4(g)	2.0536E-46	-45.6875
Ti(g)	3.8019-231	-230.4200
TiCl4(g)	2.0320E-90	-89.6921
U(g)	9.7583-303	-302.0106
U2Cl10(g)	8.7716-270	-269.0569
U2Cl8(g)	1.6615-269	-268.7795
U2F10(g)	6.0042-187	-186.2215
UCl(g)	4.3158-260	-259.3649
UCl2(g)	5.7101-216	-215.2434
UCl3(g)	1.6547-169	-168.7813
UCl4(g)	2.5966-140	-139.5856
UCl5(g)	2.0965-148	-147.6785
UCl6(g)	3.1446-151	-150.5024
UF(g)	8.5863-246	-245.0662
UF2(g)	5.6032-207	-206.2516
UF3(g)	8.9984-162	-161.0458
UF4(g)	2.1330-113	-112.6710
UF5(g)	2.3159-106	-105.6353
UF6(g)	2.4760-113	-112.6062
UO(g)	7.7068-218	-217.1131
UO2(g)	1.4278-133	-132.8453
UO2Cl2(g)	1.0203E-83	-82.9913
UO2F2(g)	7.2633E-73	-72.1389
UO3(g)	1.0502E-80	-79.9787
UOF4(g)	6.3562E-91	-90.1968
Zn(g)	7.1545E-77	-76.1454

```
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -


Stepping to zi=  4.0000E+00, delzi=  1.8928E-02, nord= 6
  time =  3.8580E+04 d, dltime =  1.8256E+02 d
Steps completed =   635, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -24.7065

- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -


                    Reaction progress        =  4.00000000000000E+00
                    Log of reaction progress =       0.6020600



                    Time =  3.333E+09 sec
                         =  3.858E+04 days
                         =  1.056E+02 years

                    Log sec =        9.523
                    Log days =       4.586
                    Log years =      2.024

                    Temperature    =     25.000 degrees C
                    total pressure =      1.013 bars


Step size is limited by the P.R.S. shift requirement


                              --- Reactant Summary ---


    Reactant                  Moles     Delta moles    Mass, g    Delta Mass, g

 Tuff                       9.6000E+01   4.0000E+00   1.9763E+03   8.2346E+01


               Current total mass =  1.97630E+03 grams
               Delta total mass   =  8.23459E+01 grams
               Delta total volume =      0.00000 cc


    Reactant                Rel. Rate      Rate         Rate
                             mol/mol       mol/s      mol/s/cm2

 Tuff                       1.0000E+00   1.2000E-09   2.5000E-15


    Reactant                  Affinity   Surface Area
                              kcal/mol     mol/s/cm2

 Tuff                        999.00000   4.8000E+05


    Reactant                Rate Constants, mol/s/cm2
```

Tuff

Forward 2.5000E-15

Affinity of the overall irreversible reaction= 0.000 kcal
Contributions from irreversible reactions
with no thermodynamic data are not included

--- Element Totals for the Aqueous Solution ---

Element	mg/kg soln.	Molality	Moles
O	8.862777E+05	5.562432E+01	5.542388E+01
Al	5.956534E-03	2.216795E-07	2.208807E-07
B	1.338555E-01	1.243280E-05	1.238800E-05
Ba	1.372540E-05	1.003616E-10	1.000000E-10
Ca	7.210152E-04	1.806496E-08	1.799986E-08
Ce	1.400405E-19	1.003616E-24	9.999993E-25
Cl	7.136380E+00	2.021283E-04	2.014000E-04
Cr	3.004717E+02	5.802716E-03	5.781806E-03
Cs	4.973386E-08	3.757578E-13	3.744038E-13
Cu	6.668785E-10	1.053797E-14	1.050000E-14
F	2.272212E-01	1.200965E-05	1.196637E-05
Fe	1.142104E-08	2.053546E-13	2.046146E-13
Gd	1.571664E-09	1.003616E-14	9.999998E-15
H	1.114462E+05	1.110272E+02	1.106271E+02
C	1.376360E+02	1.150672E-02	1.146526E-02
P	3.186951E+00	1.033190E-04	1.029467E-04
K	2.012157E+00	5.167763E-05	5.149141E-05
La	1.388317E-09	1.003616E-14	9.999998E-15
Li	6.937312E-07	1.003616E-10	1.000000E-10
Mg	2.078674E-02	8.587948E-07	8.557002E-07
Mn	4.373108E-11	7.993105E-16	7.964302E-16
Mo	2.185470E+02	2.287408E-03	2.279166E-03
N	1.987900E+00	1.425135E-04	1.420000E-04
Na	1.221514E+03	5.335342E-02	5.316117E-02
Nd	1.441633E-09	1.003616E-14	9.999998E-15
Ni	9.920503E-05	1.697337E-09	1.691221E-09
Pb	1.122174E-06	5.438374E-12	5.418778E-12
Pu	2.438703E-09	1.003616E-14	9.999999E-15
S	3.740770E+02	1.171426E-02	1.167205E-02
Si	4.314017E+00	1.542404E-04	1.536846E-04
Sm	1.502801E-09	1.003616E-14	9.999998E-15
Sr	2.614755E-20	2.996582E-25	2.985785E-25
Ti	1.076430E-05	2.257513E-10	2.249379E-10
U	2.379025E-09	1.003617E-14	1.000000E-14
V	4.781386E+00	9.424984E-05	9.391022E-05
Zn	6.535526E-06	1.003616E-10	1.000000E-10
Zr	9.117562E-16	1.003617E-20	1.000001E-20

Single ion activities and activity coefficients are here defined
with respect to the modified NBS pH scale

	pH	Eh	pe
modified NBS pH scale	9.2048	0.6745	1.1402E+01
rational pH scale	9.1237	0.6793	1.1483E+01

pHCl = 12.9990

Oxygen fugacity = 2.09991E-01
Log oxygen fugacity = -0.67780

Activity of water = 0.99865
Log activity of water = -0.00058

Ionic strength = 7.139504E-02 molal
Sum of molalities = 0.0837378304340
Osmotic coefficient = 0.89268

Mass of solution = 1.000532 kg
Mass of solutes = 0.004135 kg
Conc. of solutes = 0.413278 per cent (w/w)

Moles of solvent H2O = 5.53084E+01
Mass of solvent H2O = 9.96397E-01 kg

Species	Molality	Log molality	Log gamma	Log activity
Na+	5.1374E-02	-1.2893	-0.1059	-1.3951
SO4--	1.0323E-02	-1.9862	-0.3862	-2.3724
HCO3-	9.5745E-03	-2.0189	-0.0905	-2.1094
CrO4--	5.7970E-03	-2.2368	-0.3862	-2.6230
MoO4--	2.2874E-03	-2.6407	-0.3735	-3.0141
NaSO4-	1.3900E-03	-2.8570	-0.0905	-2.9475
CO3--	1.3805E-03	-2.8600	-0.3735	-3.2334
NaHCO3(aq)	4.4626E-04	-3.3504	0.0000	-3.3504
O2(aq)	2.6087E-04	-3.5836	0.0075	-3.5761
Cl-	2.0105E-04	-3.6967	-0.0975	-3.7942
NO3-	1.4251E-04	-3.8461	-0.0975	-3.9437
SiO2(aq)	1.0016E-04	-3.9993	0.0000	-3.9993
NaCO3-	9.4709E-05	-4.0236	-0.0905	-4.1141
HPO4--	8.7744E-05	-4.0568	-0.3862	-4.4430
VO3OH--	8.4596E-05	-4.0727	-0.3862	-4.4588
K+	5.0136E-05	-4.2999	-0.1129	-4.4127
NaHSiO3(aq)	3.2047E-05	-4.4942	0.0000	-4.4942
HSiO3-	2.2025E-05	-4.6571	-0.0905	-4.7476
OH-	2.0092E-05	-4.6970	-0.0939	-4.7909
NaHPO4-	1.4874E-05	-4.8276	-0.0905	-4.9181
F-	1.1971E-05	-4.9219	-0.0939	-5.0158
CO2(aq)	1.0559E-05	-4.9764	0.0075	-4.9689
HVO4--	9.1127E-06	-5.0404	-0.3862	-5.4265
BO2-	6.3756E-06	-5.1955	-0.0905	-5.2860
HCrO4-	5.7167E-06	-5.2429	-0.0905	-5.3334
B(OH)3(aq)	5.6693E-06	-5.2465	0.0000	-5.2465
KSO4-	1.5310E-06	-5.8150	-0.0905	-5.9055
NaCl(aq)	1.0805E-06	-5.9664	0.0000	-5.9664
Mg++	4.5404E-07	-6.3429	-0.3334	-6.6763
H2PO4-	4.4480E-07	-6.3518	-0.0905	-6.4424
NaB(OH)4(aq)	3.8781E-07	-6.4114	0.0000	-6.4114
H2VO4-	3.3281E-07	-6.4778	-0.0905	-6.5683
MgSO4(aq)	2.3067E-07	-6.6370	0.0000	-6.6370
AlO2-	2.2007E-07	-6.6574	-0.0905	-6.7480
PO4---	2.1091E-07	-6.6759	-0.8841	-7.5600
VO2(OH)2-	2.0625E-07	-6.6856	-0.0905	-6.7761
MgCO3(aq)	1.1727E-07	-6.9308	0.0000	-6.9308

NaOH(aq)	1.0335E-07	-6.9857	0.0000	-6.9857
NaF(aq)	3.9038E-08	-7.4085	0.0000	-7.4085
MgPO4-	2.7748E-08	-7.5568	-0.0905	-7.6473
MgHCO3+	2.2691E-08	-7.6441	-0.1059	-7.7500
KHPO4-	1.0347E-08	-7.9852	-0.0905	-8.0757
Ca++	9.7106E-09	-8.0128	-0.3703	-8.3831
H2SiO4--	6.8436E-09	-8.1647	-0.3862	-8.5509
MgHPO4(aq)	6.1763E-09	-8.2093	0.0000	-8.2093
CaCO3(aq)	5.1358E-09	-8.2894	0.0000	-8.2894
VO4---	2.3444E-09	-8.6300	-0.8841	-9.5141
CaSO4(aq)	2.2679E-09	-8.6444	0.0000	-8.6444
Cr2O7--	1.7801E-09	-8.7496	-0.3862	-9.1358
Ni++	1.3545E-09	-8.8682	-0.3703	-9.2385
NaAlO2(aq)	1.2990E-09	-8.8864	0.0000	-8.8864
H+	7.5208E-10	-9.1237	-0.0810	-9.2048
CaHCO3+	4.5717E-10	-9.3399	-0.1059	-9.4458
CaPO4-	4.0500E-10	-9.3925	-0.0905	-9.4831
NiSO4(aq)	3.2716E-10	-9.4852	0.0000	-9.4852
HAlO2(aq)	3.1452E-10	-9.5024	0.0000	-9.5024
HSO4-	3.1076E-10	-9.5076	-0.0905	-9.5981
Ti(OH)4(aq)	2.2575E-10	-9.6464	0.0000	-9.6464
KOH(aq)	2.1452E-10	-9.6685	0.0000	-9.6685
KCl(aq)	1.9880E-10	-9.7016	0.0000	-9.7016
MgB(OH)4+	1.0980E-10	-9.9594	-0.1059	-10.0653

--- Summary of Instantaneously Precipitated Solid Phases ---
(defined by derivatives)

--- Theoretical Rock Composition ---
g/kg

O	5.181369E+01
Al	6.307670E+00
Ca	3.743580E-01
Cl	4.294974E-11
Cs	2.130918E-10
Fe	6.119331E-01
H	7.307157E-01
C	2.060377E-03
P	1.125710E-10
K	3.828007E+00
Mg	1.381787E-01
Mn	4.839737E-02
N	1.944329E-66
Na	2.488340E+00
Pb	1.255079E-09
Si	3.360165E+01
Sr	2.352074E-22
Ti	5.500744E-02

--- Oxide Percentages ---

Oxide Theoretical rock

Total = 0.0000

Phase/end-member	d mol/d zi	d grams/d zi	d vol (cc)/d zi
Celadonite	1.2310E-03	4.8840E-01	1.9340E-01
Maximum_Microcline	1.9070E-02	5.3078E+00	2.0737E+00

Mesolite	3.1067E-03	1.2047E+00	5.3186E-01
Muscovite	1.0005E-03	3.9851E-01	1.4078E-01
Ni2SiO4	-2.5290E-12	-5.2972E-10	-1.0776E-10
Pyrolusite	1.9400E-04	1.6866E-02	9.7000E-02
Pyromorphite	2.6679E-13	3.6186E-10	5.1399E-11
Quartz	9.3845E-02	5.6386E+00	2.1292E+00
Rutile	2.5300E-04	2.0209E-02	4.7615E-03
fix CO2(g)	3.7776E-05	1.6625E-03	0.0000E+00
fix O2(g)	-7.0649E-04	-2.2607E-02	0.0000E+00
Clinoptilolite-ss			
Clinoptilolite-Ca	8.9277E-06	1.2003E-02	4.4638E-03
Clinoptilolite-Cs	1.0184E-13	1.7677E-10	5.0921E-11
Clinoptilolite-K	7.3711E-05	1.0397E-01	3.6856E-02
Clinoptilolite-NH4	8.8172E-69	1.1793E-65	4.4086E-66
Clinoptilolite-Na	6.1585E-03	8.3426E+00	3.0792E+00
Clinoptilolite-Sr	3.4102E-25	4.8658E-22	1.7051E-22
Smectite-di			
Beidellite-Ca	4.0469E-11	1.4834E-08	5.2419E-09
Beidellite-K	1.7470E-10	6.5136E-08	2.3357E-08
Beidellite-Mg	3.7562E-10	1.3671E-07	4.6273E-08
Beidellite-Na	1.7146E-08	6.3017E-06	2.2382E-06
Montmor-Ca	7.2651E-08	2.6594E-05	3.6326E-05
Montmor-K	5.1220E-07	1.9071E-04	2.5610E-04
Montmor-Mg	1.0959E-06	3.9831E-04	5.4797E-04
Montmor-Na	4.9023E-05	1.7992E-02	2.4512E-02
Nontronite-Ca	2.6317E-06	1.1166E-03	3.4502E-04
Nontronite-K	1.1361E-05	4.8918E-03	1.5368E-03
Nontronite-Mg	2.4444E-05	1.0308E-02	3.1719E-03
Nontronite-Na	1.1150E-03	4.7418E-01	1.4730E-01

--- Summary of Solid Phases (E.S.+P.R.S.) ---

Phase/End-member	Log moles	Moles	Mass, g	Volume, cc
Alunite	-2.5559	2.7801E-03	1.1516E+00	8.1624E-01
Celadonite	-2.3041	4.9652E-03	1.9699E+00	7.8004E-01
Diaspore	-1.6079	2.4665E-02	1.4796E+00	4.3804E-01
Fluorapatite	-3.9881	1.0278E-04	5.1834E-02	5.1392E-02
Hematite	-3.7144	1.9300E-04	3.0820E-02	5.8428E-03
Maximum_Microcline	-1.1970	6.3537E-02	1.7684E+01	6.9091E+00
Mesolite	-1.9173	1.2097E-02	4.6911E+00	2.0710E+00
Muscovite	-1.8415	1.4405E-02	5.7377E+00	2.0270E+00
Ni2SiO4	-2.1930	6.4125E-03	1.3432E+00	2.7324E-01
Nontronite-H	-4.9990	1.0023E-05	4.1899E-03	5.0117E-03
Pyrolusite	-2.8634	1.3697E-03	1.1907E-01	6.8484E-01
Pyromorphite	-10.7232	1.8916E-11	2.5657E-08	3.6444E-09
Quartz	-0.2285	5.9084E-01	3.5500E+01	1.3405E+01
Rutile	-2.9948	1.0120E-03	8.0837E-02	1.9046E-02
fix CO2(g)	2.3010	1.9999E+02	8.8015E+03	0.0000E+00
fix O2(g)	2.3010	2.0000E+02	6.3997E+03	0.0000E+00
Clinoptilolite-ss	-1.9882	1.0274E-02		
Clinoptilolite-Ca	-4.8328	1.4697E-05	1.9759E-02	7.3486E-03
Clinoptilolite-Cs	-10.5416	2.8735E-11	4.9877E-08	1.4368E-08
Clinoptilolite-K	-3.9160	1.2135E-04	1.7116E-01	6.0674E-02
Clinoptilolite-NH4	-67.8401	1.4451E-68	1.9329E-65	7.2257E-66
Clinoptilolite-Na	-1.9940	1.0138E-02	1.3734E+01	5.0692E+00
Clinoptilolite-Sr	-10.2389	5.7687E-11	8.2309E-08	2.8843E-08
Smectite-di	-2.3322	4.6533E-03		
Beidellite-Ca	-9.2542	5.5693E-10	2.0415E-07	7.2139E-08
Beidellite-K	-8.8970	1.2676E-09	4.7263E-07	1.6948E-07

Beidellite-Mg	-8.8513	1.4084E-09	5.1261E-07	1.7350E-07
Beidellite-Na	-7.4367	3.6581E-08	1.3445E-05	4.7752E-06
Montmor-Ca	-6.2748	5.3108E-07	1.9440E-04	2.6554E-04
Montmor-K	-5.8062	1.5623E-06	5.8169E-04	7.8114E-04
Montmor-Mg	-5.4784	3.3233E-06	1.2078E-03	1.6616E-03
Montmor-Na	-3.9819	1.0426E-04	3.8264E-02	5.2129E-02
Nontronite-Ca	-3.4044	3.9405E-04	1.6719E-01	5.1660E-02
Nontronite-K	-3.1914	6.4361E-04	2.7713E-01	8.7062E-02
Nontronite-Mg	-3.2737	5.3251E-04	2.2455E-01	6.9098E-02
Nontronite-Na	-2.5267	2.9734E-03	1.2645E+00	3.9282E-01

	Mass, grams	Volume, cc
Created	1.528686E+04	3.327856E+01
Destroyed	8.234587E+01	0.000000E+00
Net	1.520451E+04	3.327856E+01

Warning-- these volume totals may be incomplete because of missing partial molar volume data in the data base

--- Summary of Pure Mineral Saturation States ---

Mineral	Log Q/K	Aff, kcal	State
Alamosite	-2.941	-4.012	
Albite	-0.022	-0.030	
Albite_high	-1.341	-1.829	
Albite_low	-0.022	-0.030	
Alstonite	-7.211	-9.837	
Analcime	-0.148	-0.202	
Analcime-dehy	-6.510	-8.882	
Andalusite	-6.082	-8.298	
Anglesite	-6.197	-8.455	
Anhydrite	-6.449	-8.798	
Aragonite	-3.281	-4.476	
BaCrO4	-3.125	-4.263	
BaZrO3	83.677	114.160	ssatd
Barite	-2.835	-3.868	
Bassanite	-7.094	-9.679	
Beidellite-Ca	-2.466	-3.365	
Beidellite-Cs	-4.785	-6.528	
Beidellite-H	-3.163	-4.315	
Beidellite-K	-2.257	-3.079	
Beidellite-Mg	-2.147	-2.929	
Beidellite-Na	-1.599	-2.182	
Boehmite	-0.634	-0.864	
Boric_acid	-5.088	-6.942	
Brucite	-4.566	-6.229	
Bunsenite	-3.301	-4.504	
CaSO4:0.5H2O(beta)	-7.262	-9.908	
CaZrO3	139.758	190.670	ssatd
Calcite	-3.136	-4.279	
CeO2	-3.169	-4.324	
Celadonite	0.000	0.000	satd
Cerussite	-1.373	-1.873	
Chalcedony	-0.271	-0.370	
Chrysotile	-3.927	-5.358	
Clinochlore-14A	-6.714	-9.160	
Clinoptilolite	-5.054	-6.896	

Clinoptilolite-K	-6.670	-9.100	
Clinoptilolite-Na	-0.020	-0.027	
Clinoptilolite-hy-K	-6.664	-9.092	
Clinoptilolite-hy-Na	-0.018	-0.024	
Coesite	-0.810	-1.105	
Corundum	-4.450	-6.072	
Cristobalite(alpha)	-0.551	-0.751	
Cristobalite(beta)	-0.994	-1.356	
Crocoite	-1.583	-2.159	
Dawsonite	-0.920	-1.256	
Diaspore	-0.230	-0.313	
Diopside	-7.204	-9.829	
Dolomite	-3.382	-4.614	
Dolomite-dis	-4.927	-6.721	
Dolomite-ord	-3.382	-4.614	
Enstatite	-3.594	-4.903	
Epsomite	-7.090	-9.673	
Fe(OH)3	-6.518	-8.893	
Ferrite-Zn	-5.979	-8.157	
GdPO4:H2O	-4.185	-5.709	
Gibbsite	-0.826	-1.127	
Goethite	-1.397	-1.905	
Gypsum	-6.274	-8.560	
Halite	-6.775	-9.243	
Hematite	-1.832	-2.500	
Heulandite	-6.847	-9.342	
Hexahydrite	-7.325	-9.994	
Hydrocerussite	-5.852	-7.983	
Ice	-0.139	-0.190	
Illite	-1.275	-1.739	
Jadeite	-1.647	-2.247	
K-Feldspar	0.000	0.000	
Kalicinite	-6.806	-9.285	
Kalsilite	-3.175	-4.332	
Kaolinite	-0.948	-1.294	
Kyanite	-5.812	-7.929	
LaPO4:H2O	-2.338	-3.189	
Lanarkite	-6.849	-9.344	
Lansfordite	-4.425	-6.037	
Laumontite	-5.779	-7.884	
Lawsonite	-6.325	-8.630	
Litharge	-5.912	-8.066	
Magnesite	-1.875	-2.557	
Manganite	-4.459	-6.084	
Massicot	-6.088	-8.305	
Maximum_Microcline	0.000	0.000	satd
Mesolite	0.000	0.000	satd
Mirabilite	-4.029	-5.496	
MnO2(gamma)	-1.518	-2.071	
Monohydrocalcite	-3.971	-5.417	
Montmor-Ca	-1.392	-1.900	
Montmor-Cs	-3.644	-4.972	
Montmor-K	-1.113	-1.518	
Montmor-Mg	-1.003	-1.369	
Montmor-Na	-0.459	-0.626	
Mordenite	-2.805	-3.827	
Muscovite	0.000	0.000	satd
Na2CO3	-6.877	-9.382	
Na2CO3:7H2O	-5.645	-7.701	
Nahcolite	-3.393	-4.629	
Natrolite	-1.039	-1.418	
Natron	-5.311	-7.246	
NdOHCO3	-6.810	-9.291	

NdPO4:H2O	-3.358	-4.582	
Nepheline	-3.060	-4.174	
Nesquehonite	-4.578	-6.246	
Ni(OH)2	-3.579	-4.882	
Ni2SiO4	0.000	0.000	satd
NiCO3	-5.655	-7.715	
Nontronite-Ca	-0.878	-1.198	
Nontronite-H	-1.574	-2.148	
Nontronite-K	-0.668	-0.912	
Nontronite-Mg	-0.559	-0.762	
Nontronite-Na	-0.011	-0.015	
Paragonite	-0.919	-1.253	
Paralaurionite	-6.471	-8.828	
Pb3(PO4)2	-5.534	-7.550	
Pb4O(PO4)2	-6.204	-8.464	
PbHPO4	-4.553	-6.212	
Petalite	-6.150	-8.390	
Phlogopite	-2.518	-3.435	
Plattnerite	-1.276	-1.741	
PuO2	-4.802	-6.551	
Pyrolusite	0.000	0.000	satd
Pyromorphite	0.000	0.000	satd
Pyrophyllite	-2.576	-3.514	
Quartz	0.000	0.000	satd
Rutile	0.000	0.000	satd
Sanidine_high	-1.199	-1.636	
Saponite-Ca	-1.829	-2.495	
Saponite-Cs	-4.147	-5.658	
Saponite-H	-2.525	-3.445	
Saponite-K	-1.619	-2.209	
Saponite-Mg	-1.509	-2.059	
Saponite-Na	-0.962	-1.312	
Scolecite	-3.989	-5.442	
Sellaite	-7.324	-9.991	
SiO2(am)	-1.286	-1.754	
Sillimanite	-6.446	-8.794	
SmPO4:H2O	-3.688	-5.032	
Smectite-low-Fe-Mg	-7.076	-9.653	
Smithsonite	-4.298	-5.864	
SrZrO3	106.009	144.627	ssatd
Stilbite	-1.918	-2.616	
Talc	-1.938	-2.644	
Thenardite	-4.854	-6.622	
Thermonatrite	-6.658	-9.083	
Trevorite	-2.341	-3.193	
Tridymite	-0.172	-0.234	
Witherite	-0.342	-0.467	
Zincite	-3.730	-5.088	
Zn(OH)2(beta)	-4.456	-6.079	
Zn(OH)2(epsilon)	-4.184	-5.708	
Zn(OH)2(gamma)	-4.405	-6.009	
fix CO2(g)	0.000	0.000	satd
fix O2(g)	0.000	0.000	satd

--- Summary of Solid Solutions ---

--- Carbonate-Calcite ---

Ideal solution

Component	x	Log x	Log lambda	Log activity

Calcite	5.1694E-02	-1.2866	0.0000	-1.2866
Magnesite	9.4474E-01	-0.0247	0.0000	-0.0247
Rhodochrosite	1.2035E-09	-8.9196	0.0000	-8.9196
Siderite	1.8642E-18	-17.7295	0.0000	-17.7295
Smithsonite	3.5639E-03	-2.4481	0.0000	-2.4481
Strontianite	1.4516E-16	-15.8382	0.0000	-15.8382

Mineral	Log Q/K	Aff, kcal	State
Carbonate-Calcite	-1.850	-2.524	
Calcite	-1.850	-2.524	
Magnesite	-1.850	-2.524	
Rhodochrosite	-1.850	-2.524	
Siderite	-1.850	-2.524	
Smithsonite	-1.850	-2.524	
Strontianite	-1.850	-2.524	

--- Clinoptilolite-hy-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-hy-Ca	1.5022E-10	-9.8233	0.0000	-9.8233
Clinoptilolite-hy-Cs	1.9075E-33	-32.7195	0.0000	-32.7195
Clinoptilolite-hy-K	2.2582E-07	-6.6462	0.0000	-6.6462
Clinoptilolite-hy-Na	1.0000E+00	0.0000	0.0000	0.0000
Clinoptilolite-hy-Sr	2.1913E-39	-38.6593	0.0000	-38.6593

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-hy-ss	-0.018	-0.024	
Clinoptilolite-hy-Ca	-0.018	-0.024	
Clinoptilolite-hy-Cs	-0.018	-0.024	
Clinoptilolite-hy-K	-0.018	-0.024	
Clinoptilolite-hy-Na	-0.018	-0.024	
Clinoptilolite-hy-Sr	-0.018	-0.024	

--- Clinoptilolite-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-Ca	1.4305E-03	-2.8445	-6.9975	-9.8420
Clinoptilolite-Cs	3.4378E-10	-9.4637	-23.2808	-32.7445
Clinoptilolite-K	1.1811E-02	-1.9277	-4.7422	-6.6699
Clinoptilolite-NH4	1.4083E-66	-65.8513	-161.9942	-227.8455
Clinoptilolite-Na	9.8676E-01	-0.0058	-0.0142	-0.0200
Clinoptilolite-Sr	6.6362E-12	-11.1781	-27.4981	-38.6762

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-ss	0.000	0.000	satd
Clinoptilolite-Ca	0.000	0.000	satd
Clinoptilolite-Cs	0.000	0.000	satd

Clinoptilolite-K	0.000	0.000	satd
Clinoptilolite-NH4	0.000	0.000	satd
Clinoptilolite-Na	0.000	0.000	satd
Clinoptilolite-Sr	0.000	0.000	satd

--- Saponite-tri ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Saponite-Ca	2.2816E-03	-2.6418	1.7700	-0.8718
Saponite-H	1.7690E-05	-4.7523	3.1840	-1.5682
Saponite-K	9.8427E-03	-2.0069	1.3446	-0.6623
Saponite-Mg	2.1178E-02	-1.6741	1.1217	-0.5525
Saponite-Na	9.6668E-01	-0.0147	0.0099	-0.0049

Mineral	Log Q/K	Aff, kcal	State
Saponite-tri	-0.957	-1.305	
Saponite-Ca	-0.957	-1.305	
Saponite-H	-0.957	-1.305	
Saponite-K	-0.957	-1.305	
Saponite-Mg	-0.957	-1.305	
Saponite-Na	-0.957	-1.305	

--- Smectite-di ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Beidellite-Ca	3.3607E-08	-7.4736	5.0073	-2.4663
Beidellite-K	1.4508E-07	-6.8384	4.5817	-2.2567
Beidellite-Mg	3.1193E-07	-6.5059	4.3590	-2.1470
Beidellite-Na	1.4239E-05	-4.8465	3.2472	-1.5994
Montmor-Ca	6.0333E-05	-4.2194	2.8270	-1.3924
Montmor-K	4.2535E-04	-3.3712	2.2587	-1.1125
Montmor-Mg	9.1011E-04	-3.0409	2.0374	-1.0035
Montmor-Na	4.0711E-02	-1.3903	0.9315	-0.4588
Nontronite-Ca	2.1855E-03	-2.6604	1.7825	-0.8779
Nontronite-K	9.4346E-03	-2.0253	1.3569	-0.6683
Nontronite-Mg	2.0300E-02	-1.6925	1.1340	-0.5585
Nontronite-Na	9.2596E-01	-0.0334	0.0224	-0.0110

Mineral	Log Q/K	Aff, kcal	State
Smectite-di	0.000	0.000	satd
Beidellite-Ca	0.000	0.000	satd
Beidellite-K	0.000	0.000	satd
Beidellite-Mg	0.000	0.000	satd
Beidellite-Na	0.000	0.000	satd
Montmor-Ca	0.000	0.000	satd
Montmor-K	0.000	0.000	satd
Montmor-Mg	0.000	0.000	satd
Montmor-Na	0.000	0.000	satd
Nontronite-Ca	0.000	0.000	satd

Nontronite-K	0.000	0.000	satd
Nontronite-Mg	0.000	0.000	satd
Nontronite-Na	0.000	0.000	satd

--- Lanthanide hydroxide ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
La(OH)3	1.4245E-04	-3.8463	0.0000	-3.8463
Ce(OH)3	7.4028E-15	-14.1306	0.0000	-14.1306
Nd(OH)3(c)	6.8107E-01	-0.1668	0.0000	-0.1668
Gd(OH)3	2.5523E-01	-0.5931	0.0000	-0.5931
Sm(OH)3	6.3558E-02	-1.1968	0.0000	-1.1968

Mineral	Log Q/K	Aff, kcal	State
Lanthanide hydroxide	-8.320	-11.350	
La(OH)3	-8.320	-11.350	
Ce(OH)3	-8.320	-11.350	
Nd(OH)3(c)	-8.320	-11.350	
Gd(OH)3	-8.320	-11.350	
Sm(OH)3	-8.320	-11.350	

--- Rhabdophane-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaPO4:H2O	8.6637E-01	-0.0623	0.0000	-0.0623
CePO4:H2O	1.4238E-11	-10.8466	0.0000	-10.8466
NdPO4:H2O	8.2648E-02	-1.0828	0.0000	-1.0828
GdPO4:H2O	1.2330E-02	-1.9090	0.0000	-1.9090
SmPO4:H2O	3.8655E-02	-1.4128	0.0000	-1.4128

Mineral	Log Q/K	Aff, kcal	State
Rhabdophane-ss	-2.276	-3.104	
LaPO4:H2O	-2.276	-3.104	
CePO4:H2O	-2.276	-3.104	
NdPO4:H2O	-2.276	-3.104	
GdPO4:H2O	-2.276	-3.104	
SmPO4:H2O	-2.276	-3.104	

--- Lanthanide fluoride ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaF3:0.5H2O	8.8879E-01	-0.0512	0.0000	-0.0512
CeF3:0.5H2O	2.3149E-11	-10.6355	0.0000	-10.6355
NdF3:0.5H2O	1.0674E-01	-0.9717	0.0000	-0.9717

GdF3:0.5H2O	5.0357E-04	-3.2979	0.0000	-3.2979
SmF3:0.5H2O	3.9656E-03	-2.4017	0.0000	-2.4017

Mineral	Log Q/K	Aff, kcal	State
Lanthanide fluoride	-15.746	-21.482	
LaF3:0.5H2O	-15.746	-21.482	
CeF3:0.5H2O	-15.746	-21.482	
NdF3:0.5H2O	-15.746	-21.482	
GdF3:0.5H2O	-15.746	-21.482	
SmF3:0.5H2O	-15.746	-21.482	

--- Summary of Gases ---

Gas	Fugacity	Log fugacity
Al(g)	9.7072-192	-191.0129
B(g)	3.9225-204	-203.4064
BF3(g)	1.1480E-45	-44.9401
C(g)	3.0917-190	-189.5098
CH4(g)	3.5199-146	-145.4535
CO(g)	6.0395E-49	-48.2190
CO2(g)	3.1623E-04	-3.5000
Ca(g)	5.4464-154	-153.2639
Chlorine	1.6369E-31	-30.7860
Cs(g)	1.8881E-84	-83.7240
Cu(g)	1.9512E-82	-81.7097
Fluorine	1.1262E-86	-85.9484
H2(g)	6.1068E-42	-41.2142
H2O(g)	2.5943E-02	-1.5860
H2S(g)	1.0696-144	-143.9708
HCl(g)	4.9598E-20	-19.3045
HF(g)	4.6432E-16	-15.3332
K(g)	1.2715E-76	-75.8957
Li(g)	1.1297E-95	-94.9470
Mg(g)	1.8676-129	-128.7287
Nitrogen	1.2332E-22	-21.9090
NH3(g)	1.2777E-70	-69.8936
NO(g)	3.4968E-27	-26.4563
NO2(g)	2.3909E-21	-20.6214
Na(g)	6.9093E-73	-72.1606
O2(g)	2.0999E-01	-0.6778
Pb(g)	8.1426E-68	-67.0892
S2(g)	6.8403-232	-231.1649
SO2(g)	1.8963E-57	-56.7221
Si(g)	4.2257-221	-220.3741
SiF4(g)	2.0541E-46	-45.6874
Ti(g)	3.8019-231	-230.4200
TiCl4(g)	2.0325E-90	-89.6920
U(g)	9.7594-303	-302.0106
U2Cl10(g)	8.7788-270	-269.0566
U2Cl8(g)	1.6627-269	-268.7792
U2F10(g)	6.0092-187	-186.2212
UCl(g)	4.3165-260	-259.3649
UCl2(g)	5.7114-216	-215.2433
UCl3(g)	1.6552-169	-168.7811
UCl4(g)	2.5975-140	-139.5854
UCl5(g)	2.0973-148	-147.6783
UCl6(g)	3.1461-151	-150.5022

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UF(g)                        8.5878-246   -245.0661
UF2(g)                       5.6045-207   -206.2515
UF3(g)                       9.0011-162   -161.0457
UF4(g)                       2.1338-113   -112.6708
UF5(g)                       2.3169-106   -105.6351
UF6(g)                       2.4772-113   -112.6060
UO(g)                        7.7077-218   -217.1131
UO2(g)                       1.4280-133   -132.8453
UO2Cl2(g)                    1.0206E-83    -82.9912
UO2F2(g)                     7.2650E-73    -72.1388
UO3(g)                       1.0503E-80    -79.9787
UOF4(g)                      6.3585E-91    -90.1966
Zn(g)                        7.1301E-77    -76.1469



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--- shifting e.s. solid(s) to the p.r.s. (shftz) ---

      shifted -- Celadonite
              - old mass=  1.23901E-03, new mass=  1.23901E-05
      shifted -- Maximum_Microcline
              - old mass=  1.91932E-02, new mass=  1.91932E-04
      shifted -- Mesolite
              - old mass=  3.12679E-03, new mass=  3.12679E-05
      shifted -- Muscovite
              - old mass=  1.00734E-03, new mass=  1.00734E-05
  not shifted -- Ni2SiO4
              - mass=  7.99996E-07
      shifted -- Pyrolusite
              - old mass=  1.95258E-04, new mass=  1.95258E-06
  not shifted -- Pyromorphite
              - mass=  1.89162E-11
      shifted -- Quartz
              - old mass=  9.44565E-02, new mass=  9.44565E-04
      shifted -- Rutile
              - old mass=  2.54639E-04, new mass=  2.54639E-06
      shifted -- Clinoptilolite-ss
              - old mass=  6.28137E-03, new mass=  6.28137E-05
      shifted -- Smectite-di
              - old mass=  1.21198E-03, new mass=  1.21198E-05

Stepping to zi=  4.0076E+00, delzi=  7.6042E-03, nord= 6
  time =  3.8654E+04 d, dltime =  7.3343E+01 d
Steps completed =   636, iter = 12, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -25.1943

Stepping to zi=  4.0085E+00, delzi=  8.8625E-04, nord= 6
  time =  3.8662E+04 d, dltime =  8.5479E+00 d
Steps completed =   637, iter =  8, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -25.2367

Stepping to zi=  4.0103E+00, delzi=  1.7725E-03, nord= 5
  time =  3.8679E+04 d, dltime =  1.7096E+01 d
Steps completed =   638, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -25.3158

Stepping to zi=  4.0138E+00, delzi=  3.5450E-03, nord= 6
  time =  3.8713E+04 d, dltime =  3.4192E+01 d
Steps completed =   639, iter = 14, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -25.4552
```

```
Stepping to zi=  4.0168E+00, delzi=  3.0126E-03, nord= 6
  time =  3.8742E+04 d, dltime =  2.9056E+01 d
Steps completed =   640, iter = 13, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -25.5582

Stepping to zi=  4.0193E+00, delzi=  2.4821E-03, nord= 6
  time =  3.8766E+04 d, dltime =  2.3940E+01 d
Steps completed =   641, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -25.6347

Stepping to zi=  4.0220E+00, delzi=  2.7112E-03, nord= 6
  time =  3.8793E+04 d, dltime =  2.6150E+01 d
Steps completed =   642, iter =  9, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -25.7113

Stepping to zi=  4.0253E+00, delzi=  3.3029E-03, nord= 6
  time =  3.8824E+04 d, dltime =  3.1856E+01 d
Steps completed =   643, iter = 12, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -25.7962

Stepping to zi=  4.0290E+00, delzi=  3.6480E-03, nord= 6
  time =  3.8860E+04 d, dltime =  3.5185E+01 d
Steps completed =   644, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -25.8813

Stepping to zi=  4.0330E+00, delzi=  4.0691E-03, nord= 6
  time =  3.8899E+04 d, dltime =  3.9247E+01 d
Steps completed =   645, iter = 12, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -25.9672

Stepping to zi=  4.0376E+00, delzi=  4.5453E-03, nord= 6
  time =  3.8943E+04 d, dltime =  4.3840E+01 d
Steps completed =   646, iter =  7, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -26.0541

Stepping to zi=  4.0426E+00, delzi=  5.0148E-03, nord= 6
  time =  3.8991E+04 d, dltime =  4.8368E+01 d
Steps completed =   647, iter =  6, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -26.1409

Stepping to zi=  4.0481E+00, delzi=  5.5121E-03, nord= 6
  time =  3.9044E+04 d, dltime =  5.3164E+01 d
Steps completed =   648, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -26.2272

Stepping to zi=  4.0542E+00, delzi=  6.0730E-03, nord= 6
  time =  3.9103E+04 d, dltime =  5.8574E+01 d
Steps completed =   649, iter = 14, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -26.3132

Stepping to zi=  4.0609E+00, delzi=  6.7061E-03, nord= 6
  time =  3.9167E+04 d, dltime =  6.4681E+01 d
Steps completed =   650, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -26.3993

Stepping to zi=  4.0683E+00, delzi=  7.4072E-03, nord= 6
  time =  3.9239E+04 d, dltime =  7.1443E+01 d
Steps completed =   651, iter = 12, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -26.4854

Stepping to zi=  4.0765E+00, delzi=  8.1834E-03, nord= 6
  time =  3.9318E+04 d, dltime =  7.8930E+01 d
```

```
Steps completed =   652, iter = 14, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -26.5715

Stepping to zi=  4.0855E+00, delzi=  9.0412E-03, nord= 6
  time =  3.9405E+04 d, dltime =  8.7203E+01 d
Steps completed =   653, iter = 23, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -26.6576

Stepping to zi=  4.0955E+00, delzi=  9.9872E-03, nord= 6
  time =  3.9501E+04 d, dltime =  9.6327E+01 d
Steps completed =   654, iter =  6, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -26.7437

Stepping to zi=  4.1065E+00, delzi=  1.1030E-02, nord= 6
  time =  3.9608E+04 d, dltime =  1.0639E+02 d
Steps completed =   655, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -26.8298

Stepping to zi=  4.1187E+00, delzi=  1.2182E-02, nord= 6
  time =  3.9725E+04 d, dltime =  1.1750E+02 d
Steps completed =   656, iter = 13, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -26.9160

Stepping to zi=  4.1322E+00, delzi=  1.3455E-02, nord= 6
  time =  3.9855E+04 d, dltime =  1.2977E+02 d
Steps completed =   657, iter =  8, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -27.0021

Stepping to zi=  4.1470E+00, delzi=  1.4860E-02, nord= 6
  time =  3.9998E+04 d, dltime =  1.4333E+02 d
Steps completed =   658, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -27.0882

Stepping to zi=  4.1634E+00, delzi=  1.6413E-02, nord= 6
  time =  4.0157E+04 d, dltime =  1.5830E+02 d
Steps completed =   659, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -27.1743

Stepping to zi=  4.1816E+00, delzi=  1.8128E-02, nord= 6
  time =  4.0332E+04 d, dltime =  1.7484E+02 d
Steps completed =   660, iter = 16, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -27.2604

Stepping to zi=  4.2016E+00, delzi=  2.0022E-02, nord= 6
  time =  4.0525E+04 d, dltime =  1.9311E+02 d
Steps completed =   661, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -27.3466

Stepping to zi=  4.2237E+00, delzi=  2.2114E-02, nord= 6
  time =  4.0738E+04 d, dltime =  2.1329E+02 d
Steps completed =   662, iter =  8, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -27.4327

Stepping to zi=  4.2481E+00, delzi=  2.4425E-02, nord= 6
  time =  4.0974E+04 d, dltime =  2.3558E+02 d
Steps completed =   663, iter =  8, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -27.5188

Stepping to zi=  4.2751E+00, delzi=  2.6977E-02, nord= 6
  time =  4.1234E+04 d, dltime =  2.6020E+02 d
Steps completed =   664, iter =  8, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -27.6049
```

```
Stepping to zi=  4.3049E+00, delzi=  2.9796E-02, nord= 6
  time =  4.1521E+04 d, dltime =  2.8738E+02 d
Steps completed =   665, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -27.6910

Stepping to zi=  4.3378E+00, delzi=  3.2910E-02, nord= 6
  time =  4.1839E+04 d, dltime =  3.1741E+02 d
Steps completed =   666, iter =  7, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -27.7771

Stepping to zi=  4.3742E+00, delzi=  3.6348E-02, nord= 6
  time =  4.2189E+04 d, dltime =  3.5058E+02 d
Steps completed =   667, iter =  9, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -27.8632

Stepping to zi=  4.4143E+00, delzi=  4.0147E-02, nord= 6
  time =  4.2576E+04 d, dltime =  3.8722E+02 d
Steps completed =   668, iter = 19, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -27.9493

Stepping to zi=  4.4587E+00, delzi=  4.4342E-02, nord= 6
  time =  4.3004E+04 d, dltime =  4.2769E+02 d
Steps completed =   669, iter = 19, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -28.0354

Stepping to zi=  4.5076E+00, delzi=  4.8976E-02, nord= 6
  time =  4.3476E+04 d, dltime =  4.7238E+02 d
Steps completed =   670, iter = 19, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -28.1214

Stepping to zi=  4.5617E+00, delzi=  5.4095E-02, nord= 6
  time =  4.3998E+04 d, dltime =  5.2175E+02 d
Steps completed =   671, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -28.2075

Stepping to zi=  4.6215E+00, delzi=  5.9749E-02, nord= 6
  time =  4.4574E+04 d, dltime =  5.7628E+02 d
Steps completed =   672, iter = 21, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -28.2936

Stepping to zi=  4.6875E+00, delzi=  6.5993E-02, nord= 6
  time =  4.5211E+04 d, dltime =  6.3651E+02 d
Steps completed =   673, iter = 19, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -28.3796

Stepping to zi=  4.7604E+00, delzi=  7.2891E-02, nord= 6
  time =  4.5914E+04 d, dltime =  7.0304E+02 d
Steps completed =   674, iter = 19, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -28.4657

Stepping to zi=  4.8409E+00, delzi=  8.0510E-02, nord= 6
  time =  4.6690E+04 d, dltime =  7.7653E+02 d
Steps completed =   675, iter = 14, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -28.5518

Stepping to zi=  4.9298E+00, delzi=  8.8926E-02, nord= 6
  time =  4.7548E+04 d, dltime =  8.5770E+02 d
Steps completed =   676, iter =  6, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -28.6378

Stepping to zi=  5.0000E+00, delzi=  7.0204E-02, nord= 6
  time =  4.8225E+04 d, dltime =  6.7712E+02 d
Steps completed =   677, iter =  5, ncorr = 0
```

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Most rapidly changing is zvclg1(Sr++                    ) =    -28.7001

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                    Reaction progress        =  5.00000000000000E+00
                    Log of reaction progress =       0.6989700



                    Time =  4.167E+09 sec
                         =  4.823E+04 days
                         =  1.320E+02 years

                    Log sec =        9.620
                    Log days =       4.683
                    Log years =      2.121

                    Temperature    =     25.000 degrees C
                    total pressure =      1.013 bars


Step size is limited by the P.R.S. shift requirement


                              --- Reactant Summary ---


   Reactant                   Moles     Delta moles    Mass, g    Delta Mass, g

 Tuff                       9.5000E+01   5.0000E+00   1.9557E+03   1.0293E+02


              Current total mass =  1.95571E+03 grams
              Delta total mass   =  1.02932E+02 grams
              Delta total volume =      0.00000 cc


   Reactant                Rel. Rate      Rate         Rate
                            mol/mol       mol/s      mol/s/cm2

 Tuff                      1.0000E+00   1.2000E-09   2.5000E-15


   Reactant                  Affinity   Surface Area
                             kcal/mol     mol/s/cm2

 Tuff                       999.00000   4.8000E+05


   Reactant                Rate Constants, mol/s/cm2

 Tuff
                  Forward    2.5000E-15


        Affinity of the overall irreversible reaction=     0.000 kcal
        Contributions from irreversible reactions
        with no thermodynamic data are not included
```

--- Element Totals for the Aqueous Solution ---

Element	mg/kg soln.	Molality	Moles
O	8.862735E+05	5.562454E+01	5.534411E+01
Al	5.946119E-03	2.212938E-07	2.201781E-07
B	1.340478E-01	1.245077E-05	1.238800E-05
Ba	1.374512E-05	1.005067E-10	1.000000E-10
Ca	7.314885E-04	1.832753E-08	1.823513E-08
Ce	1.402416E-19	1.005066E-24	9.999993E-25
Cl	7.146632E+00	2.024205E-04	2.014000E-04
Cr	3.009033E+02	5.811103E-03	5.781806E-03
Cs	2.854433E-09	2.156649E-14	2.145776E-14
Cu	6.678366E-10	1.055320E-14	1.050000E-14
F	2.275476E-01	1.202701E-05	1.196637E-05
Fe	1.141430E-08	2.052351E-13	2.042004E-13
Gd	1.573922E-09	1.005067E-14	9.999998E-15
H	1.114453E+05	1.110272E+02	1.104675E+02
C	1.373801E+02	1.148542E-02	1.142752E-02
P	4.540107E+00	1.471887E-04	1.464467E-04
K	2.016683E+00	5.179431E-05	5.153319E-05
La	1.390311E-09	1.005067E-14	9.999998E-15
Li	6.947279E-07	1.005067E-10	1.000000E-10
Mg	2.121087E-02	8.763251E-07	8.719070E-07
Mn	4.366978E-11	7.981970E-16	7.941729E-16
Mo	2.188610E+02	2.290715E-03	2.279166E-03
N	1.990756E+00	1.427195E-04	1.420000E-04
Na	1.224243E+03	5.347309E-02	5.320350E-02
Nd	1.443705E-09	1.005067E-14	9.999998E-15
Ni	9.964536E-05	1.704886E-09	1.696291E-09
Pb	9.162790E-07	4.440587E-12	4.418200E-12
Pu	2.442207E-09	1.005067E-14	9.999999E-15
S	3.746145E+02	1.173119E-02	1.167205E-02
Si	4.312902E+00	1.542019E-04	1.534245E-04
Sm	1.504960E-09	1.005067E-14	9.999998E-15
Sr	2.656728E-24	3.044712E-29	3.029361E-29
Ti	1.076416E-05	2.257502E-10	2.246121E-10
U	2.382443E-09	1.005067E-14	1.000000E-14
V	4.788255E+00	9.438608E-05	9.391022E-05
Zn	6.544915E-06	1.005067E-10	1.000000E-10
Zr	9.130661E-16	1.005068E-20	1.000001E-20

Single ion activities and activity coefficients are here defined
with respect to the modified NBS pH scale

	pH	Eh	pe
modified NBS pH scale	9.2040	0.6746	1.1403E+01
rational pH scale	9.1228	0.6794	1.1484E+01

pHCl = 12.9977

Oxygen fugacity = 2.09991E-01
Log oxygen fugacity = -0.67780

Activity of water = 0.99865

Log activity of water = -0.00059

Ionic strength = 7.156324E-02 molal
Sum of molalities = 0.0838995601581
Osmotic coefficient = 0.89257

Mass of solution = 0.999096 kg
Mass of solutes = 0.004138 kg
Conc. of solutes = 0.414154 per cent (w/w)

Moles of solvent H2O = 5.52286E+01
Mass of solvent H2O = 9.94958E-01 kg

Species	Molality	Log molality	Log gamma	Log activity
Na+	5.1484E-02	-1.2883	-0.1059	-1.3943
SO4--	1.0336E-02	-1.9857	-0.3865	-2.3722
HCO3-	9.5577E-03	-2.0196	-0.0906	-2.1102
CrO4--	5.8054E-03	-2.2362	-0.3865	-2.6227
MoO4--	2.2907E-03	-2.6400	-0.3738	-3.0138
NaSO4-	1.3936E-03	-2.8559	-0.0906	-2.9464
CO3--	1.3762E-03	-2.8613	-0.3738	-3.2351
NaHCO3(aq)	4.4626E-04	-3.3504	0.0000	-3.3504
O2(aq)	2.6086E-04	-3.5836	0.0075	-3.5761
Cl-	2.0134E-04	-3.6961	-0.0976	-3.7937
NO3-	1.4272E-04	-3.8455	-0.0976	-3.9431
HPO4--	1.2498E-04	-3.9032	-0.3865	-4.2897
SiO2(aq)	1.0016E-04	-3.9993	0.0000	-3.9993
NaCO3-	9.4544E-05	-4.0244	-0.0906	-4.1150
VO3OH--	8.4717E-05	-4.0720	-0.3865	-4.4585
K+	5.0244E-05	-4.2989	-0.1130	-4.4119
NaHSiO3(aq)	3.2047E-05	-4.4942	0.0000	-4.4942
HSiO3-	2.1986E-05	-4.6578	-0.0906	-4.7484
NaHPO4-	2.1214E-05	-4.6734	-0.0906	-4.7640
OH-	2.0057E-05	-4.6977	-0.0940	-4.7917
F-	1.1988E-05	-4.9213	-0.0940	-5.0153
CO2(aq)	1.0559E-05	-4.9764	0.0075	-4.9689
HVO4--	9.1258E-06	-5.0397	-0.3865	-5.4262
BO2-	6.3793E-06	-5.1952	-0.0906	-5.2858
HCrO4-	5.7326E-06	-5.2416	-0.0906	-5.3322
B(OH)3(aq)	5.6826E-06	-5.2455	0.0000	-5.2455
KSO4-	1.5350E-06	-5.8139	-0.0906	-5.9045
NaCl(aq)	1.0840E-06	-5.9650	0.0000	-5.9650
H2PO4-	6.3438E-07	-6.1976	-0.0906	-6.2882
Mg++	4.5603E-07	-6.3410	-0.3336	-6.6746
NaB(OH)4(aq)	3.8872E-07	-6.4104	0.0000	-6.4104
H2VO4-	3.3373E-07	-6.4766	-0.0906	-6.5672
PO4---	3.0013E-07	-6.5227	-0.8848	-7.4075
MgSO4(aq)	2.3169E-07	-6.6351	0.0000	-6.6351
AlO2-	2.1968E-07	-6.6582	-0.0906	-6.7488
VO2(OH)2-	2.0682E-07	-6.6844	-0.0906	-6.7750
MgCO3(aq)	1.1727E-07	-6.9308	0.0000	-6.9308
NaOH(aq)	1.0335E-07	-6.9857	0.0000	-6.9857
MgPO4-	3.9575E-08	-7.4026	-0.0906	-7.4932
NaF(aq)	3.9163E-08	-7.4071	0.0000	-7.4071
MgHCO3+	2.2739E-08	-7.6432	-0.1059	-7.7492
KHPO4-	1.4757E-08	-7.8310	-0.0906	-7.9216
Ca++	9.7544E-09	-8.0108	-0.3706	-8.3814
MgHPO4(aq)	8.8243E-09	-8.0543	0.0000	-8.0543
H2SiO4--	6.8225E-09	-8.1661	-0.3865	-8.5526
CaCO3(aq)	5.1358E-09	-8.2894	0.0000	-8.2894
VO4---	2.3456E-09	-8.6298	-0.8848	-9.5146

CaSO4(aq)	2.2778E-09	-8.6425	0.0000	-8.6425
Cr2O7--	1.7907E-09	-8.7470	-0.3865	-9.1335
Ni++	1.3606E-09	-8.8663	-0.3706	-9.2369
NaAlO2(aq)	1.2991E-09	-8.8864	0.0000	-8.8864
H+	7.5362E-10	-9.1228	-0.0811	-9.2040
CaPO4-	5.7762E-10	-9.2384	-0.0906	-9.3289
CaHCO3+	4.5814E-10	-9.3390	-0.1059	-9.4449
NiSO4(aq)	3.2860E-10	-9.4833	0.0000	-9.4833
HAlO2(aq)	3.1452E-10	-9.5024	0.0000	-9.5024
HSO4-	3.1158E-10	-9.5064	-0.0906	-9.5970
Ti(OH)4(aq)	2.2575E-10	-9.6464	0.0000	-9.6464
KOH(aq)	2.1452E-10	-9.6685	0.0000	-9.6685
KCl(aq)	1.9943E-10	-9.7002	0.0000	-9.7002
CaHPO4(aq)	1.1719E-10	-9.9311	0.0000	-9.9311
MgB(OH)4+	1.1029E-10	-9.9575	-0.1059	-10.0634

--- Summary of Instantaneously Precipitated Solid Phases ---
(defined by derivatives)

--- Theoretical Rock Composition ---
g/kg

O	5.181368E+01
Al	6.307673E+00
Ca	3.743582E-01
Cl	2.431428E-11
Cs	1.195039E-11
Fe	6.119334E-01
H	7.307136E-01
C	2.056122E-03
P	6.372756E-11
K	3.828009E+00
Mg	1.381788E-01
Mn	4.839739E-02
N	1.950516E-66
Na	2.488331E+00
Pb	7.105127E-10
Si	3.360166E+01
Ti	5.500747E-02

--- Oxide Percentages ---

Oxide Theoretical rock

Total = 0.0000

Phase/end-member	d mol/d zi	d grams/d zi	d vol (cc)/d zi
Celadonite	1.2310E-03	4.8840E-01	1.9340E-01
Maximum_Microcline	1.9070E-02	5.3078E+00	2.0737E+00
Mesolite	3.1067E-03	1.2047E+00	5.3186E-01
Muscovite	1.0006E-03	3.9853E-01	1.4079E-01
Ni2SiO4	-2.5404E-12	-5.3213E-10	-1.0825E-10
Pyrolusite	1.9400E-04	1.6866E-02	9.7000E-02
Pyromorphite	1.5103E-13	2.0485E-10	2.9098E-11
Quartz	9.3846E-02	5.6387E+00	2.1292E+00
Rutile	2.5300E-04	2.0209E-02	4.7615E-03
fix CO2(g)	3.7698E-05	1.6591E-03	0.0000E+00
fix O2(g)	-7.0649E-04	-2.2607E-02	0.0000E+00
Clinoptilolite-ss			

Clinoptilolite-Ca	8.9276E-06	1.2002E-02	4.4638E-03
Clinoptilolite-Cs	5.7113E-15	9.9133E-12	2.8557E-12
Clinoptilolite-K	7.3710E-05	1.0397E-01	3.6855E-02
Clinoptilolite-NH4	8.8453E-69	1.1830E-65	4.4226E-66
Clinoptilolite-Na	6.1585E-03	8.3426E+00	3.0792E+00
Clinoptilolite-Sr	-2.1064E-27	-3.0055E-24	-1.0532E-24
Smectite-di			
Beidellite-Ca	4.0469E-11	1.4834E-08	5.2419E-09
Beidellite-K	1.7470E-10	6.5136E-08	2.3357E-08
Beidellite-Mg	3.7562E-10	1.3671E-07	4.6273E-08
Beidellite-Na	1.7146E-08	6.3017E-06	2.2382E-06
Montmor-Ca	7.2651E-08	2.6594E-05	3.6326E-05
Montmor-K	5.1220E-07	1.9071E-04	2.5610E-04
Montmor-Mg	1.0959E-06	3.9831E-04	5.4797E-04
Montmor-Na	4.9024E-05	1.7993E-02	2.4512E-02
Nontronite-Ca	2.6317E-06	1.1166E-03	3.4502E-04
Nontronite-K	1.1361E-05	4.8917E-03	1.5368E-03
Nontronite-Mg	2.4444E-05	1.0308E-02	3.1719E-03
Nontronite-Na	1.1150E-03	4.7418E-01	1.4730E-01

--- Summary of Solid Phases (E.S.+P.R.S.) ---

Phase/End-member	Log moles	Moles	Mass, g	Volume, cc
Alunite	-2.5559	2.7801E-03	1.1516E+00	8.1624E-01
Celadonite	-2.2079	6.1963E-03	2.4583E+00	9.7343E-01
Diaspore	-1.6079	2.4665E-02	1.4796E+00	4.3804E-01
Fluorapatite	-3.9881	1.0278E-04	5.1834E-02	5.1392E-02
Hematite	-3.7144	1.9300E-04	3.0820E-02	5.8428E-03
Maximum_Microcline	-1.0830	8.2607E-02	2.2992E+01	8.9828E+00
Mesolite	-1.8180	1.5204E-02	5.8958E+00	2.6029E+00
Muscovite	-1.8123	1.5406E-02	6.1363E+00	2.1678E+00
Ni2SiO4	-2.1930	6.4125E-03	1.3432E+00	2.7324E-01
Nontronite-H	-4.9990	1.0023E-05	4.1899E-03	5.0117E-03
Pyrolusite	-2.8059	1.5637E-03	1.3594E-01	7.8184E-01
Pyromorphite	-10.7186	1.9116E-11	2.5929E-08	3.6830E-09
Quartz	-0.1645	6.8469E-01	4.1139E+01	1.5534E+01
Rutile	-2.8979	1.2650E-03	1.0105E-01	2.3807E-02
fix CO2(g)	2.3010	1.9999E+02	8.8015E+03	0.0000E+00
fix O2(g)	2.3010	2.0000E+02	6.3996E+03	0.0000E+00
Clinoptilolite-ss	-1.7821	1.6516E-02		
Clinoptilolite-Ca	-4.6266	2.3625E-05	3.1762E-02	1.1812E-02
Clinoptilolite-Cs	-10.5400	2.8837E-11	5.0053E-08	1.4419E-08
Clinoptilolite-K	-3.7098	1.9506E-04	2.7513E-01	9.7529E-02
Clinoptilolite-NH4	-67.6332	2.3269E-68	3.1122E-65	1.1634E-65
Clinoptilolite-Na	-1.7879	1.6297E-02	2.2076E+01	8.1484E+00
Clinoptilolite-Sr	-10.2389	5.7687E-11	8.2309E-08	2.8843E-08
Smectite-di	-2.2323	5.8575E-03		
Beidellite-Ca	-9.2237	5.9740E-10	2.1898E-07	7.7381E-08
Beidellite-K	-8.8409	1.4423E-09	5.3777E-07	1.9284E-07
Beidellite-Mg	-8.7486	1.7840E-09	6.4932E-07	2.1978E-07
Beidellite-Na	-7.2698	5.3726E-08	1.9746E-05	7.0134E-06
Montmor-Ca	-6.2192	6.0373E-07	2.2099E-04	3.0186E-04
Montmor-K	-5.6831	2.0745E-06	7.7240E-04	1.0372E-03
Montmor-Mg	-5.3547	4.4192E-06	1.6061E-03	2.2096E-03
Montmor-Na	-3.8145	1.5328E-04	5.6257E-02	7.6640E-02
Nontronite-Ca	-3.4016	3.9669E-04	1.6831E-01	5.2005E-02
Nontronite-K	-3.1838	6.5498E-04	2.8202E-01	8.8598E-02
Nontronite-Mg	-3.2542	5.5695E-04	2.3486E-01	7.2270E-02
Nontronite-Na	-2.3884	4.0885E-03	1.7387E+00	5.4013E-01

	Mass, grams	Volume, cc
Created	1.530888E+04	4.174748E+01
Destroyed	1.029323E+02	0.000000E+00
Net	1.520595E+04	4.174748E+01

Warning-- these volume totals may be incomplete because of missing partial molar volume data in the data base

--- Summary of Pure Mineral Saturation States ---

Mineral	Log Q/K	Aff, kcal	State
Alamosite	-3.034	-4.139	
Albite	-0.022	-0.030	
Albite_high	-1.341	-1.829	
Albite_low	-0.022	-0.030	
Alstonite	-7.212	-9.839	
Analcime	-0.148	-0.202	
Analcime-dehy	-6.510	-8.882	
Andalusite	-6.082	-8.298	
Anglesite	-6.288	-8.579	
Anhydrite	-6.447	-8.796	
Aragonite	-3.281	-4.476	
BaCrO4	-3.124	-4.262	
BaHPO4	-7.323	-9.991	
BaZrO3	83.677	114.159	ssatd
Barite	-2.835	-3.867	
Bassanite	-7.092	-9.676	
Beidellite-Ca	-2.466	-3.365	
Beidellite-Cs	-5.194	-7.087	
Beidellite-H	-3.163	-4.315	
Beidellite-K	-2.257	-3.079	
Beidellite-Mg	-2.147	-2.929	
Beidellite-Na	-1.599	-2.182	
Boehmite	-0.634	-0.864	
Boric_acid	-5.087	-6.940	
Brucite	-4.566	-6.229	
Bunsenite	-3.301	-4.504	
CaSO4:0.5H2O(beta)	-7.260	-9.905	
CaZrO3	139.759	190.671	ssatd
Calcite	-3.136	-4.279	
CeO2	-3.174	-4.330	
Celadonite	0.000	0.000	satd
Cerussite	-1.466	-2.000	
Chalcedony	-0.271	-0.370	
Chrysotile	-3.927	-5.358	
Clinochlore-14A	-6.714	-9.160	
Clinoptilolite	-5.198	-7.092	
Clinoptilolite-K	-6.670	-9.100	
Clinoptilolite-Na	-0.020	-0.027	
Clinoptilolite-hy-K	-6.664	-9.092	
Clinoptilolite-hy-Na	-0.018	-0.024	
Coesite	-0.810	-1.105	
Corundum	-4.450	-6.072	
Cristobalite(alpha)	-0.551	-0.751	
Cristobalite(beta)	-0.994	-1.356	
Crocoite	-1.674	-2.284	

Dawsonite	-0.920	-1.256	
Diaspore	-0.230	-0.313	
Diopside	-7.204	-9.829	
Dolomite	-3.382	-4.614	
Dolomite-dis	-4.927	-6.721	
Dolomite-ord	-3.382	-4.614	
Enstatite	-3.594	-4.903	
Epsomite	-7.089	-9.671	
Fe(OH)3	-6.518	-8.893	
Ferrite-Zn	-6.051	-8.255	
Fluorapatite	-7.186	-9.803	
GdPO4:H2O	-4.155	-5.668	
Gibbsite	-0.826	-1.127	
Goethite	-1.397	-1.905	
Gypsum	-6.272	-8.557	
Halite	-6.773	-9.241	
Hematite	-1.832	-2.500	
Hexahydrite	-7.324	-9.991	
Hydrocerussite	-6.131	-8.365	
Ice	-0.139	-0.190	
Illite	-1.275	-1.739	
Jadeite	-1.647	-2.247	
K-Feldspar	0.000	0.000	
Kalicinite	-6.806	-9.285	
Kalsilite	-3.175	-4.332	
Kaolinite	-0.948	-1.294	
Kyanite	-5.812	-7.929	
LaPO4:H2O	-2.186	-2.983	
Lanarkite	-7.033	-9.596	
Lansfordite	-4.425	-6.037	
Laumontite	-5.779	-7.884	
Lawsonite	-6.325	-8.630	
Litharge	-6.006	-8.193	
Magnesite	-1.875	-2.557	
Manganite	-4.459	-6.084	
Massicot	-6.181	-8.432	
Maximum_Microcline	0.000	0.000	satd
Mesolite	0.000	0.000	satd
Mirabilite	-4.027	-5.494	
MnO2(gamma)	-1.518	-2.071	
Monohydrocalcite	-3.971	-5.417	
Montmor-Ca	-1.392	-1.900	
Montmor-Cs	-4.054	-5.531	
Montmor-K	-1.113	-1.518	
Montmor-Mg	-1.003	-1.369	
Montmor-Na	-0.459	-0.626	
Mordenite	-2.805	-3.827	
Muscovite	0.000	0.000	satd
Na2CO3	-6.877	-9.382	
Na2CO3:7H2O	-5.645	-7.701	
Nahcolite	-3.393	-4.629	
Natrolite	-1.039	-1.418	
Natron	-5.311	-7.246	
NdOHCO3	-6.848	-9.342	
NdPO4:H2O	-3.241	-4.421	
Nepheline	-3.060	-4.174	
Nesquehonite	-4.578	-6.246	
Ni(OH)2	-3.579	-4.882	
Ni2SiO4	0.000	0.000	satd
NiCO3	-5.655	-7.715	
Nontronite-Ca	-0.878	-1.198	
Nontronite-H	-1.574	-2.148	
Nontronite-K	-0.668	-0.912	

Nontronite-Mg	-0.559	-0.762	
Nontronite-Na	-0.011	-0.015	
Paragonite	-0.919	-1.253	
Paralaurionite	-6.563	-8.953	
Pb3(PO4)2	-5.504	-7.509	
Pb4O(PO4)2	-6.267	-8.550	
PbHPO4	-4.492	-6.128	
Petalite	-6.150	-8.391	
Phlogopite	-2.518	-3.435	
Plattnerite	-1.369	-1.868	
PuO2	-4.799	-6.547	
Pyrolusite	0.000	0.000	satd
Pyromorphite	0.000	0.000	satd
Pyrophyllite	-2.576	-3.514	
Quartz	0.000	0.000	satd
Rutile	0.000	0.000	satd
Sanidine_high	-1.199	-1.636	
Saponite-Ca	-1.829	-2.495	
Saponite-Cs	-4.557	-6.217	
Saponite-H	-2.525	-3.445	
Saponite-K	-1.619	-2.209	
Saponite-Mg	-1.509	-2.059	
Saponite-Na	-0.962	-1.312	
Scolecite	-3.989	-5.442	
Sellaite	-7.321	-9.988	
SiO2(am)	-1.286	-1.754	
Sillimanite	-6.446	-8.794	
SmPO4:H2O	-3.658	-4.990	
Smectite-low-Fe-Mg	-7.076	-9.653	
Smithsonite	-4.370	-5.962	
SrZrO3	102.015	139.177	ssatd
Stilbite	-1.918	-2.616	
Talc	-1.938	-2.644	
Thenardite	-4.852	-6.619	
Thermonatrite	-6.658	-9.083	
Trevorite	-2.341	-3.193	
Tridymite	-0.172	-0.234	
Witherite	-0.343	-0.468	
Zincite	-3.802	-5.187	
Zn(OH)2(beta)	-4.528	-6.177	
Zn(OH)2(epsilon)	-4.256	-5.807	
Zn(OH)2(gamma)	-4.477	-6.108	
fix CO2(g)	0.000	0.000	satd
fix O2(g)	0.000	0.000	satd

--- Summary of Solid Solutions ---

--- Carbonate-Calcite ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Calcite	5.1722E-02	-1.2863	0.0000	-1.2863
Magnesite	9.4526E-01	-0.0244	0.0000	-0.0244
Rhodochrosite	1.2041E-09	-8.9193	0.0000	-8.9193
Siderite	1.8652E-18	-17.7293	0.0000	-17.7293
Smithsonite	3.0201E-03	-2.5200	0.0000	-2.5200
Strontianite	1.4691E-20	-19.8330	0.0000	-19.8330

Mineral	Log Q/K	Aff, kcal	State

Carbonate-Calcite	-1.850	-2.524
Calcite	-1.850	-2.524
Magnesite	-1.850	-2.524
Rhodochrosite	-1.850	-2.524
Siderite	-1.850	-2.524
Smithsonite	-1.850	-2.524
Strontianite	-1.850	-2.524

--- Clinoptilolite-hy-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-hy-Ca	1.5022E-10	-9.8233	0.0000	-9.8233
Clinoptilolite-hy-Cs	9.4231E-38	-37.0258	0.0000	-37.0258
Clinoptilolite-hy-K	2.2582E-07	-6.6462	0.0000	-6.6462
Clinoptilolite-hy-Na	1.0000E+00	0.0000	0.0000	0.0000
Clinoptilolite-hy-Sr	2.6020E-46	-45.5847	0.0000	-45.5847

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-hy-ss	-0.018	-0.024	
Clinoptilolite-hy-Ca	-0.018	-0.024	
Clinoptilolite-hy-Cs	-0.018	-0.024	
Clinoptilolite-hy-K	-0.018	-0.024	
Clinoptilolite-hy-Na	-0.018	-0.024	
Clinoptilolite-hy-Sr	-0.018	-0.024	

--- Clinoptilolite-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-Ca	1.4305E-03	-2.8445	-6.9975	-9.8421
Clinoptilolite-Cs	1.9574E-11	-10.7083	-26.3424	-37.0508
Clinoptilolite-K	1.1811E-02	-1.9277	-4.7422	-6.6699
Clinoptilolite-NH4	1.4127E-66	-65.8499	-161.9908	-227.8408
Clinoptilolite-Na	9.8676E-01	-0.0058	-0.0142	-0.0200
Clinoptilolite-Sr	6.6124E-14	-13.1796	-32.4219	-45.6016

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-ss	0.000	0.000	satd
Clinoptilolite-Ca	0.000	0.000	satd
Clinoptilolite-Cs	0.000	0.000	satd
Clinoptilolite-K	0.000	0.000	satd
Clinoptilolite-NH4	0.000	0.000	satd
Clinoptilolite-Na	0.000	0.000	satd
Clinoptilolite-Sr	0.000	0.000	satd

--- Saponite-tri ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Saponite-Ca	2.2816E-03	-2.6418	1.7700	-0.8718
Saponite-H	1.7690E-05	-4.7523	3.1840	-1.5683
Saponite-K	9.8426E-03	-2.0069	1.3446	-0.6623
Saponite-Mg	2.1178E-02	-1.6741	1.1217	-0.5525
Saponite-Na	9.6668E-01	-0.0147	0.0099	-0.0049

Mineral	Log Q/K	Aff, kcal	State
Saponite-tri	-0.957	-1.305	
Saponite-Ca	-0.957	-1.305	
Saponite-H	-0.957	-1.305	
Saponite-K	-0.957	-1.305	
Saponite-Mg	-0.957	-1.305	
Saponite-Na	-0.957	-1.305	

--- Smectite-di ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Beidellite-Ca	3.3607E-08	-7.4736	5.0073	-2.4663
Beidellite-K	1.4508E-07	-6.8384	4.5817	-2.2567
Beidellite-Mg	3.1193E-07	-6.5059	4.3590	-2.1470
Beidellite-Na	1.4239E-05	-4.8465	3.2472	-1.5994
Montmor-Ca	6.0333E-05	-4.2194	2.8270	-1.3924
Montmor-K	4.2535E-04	-3.3712	2.2587	-1.1125
Montmor-Mg	9.1011E-04	-3.0409	2.0374	-1.0035
Montmor-Na	4.0711E-02	-1.3903	0.9315	-0.4588
Nontronite-Ca	2.1855E-03	-2.6604	1.7825	-0.8779
Nontronite-K	9.4345E-03	-2.0253	1.3569	-0.6683
Nontronite-Mg	2.0300E-02	-1.6925	1.1340	-0.5585
Nontronite-Na	9.2596E-01	-0.0334	0.0224	-0.0110

Mineral	Log Q/K	Aff, kcal	State
Smectite-di	0.000	0.000	satd
Beidellite-Ca	0.000	0.000	satd
Beidellite-K	0.000	0.000	satd
Beidellite-Mg	0.000	0.000	satd
Beidellite-Na	0.000	0.000	satd
Montmor-Ca	0.000	0.000	satd
Montmor-K	0.000	0.000	satd
Montmor-Mg	0.000	0.000	satd
Montmor-Na	0.000	0.000	satd
Nontronite-Ca	0.000	0.000	satd
Nontronite-K	0.000	0.000	satd
Nontronite-Mg	0.000	0.000	satd
Nontronite-Na	0.000	0.000	satd

--- Lanthanide hydroxide ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
La(OH)3	1.6354E-04	-3.7864	0.0000	-3.7864
Ce(OH)3	8.4747E-15	-14.0719	0.0000	-14.0719
Nd(OH)3(c)	7.2317E-01	-0.1408	0.0000	-0.1408
Gd(OH)3	2.2146E-01	-0.6547	0.0000	-0.6547
Sm(OH)3	5.5214E-02	-1.2580	0.0000	-1.2580

Mineral	Log Q/K	Aff, kcal	State
Lanthanide hydroxide	-8.383	-11.437	
La(OH)3	-8.383	-11.437	
Ce(OH)3	-8.383	-11.437	
Nd(OH)3(c)	-8.383	-11.437	
Gd(OH)3	-8.383	-11.437	
Sm(OH)3	-8.383	-11.437	

--- Rhabdophane-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaPO4:H2O	8.8281E-01	-0.0541	0.0000	-0.0541
CePO4:H2O	1.4466E-11	-10.8396	0.0000	-10.8396
NdPO4:H2O	7.7889E-02	-1.1085	0.0000	-1.1085
GdPO4:H2O	9.4957E-03	-2.0225	0.0000	-2.0225
SmPO4:H2O	2.9805E-02	-1.5257	0.0000	-1.5257

Mineral	Log Q/K	Aff, kcal	State
Rhabdophane-ss	-2.132	-2.909	
LaPO4:H2O	-2.132	-2.909	
CePO4:H2O	-2.132	-2.909	
NdPO4:H2O	-2.132	-2.909	
GdPO4:H2O	-2.132	-2.909	
SmPO4:H2O	-2.132	-2.909	

--- Lanthanide fluoride ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaF3:0.5H2O	8.9696E-01	-0.0472	0.0000	-0.0472
CeF3:0.5H2O	2.3295E-11	-10.6327	0.0000	-10.6327
NdF3:0.5H2O	9.9628E-02	-1.0016	0.0000	-1.0016
GdF3:0.5H2O	3.8409E-04	-3.4156	0.0000	-3.4156
SmF3:0.5H2O	3.0283E-03	-2.5188	0.0000	-2.5188

Mineral	Log Q/K	Aff, kcal	State
Lanthanide fluoride	-15.749	-21.486	
LaF3:0.5H2O	-15.749	-21.486	
CeF3:0.5H2O	-15.749	-21.486	

NdF3:0.5H2O	-15.749	-21.486
GdF3:0.5H2O	-15.749	-21.486
SmF3:0.5H2O	-15.749	-21.486

--- Summary of Gases ---

Gas	Fugacity	Log fugacity
Al(g)	9.7072-192	-191.0129
B(g)	3.9317-204	-203.4054
BF3(g)	1.1617E-45	-44.9349
C(g)	3.0917-190	-189.5098
CH4(g)	3.5199-146	-145.4535
CO(g)	6.0395E-49	-48.2190
CO2(g)	3.1623E-04	-3.5000
Ca(g)	5.4464-154	-153.2639
Chlorine	1.6473E-31	-30.7832
Cs(g)	1.0813E-85	-84.9660
Cu(g)	1.9474E-82	-81.7105
Fluorine	1.1334E-86	-85.9456
H2(g)	6.1068E-42	-41.2142
H2O(g)	2.5943E-02	-1.5860
H2S(g)	1.0743-144	-143.9689
HCl(g)	4.9755E-20	-19.3032
HF(g)	4.6579E-16	-15.3318
K(g)	1.2715E-76	-75.8957
Li(g)	1.1289E-95	-94.9473
Mg(g)	1.8676-129	-128.7287
Nitrogen	1.2410E-22	-21.9062
NH3(g)	1.2818E-70	-69.8922
NO(g)	3.5079E-27	-26.4550
NO2(g)	2.3985E-21	-20.6201
Na(g)	6.9093E-73	-72.1606
O2(g)	2.0999E-01	-0.6778
Pb(g)	6.5693E-68	-67.1825
S2(g)	6.9004-232	-231.1611
SO2(g)	1.9046E-57	-56.7202
Si(g)	4.2257-221	-220.3741
SiF4(g)	2.0804E-46	-45.6818
Ti(g)	3.8019-231	-230.4200
TiCl4(g)	2.0584E-90	-89.6865
U(g)	9.8180-303	-302.0080
U2Cl10(g)	9.1698-270	-269.0376
U2Cl8(g)	1.7258-269	-268.7630
U2F10(g)	6.2780-187	-186.2022
UCl(g)	4.3562-260	-259.3609
UCl2(g)	5.7821-216	-215.2379
UCl3(g)	1.6810-169	-168.7744
UCl4(g)	2.6464-140	-139.5774
UCl5(g)	2.1435-148	-147.6689
UCl6(g)	3.2256-151	-150.4914
UF(g)	8.6668-246	-245.0621
UF2(g)	5.6741-207	-206.2461
UF3(g)	9.1419-162	-161.0390
UF4(g)	2.1741-113	-112.6627
UF5(g)	2.3682-106	-105.6256
UF6(g)	2.5401-113	-112.5952
UO(g)	7.7539-218	-217.1105
UO2(g)	1.4366-133	-132.8427
UO2Cl2(g)	1.0332E-83	-82.9858

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UO2F2(g)                    7.3553E-73    -72.1334
UO3(g)                      1.0566E-80    -79.9761
UOF4(g)                     6.4785E-91    -90.1885
Zn(g)                       6.0389E-77    -76.2190



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--- shifting e.s. solid(s) to the p.r.s. (shftz) ---

      shifted -- Celadonite
              - old mass=  1.24343E-03, new mass=  1.24343E-05
      shifted -- Maximum_Microcline
              - old mass=  1.92618E-02, new mass=  1.92618E-04
      shifted -- Mesolite
              - old mass=  3.13793E-03, new mass=  3.13793E-05
      shifted -- Muscovite
              - old mass=  1.01061E-03, new mass=  1.01061E-05
  not shifted -- Ni2SiO4
              - mass=  7.99993E-07
      shifted -- Pyrolusite
              - old mass=  1.95953E-04, new mass=  1.95953E-06
  not shifted -- Pyromorphite
              - mass=  1.91164E-11
      shifted -- Quartz
              - old mass=  9.47902E-02, new mass=  9.47902E-04
      shifted -- Rutile
              - old mass=  2.55546E-04, new mass=  2.55546E-06
      shifted -- Clinoptilolite-ss
              - old mass=  6.30393E-03, new mass=  6.30393E-05
      shifted -- Smectite-di
              - old mass=  1.21629E-03, new mass=  1.21629E-05

Stepping to zi=  5.0068E+00, delzi=  6.8082E-03, nord= 6
  time =  4.8291E+04 d, dltime =  6.5666E+01 d
Steps completed =   678, iter = 25, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -29.1468

Stepping to zi=  5.0077E+00, delzi=  8.5103E-04, nord= 6
  time =  4.8299E+04 d, dltime =  8.2082E+00 d
Steps completed =   679, iter = 18, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -29.1893

Stepping to zi=  5.0094E+00, delzi=  1.7021E-03, nord= 4
  time =  4.8316E+04 d, dltime =  1.6416E+01 d
Steps completed =   680, iter = 12, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -29.2687

Stepping to zi=  5.0128E+00, delzi=  3.4041E-03, nord= 5
  time =  4.8348E+04 d, dltime =  3.2833E+01 d
Steps completed =   681, iter =  8, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -29.4084

Stepping to zi=  5.0173E+00, delzi=  4.4857E-03, nord= 6
  time =  4.8392E+04 d, dltime =  4.3265E+01 d
Steps completed =   682, iter = 12, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -29.5636

Stepping to zi=  5.0204E+00, delzi=  3.1115E-03, nord= 6
  time =  4.8422E+04 d, dltime =  3.0011E+01 d
Steps completed =   683, iter =  8, ncorr = 0
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Most rapidly changing is zvclg1(Sr++                    ) =    -29.6570

Stepping to zi=  5.0230E+00, delzi=  2.6188E-03, nord= 6
  time =  4.8447E+04 d, dltime =  2.5259E+01 d
Steps completed =   684, iter = 16, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -29.7285

Stepping to zi=  5.0262E+00, delzi=  3.2100E-03, nord= 6
  time =  4.8478E+04 d, dltime =  3.0960E+01 d
Steps completed =   685, iter =  7, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -29.8088

Stepping to zi=  5.0298E+00, delzi=  3.5987E-03, nord= 6
  time =  4.8513E+04 d, dltime =  3.4710E+01 d
Steps completed =   686, iter = 10, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -29.8907

Stepping to zi=  5.0339E+00, delzi=  4.0704E-03, nord= 6
  time =  4.8552E+04 d, dltime =  3.9259E+01 d
Steps completed =   687, iter = 18, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -29.9750

Stepping to zi=  5.0385E+00, delzi=  4.6073E-03, nord= 6
  time =  4.8596E+04 d, dltime =  4.4438E+01 d
Steps completed =   688, iter = 20, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -30.0613

Stepping to zi=  5.0436E+00, delzi=  5.1480E-03, nord= 6
  time =  4.8646E+04 d, dltime =  4.9653E+01 d
Steps completed =   689, iter = 23, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -30.1487

Stepping to zi=  5.0493E+00, delzi=  5.6608E-03, nord= 6
  time =  4.8701E+04 d, dltime =  5.4599E+01 d
Steps completed =   690, iter = 22, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -30.2355

Stepping to zi=  5.0555E+00, delzi=  6.2160E-03, nord= 6
  time =  4.8761E+04 d, dltime =  5.9953E+01 d
Steps completed =   691, iter =  7, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -30.3218

Stepping to zi=  5.0623E+00, delzi=  6.8499E-03, nord= 6
  time =  4.8827E+04 d, dltime =  6.6068E+01 d
Steps completed =   692, iter = 13, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -30.4079

Stepping to zi=  5.0699E+00, delzi=  7.5590E-03, nord= 6
  time =  4.8900E+04 d, dltime =  7.2907E+01 d
Steps completed =   693, iter = 12, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -30.4939

Stepping to zi=  5.0783E+00, delzi=  8.3494E-03, nord= 6
  time =  4.8980E+04 d, dltime =  8.0531E+01 d
Steps completed =   694, iter =  8, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -30.5800

Stepping to zi=  5.0875E+00, delzi=  9.2265E-03, nord= 6
  time =  4.9069E+04 d, dltime =  8.8990E+01 d
Steps completed =   695, iter =  9, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -30.6660

Stepping to zi=  5.0977E+00, delzi=  1.0195E-02, nord= 6
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```
  time =  4.9167E+04 d, dltime =  9.8329E+01 d
Steps completed =   696, iter =  7, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -30.7522

Stepping to zi=  5.1089E+00, delzi=  1.1262E-02, nord= 6
  time =  4.9276E+04 d, dltime =  1.0862E+02 d
Steps completed =   697, iter = 19, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -30.8383

Stepping to zi=  5.1214E+00, delzi=  1.2438E-02, nord= 6
  time =  4.9396E+04 d, dltime =  1.1996E+02 d
Steps completed =   698, iter = 21, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -30.9244

Stepping to zi=  5.1351E+00, delzi=  1.3737E-02, nord= 6
  time =  4.9528E+04 d, dltime =  1.3249E+02 d
Steps completed =   699, iter = 21, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -31.0106

Stepping to zi=  5.1503E+00, delzi=  1.5171E-02, nord= 6
  time =  4.9675E+04 d, dltime =  1.4633E+02 d
Steps completed =   700, iter = 19, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -31.0967

Stepping to zi=  5.1670E+00, delzi=  1.6756E-02, nord= 6
  time =  4.9836E+04 d, dltime =  1.6161E+02 d
Steps completed =   701, iter =  7, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -31.1828

Stepping to zi=  5.1855E+00, delzi=  1.8507E-02, nord= 6
  time =  5.0015E+04 d, dltime =  1.7850E+02 d
Steps completed =   702, iter =  9, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -31.2689

Stepping to zi=  5.2060E+00, delzi=  2.0441E-02, nord= 6
  time =  5.0212E+04 d, dltime =  1.9715E+02 d
Steps completed =   703, iter = 10, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -31.3550

Stepping to zi=  5.2286E+00, delzi=  2.2576E-02, nord= 6
  time =  5.0430E+04 d, dltime =  2.1775E+02 d
Steps completed =   704, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -31.4411

Stepping to zi=  5.2535E+00, delzi=  2.4935E-02, nord= 6
  time =  5.0670E+04 d, dltime =  2.4050E+02 d
Steps completed =   705, iter = 19, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -31.5272

Stepping to zi=  5.2810E+00, delzi=  2.7541E-02, nord= 6
  time =  5.0936E+04 d, dltime =  2.6564E+02 d
Steps completed =   706, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -31.6134

Stepping to zi=  5.3115E+00, delzi=  3.0419E-02, nord= 6
  time =  5.1229E+04 d, dltime =  2.9339E+02 d
Steps completed =   707, iter =  9, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -31.6995

Stepping to zi=  5.3451E+00, delzi=  3.3597E-02, nord= 6
  time =  5.1553E+04 d, dltime =  3.2405E+02 d
Steps completed =   708, iter = 19, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -31.7856
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Stepping to zi=  5.3822E+00, delzi=  3.7108E-02, nord= 6
  time =  5.1911E+04 d, dltime =  3.5791E+02 d
Steps completed =   709, iter = 21, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -31.8716

Stepping to zi=  5.4231E+00, delzi=  4.0986E-02, nord= 6
  time =  5.2307E+04 d, dltime =  3.9531E+02 d
Steps completed =   710, iter =  6, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -31.9577

Stepping to zi=  5.4684E+00, delzi=  4.5269E-02, nord= 6
  time =  5.2743E+04 d, dltime =  4.3663E+02 d
Steps completed =   711, iter = 11, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -32.0438

Stepping to zi=  5.5184E+00, delzi=  5.0000E-02, nord= 6
  time =  5.3225E+04 d, dltime =  4.8226E+02 d
Steps completed =   712, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -32.1299

Stepping to zi=  5.5736E+00, delzi=  5.5226E-02, nord= 6
  time =  5.3758E+04 d, dltime =  5.3266E+02 d
Steps completed =   713, iter = 12, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -32.2160

Stepping to zi=  5.6346E+00, delzi=  6.0998E-02, nord= 6
  time =  5.4346E+04 d, dltime =  5.8833E+02 d
Steps completed =   714, iter = 12, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -32.3020

Stepping to zi=  5.7020E+00, delzi=  6.7373E-02, nord= 6
  time =  5.4996E+04 d, dltime =  6.4982E+02 d
Steps completed =   715, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -32.3881

Stepping to zi=  5.7764E+00, delzi=  7.4415E-02, nord= 6
  time =  5.5714E+04 d, dltime =  7.1774E+02 d
Steps completed =   716, iter =  8, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -32.4742

Stepping to zi=  5.8586E+00, delzi=  8.2194E-02, nord= 6
  time =  5.6507E+04 d, dltime =  7.9277E+02 d
Steps completed =   717, iter = 19, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -32.5602

Stepping to zi=  5.9494E+00, delzi=  9.0786E-02, nord= 6
  time =  5.7382E+04 d, dltime =  8.7564E+02 d
Steps completed =   718, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -32.6462

Stepping to zi=  6.0000E+00, delzi=  5.0592E-02, nord= 6
  time =  5.7870E+04 d, dltime =  4.8796E+02 d
Steps completed =   719, iter =  7, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -32.6907

- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -


                    Reaction progress        =  6.00000000000000E+00
                    Log of reaction progress =       0.7781513
```

```
Time =  5.000E+09 sec
     =  5.787E+04 days
     =  1.584E+02 years

Log sec =        9.699
Log days =       4.762
Log years =      2.200

Temperature    =     25.000 degrees C
total pressure =      1.013 bars


Step size is limited by the P.R.S. shift requirement


                    --- Reactant Summary ---


   Reactant                  Moles     Delta moles    Mass, g    Delta Mass, g

 Tuff                      9.4000E+01   6.0000E+00   1.9351E+03   1.2352E+02


              Current total mass =  1.93513E+03 grams
              Delta total mass   =  1.23519E+02 grams
              Delta total volume =      0.00000 cc


   Reactant                Rel. Rate      Rate         Rate
                            mol/mol       mol/s      mol/s/cm2

 Tuff                      1.0000E+00   1.2000E-09   2.5000E-15


   Reactant                  Affinity   Surface Area
                             kcal/mol     mol/s/cm2

 Tuff                       999.00000   4.8000E+05


   Reactant                Rate Constants, mol/s/cm2

 Tuff
                  Forward    2.5000E-15


        Affinity of the overall irreversible reaction=     0.000 kcal
        Contributions from irreversible reactions
        with no thermodynamic data are not included


    --- Element Totals for the Aqueous Solution ---

 Element        mg/kg soln.          Molality             Moles

    O          8.862693E+05        5.562477E+01        5.526434E+01
    Al         5.935708E-03        2.209083E-07        2.194769E-07
    B          1.342407E-01        1.246879E-05        1.238800E-05
    Ba         1.376490E-05        1.006522E-10        1.000000E-10
    Ca         7.420224E-04        1.859162E-08        1.847115E-08
```

Ce	1.404434E-19	1.006521E-24	9.999992E-25
Cl	7.156914E+00	2.027135E-04	2.014000E-04
Cr	3.013362E+02	5.819515E-03	5.781806E-03
Cs	1.647617E-10	1.244858E-15	1.236791E-15
Cu	6.687974E-10	1.056848E-14	1.050000E-14
F	2.278750E-01	1.204442E-05	1.196637E-05
Fe	1.140755E-08	2.051157E-13	2.037866E-13
Gd	1.576187E-09	1.006522E-14	9.999998E-15
H	1.114443E+05	1.110272E+02	1.103078E+02
C	1.371243E+02	1.146414E-02	1.138986E-02
P	5.897156E+00	1.911855E-04	1.899467E-04
K	2.021225E+00	5.191142E-05	5.157505E-05
La	1.392312E-09	1.006522E-14	9.999998E-15
Li	6.957274E-07	1.006522E-10	1.000000E-10
Mg	2.163745E-02	8.939571E-07	8.881645E-07
Mn	4.360858E-11	7.970856E-16	7.919207E-16
Mo	2.191758E+02	2.294031E-03	2.279166E-03
N	1.993620E+00	1.429261E-04	1.420000E-04
Na	1.226982E+03	5.359320E-02	5.324593E-02
Nd	1.445782E-09	1.006522E-14	9.999998E-15
Ni	1.000883E-04	1.712479E-09	1.701383E-09
Pb	7.907511E-07	3.832272E-12	3.807440E-12
Pu	2.445721E-09	1.006522E-14	9.999999E-15
S	3.751534E+02	1.174817E-02	1.167205E-02
Si	4.311787E+00	1.541634E-04	1.531645E-04
Sm	1.507125E-09	1.006522E-14	9.999998E-15
Sr	2.718610E-28	3.115658E-33	3.095470E-33
Ti	1.076401E-05	2.257491E-10	2.242863E-10
U	2.385870E-09	1.006522E-14	1.000000E-14
V	4.795144E+00	9.452271E-05	9.391022E-05
Zn	6.554331E-06	1.006522E-10	1.000000E-10
Zr	9.143797E-16	1.006523E-20	1.000001E-20

Single ion activities and activity coefficients are here defined
with respect to the modified NBS pH scale

	pH	Eh	pe
modified NBS pH scale	9.2031	0.6746	1.1404E+01
rational pH scale	9.1220	0.6794	1.1485E+01

pHCl = 12.9963

Oxygen fugacity = 2.09991E-01
Log oxygen fugacity = -0.67780

Activity of water = 0.99865
Log activity of water = -0.00059

Ionic strength = 7.173201E-02 molal
Sum of molalities = 0.0840619080041
Osmotic coefficient = 0.89246

Mass of solution = 0.997661 kg
Mass of solutes = 0.004141 kg
Conc. of solutes = 0.415034 per cent (w/w)

Moles of solvent H2O = 5.51488E+01
Mass of solvent H2O = 9.93520E-01 kg

Species	Molality	Log molality	Log gamma	Log activity
Na+	5.1594E-02	-1.2874	-0.1060	-1.3934
SO4--	1.0349E-02	-1.9851	-0.3868	-2.3719
HCO3-	9.5409E-03	-2.0204	-0.0907	-2.1111
CrO4--	5.8138E-03	-2.2355	-0.3868	-2.6224
MoO4--	2.2940E-03	-2.6394	-0.3741	-3.0135
NaSO4-	1.3973E-03	-2.8547	-0.0907	-2.9454
CO3--	1.3719E-03	-2.8627	-0.3741	-3.2367
NaHCO3(aq)	4.4627E-04	-3.3504	0.0000	-3.3504
O2(aq)	2.6085E-04	-3.5836	0.0075	-3.5761
Cl-	2.0163E-04	-3.6955	-0.0977	-3.7932
HPO4--	1.6230E-04	-3.7897	-0.3868	-4.1765
NO3-	1.4293E-04	-3.8449	-0.0977	-3.9426
SiO2(aq)	1.0016E-04	-3.9993	0.0000	-3.9993
NaCO3-	9.4378E-05	-4.0251	-0.0907	-4.1158
VO3OH--	8.4839E-05	-4.0714	-0.3868	-4.4582
K+	5.0353E-05	-4.2980	-0.1131	-4.4111
NaHSiO3(aq)	3.2048E-05	-4.4942	0.0000	-4.4942
NaHPO4-	2.7587E-05	-4.5593	-0.0907	-4.6500
HSiO3-	2.1948E-05	-4.6586	-0.0907	-4.7493
OH-	2.0022E-05	-4.6985	-0.0941	-4.7926
F-	1.2005E-05	-4.9206	-0.0941	-5.0147
CO2(aq)	1.0558E-05	-4.9764	0.0075	-4.9689
HVO4--	9.1390E-06	-5.0391	-0.3868	-5.4259
BO2-	6.3831E-06	-5.1950	-0.0907	-5.2856
HCrO4-	5.7486E-06	-5.2404	-0.0907	-5.3311
B(OH)3(aq)	5.6960E-06	-5.2444	0.0000	-5.2444
KSO4-	1.5391E-06	-5.8127	-0.0907	-5.9034
NaCl(aq)	1.0874E-06	-5.9636	0.0000	-5.9636
H2PO4-	8.2494E-07	-6.0836	-0.0907	-6.1742
Mg++	4.5804E-07	-6.3391	-0.3339	-6.6730
NaB(OH)4(aq)	3.8964E-07	-6.4093	0.0000	-6.4093
PO4---	3.8940E-07	-6.4096	-0.8856	-7.2952
H2VO4-	3.3466E-07	-6.4754	-0.0907	-6.5661
MgSO4(aq)	2.3270E-07	-6.6332	0.0000	-6.6332
AlO2-	2.1929E-07	-6.6590	-0.0907	-6.7496
VO2(OH)2-	2.0740E-07	-6.6832	-0.0907	-6.7739
MgCO3(aq)	1.1727E-07	-6.9308	0.0000	-6.9308
NaOH(aq)	1.0335E-07	-6.9857	0.0000	-6.9857
MgPO4-	5.1463E-08	-7.2885	-0.0907	-7.3792
NaF(aq)	3.9288E-08	-7.4057	0.0000	-7.4057
MgHCO3+	2.2788E-08	-7.6423	-0.1060	-7.7483
KHPO4-	1.9190E-08	-7.7169	-0.0907	-7.8076
MgHPO4(aq)	1.1495E-08	-7.9395	0.0000	-7.9395
Ca++	9.7985E-09	-8.0088	-0.3709	-8.3797
H2SiO4--	6.8014E-09	-8.1674	-0.3868	-8.5542
CaCO3(aq)	5.1358E-09	-8.2894	0.0000	-8.2894
VO4---	2.3468E-09	-8.6295	-0.8856	-9.5151
CaSO4(aq)	2.2878E-09	-8.6406	0.0000	-8.6406
Cr2O7--	1.8015E-09	-8.7444	-0.3868	-9.1312
Ni++	1.3668E-09	-8.8643	-0.3709	-9.2352
NaAlO2(aq)	1.2991E-09	-8.8864	0.0000	-8.8864
H+	7.5516E-10	-9.1220	-0.0812	-9.2031
CaPO4-	7.5114E-10	-9.1243	-0.0907	-9.2149
CaHCO3+	4.5912E-10	-9.3381	-0.1060	-9.4441
NiSO4(aq)	3.3004E-10	-9.4814	0.0000	-9.4814
HAlO2(aq)	3.1452E-10	-9.5024	0.0000	-9.5024

HSO4-	3.1240E-10	-9.5053	-0.0907	-9.5960
Ti(OH)4(aq)	2.2575E-10	-9.6464	0.0000	-9.6464
KOH(aq)	2.1452E-10	-9.6685	0.0000	-9.6685
KCl(aq)	2.0006E-10	-9.6988	0.0000	-9.6988
CaHPO4(aq)	1.5267E-10	-9.8163	0.0000	-9.8163
MgB(OH)4+	1.1078E-10	-9.9555	-0.1060	-10.0616

--- Summary of Instantaneously Precipitated Solid Phases ---
(defined by derivatives)

--- Theoretical Rock Composition ---
g/kg

O	5.181367E+01
Al	6.307676E+00
Ca	3.743583E-01
Cl	1.595671E-11
Cs	6.944231E-13
Fe	6.119337E-01
H	7.307115E-01
C	2.052042E-03
P	4.182244E-11
K	3.828011E+00
Mg	1.381788E-01
Mn	4.839742E-02
N	1.956710E-66
Na	2.488322E+00
Pb	4.662877E-10
Si	3.360168E+01
Ti	5.500750E-02

--- Oxide Percentages ---

Oxide Theoretical rock

Total = 0.0000

Phase/end-member	d mol/d zi	d grams/d zi	d vol (cc)/d zi
Celadonite	1.2310E-03	4.8840E-01	1.9340E-01
Maximum_Microcline	1.9070E-02	5.3077E+00	2.0737E+00
Mesolite	3.1067E-03	1.2047E+00	5.3186E-01
Muscovite	1.0006E-03	3.9855E-01	1.4079E-01
Ni2SiO4	-2.5518E-12	-5.3450E-10	-1.0873E-10
Pyrolusite	1.9400E-04	1.6866E-02	9.7000E-02
Pyromorphite	9.9117E-14	1.3444E-10	1.9096E-11
Quartz	9.3846E-02	5.6387E+00	2.1292E+00
Rutile	2.5300E-04	2.0209E-02	4.7615E-03
fix CO2(g)	3.7624E-05	1.6558E-03	0.0000E+00
fix O2(g)	-7.0649E-04	-2.2607E-02	0.0000E+00
Clinoptilolite-ss			
Clinoptilolite-Ca	8.9275E-06	1.2002E-02	4.4637E-03
Clinoptilolite-Cs	3.3188E-16	5.7605E-13	1.6594E-13
Clinoptilolite-K	7.3709E-05	1.0397E-01	3.6855E-02
Clinoptilolite-NH4	8.8734E-69	1.1868E-65	4.4367E-66
Clinoptilolite-Na	6.1584E-03	8.3425E+00	3.0792E+00
Clinoptilolite-Sr	0.0000E+00	0.0000E+00	0.0000E+00
Smectite-di			
Beidellite-Ca	4.0469E-11	1.4834E-08	5.2419E-09
Beidellite-K	1.7470E-10	6.5136E-08	2.3357E-08

Beidellite-Mg	3.7562E-10	1.3671E-07	4.6273E-08
Beidellite-Na	1.7146E-08	6.3018E-06	2.2382E-06
Montmor-Ca	7.2652E-08	2.6594E-05	3.6326E-05
Montmor-K	5.1220E-07	1.9071E-04	2.5610E-04
Montmor-Mg	1.0959E-06	3.9831E-04	5.4797E-04
Montmor-Na	4.9024E-05	1.7993E-02	2.4512E-02
Nontronite-Ca	2.6317E-06	1.1166E-03	3.4502E-04
Nontronite-K	1.1361E-05	4.8917E-03	1.5368E-03
Nontronite-Mg	2.4444E-05	1.0308E-02	3.1719E-03
Nontronite-Na	1.1150E-03	4.7418E-01	1.4730E-01

--- Summary of Solid Phases (E.S.+P.R.S.) ---

Phase/End-member	Log moles	Moles	Mass, g	Volume, cc
Alunite	-2.5559	2.7801E-03	1.1516E+00	8.1624E-01
Celadonite	-2.1292	7.4273E-03	2.9467E+00	1.1668E+00
Diaspore	-1.6079	2.4665E-02	1.4796E+00	4.3804E-01
Fluorapatite	-3.9881	1.0278E-04	5.1834E-02	5.1392E-02
Hematite	-3.7144	1.9300E-04	3.0820E-02	5.8428E-03
Maximum_Microcline	-0.9928	1.0168E-01	2.8300E+01	1.1056E+01
Mesolite	-1.7373	1.8311E-02	7.1005E+00	3.1348E+00
Muscovite	-1.7850	1.6406E-02	6.5348E+00	2.3085E+00
Ni2SiO4	-2.1930	6.4125E-03	1.3432E+00	2.7324E-01
Nontronite-H	-4.9990	1.0023E-05	4.1899E-03	5.0117E-03
Pyrolusite	-2.7551	1.7577E-03	1.5281E-01	8.7884E-01
Pyromorphite	-10.7158	1.9239E-11	2.6094E-08	3.7065E-09
Quartz	-0.1087	7.7854E-01	4.6778E+01	1.7663E+01
Rutile	-2.8187	1.5180E-03	1.2126E-01	2.8569E-02
fix CO2(g)	2.3010	1.9999E+02	8.8015E+03	0.0000E+00
fix O2(g)	2.3010	2.0000E+02	6.3996E+03	0.0000E+00
Clinoptilolite-ss	-1.6429	2.2757E-02		
Clinoptilolite-Ca	-4.4874	3.2552E-05	4.3764E-02	1.6276E-02
Clinoptilolite-Cs	-10.5400	2.8843E-11	5.0064E-08	1.4422E-08
Clinoptilolite-K	-3.5706	2.6877E-04	3.7910E-01	1.3438E-01
Clinoptilolite-NH4	-67.4933	3.2114E-68	4.2952E-65	1.6057E-65
Clinoptilolite-Na	-1.6487	2.2455E-02	3.0419E+01	1.1228E+01
Clinoptilolite-Sr	-10.2389	5.7687E-11	8.2309E-08	2.8843E-08
Smectite-di	-2.1511	7.0617E-03		
Beidellite-Ca	-9.1953	6.3787E-10	2.3382E-07	8.2623E-08
Beidellite-K	-8.7913	1.6170E-09	6.0290E-07	2.1619E-07
Beidellite-Mg	-8.6656	2.1597E-09	7.8603E-07	2.6605E-07
Beidellite-Na	-7.1495	7.0872E-08	2.6048E-05	9.2517E-06
Montmor-Ca	-6.1698	6.7638E-07	2.4758E-04	3.3819E-04
Montmor-K	-5.5873	2.5867E-06	9.6311E-04	1.2933E-03
Montmor-Mg	-5.2584	5.5151E-06	2.0044E-03	2.7576E-03
Montmor-Na	-3.6940	2.0230E-04	7.4249E-02	1.0115E-01
Nontronite-Ca	-3.3987	3.9932E-04	1.6943E-01	5.2350E-02
Nontronite-K	-3.1763	6.6634E-04	2.8691E-01	9.0135E-02
Nontronite-Mg	-3.2355	5.8140E-04	2.4517E-01	7.5442E-02
Nontronite-Na	-2.2837	5.2035E-03	2.2129E+00	6.8743E-01

	Mass, grams	Volume, cc
Created	1.533090E+04	5.021640E+01
Destroyed	1.235188E+02	0.000000E+00
Net	1.520738E+04	5.021640E+01

Warning-- these volume totals may be incomplete because

of missing partial molar volume data in the data base

--- Summary of Pure Mineral Saturation States ---

Mineral	Log Q/K	Aff, kcal	State
Alamosite	-3.103	-4.234	
Albite	-0.022	-0.030	
Albite_high	-1.341	-1.829	
Albite_low	-0.022	-0.030	
Alstonite	-7.213	-9.841	
Analcime	-0.148	-0.202	
Analcime-dehy	-6.510	-8.882	
Andalusite	-6.082	-8.298	
Anglesite	-6.356	-8.671	
Anhydrite	-6.445	-8.793	
Aragonite	-3.281	-4.476	
BaCrO4	-3.123	-4.261	
BaHPO4	-7.210	-9.836	
BaZrO3	83.676	114.158	ssatd
Barite	-2.834	-3.866	
Bassanite	-7.090	-9.673	
Beidellite-Ca	-2.466	-3.365	
Beidellite-Cs	-5.604	-7.645	
Beidellite-H	-3.163	-4.315	
Beidellite-K	-2.257	-3.079	
Beidellite-Mg	-2.147	-2.929	
Beidellite-Na	-1.599	-2.182	
Boehmite	-0.634	-0.864	
Boric_acid	-5.086	-6.939	
Brucite	-4.566	-6.229	
Bunsenite	-3.301	-4.504	
CaSO4:0.5H2O(beta)	-7.259	-9.903	
CaZrO3	139.760	190.672	ssatd
Calcite	-3.136	-4.279	
CeO2	-3.181	-4.339	
Celadonite	0.000	0.000	satd
Cerussite	-1.535	-2.095	
Chalcedony	-0.271	-0.370	
Chrysotile	-3.927	-5.358	
Clinochlore-14A	-6.714	-9.160	
Clinoptilolite	-5.342	-7.288	
Clinoptilolite-K	-6.670	-9.100	
Clinoptilolite-Na	-0.020	-0.027	
Clinoptilolite-hy-K	-6.664	-9.092	
Clinoptilolite-hy-Na	-0.018	-0.024	
Coesite	-0.810	-1.105	
Corundum	-4.450	-6.072	
Cristobalite(alpha)	-0.551	-0.751	
Cristobalite(beta)	-0.994	-1.356	
Crocoite	-1.741	-2.375	
Dawsonite	-0.920	-1.256	
Diaspore	-0.230	-0.313	
Diopside	-7.204	-9.829	
Dolomite	-3.382	-4.614	
Dolomite-dis	-4.927	-6.721	
Dolomite-ord	-3.382	-4.614	
Enstatite	-3.594	-4.903	
Epsomite	-7.087	-9.668	
Fe(OH)3	-6.518	-8.893	

Ferrite-Zn	-6.113	-8.340	
Fluorapatite	-6.840	-9.331	
GdPO4:H2O	-4.167	-5.685	
Gibbsite	-0.826	-1.127	
Goethite	-1.397	-1.905	
Gypsum	-6.271	-8.555	
Halite	-6.772	-9.239	
Hematite	-1.832	-2.500	
Hexahydrite	-7.322	-9.989	
Hydrocerussite	-6.339	-8.648	
Ice	-0.139	-0.190	
Illite	-1.275	-1.739	
Jadeite	-1.647	-2.247	
K-Feldspar	0.000	0.000	
Kalicinite	-6.806	-9.285	
Kalsilite	-3.175	-4.332	
Kaolinite	-0.948	-1.294	
Kyanite	-5.812	-7.929	
LaPO4:H2O	-2.076	-2.832	
Lanarkite	-7.170	-9.782	
Lansfordite	-4.425	-6.037	
Laumontite	-5.779	-7.884	
Lawsonite	-6.325	-8.630	
Litharge	-6.075	-8.288	
Magnesite	-1.875	-2.557	
Manganite	-4.459	-6.084	
Massicot	-6.250	-8.527	
Maximum_Microcline	0.000	0.000	satd
Mesolite	0.000	0.000	satd
Mirabilite	-4.025	-5.491	
MnO2(gamma)	-1.518	-2.071	
Monohydrocalcite	-3.971	-5.417	
Montmor-Ca	-1.392	-1.900	
Montmor-Cs	-4.463	-6.089	
Montmor-K	-1.113	-1.518	
Montmor-Mg	-1.003	-1.369	
Montmor-Na	-0.459	-0.626	
Mordenite	-2.805	-3.827	
Muscovite	0.000	0.000	satd
Na2CO3	-6.877	-9.382	
Na2CO3:7H2O	-5.645	-7.701	
Nahcolite	-3.393	-4.629	
Natrolite	-1.039	-1.418	
Natron	-5.311	-7.246	
NdOHCO3	-6.894	-9.405	
NdPO4:H2O	-3.172	-4.327	
Nepheline	-3.060	-4.174	
Nesquehonite	-4.578	-6.246	
Ni(OH)2	-3.579	-4.882	
Ni2SiO4	0.000	0.000	satd
NiCO3	-5.655	-7.715	
Nontronite-Ca	-0.878	-1.198	
Nontronite-H	-1.574	-2.148	
Nontronite-K	-0.668	-0.912	
Nontronite-Mg	-0.559	-0.762	
Nontronite-Na	-0.011	-0.015	
Paragonite	-0.919	-1.253	
Paralaurionite	-6.631	-9.046	
Pb3(PO4)2	-5.482	-7.478	
Pb4O(PO4)2	-6.314	-8.614	
PbHPO4	-4.446	-6.066	
Petalite	-6.150	-8.391	
Phlogopite	-2.518	-3.435	

Plattnerite	-1.438	-1.962	
PuO2	-4.797	-6.544	
Pyrolusite	0.000	0.000	satd
Pyromorphite	0.000	0.000	satd
Pyrophyllite	-2.576	-3.514	
Quartz	0.000	0.000	satd
Rutile	0.000	0.000	satd
Sanidine_high	-1.199	-1.636	
Saponite-Ca	-1.829	-2.495	
Saponite-Cs	-4.966	-6.775	
Saponite-H	-2.525	-3.445	
Saponite-K	-1.619	-2.209	
Saponite-Mg	-1.509	-2.059	
Saponite-Na	-0.962	-1.312	
Scolecite	-3.989	-5.442	
Sellaite	-7.318	-9.984	
SiO2(am)	-1.286	-1.754	
Sillimanite	-6.446	-8.794	
SmPO4:H2O	-3.669	-5.006	
Smectite-low-Fe-Mg	-7.076	-9.653	
Smithsonite	-4.432	-6.047	
SrZrO3	98.023	133.732	ssatd
Stilbite	-1.918	-2.616	
Talc	-1.938	-2.644	
Thenardite	-4.850	-6.616	
Thermonatrite	-6.658	-9.083	
Trevorite	-2.341	-3.193	
Tridymite	-0.172	-0.234	
Witherite	-0.345	-0.470	
Zincite	-3.864	-5.271	
Zn(OH)2(beta)	-4.590	-6.262	
Zn(OH)2(epsilon)	-4.318	-5.891	
Zn(OH)2(gamma)	-4.539	-6.192	
fix CO2(g)	0.000	0.000	satd
fix O2(g)	0.000	0.000	satd

--- Summary of Solid Solutions ---

--- Carbonate-Calcite ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Calcite	5.1742E-02	-1.2862	0.0000	-1.2862
Magnesite	9.4564E-01	-0.0243	0.0000	-0.0243
Rhodochrosite	1.2046E-09	-8.9192	0.0000	-8.9192
Siderite	1.8659E-18	-17.7291	0.0000	-17.7291
Smithsonite	2.6195E-03	-2.5818	0.0000	-2.5818
Strontianite	1.4972E-24	-23.8247	0.0000	-23.8247

Mineral	Log Q/K	Aff, kcal	State
Carbonate-Calcite	-1.850	-2.524	
Calcite	-1.850	-2.524	
Magnesite	-1.850	-2.524	
Rhodochrosite	-1.850	-2.524	
Siderite	-1.850	-2.524	
Smithsonite	-1.850	-2.524	
Strontianite	-1.850	-2.524	

--- Clinoptilolite-hy-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-hy-Ca	1.5021E-10	-9.8233	0.0000	-9.8233
Clinoptilolite-hy-Cs	4.7476E-42	-41.3235	0.0000	-41.3235
Clinoptilolite-hy-K	2.2582E-07	-6.6462	0.0000	-6.6462
Clinoptilolite-hy-Na	1.0000E+00	0.0000	0.0000	0.0000
Clinoptilolite-hy-Sr	3.1279E-53	-52.5047	0.0000	-52.5047

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-hy-ss	-0.018	-0.024	
Clinoptilolite-hy-Ca	-0.018	-0.024	
Clinoptilolite-hy-Cs	-0.018	-0.024	
Clinoptilolite-hy-K	-0.018	-0.024	
Clinoptilolite-hy-Na	-0.018	-0.024	
Clinoptilolite-hy-Sr	-0.018	-0.024	

--- Clinoptilolite-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-Ca	1.4304E-03	-2.8445	-6.9975	-9.8421
Clinoptilolite-Cs	1.1209E-12	-11.9504	-29.3981	-41.3485
Clinoptilolite-K	1.1810E-02	-1.9277	-4.7422	-6.6700
Clinoptilolite-NH4	1.4172E-66	-65.8486	-161.9875	-227.8360
Clinoptilolite-Na	9.8676E-01	-0.0058	-0.0142	-0.0200
Clinoptilolite-Sr	6.6122E-16	-15.1797	-37.3419	-52.5216

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-ss	0.000	0.000	satd
Clinoptilolite-Ca	0.000	0.000	satd
Clinoptilolite-Cs	0.000	0.000	satd
Clinoptilolite-K	0.000	0.000	satd
Clinoptilolite-NH4	0.000	0.000	satd
Clinoptilolite-Na	0.000	0.000	satd
Clinoptilolite-Sr	0.000	0.000	satd

--- Saponite-tri ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Saponite-Ca	2.2816E-03	-2.6418	1.7700	-0.8718
Saponite-H	1.7690E-05	-4.7523	3.1840	-1.5683
Saponite-K	9.8425E-03	-2.0069	1.3446	-0.6623
Saponite-Mg	2.1178E-02	-1.6741	1.1217	-0.5525
Saponite-Na	9.6668E-01	-0.0147	0.0099	-0.0049

Mineral	Log Q/K	Aff, kcal	State
Saponite-tri	-0.957	-1.305	
Saponite-Ca	-0.957	-1.305	
Saponite-H	-0.957	-1.305	
Saponite-K	-0.957	-1.305	
Saponite-Mg	-0.957	-1.305	
Saponite-Na	-0.957	-1.305	

--- Smectite-di ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Beidellite-Ca	3.3607E-08	-7.4736	5.0073	-2.4663
Beidellite-K	1.4508E-07	-6.8384	4.5817	-2.2567
Beidellite-Mg	3.1193E-07	-6.5059	4.3590	-2.1470
Beidellite-Na	1.4239E-05	-4.8465	3.2472	-1.5994
Montmor-Ca	6.0333E-05	-4.2194	2.8270	-1.3924
Montmor-K	4.2535E-04	-3.3712	2.2587	-1.1125
Montmor-Mg	9.1011E-04	-3.0409	2.0374	-1.0035
Montmor-Na	4.0711E-02	-1.3903	0.9315	-0.4588
Nontronite-Ca	2.1855E-03	-2.6604	1.7825	-0.8779
Nontronite-K	9.4345E-03	-2.0253	1.3569	-0.6683
Nontronite-Mg	2.0300E-02	-1.6925	1.1340	-0.5585
Nontronite-Na	9.2596E-01	-0.0334	0.0224	-0.0110

Mineral	Log Q/K	Aff, kcal	State
Smectite-di	0.000	0.000	satd
Beidellite-Ca	0.000	0.000	satd
Beidellite-K	0.000	0.000	satd
Beidellite-Mg	0.000	0.000	satd
Beidellite-Na	0.000	0.000	satd
Montmor-Ca	0.000	0.000	satd
Montmor-K	0.000	0.000	satd
Montmor-Mg	0.000	0.000	satd
Montmor-Na	0.000	0.000	satd
Nontronite-Ca	0.000	0.000	satd
Nontronite-K	0.000	0.000	satd
Nontronite-Mg	0.000	0.000	satd
Nontronite-Na	0.000	0.000	satd

--- Lanthanide hydroxide ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
La(OH)3	1.8874E-04	-3.7241	0.0000	-3.7241
Ce(OH)3	9.7373E-15	-14.0116	0.0000	-14.0116
Nd(OH)3(c)	7.5879E-01	-0.1199	0.0000	-0.1199
Gd(OH)3	1.9288E-01	-0.7147	0.0000	-0.7147
Sm(OH)3	4.8144E-02	-1.3175	0.0000	-1.3175

Mineral	Log Q/K	Aff, kcal	State
Lanthanide hydroxide	-8.450	-11.528	
La(OH)3	-8.450	-11.528	
Ce(OH)3	-8.450	-11.528	
Nd(OH)3(c)	-8.450	-11.528	
Gd(OH)3	-8.450	-11.528	
Sm(OH)3	-8.450	-11.528	

--- Rhabdophane-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaPO4:H2O	8.9779E-01	-0.0468	0.0000	-0.0468
CePO4:H2O	1.4647E-11	-10.8342	0.0000	-10.8342
NdPO4:H2O	7.2017E-02	-1.1426	0.0000	-1.1426
GdPO4:H2O	7.2877E-03	-2.1374	0.0000	-2.1374
SmPO4:H2O	2.2901E-02	-1.6401	0.0000	-1.6401

Mineral	Log Q/K	Aff, kcal	State
Rhabdophane-ss	-2.029	-2.769	
LaPO4:H2O	-2.029	-2.769	
CePO4:H2O	-2.029	-2.769	
NdPO4:H2O	-2.029	-2.769	
GdPO4:H2O	-2.029	-2.769	
SmPO4:H2O	-2.029	-2.769	

--- Lanthanide fluoride ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaF3:0.5H2O	9.0591E-01	-0.0429	0.0000	-0.0429
CeF3:0.5H2O	2.3424E-11	-10.6303	0.0000	-10.6303
NdF3:0.5H2O	9.1484E-02	-1.0387	0.0000	-1.0387
GdF3:0.5H2O	2.9275E-04	-3.5335	0.0000	-3.5335
SmF3:0.5H2O	2.3108E-03	-2.6362	0.0000	-2.6362

Mineral	Log Q/K	Aff, kcal	State
Lanthanide fluoride	-15.754	-21.493	
LaF3:0.5H2O	-15.754	-21.493	
CeF3:0.5H2O	-15.754	-21.493	
NdF3:0.5H2O	-15.754	-21.493	
GdF3:0.5H2O	-15.754	-21.493	
SmF3:0.5H2O	-15.754	-21.493	

--- Summary of Gases ---

Gas	Fugacity	Log fugacity
Al(g)	9.7072-192	-191.0129
B(g)	3.9409-204	-203.4044
BF3(g)	1.1756E-45	-44.9297
C(g)	3.0917-190	-189.5098
CH4(g)	3.5199-146	-145.4535
CO(g)	6.0395E-49	-48.2190
CO2(g)	3.1623E-04	-3.5000
Ca(g)	5.4464-154	-153.2639
Chlorine	1.6577E-31	-30.7805
Cs(g)	6.2281E-87	-86.2056
Cu(g)	1.9436E-82	-81.7114
Fluorine	1.1406E-86	-85.9429
H2(g)	6.1068E-42	-41.2142
H2O(g)	2.5943E-02	-1.5860
H2S(g)	1.0790-144	-143.9670
HCl(g)	4.9913E-20	-19.3018
HF(g)	4.6728E-16	-15.3304
K(g)	1.2715E-76	-75.8957
Li(g)	1.1282E-95	-94.9476
Mg(g)	1.8676-129	-128.7287
Nitrogen	1.2489E-22	-21.9035
NH3(g)	1.2859E-70	-69.8908
NO(g)	3.5190E-27	-26.4536
NO2(g)	2.4061E-21	-20.6187
Na(g)	6.9094E-73	-72.1606
O2(g)	2.0999E-01	-0.6778
Pb(g)	5.6020E-68	-67.2517
S2(g)	6.9612-232	-231.1573
SO2(g)	1.9130E-57	-56.7183
Si(g)	4.2257-221	-220.3741
SiF4(g)	2.1071E-46	-45.6763
Ti(g)	3.8019-231	-230.4200
TiCl4(g)	2.0846E-90	-89.6810
U(g)	9.8770-303	-302.0054
U2Cl10(g)	9.5788-270	-269.0187
U2Cl8(g)	1.7914-269	-268.7468
U2F10(g)	6.5592-187	-186.1831
UCl(g)	4.3962-260	-259.3569
UCl2(g)	5.8538-216	-215.2326
UCl3(g)	1.7072-169	-168.7677
UCl4(g)	2.6962-140	-139.5693
UCl5(g)	2.1908-148	-147.6594
UCl6(g)	3.3072-151	-150.4805
UF(g)	8.7467-246	-245.0582
UF2(g)	5.7447-207	-206.2407
UF3(g)	9.2851-162	-161.0322
UF4(g)	2.2152-113	-112.6546
UF5(g)	2.4206-106	-105.6161
UF6(g)	2.6046-113	-112.5843
UO(g)	7.8005-218	-217.1079
UO2(g)	1.4452-133	-132.8401
UO2Cl2(g)	1.0460E-83	-82.9805
UO2F2(g)	7.4467E-73	-72.1280
UO3(g)	1.0630E-80	-79.9735
UOF4(g)	6.6009E-91	-90.1804
Zn(g)	5.2357E-77	-76.2810

```
--- shifting e.s. solid(s) to the p.r.s. (shftz) ---

      shifted -- Celadonite
              - old mass=  1.24347E-03, new mass=  1.24347E-05
      shifted -- Maximum_Microcline
              - old mass=  1.92625E-02, new mass=  1.92625E-04
      shifted -- Mesolite
              - old mass=  3.13804E-03, new mass=  3.13804E-05
      shifted -- Muscovite
              - old mass=  1.01069E-03, new mass=  1.01069E-05
  not shifted -- Ni2SiO4
              - mass=  7.99991E-07
      shifted -- Pyrolusite
              - old mass=  1.95960E-04, new mass=  1.95960E-06
  not shifted -- Pyromorphite
              - mass=  1.92385E-11
      shifted -- Quartz
              - old mass=  9.47939E-02, new mass=  9.47939E-04
      shifted -- Rutile
              - old mass=  2.55555E-04, new mass=  2.55555E-06
      shifted -- Clinoptilolite-ss
              - old mass=  6.30412E-03, new mass=  6.30412E-05
      shifted -- Smectite-di
              - old mass=  1.21634E-03, new mass=  1.21634E-05

Stepping to zi=  6.0070E+00, delzi=  6.9719E-03, nord= 6
  time =  5.7938E+04 d, dltime =  6.7244E+01 d
Steps completed =   720, iter = 25, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -33.1457

Stepping to zi=  6.0078E+00, delzi=  8.7148E-04, nord= 6
  time =  5.7946E+04 d, dltime =  8.4055E+00 d
Steps completed =   721, iter = 10, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -33.1888

Stepping to zi=  6.0096E+00, delzi=  1.7430E-03, nord= 4
  time =  5.7963E+04 d, dltime =  1.6811E+01 d
Steps completed =   722, iter =  9, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -33.2692

Stepping to zi=  6.0131E+00, delzi=  3.4859E-03, nord= 6
  time =  5.7996E+04 d, dltime =  3.3622E+01 d
Steps completed =   723, iter =  6, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -33.4105

Stepping to zi=  6.0172E+00, delzi=  4.1542E-03, nord= 6
  time =  5.8037E+04 d, dltime =  4.0068E+01 d
Steps completed =   724, iter = 10, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -33.5534

Stepping to zi=  6.0202E+00, delzi=  2.9516E-03, nord= 6
  time =  5.8065E+04 d, dltime =  2.8468E+01 d
Steps completed =   725, iter =  9, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -33.6423

Stepping to zi=  6.0228E+00, delzi=  2.6432E-03, nord= 6
  time =  5.8090E+04 d, dltime =  2.5494E+01 d
Steps completed =   726, iter = 10, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -33.7149

Stepping to zi=  6.0261E+00, delzi=  3.2363E-03, nord= 6
  time =  5.8122E+04 d, dltime =  3.1214E+01 d
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```
Steps completed =   727, iter = 10, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -33.7961

Stepping to zi=  6.0297E+00, delzi=  3.6177E-03, nord= 6
  time =  5.8157E+04 d, dltime =  3.4893E+01 d
Steps completed =   728, iter =  8, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -33.8788

Stepping to zi=  6.0338E+00, delzi=  4.0804E-03, nord= 6
  time =  5.8196E+04 d, dltime =  3.9355E+01 d
Steps completed =   729, iter =  8, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -33.9634

Stepping to zi=  6.0384E+00, delzi=  4.6052E-03, nord= 6
  time =  5.8240E+04 d, dltime =  4.4417E+01 d
Steps completed =   730, iter =  9, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -34.0500

Stepping to zi=  6.0435E+00, delzi=  5.1293E-03, nord= 6
  time =  5.8290E+04 d, dltime =  4.9472E+01 d
Steps completed =   731, iter = 19, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -34.1372

Stepping to zi=  6.0491E+00, delzi=  5.6387E-03, nord= 6
  time =  5.8344E+04 d, dltime =  5.4386E+01 d
Steps completed =   732, iter = 10, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -34.2239

Stepping to zi=  6.0553E+00, delzi=  6.1964E-03, nord= 6
  time =  5.8404E+04 d, dltime =  5.9764E+01 d
Steps completed =   733, iter = 15, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -34.3101

Stepping to zi=  6.0622E+00, delzi=  6.8315E-03, nord= 6
  time =  5.8470E+04 d, dltime =  6.5890E+01 d
Steps completed =   734, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -34.3962

Stepping to zi=  6.0697E+00, delzi=  7.5404E-03, nord= 6
  time =  5.8543E+04 d, dltime =  7.2727E+01 d
Steps completed =   735, iter = 19, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -34.4823

Stepping to zi=  6.0780E+00, delzi=  8.3294E-03, nord= 6
  time =  5.8623E+04 d, dltime =  8.0338E+01 d
Steps completed =   736, iter =  7, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -34.5683

Stepping to zi=  6.0872E+00, delzi=  9.2040E-03, nord= 6
  time =  5.8712E+04 d, dltime =  8.8773E+01 d
Steps completed =   737, iter =  9, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -34.6544

Stepping to zi=  6.0974E+00, delzi=  1.0169E-02, nord= 6
  time =  5.8810E+04 d, dltime =  9.8084E+01 d
Steps completed =   738, iter =  8, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -34.7405

Stepping to zi=  6.1086E+00, delzi=  1.1233E-02, nord= 6
  time =  5.8918E+04 d, dltime =  1.0834E+02 d
Steps completed =   739, iter = 24, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -34.8267
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```
Stepping to zi=  6.1210E+00, delzi=  1.2406E-02, nord= 6
  time =  5.9038E+04 d, dltime =  1.1966E+02 d
Steps completed =   740, iter =  9, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -34.9128

Stepping to zi=  6.1347E+00, delzi=  1.3702E-02, nord= 6
  time =  5.9170E+04 d, dltime =  1.3215E+02 d
Steps completed =   741, iter =  6, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -34.9989

Stepping to zi=  6.1499E+00, delzi=  1.5133E-02, nord= 6
  time =  5.9316E+04 d, dltime =  1.4596E+02 d
Steps completed =   742, iter = 15, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -35.0850

Stepping to zi=  6.1666E+00, delzi=  1.6714E-02, nord= 6
  time =  5.9477E+04 d, dltime =  1.6120E+02 d
Steps completed =   743, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -35.1712

Stepping to zi=  6.1850E+00, delzi=  1.8460E-02, nord= 6
  time =  5.9655E+04 d, dltime =  1.7805E+02 d
Steps completed =   744, iter = 22, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -35.2573

Stepping to zi=  6.2054E+00, delzi=  2.0389E-02, nord= 6
  time =  5.9852E+04 d, dltime =  1.9665E+02 d
Steps completed =   745, iter = 12, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -35.3434

Stepping to zi=  6.2280E+00, delzi=  2.2519E-02, nord= 6
  time =  6.0069E+04 d, dltime =  2.1720E+02 d
Steps completed =   746, iter =  6, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -35.4295

Stepping to zi=  6.2528E+00, delzi=  2.4872E-02, nord= 6
  time =  6.0309E+04 d, dltime =  2.3990E+02 d
Steps completed =   747, iter =  9, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -35.5156

Stepping to zi=  6.2803E+00, delzi=  2.7471E-02, nord= 6
  time =  6.0574E+04 d, dltime =  2.6496E+02 d
Steps completed =   748, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -35.6017

Stepping to zi=  6.3096E+00, delzi=  2.9275E-02, nord= 6
  time =  6.0856E+04 d, dltime =  2.8235E+02 d
Steps completed =   749, iter = 23, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -35.6849

- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -


                    Reaction progress        =  6.30957344480158E+00
                    Log of reaction progress =       0.8000000


                    Time =  5.258E+09 sec
                         =  6.086E+04 days
                         =  1.666E+02 years

                    Log sec =        9.721
```

```
Log days =       4.784
Log years =      2.222

Temperature    =     25.000 degrees C
total pressure =      1.013 bars
```

Step size is limited by the print requirement

--- Reactant Summary ---

Reactant	Moles	Delta moles	Mass, g	Delta Mass, g
Tuff	9.3690E+01	6.3096E+00	1.9288E+03	1.2989E+02

```
Current total mass =  1.92875E+03 grams
Delta total mass   =  1.29892E+02 grams
Delta total volume =      0.00000 cc
```

Reactant	Rel. Rate mol/mol	Rate mol/s	Rate mol/s/cm2
Tuff	1.0000E+00	1.2000E-09	2.5000E-15

Reactant	Affinity kcal/mol	Surface Area mol/s/cm2
Tuff	999.00000	4.8000E+05

Reactant	Rate Constants, mol/s/cm2	
Tuff		
	Forward	2.5000E-15

```
Affinity of the overall irreversible reaction=     0.000 kcal
Contributions from irreversible reactions
with no thermodynamic data are not included
```

--- Element Totals for the Aqueous Solution ---

Element	mg/kg soln.	Molality	Moles
O	8.862680E+05	5.562484E+01	5.523964E+01
Al	5.932485E-03	2.207890E-07	2.192600E-07
B	1.343005E-01	1.247438E-05	1.238800E-05
Ba	1.377103E-05	1.006973E-10	1.000000E-10
Ca	7.452958E-04	1.867369E-08	1.854437E-08
Ce	1.405060E-19	1.006972E-24	9.999992E-25
Cl	7.160103E+00	2.028044E-04	2.014000E-04
Cr	3.014705E+02	5.822124E-03	5.781806E-03
Cs	2.725928E-11	2.059582E-16	2.045320E-16
Cu	6.690954E-10	1.057322E-14	1.050000E-14
F	2.279765E-01	1.204982E-05	1.196637E-05

Fe	1.140547E-08	2.050787E-13	2.036586E-13
Gd	1.576889E-09	1.006973E-14	9.999998E-15
H	1.114440E+05	1.110273E+02	1.102584E+02
C	1.370452E+02	1.145756E-02	1.137822E-02
P	6.318055E+00	2.048316E-04	2.034131E-04
K	2.022634E+00	5.194777E-05	5.158803E-05
La	1.392932E-09	1.006973E-14	9.999998E-15
Li	6.960374E-07	1.006973E-10	1.000000E-10
Mg	2.177001E-02	8.994363E-07	8.932077E-07
Mn	4.358966E-11	7.967420E-16	7.912246E-16
Mo	2.192735E+02	2.295059E-03	2.279166E-03
N	1.994509E+00	1.429902E-04	1.420000E-04
Na	1.227832E+03	5.363047E-02	5.325908E-02
Nd	1.446426E-09	1.006973E-14	9.999998E-15
Ni	1.002259E-04	1.714839E-09	1.702964E-09
Pb	7.609529E-07	3.687869E-12	3.662330E-12
Pu	2.446810E-09	1.006973E-14	9.999999E-15
S	3.753206E+02	1.175344E-02	1.167205E-02
Si	4.311442E+00	1.541515E-04	1.530840E-04
Sm	1.507797E-09	1.006973E-14	9.999998E-15
Sr	2.756296E-31	3.158858E-36	3.136983E-36
Ti	1.076396E-05	2.257488E-10	2.241855E-10
U	2.386933E-09	1.006973E-14	1.000000E-14
V	4.797281E+00	9.456508E-05	9.391022E-05
Zn	6.557252E-06	1.006973E-10	1.000000E-10
Zr	9.147872E-16	1.006974E-20	1.000001E-20

Single ion activities and activity coefficients are here defined
with respect to the modified NBS pH scale

	pH	Eh	pe
modified NBS pH scale	9.2029	0.6746	1.1404E+01
rational pH scale	9.1217	0.6794	1.1485E+01

pHCl = 12.9959

Oxygen fugacity = 2.09991E-01
Log oxygen fugacity = -0.67780

Activity of water = 0.99865
Log activity of water = -0.00059

Ionic strength = 7.178437E-02 molal
Sum of molalities = 0.0841122923060
Osmotic coefficient = 0.89242

Mass of solution = 0.997217 kg
Mass of solutes = 0.004142 kg
Conc. of solutes = 0.415307 per cent (w/w)

Moles of solvent H2O = 5.51240E+01
Mass of solvent H2O = 9.93075E-01 kg

Species	Molality	Log molality	Log gamma	Log activity

Na+	5.1628E-02	-1.2871	-0.1061	-1.3932
SO4--	1.0353E-02	-1.9849	-0.3869	-2.3719
HCO3-	9.5357E-03	-2.0206	-0.0907	-2.1113
CrO4--	5.8164E-03	-2.2353	-0.3869	-2.6223
MoO4--	2.2951E-03	-2.6392	-0.3741	-3.0134
NaSO4-	1.3984E-03	-2.8544	-0.0907	-2.9450
CO3--	1.3705E-03	-2.8631	-0.3741	-3.2373
NaHCO3(aq)	4.4627E-04	-3.3504	0.0000	-3.3504
O2(aq)	2.6085E-04	-3.5836	0.0075	-3.5761
Cl-	2.0172E-04	-3.6953	-0.0977	-3.7930
HPO4--	1.7387E-04	-3.7598	-0.3869	-4.1467
NO3-	1.4299E-04	-3.8447	-0.0977	-3.9424
SiO2(aq)	1.0016E-04	-3.9993	0.0000	-3.9993
NaCO3-	9.4327E-05	-4.0254	-0.0907	-4.1160
VO3OH--	8.4877E-05	-4.0712	-0.3869	-4.4581
K+	5.0386E-05	-4.2977	-0.1131	-4.4108
NaHSiO3(aq)	3.2048E-05	-4.4942	0.0000	-4.4942
NaHPO4-	2.9567E-05	-4.5292	-0.0907	-4.6199
HSiO3-	2.1936E-05	-4.6588	-0.0907	-4.7495
OH-	2.0011E-05	-4.6987	-0.0941	-4.7928
F-	1.2010E-05	-4.9204	-0.0941	-5.0145
CO2(aq)	1.0558E-05	-4.9764	0.0075	-4.9689
HVO4--	9.1430E-06	-5.0389	-0.3869	-5.4258
BO2-	6.3843E-06	-5.1949	-0.0907	-5.2856
HCrO4-	5.7535E-06	-5.2401	-0.0907	-5.3307
B(OH)3(aq)	5.7001E-06	-5.2441	0.0000	-5.2441
KSO4-	1.5403E-06	-5.8124	-0.0907	-5.9031
NaCl(aq)	1.0885E-06	-5.9632	0.0000	-5.9632
H2PO4-	8.8414E-07	-6.0535	-0.0907	-6.1442
Mg++	4.5866E-07	-6.3385	-0.3339	-6.6725
PO4---	4.1705E-07	-6.3798	-0.8858	-7.2656
NaB(OH)4(aq)	3.8992E-07	-6.4090	0.0000	-6.4090
H2VO4-	3.3495E-07	-6.4750	-0.0907	-6.5657
MgSO4(aq)	2.3302E-07	-6.6326	0.0000	-6.6326
AlO2-	2.1918E-07	-6.6592	-0.0907	-6.7499
VO2(OH)2-	2.0757E-07	-6.6828	-0.0907	-6.7735
MgCO3(aq)	1.1727E-07	-6.9308	0.0000	-6.9308
NaOH(aq)	1.0335E-07	-6.9857	0.0000	-6.9857
MgPO4-	5.5156E-08	-7.2584	-0.0907	-7.3491
NaF(aq)	3.9327E-08	-7.4053	0.0000	-7.4053
MgHCO3+	2.2803E-08	-7.6420	-0.1061	-7.7481
KHPO4-	2.0567E-08	-7.6868	-0.0907	-7.7775
MgHPO4(aq)	1.2327E-08	-7.9091	0.0000	-7.9091
Ca++	9.8122E-09	-8.0082	-0.3710	-8.3792
H2SiO4--	6.7949E-09	-8.1678	-0.3869	-8.5547
CaCO3(aq)	5.1358E-09	-8.2894	0.0000	-8.2894
VO4---	2.3471E-09	-8.6295	-0.8858	-9.5153
CaSO4(aq)	2.2909E-09	-8.6400	0.0000	-8.6400
Cr2O7--	1.8048E-09	-8.7436	-0.3869	-9.1305
Ni++	1.3687E-09	-8.8637	-0.3710	-9.2347
NaAlO2(aq)	1.2991E-09	-8.8864	0.0000	-8.8864
CaPO4-	8.0504E-10	-9.0942	-0.0907	-9.1849
H+	7.5564E-10	-9.1217	-0.0812	-9.2029
CaHCO3+	4.5942E-10	-9.3378	-0.1061	-9.4439
NiSO4(aq)	3.3049E-10	-9.4808	0.0000	-9.4808
HAlO2(aq)	3.1452E-10	-9.5024	0.0000	-9.5024
HSO4-	3.1265E-10	-9.5049	-0.0907	-9.5956
Ti(OH)4(aq)	2.2575E-10	-9.6464	0.0000	-9.6464
KOH(aq)	2.1452E-10	-9.6685	0.0000	-9.6685
KCl(aq)	2.0026E-10	-9.6984	0.0000	-9.6984
CaHPO4(aq)	1.6371E-10	-9.7859	0.0000	-9.7859
MgB(OH)4+	1.1094E-10	-9.9549	-0.1061	-10.0610

--- Summary of Instantaneously Precipitated Solid Phases ---
(defined by derivatives)

--- Theoretical Rock Composition ---
g/kg

O	5.181367E+01
Al	6.307677E+00
Ca	3.743584E-01
Cl	1.427799E-11
Cs	3.275217E-13
Fe	6.119338E-01
H	7.307109E-01
C	2.050726E-03
P	3.742252E-11
K	3.828011E+00
Mg	1.381789E-01
Mn	4.839743E-02
N	1.954356E-66
Na	2.488319E+00
Pb	4.172320E-10
Si	3.360168E+01
Ti	5.500751E-02

--- Oxide Percentages ---

Oxide Theoretical rock

Total = 0.0000

Phase/end-member	d mol/d zi	d grams/d zi	d vol (cc)/d zi
Celadonite	1.2310E-03	4.8840E-01	1.9340E-01
Maximum_Microcline	1.9070E-02	5.3077E+00	2.0737E+00
Mesolite	3.1067E-03	1.2047E+00	5.3186E-01
Muscovite	1.0006E-03	3.9855E-01	1.4080E-01
Ni2SiO4	-2.5553E-12	-5.3525E-10	-1.0888E-10
Pyrolusite	1.9400E-04	1.6866E-02	9.7000E-02
Pyromorphite	8.8689E-14	1.2030E-10	1.7087E-11
Quartz	9.3846E-02	5.6387E+00	2.1292E+00
Rutile	2.5300E-04	2.0209E-02	4.7615E-03
fix CO2(g)	3.7599E-05	1.6547E-03	0.0000E+00
fix O2(g)	-7.0649E-04	-2.2607E-02	0.0000E+00
Clinoptilolite-ss			
Clinoptilolite-Ca	8.9275E-06	1.2002E-02	4.4637E-03
Clinoptilolite-Cs	1.5653E-16	2.7169E-13	7.8265E-14
Clinoptilolite-K	7.3709E-05	1.0397E-01	3.6855E-02
Clinoptilolite-NH4	8.8627E-69	1.1854E-65	4.4313E-66
Clinoptilolite-Na	6.1584E-03	8.3425E+00	3.0792E+00
Clinoptilolite-Sr	0.0000E+00	0.0000E+00	0.0000E+00
Smectite-di			
Beidellite-Ca	4.0469E-11	1.4834E-08	5.2419E-09
Beidellite-K	1.7470E-10	6.5136E-08	2.3357E-08
Beidellite-Mg	3.7562E-10	1.3671E-07	4.6273E-08
Beidellite-Na	1.7146E-08	6.3018E-06	2.2382E-06
Montmor-Ca	7.2651E-08	2.6594E-05	3.6326E-05
Montmor-K	5.1220E-07	1.9071E-04	2.5610E-04
Montmor-Mg	1.0959E-06	3.9831E-04	5.4797E-04
Montmor-Na	4.9024E-05	1.7993E-02	2.4512E-02

Nontronite-Ca	2.6317E-06	1.1166E-03	3.4502E-04
Nontronite-K	1.1361E-05	4.8917E-03	1.5368E-03
Nontronite-Mg	2.4444E-05	1.0308E-02	3.1719E-03
Nontronite-Na	1.1150E-03	4.7418E-01	1.4730E-01

--- Summary of Solid Phases (E.S.+P.R.S.) ---

Phase/End-member	Log moles	Moles	Mass, g	Volume, cc
Alunite	-2.5559	2.7801E-03	1.1516E+00	8.1624E-01
Celadonite	-2.1074	7.8084E-03	3.0979E+00	1.2267E+00
Diaspore	-1.6079	2.4665E-02	1.4796E+00	4.3804E-01
Fluorapatite	-3.9881	1.0278E-04	5.1834E-02	5.1392E-02
Hematite	-3.7144	1.9300E-04	3.0820E-02	5.8428E-03
Maximum_Microcline	-0.9683	1.0758E-01	2.9943E+01	1.1698E+01
Mesolite	-1.7151	1.9272E-02	7.4735E+00	3.2994E+00
Muscovite	-1.7769	1.6716E-02	6.6582E+00	2.3521E+00
Ni2SiO4	-2.1930	6.4125E-03	1.3432E+00	2.7324E-01
Nontronite-H	-4.9990	1.0023E-05	4.1899E-03	5.0117E-03
Pyrolusite	-2.7405	1.8177E-03	1.5803E-01	9.0886E-01
Pyromorphite	-10.7152	1.9268E-11	2.6134E-08	3.7121E-09
Quartz	-0.0928	8.0759E-01	4.8523E+01	1.8323E+01
Rutile	-2.7969	1.5963E-03	1.2751E-01	3.0043E-02
fix CO2(g)	2.3010	1.9999E+02	8.8015E+03	0.0000E+00
fix O2(g)	2.3010	2.0000E+02	6.3996E+03	0.0000E+00
Clinoptilolite-ss	-1.6075	2.4689E-02		
Clinoptilolite-Ca	-4.4520	3.5316E-05	4.7480E-02	1.7658E-02
Clinoptilolite-Cs	-10.5400	2.8843E-11	5.0064E-08	1.4422E-08
Clinoptilolite-K	-3.5352	2.9159E-04	4.1128E-01	1.4579E-01
Clinoptilolite-NH4	-67.4577	3.4855E-68	4.6618E-65	1.7428E-65
Clinoptilolite-Na	-1.6133	2.4362E-02	3.3002E+01	1.2181E+01
Clinoptilolite-Sr	-10.2389	5.7687E-11	8.2309E-08	2.8843E-08
Smectite-di	-2.1288	7.4345E-03		
Beidellite-Ca	-9.1868	6.5040E-10	2.3841E-07	8.4246E-08
Beidellite-K	-8.7770	1.6711E-09	6.2307E-07	2.2342E-07
Beidellite-Mg	-8.6428	2.2760E-09	8.2836E-07	2.8037E-07
Beidellite-Na	-7.1182	7.6180E-08	2.7999E-05	9.9446E-06
Montmor-Ca	-6.1556	6.9887E-07	2.5582E-04	3.4943E-04
Montmor-K	-5.5614	2.7452E-06	1.0221E-03	1.3726E-03
Montmor-Mg	-5.2325	5.8544E-06	2.1277E-03	2.9272E-03
Montmor-Na	-3.6626	2.1748E-04	7.9819E-02	1.0874E-01
Nontronite-Ca	-3.3978	4.0013E-04	1.6977E-01	5.2457E-02
Nontronite-K	-3.1740	6.6985E-04	2.8843E-01	9.0611E-02
Nontronite-Mg	-3.2299	5.8896E-04	2.4836E-01	7.6424E-02
Nontronite-Na	-2.2558	5.5487E-03	2.3597E+00	7.3303E-01

	Mass, grams	Volume, cc
Created	1.533772E+04	5.283815E+01
Destroyed	1.298918E+02	0.000000E+00
Net	1.520783E+04	5.283815E+01

Warning-- these volume totals may be incomplete because
of missing partial molar volume data in the data base

--- Summary of Pure Mineral Saturation States ---

Mineral	Log Q/K	Aff, kcal	State
Alamosite	-3.122	-4.259	
Albite	-0.022	-0.030	
Albite_high	-1.341	-1.829	
Albite_low	-0.022	-0.030	
Alstonite	-7.213	-9.841	
Analcime	-0.148	-0.202	
Analcime-dehy	-6.510	-8.882	
Andalusite	-6.082	-8.298	
Anglesite	-6.373	-8.695	
Anhydrite	-6.445	-8.792	
Aragonite	-3.281	-4.476	
BaCrO4	-3.123	-4.261	
BaHPO4	-7.180	-9.795	
BaZrO3	83.676	114.158	ssatd
Barite	-2.834	-3.866	
Bassanite	-7.090	-9.673	
Beidellite-Ca	-2.466	-3.365	
Beidellite-Cs	-5.861	-7.997	
Beidellite-H	-3.163	-4.315	
Beidellite-K	-2.257	-3.079	
Beidellite-Mg	-2.147	-2.929	
Beidellite-Na	-1.599	-2.182	
Boehmite	-0.634	-0.864	
Boric_acid	-5.086	-6.939	
Brucite	-4.566	-6.229	
Bunsenite	-3.301	-4.504	
CaSO4:0.5H2O(beta)	-7.258	-9.902	
CaZrO3	139.760	190.672	ssatd
Calcite	-3.136	-4.279	
CeO2	-3.183	-4.343	
Celadonite	0.000	0.000	satd
Cerussite	-1.554	-2.119	
Chalcedony	-0.271	-0.370	
Chrysotile	-3.927	-5.358	
Clinochlore-14A	-6.714	-9.160	
Clinoptilolite	-5.450	-7.435	
Clinoptilolite-K	-6.670	-9.100	
Clinoptilolite-Na	-0.020	-0.027	
Clinoptilolite-hy-K	-6.664	-9.092	
Clinoptilolite-hy-Na	-0.018	-0.024	
Coesite	-0.810	-1.105	
Corundum	-4.450	-6.072	
Cristobalite(alpha)	-0.551	-0.751	
Cristobalite(beta)	-0.994	-1.356	
Crocoite	-1.759	-2.400	
Dawsonite	-0.920	-1.256	
Diaspore	-0.230	-0.313	
Diopside	-7.204	-9.829	
Dolomite	-3.382	-4.614	
Dolomite-dis	-4.927	-6.721	
Dolomite-ord	-3.382	-4.614	
Enstatite	-3.594	-4.903	
Epsomite	-7.086	-9.667	
Fe(OH)3	-6.518	-8.893	
Ferrite-Zn	-6.130	-8.364	
Fluorapatite	-6.748	-9.206	
GdPO4:H2O	-4.175	-5.695	
Gibbsite	-0.826	-1.127	
Goethite	-1.397	-1.905	
Gypsum	-6.270	-8.554	

Halite	-6.772	-9.239	
Hematite	-1.832	-2.500	
Hexahydrite	-7.321	-9.988	
Hydrocerussite	-6.394	-8.723	
Ice	-0.139	-0.190	
Illite	-1.275	-1.739	
Jadeite	-1.647	-2.247	
K-Feldspar	0.000	0.000	
Kalicinite	-6.806	-9.285	
Kalsilite	-3.175	-4.332	
Kaolinite	-0.948	-1.294	
Kyanite	-5.812	-7.929	
LaPO4:H2O	-2.047	-2.793	
Lanarkite	-7.206	-9.831	
Lansfordite	-4.425	-6.037	
Laumontite	-5.779	-7.884	
Lawsonite	-6.325	-8.630	
Litharge	-6.093	-8.313	
Magnesite	-1.875	-2.557	
Manganite	-4.459	-6.084	
Massicot	-6.268	-8.552	
Maximum_Microcline	0.000	0.000	satd
Mesolite	0.000	0.000	satd
Mirabilite	-4.024	-5.490	
MnO2(gamma)	-1.518	-2.071	
Monohydrocalcite	-3.971	-5.417	
Montmor-Ca	-1.392	-1.900	
Montmor-Cs	-4.721	-6.441	
Montmor-K	-1.113	-1.518	
Montmor-Mg	-1.003	-1.369	
Montmor-Na	-0.459	-0.626	
Mordenite	-2.805	-3.827	
Muscovite	0.000	0.000	satd
Na2CO3	-6.877	-9.382	
Na2CO3:7H2O	-5.645	-7.701	
Nahcolite	-3.393	-4.629	
Natrolite	-1.039	-1.418	
Natron	-5.311	-7.246	
NdOHCO3	-6.909	-9.426	
NdPO4:H2O	-3.157	-4.307	
Nepheline	-3.060	-4.174	
Nesquehonite	-4.578	-6.246	
Ni(OH)2	-3.579	-4.882	
Ni2SiO4	0.000	0.000	satd
NiCO3	-5.655	-7.715	
Nontronite-Ca	-0.878	-1.198	
Nontronite-H	-1.574	-2.148	
Nontronite-K	-0.668	-0.912	
Nontronite-Mg	-0.559	-0.762	
Nontronite-Na	-0.011	-0.015	
Paragonite	-0.919	-1.253	
Paralaurionite	-6.648	-9.070	
Pb3(PO4)2	-5.476	-7.471	
Pb4O(PO4)2	-6.327	-8.631	
PbHPO4	-4.434	-6.049	
Petalite	-6.151	-8.391	
Phlogopite	-2.518	-3.435	
Plattnerite	-1.457	-1.987	
PuO2	-4.796	-6.543	
Pyrolusite	0.000	0.000	satd
Pyromorphite	0.000	0.000	satd
Pyrophyllite	-2.576	-3.514	
Quartz	0.000	0.000	satd

Rutile	0.000	0.000	satd
Sanidine_high	-1.199	-1.636	
Saponite-Ca	-1.829	-2.495	
Saponite-Cs	-5.224	-7.127	
Saponite-H	-2.525	-3.445	
Saponite-K	-1.619	-2.209	
Saponite-Mg	-1.509	-2.059	
Saponite-Na	-0.962	-1.312	
Scolecite	-3.989	-5.442	
Sellaite	-7.317	-9.983	
SiO2(am)	-1.286	-1.754	
Sillimanite	-6.446	-8.794	
SmPO4:H2O	-3.677	-5.017	
Smectite-low-Fe-Mg	-7.076	-9.653	
Smithsonite	-4.450	-6.070	
SrZrO3	95.029	129.647	ssatd
Stilbite	-1.918	-2.616	
Talc	-1.938	-2.644	
Thenardite	-4.849	-6.616	
Thermonatrite	-6.658	-9.083	
Trevorite	-2.341	-3.193	
Tridymite	-0.171	-0.234	
Witherite	-0.345	-0.471	
Zincite	-3.881	-5.295	
Zn(OH)2(beta)	-4.607	-6.286	
Zn(OH)2(epsilon)	-4.336	-5.915	
Zn(OH)2(gamma)	-4.556	-6.216	
fix CO2(g)	0.000	0.000	satd
fix O2(g)	0.000	0.000	satd

--- Summary of Solid Solutions ---

--- Carbonate-Calcite ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Calcite	5.1748E-02	-1.2861	0.0000	-1.2861
Magnesite	9.4574E-01	-0.0242	0.0000	-0.0242
Rhodochrosite	1.2047E-09	-8.9191	0.0000	-8.9191
Siderite	1.8661E-18	-17.7291	0.0000	-17.7291
Smithsonite	2.5160E-03	-2.5993	0.0000	-2.5993
Strontianite	1.5160E-27	-26.8193	0.0000	-26.8193

Mineral	Log Q/K	Aff, kcal	State
Carbonate-Calcite	-1.850	-2.524	
Calcite	-1.850	-2.524	
Magnesite	-1.850	-2.524	
Rhodochrosite	-1.850	-2.524	
Siderite	-1.850	-2.524	
Smithsonite	-1.850	-2.524	
Strontianite	-1.850	-2.524	

--- Clinoptilolite-hy-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-hy-Ca	1.5021E-10	-9.8233	0.0000	-9.8233
Clinoptilolite-hy-Cs	9.2587E-45	-44.0335	0.0000	-44.0335
Clinoptilolite-hy-K	2.2581E-07	-6.6462	0.0000	-6.6462
Clinoptilolite-hy-Na	1.0000E+00	0.0000	0.0000	0.0000
Clinoptilolite-hy-Sr	2.0141E-58	-57.6959	0.0000	-57.6959

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-hy-ss	-0.018	-0.024	
Clinoptilolite-hy-Ca	-0.018	-0.024	
Clinoptilolite-hy-Cs	-0.018	-0.024	
Clinoptilolite-hy-K	-0.018	-0.024	
Clinoptilolite-hy-Na	-0.018	-0.024	
Clinoptilolite-hy-Sr	-0.018	-0.024	

--- Clinoptilolite-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-Ca	1.4304E-03	-2.8445	-6.9975	-9.8421
Clinoptilolite-Cs	1.8465E-13	-12.7336	-31.3248	-44.0584
Clinoptilolite-K	1.1810E-02	-1.9277	-4.7422	-6.6700
Clinoptilolite-NH4	1.4186E-66	-65.8481	-161.9864	-227.8345
Clinoptilolite-Na	9.8676E-01	-0.0058	-0.0142	-0.0200
Clinoptilolite-Sr	2.0893E-17	-16.6800	-41.0328	-57.7128

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-ss	0.000	0.000	satd
Clinoptilolite-Ca	0.000	0.000	satd
Clinoptilolite-Cs	0.000	0.000	satd
Clinoptilolite-K	0.000	0.000	satd
Clinoptilolite-NH4	0.000	0.000	satd
Clinoptilolite-Na	0.000	0.000	satd
Clinoptilolite-Sr	0.000	0.000	satd

--- Saponite-tri ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Saponite-Ca	2.2816E-03	-2.6418	1.7700	-0.8718
Saponite-H	1.7690E-05	-4.7523	3.1840	-1.5683
Saponite-K	9.8425E-03	-2.0069	1.3446	-0.6623
Saponite-Mg	2.1177E-02	-1.6741	1.1217	-0.5525
Saponite-Na	9.6668E-01	-0.0147	0.0099	-0.0049

Mineral	Log Q/K	Aff, kcal	State
Saponite-tri	-0.957	-1.305	
Saponite-Ca	-0.957	-1.305	

Saponite-H	-0.957	-1.305
Saponite-K	-0.957	-1.305
Saponite-Mg	-0.957	-1.305
Saponite-Na	-0.957	-1.305

--- Smectite-di ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Beidellite-Ca	3.3607E-08	-7.4736	5.0073	-2.4663
Beidellite-K	1.4508E-07	-6.8384	4.5817	-2.2567
Beidellite-Mg	3.1193E-07	-6.5059	4.3590	-2.1470
Beidellite-Na	1.4239E-05	-4.8465	3.2472	-1.5994
Montmor-Ca	6.0333E-05	-4.2194	2.8270	-1.3924
Montmor-K	4.2535E-04	-3.3712	2.2587	-1.1125
Montmor-Mg	9.1012E-04	-3.0409	2.0374	-1.0035
Montmor-Na	4.0712E-02	-1.3903	0.9315	-0.4588
Nontronite-Ca	2.1855E-03	-2.6604	1.7825	-0.8779
Nontronite-K	9.4344E-03	-2.0253	1.3569	-0.6683
Nontronite-Mg	2.0300E-02	-1.6925	1.1340	-0.5585
Nontronite-Na	9.2596E-01	-0.0334	0.0224	-0.0110

Mineral	Log Q/K	Aff, kcal	State
Smectite-di	0.000	0.000	satd
Beidellite-Ca	0.000	0.000	satd
Beidellite-K	0.000	0.000	satd
Beidellite-Mg	0.000	0.000	satd
Beidellite-Na	0.000	0.000	satd
Montmor-Ca	0.000	0.000	satd
Montmor-K	0.000	0.000	satd
Montmor-Mg	0.000	0.000	satd
Montmor-Na	0.000	0.000	satd
Nontronite-Ca	0.000	0.000	satd
Nontronite-K	0.000	0.000	satd
Nontronite-Mg	0.000	0.000	satd
Nontronite-Na	0.000	0.000	satd

--- Lanthanide hydroxide ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
La(OH)3	1.9729E-04	-3.7049	0.0000	-3.7049
Ce(OH)3	1.0161E-14	-13.9931	0.0000	-13.9931
Nd(OH)3(c)	7.6819E-01	-0.1145	0.0000	-0.1145
Gd(OH)3	1.8533E-01	-0.7320	0.0000	-0.7320
Sm(OH)3	4.6276E-02	-1.3346	0.0000	-1.3346

Mineral	Log Q/K	Aff, kcal	State
Lanthanide hydroxide	-8.471	-11.557	
La(OH)3	-8.471	-11.557	
Ce(OH)3	-8.471	-11.557	

Nd(OH)3(c)	-8.471	-11.557
Gd(OH)3	-8.471	-11.557
Sm(OH)3	-8.471	-11.557

--- Rhabdophane-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaPO4:H2O	9.0203E-01	-0.0448	0.0000	-0.0448
CePO4:H2O	1.4692E-11	-10.8329	0.0000	-10.8329
NdPO4:H2O	7.0079E-02	-1.1544	0.0000	-1.1544
GdPO4:H2O	6.7309E-03	-2.1719	0.0000	-2.1719
SmPO4:H2O	2.1158E-02	-1.6745	0.0000	-1.6745

Mineral	Log Q/K	Aff, kcal	State
Rhabdophane-ss	-2.003	-2.732	
LaPO4:H2O	-2.003	-2.732	
CePO4:H2O	-2.003	-2.732	
NdPO4:H2O	-2.003	-2.732	
GdPO4:H2O	-2.003	-2.732	
SmPO4:H2O	-2.003	-2.732	

--- Lanthanide fluoride ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaF3:0.5H2O	9.0872E-01	-0.0416	0.0000	-0.0416
CeF3:0.5H2O	2.3457E-11	-10.6297	0.0000	-10.6297
NdF3:0.5H2O	8.8879E-02	-1.0512	0.0000	-1.0512
GdF3:0.5H2O	2.6995E-04	-3.5687	0.0000	-3.5687
SmF3:0.5H2O	2.1315E-03	-2.6713	0.0000	-2.6713

Mineral	Log Q/K	Aff, kcal	State
Lanthanide fluoride	-15.755	-21.495	
LaF3:0.5H2O	-15.755	-21.495	
CeF3:0.5H2O	-15.755	-21.495	
NdF3:0.5H2O	-15.755	-21.495	
GdF3:0.5H2O	-15.755	-21.495	
SmF3:0.5H2O	-15.755	-21.495	

--- Summary of Gases ---

Gas	Fugacity	Log fugacity
Al(g)	9.7072-192	-191.0129
B(g)	3.9438-204	-203.4041
BF3(g)	1.1799E-45	-44.9281
C(g)	3.0917-190	-189.5098

CH4(g)	3.5199-146	-145.4535
CO(g)	6.0395E-49	-48.2190
CO2(g)	3.1623E-04	-3.5000
Ca(g)	5.4464-154	-153.2639
Chlorine	1.6610E-31	-30.7796
Cs(g)	1.0297E-87	-86.9873
Cu(g)	1.9424E-82	-81.7117
Fluorine	1.1429E-86	-85.9420
H2(g)	6.1068E-42	-41.2142
H2O(g)	2.5943E-02	-1.5860
H2S(g)	1.0805-144	-143.9664
HCl(g)	4.9962E-20	-19.3014
HF(g)	4.6774E-16	-15.3300
K(g)	1.2715E-76	-75.8957
Li(g)	1.1280E-95	-94.9477
Mg(g)	1.8676-129	-128.7287
Nitrogen	1.2514E-22	-21.9026
NH3(g)	1.2871E-70	-69.8904
NO(g)	3.5225E-27	-26.4532
NO2(g)	2.4085E-21	-20.6183
Na(g)	6.9094E-73	-72.1606
O2(g)	2.0999E-01	-0.6778
Pb(g)	5.3710E-68	-67.2699
S2(g)	6.9801-232	-231.1561
SO2(g)	1.9156E-57	-56.7177
Si(g)	4.2257-221	-220.3741
SiF4(g)	2.1154E-46	-45.6746
Ti(g)	3.8019-231	-230.4200
TiCl4(g)	2.0928E-90	-89.6793
U(g)	9.8953-303	-302.0046
U2Cl10(g)	9.7092-270	-269.0128
U2Cl8(g)	1.8122-269	-268.7418
U2F10(g)	6.6489-187	-186.1773
UCl(g)	4.4087-260	-259.3557
UCl2(g)	5.8762-216	-215.2309
UCl3(g)	1.7154-169	-168.7656
UCl4(g)	2.7118-140	-139.5667
UCl5(g)	2.2057-148	-147.6565
UCl6(g)	3.3329-151	-150.4772
UF(g)	8.7716-246	-245.0569
UF2(g)	5.7667-207	-206.2391
UF3(g)	9.3299-162	-161.0301
UF4(g)	2.2281-113	-112.6521
UF5(g)	2.4371-106	-105.6131
UF6(g)	2.6250-113	-112.5809
UO(g)	7.8150-218	-217.1071
UO2(g)	1.4479-133	-132.8393
UO2Cl2(g)	1.0500E-83	-82.9788
UO2F2(g)	7.4753E-73	-72.1264
UO3(g)	1.0650E-80	-79.9727
UOF4(g)	6.6394E-91	-90.1779
Zn(g)	5.0283E-77	-76.2986

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```
Stepping to zi=  6.3431E+00, delzi=  3.3529E-02, nord= 6
  time =  6.1180E+04 d, dltime =  3.2339E+02 d
Steps completed =   750, iter = 25, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -35.7713
```

```
Stepping to zi=  6.3801E+00, delzi=  3.7008E-02, nord= 6
  time =  6.1537E+04 d, dltime =  3.5694E+02 d
Steps completed =   751, iter =  6, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -35.8577

Stepping to zi=  6.4210E+00, delzi=  4.0851E-02, nord= 6
  time =  6.1931E+04 d, dltime =  3.9401E+02 d
Steps completed =   752, iter = 26, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -35.9439

Stepping to zi=  6.4661E+00, delzi=  4.5095E-02, nord= 6
  time =  6.2366E+04 d, dltime =  4.3495E+02 d
Steps completed =   753, iter =  6, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -36.0301

Stepping to zi=  6.5158E+00, delzi=  4.9783E-02, nord= 6
  time =  6.2846E+04 d, dltime =  4.8016E+02 d
Steps completed =   754, iter =  9, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -36.1162

Stepping to zi=  6.5708E+00, delzi=  5.4959E-02, nord= 6
  time =  6.3376E+04 d, dltime =  5.3009E+02 d
Steps completed =   755, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -36.2023

Stepping to zi=  6.6315E+00, delzi=  6.0675E-02, nord= 6
  time =  6.3961E+04 d, dltime =  5.8521E+02 d
Steps completed =   756, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -36.2883

Stepping to zi=  6.6985E+00, delzi=  6.7029E-02, nord= 6
  time =  6.4607E+04 d, dltime =  6.4650E+02 d
Steps completed =   757, iter = 17, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -36.3744

Stepping to zi=  6.7725E+00, delzi=  7.4044E-02, nord= 6
  time =  6.5322E+04 d, dltime =  7.1416E+02 d
Steps completed =   758, iter =  9, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -36.4604

Stepping to zi=  6.8543E+00, delzi=  8.1789E-02, nord= 6
  time =  6.6110E+04 d, dltime =  7.8886E+02 d
Steps completed =   759, iter = 19, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -36.5465

Stepping to zi=  6.9447E+00, delzi=  9.0341E-02, nord= 6
  time =  6.6982E+04 d, dltime =  8.7134E+02 d
Steps completed =   760, iter = 11, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -36.6325

Stepping to zi=  7.0000E+00, delzi=  5.5323E-02, nord= 6
  time =  6.7515E+04 d, dltime =  5.3359E+02 d
Steps completed =   761, iter = 19, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -36.6813

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                    Reaction progress        =  7.00000000000000E+00
                    Log of reaction progress =       0.8450980
```

```
Time =  5.833E+09 sec
     =  6.752E+04 days
     =  1.848E+02 years

Log sec =        9.766
Log days =       4.829
Log years =      2.267

Temperature    =     25.000 degrees C
total pressure =      1.013 bars


Step size is limited by the P.R.S. shift requirement


                    --- Reactant Summary ---


   Reactant                  Moles     Delta moles    Mass, g    Delta Mass, g

 Tuff                      9.3000E+01   7.0000E+00   1.9145E+03   1.4411E+02


              Current total mass =  1.91454E+03 grams
              Delta total mass   =  1.44105E+02 grams
              Delta total volume =      0.00000 cc


   Reactant                Rel. Rate      Rate         Rate
                            mol/mol       mol/s      mol/s/cm2

 Tuff                      1.0000E+00   1.2000E-09   2.5000E-15


   Reactant                  Affinity   Surface Area
                             kcal/mol     mol/s/cm2

 Tuff                       999.00000   4.8000E+05


   Reactant                Rate Constants, mol/s/cm2

 Tuff
                  Forward    2.5000E-15


        Affinity of the overall irreversible reaction=     0.000 kcal
        Contributions from irreversible reactions
        with no thermodynamic data are not included


    --- Element Totals for the Aqueous Solution ---

 Element        mg/kg soln.          Molality             Moles

    O          8.862651E+05        5.562500E+01        5.518457E+01
    Al         5.925299E-03        2.205229E-07        2.187768E-07
    B          1.344341E-01        1.248687E-05        1.238800E-05
    Ba         1.378473E-05        1.007981E-10        1.000000E-10
    Ca         7.526174E-04        1.885725E-08        1.870794E-08
```

Ce	1.406458E-19	1.007980E-24	9.999992E-25
Cl	7.167225E+00	2.030074E-04	2.014000E-04
Cr	3.017704E+02	5.827951E-03	5.781806E-03
Cs	9.559099E-12	7.222446E-17	7.165260E-17
Cu	6.697610E-10	1.058380E-14	1.050000E-14
F	2.282033E-01	1.206188E-05	1.196637E-05
Fe	1.140081E-08	2.049963E-13	2.033732E-13
Gd	1.578457E-09	1.007981E-14	9.999998E-15
H	1.114434E+05	1.110273E+02	1.101482E+02
C	1.368687E+02	1.144288E-02	1.135227E-02
P	7.258116E+00	2.353098E-04	2.334467E-04
K	2.025783E+00	5.202897E-05	5.161701E-05
La	1.394318E-09	1.007981E-14	9.999998E-15
Li	6.967298E-07	1.007981E-10	1.000000E-10
Mg	2.206650E-02	9.116916E-07	9.044729E-07
Mn	4.354751E-11	7.959762E-16	7.896738E-16
Mo	2.194916E+02	2.297356E-03	2.279166E-03
N	1.996493E+00	1.431333E-04	1.420000E-04
Na	1.229731E+03	5.371375E-02	5.328845E-02
Nd	1.447865E-09	1.007981E-14	9.999998E-15
Ni	1.005338E-04	1.720118E-09	1.706498E-09
Pb	7.047994E-07	3.415748E-12	3.388703E-12
Pu	2.449244E-09	1.007981E-14	9.999999E-15
S	3.756939E+02	1.176520E-02	1.167205E-02
Si	4.310673E+00	1.541250E-04	1.529046E-04
Sm	1.509296E-09	1.007981E-14	9.999998E-15
Sr	2.782152E-32	3.188509E-37	3.163263E-37
Ti	1.076386E-05	2.257480E-10	2.239606E-10
U	2.389308E-09	1.007981E-14	1.000000E-14
V	4.802053E+00	9.465973E-05	9.391022E-05
Zn	6.563774E-06	1.007981E-10	1.000000E-10
Zr	9.156971E-16	1.007982E-20	1.000001E-20

Single ion activities and activity coefficients are here defined
with respect to the modified NBS pH scale

	pH	Eh	pe
modified NBS pH scale	9.2023	0.6747	1.1405E+01
rational pH scale	9.1211	0.6795	1.1486E+01

pHCl = 12.9949

Oxygen fugacity = 2.09991E-01
Log oxygen fugacity = -0.67780

Activity of water = 0.99865
Log activity of water = -0.00059

Ionic strength = 7.190134E-02 molal
Sum of molalities = 0.0842248766680
Osmotic coefficient = 0.89235

Mass of solution = 0.996226 kg
Mass of solutes = 0.004143 kg
Conc. of solutes = 0.415916 per cent (w/w)

Moles of solvent H2O = 5.50689E+01
Mass of solvent H2O = 9.92082E-01 kg

Species	Molality	Log molality	Log gamma	Log activity
Na+	5.1705E-02	-1.2865	-0.1061	-1.3926
SO4--	1.0362E-02	-1.9845	-0.3872	-2.3717
HCO3-	9.5241E-03	-2.0212	-0.0907	-2.1119
CrO4--	5.8222E-03	-2.2349	-0.3872	-2.6221
MoO4--	2.2974E-03	-2.6388	-0.3744	-3.0131
NaSO4-	1.4010E-03	-2.8536	-0.0907	-2.9443
CO3--	1.3676E-03	-2.8641	-0.3744	-3.2384
NaHCO3(aq)	4.4627E-04	-3.3504	0.0000	-3.3504
O2(aq)	2.6084E-04	-3.5836	0.0075	-3.5761
Cl-	2.0192E-04	-3.6948	-0.0978	-3.7926
HPO4--	1.9972E-04	-3.6996	-0.3872	-4.0867
NO3-	1.4313E-04	-3.8443	-0.0978	-3.9421
SiO2(aq)	1.0016E-04	-3.9993	0.0000	-3.9993
NaCO3-	9.4213E-05	-4.0259	-0.0907	-4.1166
VO3OH--	8.4962E-05	-4.0708	-0.3872	-4.4579
K+	5.0462E-05	-4.2970	-0.1132	-4.4102
NaHPO4-	3.3993E-05	-4.4686	-0.0907	-4.5593
NaHSiO3(aq)	3.2048E-05	-4.4942	0.0000	-4.4942
HSiO3-	2.1909E-05	-4.6594	-0.0907	-4.7501
OH-	1.9987E-05	-4.6993	-0.0941	-4.7934
F-	1.2022E-05	-4.9200	-0.0941	-5.0142
CO2(aq)	1.0558E-05	-4.9764	0.0075	-4.9689
HVO4--	9.1521E-06	-5.0385	-0.3872	-5.4256
BO2-	6.3869E-06	-5.1947	-0.0907	-5.2854
HCrO4-	5.7646E-06	-5.2392	-0.0907	-5.3300
B(OH)3(aq)	5.7093E-06	-5.2434	0.0000	-5.2434
KSO4-	1.5431E-06	-5.8116	-0.0907	-5.9023
NaCl(aq)	1.0909E-06	-5.9622	0.0000	-5.9622
H2PO4-	1.0165E-06	-5.9929	-0.0907	-6.0836
PO4---	4.7873E-07	-6.3199	-0.8863	-7.2062
Mg++	4.6005E-07	-6.3372	-0.3341	-6.6713
NaB(OH)4(aq)	3.9056E-07	-6.4083	0.0000	-6.4083
H2VO4-	3.3559E-07	-6.4742	-0.0907	-6.5649
MgSO4(aq)	2.3373E-07	-6.6313	0.0000	-6.6313
AlO2-	2.1891E-07	-6.6597	-0.0907	-6.7505
VO2(OH)2-	2.0797E-07	-6.6820	-0.0907	-6.7727
MgCO3(aq)	1.1727E-07	-6.9308	0.0000	-6.9308
NaOH(aq)	1.0335E-07	-6.9857	0.0000	-6.9857
MgPO4-	6.3413E-08	-7.1978	-0.0907	-7.2885
NaF(aq)	3.9414E-08	-7.4044	0.0000	-7.4044
KHPO4-	2.3646E-08	-7.6262	-0.0907	-7.7170
MgHCO3+	2.2837E-08	-7.6414	-0.1061	-7.7475
MgHPO4(aq)	1.4189E-08	-7.8480	0.0000	-7.8480
Ca++	9.8429E-09	-8.0069	-0.3712	-8.3781
H2SiO4--	6.7804E-09	-8.1687	-0.3872	-8.5559
CaCO3(aq)	5.1358E-09	-8.2894	0.0000	-8.2894
VO4---	2.3480E-09	-8.6293	-0.8863	-9.5156
CaSO4(aq)	2.2979E-09	-8.6387	0.0000	-8.6387
Cr2O7--	1.8123E-09	-8.7418	-0.3872	-9.1289
Ni++	1.3730E-09	-8.8623	-0.3712	-9.2335
NaAlO2(aq)	1.2991E-09	-8.8864	0.0000	-8.8864
CaPO4-	9.2555E-10	-9.0336	-0.0907	-9.1243
H+	7.5670E-10	-9.1211	-0.0812	-9.2023
CaHCO3+	4.6010E-10	-9.3371	-0.1061	-9.4433
NiSO4(aq)	3.3149E-10	-9.4795	0.0000	-9.4795
HAlO2(aq)	3.1452E-10	-9.5024	0.0000	-9.5024

HSO4-	3.1322E-10	-9.5042	-0.0907	-9.5949
Ti(OH)4(aq)	2.2575E-10	-9.6464	0.0000	-9.6464
KOH(aq)	2.1452E-10	-9.6685	0.0000	-9.6685
KCl(aq)	2.0070E-10	-9.6975	0.0000	-9.6975
CaHPO4(aq)	1.8845E-10	-9.7248	0.0000	-9.7248
MgB(OH)4+	1.1128E-10	-9.9536	-0.1061	-10.0597

--- Summary of Instantaneously Precipitated Solid Phases ---
(defined by derivatives)

--- Theoretical Rock Composition ---
g/kg

O	5.181366E+01
Al	6.307679E+00
Ca	3.743585E-01
Cl	1.141441E-11
Cs	4.015302E-14
Fe	6.119340E-01
H	7.307095E-01
C	2.048022E-03
P	2.991709E-11
K	3.828013E+00
Mg	1.381789E-01
Mn	4.839744E-02
N	1.962933E-66
Na	2.488314E+00
Pb	3.335523E-10
Si	3.360170E+01
Ti	5.500753E-02

--- Oxide Percentages ---

Oxide Theoretical rock

Total = 0.0000

Phase/end-member	d mol/d zi	d grams/d zi	d vol (cc)/d zi
Celadonite	1.2310E-03	4.8840E-01	1.9340E-01
Maximum_Microcline	1.9070E-02	5.3077E+00	2.0737E+00
Mesolite	3.1067E-03	1.2047E+00	5.3186E-01
Muscovite	1.0006E-03	3.9857E-01	1.4080E-01
Ni2SiO4	-2.5632E-12	-5.3689E-10	-1.0922E-10
Pyrolusite	1.9400E-04	1.6866E-02	9.7000E-02
Pyromorphite	7.0902E-14	9.6169E-11	1.3660E-11
Quartz	9.3847E-02	5.6387E+00	2.1292E+00
Rutile	2.5300E-04	2.0209E-02	4.7615E-03
fix CO2(g)	3.7550E-05	1.6526E-03	0.0000E+00
fix O2(g)	-7.0649E-04	-2.2607E-02	0.0000E+00
Clinoptilolite-ss			
Clinoptilolite-Ca	8.9274E-06	1.2002E-02	4.4637E-03
Clinoptilolite-Cs	1.9190E-17	3.3309E-14	9.5950E-15
Clinoptilolite-K	7.3708E-05	1.0397E-01	3.6854E-02
Clinoptilolite-NH4	8.9016E-69	1.1906E-65	4.4508E-66
Clinoptilolite-Na	6.1584E-03	8.3425E+00	3.0792E+00
Clinoptilolite-Sr	0.0000E+00	0.0000E+00	0.0000E+00
Smectite-di			
Beidellite-Ca	4.0469E-11	1.4834E-08	5.2419E-09
Beidellite-K	1.7470E-10	6.5136E-08	2.3357E-08

Beidellite-Mg	3.7562E-10	1.3671E-07	4.6273E-08
Beidellite-Na	1.7146E-08	6.3018E-06	2.2383E-06
Montmor-Ca	7.2652E-08	2.6594E-05	3.6326E-05
Montmor-K	5.1220E-07	1.9071E-04	2.5610E-04
Montmor-Mg	1.0959E-06	3.9831E-04	5.4797E-04
Montmor-Na	4.9024E-05	1.7993E-02	2.4512E-02
Nontronite-Ca	2.6317E-06	1.1166E-03	3.4501E-04
Nontronite-K	1.1361E-05	4.8917E-03	1.5367E-03
Nontronite-Mg	2.4444E-05	1.0308E-02	3.1718E-03
Nontronite-Na	1.1150E-03	4.7418E-01	1.4730E-01

--- Summary of Solid Phases (E.S.+P.R.S.) ---

Phase/End-member	Log moles	Moles	Mass, g	Volume, cc
Alunite	-2.5559	2.7801E-03	1.1516E+00	8.1624E-01
Celadonite	-2.0626	8.6583E-03	3.4351E+00	1.3602E+00
Diaspore	-1.6079	2.4665E-02	1.4796E+00	4.3804E-01
Fluorapatite	-3.9881	1.0278E-04	5.1834E-02	5.1392E-02
Hematite	-3.7144	1.9300E-04	3.0820E-02	5.8428E-03
Maximum_Microcline	-0.9181	1.2075E-01	3.3608E+01	1.3130E+01
Mesolite	-1.6692	2.1417E-02	8.3052E+00	3.6666E+00
Muscovite	-1.7593	1.7407E-02	6.9334E+00	2.4493E+00
Ni2SiO4	-2.1930	6.4125E-03	1.3432E+00	2.7324E-01
Nontronite-H	-4.9990	1.0023E-05	4.1899E-03	5.0117E-03
Pyrolusite	-2.7096	1.9517E-03	1.6967E-01	9.7584E-01
Pyromorphite	-10.7139	1.9322E-11	2.6208E-08	3.7226E-09
Quartz	-0.0593	8.7238E-01	5.2416E+01	1.9793E+01
Rutile	-2.7518	1.7710E-03	1.4147E-01	3.3330E-02
fix CO2(g)	2.3010	1.9999E+02	8.8015E+03	0.0000E+00
fix O2(g)	2.3010	1.9999E+02	6.3996E+03	0.0000E+00
Clinoptilolite-ss	-1.5376	2.8998E-02		
Clinoptilolite-Ca	-4.3822	4.1480E-05	5.5766E-02	2.0740E-02
Clinoptilolite-Cs	-10.5400	2.8843E-11	5.0064E-08	1.4422E-08
Clinoptilolite-K	-3.4654	3.4248E-04	4.8306E-01	1.7124E-01
Clinoptilolite-NH4	-67.3873	4.0988E-68	5.4820E-65	2.0494E-65
Clinoptilolite-Na	-1.5434	2.8614E-02	3.8762E+01	1.4307E+01
Clinoptilolite-Sr	-10.2389	5.7687E-11	8.2309E-08	2.8843E-08
Smectite-di	-2.0827	8.2659E-03		
Beidellite-Ca	-9.1686	6.7834E-10	2.4865E-07	8.7865E-08
Beidellite-K	-8.7467	1.7917E-09	6.6804E-07	2.3955E-07
Beidellite-Mg	-8.5960	2.5353E-09	9.2275E-07	3.1232E-07
Beidellite-Na	-7.0554	8.8018E-08	3.2350E-05	1.1490E-05
Montmor-Ca	-6.1255	7.4903E-07	2.7418E-04	3.7451E-04
Montmor-K	-5.5088	3.0989E-06	1.1538E-03	1.5494E-03
Montmor-Mg	-5.1797	6.6111E-06	2.4027E-03	3.3055E-03
Montmor-Na	-3.5998	2.5133E-04	9.2242E-02	1.2566E-01
Nontronite-Ca	-3.3958	4.0195E-04	1.7054E-01	5.2695E-02
Nontronite-K	-3.1690	6.7770E-04	2.9180E-01	9.1672E-02
Nontronite-Mg	-3.2176	6.0584E-04	2.5548E-01	7.8614E-02
Nontronite-Na	-2.1994	6.3185E-03	2.6870E+00	8.3474E-01

	Mass, grams	Volume, cc
Created	1.535292E+04	5.868531E+01
Destroyed	1.441053E+02	0.000000E+00
Net	1.520882E+04	5.868531E+01

Warning-- these volume totals may be incomplete because

of missing partial molar volume data in the data base

--- Summary of Pure Mineral Saturation States ---

Mineral	Log Q/K	Aff, kcal	State
Alamosite	-3.158	-4.309	
Albite	-0.022	-0.030	
Albite_high	-1.341	-1.829	
Albite_low	-0.022	-0.030	
Alstonite	-7.214	-9.842	
Analcime	-0.148	-0.202	
Analcime-dehy	-6.510	-8.882	
Andalusite	-6.082	-8.298	
Anglesite	-6.409	-8.744	
Anhydrite	-6.443	-8.791	
Aragonite	-3.281	-4.476	
BaCrO4	-3.122	-4.260	
BaHPO4	-7.119	-9.713	
BaZrO3	83.676	114.158	ssatd
Barite	-2.833	-3.865	
Bassanite	-7.089	-9.671	
Beidellite-Ca	-2.466	-3.365	
Beidellite-Cs	-6.012	-8.202	
Beidellite-H	-3.163	-4.315	
Beidellite-K	-2.257	-3.079	
Beidellite-Mg	-2.147	-2.929	
Beidellite-Na	-1.599	-2.182	
Boehmite	-0.634	-0.864	
Boric_acid	-5.085	-6.938	
Brucite	-4.566	-6.229	
Bunsenite	-3.301	-4.504	
CaSO4:0.5H2O(beta)	-7.257	-9.900	
CaZrO3	139.760	190.673	ssatd
Calcite	-3.136	-4.279	
CeO2	-3.189	-4.351	
Celadonite	0.000	0.000	satd
Cerussite	-1.590	-2.170	
Chalcedony	-0.271	-0.370	
Chrysotile	-3.927	-5.358	
Clinochlore-14A	-6.714	-9.160	
Clinoptilolite	-5.486	-7.484	
Clinoptilolite-K	-6.670	-9.100	
Clinoptilolite-Na	-0.020	-0.027	
Clinoptilolite-hy-K	-6.664	-9.092	
Clinoptilolite-hy-Na	-0.018	-0.024	
Coesite	-0.810	-1.105	
Corundum	-4.450	-6.072	
Cristobalite(alpha)	-0.551	-0.751	
Cristobalite(beta)	-0.994	-1.356	
Crocoite	-1.794	-2.448	
Dawsonite	-0.920	-1.256	
Diaspore	-0.230	-0.313	
Diopside	-7.204	-9.829	
Dolomite	-3.382	-4.614	
Dolomite-dis	-4.927	-6.721	
Dolomite-ord	-3.382	-4.614	
Enstatite	-3.594	-4.903	
Epsomite	-7.085	-9.666	
Fe(OH)3	-6.518	-8.893	

Ferrite-Zn	-6.167	-8.414	
Fluorapatite	-6.564	-8.955	
GdPO4:H2O	-4.196	-5.724	
Gibbsite	-0.826	-1.127	
Goethite	-1.397	-1.905	
Gypsum	-6.269	-8.552	
Halite	-6.771	-9.237	
Hematite	-1.832	-2.500	
Hexahydrite	-7.320	-9.986	
Hydrocerussite	-6.504	-8.874	
Ice	-0.139	-0.190	
Illite	-1.275	-1.739	
Jadeite	-1.647	-2.247	
K-Feldspar	0.000	0.000	
Kalicinite	-6.806	-9.285	
Kalsilite	-3.175	-4.332	
Kaolinite	-0.948	-1.294	
Kyanite	-5.812	-7.929	
LaPO4:H2O	-1.990	-2.715	
Lanarkite	-7.278	-9.930	
Lansfordite	-4.425	-6.037	
Laumontite	-5.779	-7.884	
Lawsonite	-6.325	-8.630	
Litharge	-6.130	-8.363	
Magnesite	-1.875	-2.557	
Manganite	-4.459	-6.084	
Massicot	-6.305	-8.602	
Maximum_Microcline	0.000	0.000	satd
Mesolite	0.000	0.000	satd
Mirabilite	-4.023	-5.488	
MnO2(gamma)	-1.518	-2.071	
Monohydrocalcite	-3.971	-5.417	
Montmor-Ca	-1.392	-1.900	
Montmor-Cs	-4.871	-6.646	
Montmor-K	-1.113	-1.518	
Montmor-Mg	-1.003	-1.369	
Montmor-Na	-0.459	-0.626	
Mordenite	-2.805	-3.827	
Muscovite	0.000	0.000	satd
Na2CO3	-6.877	-9.382	
Na2CO3:7H2O	-5.645	-7.701	
Nahcolite	-3.393	-4.629	
Natrolite	-1.039	-1.418	
Natron	-5.311	-7.246	
NdOHCO3	-6.946	-9.476	
NdPO4:H2O	-3.132	-4.273	
Nepheline	-3.060	-4.174	
Nesquehonite	-4.578	-6.246	
Ni(OH)2	-3.579	-4.882	
Ni2SiO4	0.000	0.000	satd
NiCO3	-5.655	-7.715	
Nontronite-Ca	-0.878	-1.198	
Nontronite-H	-1.574	-2.148	
Nontronite-K	-0.668	-0.912	
Nontronite-Mg	-0.559	-0.762	
Nontronite-Na	-0.011	-0.015	
Paragonite	-0.919	-1.253	
Paralaurionite	-6.684	-9.119	
Pb3(PO4)2	-5.464	-7.455	
Pb4O(PO4)2	-6.352	-8.666	
PbHPO4	-4.410	-6.016	
Petalite	-6.151	-8.391	
Phlogopite	-2.518	-3.435	

Plattnerite	-1.493	-2.037	
PuO2	-4.794	-6.541	
Pyrolusite	0.000	0.000	satd
Pyromorphite	0.000	0.000	satd
Pyrophyllite	-2.576	-3.514	
Quartz	0.000	0.000	satd
Rutile	0.000	0.000	satd
Sanidine_high	-1.199	-1.636	
Saponite-Ca	-1.829	-2.495	
Saponite-Cs	-5.374	-7.332	
Saponite-H	-2.525	-3.445	
Saponite-K	-1.619	-2.209	
Saponite-Mg	-1.509	-2.059	
Saponite-Na	-0.962	-1.312	
Scolecite	-3.989	-5.442	
Sellaite	-7.315	-9.980	
SiO2(am)	-1.286	-1.754	
Sillimanite	-6.446	-8.794	
SmPO4:H2O	-3.698	-5.045	
Smectite-low-Fe-Mg	-7.076	-9.653	
Smithsonite	-4.486	-6.121	
SrZrO3	94.032	128.287	ssatd
Stilbite	-1.918	-2.616	
Talc	-1.938	-2.644	
Thenardite	-4.848	-6.614	
Thermonatrite	-6.658	-9.083	
Trevorite	-2.341	-3.193	
Tridymite	-0.172	-0.234	
Witherite	-0.346	-0.472	
Zincite	-3.918	-5.346	
Zn(OH)2(beta)	-4.644	-6.336	
Zn(OH)2(epsilon)	-4.373	-5.965	
Zn(OH)2(gamma)	-4.593	-6.267	
fix CO2(g)	0.000	0.000	satd
fix O2(g)	0.000	0.000	satd

--- Summary of Solid Solutions ---

--- Carbonate-Calcite ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Calcite	5.1758E-02	-1.2860	0.0000	-1.2860
Magnesite	9.4593E-01	-0.0241	0.0000	-0.0241
Rhodochrosite	1.2050E-09	-8.9190	0.0000	-8.9190
Siderite	1.8665E-18	-17.7290	0.0000	-17.7290
Smithsonite	2.3120E-03	-2.6360	0.0000	-2.6360
Strontianite	1.5258E-28	-27.8165	0.0000	-27.8165

Mineral	Log Q/K	Aff, kcal	State
Carbonate-Calcite	-1.850	-2.524	
Calcite	-1.850	-2.524	
Magnesite	-1.850	-2.524	
Rhodochrosite	-1.850	-2.524	
Siderite	-1.850	-2.524	
Smithsonite	-1.850	-2.524	
Strontianite	-1.850	-2.524	

--- Clinoptilolite-hy-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-hy-Ca	1.5021E-10	-9.8233	0.0000	-9.8233
Clinoptilolite-hy-Cs	2.4348E-46	-45.6135	0.0000	-45.6135
Clinoptilolite-hy-K	2.2581E-07	-6.6463	0.0000	-6.6463
Clinoptilolite-hy-Na	1.0000E+00	0.0000	0.0000	0.0000
Clinoptilolite-hy-Sr	3.7606E-60	-59.4247	0.0000	-59.4247

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-hy-ss	-0.018	-0.024	
Clinoptilolite-hy-Ca	-0.018	-0.024	
Clinoptilolite-hy-Cs	-0.018	-0.024	
Clinoptilolite-hy-K	-0.018	-0.024	
Clinoptilolite-hy-Na	-0.018	-0.024	
Clinoptilolite-hy-Sr	-0.018	-0.024	

--- Clinoptilolite-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-Ca	1.4304E-03	-2.8445	-6.9975	-9.8421
Clinoptilolite-Cs	6.4518E-14	-13.1903	-32.4482	-45.6385
Clinoptilolite-K	1.1810E-02	-1.9277	-4.7422	-6.6700
Clinoptilolite-NH4	1.4217E-66	-65.8472	-161.9841	-227.8312
Clinoptilolite-Na	9.8676E-01	-0.0058	-0.0142	-0.0200
Clinoptilolite-Sr	6.6122E-18	-17.1797	-42.2619	-59.4416

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-ss	0.000	0.000	satd
Clinoptilolite-Ca	0.000	0.000	satd
Clinoptilolite-Cs	0.000	0.000	satd
Clinoptilolite-K	0.000	0.000	satd
Clinoptilolite-NH4	0.000	0.000	satd
Clinoptilolite-Na	0.000	0.000	satd
Clinoptilolite-Sr	0.000	0.000	satd

--- Saponite-tri ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Saponite-Ca	2.2816E-03	-2.6418	1.7700	-0.8718
Saponite-H	1.7690E-05	-4.7523	3.1840	-1.5683
Saponite-K	9.8424E-03	-2.0069	1.3446	-0.6623
Saponite-Mg	2.1177E-02	-1.6741	1.1217	-0.5525
Saponite-Na	9.6668E-01	-0.0147	0.0099	-0.0049

Mineral	Log Q/K	Aff, kcal	State
Saponite-tri	-0.957	-1.305	
Saponite-Ca	-0.957	-1.305	
Saponite-H	-0.957	-1.305	
Saponite-K	-0.957	-1.305	
Saponite-Mg	-0.957	-1.305	
Saponite-Na	-0.957	-1.305	

--- Smectite-di ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Beidellite-Ca	3.3607E-08	-7.4736	5.0073	-2.4663
Beidellite-K	1.4508E-07	-6.8384	4.5817	-2.2567
Beidellite-Mg	3.1193E-07	-6.5059	4.3590	-2.1470
Beidellite-Na	1.4239E-05	-4.8465	3.2472	-1.5994
Montmor-Ca	6.0333E-05	-4.2194	2.8270	-1.3924
Montmor-K	4.2535E-04	-3.3712	2.2587	-1.1125
Montmor-Mg	9.1012E-04	-3.0409	2.0374	-1.0035
Montmor-Na	4.0712E-02	-1.3903	0.9315	-0.4588
Nontronite-Ca	2.1855E-03	-2.6605	1.7825	-0.8779
Nontronite-K	9.4344E-03	-2.0253	1.3569	-0.6683
Nontronite-Mg	2.0299E-02	-1.6925	1.1340	-0.5585
Nontronite-Na	9.2596E-01	-0.0334	0.0224	-0.0110

Mineral	Log Q/K	Aff, kcal	State
Smectite-di	0.000	0.000	satd
Beidellite-Ca	0.000	0.000	satd
Beidellite-K	0.000	0.000	satd
Beidellite-Mg	0.000	0.000	satd
Beidellite-Na	0.000	0.000	satd
Montmor-Ca	0.000	0.000	satd
Montmor-K	0.000	0.000	satd
Montmor-Mg	0.000	0.000	satd
Montmor-Na	0.000	0.000	satd
Nontronite-Ca	0.000	0.000	satd
Nontronite-K	0.000	0.000	satd
Nontronite-Mg	0.000	0.000	satd
Nontronite-Na	0.000	0.000	satd

--- Lanthanide hydroxide ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
La(OH)3	2.1758E-04	-3.6624	0.0000	-3.6624
Ce(OH)3	1.1159E-14	-13.9524	0.0000	-13.9524
Nd(OH)3(c)	7.8653E-01	-0.1043	0.0000	-0.1043
Gd(OH)3	1.7062E-01	-0.7680	0.0000	-0.7680
Sm(OH)3	4.2630E-02	-1.3703	0.0000	-1.3703

Mineral	Log Q/K	Aff, kcal	State
Lanthanide hydroxide	-8.517	-11.620	
La(OH)3	-8.517	-11.620	
Ce(OH)3	-8.517	-11.620	
Nd(OH)3(c)	-8.517	-11.620	
Gd(OH)3	-8.517	-11.620	
Sm(OH)3	-8.517	-11.620	

--- Rhabdophane-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaPO4:H2O	9.1079E-01	-0.0406	0.0000	-0.0406
CePO4:H2O	1.4771E-11	-10.8306	0.0000	-10.8306
NdPO4:H2O	6.5693E-02	-1.1825	0.0000	-1.1825
GdPO4:H2O	5.6733E-03	-2.2462	0.0000	-2.2462
SmPO4:H2O	1.7845E-02	-1.7485	0.0000	-1.7485

Mineral	Log Q/K	Aff, kcal	State
Rhabdophane-ss	-1.950	-2.660	
LaPO4:H2O	-1.950	-2.660	
CePO4:H2O	-1.950	-2.660	
NdPO4:H2O	-1.950	-2.660	
GdPO4:H2O	-1.950	-2.660	
SmPO4:H2O	-1.950	-2.660	

--- Lanthanide fluoride ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaF3:0.5H2O	9.1490E-01	-0.0386	0.0000	-0.0386
CeF3:0.5H2O	2.3517E-11	-10.6286	0.0000	-10.6286
NdF3:0.5H2O	8.3076E-02	-1.0805	0.0000	-1.0805
GdF3:0.5H2O	2.2688E-04	-3.6442	0.0000	-3.6442
SmF3:0.5H2O	1.7926E-03	-2.7465	0.0000	-2.7465

Mineral	Log Q/K	Aff, kcal	State
Lanthanide fluoride	-15.760	-21.501	
LaF3:0.5H2O	-15.760	-21.501	
CeF3:0.5H2O	-15.760	-21.501	
NdF3:0.5H2O	-15.760	-21.501	
GdF3:0.5H2O	-15.760	-21.501	
SmF3:0.5H2O	-15.760	-21.501	

--- Summary of Gases ---

Gas	Fugacity	Log fugacity
Al(g)	9.7072-192	-191.0129
B(g)	3.9502-204	-203.4034
BF3(g)	1.1897E-45	-44.9246
C(g)	3.0917-190	-189.5098
CH4(g)	3.5198-146	-145.4535
CO(g)	6.0395E-49	-48.2190
CO2(g)	3.1623E-04	-3.5000
Ca(g)	5.4464-154	-153.2639
Chlorine	1.6683E-31	-30.7777
Cs(g)	3.6055E-88	-87.4430
Cu(g)	1.9397E-82	-81.7123
Fluorine	1.1479E-86	-85.9401
H2(g)	6.1068E-42	-41.2142
H2O(g)	2.5943E-02	-1.5860
H2S(g)	1.0838-144	-143.9651
HCl(g)	5.0071E-20	-19.3004
HF(g)	4.6877E-16	-15.3290
K(g)	1.2715E-76	-75.8957
Li(g)	1.1275E-95	-94.9479
Mg(g)	1.8676-129	-128.7287
Nitrogen	1.2569E-22	-21.9007
NH3(g)	1.2899E-70	-69.8894
NO(g)	3.5302E-27	-26.4522
NO2(g)	2.4138E-21	-20.6173
Na(g)	6.9094E-73	-72.1606
O2(g)	2.0999E-01	-0.6778
Pb(g)	4.9340E-68	-67.3068
S2(g)	7.0225-232	-231.1535
SO2(g)	1.9214E-57	-56.7164
Si(g)	4.2257-221	-220.3741
SiF4(g)	2.1341E-46	-45.6708
Ti(g)	3.8019-231	-230.4200
TiCl4(g)	2.1112E-90	-89.6755
U(g)	9.9364-303	-302.0028
U2Cl10(g)	1.0007-269	-268.9997
U2Cl8(g)	1.8596-269	-268.7306
U2F10(g)	6.8535-187	-186.1641
UCl(g)	4.4367-260	-259.3529
UCl2(g)	5.9265-216	-215.2272
UCl3(g)	1.7339-169	-168.7610
UCl4(g)	2.7470-140	-139.5611
UCl5(g)	2.2392-148	-147.6499
UCl6(g)	3.3910-151	-150.4697
UF(g)	8.8274-246	-245.0542
UF2(g)	5.8162-207	-206.2354
UF3(g)	9.4307-162	-161.0255
UF4(g)	2.2571-113	-112.6464
UF5(g)	2.4743-106	-105.6065
UF6(g)	2.6709-113	-112.5733
UO(g)	7.8474-218	-217.1053
UO2(g)	1.4539-133	-132.8375
UO2Cl2(g)	1.0590E-83	-82.9751
UO2F2(g)	7.5394E-73	-72.1227
UO3(g)	1.0694E-80	-79.9709
UOF4(g)	6.7259E-91	-90.1722
Zn(g)	4.6198E-77	-76.3354

```
--- shifting e.s. solid(s) to the p.r.s. (shftz) ---

      shifted -- Celadonite
              - old mass=  1.24347E-03, new mass=  1.24347E-05
      shifted -- Maximum_Microcline
              - old mass=  1.92625E-02, new mass=  1.92625E-04
      shifted -- Mesolite
              - old mass=  3.13804E-03, new mass=  3.13804E-05
      shifted -- Muscovite
              - old mass=  1.01073E-03, new mass=  1.01073E-05
  not shifted -- Ni2SiO4
              - mass=  7.99988E-07
      shifted -- Pyrolusite
              - old mass=  1.95960E-04, new mass=  1.95960E-06
  not shifted -- Pyromorphite
              - mass=  1.93223E-11
      shifted -- Quartz
              - old mass=  9.47943E-02, new mass=  9.47943E-04
      shifted -- Rutile
              - old mass=  2.55556E-04, new mass=  2.55556E-06
      shifted -- Clinoptilolite-ss
              - old mass=  6.30410E-03, new mass=  6.30410E-05
      shifted -- Smectite-di
              - old mass=  1.21634E-03, new mass=  1.21634E-05

Stepping to zi=  7.0069E+00, delzi=  6.9325E-03, nord= 6
  time =  6.7582E+04 d, dltime =  6.6865E+01 d
Steps completed =   762, iter = 19, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -37.1342

Stepping to zi=  7.0078E+00, delzi=  8.6657E-04, nord= 6
  time =  6.7591E+04 d, dltime =  8.3581E+00 d
Steps completed =   763, iter =  8, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -37.1772

Stepping to zi=  7.0095E+00, delzi=  1.7331E-03, nord= 4
  time =  6.7607E+04 d, dltime =  1.6716E+01 d
Steps completed =   764, iter = 20, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -37.2573

Stepping to zi=  7.0130E+00, delzi=  3.4663E-03, nord= 6
  time =  6.7641E+04 d, dltime =  3.3432E+01 d
Steps completed =   765, iter =  9, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -37.3983

Stepping to zi=  7.0172E+00, delzi=  4.2417E-03, nord= 6
  time =  6.7682E+04 d, dltime =  4.0912E+01 d
Steps completed =   766, iter = 15, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -37.5444

Stepping to zi=  7.0202E+00, delzi=  2.9958E-03, nord= 6
  time =  6.7711E+04 d, dltime =  2.8895E+01 d
Steps completed =   767, iter = 11, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -37.6345

Stepping to zi=  7.0229E+00, delzi=  2.6373E-03, nord= 6
  time =  6.7736E+04 d, dltime =  2.5437E+01 d
Steps completed =   768, iter = 22, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -37.7068

Stepping to zi=  7.0261E+00, delzi=  3.2302E-03, nord= 6
  time =  6.7767E+04 d, dltime =  3.1156E+01 d
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Steps completed =   769, iter = 20, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -37.7878

Stepping to zi=  7.0297E+00, delzi=  3.6138E-03, nord= 6
  time =  6.7802E+04 d, dltime =  3.4855E+01 d
Steps completed =   770, iter =  9, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -37.8703

Stepping to zi=  7.0338E+00, delzi=  4.0790E-03, nord= 6
  time =  6.7841E+04 d, dltime =  3.9342E+01 d
Steps completed =   771, iter =  9, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -37.9548

Stepping to zi=  7.0384E+00, delzi=  4.6072E-03, nord= 6
  time =  6.7886E+04 d, dltime =  4.4436E+01 d
Steps completed =   772, iter = 13, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -38.0413

Stepping to zi=  7.0435E+00, delzi=  5.1357E-03, nord= 6
  time =  6.7935E+04 d, dltime =  4.9535E+01 d
Steps completed =   773, iter = 11, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -38.1285

Stepping to zi=  7.0492E+00, delzi=  5.6462E-03, nord= 6
  time =  6.7990E+04 d, dltime =  5.4458E+01 d
Steps completed =   774, iter =  7, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -38.2153

Stepping to zi=  7.0554E+00, delzi=  6.2034E-03, nord= 6
  time =  6.8050E+04 d, dltime =  5.9832E+01 d
Steps completed =   775, iter = 16, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -38.3015

Stepping to zi=  7.0622E+00, delzi=  6.8384E-03, nord= 6
  time =  6.8116E+04 d, dltime =  6.5957E+01 d
Steps completed =   776, iter =  9, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -38.3876

Stepping to zi=  7.0698E+00, delzi=  7.5475E-03, nord= 6
  time =  6.8188E+04 d, dltime =  7.2796E+01 d
Steps completed =   777, iter = 19, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -38.4736

Stepping to zi=  7.0781E+00, delzi=  8.3372E-03, nord= 6
  time =  6.8269E+04 d, dltime =  8.0413E+01 d
Steps completed =   778, iter =  7, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -38.5597

Stepping to zi=  7.0873E+00, delzi=  9.2127E-03, nord= 6
  time =  6.8358E+04 d, dltime =  8.8857E+01 d
Steps completed =   779, iter = 19, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -38.6458

Stepping to zi=  7.0975E+00, delzi=  1.0179E-02, nord= 6
  time =  6.8456E+04 d, dltime =  9.8178E+01 d
Steps completed =   780, iter =  7, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -38.7319

Stepping to zi=  7.1087E+00, delzi=  1.1244E-02, nord= 6
  time =  6.8564E+04 d, dltime =  1.0845E+02 d
Steps completed =   781, iter = 19, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -38.8180
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Stepping to zi=  7.1212E+00, delzi=  1.2418E-02, nord= 6
  time =  6.8684E+04 d, dltime =  1.1978E+02 d
Steps completed =   782, iter =  7, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -38.9042

Stepping to zi=  7.1349E+00, delzi=  1.3715E-02, nord= 6
  time =  6.8816E+04 d, dltime =  1.3228E+02 d
Steps completed =   783, iter = 21, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -38.9903

Stepping to zi=  7.1500E+00, delzi=  1.5147E-02, nord= 6
  time =  6.8962E+04 d, dltime =  1.4610E+02 d
Steps completed =   784, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -39.0764

Stepping to zi=  7.1668E+00, delzi=  1.6730E-02, nord= 6
  time =  6.9124E+04 d, dltime =  1.6136E+02 d
Steps completed =   785, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -39.1625

Stepping to zi=  7.1852E+00, delzi=  1.8478E-02, nord= 6
  time =  6.9302E+04 d, dltime =  1.7822E+02 d
Steps completed =   786, iter = 19, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -39.2487

Stepping to zi=  7.2056E+00, delzi=  2.0409E-02, nord= 6
  time =  6.9499E+04 d, dltime =  1.9684E+02 d
Steps completed =   787, iter =  8, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -39.3348

Stepping to zi=  7.2282E+00, delzi=  2.2541E-02, nord= 6
  time =  6.9716E+04 d, dltime =  2.1741E+02 d
Steps completed =   788, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -39.4209

Stepping to zi=  7.2531E+00, delzi=  2.4897E-02, nord= 6
  time =  6.9956E+04 d, dltime =  2.4013E+02 d
Steps completed =   789, iter =  9, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -39.5070

Stepping to zi=  7.2806E+00, delzi=  2.7498E-02, nord= 6
  time =  7.0222E+04 d, dltime =  2.6522E+02 d
Steps completed =   790, iter =  8, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -39.5931

Stepping to zi=  7.3110E+00, delzi=  3.0371E-02, nord= 6
  time =  7.0515E+04 d, dltime =  2.9293E+02 d
Steps completed =   791, iter = 11, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -39.6792

Stepping to zi=  7.3445E+00, delzi=  3.3545E-02, nord= 6
  time =  7.0838E+04 d, dltime =  3.2354E+02 d
Steps completed =   792, iter =  6, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -39.7653

Stepping to zi=  7.3815E+00, delzi=  3.7050E-02, nord= 6
  time =  7.1195E+04 d, dltime =  3.5735E+02 d
Steps completed =   793, iter = 12, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -39.8514

Stepping to zi=  7.4225E+00, delzi=  4.0922E-02, nord= 6
  time =  7.1590E+04 d, dltime =  3.9470E+02 d
Steps completed =   794, iter = 23, ncorr = 0
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```
Most rapidly changing is zvclg1(Sr++                    ) =    -39.9375

Stepping to zi=  7.4677E+00, delzi=  4.5199E-02, nord= 6
  time =  7.2026E+04 d, dltime =  4.3594E+02 d
Steps completed =   795, iter =  6, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -40.0236

Stepping to zi=  7.5176E+00, delzi=  4.9922E-02, nord= 6
  time =  7.2508E+04 d, dltime =  4.8150E+02 d
Steps completed =   796, iter = 10, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -40.1096

Stepping to zi=  7.5727E+00, delzi=  5.5140E-02, nord= 6
  time =  7.3039E+04 d, dltime =  5.3182E+02 d
Steps completed =   797, iter = 11, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -40.1957

Stepping to zi=  7.6336E+00, delzi=  6.0902E-02, nord= 6
  time =  7.3627E+04 d, dltime =  5.8741E+02 d
Steps completed =   798, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -40.2818

Stepping to zi=  7.7009E+00, delzi=  6.7268E-02, nord= 6
  time =  7.4276E+04 d, dltime =  6.4880E+02 d
Steps completed =   799, iter = 14, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -40.3678

Stepping to zi=  7.7752E+00, delzi=  7.4299E-02, nord= 6
  time =  7.4992E+04 d, dltime =  7.1662E+02 d
Steps completed =   800, iter =  9, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -40.4539

Stepping to zi=  7.8573E+00, delzi=  8.2065E-02, nord= 6
  time =  7.5784E+04 d, dltime =  7.9153E+02 d
Steps completed =   801, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -40.5399

Stepping to zi=  7.9479E+00, delzi=  9.0644E-02, nord= 6
  time =  7.6658E+04 d, dltime =  8.7427E+02 d
Steps completed =   802, iter = 10, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -40.6260

Stepping to zi=  8.0000E+00, delzi=  5.2092E-02, nord= 6
  time =  7.7160E+04 d, dltime =  5.0243E+02 d
Steps completed =   803, iter = 18, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -40.6718

- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -


                    Reaction progress        =  8.00000000000000E+00
                    Log of reaction progress =       0.9030900



                    Time =  6.667E+09 sec
                         =  7.716E+04 days
                         =  2.113E+02 years

                    Log sec =        9.824
                    Log days =       4.887
                    Log years =      2.325
```

Alloy-22 tuff.6o.txt
Temperature = 25.000 degrees C
total pressure = 1.013 bars

Step size is limited by the P.R.S. shift requirement

--- Reactant Summary ---

Reactant	Moles	Delta moles	Mass, g	Delta Mass, g
Tuff	9.2000E+01	8.0000E+00	1.8940E+03	1.6469E+02

Current total mass = 1.89395E+03 grams
Delta total mass = 1.64692E+02 grams
Delta total volume = 0.00000 cc

Reactant	Rel. Rate mol/mol	Rate mol/s	Rate mol/s/cm2
Tuff	1.0000E+00	1.2000E-09	2.5000E-15

Reactant	Affinity kcal/mol	Surface Area mol/s/cm2
Tuff	999.00000	4.8000E+05

Reactant	Rate Constants, mol/s/cm2	
Tuff		
	Forward	2.5000E-15

Affinity of the overall irreversible reaction= 0.000 kcal
Contributions from irreversible reactions
with no thermodynamic data are not included

--- Element Totals for the Aqueous Solution ---

Element	mg/kg soln.	Molality	Moles
O	8.862609E+05	5.562523E+01	5.510480E+01
Al	5.914894E-03	2.201376E-07	2.180780E-07
B	1.346280E-01	1.250500E-05	1.238800E-05
Ba	1.380462E-05	1.009444E-10	1.000000E-10
Ca	7.632737E-04	1.912442E-08	1.894549E-08
Ce	1.408487E-19	1.009444E-24	9.999992E-25
Cl	7.177566E+00	2.033021E-04	2.014000E-04
Cr	3.022058E+02	5.836412E-03	5.781806E-03
Cs	5.574401E-13	4.211816E-18	4.172410E-18
Cu	6.707273E-10	1.059917E-14	1.050000E-14
F	2.285326E-01	1.207939E-05	1.196637E-05
Fe	1.139407E-08	2.048769E-13	2.029601E-13
Gd	1.580735E-09	1.009444E-14	9.999998E-15
H	1.114424E+05	1.110273E+02	1.099885E+02

C	1.366133E+02	1.142162E-02	1.131476E-02
P	8.623003E+00	2.795623E-04	2.769467E-04
K	2.030359E+00	5.214695E-05	5.165906E-05
La	1.396329E-09	1.009444E-14	9.999998E-15
Li	6.977350E-07	1.009444E-10	1.000000E-10
Mg	2.249804E-02	9.295292E-07	9.208325E-07
Mn	4.348654E-11	7.948689E-16	7.874321E-16
Mo	2.198083E+02	2.300691E-03	2.279166E-03
N	1.999373E+00	1.433411E-04	1.420000E-04
Na	1.232490E+03	5.383474E-02	5.333106E-02
Nd	1.449954E-09	1.009444E-14	9.999998E-15
Ni	1.009820E-04	1.727801E-09	1.711636E-09
Pb	6.416174E-07	3.109570E-12	3.080476E-12
Pu	2.452778E-09	1.009444E-14	9.999999E-15
S	3.762360E+02	1.178228E-02	1.167205E-02
Si	4.309559E+00	1.540865E-04	1.526449E-04
Sm	1.511474E-09	1.009444E-14	9.999998E-15
Sr	2.847204E-36	3.263091E-41	3.232562E-41
Ti	1.076371E-05	2.257469E-10	2.236348E-10
U	2.392755E-09	1.009445E-14	1.000000E-14
V	4.808981E+00	9.479715E-05	9.391022E-05
Zn	6.573245E-06	1.009444E-10	1.000000E-10
Zr	9.170183E-16	1.009445E-20	1.000001E-20

Single ion activities and activity coefficients are here defined
with respect to the modified NBS pH scale

	pH	Eh	pe
modified NBS pH scale	9.2015	0.6747	1.1406E+01
rational pH scale	9.1202	0.6795	1.1487E+01

pHCl = 12.9935

Oxygen fugacity = 2.09991E-01
Log oxygen fugacity = -0.67780

Activity of water = 0.99864
Log activity of water = -0.00059

Ionic strength = 7.207124E-02 molal
Sum of molalities = 0.0843884687997
Osmotic coefficient = 0.89224

Mass of solution = 0.994790 kg
Mass of solutes = 0.004146 kg
Conc. of solutes = 0.416802 per cent (w/w)

Moles of solvent H2O = 5.49891E+01
Mass of solvent H2O = 9.90644E-01 kg

Species	Molality	Log molality	Log gamma	Log activity
Na+	5.1816E-02	-1.2855	-0.1062	-1.3918
SO4--	1.0376E-02	-1.9840	-0.3875	-2.3715

HCO3-	9.5074E-03	-2.0219	-0.0908	-2.1127
CrO4--	5.8306E-03	-2.2343	-0.3875	-2.6218
MoO4--	2.3007E-03	-2.6381	-0.3747	-3.0128
NaSO4-	1.4047E-03	-2.8524	-0.0908	-2.9432
CO3--	1.3632E-03	-2.8654	-0.3747	-3.2401
NaHCO3(aq)	4.4627E-04	-3.3504	0.0000	-3.3504
O2(aq)	2.6083E-04	-3.5836	0.0075	-3.5761
HPO4--	2.3723E-04	-3.6248	-0.3875	-4.0123
Cl-	2.0221E-04	-3.6942	-0.0979	-3.7921
NO3-	1.4334E-04	-3.8436	-0.0979	-3.9415
SiO2(aq)	1.0016E-04	-3.9993	0.0000	-3.9993
NaCO3-	9.4048E-05	-4.0267	-0.0908	-4.1174
VO3OH--	8.5084E-05	-4.0702	-0.3875	-4.4576
K+	5.0571E-05	-4.2961	-0.1133	-4.4094
NaHPO4-	4.0432E-05	-4.3933	-0.0908	-4.4841
NaHSiO3(aq)	3.2048E-05	-4.4942	0.0000	-4.4942
HSiO3-	2.1871E-05	-4.6601	-0.0908	-4.7509
OH-	1.9952E-05	-4.7000	-0.0942	-4.7942
F-	1.2040E-05	-4.9194	-0.0942	-5.0136
CO2(aq)	1.0557E-05	-4.9764	0.0075	-4.9689
HVO4--	9.1654E-06	-5.0379	-0.3875	-5.4253
BO2-	6.3906E-06	-5.1945	-0.0908	-5.2853
HCrO4-	5.7807E-06	-5.2380	-0.0908	-5.3288
B(OH)3(aq)	5.7228E-06	-5.2424	0.0000	-5.2424
KSO4-	1.5472E-06	-5.8105	-0.0908	-5.9013
H2PO4-	1.2090E-06	-5.9176	-0.0908	-6.0084
NaCl(aq)	1.0943E-06	-5.9608	0.0000	-5.9608
PO4---	5.6812E-07	-6.2456	-0.8871	-7.1327
Mg++	4.6208E-07	-6.3353	-0.3343	-6.6696
NaB(OH)4(aq)	3.9148E-07	-6.4073	0.0000	-6.4073
H2VO4-	3.3652E-07	-6.4730	-0.0908	-6.5638
MgSO4(aq)	2.3476E-07	-6.6294	0.0000	-6.6294
AlO2-	2.1852E-07	-6.6605	-0.0908	-6.7513
VO2(OH)2-	2.0855E-07	-6.6808	-0.0908	-6.7716
MgCO3(aq)	1.1727E-07	-6.9308	0.0000	-6.9308
NaOH(aq)	1.0335E-07	-6.9857	0.0000	-6.9857
MgPO4-	7.5425E-08	-7.1225	-0.0908	-7.2133
NaF(aq)	3.9540E-08	-7.4030	0.0000	-7.4030
KHPO4-	2.8125E-08	-7.5509	-0.0908	-7.6417
MgHCO3+	2.2886E-08	-7.6404	-0.1062	-7.7467
MgHPO4(aq)	1.6907E-08	-7.7719	0.0000	-7.7719
Ca++	9.8875E-09	-8.0049	-0.3715	-8.3764
H2SiO4--	6.7594E-09	-8.1701	-0.3875	-8.5576
CaCO3(aq)	5.1358E-09	-8.2894	0.0000	-8.2894
VO4---	2.3492E-09	-8.6291	-0.8871	-9.5162
CaSO4(aq)	2.3080E-09	-8.6368	0.0000	-8.6368
Cr2O7--	1.8232E-09	-8.7392	-0.3875	-9.1266
Ni++	1.3792E-09	-8.8604	-0.3715	-9.2319
NaAlO2(aq)	1.2991E-09	-8.8864	0.0000	-8.8864
CaPO4-	1.1009E-09	-8.9583	-0.0908	-9.0491
H+	7.5826E-10	-9.1202	-0.0813	-9.2015
CaHCO3+	4.6108E-10	-9.3362	-0.1062	-9.4424
NiSO4(aq)	3.3295E-10	-9.4776	0.0000	-9.4776
HAlO2(aq)	3.1452E-10	-9.5024	0.0000	-9.5024
HSO4-	3.1404E-10	-9.5030	-0.0908	-9.5938
Ti(OH)4(aq)	2.2575E-10	-9.6464	0.0000	-9.6464
CaHPO4(aq)	2.2454E-10	-9.6487	0.0000	-9.6487
KOH(aq)	2.1452E-10	-9.6685	0.0000	-9.6685
KCl(aq)	2.0133E-10	-9.6961	0.0000	-9.6961
MgB(OH)4+	1.1178E-10	-9.9516	-0.1062	-10.0579

--- Summary of Instantaneously Precipitated Solid Phases ---

(defined by derivatives)

--- Theoretical Rock Composition ---
g/kg

O	5.181366E+01
Al	6.307682E+00
Ca	3.743587E-01
Cl	8.639997E-12
Cs	2.340176E-15
Fe	6.119343E-01
H	7.307075E-01
C	2.043969E-03
P	2.264537E-11
K	3.828015E+00
Mg	1.381790E-01
Mn	4.839747E-02
N	1.969184E-66
Na	2.488305E+00
Pb	2.524783E-10
Si	3.360171E+01
Ti	5.500755E-02

--- Oxide Percentages ---

Oxide Theoretical rock

Total = 0.0000

Phase/end-member	d mol/d zi	d grams/d zi	d vol (cc)/d zi
Celadonite	1.2310E-03	4.8840E-01	1.9340E-01
Maximum_Microcline	1.9070E-02	5.3077E+00	2.0737E+00
Mesolite	3.1067E-03	1.2047E+00	5.3186E-01
Muscovite	1.0007E-03	3.9859E-01	1.4081E-01
Ni2SiO4	-2.5746E-12	-5.3928E-10	-1.0970E-10
Pyrolusite	1.9400E-04	1.6866E-02	9.7000E-02
Pyromorphite	5.3668E-14	7.2794E-11	1.0340E-11
Quartz	9.3847E-02	5.6387E+00	2.1292E+00
Rutile	2.5300E-04	2.0209E-02	4.7615E-03
fix CO2(g)	3.7475E-05	1.6493E-03	0.0000E+00
fix O2(g)	-7.0649E-04	-2.2607E-02	0.0000E+00
Clinoptilolite-ss			
Clinoptilolite-Ca	8.9273E-06	1.2002E-02	4.4636E-03
Clinoptilolite-Cs	1.1184E-18	1.9413E-15	5.5921E-16
Clinoptilolite-K	7.3707E-05	1.0396E-01	3.6854E-02
Clinoptilolite-NH4	8.9299E-69	1.1944E-65	4.4650E-66
Clinoptilolite-Na	6.1584E-03	8.3424E+00	3.0792E+00
Clinoptilolite-Sr	0.0000E+00	0.0000E+00	0.0000E+00
Smectite-di			
Beidellite-Ca	4.0469E-11	1.4834E-08	5.2419E-09
Beidellite-K	1.7470E-10	6.5136E-08	2.3357E-08
Beidellite-Mg	3.7563E-10	1.3671E-07	4.6273E-08
Beidellite-Na	1.7146E-08	6.3019E-06	2.2383E-06
Montmor-Ca	7.2652E-08	2.6594E-05	3.6326E-05
Montmor-K	5.1220E-07	1.9071E-04	2.5610E-04
Montmor-Mg	1.0959E-06	3.9831E-04	5.4797E-04
Montmor-Na	4.9025E-05	1.7993E-02	2.4512E-02
Nontronite-Ca	2.6317E-06	1.1166E-03	3.4501E-04
Nontronite-K	1.1360E-05	4.8916E-03	1.5367E-03
Nontronite-Mg	2.4444E-05	1.0308E-02	3.1718E-03

Nontronite-Na	1.1150E-03	4.7418E-01	1.4730E-01

--- Summary of Solid Phases (E.S.+P.R.S.) ---

Phase/End-member	Log moles	Moles	Mass, g	Volume, cc
Alunite	-2.5559	2.7801E-03	1.1516E+00	8.1624E-01
Celadonite	-2.0048	9.8894E-03	3.9235E+00	1.5536E+00
Diaspore	-1.6079	2.4665E-02	1.4796E+00	4.3804E-01
Fluorapatite	-3.9881	1.0278E-04	5.1834E-02	5.1392E-02
Hematite	-3.7144	1.9300E-04	3.0820E-02	5.8428E-03
Maximum_Microcline	-0.8544	1.3982E-01	3.8915E+01	1.5204E+01
Mesolite	-1.6104	2.4524E-02	9.5099E+00	4.1985E+00
Muscovite	-1.7350	1.8408E-02	7.3319E+00	2.5901E+00
Ni2SiO4	-2.1930	6.4125E-03	1.3432E+00	2.7324E-01
Nontronite-H	-4.9990	1.0023E-05	4.1899E-03	5.0117E-03
Pyrolusite	-2.6684	2.1457E-03	1.8654E-01	1.0728E+00
Pyromorphite	-10.7126	1.9384E-11	2.6292E-08	3.7345E-09
Quartz	-0.0149	9.6623E-01	5.8055E+01	2.1922E+01
Rutile	-2.6938	2.0240E-03	1.6167E-01	3.8092E-02
fix CO2(g)	2.3010	1.9999E+02	8.8015E+03	0.0000E+00
fix O2(g)	2.3010	1.9999E+02	6.3996E+03	0.0000E+00
Clinoptilolite-ss	-1.4530	3.5239E-02		
Clinoptilolite-Ca	-4.2975	5.0407E-05	6.7768E-02	2.5204E-02
Clinoptilolite-Cs	-10.5400	2.8843E-11	5.0064E-08	1.4422E-08
Clinoptilolite-K	-3.3807	4.1619E-04	5.8703E-01	2.0809E-01
Clinoptilolite-NH4	-67.3020	4.9889E-68	6.6726E-65	2.4945E-65
Clinoptilolite-Na	-1.4588	3.4772E-02	4.7104E+01	1.7386E+01
Clinoptilolite-Sr	-10.2389	5.7687E-11	8.2309E-08	2.8843E-08
Smectite-di	-2.0236	9.4700E-03		
Beidellite-Ca	-9.1434	7.1881E-10	2.6349E-07	9.3107E-08
Beidellite-K	-8.7063	1.9664E-09	7.3317E-07	2.6291E-07
Beidellite-Mg	-8.5360	2.9109E-09	1.0595E-06	3.5860E-07
Beidellite-Na	-6.9781	1.0516E-07	3.8652E-05	1.3728E-05
Montmor-Ca	-6.0853	8.2168E-07	3.0077E-04	4.1084E-04
Montmor-K	-5.4424	3.6111E-06	1.3445E-03	1.8055E-03
Montmor-Mg	-5.1131	7.7070E-06	2.8010E-03	3.8535E-03
Montmor-Na	-3.5224	3.0035E-04	1.1023E-01	1.5018E-01
Nontronite-Ca	-3.3930	4.0458E-04	1.7166E-01	5.3040E-02
Nontronite-K	-3.1617	6.8906E-04	2.9670E-01	9.3209E-02
Nontronite-Mg	-3.2005	6.3028E-04	2.6578E-01	8.1786E-02
Nontronite-Na	-2.1288	7.4335E-03	3.1612E+00	9.8204E-01

	Mass, grams	Volume, cc
Created	1.537495E+04	6.715422E+01
Destroyed	1.646917E+02	0.000000E+00
Net	1.521025E+04	6.715422E+01

Warning-- these volume totals may be incomplete because
of missing partial molar volume data in the data base

--- Summary of Pure Mineral Saturation States ---

Mineral	Log Q/K	Aff, kcal	State

Alamosite	-3.204	-4.372	
Albite	-0.022	-0.030	
Albite_high	-1.341	-1.829	
Albite_low	-0.022	-0.030	
Alstonite	-7.215	-9.844	
Analcime	-0.148	-0.202	
Analcime-dehy	-6.510	-8.882	
Andalusite	-6.082	-8.298	
Anglesite	-6.453	-8.804	
Anhydrite	-6.441	-8.788	
Aragonite	-3.281	-4.476	
BaCrO4	-3.122	-4.259	
BaHPO4	-7.044	-9.611	
BaZrO3	83.675	114.157	ssatd
Barite	-2.832	-3.864	
Bassanite	-7.087	-9.668	
Beidellite-Ca	-2.466	-3.365	
Beidellite-Cs	-6.419	-8.758	
Beidellite-H	-3.163	-4.315	
Beidellite-K	-2.257	-3.079	
Beidellite-Mg	-2.147	-2.929	
Beidellite-Na	-1.599	-2.182	
Boehmite	-0.634	-0.864	
Boric_acid	-5.084	-6.936	
Brucite	-4.566	-6.229	
Bunsenite	-3.301	-4.504	
CaSO4:0.5H2O(beta)	-7.255	-9.898	
CaZrO3	139.761	190.674	ssatd
Calcite	-3.136	-4.279	
CeO2	-3.199	-4.364	
Celadonite	0.000	0.000	satd
Cerussite	-1.636	-2.232	
Chalcedony	-0.271	-0.370	
Chrysotile	-3.927	-5.358	
Clinochlore-14A	-6.714	-9.160	
Clinoptilolite	-5.630	-7.680	
Clinoptilolite-K	-6.670	-9.100	
Clinoptilolite-Na	-0.020	-0.027	
Clinoptilolite-hy-K	-6.664	-9.092	
Clinoptilolite-hy-Na	-0.018	-0.024	
Coesite	-0.810	-1.105	
Corundum	-4.450	-6.072	
Cristobalite(alpha)	-0.551	-0.751	
Cristobalite(beta)	-0.994	-1.356	
Crocoite	-1.838	-2.508	
Dawsonite	-0.920	-1.256	
Diaspore	-0.230	-0.313	
Diopside	-7.204	-9.829	
Dolomite	-3.382	-4.614	
Dolomite-dis	-4.927	-6.721	
Dolomite-ord	-3.382	-4.614	
Enstatite	-3.594	-4.903	
Epsomite	-7.083	-9.663	
Fe(OH)3	-6.518	-8.893	
Ferrite-Zn	-6.216	-8.480	
Fluorapatite	-6.334	-8.642	
GdPO4:H2O	-4.232	-5.773	
Gibbsite	-0.826	-1.127	
Goethite	-1.397	-1.905	
Gypsum	-6.267	-8.550	
Halite	-6.769	-9.235	
Hematite	-1.832	-2.500	
Hexahydrite	-7.318	-9.984	

Hydrocerussite	-6.642	-9.062	
Ice	-0.139	-0.190	
Illite	-1.275	-1.739	
Jadeite	-1.647	-2.247	
K-Feldspar	0.000	0.000	
Kalicinite	-6.806	-9.285	
Kalsilite	-3.175	-4.332	
Kaolinite	-0.948	-1.294	
Kyanite	-5.812	-7.929	
LaPO4:H2O	-1.921	-2.621	
Lansfordite	-4.425	-6.037	
Laumontite	-5.779	-7.884	
Lawsonite	-6.325	-8.630	
Litharge	-6.176	-8.426	
Magnesite	-1.875	-2.557	
Manganite	-4.459	-6.084	
Massicot	-6.351	-8.665	
Maximum_Microcline	0.000	0.000	satd
Mesolite	0.000	0.000	satd
Mirabilite	-4.021	-5.486	
MnO2(gamma)	-1.518	-2.071	
Monohydrocalcite	-3.971	-5.417	
Montmor-Ca	-1.392	-1.900	
Montmor-Cs	-5.279	-7.202	
Montmor-K	-1.113	-1.518	
Montmor-Mg	-1.003	-1.369	
Montmor-Na	-0.459	-0.626	
Mordenite	-2.805	-3.827	
Muscovite	0.000	0.000	satd
Na2CO3	-6.877	-9.382	
Na2CO3:7H2O	-5.645	-7.701	
Nahcolite	-3.393	-4.629	
Natrolite	-1.039	-1.417	
Natron	-5.311	-7.246	
NdOHCO3	-7.001	-9.551	
NdPO4:H2O	-3.112	-4.245	
Nepheline	-3.060	-4.174	
Nesquehonite	-4.578	-6.246	
Ni(OH)2	-3.579	-4.882	
Ni2SiO4	0.000	0.000	satd
NiCO3	-5.655	-7.715	
Nontronite-Ca	-0.878	-1.198	
Nontronite-H	-1.574	-2.148	
Nontronite-K	-0.668	-0.912	
Nontronite-Mg	-0.559	-0.762	
Nontronite-Na	-0.011	-0.015	
Paragonite	-0.919	-1.253	
Paralaurionite	-6.729	-9.180	
Pb3(PO4)2	-5.450	-7.435	
Pb4O(PO4)2	-6.383	-8.709	
PbHPO4	-4.380	-5.975	
Petalite	-6.151	-8.392	
Phlogopite	-2.518	-3.435	
Plattnerite	-1.539	-2.100	
PuO2	-4.792	-6.538	
Pyrolusite	0.000	0.000	satd
Pyromorphite	0.000	0.000	satd
Pyrophyllite	-2.576	-3.514	
Quartz	0.000	0.000	satd
Rutile	0.000	0.000	satd
Sanidine_high	-1.199	-1.636	
Saponite-Ca	-1.828	-2.495	
Saponite-Cs	-5.782	-7.888	

Saponite-H	-2.525	-3.445	
Saponite-K	-1.619	-2.209	
Saponite-Mg	-1.509	-2.059	
Saponite-Na	-0.962	-1.312	
Scolecite	-3.989	-5.442	
Sellaite	-7.313	-9.976	
SiO2(am)	-1.286	-1.754	
Sillimanite	-6.446	-8.794	
SmPO4:H2O	-3.734	-5.094	
Smectite-low-Fe-Mg	-7.076	-9.653	
Smithsonite	-4.535	-6.187	
SrZrO3	90.041	122.841	ssatd
Stilbite	-1.918	-2.616	
Talc	-1.938	-2.644	
Thenardite	-4.846	-6.611	
Thermonatrite	-6.658	-9.083	
Trevorite	-2.341	-3.193	
Tridymite	-0.172	-0.234	
Witherite	-0.347	-0.473	
Zincite	-3.967	-5.412	
Zn(OH)2(beta)	-4.693	-6.402	
Zn(OH)2(epsilon)	-4.421	-6.031	
Zn(OH)2(gamma)	-4.642	-6.333	
fix CO2(g)	0.000	0.000	satd
fix O2(g)	0.000	0.000	satd

--- Summary of Solid Solutions ---

--- Carbonate-Calcite ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Calcite	5.1771E-02	-1.2859	0.0000	-1.2859
Magnesite	9.4616E-01	-0.0240	0.0000	-0.0240
Rhodochrosite	1.2052E-09	-8.9189	0.0000	-8.9189
Siderite	1.8670E-18	-17.7289	0.0000	-17.7289
Smithsonite	2.0687E-03	-2.6843	0.0000	-2.6843
Strontianite	1.5548E-32	-31.8083	0.0000	-31.8083

Mineral	Log Q/K	Aff, kcal	State
Carbonate-Calcite	-1.850	-2.525	
Calcite	-1.850	-2.525	
Magnesite	-1.850	-2.525	
Rhodochrosite	-1.850	-2.525	
Siderite	-1.850	-2.525	
Smithsonite	-1.850	-2.525	
Strontianite	-1.850	-2.525	

--- Clinoptilolite-hy-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-hy-Ca	1.5021E-10	-9.8233	0.0000	-9.8233
Clinoptilolite-hy-Cs	1.2710E-50	-49.8959	0.0000	-49.8959

Clinoptilolite-hy-K	2.2581E-07	-6.6463	0.0000	-6.6463
Clinoptilolite-hy-Na	1.0000E+00	0.0000	0.0000	0.0000
Clinoptilolite-hy-Sr	4.5213E-67	-66.3447	0.0000	-66.3447

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-hy-ss	-0.018	-0.024	
Clinoptilolite-hy-Ca	-0.018	-0.024	
Clinoptilolite-hy-Cs	-0.018	-0.024	
Clinoptilolite-hy-K	-0.018	-0.024	
Clinoptilolite-hy-Na	-0.018	-0.024	
Clinoptilolite-hy-Sr	-0.018	-0.024	

--- Clinoptilolite-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-Ca	1.4304E-03	-2.8445	-6.9976	-9.8421
Clinoptilolite-Cs	3.7326E-15	-14.4280	-35.4928	-49.9208
Clinoptilolite-K	1.1810E-02	-1.9277	-4.7422	-6.6700
Clinoptilolite-NH4	1.4263E-66	-65.8458	-161.9807	-227.8265
Clinoptilolite-Na	9.8676E-01	-0.0058	-0.0142	-0.0200
Clinoptilolite-Sr	6.6123E-20	-19.1797	-47.1819	-66.3616

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-ss	0.000	0.000	satd
Clinoptilolite-Ca	0.000	0.000	satd
Clinoptilolite-Cs	0.000	0.000	satd
Clinoptilolite-K	0.000	0.000	satd
Clinoptilolite-NH4	0.000	0.000	satd
Clinoptilolite-Na	0.000	0.000	satd
Clinoptilolite-Sr	0.000	0.000	satd

--- Saponite-tri ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Saponite-Ca	2.2816E-03	-2.6418	1.7700	-0.8718
Saponite-H	1.7690E-05	-4.7523	3.1840	-1.5683
Saponite-K	9.8424E-03	-2.0069	1.3446	-0.6623
Saponite-Mg	2.1177E-02	-1.6741	1.1217	-0.5525
Saponite-Na	9.6668E-01	-0.0147	0.0099	-0.0049

Mineral	Log Q/K	Aff, kcal	State
Saponite-tri	-0.957	-1.305	
Saponite-Ca	-0.957	-1.305	
Saponite-H	-0.957	-1.305	
Saponite-K	-0.957	-1.305	
Saponite-Mg	-0.957	-1.305	
Saponite-Na	-0.957	-1.305	

--- Smectite-di ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Beidellite-Ca	3.3607E-08	-7.4736	5.0073	-2.4663
Beidellite-K	1.4508E-07	-6.8384	4.5817	-2.2567
Beidellite-Mg	3.1194E-07	-6.5059	4.3590	-2.1470
Beidellite-Na	1.4239E-05	-4.8465	3.2472	-1.5994
Montmor-Ca	6.0333E-05	-4.2194	2.8270	-1.3924
Montmor-K	4.2535E-04	-3.3712	2.2587	-1.1125
Montmor-Mg	9.1012E-04	-3.0409	2.0374	-1.0035
Montmor-Na	4.0712E-02	-1.3903	0.9315	-0.4588
Nontronite-Ca	2.1855E-03	-2.6605	1.7825	-0.8780
Nontronite-K	9.4343E-03	-2.0253	1.3569	-0.6683
Nontronite-Mg	2.0299E-02	-1.6925	1.1340	-0.5585
Nontronite-Na	9.2596E-01	-0.0334	0.0224	-0.0110

Mineral	Log Q/K	Aff, kcal	State
Smectite-di	0.000	0.000	satd
Beidellite-Ca	0.000	0.000	satd
Beidellite-K	0.000	0.000	satd
Beidellite-Mg	0.000	0.000	satd
Beidellite-Na	0.000	0.000	satd
Montmor-Ca	0.000	0.000	satd
Montmor-K	0.000	0.000	satd
Montmor-Mg	0.000	0.000	satd
Montmor-Na	0.000	0.000	satd
Nontronite-Ca	0.000	0.000	satd
Nontronite-K	0.000	0.000	satd
Nontronite-Mg	0.000	0.000	satd
Nontronite-Na	0.000	0.000	satd

--- Lanthanide hydroxide ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
La(OH)3	2.4989E-04	-3.6023	0.0000	-3.6023
Ce(OH)3	1.2723E-14	-13.8954	0.0000	-13.8954
Nd(OH)3(c)	8.0747E-01	-0.0929	0.0000	-0.0929
Gd(OH)3	1.5382E-01	-0.8130	0.0000	-0.8130
Sm(OH)3	3.8461E-02	-1.4150	0.0000	-1.4150

Mineral	Log Q/K	Aff, kcal	State
Lanthanide hydroxide	-8.584	-11.711	
La(OH)3	-8.584	-11.711	
Ce(OH)3	-8.584	-11.711	
Nd(OH)3(c)	-8.584	-11.711	
Gd(OH)3	-8.584	-11.711	
Sm(OH)3	-8.584	-11.711	

--- Rhabdophane-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaPO4:H2O	9.2187E-01	-0.0353	0.0000	-0.0353
CePO4:H2O	1.4843E-11	-10.8285	0.0000	-10.8285
NdPO4:H2O	5.9437E-02	-1.2259	0.0000	-1.2259
GdPO4:H2O	4.5074E-03	-2.3461	0.0000	-2.3461
SmPO4:H2O	1.4189E-02	-1.8481	0.0000	-1.8481

Mineral	Log Q/K	Aff, kcal	State
Rhabdophane-ss	-1.886	-2.573	
LaPO4:H2O	-1.886	-2.573	
CePO4:H2O	-1.886	-2.573	
NdPO4:H2O	-1.886	-2.573	
GdPO4:H2O	-1.886	-2.573	
SmPO4:H2O	-1.886	-2.573	

--- Lanthanide fluoride ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaF3:0.5H2O	9.2344E-01	-0.0346	0.0000	-0.0346
CeF3:0.5H2O	2.3564E-11	-10.6277	0.0000	-10.6277
NdF3:0.5H2O	7.4955E-02	-1.1252	0.0000	-1.1252
GdF3:0.5H2O	1.7975E-04	-3.7453	0.0000	-3.7453
SmF3:0.5H2O	1.4213E-03	-2.8473	0.0000	-2.8473

Mineral	Log Q/K	Aff, kcal	State
Lanthanide fluoride	-15.766	-21.510	
LaF3:0.5H2O	-15.766	-21.510	
CeF3:0.5H2O	-15.766	-21.510	
NdF3:0.5H2O	-15.766	-21.510	
GdF3:0.5H2O	-15.766	-21.510	
SmF3:0.5H2O	-15.766	-21.510	

--- Summary of Gases ---

Gas	Fugacity	Log fugacity
Al(g)	9.7072-192	-191.0129
B(g)	3.9595-204	-203.4024
BF3(g)	1.2040E-45	-44.9194
C(g)	3.0917-190	-189.5098
CH4(g)	3.5198-146	-145.4535
CO(g)	6.0395E-49	-48.2190
CO2(g)	3.1623E-04	-3.5000
Ca(g)	5.4464-154	-153.2639

Chlorine	1.6789E-31	-30.7750
Cs(g)	2.0980E-89	-88.6782
Cu(g)	1.9358E-82	-81.7131
Fluorine	1.1553E-86	-85.9373
H2(g)	6.1068E-42	-41.2142
H2O(g)	2.5942E-02	-1.5860
H2S(g)	1.0885-144	-143.9632
HCl(g)	5.0230E-20	-19.2990
HF(g)	4.7027E-16	-15.3277
K(g)	1.2715E-76	-75.8957
Li(g)	1.1267E-95	-94.9482
Mg(g)	1.8676-129	-128.7287
Nitrogen	1.2649E-22	-21.8979
NH3(g)	1.2941E-70	-69.8880
NO(g)	3.5415E-27	-26.4508
NO2(g)	2.4215E-21	-20.6159
Na(g)	6.9095E-73	-72.1606
O2(g)	2.0999E-01	-0.6778
Pb(g)	4.4388E-68	-67.3527
S2(g)	7.0845-232	-231.1497
SO2(g)	1.9299E-57	-56.7145
Si(g)	4.2257-221	-220.3741
SiF4(g)	2.1616E-46	-45.6652
Ti(g)	3.8019-231	-230.4200
TiCl4(g)	2.1382E-90	-89.6700
U(g)	9.9962-303	-302.0002
U2Cl10(g)	1.0454-269	-268.9807
U2Cl8(g)	1.9305-269	-268.7143
U2F10(g)	7.1614-187	-186.1450
UCl(g)	4.4776-260	-259.3490
UCl2(g)	6.0001-216	-215.2218
UCl3(g)	1.7611-169	-168.7542
UCl4(g)	2.7989-140	-139.5530
UCl5(g)	2.2887-148	-147.6404
UCl6(g)	3.4770-151	-150.4588
UF(g)	8.9090-246	-245.0502
UF2(g)	5.8887-207	-206.2300
UF3(g)	9.5789-162	-161.0187
UF4(g)	2.2999-113	-112.6383
UF5(g)	2.5293-106	-105.5970
UF6(g)	2.7390-113	-112.5624
UO(g)	7.8947-218	-217.1027
UO2(g)	1.4626-133	-132.8349
UO2Cl2(g)	1.0722E-83	-82.9697
UO2F2(g)	7.6335E-73	-72.1173
UO3(g)	1.0758E-80	-79.9683
UOF4(g)	6.8534E-91	-90.1641
Zn(g)	4.1325E-77	-76.3838

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--- shifting e.s. solid(s) to the p.r.s. (shftz) ---

      shifted -- Celadonite
              - old mass=  1.24347E-03, new mass=  1.24347E-05
      shifted -- Maximum_Microcline
              - old mass=  1.92624E-02, new mass=  1.92624E-04
      shifted -- Mesolite
              - old mass=  3.13804E-03, new mass=  3.13804E-05
      shifted -- Muscovite
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            - old mass=  1.01078E-03, new mass=  1.01078E-05
  not shifted -- Ni2SiO4
            - mass=  7.99986E-07
      shifted -- Pyrolusite
            - old mass=  1.95960E-04, new mass=  1.95960E-06
  not shifted -- Pyromorphite
            - mass=  1.93839E-11
      shifted -- Quartz
            - old mass=  9.47947E-02, new mass=  9.47947E-04
      shifted -- Rutile
            - old mass=  2.55556E-04, new mass=  2.55556E-06
      shifted -- Clinoptilolite-ss
            - old mass=  6.30407E-03, new mass=  6.30407E-05
      shifted -- Smectite-di
            - old mass=  1.21634E-03, new mass=  1.21634E-05

Stepping to zi=  8.0070E+00, delzi=  6.9594E-03, nord= 6
  time =  7.7228E+04 d, dltime =  6.7123E+01 d
Steps completed =   804, iter = 25, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -41.1261

Stepping to zi=  8.0078E+00, delzi=  8.6992E-04, nord= 6
  time =  7.7236E+04 d, dltime =  8.3904E+00 d
Steps completed =   805, iter = 13, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -41.1692

Stepping to zi=  8.0096E+00, delzi=  1.7398E-03, nord= 4
  time =  7.7253E+04 d, dltime =  1.6781E+01 d
Steps completed =   806, iter = 19, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -41.2495

Stepping to zi=  8.0130E+00, delzi=  3.4797E-03, nord= 6
  time =  7.7286E+04 d, dltime =  3.3562E+01 d
Steps completed =   807, iter = 15, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -41.3907

Stepping to zi=  8.0172E+00, delzi=  4.1826E-03, nord= 6
  time =  7.7327E+04 d, dltime =  4.0341E+01 d
Steps completed =   808, iter = 15, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -41.5347

Stepping to zi=  8.0202E+00, delzi=  2.9661E-03, nord= 6
  time =  7.7355E+04 d, dltime =  2.8608E+01 d
Steps completed =   809, iter =  8, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -41.6240

Stepping to zi=  8.0228E+00, delzi=  2.6413E-03, nord= 6
  time =  7.7381E+04 d, dltime =  2.5476E+01 d
Steps completed =   810, iter =  8, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -41.6964

Stepping to zi=  8.0261E+00, delzi=  3.2344E-03, nord= 6
  time =  7.7412E+04 d, dltime =  3.1196E+01 d
Steps completed =   811, iter = 19, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -41.7776

Stepping to zi=  8.0297E+00, delzi=  3.6165E-03, nord= 6
  time =  7.7447E+04 d, dltime =  3.4881E+01 d
Steps completed =   812, iter = 14, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -41.8602

Stepping to zi=  8.0338E+00, delzi=  4.0800E-03, nord= 6
  time =  7.7486E+04 d, dltime =  3.9352E+01 d
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Steps completed =   813, iter = 11, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -41.9448

Stepping to zi=  8.0384E+00, delzi=  4.6059E-03, nord= 6
  time =  7.7531E+04 d, dltime =  4.4424E+01 d
Steps completed =   814, iter = 19, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -42.0313

Stepping to zi=  8.0435E+00, delzi=  5.1315E-03, nord= 6
  time =  7.7580E+04 d, dltime =  4.9493E+01 d
Steps completed =   815, iter =  6, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -42.1186

Stepping to zi=  8.0491E+00, delzi=  5.6413E-03, nord= 6
  time =  7.7635E+04 d, dltime =  5.4410E+01 d
Steps completed =   816, iter =  6, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -42.2053

Stepping to zi=  8.0553E+00, delzi=  6.1988E-03, nord= 6
  time =  7.7694E+04 d, dltime =  5.9787E+01 d
Steps completed =   817, iter = 12, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -42.2915

Stepping to zi=  8.0622E+00, delzi=  6.8339E-03, nord= 6
  time =  7.7760E+04 d, dltime =  6.5913E+01 d
Steps completed =   818, iter =  8, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -42.3776

Stepping to zi=  8.0697E+00, delzi=  7.5428E-03, nord= 6
  time =  7.7833E+04 d, dltime =  7.2751E+01 d
Steps completed =   819, iter = 12, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -42.4636

Stepping to zi=  8.0781E+00, delzi=  8.3321E-03, nord= 6
  time =  7.7913E+04 d, dltime =  8.0364E+01 d
Steps completed =   820, iter = 11, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -42.5497

Stepping to zi=  8.0873E+00, delzi=  9.2070E-03, nord= 6
  time =  7.8002E+04 d, dltime =  8.8802E+01 d
Steps completed =   821, iter =  7, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -42.6358

Stepping to zi=  8.0974E+00, delzi=  1.0173E-02, nord= 6
  time =  7.8100E+04 d, dltime =  9.8116E+01 d
Steps completed =   822, iter = 11, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -42.7219

Stepping to zi=  8.1087E+00, delzi=  1.1237E-02, nord= 6
  time =  7.8209E+04 d, dltime =  1.0838E+02 d
Steps completed =   823, iter = 16, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -42.8080

Stepping to zi=  8.1211E+00, delzi=  1.2410E-02, nord= 6
  time =  7.8328E+04 d, dltime =  1.1970E+02 d
Steps completed =   824, iter = 15, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -42.8942

Stepping to zi=  8.1348E+00, delzi=  1.3706E-02, nord= 6
  time =  7.8461E+04 d, dltime =  1.3220E+02 d
Steps completed =   825, iter =  7, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -42.9803
```

```
Stepping to zi=  8.1499E+00, delzi=  1.5138E-02, nord= 6
  time =  7.8607E+04 d, dltime =  1.4600E+02 d
Steps completed =   826, iter = 15, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -43.0664

Stepping to zi=  8.1666E+00, delzi=  1.6719E-02, nord= 6
  time =  7.8768E+04 d, dltime =  1.6126E+02 d
Steps completed =   827, iter = 19, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -43.1525

Stepping to zi=  8.1851E+00, delzi=  1.8466E-02, nord= 6
  time =  7.8946E+04 d, dltime =  1.7811E+02 d
Steps completed =   828, iter = 10, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -43.2386

Stepping to zi=  8.2055E+00, delzi=  2.0396E-02, nord= 6
  time =  7.9143E+04 d, dltime =  1.9672E+02 d
Steps completed =   829, iter = 12, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -43.3248

Stepping to zi=  8.2280E+00, delzi=  2.2527E-02, nord= 6
  time =  7.9360E+04 d, dltime =  2.1727E+02 d
Steps completed =   830, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -43.4109

Stepping to zi=  8.2529E+00, delzi=  2.4881E-02, nord= 6
  time =  7.9600E+04 d, dltime =  2.3998E+02 d
Steps completed =   831, iter = 12, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -43.4970

Stepping to zi=  8.2804E+00, delzi=  2.7481E-02, nord= 6
  time =  7.9865E+04 d, dltime =  2.6505E+02 d
Steps completed =   832, iter = 19, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -43.5831

Stepping to zi=  8.3107E+00, delzi=  3.0352E-02, nord= 6
  time =  8.0158E+04 d, dltime =  2.9275E+02 d
Steps completed =   833, iter = 19, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -43.6692

Stepping to zi=  8.3443E+00, delzi=  3.3524E-02, nord= 6
  time =  8.0481E+04 d, dltime =  3.2334E+02 d
Steps completed =   834, iter =  6, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -43.7553

Stepping to zi=  8.3813E+00, delzi=  3.7027E-02, nord= 6
  time =  8.0838E+04 d, dltime =  3.5713E+02 d
Steps completed =   835, iter =  8, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -43.8414

Stepping to zi=  8.4222E+00, delzi=  4.0896E-02, nord= 6
  time =  8.1233E+04 d, dltime =  3.9445E+02 d
Steps completed =   836, iter =  6, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -43.9275

Stepping to zi=  8.4674E+00, delzi=  4.5170E-02, nord= 6
  time =  8.1668E+04 d, dltime =  4.3567E+02 d
Steps completed =   837, iter = 12, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -44.0136

Stepping to zi=  8.5173E+00, delzi=  4.9891E-02, nord= 6
  time =  8.2149E+04 d, dltime =  4.8120E+02 d
Steps completed =   838, iter = 14, ncorr = 0
```

```
Most rapidly changing is zvclg1(Sr++                    ) =    -44.0996

Stepping to zi=  8.5724E+00, delzi=  5.5105E-02, nord= 6
  time =  8.2681E+04 d, dltime =  5.3149E+02 d
Steps completed =   839, iter = 20, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -44.1857

Stepping to zi=  8.6332E+00, delzi=  6.0864E-02, nord= 6
  time =  8.3268E+04 d, dltime =  5.8704E+02 d
Steps completed =   840, iter =  7, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -44.2718

Stepping to zi=  8.7004E+00, delzi=  6.7225E-02, nord= 6
  time =  8.3916E+04 d, dltime =  6.4839E+02 d
Steps completed =   841, iter = 18, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -44.3578

Stepping to zi=  8.7747E+00, delzi=  7.4252E-02, nord= 6
  time =  8.4633E+04 d, dltime =  7.1616E+02 d
Steps completed =   842, iter = 15, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -44.4439

Stepping to zi=  8.8567E+00, delzi=  8.2013E-02, nord= 6
  time =  8.5424E+04 d, dltime =  7.9102E+02 d
Steps completed =   843, iter = 21, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -44.5299

Stepping to zi=  8.9473E+00, delzi=  9.0587E-02, nord= 6
  time =  8.6297E+04 d, dltime =  8.7371E+02 d
Steps completed =   844, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -44.6160

Stepping to zi=  9.0000E+00, delzi=  5.2699E-02, nord= 6
  time =  8.6806E+04 d, dltime =  5.0828E+02 d
Steps completed =   845, iter =  6, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -44.6624

- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -


                    Reaction progress        =  9.00000000000000E+00
                    Log of reaction progress =       0.9542425



                    Time =  7.500E+09 sec
                         =  8.681E+04 days
                         =  2.377E+02 years

                    Log sec =        9.875
                    Log days =       4.939
                    Log years =      2.376

                    Temperature    =     25.000 degrees C
                    total pressure =      1.013 bars


Step size is limited by the P.R.S. shift requirement


                              --- Reactant Summary ---
```

Reactant	Moles	Delta moles	Mass, g	Delta Mass, g
Tuff	9.1000E+01	9.0000E+00	1.8734E+03	1.8528E+02

Current total mass = 1.87337E+03 grams
Delta total mass = 1.85278E+02 grams
Delta total volume = 0.00000 cc

Reactant	Rel. Rate mol/mol	Rate mol/s	Rate mol/s/cm2
Tuff	1.0000E+00	1.2000E-09	2.5000E-15

Reactant	Affinity kcal/mol	Surface Area mol/s/cm2
Tuff	999.00000	4.8000E+05

Reactant	Rate Constants, mol/s/cm2	
Tuff		
	Forward	2.5000E-15

Affinity of the overall irreversible reaction= 0.000 kcal
Contributions from irreversible reactions
with no thermodynamic data are not included

--- Element Totals for the Aqueous Solution ---

Element	mg/kg soln.	Molality	Moles
O	8.862567E+05	5.562546E+01	5.502503E+01
Al	5.904493E-03	2.197524E-07	2.173804E-07
B	1.348226E-01	1.252318E-05	1.238800E-05
Ba	1.382456E-05	1.010912E-10	1.000000E-10
Ca	7.739919E-04	1.939314E-08	1.918381E-08
Ce	1.410522E-19	1.010911E-24	9.999992E-25
Cl	7.187937E+00	2.035977E-04	2.014000E-04
Cr	3.026425E+02	5.844897E-03	5.781806E-03
Cs	3.267370E-14	2.468729E-19	2.442081E-19
Cu	6.716965E-10	1.061458E-14	1.050000E-14
F	2.288628E-01	1.209695E-05	1.196637E-05
Fe	1.138733E-08	2.047576E-13	2.025474E-13
Gd	1.583019E-09	1.010912E-14	9.999998E-15
H	1.114414E+05	1.110273E+02	1.098289E+02
C	1.363580E+02	1.140038E-02	1.127732E-02
P	9.991834E+00	3.239434E-04	3.204467E-04
K	2.034951E+00	5.226536E-05	5.170120E-05
La	1.398347E-09	1.010912E-14	9.999998E-15
Li	6.987432E-07	1.010912E-10	1.000000E-10
Mg	2.293209E-02	9.474707E-07	9.372435E-07
Mn	4.342568E-11	7.937637E-16	7.851957E-16
Mo	2.201259E+02	2.304036E-03	2.279166E-03
N	2.002262E+00	1.435495E-04	1.420000E-04
Na	1.235259E+03	5.395618E-02	5.337377E-02

Nd	1.452049E-09	1.010912E-14	9.999998E-15
Ni	1.014328E-04	1.735530E-09	1.716796E-09
Pb	5.928880E-07	2.873431E-12	2.842414E-12
Pu	2.456322E-09	1.010912E-14	9.999999E-15
S	3.767796E+02	1.179941E-02	1.167205E-02
Si	4.308445E+00	1.540481E-04	1.523852E-04
Sm	1.513658E-09	1.010912E-14	9.999998E-15
Sr	2.913800E-40	3.339445E-45	3.303398E-45
Ti	1.076356E-05	2.257458E-10	2.233090E-10
U	2.396213E-09	1.010912E-14	1.000000E-14
V	4.815930E+00	9.493497E-05	9.391022E-05
Zn	6.582743E-06	1.010912E-10	1.000000E-10
Zr	9.183433E-16	1.010913E-20	1.000001E-20

Single ion activities and activity coefficients are here defined
with respect to the modified NBS pH scale

	pH	Eh	pe
modified NBS pH scale	9.2006	0.6748	1.1406E+01
rational pH scale	9.1193	0.6796	1.1488E+01

pHCl = 12.9922

Oxygen fugacity = 2.09991E-01
Log oxygen fugacity = -0.67780

Activity of water = 0.99864
Log activity of water = -0.00059

Ionic strength = 7.224171E-02 molal
Sum of molalities = 0.0845526870621
Osmotic coefficient = 0.89212

Mass of solution = 0.993355 kg
Mass of solutes = 0.004149 kg
Conc. of solutes = 0.417692 per cent (w/w)

Moles of solvent H2O = 5.49093E+01
Mass of solvent H2O = 9.89206E-01 kg

Species	Molality	Log molality	Log gamma	Log activity
Na+	5.1927E-02	-1.2846	-0.1063	-1.3909
SO4--	1.0389E-02	-1.9834	-0.3878	-2.3712
HCO3-	9.4906E-03	-2.0227	-0.0909	-2.1136
CrO4--	5.8391E-03	-2.2337	-0.3878	-2.6215
MoO4--	2.3040E-03	-2.6375	-0.3750	-3.0125
NaSO4-	1.4084E-03	-2.8513	-0.0909	-2.9421
CO3--	1.3589E-03	-2.8668	-0.3750	-3.2418
NaHCO3(aq)	4.4627E-04	-3.3504	0.0000	-3.3504
HPO4--	2.7484E-04	-3.5609	-0.3878	-3.9487
O2(aq)	2.6082E-04	-3.5837	0.0076	-3.5761
Cl-	2.0250E-04	-3.6936	-0.0980	-3.7915
NO3-	1.4355E-04	-3.8430	-0.0980	-3.9410

SiO2(aq)	1.0016E-04	-3.9993	0.0000	-3.9993
NaCO3-	9.3882E-05	-4.0274	-0.0909	-4.1183
VO3OH--	8.5207E-05	-4.0695	-0.3878	-4.4573
K+	5.0681E-05	-4.2952	-0.1134	-4.4086
NaHPO4-	4.6905E-05	-4.3288	-0.0909	-4.4197
NaHSiO3(aq)	3.2048E-05	-4.4942	0.0000	-4.4942
HSiO3-	2.1832E-05	-4.6609	-0.0909	-4.7518
OH-	1.9917E-05	-4.7008	-0.0943	-4.7951
F-	1.2057E-05	-4.9188	-0.0943	-5.0130
CO2(aq)	1.0557E-05	-4.9765	0.0076	-4.9689
HVO4--	9.1786E-06	-5.0372	-0.3878	-5.4250
BO2-	6.3944E-06	-5.1942	-0.0909	-5.2851
HCrO4-	5.7969E-06	-5.2368	-0.0909	-5.3277
B(OH)3(aq)	5.7362E-06	-5.2414	0.0000	-5.2414
KSO4-	1.5512E-06	-5.8093	-0.0909	-5.9002
H2PO4-	1.4026E-06	-5.8531	-0.0909	-5.9439
NaCl(aq)	1.0978E-06	-5.9595	0.0000	-5.9595
PO4---	6.5756E-07	-6.1821	-0.8878	-7.0699
Mg++	4.6412E-07	-6.3334	-0.3346	-6.6680
NaB(OH)4(aq)	3.9240E-07	-6.4063	0.0000	-6.4063
H2VO4-	3.3746E-07	-6.4718	-0.0909	-6.5626
MgSO4(aq)	2.3579E-07	-6.6275	0.0000	-6.6275
AlO2-	2.1814E-07	-6.6613	-0.0909	-6.7521
VO2(OH)2-	2.0913E-07	-6.6796	-0.0909	-6.7704
MgCO3(aq)	1.1727E-07	-6.9308	0.0000	-6.9308
NaOH(aq)	1.0335E-07	-6.9857	0.0000	-6.9857
MgPO4-	8.7499E-08	-7.0580	-0.0909	-7.1489
NaF(aq)	3.9667E-08	-7.4016	0.0000	-7.4016
KHPO4-	3.2627E-08	-7.4864	-0.0909	-7.5773
MgHCO3+	2.2935E-08	-7.6395	-0.1063	-7.7458
MgHPO4(aq)	1.9648E-08	-7.7067	0.0000	-7.7067
Ca++	9.9323E-09	-8.0029	-0.3718	-8.3747
H2SiO4--	6.7384E-09	-8.1714	-0.3878	-8.5592
CaCO3(aq)	5.1358E-09	-8.2894	0.0000	-8.2894
VO4---	2.3504E-09	-8.6289	-0.8878	-9.5167
CaSO4(aq)	2.3182E-09	-8.6349	0.0000	-8.6349
Cr2O7--	1.8342E-09	-8.7366	-0.3878	-9.1244
Ni++	1.3855E-09	-8.8584	-0.3718	-9.2302
NaAlO2(aq)	1.2991E-09	-8.8864	0.0000	-8.8864
CaPO4-	1.2771E-09	-8.8938	-0.0909	-8.9846
H+	7.5981E-10	-9.1193	-0.0813	-9.2006
CaHCO3+	4.6207E-10	-9.3353	-0.1063	-9.4416
NiSO4(aq)	3.3442E-10	-9.4757	0.0000	-9.4757
HSO4-	3.1487E-10	-9.5019	-0.0909	-9.5927
HAlO2(aq)	3.1452E-10	-9.5024	0.0000	-9.5024
CaHPO4(aq)	2.6094E-10	-9.5835	0.0000	-9.5835
Ti(OH)4(aq)	2.2575E-10	-9.6464	0.0000	-9.6464
KOH(aq)	2.1452E-10	-9.6685	0.0000	-9.6685
KCl(aq)	2.0197E-10	-9.6947	0.0000	-9.6947
MgB(OH)4+	1.1228E-10	-9.9497	-0.1063	-10.0560

--- Summary of Instantaneously Precipitated Solid Phases ---
(defined by derivatives)

--- Theoretical Rock Composition ---
g/kg

O	5.181365E+01
Al	6.307685E+00
Ca	3.743589E-01
Cl	6.806534E-12
Cs	1.369010E-16

Fe	6.119346E-01
H	7.307055E-01
C	2.039934E-03
P	1.783988E-11
K	3.828016E+00
Mg	1.381790E-01
Mn	4.839749E-02
N	1.975464E-66
Na	2.488296E+00
Pb	1.989008E-10
Si	3.360173E+01
Ti	5.500758E-02

--- Oxide Percentages ---

Oxide Theoretical rock

Total = 0.0000

Phase/end-member	d mol/d zi	d grams/d zi	d vol (cc)/d zi
Celadonite	1.2310E-03	4.8840E-01	1.9340E-01
Maximum_Microcline	1.9070E-02	5.3077E+00	2.0737E+00
Mesolite	3.1067E-03	1.2047E+00	5.3186E-01
Muscovite	1.0007E-03	3.9860E-01	1.4081E-01
Ni2SiO4	-2.5861E-12	-5.4169E-10	-1.1019E-10
Pyrolusite	1.9400E-04	1.6866E-02	9.7000E-02
Pyromorphite	4.2279E-14	5.7346E-11	8.1455E-12
Quartz	9.3847E-02	5.6388E+00	2.1292E+00
Rutile	2.5300E-04	2.0209E-02	4.7615E-03
fix CO2(g)	3.7402E-05	1.6460E-03	0.0000E+00
fix O2(g)	-7.0649E-04	-2.2607E-02	0.0000E+00
Clinoptilolite-ss			
Clinoptilolite-Ca	8.9272E-06	1.2002E-02	4.4636E-03
Clinoptilolite-Cs	6.5428E-20	1.1356E-16	3.2714E-17
Clinoptilolite-K	7.3707E-05	1.0396E-01	3.6853E-02
Clinoptilolite-NH4	8.9584E-69	1.1982E-65	4.4792E-66
Clinoptilolite-Na	6.1584E-03	8.3424E+00	3.0792E+00
Clinoptilolite-Sr	0.0000E+00	0.0000E+00	0.0000E+00
Smectite-di			
Beidellite-Ca	4.0469E-11	1.4834E-08	5.2419E-09
Beidellite-K	1.7470E-10	6.5136E-08	2.3357E-08
Beidellite-Mg	3.7563E-10	1.3671E-07	4.6273E-08
Beidellite-Na	1.7146E-08	6.3019E-06	2.2383E-06
Montmor-Ca	7.2652E-08	2.6594E-05	3.6326E-05
Montmor-K	5.1220E-07	1.9071E-04	2.5610E-04
Montmor-Mg	1.0959E-06	3.9831E-04	5.4797E-04
Montmor-Na	4.9025E-05	1.7993E-02	2.4513E-02
Nontronite-Ca	2.6317E-06	1.1166E-03	3.4501E-04
Nontronite-K	1.1360E-05	4.8916E-03	1.5367E-03
Nontronite-Mg	2.4444E-05	1.0308E-02	3.1718E-03
Nontronite-Na	1.1150E-03	4.7418E-01	1.4730E-01

--- Summary of Solid Phases (E.S.+P.R.S.) ---

Phase/End-member	Log moles	Moles	Mass, g	Volume, cc
Alunite	-2.5559	2.7801E-03	1.1516E+00	8.1624E-01
Celadonite	-1.9539	1.1120E-02	4.4119E+00	1.7470E+00
Diaspore	-1.6079	2.4665E-02	1.4796E+00	4.3804E-01

Fluorapatite	-3.9881	1.0278E-04	5.1834E-02	5.1392E-02
Hematite	-3.7144	1.9300E-04	3.0820E-02	5.8428E-03
Maximum_Microcline	-0.7989	1.5889E-01	4.4223E+01	1.7277E+01
Mesolite	-1.5586	2.7631E-02	1.0715E+01	4.7303E+00
Muscovite	-1.7120	1.9408E-02	7.7305E+00	2.7310E+00
Ni2SiO4	-2.1930	6.4125E-03	1.3432E+00	2.7324E-01
Nontronite-H	-4.9990	1.0023E-05	4.1899E-03	5.0117E-03
Pyrolusite	-2.6308	2.3397E-03	2.0340E-01	1.1698E+00
Pyromorphite	-10.7115	1.9432E-11	2.6356E-08	3.7437E-09
Quartz	0.0253	1.0601E+00	6.3694E+01	2.4051E+01
Rutile	-2.6426	2.2770E-03	1.8188E-01	4.2853E-02
fix CO2(g)	2.3010	1.9999E+02	8.8015E+03	0.0000E+00
fix O2(g)	2.3010	1.9999E+02	6.3995E+03	0.0000E+00
Clinoptilolite-ss	-1.3822	4.1480E-02		
Clinoptilolite-Ca	-4.2267	5.9334E-05	7.9770E-02	2.9667E-02
Clinoptilolite-Cs	-10.5400	2.8843E-11	5.0064E-08	1.4422E-08
Clinoptilolite-K	-3.3099	4.8989E-04	6.9099E-01	2.4495E-01
Clinoptilolite-NH4	-67.2305	5.8819E-68	7.8670E-65	2.9410E-65
Clinoptilolite-Na	-1.3880	4.0930E-02	5.5446E+01	2.0465E+01
Clinoptilolite-Sr	-10.2389	5.7687E-11	8.2309E-08	2.8843E-08
Smectite-di	-1.9717	1.0674E-02		
Beidellite-Ca	-9.1196	7.5928E-10	2.7832E-07	9.8349E-08
Beidellite-K	-8.6694	2.1411E-09	7.9831E-07	2.8626E-07
Beidellite-Mg	-8.4833	3.2865E-09	1.1962E-06	4.0487E-07
Beidellite-Na	-6.9125	1.2231E-07	4.4954E-05	1.5966E-05
Montmor-Ca	-6.0485	8.9433E-07	3.2736E-04	4.4717E-04
Montmor-K	-5.3848	4.1233E-06	1.5352E-03	2.0616E-03
Montmor-Mg	-5.0554	8.8029E-06	3.1994E-03	4.4015E-03
Montmor-Na	-3.4567	3.4938E-04	1.2823E-01	1.7469E-01
Nontronite-Ca	-3.3902	4.0721E-04	1.7278E-01	5.3386E-02
Nontronite-K	-3.1546	7.0042E-04	3.0159E-01	9.4745E-02
Nontronite-Mg	-3.1839	6.5473E-04	2.7609E-01	8.4957E-02
Nontronite-Na	-2.0681	8.5485E-03	3.6354E+00	1.1293E+00

	Mass, grams	Volume, cc
Created	1.539697E+04	7.562313E+01
Destroyed	1.852782E+02	0.000000E+00
Net	1.521169E+04	7.562313E+01

Warning-- these volume totals may be incomplete because
of missing partial molar volume data in the data base

--- Summary of Pure Mineral Saturation States ---

Mineral	Log Q/K	Aff, kcal	State
Alamosite	-3.244	-4.426	
Albite	-0.022	-0.030	
Albite_high	-1.341	-1.829	
Albite_low	-0.022	-0.030	
Alstonite	-7.217	-9.845	
Analcime	-0.148	-0.202	
Analcime-dehy	-6.510	-8.882	
Andalusite	-6.082	-8.298	
Anglesite	-6.490	-8.855	
Anhydrite	-6.440	-8.785	

Aragonite	-3.281	-4.476	
BaCrO4	-3.121	-4.258	
BaHPO4	-6.980	-9.523	
BaZrO3	83.675	114.156	ssatd
Barite	-2.832	-3.863	
Bassanite	-7.085	-9.666	
Beidellite-Ca	-2.466	-3.365	
Beidellite-Cs	-6.826	-9.313	
Beidellite-H	-3.163	-4.315	
Beidellite-K	-2.257	-3.079	
Beidellite-Mg	-2.147	-2.929	
Beidellite-Na	-1.599	-2.182	
Boehmite	-0.634	-0.864	
Boric_acid	-5.083	-6.935	
Brucite	-4.566	-6.229	
Bunsenite	-3.301	-4.504	
CaSO4:0.5H2O(beta)	-7.253	-9.895	
CaZrO3	139.761	190.674	ssatd
Calcite	-3.136	-4.279	
CeO2	-3.210	-4.380	
Celadonite	0.000	0.000	satd
Cerussite	-1.676	-2.286	
Chalcedony	-0.271	-0.370	
Chrysotile	-3.927	-5.358	
Clinochlore-14A	-6.714	-9.160	
Clinoptilolite	-5.773	-7.877	
Clinoptilolite-K	-6.670	-9.100	
Clinoptilolite-Na	-0.020	-0.027	
Clinoptilolite-hy-K	-6.664	-9.092	
Clinoptilolite-hy-Na	-0.018	-0.024	
Coesite	-0.810	-1.105	
Corundum	-4.450	-6.072	
Cristobalite(alpha)	-0.551	-0.751	
Cristobalite(beta)	-0.994	-1.356	
Crocoite	-1.876	-2.559	
Dawsonite	-0.920	-1.256	
Diaspore	-0.230	-0.313	
Diopside	-7.204	-9.829	
Dolomite	-3.382	-4.614	
Dolomite-dis	-4.927	-6.721	
Dolomite-ord	-3.382	-4.614	
Enstatite	-3.594	-4.903	
Epsomite	-7.081	-9.661	
Fe(OH)3	-6.518	-8.893	
Ferrite-Zn	-6.259	-8.539	
Fluorapatite	-6.137	-8.373	
GdPO4:H2O	-4.269	-5.825	
Gibbsite	-0.826	-1.127	
Goethite	-1.397	-1.905	
Gypsum	-6.265	-8.547	
Halite	-6.768	-9.233	
Hematite	-1.832	-2.500	
Hexahydrite	-7.316	-9.981	
Hydrocerussite	-6.760	-9.223	
Ice	-0.139	-0.190	
Illite	-1.275	-1.739	
Jadeite	-1.647	-2.247	
K-Feldspar	0.000	0.000	
Kalicinite	-6.806	-9.285	
Kalsilite	-3.175	-4.332	
Kaolinite	-0.948	-1.294	
Kyanite	-5.812	-7.929	
LaPO4:H2O	-1.863	-2.542	

Lansfordite	-4.425	-6.037	
Laumontite	-5.779	-7.884	
Lawsonite	-6.325	-8.630	
Litharge	-6.215	-8.479	
Magnesite	-1.875	-2.557	
Manganite	-4.459	-6.084	
Massicot	-6.390	-8.718	
Maximum_Microcline	0.000	0.000	satd
Mesolite	0.000	0.000	satd
Mirabilite	-4.019	-5.483	
MnO2(gamma)	-1.518	-2.071	
Monohydrocalcite	-3.971	-5.417	
Montmor-Ca	-1.392	-1.900	
Montmor-Cs	-5.686	-7.757	
Montmor-K	-1.113	-1.518	
Montmor-Mg	-1.003	-1.369	
Montmor-Na	-0.459	-0.626	
Mordenite	-2.805	-3.827	
Muscovite	0.000	0.000	satd
Na2CO3	-6.877	-9.382	
Na2CO3:7H2O	-5.645	-7.701	
Nahcolite	-3.393	-4.629	
Natrolite	-1.039	-1.417	
Natron	-5.311	-7.246	
NdOHCO3	-7.058	-9.630	
NdPO4:H2O	-3.104	-4.234	
Nepheline	-3.060	-4.174	
Nesquehonite	-4.578	-6.246	
Ni(OH)2	-3.579	-4.882	
Ni2SiO4	0.000	0.000	satd
NiCO3	-5.655	-7.715	
Nontronite-Ca	-0.878	-1.198	
Nontronite-H	-1.574	-2.148	
Nontronite-K	-0.668	-0.912	
Nontronite-Mg	-0.559	-0.762	
Nontronite-Na	-0.011	-0.015	
Paragonite	-0.919	-1.253	
Paralaurionite	-6.767	-9.232	
Pb3(PO4)2	-5.438	-7.418	
Pb4O(PO4)2	-6.411	-8.746	
PbHPO4	-4.354	-5.940	
Petalite	-6.151	-8.392	
Phlogopite	-2.518	-3.435	
Plattnerite	-1.579	-2.154	
PuO2	-4.790	-6.535	
Pyrolusite	0.000	0.000	satd
Pyromorphite	0.000	0.000	satd
Pyrophyllite	-2.576	-3.514	
Quartz	0.000	0.000	satd
Rutile	0.000	0.000	satd
Sanidine_high	-1.199	-1.636	
Saponite-Ca	-1.828	-2.495	
Saponite-Cs	-6.189	-8.443	
Saponite-H	-2.525	-3.445	
Saponite-K	-1.619	-2.209	
Saponite-Mg	-1.509	-2.059	
Saponite-Na	-0.962	-1.312	
Scolecite	-3.989	-5.442	
Sellaite	-7.310	-9.973	
SiO2(am)	-1.286	-1.754	
Sillimanite	-6.446	-8.794	
SmPO4:H2O	-3.771	-5.145	
Smectite-low-Fe-Mg	-7.076	-9.653	

Smithsonite	-4.578	-6.246	
SrZrO3	86.050	117.396	ssatd
Stilbite	-1.918	-2.616	
Talc	-1.938	-2.644	
Thenardite	-4.844	-6.609	
Thermonatrite	-6.658	-9.083	
Trevorite	-2.341	-3.193	
Tridymite	-0.172	-0.234	
Witherite	-0.348	-0.475	
Zincite	-4.010	-5.471	
Zn(OH)2(beta)	-4.736	-6.462	
Zn(OH)2(epsilon)	-4.465	-6.091	
Zn(OH)2(gamma)	-4.685	-6.392	
fix CO2(g)	0.000	0.000	satd
fix O2(g)	0.000	0.000	satd

--- Summary of Solid Solutions ---

--- Carbonate-Calcite ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Calcite	5.1781E-02	-1.2858	0.0000	-1.2858
Magnesite	9.4635E-01	-0.0239	0.0000	-0.0239
Rhodochrosite	1.2055E-09	-8.9188	0.0000	-8.9188
Siderite	1.8673E-18	-17.7288	0.0000	-17.7288
Smithsonite	1.8712E-03	-2.7279	0.0000	-2.7279
Strontianite	1.5844E-36	-35.8001	0.0000	-35.8001

Mineral	Log Q/K	Aff, kcal	State
Carbonate-Calcite	-1.851	-2.525	
Calcite	-1.851	-2.525	
Magnesite	-1.851	-2.525	
Rhodochrosite	-1.851	-2.525	
Siderite	-1.851	-2.525	
Smithsonite	-1.851	-2.525	
Strontianite	-1.851	-2.525	

--- Clinoptilolite-hy-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-hy-Ca	1.5020E-10	-9.8233	0.0000	-9.8233
Clinoptilolite-hy-Cs	6.7533E-55	-54.1705	0.0000	-54.1705
Clinoptilolite-hy-K	2.2580E-07	-6.6463	0.0000	-6.6463
Clinoptilolite-hy-Na	1.0000E+00	0.0000	0.0000	0.0000
Clinoptilolite-hy-Sr	5.4358E-74	-73.2647	0.0000	-73.2647

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-hy-ss	-0.018	-0.024	
Clinoptilolite-hy-Ca	-0.018	-0.024	
Clinoptilolite-hy-Cs	-0.018	-0.024	

Clinoptilolite-hy-K	-0.018	-0.024
Clinoptilolite-hy-Na	-0.018	-0.024
Clinoptilolite-hy-Sr	-0.018	-0.024

--- Clinoptilolite-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-Ca	1.4304E-03	-2.8445	-6.9976	-9.8421
Clinoptilolite-Cs	2.1706E-16	-15.6634	-38.5320	-54.1955
Clinoptilolite-K	1.1810E-02	-1.9277	-4.7422	-6.6700
Clinoptilolite-NH4	1.4308E-66	-65.8444	-161.9773	-227.8217
Clinoptilolite-Na	9.8676E-01	-0.0058	-0.0142	-0.0200
Clinoptilolite-Sr	6.6123E-22	-21.1796	-52.1019	-73.2816

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-ss	0.000	0.000	satd
Clinoptilolite-Ca	0.000	0.000	satd
Clinoptilolite-Cs	0.000	0.000	satd
Clinoptilolite-K	0.000	0.000	satd
Clinoptilolite-NH4	0.000	0.000	satd
Clinoptilolite-Na	0.000	0.000	satd
Clinoptilolite-Sr	0.000	0.000	satd

--- Saponite-tri ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Saponite-Ca	2.2816E-03	-2.6418	1.7700	-0.8718
Saponite-H	1.7689E-05	-4.7523	3.1840	-1.5683
Saponite-K	9.8423E-03	-2.0069	1.3446	-0.6623
Saponite-Mg	2.1177E-02	-1.6741	1.1217	-0.5525
Saponite-Na	9.6668E-01	-0.0147	0.0099	-0.0049

Mineral	Log Q/K	Aff, kcal	State
Saponite-tri	-0.957	-1.305	
Saponite-Ca	-0.957	-1.305	
Saponite-H	-0.957	-1.305	
Saponite-K	-0.957	-1.305	
Saponite-Mg	-0.957	-1.305	
Saponite-Na	-0.957	-1.305	

--- Smectite-di ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Beidellite-Ca	3.3607E-08	-7.4736	5.0073	-2.4663

Beidellite-K	1.4508E-07	-6.8384	4.5817	-2.2567
Beidellite-Mg	3.1194E-07	-6.5059	4.3590	-2.1470
Beidellite-Na	1.4239E-05	-4.8465	3.2472	-1.5994
Montmor-Ca	6.0333E-05	-4.2194	2.8270	-1.3924
Montmor-K	4.2535E-04	-3.3712	2.2587	-1.1125
Montmor-Mg	9.1012E-04	-3.0409	2.0374	-1.0035
Montmor-Na	4.0712E-02	-1.3903	0.9315	-0.4588
Nontronite-Ca	2.1855E-03	-2.6605	1.7825	-0.8780
Nontronite-K	9.4342E-03	-2.0253	1.3569	-0.6683
Nontronite-Mg	2.0299E-02	-1.6925	1.1340	-0.5585
Nontronite-Na	9.2596E-01	-0.0334	0.0224	-0.0110

Mineral	Log Q/K	Aff, kcal	State
Smectite-di	0.000	0.000	satd
Beidellite-Ca	0.000	0.000	satd
Beidellite-K	0.000	0.000	satd
Beidellite-Mg	0.000	0.000	satd
Beidellite-Na	0.000	0.000	satd
Montmor-Ca	0.000	0.000	satd
Montmor-K	0.000	0.000	satd
Montmor-Mg	0.000	0.000	satd
Montmor-Na	0.000	0.000	satd
Nontronite-Ca	0.000	0.000	satd
Nontronite-K	0.000	0.000	satd
Nontronite-Mg	0.000	0.000	satd
Nontronite-Na	0.000	0.000	satd

--- Lanthanide hydroxide ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
La(OH)3	2.8550E-04	-3.5444	0.0000	-3.5444
Ce(OH)3	1.4413E-14	-13.8413	0.0000	-13.8413
Nd(OH)3(c)	8.2320E-01	-0.0845	0.0000	-0.0845
Gd(OH)3	1.4119E-01	-0.8502	0.0000	-0.8502
Sm(OH)3	3.5325E-02	-1.4519	0.0000	-1.4519

Mineral	Log Q/K	Aff, kcal	State
Lanthanide hydroxide	-8.650	-11.801	
La(OH)3	-8.650	-11.801	
Ce(OH)3	-8.650	-11.801	
Nd(OH)3(c)	-8.650	-11.801	
Gd(OH)3	-8.650	-11.801	
Sm(OH)3	-8.650	-11.801	

--- Rhabdophane-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaPO4:H2O	9.3124E-01	-0.0309	0.0000	-0.0309
CePO4:H2O	1.4866E-11	-10.8278	0.0000	-10.8278

NdPO4:H2O	5.3575E-02	-1.2710	0.0000	-1.2710
GdPO4:H2O	3.6580E-03	-2.4368	0.0000	-2.4368
SmPO4:H2O	1.1522E-02	-1.9385	0.0000	-1.9385

Mineral	Log Q/K	Aff, kcal	State
Rhabdophane-ss	-1.833	-2.500	
LaPO4:H2O	-1.833	-2.500	
CePO4:H2O	-1.833	-2.500	
NdPO4:H2O	-1.833	-2.500	
GdPO4:H2O	-1.833	-2.500	
SmPO4:H2O	-1.833	-2.500	

--- Lanthanide fluoride ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaF3:0.5H2O	9.3125E-01	-0.0309	0.0000	-0.0309
CeF3:0.5H2O	2.3562E-11	-10.6278	0.0000	-10.6278
NdF3:0.5H2O	6.7448E-02	-1.1710	0.0000	-1.1710
GdF3:0.5H2O	1.4563E-04	-3.8367	0.0000	-3.8367
SmF3:0.5H2O	1.1522E-03	-2.9385	0.0000	-2.9385

Mineral	Log Q/K	Aff, kcal	State
Lanthanide fluoride	-15.773	-21.519	
LaF3:0.5H2O	-15.773	-21.519	
CeF3:0.5H2O	-15.773	-21.519	
NdF3:0.5H2O	-15.773	-21.519	
GdF3:0.5H2O	-15.773	-21.519	
SmF3:0.5H2O	-15.773	-21.519	

--- Summary of Gases ---

Gas	Fugacity	Log fugacity
Al(g)	9.7072-192	-191.0129
B(g)	3.9688-204	-203.4013
BF3(g)	1.2184E-45	-44.9142
C(g)	3.0917-190	-189.5098
CH4(g)	3.5198-146	-145.4535
CO(g)	6.0395E-49	-48.2190
CO2(g)	3.1623E-04	-3.5000
Ca(g)	5.4464-154	-153.2639
Chlorine	1.6896E-31	-30.7722
Cs(g)	1.2270E-90	-89.9111
Cu(g)	1.9319E-82	-81.7140
Fluorine	1.1627E-86	-85.9345
H2(g)	6.1067E-42	-41.2142
H2O(g)	2.5942E-02	-1.5860
H2S(g)	1.0933-144	-143.9613
HCl(g)	5.0390E-20	-19.2977
HF(g)	4.7178E-16	-15.3263
K(g)	1.2715E-76	-75.8957

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Li(g)                        1.1260E-95    -94.9485
Mg(g)                        1.8676-129   -128.7287
Nitrogen                     1.2730E-22    -21.8952
NH3(g)                       1.2982E-70    -69.8867
NO(g)                        3.5528E-27    -26.4494
NO2(g)                       2.4292E-21    -20.6145
Na(g)                        6.9095E-73    -72.1606
O2(g)                        2.0999E-01     -0.6778
Pb(g)                        4.0536E-68    -67.3922
S2(g)                        7.1471-232   -231.1459
SO2(g)                       1.9384E-57    -56.7126
Si(g)                        4.2257-221   -220.3741
SiF4(g)                      2.1894E-46    -45.6597
Ti(g)                        3.8019-231   -230.4200
TiCl4(g)                     2.1656E-90    -89.6644
U(g)                         1.0057-302   -301.9976
U2Cl10(g)                    1.0923-269   -268.9617
U2Cl8(g)                     2.0042-269   -268.6981
U2F10(g)                     7.4836-187   -186.1259
UCl(g)                       4.5190-260   -259.3450
UCl2(g)                      6.0748-216   -215.2165
UCl3(g)                      1.7887-169   -168.7475
UCl4(g)                      2.8518-140   -139.5449
UCl5(g)                      2.3394-148   -147.6309
UCl6(g)                      3.5654-151   -150.4479
UF(g)                        8.9915-246   -245.0462
UF2(g)                       5.9623-207   -206.2246
UF3(g)                       9.7295-162   -161.0119
UF4(g)                       2.3435-113   -112.6301
UF5(g)                       2.5856-106   -105.5874
UF6(g)                       2.8089-113   -112.5515
UO(g)                        7.9423-218   -217.1001
UO2(g)                       1.4715-133   -132.8323
UO2Cl2(g)                    1.0855E-83    -82.9644
UO2F2(g)                     7.7288E-73    -72.1119
UO3(g)                       1.0823E-80    -79.9657
UOF4(g)                      6.9835E-91    -90.1559
Zn(g)                        3.7374E-77    -76.4274



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--- shifting e.s. solid(s) to the p.r.s. (shftz) ---

      shifted -- Celadonite
              - old mass=  1.24347E-03, new mass=  1.24347E-05
      shifted -- Maximum_Microcline
              - old mass=  1.92624E-02, new mass=  1.92624E-04
      shifted -- Mesolite
              - old mass=  3.13804E-03, new mass=  3.13804E-05
      shifted -- Muscovite
              - old mass=  1.01083E-03, new mass=  1.01083E-05
  not shifted -- Ni2SiO4
              - mass=  7.99983E-07
      shifted -- Pyrolusite
              - old mass=  1.95960E-04, new mass=  1.95960E-06
  not shifted -- Pyromorphite
              - mass=  1.94315E-11
      shifted -- Quartz
              - old mass=  9.47951E-02, new mass=  9.47951E-04
      shifted -- Rutile
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                - old mass=  2.55556E-04, new mass=  2.55556E-06
        shifted -- Clinoptilolite-ss
                - old mass=  6.30404E-03, new mass=  6.30404E-05
        shifted -- Smectite-di
                - old mass=  1.21634E-03, new mass=  1.21634E-05

Stepping to zi=  9.0070E+00, delzi=  6.9543E-03, nord= 6
  time =  8.6873E+04 d, dltime =  6.7075E+01 d
Steps completed =   846, iter = 21, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -45.1164

Stepping to zi=  9.0078E+00, delzi=  8.6929E-04, nord= 6
  time =  8.6881E+04 d, dltime =  8.3843E+00 d
Steps completed =   847, iter = 19, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -45.1595

Stepping to zi=  9.0096E+00, delzi=  1.7386E-03, nord= 4
  time =  8.6898E+04 d, dltime =  1.6769E+01 d
Steps completed =   848, iter =  9, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -45.2397

Stepping to zi=  9.0130E+00, delzi=  3.4772E-03, nord= 6
  time =  8.6931E+04 d, dltime =  3.3537E+01 d
Steps completed =   849, iter = 19, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -45.3809

Stepping to zi=  9.0172E+00, delzi=  4.1939E-03, nord= 6
  time =  8.6972E+04 d, dltime =  4.0450E+01 d
Steps completed =   850, iter = 10, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -45.5253

Stepping to zi=  9.0202E+00, delzi=  2.9718E-03, nord= 6
  time =  8.7000E+04 d, dltime =  2.8663E+01 d
Steps completed =   851, iter =  8, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -45.6147

Stepping to zi=  9.0228E+00, delzi=  2.6405E-03, nord= 6
  time =  8.7026E+04 d, dltime =  2.5468E+01 d
Steps completed =   852, iter = 11, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -45.6871

Stepping to zi=  9.0261E+00, delzi=  3.2336E-03, nord= 6
  time =  8.7057E+04 d, dltime =  3.1188E+01 d
Steps completed =   853, iter = 22, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -45.7683

Stepping to zi=  9.0297E+00, delzi=  3.6160E-03, nord= 6
  time =  8.7092E+04 d, dltime =  3.4877E+01 d
Steps completed =   854, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -45.8509

Stepping to zi=  9.0338E+00, delzi=  4.0798E-03, nord= 6
  time =  8.7131E+04 d, dltime =  3.9350E+01 d
Steps completed =   855, iter = 18, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -45.9355

Stepping to zi=  9.0384E+00, delzi=  4.6062E-03, nord= 6
  time =  8.7176E+04 d, dltime =  4.4427E+01 d
Steps completed =   856, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -46.0220

Stepping to zi=  9.0435E+00, delzi=  5.1323E-03, nord= 6
  time =  8.7225E+04 d, dltime =  4.9501E+01 d
```

```
Steps completed =   857, iter =  9, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -46.1092

Stepping to zi=  9.0492E+00, delzi=  5.6423E-03, nord= 6
  time =  8.7280E+04 d, dltime =  5.4420E+01 d
Steps completed =   858, iter = 12, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -46.1959

Stepping to zi=  9.0554E+00, delzi=  6.1997E-03, nord= 6
  time =  8.7339E+04 d, dltime =  5.9796E+01 d
Steps completed =   859, iter = 13, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -46.2822

Stepping to zi=  9.0622E+00, delzi=  6.8348E-03, nord= 6
  time =  8.7405E+04 d, dltime =  6.5922E+01 d
Steps completed =   860, iter = 19, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -46.3683

Stepping to zi=  9.0697E+00, delzi=  7.5438E-03, nord= 6
  time =  8.7478E+04 d, dltime =  7.2760E+01 d
Steps completed =   861, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -46.4543

Stepping to zi=  9.0781E+00, delzi=  8.3332E-03, nord= 6
  time =  8.7559E+04 d, dltime =  8.0374E+01 d
Steps completed =   862, iter = 15, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -46.5403

Stepping to zi=  9.0873E+00, delzi=  9.2082E-03, nord= 6
  time =  8.7647E+04 d, dltime =  8.8813E+01 d
Steps completed =   863, iter = 22, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -46.6264

Stepping to zi=  9.0974E+00, delzi=  1.0174E-02, nord= 6
  time =  8.7745E+04 d, dltime =  9.8128E+01 d
Steps completed =   864, iter = 20, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -46.7126

Stepping to zi=  9.1087E+00, delzi=  1.1238E-02, nord= 6
  time =  8.7854E+04 d, dltime =  1.0839E+02 d
Steps completed =   865, iter = 18, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -46.7987

Stepping to zi=  9.1211E+00, delzi=  1.2412E-02, nord= 6
  time =  8.7974E+04 d, dltime =  1.1971E+02 d
Steps completed =   866, iter =  6, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -46.8848

Stepping to zi=  9.1348E+00, delzi=  1.3708E-02, nord= 6
  time =  8.8106E+04 d, dltime =  1.3222E+02 d
Steps completed =   867, iter =  8, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -46.9710

Stepping to zi=  9.1499E+00, delzi=  1.5140E-02, nord= 6
  time =  8.8252E+04 d, dltime =  1.4602E+02 d
Steps completed =   868, iter = 11, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -47.0571

Stepping to zi=  9.1667E+00, delzi=  1.6721E-02, nord= 6
  time =  8.8413E+04 d, dltime =  1.6128E+02 d
Steps completed =   869, iter = 20, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -47.1432
```

```
Stepping to zi=  9.1851E+00, delzi=  1.8468E-02, nord= 6
  time =  8.8591E+04 d, dltime =  1.7813E+02 d
Steps completed =   870, iter = 13, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -47.2293

Stepping to zi=  9.2055E+00, delzi=  2.0398E-02, nord= 6
  time =  8.8788E+04 d, dltime =  1.9674E+02 d
Steps completed =   871, iter =  7, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -47.3154

Stepping to zi=  9.2281E+00, delzi=  2.2530E-02, nord= 6
  time =  8.9005E+04 d, dltime =  2.1730E+02 d
Steps completed =   872, iter = 19, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -47.4015

Stepping to zi=  9.2529E+00, delzi=  2.4884E-02, nord= 6
  time =  8.9245E+04 d, dltime =  2.4001E+02 d
Steps completed =   873, iter =  7, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -47.4876

Stepping to zi=  9.2804E+00, delzi=  2.7484E-02, nord= 6
  time =  8.9510E+04 d, dltime =  2.6509E+02 d
Steps completed =   874, iter = 20, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -47.5737

Stepping to zi=  9.3108E+00, delzi=  3.0356E-02, nord= 6
  time =  8.9803E+04 d, dltime =  2.9278E+02 d
Steps completed =   875, iter =  6, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -47.6598

Stepping to zi=  9.3443E+00, delzi=  3.3528E-02, nord= 6
  time =  9.0127E+04 d, dltime =  3.2338E+02 d
Steps completed =   876, iter = 12, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -47.7459

Stepping to zi=  9.3813E+00, delzi=  3.7032E-02, nord= 6
  time =  9.0484E+04 d, dltime =  3.5717E+02 d
Steps completed =   877, iter = 12, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -47.8320

Stepping to zi=  9.4222E+00, delzi=  4.0901E-02, nord= 6
  time =  9.0878E+04 d, dltime =  3.9450E+02 d
Steps completed =   878, iter = 12, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -47.9181

Stepping to zi=  9.4674E+00, delzi=  4.5176E-02, nord= 6
  time =  9.1314E+04 d, dltime =  4.3572E+02 d
Steps completed =   879, iter = 15, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -48.0042

Stepping to zi=  9.5173E+00, delzi=  4.9897E-02, nord= 6
  time =  9.1795E+04 d, dltime =  4.8126E+02 d
Steps completed =   880, iter = 19, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -48.0903

Stepping to zi=  9.5724E+00, delzi=  5.5112E-02, nord= 6
  time =  9.2327E+04 d, dltime =  5.3156E+02 d
Steps completed =   881, iter =  7, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -48.1764

Stepping to zi=  9.6333E+00, delzi=  6.0872E-02, nord= 6
  time =  9.2914E+04 d, dltime =  5.8711E+02 d
Steps completed =   882, iter =  4, ncorr = 0
```

```
Most rapidly changing is zvclg1(Sr++                    ) =    -48.2624

Stepping to zi=  9.7005E+00, delzi=  6.7234E-02, nord= 6
  time =  9.3562E+04 d, dltime =  6.4848E+02 d
Steps completed =   883, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -48.3485

Stepping to zi=  9.7748E+00, delzi=  7.4261E-02, nord= 6
  time =  9.4279E+04 d, dltime =  7.1626E+02 d
Steps completed =   884, iter =  6, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -48.4346

Stepping to zi=  9.8568E+00, delzi=  8.2024E-02, nord= 6
  time =  9.5070E+04 d, dltime =  7.9113E+02 d
Steps completed =   885, iter =  9, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -48.5206

Stepping to zi=  9.9474E+00, delzi=  9.0598E-02, nord= 6
  time =  9.5944E+04 d, dltime =  8.7383E+02 d
Steps completed =   886, iter = 20, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -48.6066

Stepping to zi=  1.0000E+01, delzi=  5.2577E-02, nord= 6
  time =  9.6451E+04 d, dltime =  5.0710E+02 d
Steps completed =   887, iter =  8, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -48.6529

- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -


                    Reaction progress        =  9.99999999999945E+00
                    Log of reaction progress =       1.0000000



                    Time =  8.333E+09 sec
                         =  9.645E+04 days
                         =  2.641E+02 years

                    Log sec =        9.921
                    Log days =       4.984
                    Log years =      2.422

                    Temperature    =     25.000 degrees C
                    total pressure =      1.013 bars


Step size is limited by the print requirement


                              --- Reactant Summary ---


    Reactant                  Moles     Delta moles    Mass, g    Delta Mass, g

 Tuff                      9.0000E+01   1.0000E+01   1.8528E+03   2.0586E+02


               Current total mass =  1.85278E+03 grams
               Delta total mass   =  2.05865E+02 grams
               Delta total volume =      0.00000 cc
```

Reactant	Rel. Rate mol/mol	Rate mol/s	Rate mol/s/cm2
Tuff	1.0000E+00	1.2000E-09	2.5000E-15

Reactant	Affinity kcal/mol	Surface Area mol/s/cm2
Tuff	999.00000	4.8000E+05

Reactant	Rate Constants, mol/s/cm2	
Tuff		
	Forward	2.5000E-15

Affinity of the overall irreversible reaction= 0.000 kcal
Contributions from irreversible reactions
with no thermodynamic data are not included

--- Element Totals for the Aqueous Solution ---

Element	mg/kg soln.	Molality	Moles
O	8.862524E+05	5.562569E+01	5.494526E+01
Al	5.894095E-03	2.193674E-07	2.166840E-07
B	1.350177E-01	1.254141E-05	1.238800E-05
Ba	1.384457E-05	1.012384E-10	1.000000E-10
Ca	7.847723E-04	1.966343E-08	1.942290E-08
Ce	1.412563E-19	1.012383E-24	9.999992E-25
Cl	7.198338E+00	2.038941E-04	2.014000E-04
Cr	3.030804E+02	5.853407E-03	5.781806E-03
Cs	1.924935E-15	1.454437E-20	1.436646E-20
Cu	6.726684E-10	1.063003E-14	1.050000E-14
F	2.291939E-01	1.211456E-05	1.196637E-05
Fe	1.138060E-08	2.046383E-13	2.021351E-13
Gd	1.585310E-09	1.012384E-14	9.999998E-15
H	1.114405E+05	1.110274E+02	1.096692E+02
C	1.361029E+02	1.137915E-02	1.123996E-02
P	1.136463E+01	3.684537E-04	3.639467E-04
K	2.039560E+00	5.238421E-05	5.174343E-05
La	1.400370E-09	1.012384E-14	9.999998E-15
Li	6.997543E-07	1.012384E-10	1.000000E-10
Mg	2.336865E-02	9.655166E-07	9.537060E-07
Mn	4.336495E-11	7.926606E-16	7.829645E-16
Mo	2.204444E+02	2.307391E-03	2.279166E-03
N	2.005159E+00	1.437585E-04	1.420000E-04
Na	1.238038E+03	5.407807E-02	5.341657E-02
Nd	1.454150E-09	1.012384E-14	9.999998E-15
Ni	1.018863E-04	1.743305E-09	1.721980E-09
Pb	5.539784E-07	2.684879E-12	2.652037E-12
Pu	2.459876E-09	1.012384E-14	9.999999E-15
S	3.773248E+02	1.181659E-02	1.167205E-02
Si	4.307331E+00	1.540096E-04	1.521257E-04
Sm	1.515848E-09	1.012384E-14	9.999998E-15
Sr	2.981977E-44	3.417612E-49	3.375806E-49
Ti	1.076341E-05	2.257447E-10	2.229833E-10
U	2.399680E-09	1.012384E-14	1.000000E-14

V	4.822898E+00	9.507319E-05	9.391022E-05
Zn	6.592268E-06	1.012384E-10	1.000000E-10
Zr	9.196722E-16	1.012385E-20	1.000001E-20

Single ion activities and activity coefficients are here defined
with respect to the modified NBS pH scale

	pH	Eh	pe
modified NBS pH scale	9.1998	0.6748	1.1407E+01
rational pH scale	9.1184	0.6796	1.1489E+01

pHCl = 12.9908

Oxygen fugacity = 2.09991E-01
Log oxygen fugacity = -0.67780

Activity of water = 0.99864
Log activity of water = -0.00059

Ionic strength = 7.241275E-02 molal
Sum of molalities = 0.0847175341325
Osmotic coefficient = 0.89201

Mass of solution = 0.991920 kg
Mass of solutes = 0.004152 kg
Conc. of solutes = 0.418584 per cent (w/w)

Moles of solvent H2O = 5.48294E+01
Mass of solvent H2O = 9.87768E-01 kg

Species	Molality	Log molality	Log gamma	Log activity
Na+	5.2039E-02	-1.2837	-0.1064	-1.3901
SO4--	1.0403E-02	-1.9829	-0.3881	-2.3710
HCO3-	9.4738E-03	-2.0235	-0.0909	-2.1144
CrO4--	5.8476E-03	-2.2330	-0.3881	-2.6211
MoO4--	2.3074E-03	-2.6369	-0.3753	-3.0121
NaSO4-	1.4121E-03	-2.8501	-0.0909	-2.9411
CO3--	1.3547E-03	-2.8682	-0.3753	-3.2434
NaHCO3(aq)	4.4628E-04	-3.3504	0.0000	-3.3504
HPO4--	3.1254E-04	-3.5051	-0.3881	-3.8932
O2(aq)	2.6081E-04	-3.5837	0.0076	-3.5761
Cl-	2.0279E-04	-3.6929	-0.0980	-3.7910
NO3-	1.4376E-04	-3.8424	-0.0980	-3.9404
SiO2(aq)	1.0016E-04	-3.9993	0.0000	-3.9993
NaCO3-	9.3717E-05	-4.0282	-0.0909	-4.1191
VO3OH--	8.5331E-05	-4.0689	-0.3881	-4.4570
NaHPO4-	5.3411E-05	-4.2724	-0.0909	-4.3633
K+	5.0791E-05	-4.2942	-0.1135	-4.4077
NaHSiO3(aq)	3.2048E-05	-4.4942	0.0000	-4.4942
HSiO3-	2.1793E-05	-4.6617	-0.0909	-4.7526
OH-	1.9882E-05	-4.7015	-0.0944	-4.7959
F-	1.2075E-05	-4.9181	-0.0944	-5.0125
CO2(aq)	1.0557E-05	-4.9765	0.0076	-4.9689

HVO4--	9.1919E-06	-5.0366	-0.3881	-5.4247
BO2-	6.3982E-06	-5.1939	-0.0909	-5.2849
HCrO4-	5.8131E-06	-5.2356	-0.0909	-5.3265
B(OH)3(aq)	5.7498E-06	-5.2403	0.0000	-5.2403
H2PO4-	1.5971E-06	-5.7967	-0.0909	-5.8876
KSO4-	1.5553E-06	-5.8082	-0.0909	-5.8991
NaCl(aq)	1.1013E-06	-5.9581	0.0000	-5.9581
PO4---	7.4706E-07	-6.1266	-0.8886	-7.0152
Mg++	4.6617E-07	-6.3315	-0.3348	-6.6663
NaB(OH)4(aq)	3.9333E-07	-6.4052	0.0000	-6.4052
H2VO4-	3.3840E-07	-6.4706	-0.0909	-6.5615
MgSO4(aq)	2.3683E-07	-6.6256	0.0000	-6.6256
AlO2-	2.1775E-07	-6.6620	-0.0909	-6.7530
VO2(OH)2-	2.0972E-07	-6.6784	-0.0909	-6.7693
MgCO3(aq)	1.1727E-07	-6.9308	0.0000	-6.9308
NaOH(aq)	1.0335E-07	-6.9857	0.0000	-6.9857
MgPO4-	9.9636E-08	-7.0016	-0.0909	-7.0925
NaF(aq)	3.9794E-08	-7.4002	0.0000	-7.4002
KHPO4-	3.7152E-08	-7.4300	-0.0909	-7.5210
MgHCO3+	2.2984E-08	-7.6386	-0.1064	-7.7450
MgHPO4(aq)	2.2413E-08	-7.6495	0.0000	-7.6495
Ca++	9.9775E-09	-8.0010	-0.3721	-8.3731
H2SiO4--	6.7174E-09	-8.1728	-0.3881	-8.5609
CaCO3(aq)	5.1358E-09	-8.2894	0.0000	-8.2894
VO4---	2.3516E-09	-8.6286	-0.8886	-9.5172
CaSO4(aq)	2.3284E-09	-8.6329	0.0000	-8.6329
Cr2O7--	1.8453E-09	-8.7339	-0.3881	-9.1221
CaPO4-	1.4542E-09	-8.8374	-0.0909	-8.9283
Ni++	1.3918E-09	-8.8564	-0.3721	-9.2285
NaAlO2(aq)	1.2991E-09	-8.8864	0.0000	-8.8864
H+	7.6138E-10	-9.1184	-0.0814	-9.1998
CaHCO3+	4.6306E-10	-9.3344	-0.1064	-9.4408
NiSO4(aq)	3.3589E-10	-9.4738	0.0000	-9.4738
HSO4-	3.1570E-10	-9.5007	-0.0909	-9.5917
HAlO2(aq)	3.1452E-10	-9.5024	0.0000	-9.5024
CaHPO4(aq)	2.9766E-10	-9.5263	0.0000	-9.5263
Ti(OH)4(aq)	2.2574E-10	-9.6464	0.0000	-9.6464
KOH(aq)	2.1452E-10	-9.6685	0.0000	-9.6685
KCl(aq)	2.0262E-10	-9.6933	0.0000	-9.6933
MgB(OH)4+	1.1279E-10	-9.9477	-0.1064	-10.0541

--- Summary of Instantaneously Precipitated Solid Phases ---
(defined by derivatives)

--- Theoretical Rock Composition ---
g/kg

O	5.181364E+01
Al	6.307688E+00
Ca	3.743591E-01
Cl	5.524040E-12
Cs	8.051740E-18
Fe	6.119349E-01
H	7.307034E-01
C	2.035909E-03
P	1.447847E-11
K	3.828018E+00
Mg	1.381791E-01
Mn	4.839751E-02
N	1.981774E-66
Na	2.488288E+00
Pb	1.614237E-10

```
      Si     3.360175E+01
      Ti     5.500761E-02

      --- Oxide Percentages ---

   Oxide   Theoretical rock


    Total =     0.0000


   Phase/end-member     d mol/d zi    d grams/d zi   d vol (cc)/d zi

Celadonite                  1.2310E-03   4.8840E-01   1.9340E-01
Maximum_Microcline          1.9070E-02   5.3077E+00   2.0737E+00
Mesolite                    3.1067E-03   1.2047E+00   5.3186E-01
Muscovite                   1.0008E-03   3.9862E-01   1.4082E-01
Ni2SiO4                    -2.5976E-12  -5.4411E-10  -1.1069E-10
Pyrolusite                  1.9400E-04   1.6866E-02   9.7000E-02
Pyromorphite                3.4313E-14   4.6541E-11   6.6108E-12
Quartz                      9.3848E-02   5.6388E+00   2.1292E+00
Rutile                      2.5300E-04   2.0209E-02   4.7615E-03
fix     CO2(g)              3.7328E-05   1.6428E-03   0.0000E+00
fix     O2(g)              -7.0649E-04  -2.2607E-02   0.0000E+00
Clinoptilolite-ss
  Clinoptilolite-Ca         8.9271E-06   1.2002E-02   4.4635E-03
  Clinoptilolite-Cs         3.8481E-21   6.6792E-18   1.9240E-18
  Clinoptilolite-K          7.3706E-05   1.0396E-01   3.6853E-02
  Clinoptilolite-NH4        8.9870E-69   1.2020E-65   4.4935E-66
  Clinoptilolite-Na         6.1583E-03   8.3424E+00   3.0792E+00
  Clinoptilolite-Sr         0.0000E+00   0.0000E+00   0.0000E+00
Smectite-di
  Beidellite-Ca             4.0469E-11   1.4834E-08   5.2420E-09
  Beidellite-K              1.7470E-10   6.5136E-08   2.3357E-08
  Beidellite-Mg             3.7563E-10   1.3671E-07   4.6274E-08
  Beidellite-Na             1.7147E-08   6.3020E-06   2.2383E-06
  Montmor-Ca                7.2652E-08   2.6594E-05   3.6326E-05
  Montmor-K                 5.1220E-07   1.9071E-04   2.5610E-04
  Montmor-Mg                1.0960E-06   3.9831E-04   5.4798E-04
  Montmor-Na                4.9026E-05   1.7993E-02   2.4513E-02
  Nontronite-Ca             2.6316E-06   1.1166E-03   3.4501E-04
  Nontronite-K              1.1360E-05   4.8916E-03   1.5367E-03
  Nontronite-Mg             2.4444E-05   1.0308E-02   3.1718E-03
  Nontronite-Na             1.1150E-03   4.7418E-01   1.4730E-01


                --- Summary of Solid Phases (E.S.+P.R.S.) ---

   Phase/End-member        Log moles     Moles       Mass, g     Volume, cc

Alunite                       -2.5559   2.7801E-03   1.1516E+00   8.1624E-01
Celadonite                    -1.9083   1.2351E-02   4.9003E+00   1.9404E+00
Diaspore                      -1.6079   2.4665E-02   1.4796E+00   4.3804E-01
Fluorapatite                  -3.9881   1.0278E-04   5.1834E-02   5.1392E-02
Hematite                      -3.7144   1.9300E-04   3.0820E-02   5.8428E-03
Maximum_Microcline            -0.7497   1.7796E-01   4.9531E+01   1.9351E+01
Mesolite                      -1.5123   3.0737E-02   1.1919E+01   5.2622E+00
Muscovite                     -1.6902   2.0409E-02   8.1291E+00   2.8718E+00
Ni2SiO4                       -2.1930   6.4125E-03   1.3432E+00   2.7324E-01
Nontronite-H                  -4.9990   1.0023E-05   4.1899E-03   5.0117E-03
Pyrolusite                    -2.5962   2.5337E-03   2.2027E-01   1.2668E+00
Pyromorphite                 -10.7106   1.9470E-11   2.6408E-08   3.7510E-09
Quartz                         0.0622   1.1539E+00   6.9333E+01   2.6180E+01
```

Rutile	-2.5969	2.5300E-03	2.0209E-01	4.7615E-02
fix CO2(g)	2.3010	1.9999E+02	8.8015E+03	0.0000E+00
fix O2(g)	2.3010	1.9999E+02	6.3995E+03	0.0000E+00
Clinoptilolite-ss	-1.3213	4.7721E-02		
Clinoptilolite-Ca	-4.1658	6.8262E-05	9.1772E-02	3.4131E-02
Clinoptilolite-Cs	-10.5400	2.8843E-11	5.0064E-08	1.4422E-08
Clinoptilolite-K	-3.2490	5.6360E-04	7.9496E-01	2.8180E-01
Clinoptilolite-NH4	-67.1689	6.7778E-68	9.0651E-65	3.3889E-65
Clinoptilolite-Na	-1.3271	4.7089E-02	6.3789E+01	2.3544E+01
Clinoptilolite-Sr	-10.2389	5.7687E-11	8.2309E-08	2.8843E-08
Smectite-di	-1.9252	1.1878E-02		
Beidellite-Ca	-9.0970	7.9974E-10	2.9316E-07	1.0359E-07
Beidellite-K	-8.6353	2.3158E-09	8.6345E-07	3.0962E-07
Beidellite-Mg	-8.4363	3.6622E-09	1.3329E-06	4.5114E-07
Beidellite-Na	-6.8556	1.3946E-07	5.1256E-05	1.8205E-05
Montmor-Ca	-6.0146	9.6699E-07	3.5396E-04	4.8349E-04
Montmor-K	-5.3339	4.6355E-06	1.7259E-03	2.3177E-03
Montmor-Mg	-5.0044	9.8989E-06	3.5977E-03	4.9494E-03
Montmor-Na	-3.3997	3.9840E-04	1.4622E-01	1.9920E-01
Nontronite-Ca	-3.3874	4.0984E-04	1.7389E-01	5.3731E-02
Nontronite-K	-3.1477	7.1178E-04	3.0648E-01	9.6282E-02
Nontronite-Mg	-3.1680	6.7917E-04	2.8640E-01	8.8129E-02
Nontronite-Na	-2.0149	9.6635E-03	4.1096E+00	1.2767E+00

	Mass, grams	Volume, cc
Created	1.541899E+04	8.409204E+01
Destroyed	2.058647E+02	0.000000E+00
Net	1.521313E+04	8.409204E+01

Warning-- these volume totals may be incomplete because
of missing partial molar volume data in the data base

--- Summary of Pure Mineral Saturation States ---

Mineral	Log Q/K	Aff, kcal	State
Alamosite	-3.278	-4.473	
Albite	-0.022	-0.030	
Albite_high	-1.341	-1.829	
Albite_low	-0.022	-0.030	
Alstonite	-7.218	-9.847	
Analcime	-0.148	-0.202	
Analcime-dehy	-6.510	-8.882	
Andalusite	-6.082	-8.298	
Anglesite	-6.523	-8.899	
Anhydrite	-6.438	-8.783	
Aragonite	-3.281	-4.476	
BaCrO4	-3.120	-4.257	
BaHPO4	-6.924	-9.447	
BaZrO3	83.674	114.155	ssatd
Barite	-2.831	-3.862	
Bassanite	-7.083	-9.663	
Beidellite-Ca	-2.466	-3.365	
Beidellite-Cs	-7.233	-9.867	
Beidellite-H	-3.163	-4.315	
Beidellite-K	-2.257	-3.079	

Beidellite-Mg	-2.147	-2.929	
Beidellite-Na	-1.599	-2.182	
Boehmite	-0.634	-0.864	
Boric_acid	-5.082	-6.933	
Brucite	-4.566	-6.229	
Bunsenite	-3.301	-4.504	
CaSO4:0.5H2O(beta)	-7.251	-9.892	
CaZrO3	139.762	190.675	ssatd
Calcite	-3.136	-4.279	
CeO2	-3.223	-4.397	
Celadonite	0.000	0.000	satd
Cerussite	-1.710	-2.333	
Chalcedony	-0.271	-0.370	
Chrysotile	-3.927	-5.358	
Clinochlore-14A	-6.714	-9.160	
Clinoptilolite	-5.917	-8.073	
Clinoptilolite-K	-6.670	-9.100	
Clinoptilolite-Na	-0.020	-0.027	
Clinoptilolite-hy-K	-6.664	-9.092	
Clinoptilolite-hy-Na	-0.018	-0.024	
Coesite	-0.810	-1.105	
Corundum	-4.450	-6.072	
Cristobalite(alpha)	-0.551	-0.751	
Cristobalite(beta)	-0.994	-1.356	
Crocoite	-1.908	-2.604	
Dawsonite	-0.920	-1.256	
Diaspore	-0.230	-0.313	
Diopside	-7.204	-9.829	
Dolomite	-3.382	-4.614	
Dolomite-dis	-4.927	-6.721	
Dolomite-ord	-3.382	-4.614	
Enstatite	-3.594	-4.903	
Epsomite	-7.079	-9.658	
Fe(OH)3	-6.518	-8.893	
Ferrite-Zn	-6.299	-8.594	
Fluorapatite	-5.964	-8.137	
GdPO4:H2O	-4.306	-5.875	
Gibbsite	-0.826	-1.127	
Goethite	-1.397	-1.905	
Gypsum	-6.263	-8.544	
Halite	-6.767	-9.232	
Hematite	-1.832	-2.500	
Hexahydrite	-7.314	-9.978	
Hydrocerussite	-6.864	-9.365	
Ice	-0.139	-0.190	
Illite	-1.275	-1.739	
Jadeite	-1.647	-2.247	
K-Feldspar	0.000	0.000	
Kalicinite	-6.806	-9.285	
Kalsilite	-3.175	-4.332	
Kaolinite	-0.948	-1.294	
Kyanite	-5.812	-7.929	
LaPO4:H2O	-1.815	-2.476	
Lansfordite	-4.425	-6.037	
Laumontite	-5.779	-7.884	
Lawsonite	-6.325	-8.630	
Litharge	-6.250	-8.527	
Magnesite	-1.875	-2.557	
Manganite	-4.459	-6.084	
Massicot	-6.425	-8.766	
Maximum_Microcline	0.000	0.000	satd
Mesolite	0.000	0.000	satd
Mirabilite	-4.017	-5.481	

MnO2(gamma)	-1.518	-2.071	
Monohydrocalcite	-3.971	-5.417	
Montmor-Ca	-1.392	-1.900	
Montmor-Cs	-6.092	-8.311	
Montmor-K	-1.113	-1.518	
Montmor-Mg	-1.003	-1.369	
Montmor-Na	-0.459	-0.626	
Mordenite	-2.805	-3.827	
Muscovite	0.000	0.000	satd
Na2CO3	-6.877	-9.382	
Na2CO3:7H2O	-5.645	-7.701	
Nahcolite	-3.393	-4.629	
Natrolite	-1.039	-1.417	
Natron	-5.311	-7.246	
NdOHCO3	-7.116	-9.708	
NdPO4:H2O	-3.104	-4.235	
Nepheline	-3.060	-4.174	
Nesquehonite	-4.578	-6.246	
Ni(OH)2	-3.579	-4.882	
Ni2SiO4	0.000	0.000	satd
NiCO3	-5.655	-7.715	
Nontronite-Ca	-0.878	-1.198	
Nontronite-H	-1.574	-2.148	
Nontronite-K	-0.668	-0.912	
Nontronite-Mg	-0.559	-0.762	
Nontronite-Na	-0.011	-0.015	
Paragonite	-0.919	-1.253	
Paralaurionite	-6.800	-9.277	
Pb3(PO4)2	-5.427	-7.404	
Pb4O(PO4)2	-6.434	-8.778	
PbHPO4	-4.331	-5.909	
Petalite	-6.152	-8.392	
Phlogopite	-2.518	-3.435	
Plattnerite	-1.613	-2.201	
PuO2	-4.789	-6.533	
Pyrolusite	0.000	0.000	satd
Pyromorphite	0.000	0.000	satd
Pyrophyllite	-2.576	-3.514	
Quartz	0.000	0.000	satd
Rutile	0.000	0.000	satd
Sanidine_high	-1.199	-1.636	
Saponite-Ca	-1.828	-2.495	
Saponite-Cs	-6.595	-8.997	
Saponite-H	-2.525	-3.445	
Saponite-K	-1.619	-2.209	
Saponite-Mg	-1.509	-2.059	
Saponite-Na	-0.962	-1.312	
Scolecite	-3.989	-5.442	
Sellaite	-7.307	-9.969	
SiO2(am)	-1.286	-1.754	
Sillimanite	-6.446	-8.794	
SmPO4:H2O	-3.808	-5.195	
Smectite-low-Fe-Mg	-7.076	-9.653	
Smithsonite	-4.618	-6.301	
SrZrO3	82.058	111.951	ssatd
Stilbite	-1.918	-2.616	
Talc	-1.938	-2.644	
Thenardite	-4.842	-6.606	
Thermonatrite	-6.658	-9.083	
Trevorite	-2.341	-3.193	
Tridymite	-0.172	-0.234	
Witherite	-0.349	-0.476	
Zincite	-4.050	-5.525	

Zn(OH)2(beta)	-4.776	-6.516	
Zn(OH)2(epsilon)	-4.504	-6.145	
Zn(OH)2(gamma)	-4.725	-6.446	
fix CO2(g)	0.000	0.000	satd
fix O2(g)	0.000	0.000	satd

--- Summary of Solid Solutions ---

--- Carbonate-Calcite ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Calcite	5.1789E-02	-1.2858	0.0000	-1.2858
Magnesite	9.4650E-01	-0.0239	0.0000	-0.0239
Rhodochrosite	1.2057E-09	-8.9188	0.0000	-8.9188
Siderite	1.8676E-18	-17.7287	0.0000	-17.7287
Smithsonite	1.7079E-03	-2.7675	0.0000	-2.7675
Strontianite	1.6144E-40	-39.7920	0.0000	-39.7920

Mineral	Log Q/K	Aff, kcal	State
Carbonate-Calcite	-1.851	-2.525	
Calcite	-1.851	-2.525	
Magnesite	-1.851	-2.525	
Rhodochrosite	-1.851	-2.525	
Siderite	-1.851	-2.525	
Smithsonite	-1.851	-2.525	
Strontianite	-1.851	-2.525	

--- Clinoptilolite-hy-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-hy-Ca	1.5020E-10	-9.8233	0.0000	-9.8233
Clinoptilolite-hy-Cs	3.6523E-59	-58.4374	0.0000	-58.4374
Clinoptilolite-hy-K	2.2580E-07	-6.6463	0.0000	-6.6463
Clinoptilolite-hy-Na	1.0000E+00	0.0000	0.0000	0.0000
Clinoptilolite-hy-Sr	6.5354E-81	-80.1847	0.0000	-80.1847

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-hy-ss	-0.018	-0.024	
Clinoptilolite-hy-Ca	-0.018	-0.024	
Clinoptilolite-hy-Cs	-0.018	-0.024	
Clinoptilolite-hy-K	-0.018	-0.024	
Clinoptilolite-hy-Na	-0.018	-0.024	
Clinoptilolite-hy-Sr	-0.018	-0.024	

--- Clinoptilolite-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-Ca	1.4304E-03	-2.8445	-6.9976	-9.8421
Clinoptilolite-Cs	1.2687E-17	-16.8966	-41.5658	-58.4624
Clinoptilolite-K	1.1810E-02	-1.9277	-4.7423	-6.6700
Clinoptilolite-NH4	1.4354E-66	-65.8430	-161.9739	-227.8169
Clinoptilolite-Na	9.8676E-01	-0.0058	-0.0142	-0.0200
Clinoptilolite-Sr	6.6123E-24	-23.1796	-57.0219	-80.2016

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-ss	0.000	0.000	satd
Clinoptilolite-Ca	0.000	0.000	satd
Clinoptilolite-Cs	0.000	0.000	satd
Clinoptilolite-K	0.000	0.000	satd
Clinoptilolite-NH4	0.000	0.000	satd
Clinoptilolite-Na	0.000	0.000	satd
Clinoptilolite-Sr	0.000	0.000	satd

--- Saponite-tri ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Saponite-Ca	2.2816E-03	-2.6418	1.7700	-0.8718
Saponite-H	1.7689E-05	-4.7523	3.1840	-1.5683
Saponite-K	9.8422E-03	-2.0069	1.3446	-0.6623
Saponite-Mg	2.1177E-02	-1.6741	1.1217	-0.5525
Saponite-Na	9.6668E-01	-0.0147	0.0099	-0.0049

Mineral	Log Q/K	Aff, kcal	State
Saponite-tri	-0.957	-1.305	
Saponite-Ca	-0.957	-1.305	
Saponite-H	-0.957	-1.305	
Saponite-K	-0.957	-1.305	
Saponite-Mg	-0.957	-1.305	
Saponite-Na	-0.957	-1.305	

--- Smectite-di ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Beidellite-Ca	3.3607E-08	-7.4736	5.0073	-2.4663
Beidellite-K	1.4508E-07	-6.8384	4.5817	-2.2567
Beidellite-Mg	3.1194E-07	-6.5059	4.3590	-2.1470
Beidellite-Na	1.4239E-05	-4.8465	3.2472	-1.5994
Montmor-Ca	6.0333E-05	-4.2194	2.8270	-1.3924
Montmor-K	4.2535E-04	-3.3712	2.2587	-1.1125
Montmor-Mg	9.1012E-04	-3.0409	2.0374	-1.0035
Montmor-Na	4.0713E-02	-1.3903	0.9315	-0.4588
Nontronite-Ca	2.1854E-03	-2.6605	1.7825	-0.8780
Nontronite-K	9.4342E-03	-2.0253	1.3569	-0.6683
Nontronite-Mg	2.0299E-02	-1.6925	1.1340	-0.5585

Nontronite-Na	9.2596E-01	-0.0334	0.0224	-0.0110

Mineral	Log Q/K	Aff, kcal	State
Smectite-di	0.000	0.000	satd
Beidellite-Ca	0.000	0.000	satd
Beidellite-K	0.000	0.000	satd
Beidellite-Mg	0.000	0.000	satd
Beidellite-Na	0.000	0.000	satd
Montmor-Ca	0.000	0.000	satd
Montmor-K	0.000	0.000	satd
Montmor-Mg	0.000	0.000	satd
Montmor-Na	0.000	0.000	satd
Nontronite-Ca	0.000	0.000	satd
Nontronite-K	0.000	0.000	satd
Nontronite-Mg	0.000	0.000	satd
Nontronite-Na	0.000	0.000	satd

--- Lanthanide hydroxide ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
La(OH)3	3.2420E-04	-3.4892	0.0000	-3.4892
Ce(OH)3	1.6210E-14	-13.7902	0.0000	-13.7902
Nd(OH)3(c)	8.3510E-01	-0.0783	0.0000	-0.0783
Gd(OH)3	1.3163E-01	-0.8806	0.0000	-0.8806
Sm(OH)3	3.2950E-02	-1.4821	0.0000	-1.4821

Mineral	Log Q/K	Aff, kcal	State
Lanthanide hydroxide	-8.714	-11.888	
La(OH)3	-8.714	-11.888	
Ce(OH)3	-8.714	-11.888	
Nd(OH)3(c)	-8.714	-11.888	
Gd(OH)3	-8.714	-11.888	
Sm(OH)3	-8.714	-11.888	

--- Rhabdophane-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaPO4:H2O	9.3916E-01	-0.0273	0.0000	-0.0273
CePO4:H2O	1.4849E-11	-10.8283	0.0000	-10.8283
NdPO4:H2O	4.8268E-02	-1.3163	0.0000	-1.3163
GdPO4:H2O	3.0288E-03	-2.5187	0.0000	-2.5187
SmPO4:H2O	9.5450E-03	-2.0202	0.0000	-2.0202

Mineral	Log Q/K	Aff, kcal	State
Rhabdophane-ss	-1.788	-2.439	
LaPO4:H2O	-1.788	-2.439	
CePO4:H2O	-1.788	-2.439	

NdPO4:H2O	-1.788	-2.439
GdPO4:H2O	-1.788	-2.439
SmPO4:H2O	-1.788	-2.439

--- Lanthanide fluoride ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaF3:0.5H2O	9.3822E-01	-0.0277	0.0000	-0.0277
CeF3:0.5H2O	2.3511E-11	-10.6287	0.0000	-10.6287
NdF3:0.5H2O	6.0705E-02	-1.2168	0.0000	-1.2168
GdF3:0.5H2O	1.2046E-04	-3.9192	0.0000	-3.9192
SmF3:0.5H2O	9.5354E-04	-3.0207	0.0000	-3.0207

Mineral	Log Q/K	Aff, kcal	State
Lanthanide fluoride	-15.781	-21.530	
LaF3:0.5H2O	-15.781	-21.530	
CeF3:0.5H2O	-15.781	-21.530	
NdF3:0.5H2O	-15.781	-21.530	
GdF3:0.5H2O	-15.781	-21.530	
SmF3:0.5H2O	-15.781	-21.530	

--- Summary of Gases ---

Gas	Fugacity	Log fugacity
Al(g)	9.7072-192	-191.0129
B(g)	3.9782-204	-203.4003
BF3(g)	1.2331E-45	-44.9090
C(g)	3.0917-190	-189.5098
CH4(g)	3.5198-146	-145.4535
CO(g)	6.0395E-49	-48.2190
CO2(g)	3.1623E-04	-3.5000
Ca(g)	5.4464-154	-153.2639
Chlorine	1.7004E-31	-30.7694
Cs(g)	7.2133E-92	-91.1419
Cu(g)	1.9280E-82	-81.7149
Fluorine	1.1702E-86	-85.9318
H2(g)	6.1067E-42	-41.2142
H2O(g)	2.5942E-02	-1.5860
H2S(g)	1.0981-144	-143.9593
HCl(g)	5.0551E-20	-19.2963
HF(g)	4.7329E-16	-15.3249
K(g)	1.2715E-76	-75.8957
Li(g)	1.1252E-95	-94.9488
Mg(g)	1.8676-129	-128.7287
Nitrogen	1.2812E-22	-21.8924
NH3(g)	1.3023E-70	-69.8853
NO(g)	3.5642E-27	-26.4480
NO2(g)	2.4370E-21	-20.6131
Na(g)	6.9095E-73	-72.1606
O2(g)	2.0999E-01	-0.6778
Pb(g)	3.7433E-68	-67.4267
S2(g)	7.2103-232	-231.1420

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SO2(g)                    1.9469E-57    -56.7106
Si(g)                     4.2257-221   -220.3741
SiF4(g)                   2.2176E-46    -45.6541
Ti(g)                     3.8019-231   -230.4200
TiCl4(g)                  2.1933E-90    -89.6589
U(g)                      1.0117-302   -301.9949
U2Cl10(g)                 1.1413-269   -268.9426
U2Cl8(g)                  2.0808-269   -268.6818
U2F10(g)                  7.8208-187   -186.1067
UCl(g)                    4.5608-260   -259.3410
UCl2(g)                   6.1506-216   -215.2111
UCl3(g)                   1.8167-169   -168.7407
UCl4(g)                   2.9058-140   -139.5367
UCl5(g)                   2.3913-148   -147.6214
UCl6(g)                   3.6561-151   -150.4370
UF(g)                     9.0748-246   -245.0422
UF2(g)                    6.0368-207   -206.2192
UF3(g)                    9.8828-162   -161.0051
UF4(g)                    2.3881-113   -112.6219
UF5(g)                    2.6432-106   -105.5779
UF6(g)                    2.8807-113   -112.5405
UO(g)                     7.9903-218   -217.0974
UO2(g)                    1.4803-133   -132.8296
UO2Cl2(g)                 1.0990E-83    -82.9590
UO2F2(g)                  7.8254E-73    -72.1065
UO3(g)                    1.0888E-80    -79.9630
UOF4(g)                   7.1163E-91    -90.1477
Zn(g)                     3.4105E-77    -76.4672



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Stepping to zi=  1.0000E+01, delzi=  1.0000E-10, nord= 0
  time =  9.6451E+04 d, dltime =  9.6451E-07 d
Steps completed =   888, iter =  1, ncorr = 0
Most rapidly changing is zvclg1(Ce+++                    ) =    -29.4677

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                    Reaction progress        =  1.00000000000995E+01
                    Log of reaction progress =       1.0000000



                    Time =  8.333E+09 sec
                         =  9.645E+04 days
                         =  2.641E+02 years

                    Log sec =        9.921
                    Log days =       4.984
                    Log years =      2.422

                    Temperature    =     25.000 degrees C
                    total pressure =      1.013 bars


Step size is limited by the P.R.S. shift requirement
```

--- Reactant Summary ---

Reactant	Moles	Delta moles	Mass, g	Delta Mass, g
Tuff	9.0000E+01	1.0000E+01	1.8528E+03	2.0586E+02

Current total mass = 1.85278E+03 grams
Delta total mass = 2.05865E+02 grams
Delta total volume = 0.00000 cc

Reactant	Rel. Rate mol/mol	Rate mol/s	Rate mol/s/cm2
Tuff	1.0000E+00	1.2000E-09	2.5000E-15

Reactant	Affinity kcal/mol	Surface Area mol/s/cm2
Tuff	999.00000	4.8000E+05

Reactant	Rate Constants, mol/s/cm2	
Tuff		
	Forward	2.5000E-15

Affinity of the overall irreversible reaction= 0.000 kcal
Contributions from irreversible reactions
with no thermodynamic data are not included

--- Element Totals for the Aqueous Solution ---

Element	mg/kg soln.	Molality	Moles
O	8.862524E+05	5.562569E+01	5.494526E+01
Al	5.894095E-03	2.193674E-07	2.166840E-07
B	1.350177E-01	1.254141E-05	1.238800E-05
Ba	1.384457E-05	1.012384E-10	1.000000E-10
Ca	7.847723E-04	1.966343E-08	1.942290E-08
Ce	1.412563E-19	1.012383E-24	9.999992E-25
Cl	7.198338E+00	2.038941E-04	2.014000E-04
Cr	3.030804E+02	5.853407E-03	5.781806E-03
Cs	1.924935E-15	1.454437E-20	1.436646E-20
Cu	6.726684E-10	1.063003E-14	1.050000E-14
F	2.291939E-01	1.211456E-05	1.196637E-05
Fe	1.138060E-08	2.046383E-13	2.021351E-13
Gd	1.585310E-09	1.012384E-14	9.999998E-15
H	1.114405E+05	1.110274E+02	1.096692E+02
C	1.361029E+02	1.137915E-02	1.123996E-02
P	1.136463E+01	3.684537E-04	3.639467E-04
K	2.039560E+00	5.238421E-05	5.174343E-05
La	1.400370E-09	1.012384E-14	9.999998E-15
Li	6.997543E-07	1.012384E-10	1.000000E-10
Mg	2.336865E-02	9.655166E-07	9.537060E-07
Mn	4.336495E-11	7.926606E-16	7.829645E-16

Mo	2.204444E+02	2.307391E-03	2.279166E-03
N	2.005159E+00	1.437585E-04	1.420000E-04
Na	1.238038E+03	5.407807E-02	5.341657E-02
Nd	1.454150E-09	1.012384E-14	9.999998E-15
Ni	1.018863E-04	1.743305E-09	1.721980E-09
Pb	5.539784E-07	2.684879E-12	2.652037E-12
Pu	2.459876E-09	1.012384E-14	9.999999E-15
S	3.773248E+02	1.181659E-02	1.167205E-02
Si	4.307331E+00	1.540096E-04	1.521257E-04
Sm	1.515848E-09	1.012384E-14	9.999998E-15
Sr	2.981977E-44	3.417612E-49	3.375806E-49
Ti	1.076341E-05	2.257447E-10	2.229833E-10
U	2.399680E-09	1.012384E-14	1.000000E-14
V	4.822898E+00	9.507319E-05	9.391022E-05
Zn	6.592268E-06	1.012384E-10	1.000000E-10
Zr	9.196722E-16	1.012385E-20	1.000001E-20

Single ion activities and activity coefficients are here defined
with respect to the modified NBS pH scale

	pH	Eh	pe
modified NBS pH scale	9.1998	0.6748	1.1407E+01
rational pH scale	9.1184	0.6796	1.1489E+01

pHCl = 12.9908

Oxygen fugacity = 2.09991E-01
Log oxygen fugacity = -0.67780

Activity of water = 0.99864
Log activity of water = -0.00059

Ionic strength = 7.241275E-02 molal
Sum of molalities = 0.0847175341325
Osmotic coefficient = 0.89201

Mass of solution = 0.991920 kg
Mass of solutes = 0.004152 kg
Conc. of solutes = 0.418584 per cent (w/w)

Moles of solvent H2O = 5.48294E+01
Mass of solvent H2O = 9.87768E-01 kg

Species	Molality	Log molality	Log gamma	Log activity
Na+	5.2039E-02	-1.2837	-0.1064	-1.3901
SO4--	1.0403E-02	-1.9829	-0.3881	-2.3710
HCO3-	9.4738E-03	-2.0235	-0.0909	-2.1144
CrO4--	5.8476E-03	-2.2330	-0.3881	-2.6211
MoO4--	2.3074E-03	-2.6369	-0.3753	-3.0121
NaSO4-	1.4121E-03	-2.8501	-0.0909	-2.9411
CO3--	1.3547E-03	-2.8682	-0.3753	-3.2434
NaHCO3(aq)	4.4628E-04	-3.3504	0.0000	-3.3504
HPO4--	3.1254E-04	-3.5051	-0.3881	-3.8932

O2(aq)	2.6081E-04	-3.5837	0.0076	-3.5761
Cl-	2.0279E-04	-3.6929	-0.0980	-3.7910
NO3-	1.4376E-04	-3.8424	-0.0980	-3.9404
SiO2(aq)	1.0016E-04	-3.9993	0.0000	-3.9993
NaCO3-	9.3717E-05	-4.0282	-0.0909	-4.1191
VO3OH--	8.5331E-05	-4.0689	-0.3881	-4.4570
NaHPO4-	5.3411E-05	-4.2724	-0.0909	-4.3633
K+	5.0791E-05	-4.2942	-0.1135	-4.4077
NaHSiO3(aq)	3.2048E-05	-4.4942	0.0000	-4.4942
HSiO3-	2.1793E-05	-4.6617	-0.0909	-4.7526
OH-	1.9882E-05	-4.7015	-0.0944	-4.7959
F-	1.2075E-05	-4.9181	-0.0944	-5.0125
CO2(aq)	1.0557E-05	-4.9765	0.0076	-4.9689
HVO4--	9.1919E-06	-5.0366	-0.3881	-5.4247
BO2-	6.3982E-06	-5.1939	-0.0909	-5.2849
HCrO4-	5.8131E-06	-5.2356	-0.0909	-5.3265
B(OH)3(aq)	5.7498E-06	-5.2403	0.0000	-5.2403
H2PO4-	1.5971E-06	-5.7967	-0.0909	-5.8876
KSO4-	1.5553E-06	-5.8082	-0.0909	-5.8991
NaCl(aq)	1.1013E-06	-5.9581	0.0000	-5.9581
PO4---	7.4706E-07	-6.1266	-0.8886	-7.0152
Mg++	4.6617E-07	-6.3315	-0.3348	-6.6663
NaB(OH)4(aq)	3.9333E-07	-6.4052	0.0000	-6.4052
H2VO4-	3.3840E-07	-6.4706	-0.0909	-6.5615
MgSO4(aq)	2.3683E-07	-6.6256	0.0000	-6.6256
AlO2-	2.1775E-07	-6.6620	-0.0909	-6.7530
VO2(OH)2-	2.0972E-07	-6.6784	-0.0909	-6.7693
MgCO3(aq)	1.1727E-07	-6.9308	0.0000	-6.9308
NaOH(aq)	1.0335E-07	-6.9857	0.0000	-6.9857
MgPO4-	9.9636E-08	-7.0016	-0.0909	-7.0925
NaF(aq)	3.9794E-08	-7.4002	0.0000	-7.4002
KHPO4-	3.7152E-08	-7.4300	-0.0909	-7.5210
MgHCO3+	2.2984E-08	-7.6386	-0.1064	-7.7450
MgHPO4(aq)	2.2413E-08	-7.6495	0.0000	-7.6495
Ca++	9.9775E-09	-8.0010	-0.3721	-8.3731
H2SiO4--	6.7174E-09	-8.1728	-0.3881	-8.5609
CaCO3(aq)	5.1358E-09	-8.2894	0.0000	-8.2894
VO4---	2.3516E-09	-8.6286	-0.8886	-9.5172
CaSO4(aq)	2.3284E-09	-8.6329	0.0000	-8.6329
Cr2O7--	1.8453E-09	-8.7339	-0.3881	-9.1221
CaPO4-	1.4542E-09	-8.8374	-0.0909	-8.9283
Ni++	1.3918E-09	-8.8564	-0.3721	-9.2285
NaAlO2(aq)	1.2991E-09	-8.8864	0.0000	-8.8864
H+	7.6138E-10	-9.1184	-0.0814	-9.1998
CaHCO3+	4.6306E-10	-9.3344	-0.1064	-9.4408
NiSO4(aq)	3.3589E-10	-9.4738	0.0000	-9.4738
HSO4-	3.1570E-10	-9.5007	-0.0909	-9.5917
HAlO2(aq)	3.1452E-10	-9.5024	0.0000	-9.5024
CaHPO4(aq)	2.9766E-10	-9.5263	0.0000	-9.5263
Ti(OH)4(aq)	2.2574E-10	-9.6464	0.0000	-9.6464
KOH(aq)	2.1452E-10	-9.6685	0.0000	-9.6685
KCl(aq)	2.0262E-10	-9.6933	0.0000	-9.6933
MgB(OH)4+	1.1279E-10	-9.9477	-0.1064	-10.0541

--- Summary of Instantaneously Precipitated Solid Phases ---
(defined by derivatives)

--- Theoretical Rock Composition ---
g/kg

O	5.181364E+01
Al	6.307688E+00

Ca	3.743591E-01
Cl	5.524040E-12
Cs	8.051740E-18
Fe	6.119349E-01
H	7.307034E-01
C	2.035909E-03
P	1.447847E-11
K	3.828018E+00
Mg	1.381791E-01
Mn	4.839751E-02
N	1.981774E-66
Na	2.488288E+00
Pb	1.614237E-10
Si	3.360175E+01
Ti	5.500761E-02

--- Oxide Percentages ---

Oxide Theoretical rock

Total = 0.0000

Phase/end-member	d mol/d zi	d grams/d zi	d vol (cc)/d zi
Celadonite	1.2310E-03	4.8840E-01	1.9340E-01
Maximum_Microcline	1.9070E-02	5.3077E+00	2.0737E+00
Mesolite	3.1067E-03	1.2047E+00	5.3186E-01
Muscovite	1.0008E-03	3.9862E-01	1.4082E-01
Ni2SiO4	-2.5976E-12	-5.4411E-10	-1.1069E-10
Pyrolusite	1.9400E-04	1.6866E-02	9.7000E-02
Pyromorphite	3.4313E-14	4.6541E-11	6.6108E-12
Quartz	9.3848E-02	5.6388E+00	2.1292E+00
Rutile	2.5300E-04	2.0209E-02	4.7615E-03
fix CO2(g)	3.7328E-05	1.6428E-03	0.0000E+00
fix O2(g)	-7.0649E-04	-2.2607E-02	0.0000E+00
Clinoptilolite-ss			
Clinoptilolite-Ca	8.9271E-06	1.2002E-02	4.4635E-03
Clinoptilolite-Cs	3.8481E-21	6.6792E-18	1.9240E-18
Clinoptilolite-K	7.3706E-05	1.0396E-01	3.6853E-02
Clinoptilolite-NH4	8.9870E-69	1.2020E-65	4.4935E-66
Clinoptilolite-Na	6.1583E-03	8.3424E+00	3.0792E+00
Clinoptilolite-Sr	0.0000E+00	0.0000E+00	0.0000E+00
Smectite-di			
Beidellite-Ca	4.0469E-11	1.4834E-08	5.2420E-09
Beidellite-K	1.7470E-10	6.5136E-08	2.3357E-08
Beidellite-Mg	3.7563E-10	1.3671E-07	4.6274E-08
Beidellite-Na	1.7147E-08	6.3020E-06	2.2383E-06
Montmor-Ca	7.2652E-08	2.6594E-05	3.6326E-05
Montmor-K	5.1220E-07	1.9071E-04	2.5610E-04
Montmor-Mg	1.0960E-06	3.9831E-04	5.4798E-04
Montmor-Na	4.9026E-05	1.7993E-02	2.4513E-02
Nontronite-Ca	2.6316E-06	1.1166E-03	3.4501E-04
Nontronite-K	1.1360E-05	4.8916E-03	1.5367E-03
Nontronite-Mg	2.4444E-05	1.0308E-02	3.1718E-03
Nontronite-Na	1.1150E-03	4.7418E-01	1.4730E-01

--- Summary of Solid Phases (E.S.+P.R.S.) ---

Phase/End-member	Log moles	Moles	Mass, g	Volume, cc

Alunite	-2.5559	2.7801E-03	1.1516E+00	8.1624E-01
Celadonite	-1.9083	1.2351E-02	4.9003E+00	1.9404E+00
Diaspore	-1.6079	2.4665E-02	1.4796E+00	4.3804E-01
Fluorapatite	-3.9881	1.0278E-04	5.1834E-02	5.1392E-02
Hematite	-3.7144	1.9300E-04	3.0820E-02	5.8428E-03
Maximum_Microcline	-0.7497	1.7796E-01	4.9531E+01	1.9351E+01
Mesolite	-1.5123	3.0737E-02	1.1919E+01	5.2622E+00
Muscovite	-1.6902	2.0409E-02	8.1291E+00	2.8718E+00
Ni2SiO4	-2.1930	6.4125E-03	1.3432E+00	2.7324E-01
Nontronite-H	-4.9990	1.0023E-05	4.1899E-03	5.0117E-03
Pyrolusite	-2.5962	2.5337E-03	2.2027E-01	1.2668E+00
Pyromorphite	-10.7106	1.9470E-11	2.6408E-08	3.7510E-09
Quartz	0.0622	1.1539E+00	6.9333E+01	2.6180E+01
Rutile	-2.5969	2.5300E-03	2.0209E-01	4.7615E-02
fix CO2(g)	2.3010	1.9999E+02	8.8015E+03	0.0000E+00
fix O2(g)	2.3010	1.9999E+02	6.3995E+03	0.0000E+00
Clinoptilolite-ss	-1.3213	4.7721E-02		
Clinoptilolite-Ca	-4.1658	6.8262E-05	9.1772E-02	3.4131E-02
Clinoptilolite-Cs	-10.5400	2.8843E-11	5.0064E-08	1.4422E-08
Clinoptilolite-K	-3.2490	5.6360E-04	7.9496E-01	2.8180E-01
Clinoptilolite-NH4	-67.1689	6.7778E-68	9.0651E-65	3.3889E-65
Clinoptilolite-Na	-1.3271	4.7089E-02	6.3789E+01	2.3544E+01
Clinoptilolite-Sr	-10.2389	5.7687E-11	8.2309E-08	2.8843E-08
Smectite-di	-1.9252	1.1878E-02		
Beidellite-Ca	-9.0970	7.9974E-10	2.9316E-07	1.0359E-07
Beidellite-K	-8.6353	2.3158E-09	8.6345E-07	3.0962E-07
Beidellite-Mg	-8.4363	3.6622E-09	1.3329E-06	4.5114E-07
Beidellite-Na	-6.8556	1.3946E-07	5.1256E-05	1.8205E-05
Montmor-Ca	-6.0146	9.6699E-07	3.5396E-04	4.8349E-04
Montmor-K	-5.3339	4.6355E-06	1.7259E-03	2.3177E-03
Montmor-Mg	-5.0044	9.8989E-06	3.5977E-03	4.9494E-03
Montmor-Na	-3.3997	3.9840E-04	1.4622E-01	1.9920E-01
Nontronite-Ca	-3.3874	4.0984E-04	1.7389E-01	5.3731E-02
Nontronite-K	-3.1477	7.1178E-04	3.0648E-01	9.6282E-02
Nontronite-Mg	-3.1680	6.7917E-04	2.8640E-01	8.8129E-02
Nontronite-Na	-2.0149	9.6635E-03	4.1096E+00	1.2767E+00

	Mass, grams	Volume, cc
Created	1.541899E+04	8.409204E+01
Destroyed	2.058647E+02	0.000000E+00
Net	1.521313E+04	8.409204E+01

Warning-- these volume totals may be incomplete because
of missing partial molar volume data in the data base

--- Summary of Pure Mineral Saturation States ---

Mineral	Log Q/K	Aff, kcal	State
Alamosite	-3.278	-4.473	
Albite	-0.022	-0.030	
Albite_high	-1.341	-1.829	
Albite_low	-0.022	-0.030	
Alstonite	-7.218	-9.847	
Analcime	-0.148	-0.202	
Analcime-dehy	-6.510	-8.882	

Andalusite	-6.082	-8.298	
Anglesite	-6.523	-8.899	
Anhydrite	-6.438	-8.783	
Aragonite	-3.281	-4.476	
BaCrO4	-3.120	-4.257	
BaHPO4	-6.924	-9.447	
BaZrO3	83.674	114.155	ssatd
Barite	-2.831	-3.862	
Bassanite	-7.083	-9.663	
Beidellite-Ca	-2.466	-3.365	
Beidellite-Cs	-7.233	-9.867	
Beidellite-H	-3.163	-4.315	
Beidellite-K	-2.257	-3.079	
Beidellite-Mg	-2.147	-2.929	
Beidellite-Na	-1.599	-2.182	
Boehmite	-0.634	-0.864	
Boric_acid	-5.082	-6.933	
Brucite	-4.566	-6.229	
Bunsenite	-3.301	-4.504	
CaSO4:0.5H2O(beta)	-7.251	-9.892	
CaZrO3	139.762	190.675	ssatd
Calcite	-3.136	-4.279	
CeO2	-3.223	-4.397	
Celadonite	0.000	0.000	satd
Cerussite	-1.710	-2.333	
Chalcedony	-0.271	-0.370	
Chrysotile	-3.927	-5.358	
Clinochlore-14A	-6.714	-9.160	
Clinoptilolite	-5.917	-8.073	
Clinoptilolite-K	-6.670	-9.100	
Clinoptilolite-Na	-0.020	-0.027	
Clinoptilolite-hy-K	-6.664	-9.092	
Clinoptilolite-hy-Na	-0.018	-0.024	
Coesite	-0.810	-1.105	
Corundum	-4.450	-6.072	
Cristobalite(alpha)	-0.551	-0.751	
Cristobalite(beta)	-0.994	-1.356	
Crocoite	-1.908	-2.604	
Dawsonite	-0.920	-1.256	
Diaspore	-0.230	-0.313	
Diopside	-7.204	-9.829	
Dolomite	-3.382	-4.614	
Dolomite-dis	-4.927	-6.721	
Dolomite-ord	-3.382	-4.614	
Enstatite	-3.594	-4.903	
Epsomite	-7.079	-9.658	
Fe(OH)3	-6.518	-8.893	
Ferrite-Zn	-6.299	-8.594	
Fluorapatite	-5.964	-8.137	
GdPO4:H2O	-4.306	-5.875	
Gibbsite	-0.826	-1.127	
Goethite	-1.397	-1.905	
Gypsum	-6.263	-8.544	
Halite	-6.767	-9.232	
Hematite	-1.832	-2.500	
Hexahydrite	-7.314	-9.978	
Hydrocerussite	-6.864	-9.365	
Ice	-0.139	-0.190	
Illite	-1.275	-1.739	
Jadeite	-1.647	-2.247	
K-Feldspar	0.000	0.000	
Kalicinite	-6.806	-9.285	
Kalsilite	-3.175	-4.332	

Kaolinite	-0.948	-1.294	
Kyanite	-5.812	-7.929	
LaPO4:H2O	-1.815	-2.476	
Lansfordite	-4.425	-6.037	
Laumontite	-5.779	-7.884	
Lawsonite	-6.325	-8.630	
Litharge	-6.250	-8.527	
Magnesite	-1.875	-2.557	
Manganite	-4.459	-6.084	
Massicot	-6.425	-8.766	
Maximum_Microcline	0.000	0.000	satd
Mesolite	0.000	0.000	satd
Mirabilite	-4.017	-5.481	
MnO2(gamma)	-1.518	-2.071	
Monohydrocalcite	-3.971	-5.417	
Montmor-Ca	-1.392	-1.900	
Montmor-Cs	-6.092	-8.311	
Montmor-K	-1.113	-1.518	
Montmor-Mg	-1.003	-1.369	
Montmor-Na	-0.459	-0.626	
Mordenite	-2.805	-3.827	
Muscovite	0.000	0.000	satd
Na2CO3	-6.877	-9.382	
Na2CO3:7H2O	-5.645	-7.701	
Nahcolite	-3.393	-4.629	
Natrolite	-1.039	-1.417	
Natron	-5.311	-7.246	
NdOHCO3	-7.116	-9.708	
NdPO4:H2O	-3.104	-4.235	
Nepheline	-3.060	-4.174	
Nesquehonite	-4.578	-6.246	
Ni(OH)2	-3.579	-4.882	
Ni2SiO4	0.000	0.000	satd
NiCO3	-5.655	-7.715	
Nontronite-Ca	-0.878	-1.198	
Nontronite-H	-1.574	-2.148	
Nontronite-K	-0.668	-0.912	
Nontronite-Mg	-0.559	-0.762	
Nontronite-Na	-0.011	-0.015	
Paragonite	-0.919	-1.253	
Paralaurionite	-6.800	-9.277	
Pb3(PO4)2	-5.427	-7.404	
Pb4O(PO4)2	-6.434	-8.778	
PbHPO4	-4.331	-5.909	
Petalite	-6.152	-8.392	
Phlogopite	-2.518	-3.435	
Plattnerite	-1.613	-2.201	
PuO2	-4.789	-6.533	
Pyrolusite	0.000	0.000	satd
Pyromorphite	0.000	0.000	satd
Pyrophyllite	-2.576	-3.514	
Quartz	0.000	0.000	satd
Rutile	0.000	0.000	satd
Sanidine_high	-1.199	-1.636	
Saponite-Ca	-1.828	-2.495	
Saponite-Cs	-6.595	-8.997	
Saponite-H	-2.525	-3.445	
Saponite-K	-1.619	-2.209	
Saponite-Mg	-1.509	-2.059	
Saponite-Na	-0.962	-1.312	
Scolecite	-3.989	-5.442	
Sellaite	-7.307	-9.969	
SiO2(am)	-1.286	-1.754	

Sillimanite	-6.446	-8.794	
SmPO4:H2O	-3.808	-5.195	
Smectite-low-Fe-Mg	-7.076	-9.653	
Smithsonite	-4.618	-6.301	
SrZrO3	82.058	111.951	ssatd
Stilbite	-1.918	-2.616	
Talc	-1.938	-2.644	
Thenardite	-4.842	-6.606	
Thermonatrite	-6.658	-9.083	
Trevorite	-2.341	-3.193	
Tridymite	-0.171	-0.234	
Witherite	-0.349	-0.476	
Zincite	-4.050	-5.525	
Zn(OH)2(beta)	-4.776	-6.516	
Zn(OH)2(epsilon)	-4.504	-6.145	
Zn(OH)2(gamma)	-4.725	-6.446	
fix CO2(g)	0.000	0.000	satd
fix O2(g)	0.000	0.000	satd

--- Summary of Solid Solutions ---

--- Carbonate-Calcite ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Calcite	5.1789E-02	-1.2858	0.0000	-1.2858
Magnesite	9.4650E-01	-0.0239	0.0000	-0.0239
Rhodochrosite	1.2057E-09	-8.9188	0.0000	-8.9188
Siderite	1.8676E-18	-17.7287	0.0000	-17.7287
Smithsonite	1.7079E-03	-2.7675	0.0000	-2.7675
Strontianite	1.6144E-40	-39.7920	0.0000	-39.7920

Mineral	Log Q/K	Aff, kcal	State
Carbonate-Calcite	-1.851	-2.525	
Calcite	-1.851	-2.525	
Magnesite	-1.851	-2.525	
Rhodochrosite	-1.851	-2.525	
Siderite	-1.851	-2.525	
Smithsonite	-1.851	-2.525	
Strontianite	-1.851	-2.525	

--- Clinoptilolite-hy-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-hy-Ca	1.5020E-10	-9.8233	0.0000	-9.8233
Clinoptilolite-hy-Cs	3.6523E-59	-58.4374	0.0000	-58.4374
Clinoptilolite-hy-K	2.2580E-07	-6.6463	0.0000	-6.6463
Clinoptilolite-hy-Na	1.0000E+00	0.0000	0.0000	0.0000
Clinoptilolite-hy-Sr	6.5354E-81	-80.1847	0.0000	-80.1847

Mineral	Log Q/K	Aff, kcal	State

Clinoptilolite-hy-ss	-0.018	-0.024
Clinoptilolite-hy-Ca	-0.018	-0.024
Clinoptilolite-hy-Cs	-0.018	-0.024
Clinoptilolite-hy-K	-0.018	-0.024
Clinoptilolite-hy-Na	-0.018	-0.024
Clinoptilolite-hy-Sr	-0.018	-0.024

--- Clinoptilolite-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-Ca	1.4304E-03	-2.8445	-6.9976	-9.8421
Clinoptilolite-Cs	1.2687E-17	-16.8966	-41.5658	-58.4624
Clinoptilolite-K	1.1810E-02	-1.9277	-4.7423	-6.6700
Clinoptilolite-NH4	1.4354E-66	-65.8430	-161.9739	-227.8169
Clinoptilolite-Na	9.8676E-01	-0.0058	-0.0142	-0.0200
Clinoptilolite-Sr	6.6123E-24	-23.1796	-57.0219	-80.2016

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-ss	0.000	0.000	satd
Clinoptilolite-Ca	0.000	0.000	satd
Clinoptilolite-Cs	0.000	0.000	satd
Clinoptilolite-K	0.000	0.000	satd
Clinoptilolite-NH4	0.000	0.000	satd
Clinoptilolite-Na	0.000	0.000	satd
Clinoptilolite-Sr	0.000	0.000	satd

--- Saponite-tri ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Saponite-Ca	2.2816E-03	-2.6418	1.7700	-0.8718
Saponite-H	1.7689E-05	-4.7523	3.1840	-1.5683
Saponite-K	9.8422E-03	-2.0069	1.3446	-0.6623
Saponite-Mg	2.1177E-02	-1.6741	1.1217	-0.5525
Saponite-Na	9.6668E-01	-0.0147	0.0099	-0.0049

Mineral	Log Q/K	Aff, kcal	State
Saponite-tri	-0.957	-1.305	
Saponite-Ca	-0.957	-1.305	
Saponite-H	-0.957	-1.305	
Saponite-K	-0.957	-1.305	
Saponite-Mg	-0.957	-1.305	
Saponite-Na	-0.957	-1.305	

--- Smectite-di ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Beidellite-Ca	3.3607E-08	-7.4736	5.0073	-2.4663
Beidellite-K	1.4508E-07	-6.8384	4.5817	-2.2567
Beidellite-Mg	3.1194E-07	-6.5059	4.3590	-2.1470
Beidellite-Na	1.4239E-05	-4.8465	3.2472	-1.5994
Montmor-Ca	6.0333E-05	-4.2194	2.8270	-1.3924
Montmor-K	4.2535E-04	-3.3712	2.2587	-1.1125
Montmor-Mg	9.1012E-04	-3.0409	2.0374	-1.0035
Montmor-Na	4.0713E-02	-1.3903	0.9315	-0.4588
Nontronite-Ca	2.1854E-03	-2.6605	1.7825	-0.8780
Nontronite-K	9.4342E-03	-2.0253	1.3569	-0.6683
Nontronite-Mg	2.0299E-02	-1.6925	1.1340	-0.5585
Nontronite-Na	9.2596E-01	-0.0334	0.0224	-0.0110

Mineral	Log Q/K	Aff, kcal	State
Smectite-di	0.000	0.000	satd
Beidellite-Ca	0.000	0.000	satd
Beidellite-K	0.000	0.000	satd
Beidellite-Mg	0.000	0.000	satd
Beidellite-Na	0.000	0.000	satd
Montmor-Ca	0.000	0.000	satd
Montmor-K	0.000	0.000	satd
Montmor-Mg	0.000	0.000	satd
Montmor-Na	0.000	0.000	satd
Nontronite-Ca	0.000	0.000	satd
Nontronite-K	0.000	0.000	satd
Nontronite-Mg	0.000	0.000	satd
Nontronite-Na	0.000	0.000	satd

--- Lanthanide hydroxide ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
La(OH)3	3.2420E-04	-3.4892	0.0000	-3.4892
Ce(OH)3	1.6210E-14	-13.7902	0.0000	-13.7902
Nd(OH)3(c)	8.3510E-01	-0.0783	0.0000	-0.0783
Gd(OH)3	1.3163E-01	-0.8806	0.0000	-0.8806
Sm(OH)3	3.2950E-02	-1.4821	0.0000	-1.4821

Mineral	Log Q/K	Aff, kcal	State
Lanthanide hydroxide	-8.714	-11.888	
La(OH)3	-8.714	-11.888	
Ce(OH)3	-8.714	-11.888	
Nd(OH)3(c)	-8.714	-11.888	
Gd(OH)3	-8.714	-11.888	
Sm(OH)3	-8.714	-11.888	

--- Rhabdophane-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity

LaPO4:H2O	9.3916E-01	-0.0273	0.0000	-0.0273
CePO4:H2O	1.4849E-11	-10.8283	0.0000	-10.8283
NdPO4:H2O	4.8268E-02	-1.3163	0.0000	-1.3163
GdPO4:H2O	3.0288E-03	-2.5187	0.0000	-2.5187
SmPO4:H2O	9.5450E-03	-2.0202	0.0000	-2.0202

Mineral	Log Q/K	Aff, kcal	State
Rhabdophane-ss	-1.788	-2.439	
LaPO4:H2O	-1.788	-2.439	
CePO4:H2O	-1.788	-2.439	
NdPO4:H2O	-1.788	-2.439	
GdPO4:H2O	-1.788	-2.439	
SmPO4:H2O	-1.788	-2.439	

--- Lanthanide fluoride ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaF3:0.5H2O	9.3822E-01	-0.0277	0.0000	-0.0277
CeF3:0.5H2O	2.3511E-11	-10.6287	0.0000	-10.6287
NdF3:0.5H2O	6.0705E-02	-1.2168	0.0000	-1.2168
GdF3:0.5H2O	1.2046E-04	-3.9192	0.0000	-3.9192
SmF3:0.5H2O	9.5354E-04	-3.0207	0.0000	-3.0207

Mineral	Log Q/K	Aff, kcal	State
Lanthanide fluoride	-15.781	-21.530	
LaF3:0.5H2O	-15.781	-21.530	
CeF3:0.5H2O	-15.781	-21.530	
NdF3:0.5H2O	-15.781	-21.530	
GdF3:0.5H2O	-15.781	-21.530	
SmF3:0.5H2O	-15.781	-21.530	

--- Summary of Gases ---

Gas	Fugacity	Log fugacity
Al(g)	9.7072-192	-191.0129
B(g)	3.9782-204	-203.4003
BF3(g)	1.2331E-45	-44.9090
C(g)	3.0917-190	-189.5098
CH4(g)	3.5198-146	-145.4535
CO(g)	6.0395E-49	-48.2190
CO2(g)	3.1623E-04	-3.5000
Ca(g)	5.4464-154	-153.2639
Chlorine	1.7004E-31	-30.7694
Cs(g)	7.2133E-92	-91.1419
Cu(g)	1.9280E-82	-81.7149
Fluorine	1.1702E-86	-85.9318
H2(g)	6.1067E-42	-41.2142
H2O(g)	2.5942E-02	-1.5860
H2S(g)	1.0981-144	-143.9593

HCl(g)	5.0551E-20	-19.2963
HF(g)	4.7329E-16	-15.3249
K(g)	1.2715E-76	-75.8957
Li(g)	1.1252E-95	-94.9488
Mg(g)	1.8676-129	-128.7287
Nitrogen	1.2812E-22	-21.8924
NH3(g)	1.3023E-70	-69.8853
NO(g)	3.5642E-27	-26.4480
NO2(g)	2.4370E-21	-20.6131
Na(g)	6.9095E-73	-72.1606
O2(g)	2.0999E-01	-0.6778
Pb(g)	3.7433E-68	-67.4267
S2(g)	7.2103-232	-231.1420
SO2(g)	1.9469E-57	-56.7106
Si(g)	4.2257-221	-220.3741
SiF4(g)	2.2176E-46	-45.6541
Ti(g)	3.8019-231	-230.4200
TiCl4(g)	2.1933E-90	-89.6589
U(g)	1.0117-302	-301.9949
U2Cl10(g)	1.1413-269	-268.9426
U2Cl8(g)	2.0808-269	-268.6818
U2F10(g)	7.8208-187	-186.1067
UCl(g)	4.5608-260	-259.3410
UCl2(g)	6.1506-216	-215.2111
UCl3(g)	1.8167-169	-168.7407
UCl4(g)	2.9058-140	-139.5367
UCl5(g)	2.3913-148	-147.6214
UCl6(g)	3.6561-151	-150.4370
UF(g)	9.0748-246	-245.0422
UF2(g)	6.0368-207	-206.2192
UF3(g)	9.8828-162	-161.0051
UF4(g)	2.3881-113	-112.6219
UF5(g)	2.6432-106	-105.5779
UF6(g)	2.8807-113	-112.5405
UO(g)	7.9903-218	-217.0974
UO2(g)	1.4803-133	-132.8296
UO2Cl2(g)	1.0990E-83	-82.9590
UO2F2(g)	7.8254E-73	-72.1065
UO3(g)	1.0888E-80	-79.9630
UOF4(g)	7.1163E-91	-90.1477
Zn(g)	3.4105E-77	-76.4672

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--- shifting e.s. solid(s) to the p.r.s. (shftz) ---

      shifted -- Celadonite
              - old mass=  1.24347E-03, new mass=  1.24347E-05
      shifted -- Maximum_Microcline
              - old mass=  1.92623E-02, new mass=  1.92623E-04
      shifted -- Mesolite
              - old mass=  3.13804E-03, new mass=  3.13804E-05
      shifted -- Muscovite
              - old mass=  1.01087E-03, new mass=  1.01087E-05
  not shifted -- Ni2SiO4
              - mass=  7.99980E-07
      shifted -- Pyrolusite
              - old mass=  1.95960E-04, new mass=  1.95960E-06
  not shifted -- Pyromorphite
              - mass=  1.94696E-11
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      shifted -- Quartz
              - old mass=  9.47955E-02, new mass=  9.47955E-04
      shifted -- Rutile
              - old mass=  2.55556E-04, new mass=  2.55556E-06
      shifted -- Clinoptilolite-ss
              - old mass=  6.30401E-03, new mass=  6.30401E-05
      shifted -- Smectite-di
              - old mass=  1.21634E-03, new mass=  1.21634E-05

Stepping to zi=  1.0009E+01, delzi=  8.6708E-03, nord= 6
  time =  9.6534E+04 d, dltime =  8.3630E+01 d
Steps completed =   889, iter = 21, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -49.1901

Stepping to zi=  1.0009E+01, delzi=  7.0789E-04, nord= 6
  time =  9.6541E+04 d, dltime =  6.8276E+00 d
Steps completed =   890, iter = 18, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -49.2222

Stepping to zi=  1.0011E+01, delzi=  1.4158E-03, nord= 5
  time =  9.6555E+04 d, dltime =  1.3655E+01 d
Steps completed =   891, iter = 12, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -49.2830

Stepping to zi=  1.0012E+01, delzi=  7.0789E-04, nord= 6
  time =  9.6562E+04 d, dltime =  6.8276E+00 d
Steps completed =   892, iter = 10, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -49.3119

Stepping to zi=  1.0013E+01, delzi=  1.4158E-03, nord= 6
  time =  9.6575E+04 d, dltime =  1.3655E+01 d
Steps completed =   893, iter = 20, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -49.3669

Stepping to zi=  1.0015E+01, delzi=  1.8450E-03, nord= 5
  time =  9.6593E+04 d, dltime =  1.7795E+01 d
Steps completed =   894, iter =  8, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -49.4337

Stepping to zi=  1.0017E+01, delzi=  2.7232E-03, nord= 6
  time =  9.6619E+04 d, dltime =  2.6266E+01 d
Steps completed =   895, iter = 19, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -49.5238

Stepping to zi=  1.0021E+01, delzi=  3.2044E-03, nord= 6
  time =  9.6650E+04 d, dltime =  3.0907E+01 d
Steps completed =   896, iter = 19, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -49.6191

Stepping to zi=  1.0024E+01, delzi=  3.3928E-03, nord= 6
  time =  9.6683E+04 d, dltime =  3.2724E+01 d
Steps completed =   897, iter = 19, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -49.7097

Stepping to zi=  1.0028E+01, delzi=  3.6452E-03, nord= 6
  time =  9.6718E+04 d, dltime =  3.5158E+01 d
Steps completed =   898, iter = 18, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -49.7975

Stepping to zi=  1.0032E+01, delzi=  3.9435E-03, nord= 6
  time =  9.6756E+04 d, dltime =  3.8035E+01 d
Steps completed =   899, iter =  9, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -49.8834
```

```
Stepping to zi=  1.0036E+01, delzi=  4.3243E-03, nord= 6
  time =  9.6798E+04 d, dltime =  4.1708E+01 d
Steps completed =   900, iter =  7, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -49.9688

Stepping to zi=  1.0041E+01, delzi=  4.7758E-03, nord= 6
  time =  9.6844E+04 d, dltime =  4.6063E+01 d
Steps completed =   901, iter = 24, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -50.0543

Stepping to zi=  1.0046E+01, delzi=  5.2972E-03, nord= 6
  time =  9.6895E+04 d, dltime =  5.1091E+01 d
Steps completed =   902, iter = 20, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -50.1401

Stepping to zi=  1.0052E+01, delzi=  5.8691E-03, nord= 6
  time =  9.6952E+04 d, dltime =  5.6608E+01 d
Steps completed =   903, iter = 13, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -50.2263

Stepping to zi=  1.0058E+01, delzi=  6.4888E-03, nord= 6
  time =  9.7014E+04 d, dltime =  6.2584E+01 d
Steps completed =   904, iter =  7, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -50.3125

Stepping to zi=  1.0066E+01, delzi=  7.1664E-03, nord= 6
  time =  9.7083E+04 d, dltime =  6.9120E+01 d
Steps completed =   905, iter =  9, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -50.3987

Stepping to zi=  1.0074E+01, delzi=  7.9118E-03, nord= 6
  time =  9.7160E+04 d, dltime =  7.6310E+01 d
Steps completed =   906, iter = 18, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -50.4848

Stepping to zi=  1.0082E+01, delzi=  8.7353E-03, nord= 6
  time =  9.7244E+04 d, dltime =  8.4252E+01 d
Steps completed =   907, iter = 13, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -50.5710

Stepping to zi=  1.0092E+01, delzi=  9.6465E-03, nord= 6
  time =  9.7337E+04 d, dltime =  9.3041E+01 d
Steps completed =   908, iter =  7, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -50.6571

Stepping to zi=  1.0103E+01, delzi=  1.0654E-02, nord= 6
  time =  9.7440E+04 d, dltime =  1.0276E+02 d
Steps completed =   909, iter = 19, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -50.7432

Stepping to zi=  1.0114E+01, delzi=  1.1768E-02, nord= 6
  time =  9.7553E+04 d, dltime =  1.1350E+02 d
Steps completed =   910, iter = 12, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -50.8293

Stepping to zi=  1.0127E+01, delzi=  1.2998E-02, nord= 6
  time =  9.7679E+04 d, dltime =  1.2536E+02 d
Steps completed =   911, iter = 12, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -50.9154

Stepping to zi=  1.0142E+01, delzi=  1.4356E-02, nord= 6
  time =  9.7817E+04 d, dltime =  1.3847E+02 d
```

```
Steps completed =   912, iter = 16, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -51.0016

Stepping to zi=  1.0158E+01, delzi=  1.5856E-02, nord= 6
  time =  9.7970E+04 d, dltime =  1.5293E+02 d
Steps completed =   913, iter =  6, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -51.0877

Stepping to zi=  1.0175E+01, delzi=  1.7513E-02, nord= 6
  time =  9.8139E+04 d, dltime =  1.6891E+02 d
Steps completed =   914, iter = 14, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -51.1738

Stepping to zi=  1.0194E+01, delzi=  1.9343E-02, nord= 6
  time =  9.8325E+04 d, dltime =  1.8656E+02 d
Steps completed =   915, iter = 12, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -51.2599

Stepping to zi=  1.0216E+01, delzi=  2.1364E-02, nord= 6
  time =  9.8531E+04 d, dltime =  2.0605E+02 d
Steps completed =   916, iter = 19, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -51.3460

Stepping to zi=  1.0239E+01, delzi=  2.3596E-02, nord= 6
  time =  9.8759E+04 d, dltime =  2.2758E+02 d
Steps completed =   917, iter =  6, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -51.4321

Stepping to zi=  1.0265E+01, delzi=  2.6061E-02, nord= 6
  time =  9.9010E+04 d, dltime =  2.5136E+02 d
Steps completed =   918, iter = 19, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -51.5182

Stepping to zi=  1.0294E+01, delzi=  2.8785E-02, nord= 6
  time =  9.9288E+04 d, dltime =  2.7763E+02 d
Steps completed =   919, iter = 10, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -51.6043

Stepping to zi=  1.0326E+01, delzi=  3.1792E-02, nord= 6
  time =  9.9595E+04 d, dltime =  3.0664E+02 d
Steps completed =   920, iter =  6, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -51.6904

Stepping to zi=  1.0361E+01, delzi=  3.5115E-02, nord= 6
  time =  9.9933E+04 d, dltime =  3.3868E+02 d
Steps completed =   921, iter = 23, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -51.7765

Stepping to zi=  1.0400E+01, delzi=  3.8784E-02, nord= 6
  time =  1.0031E+05 d, dltime =  3.7408E+02 d
Steps completed =   922, iter = 19, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -51.8626

Stepping to zi=  1.0443E+01, delzi=  4.2837E-02, nord= 6
  time =  1.0072E+05 d, dltime =  4.1317E+02 d
Steps completed =   923, iter = 14, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -51.9487

Stepping to zi=  1.0490E+01, delzi=  4.7314E-02, nord= 6
  time =  1.0118E+05 d, dltime =  4.5635E+02 d
Steps completed =   924, iter = 11, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -52.0348
```

```
Stepping to zi=  1.0542E+01, delzi=  5.2259E-02, nord= 6
  time =  1.0168E+05 d, dltime =  5.0404E+02 d
Steps completed =   925, iter = 17, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -52.1209

Stepping to zi=  1.0600E+01, delzi=  5.7720E-02, nord= 6
  time =  1.0224E+05 d, dltime =  5.5672E+02 d
Steps completed =   926, iter = 19, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -52.2069

Stepping to zi=  1.0664E+01, delzi=  6.3753E-02, nord= 6
  time =  1.0285E+05 d, dltime =  6.1490E+02 d
Steps completed =   927, iter =  8, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -52.2930

Stepping to zi=  1.0734E+01, delzi=  7.0417E-02, nord= 6
  time =  1.0353E+05 d, dltime =  6.7917E+02 d
Steps completed =   928, iter = 10, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -52.3791

Stepping to zi=  1.0812E+01, delzi=  7.7777E-02, nord= 6
  time =  1.0428E+05 d, dltime =  7.5016E+02 d
Steps completed =   929, iter = 12, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -52.4651

Stepping to zi=  1.0898E+01, delzi=  8.5907E-02, nord= 6
  time =  1.0511E+05 d, dltime =  8.2858E+02 d
Steps completed =   930, iter = 21, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -52.5512

Stepping to zi=  1.0993E+01, delzi=  9.4888E-02, nord= 6
  time =  1.0603E+05 d, dltime =  9.1520E+02 d
Steps completed =   931, iter = 19, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -52.6372

Stepping to zi=  1.1000E+01, delzi=  7.2566E-03, nord= 6
  time =  1.0610E+05 d, dltime =  6.9991E+01 d
Steps completed =   932, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -52.6434

- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -


                    Reaction progress        =  1.10000000000000E+01
                    Log of reaction progress =       1.0413927



                    Time =  9.167E+09 sec
                         =  1.061E+05 days
                         =  2.905E+02 years

                    Log sec =        9.962
                    Log days =       5.026
                    Log years =      2.463

                    Temperature    =     25.000 degrees C
                    total pressure =      1.013 bars


Step size is limited by the P.R.S. shift requirement
```

--- Reactant Summary ---

Reactant	Moles	Delta moles	Mass, g	Delta Mass, g
Tuff	8.9000E+01	1.1000E+01	1.8322E+03	2.2645E+02

Current total mass = 1.83220E+03 grams
Delta total mass = 2.26451E+02 grams
Delta total volume = 0.00000 cc

Reactant	Rel. Rate mol/mol	Rate mol/s	Rate mol/s/cm2
Tuff	1.0000E+00	1.2000E-09	2.5000E-15

Reactant	Affinity kcal/mol	Surface Area mol/s/cm2
Tuff	999.00000	4.8000E+05

Reactant	Rate Constants, mol/s/cm2	
Tuff		
	Forward	2.5000E-15

Affinity of the overall irreversible reaction= 0.000 kcal
Contributions from irreversible reactions
with no thermodynamic data are not included

--- Element Totals for the Aqueous Solution ---

Element	mg/kg soln.	Molality	Moles
O	8.862481E+05	5.562592E+01	5.486549E+01
Al	5.883700E-03	2.189825E-07	2.159889E-07
B	1.352133E-01	1.255970E-05	1.238800E-05
Ba	1.386463E-05	1.013860E-10	1.000000E-10
Ca	7.956154E-04	1.993530E-08	1.966277E-08
Ce	1.414610E-19	1.013859E-24	9.999992E-25
Cl	7.208769E+00	2.041914E-04	2.014000E-04
Cr	3.035196E+02	5.861942E-03	5.781806E-03
Cs	1.139855E-16	8.612565E-22	8.494827E-22
Cu	6.736431E-10	1.064553E-14	1.050000E-14
F	2.295261E-01	1.213223E-05	1.196637E-05
Fe	1.137386E-08	2.045191E-13	2.017232E-13
Gd	1.587607E-09	1.013860E-14	9.999998E-15
H	1.114395E+05	1.110274E+02	1.095096E+02
C	1.358479E+02	1.135794E-02	1.120267E-02
P	1.274140E+01	4.130939E-04	4.074467E-04
K	2.044186E+00	5.250350E-05	5.178575E-05
La	1.402399E-09	1.013860E-14	9.999998E-15
Li	7.007682E-07	1.013860E-10	1.000000E-10
Mg	2.380775E-02	9.836677E-07	9.702204E-07
Mn	4.330432E-11	7.915596E-16	7.807385E-16

Mo	2.207639E+02	2.310755E-03	2.279166E-03
N	2.008065E+00	1.439681E-04	1.420000E-04
Na	1.240828E+03	5.420041E-02	5.345947E-02
Nd	1.456257E-09	1.013860E-14	9.999998E-15
Ni	1.023424E-04	1.751126E-09	1.727187E-09
Pb	5.220832E-07	2.530321E-12	2.495730E-12
Pu	2.463441E-09	1.013860E-14	9.999999E-15
S	3.778716E+02	1.183382E-02	1.167205E-02
Si	4.306218E+00	1.539712E-04	1.518663E-04
Sm	1.518045E-09	1.013860E-14	9.999998E-15
Sr	3.051773E-48	3.497636E-53	3.449822E-53
Ti	1.076326E-05	2.257435E-10	2.226575E-10
U	2.403157E-09	1.013860E-14	1.000000E-14
V	4.829887E+00	9.521182E-05	9.391022E-05
Zn	6.601820E-06	1.013860E-10	1.000000E-10
Zr	9.210048E-16	1.013861E-20	1.000001E-20

Single ion activities and activity coefficients are here defined
with respect to the modified NBS pH scale

	pH	Eh	pe
modified NBS pH scale	9.1989	0.6749	1.1408E+01
rational pH scale	9.1175	0.6797	1.1490E+01

pHCl = 12.9894

Oxygen fugacity = 2.09991E-01
Log oxygen fugacity = -0.67780

Activity of water = 0.99864
Log activity of water = -0.00059

Ionic strength = 7.258437E-02 molal
Sum of molalities = 0.0848830126764
Osmotic coefficient = 0.89190

Mass of solution = 0.990484 kg
Mass of solutes = 0.004155 kg
Conc. of solutes = 0.419480 per cent (w/w)

Moles of solvent H2O = 5.47496E+01
Mass of solvent H2O = 9.86329E-01 kg

Species	Molality	Log molality	Log gamma	Log activity
Na+	5.2151E-02	-1.2827	-0.1065	-1.3892
SO4--	1.0416E-02	-1.9823	-0.3884	-2.3707
HCO3-	9.4570E-03	-2.0242	-0.0910	-2.1153
CrO4--	5.8561E-03	-2.2324	-0.3884	-2.6208
MoO4--	2.3108E-03	-2.6362	-0.3756	-3.0118
NaSO4-	1.4159E-03	-2.8490	-0.0910	-2.9400
CO3--	1.3504E-03	-2.8695	-0.3756	-3.2451
NaHCO3(aq)	4.4628E-04	-3.3504	0.0000	-3.3504
HPO4--	3.5033E-04	-3.4555	-0.3884	-3.8440

O2(aq)	2.6080E-04	-3.5837	0.0076	-3.5761
Cl-	2.0309E-04	-3.6923	-0.0981	-3.7904
NO3-	1.4397E-04	-3.8417	-0.0981	-3.9399
SiO2(aq)	1.0016E-04	-3.9993	0.0000	-3.9993
NaCO3-	9.3552E-05	-4.0289	-0.0910	-4.1200
VO3OH--	8.5455E-05	-4.0683	-0.3884	-4.4567
NaHPO4-	5.9951E-05	-4.2222	-0.0910	-4.3132
K+	5.0902E-05	-4.2933	-0.1136	-4.4069
NaHSiO3(aq)	3.2048E-05	-4.4942	0.0000	-4.4942
HSiO3-	2.1755E-05	-4.6624	-0.0910	-4.7535
OH-	1.9847E-05	-4.7023	-0.0944	-4.7968
F-	1.2092E-05	-4.9175	-0.0944	-5.0119
CO2(aq)	1.0556E-05	-4.9765	0.0076	-4.9689
HVO4--	9.2052E-06	-5.0360	-0.3884	-5.4244
BO2-	6.4020E-06	-5.1937	-0.0910	-5.2847
HCrO4-	5.8294E-06	-5.2344	-0.0910	-5.3254
B(OH)3(aq)	5.7633E-06	-5.2393	0.0000	-5.2393
H2PO4-	1.7926E-06	-5.7465	-0.0910	-5.8375
KSO4-	1.5594E-06	-5.8070	-0.0910	-5.8980
NaCl(aq)	1.1049E-06	-5.9567	0.0000	-5.9567
PO4---	8.3663E-07	-6.0775	-0.8894	-6.9668
Mg++	4.6824E-07	-6.3295	-0.3351	-6.6646
NaB(OH)4(aq)	3.9426E-07	-6.4042	0.0000	-6.4042
H2VO4-	3.3935E-07	-6.4694	-0.0910	-6.5604
MgSO4(aq)	2.3788E-07	-6.6236	0.0000	-6.6236
AlO2-	2.1737E-07	-6.6628	-0.0910	-6.7538
VO2(OH)2-	2.1030E-07	-6.6772	-0.0910	-6.7682
MgCO3(aq)	1.1727E-07	-6.9308	0.0000	-6.9308
MgPO4-	1.1184E-07	-6.9514	-0.0910	-7.0424
NaOH(aq)	1.0335E-07	-6.9857	0.0000	-6.9857
KHPO4-	4.1701E-08	-7.3799	-0.0910	-7.4709
NaF(aq)	3.9922E-08	-7.3988	0.0000	-7.3988
MgHPO4(aq)	2.5202E-08	-7.5986	0.0000	-7.5986
MgHCO3+	2.3033E-08	-7.6376	-0.1065	-7.7441
Ca++	1.0023E-08	-7.9990	-0.3724	-8.3714
H2SiO4--	6.6965E-09	-8.1742	-0.3884	-8.5626
CaCO3(aq)	5.1358E-09	-8.2894	0.0000	-8.2894
VO4---	2.3528E-09	-8.6284	-0.8894	-9.5178
CaSO4(aq)	2.3387E-09	-8.6310	0.0000	-8.6310
Cr2O7--	1.8564E-09	-8.7313	-0.3884	-9.1198
CaPO4-	1.6323E-09	-8.7872	-0.0910	-8.8782
Ni++	1.3981E-09	-8.8545	-0.3724	-9.2268
NaAlO2(aq)	1.2991E-09	-8.8864	0.0000	-8.8864
H+	7.6295E-10	-9.1175	-0.0814	-9.1989
CaHCO3+	4.6406E-10	-9.3334	-0.1065	-9.4399
NiSO4(aq)	3.3738E-10	-9.4719	0.0000	-9.4719
CaHPO4(aq)	3.3469E-10	-9.4754	0.0000	-9.4754
HSO4-	3.1653E-10	-9.4996	-0.0910	-9.5906
HAlO2(aq)	3.1452E-10	-9.5024	0.0000	-9.5024
Ti(OH)4(aq)	2.2574E-10	-9.6464	0.0000	-9.6464
KOH(aq)	2.1452E-10	-9.6685	0.0000	-9.6685
KCl(aq)	2.0327E-10	-9.6919	0.0000	-9.6919
MgB(OH)4+	1.1330E-10	-9.9458	-0.1065	-10.0523

--- Summary of Instantaneously Precipitated Solid Phases ---
(defined by derivatives)

--- Theoretical Rock Composition ---
g/kg

O	5.181363E+01
Al	6.307692E+00

Ca	3.743593E-01
Cl	4.587545E-12
Cs	4.801824E-19
Fe	6.119353E-01
H	7.307014E-01
C	2.031845E-03
P	1.202392E-11
K	3.828020E+00
Mg	1.381792E-01
Mn	4.839754E-02
N	1.988112E-66
Na	2.488279E+00
Pb	1.340574E-10
Si	3.360176E+01
Ti	5.500763E-02

--- Oxide Percentages ---

Oxide Theoretical rock

Total = 0.0000

Phase/end-member	d mol/d zi	d grams/d zi	d vol (cc)/d zi
Celadonite	1.2310E-03	4.8840E-01	1.9340E-01
Maximum_Microcline	1.9070E-02	5.3077E+00	2.0737E+00
Mesolite	3.1067E-03	1.2047E+00	5.3186E-01
Muscovite	1.0008E-03	3.9864E-01	1.4083E-01
Ni2SiO4	-2.6092E-12	-5.4654E-10	-1.1118E-10
Pyrolusite	1.9400E-04	1.6866E-02	9.7000E-02
Pyromorphite	2.8496E-14	3.8651E-11	5.4900E-12
Quartz	9.3848E-02	5.6388E+00	2.1292E+00
Rutile	2.5300E-04	2.0209E-02	4.7615E-03
fix CO2(g)	3.7253E-05	1.6395E-03	0.0000E+00
fix O2(g)	-7.0649E-04	-2.2607E-02	0.0000E+00
Clinoptilolite-ss			
Clinoptilolite-Ca	8.9270E-06	1.2002E-02	4.4635E-03
Clinoptilolite-Cs	2.2949E-22	3.9833E-19	1.1474E-19
Clinoptilolite-K	7.3705E-05	1.0396E-01	3.6852E-02
Clinoptilolite-NH4	9.0157E-69	1.2058E-65	4.5079E-66
Clinoptilolite-Na	6.1583E-03	8.3423E+00	3.0791E+00
Clinoptilolite-Sr	0.0000E+00	0.0000E+00	0.0000E+00
Smectite-di			
Beidellite-Ca	4.0469E-11	1.4834E-08	5.2420E-09
Beidellite-K	1.7470E-10	6.5136E-08	2.3357E-08
Beidellite-Mg	3.7563E-10	1.3671E-07	4.6274E-08
Beidellite-Na	1.7147E-08	6.3021E-06	2.2383E-06
Montmor-Ca	7.2652E-08	2.6594E-05	3.6326E-05
Montmor-K	5.1220E-07	1.9071E-04	2.5610E-04
Montmor-Mg	1.0960E-06	3.9831E-04	5.4798E-04
Montmor-Na	4.9026E-05	1.7993E-02	2.4513E-02
Nontronite-Ca	2.6316E-06	1.1166E-03	3.4501E-04
Nontronite-K	1.1360E-05	4.8915E-03	1.5367E-03
Nontronite-Mg	2.4443E-05	1.0308E-02	3.1718E-03
Nontronite-Na	1.1150E-03	4.7418E-01	1.4730E-01

--- Summary of Solid Phases (E.S.+P.R.S.) ---

Phase/End-member	Log moles	Moles	Mass, g	Volume, cc

Alunite	-2.5559	2.7801E-03	1.1516E+00	8.1624E-01
Celadonite	-1.8670	1.3582E-02	5.3887E+00	2.1338E+00
Diaspore	-1.6079	2.4665E-02	1.4796E+00	4.3804E-01
Fluorapatite	-3.9881	1.0278E-04	5.1834E-02	5.1392E-02
Hematite	-3.7144	1.9300E-04	3.0820E-02	5.8428E-03
Maximum_Microcline	-0.7055	1.9703E-01	5.4838E+01	2.1425E+01
Mesolite	-1.4705	3.3844E-02	1.3124E+01	5.7941E+00
Muscovite	-1.6694	2.1410E-02	8.5278E+00	3.0126E+00
Ni2SiO4	-2.1930	6.4125E-03	1.3432E+00	2.7324E-01
Nontronite-H	-4.9990	1.0023E-05	4.1899E-03	5.0117E-03
Pyrolusite	-2.5642	2.7277E-03	2.3714E-01	1.3638E+00
Pyromorphite	-10.7099	1.9501E-11	2.6450E-08	3.7570E-09
Quartz	0.0961	1.2478E+00	7.4972E+01	2.8309E+01
Rutile	-2.5555	2.7830E-03	2.2230E-01	5.2376E-02
fix CO2(g)	2.3010	1.9999E+02	8.8015E+03	0.0000E+00
fix O2(g)	2.3010	1.9999E+02	6.3995E+03	0.0000E+00
Clinoptilolite-ss	-1.2679	5.3962E-02		
Clinoptilolite-Ca	-4.1124	7.7189E-05	1.0377E-01	3.8594E-02
Clinoptilolite-Cs	-10.5400	2.8843E-11	5.0064E-08	1.4422E-08
Clinoptilolite-K	-3.1957	6.3730E-04	8.9892E-01	3.1865E-01
Clinoptilolite-NH4	-67.1148	7.6765E-68	1.0267E-64	3.8382E-65
Clinoptilolite-Na	-1.2737	5.3247E-02	7.2131E+01	2.6624E+01
Clinoptilolite-Sr	-10.2389	5.7687E-11	8.2309E-08	2.8843E-08
Smectite-di	-1.8833	1.3083E-02		
Beidellite-Ca	-9.0756	8.4021E-10	3.0799E-07	1.0883E-07
Beidellite-K	-8.6037	2.4905E-09	9.2858E-07	3.3298E-07
Beidellite-Mg	-8.3939	4.0378E-09	1.4696E-06	4.9742E-07
Beidellite-Na	-6.8052	1.5660E-07	5.7558E-05	2.0443E-05
Montmor-Ca	-5.9831	1.0396E-06	3.8055E-04	5.1982E-04
Montmor-K	-5.2884	5.1477E-06	1.9167E-03	2.5738E-03
Montmor-Mg	-4.9588	1.0995E-05	3.9960E-03	5.4974E-03
Montmor-Na	-3.3493	4.4743E-04	1.6421E-01	2.2371E-01
Nontronite-Ca	-3.3846	4.1248E-04	1.7501E-01	5.4076E-02
Nontronite-K	-3.1408	7.2314E-04	3.1137E-01	9.7819E-02
Nontronite-Mg	-3.1527	7.0361E-04	2.9671E-01	9.1301E-02
Nontronite-Na	-1.9674	1.0779E-02	4.5838E+00	1.4240E+00

	Mass, grams	Volume, cc
Created	1.544101E+04	9.256095E+01
Destroyed	2.264511E+02	0.000000E+00
Net	1.521456E+04	9.256095E+01

Warning-- these volume totals may be incomplete because
of missing partial molar volume data in the data base

--- Summary of Pure Mineral Saturation States ---

Mineral	Log Q/K	Aff, kcal	State
Alamosite	-3.309	-4.515	
Albite	-0.022	-0.030	
Albite_high	-1.341	-1.829	
Albite_low	-0.022	-0.030	
Alstonite	-7.219	-9.849	
Analcime	-0.148	-0.202	
Analcime-dehy	-6.510	-8.882	

Andalusite	-6.082	-8.298	
Anglesite	-6.552	-8.939	
Anhydrite	-6.436	-8.780	
Aragonite	-3.281	-4.476	
BaCrO4	-3.119	-4.256	
BaHPO4	-6.875	-9.379	
BaZrO3	83.674	114.155	ssatd
Barite	-2.830	-3.861	
Bassanite	-7.081	-9.660	
Beidellite-Ca	-2.466	-3.365	
Beidellite-H	-3.163	-4.315	
Beidellite-K	-2.257	-3.079	
Beidellite-Mg	-2.147	-2.929	
Beidellite-Na	-1.599	-2.182	
Boehmite	-0.634	-0.864	
Boric_acid	-5.081	-6.932	
Brucite	-4.566	-6.229	
Bunsenite	-3.301	-4.504	
CaSO4:0.5H2O(beta)	-7.249	-9.890	
CaZrO3	139.763	190.676	ssatd
Calcite	-3.136	-4.279	
CeO2	-3.237	-4.417	
Celadonite	0.000	0.000	satd
Cerussite	-1.741	-2.375	
Chalcedony	-0.271	-0.370	
Chrysotile	-3.927	-5.358	
Clinochlore-14A	-6.714	-9.160	
Clinoptilolite	-6.061	-8.269	
Clinoptilolite-K	-6.670	-9.100	
Clinoptilolite-Na	-0.020	-0.027	
Clinoptilolite-hy-K	-6.664	-9.092	
Clinoptilolite-hy-Na	-0.018	-0.024	
Coesite	-0.810	-1.105	
Corundum	-4.450	-6.072	
Cristobalite(alpha)	-0.551	-0.751	
Cristobalite(beta)	-0.994	-1.356	
Crocoite	-1.937	-2.643	
Dawsonite	-0.920	-1.256	
Diaspore	-0.230	-0.313	
Diopside	-7.204	-9.829	
Dolomite	-3.382	-4.614	
Dolomite-dis	-4.927	-6.721	
Dolomite-ord	-3.382	-4.614	
Enstatite	-3.594	-4.903	
Epsomite	-7.077	-9.655	
Fe(OH)3	-6.518	-8.893	
Ferrite-Zn	-6.336	-8.644	
Fluorapatite	-5.810	-7.926	
GdPO4:H2O	-4.342	-5.924	
Gibbsite	-0.826	-1.127	
Goethite	-1.397	-1.905	
Gypsum	-6.261	-8.542	
Halite	-6.765	-9.230	
Hematite	-1.832	-2.500	
Hexahydrite	-7.312	-9.976	
Hydrocerussite	-6.957	-9.491	
Ice	-0.139	-0.190	
Illite	-1.275	-1.739	
Jadeite	-1.647	-2.247	
K-Feldspar	0.000	0.000	
Kalicinite	-6.806	-9.285	
Kalsilite	-3.175	-4.332	
Kaolinite	-0.948	-1.294	

Kyanite	-5.812	-7.929	
LaPO4:H2O	-1.774	-2.420	
Lansfordite	-4.425	-6.037	
Laumontite	-5.779	-7.884	
Lawsonite	-6.325	-8.630	
Litharge	-6.281	-8.569	
Magnesite	-1.875	-2.557	
Manganite	-4.459	-6.084	
Massicot	-6.456	-8.808	
Maximum_Microcline	0.000	0.000	satd
Mesolite	0.000	0.000	satd
Mirabilite	-4.015	-5.478	
MnO2(gamma)	-1.518	-2.071	
Monohydrocalcite	-3.971	-5.417	
Montmor-Ca	-1.392	-1.900	
Montmor-Cs	-6.497	-8.864	
Montmor-K	-1.113	-1.518	
Montmor-Mg	-1.003	-1.369	
Montmor-Na	-0.459	-0.626	
Mordenite	-2.805	-3.827	
Muscovite	0.000	0.000	satd
Na2CO3	-6.877	-9.382	
Na2CO3:7H2O	-5.645	-7.701	
Nahcolite	-3.393	-4.629	
Natrolite	-1.039	-1.417	
Natron	-5.311	-7.246	
NdOHCO3	-7.173	-9.786	
NdPO4:H2O	-3.110	-4.243	
Nepheline	-3.060	-4.174	
Nesquehonite	-4.578	-6.246	
Ni(OH)2	-3.579	-4.882	
Ni2SiO4	0.000	0.000	satd
NiCO3	-5.655	-7.715	
Nontronite-Ca	-0.878	-1.198	
Nontronite-H	-1.574	-2.148	
Nontronite-K	-0.668	-0.912	
Nontronite-Mg	-0.559	-0.762	
Nontronite-Na	-0.011	-0.015	
Paragonite	-0.919	-1.253	
Paralaurionite	-6.830	-9.317	
Pb3(PO4)2	-5.418	-7.391	
Pb4O(PO4)2	-6.456	-8.808	
PbHPO4	-4.311	-5.882	
Petalite	-6.152	-8.393	
Phlogopite	-2.518	-3.435	
Plattnerite	-1.644	-2.243	
PuO2	-4.789	-6.533	
Pyrolusite	0.000	0.000	satd
Pyromorphite	0.000	0.000	satd
Pyrophyllite	-2.576	-3.514	
Quartz	0.000	0.000	satd
Rutile	0.000	0.000	satd
Sanidine_high	-1.199	-1.636	
Saponite-Ca	-1.828	-2.495	
Saponite-Cs	-7.000	-9.550	
Saponite-H	-2.525	-3.445	
Saponite-K	-1.619	-2.209	
Saponite-Mg	-1.509	-2.059	
Saponite-Na	-0.962	-1.312	
Scolecite	-3.989	-5.442	
Sellaite	-7.304	-9.965	
SiO2(am)	-1.286	-1.754	
Sillimanite	-6.446	-8.794	

SmPO4:H2O	-3.844	-5.244	
Smectite-low-Fe-Mg	-7.076	-9.653	
Smithsonite	-4.655	-6.350	
SrZrO3	78.067	106.506	ssatd
Stilbite	-1.918	-2.616	
Talc	-1.938	-2.644	
Thenardite	-4.840	-6.603	
Thermonatrite	-6.658	-9.083	
Trevorite	-2.341	-3.193	
Tridymite	-0.172	-0.234	
Witherite	-0.350	-0.478	
Zincite	-4.086	-5.575	
Zn(OH)2(beta)	-4.812	-6.566	
Zn(OH)2(epsilon)	-4.541	-6.195	
Zn(OH)2(gamma)	-4.762	-6.496	
fix CO2(g)	0.000	0.000	satd
fix O2(g)	0.000	0.000	satd

--- Summary of Solid Solutions ---

--- Carbonate-Calcite ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Calcite	5.1796E-02	-1.2857	0.0000	-1.2857
Magnesite	9.4663E-01	-0.0238	0.0000	-0.0238
Rhodochrosite	1.2058E-09	-8.9187	0.0000	-8.9187
Siderite	1.8679E-18	-17.7287	0.0000	-17.7287
Smithsonite	1.5704E-03	-2.8040	0.0000	-2.8040
Strontianite	1.6450E-44	-43.7838	0.0000	-43.7838

Mineral	Log Q/K	Aff, kcal	State
Carbonate-Calcite	-1.851	-2.525	
Calcite	-1.851	-2.525	
Magnesite	-1.851	-2.525	
Rhodochrosite	-1.851	-2.525	
Siderite	-1.851	-2.525	
Smithsonite	-1.851	-2.525	
Strontianite	-1.851	-2.525	

--- Clinoptilolite-hy-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-hy-Ca	1.5020E-10	-9.8233	0.0000	-9.8233
Clinoptilolite-hy-Cs	2.0105E-63	-62.6967	0.0000	-62.6967
Clinoptilolite-hy-K	2.2579E-07	-6.6463	0.0000	-6.6463
Clinoptilolite-hy-Na	1.0000E+00	0.0000	0.0000	0.0000
Clinoptilolite-hy-Sr	7.8573E-88	-87.1047	0.0000	-87.1047

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-hy-ss	-0.018	-0.024	

Clinoptilolite-hy-Ca	-0.018	-0.024
Clinoptilolite-hy-Cs	-0.018	-0.024
Clinoptilolite-hy-K	-0.018	-0.024
Clinoptilolite-hy-Na	-0.018	-0.024
Clinoptilolite-hy-Sr	-0.018	-0.024

--- Clinoptilolite-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-Ca	1.4304E-03	-2.8445	-6.9976	-9.8421
Clinoptilolite-Cs	7.4533E-19	-18.1277	-44.5940	-62.7217
Clinoptilolite-K	1.1810E-02	-1.9278	-4.7423	-6.6700
Clinoptilolite-NH4	1.4400E-66	-65.8416	-161.9705	-227.8121
Clinoptilolite-Na	9.8676E-01	-0.0058	-0.0142	-0.0200
Clinoptilolite-Sr	6.6124E-26	-25.1796	-61.9419	-87.1216

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-ss	0.000	0.000	satd
Clinoptilolite-Ca	0.000	0.000	satd
Clinoptilolite-Cs	0.000	0.000	satd
Clinoptilolite-K	0.000	0.000	satd
Clinoptilolite-NH4	0.000	0.000	satd
Clinoptilolite-Na	0.000	0.000	satd
Clinoptilolite-Sr	0.000	0.000	satd

--- Saponite-tri ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Saponite-Ca	2.2815E-03	-2.6418	1.7700	-0.8718
Saponite-H	1.7689E-05	-4.7523	3.1840	-1.5683
Saponite-K	9.8421E-03	-2.0069	1.3446	-0.6623
Saponite-Mg	2.1177E-02	-1.6741	1.1217	-0.5525
Saponite-Na	9.6668E-01	-0.0147	0.0099	-0.0049

Mineral	Log Q/K	Aff, kcal	State
Saponite-tri	-0.957	-1.305	
Saponite-Ca	-0.957	-1.305	
Saponite-H	-0.957	-1.305	
Saponite-K	-0.957	-1.305	
Saponite-Mg	-0.957	-1.305	
Saponite-Na	-0.957	-1.305	

--- Smectite-di ---

Ideal solution

Component	x	Log x	Log lambda	Log activity

Beidellite-Ca	3.3607E-08	-7.4736	5.0073	-2.4663
Beidellite-K	1.4508E-07	-6.8384	4.5817	-2.2567
Beidellite-Mg	3.1194E-07	-6.5059	4.3590	-2.1470
Beidellite-Na	1.4239E-05	-4.8465	3.2472	-1.5993
Montmor-Ca	6.0333E-05	-4.2194	2.8270	-1.3924
Montmor-K	4.2535E-04	-3.3712	2.2587	-1.1125
Montmor-Mg	9.1013E-04	-3.0409	2.0374	-1.0035
Montmor-Na	4.0713E-02	-1.3903	0.9315	-0.4588
Nontronite-Ca	2.1854E-03	-2.6605	1.7825	-0.8780
Nontronite-K	9.4341E-03	-2.0253	1.3570	-0.6683
Nontronite-Mg	2.0299E-02	-1.6925	1.1340	-0.5585
Nontronite-Na	9.2596E-01	-0.0334	0.0224	-0.0110

Mineral	Log Q/K	Aff, kcal	State
Smectite-di	0.000	0.000	satd
Beidellite-Ca	0.000	0.000	satd
Beidellite-K	0.000	0.000	satd
Beidellite-Mg	0.000	0.000	satd
Beidellite-Na	0.000	0.000	satd
Montmor-Ca	0.000	0.000	satd
Montmor-K	0.000	0.000	satd
Montmor-Mg	0.000	0.000	satd
Montmor-Na	0.000	0.000	satd
Nontronite-Ca	0.000	0.000	satd
Nontronite-K	0.000	0.000	satd
Nontronite-Mg	0.000	0.000	satd
Nontronite-Na	0.000	0.000	satd

--- Lanthanide hydroxide ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
La(OH)3	3.6569E-04	-3.4369	0.0000	-3.4369
Ce(OH)3	1.8092E-14	-13.7425	0.0000	-13.7425
Nd(OH)3(c)	8.4420E-01	-0.0736	0.0000	-0.0736
Gd(OH)3	1.2431E-01	-0.9055	0.0000	-0.9055
Sm(OH)3	3.1129E-02	-1.5068	0.0000	-1.5068

Mineral	Log Q/K	Aff, kcal	State
Lanthanide hydroxide	-8.776	-11.972	
La(OH)3	-8.776	-11.972	
Ce(OH)3	-8.776	-11.972	
Nd(OH)3(c)	-8.776	-11.972	
Gd(OH)3	-8.776	-11.972	
Sm(OH)3	-8.776	-11.972	

--- Rhabdophane-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity

LaPO4:H2O	9.4583E-01	-0.0242	0.0000	-0.0242
CePO4:H2O	1.4798E-11	-10.8298	0.0000	-10.8298
NdPO4:H2O	4.3565E-02	-1.3609	0.0000	-1.3609
GdPO4:H2O	2.5538E-03	-2.5928	0.0000	-2.5928
SmPO4:H2O	8.0513E-03	-2.0941	0.0000	-2.0941

Mineral	Log Q/K	Aff, kcal	State
Rhabdophane-ss	-1.749	-2.387	
LaPO4:H2O	-1.749	-2.387	
CePO4:H2O	-1.749	-2.387	
NdPO4:H2O	-1.749	-2.387	
GdPO4:H2O	-1.749	-2.387	
SmPO4:H2O	-1.749	-2.387	

--- Lanthanide fluoride ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaF3:0.5H2O	9.4434E-01	-0.0249	0.0000	-0.0249
CeF3:0.5H2O	2.3416E-11	-10.6305	0.0000	-10.6305
NdF3:0.5H2O	5.4759E-02	-1.2615	0.0000	-1.2615
GdF3:0.5H2O	1.0151E-04	-3.9935	0.0000	-3.9935
SmF3:0.5H2O	8.0386E-04	-3.0948	0.0000	-3.0948

Mineral	Log Q/K	Aff, kcal	State
Lanthanide fluoride	-15.789	-21.541	
LaF3:0.5H2O	-15.789	-21.541	
CeF3:0.5H2O	-15.789	-21.541	
NdF3:0.5H2O	-15.789	-21.541	
GdF3:0.5H2O	-15.789	-21.541	
SmF3:0.5H2O	-15.789	-21.541	

--- Summary of Gases ---

Gas	Fugacity	Log fugacity
Al(g)	9.7072-192	-191.0129
B(g)	3.9876-204	-203.3993
BF3(g)	1.2480E-45	-44.9038
C(g)	3.0917-190	-189.5098
CH4(g)	3.5198-146	-145.4535
CO(g)	6.0395E-49	-48.2190
CO2(g)	3.1623E-04	-3.5000
Ca(g)	5.4464-154	-153.2639
Chlorine	1.7113E-31	-30.7667
Cs(g)	4.2620E-93	-92.3704
Cu(g)	1.9240E-82	-81.7158
Fluorine	1.1777E-86	-85.9290
H2(g)	6.1067E-42	-41.2142
H2O(g)	2.5942E-02	-1.5860
H2S(g)	1.1030-144	-143.9574
HCl(g)	5.0712E-20	-19.2949

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HF(g)                       4.7481E-16    -15.3235
K(g)                        1.2715E-76    -75.8957
Li(g)                       1.1245E-95    -94.9490
Mg(g)                       1.8676-129   -128.7287
Nitrogen                    1.2894E-22    -21.8896
NH3(g)                      1.3065E-70    -69.8839
NO(g)                       3.5756E-27    -26.4467
NO2(g)                      2.4448E-21    -20.6118
Na(g)                       6.9096E-73    -72.1605
O2(g)                       2.0999E-01     -0.6778
Pb(g)                       3.4867E-68    -67.4576
S2(g)                       7.2742-232   -231.1382
SO2(g)                      1.9555E-57    -56.7087
Si(g)                       4.2257-221   -220.3741
SiF4(g)                     2.2463E-46    -45.6485
Ti(g)                       3.8019-231   -230.4200
TiCl4(g)                    2.2215E-90    -89.6534
U(g)                        1.0178-302   -301.9923
U2Cl10(g)                   1.1925-269   -268.9235
U2Cl8(g)                    2.1605-269   -268.6655
U2F10(g)                    8.1737-187   -186.0876
UCl(g)                      4.6030-260   -259.3370
UCl2(g)                     6.2273-216   -215.2057
UCl3(g)                     1.8453-169   -168.7339
UCl4(g)                     2.9609-140   -139.5286
UCl5(g)                     2.4445-148   -147.6118
UCl6(g)                     3.7492-151   -150.4261
UF(g)                       9.1590-246   -245.0382
UF2(g)                      6.1124-207   -206.2138
UF3(g)                      1.0039-161   -160.9983
UF4(g)                      2.4336-113   -112.6138
UF5(g)                      2.7021-106   -105.5683
UF6(g)                      2.9544-113   -112.5295
UO(g)                       8.0386-218   -217.0948
UO2(g)                      1.4893-133   -132.8270
UO2Cl2(g)                   1.1128E-83    -82.9536
UO2F2(g)                    7.9234E-73    -72.1011
UO3(g)                      1.0954E-80    -79.9604
UOF4(g)                     7.2518E-91    -90.1396
Zn(g)                       3.1356E-77    -76.5037



- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

--- shifting e.s. solid(s) to the p.r.s. (shftz) ---

      shifted -- Celadonite
              - old mass=  1.24347E-03, new mass=  1.24347E-05
      shifted -- Maximum_Microcline
              - old mass=  1.92623E-02, new mass=  1.92623E-04
      shifted -- Mesolite
              - old mass=  3.13804E-03, new mass=  3.13804E-05
      shifted -- Muscovite
              - old mass=  1.01092E-03, new mass=  1.01092E-05
  not shifted -- Ni2SiO4
              - mass=  7.99978E-07
      shifted -- Pyrolusite
              - old mass=  1.95960E-04, new mass=  1.95960E-06
  not shifted -- Pyromorphite
              - mass=  1.95009E-11
      shifted -- Quartz
```

```
                - old mass=  9.47959E-02, new mass=  9.47959E-04
        shifted -- Rutile
                - old mass=  2.55556E-04, new mass=  2.55556E-06
        shifted -- Clinoptilolite-ss
                - old mass=  6.30398E-03, new mass=  6.30398E-05
        shifted -- Smectite-di
                - old mass=  1.21634E-03, new mass=  1.21634E-05

Stepping to zi=  1.1007E+01, delzi=  7.3344E-03, nord= 6
  time =  1.0617E+05 d, dltime =  7.0741E+01 d
Steps completed =   933, iter = 25, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -53.1166

Stepping to zi=  1.1008E+01, delzi=  9.1680E-04, nord= 6
  time =  1.0618E+05 d, dltime =  8.8426E+00 d
Steps completed =   934, iter = 14, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -53.1610

Stepping to zi=  1.1010E+01, delzi=  1.8336E-03, nord= 5
  time =  1.0619E+05 d, dltime =  1.7685E+01 d
Steps completed =   935, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -53.2436

Stepping to zi=  1.1011E+01, delzi=  9.1680E-04, nord= 6
  time =  1.0620E+05 d, dltime =  8.8426E+00 d
Steps completed =   936, iter = 19, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -53.2821

Stepping to zi=  1.1013E+01, delzi=  1.8336E-03, nord= 6
  time =  1.0622E+05 d, dltime =  1.7685E+01 d
Steps completed =   937, iter =  9, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -53.3543

Stepping to zi=  1.1015E+01, delzi=  1.9926E-03, nord= 6
  time =  1.0624E+05 d, dltime =  1.9219E+01 d
Steps completed =   938, iter =  6, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -53.4265

Stepping to zi=  1.1017E+01, delzi=  2.6236E-03, nord= 6
  time =  1.0626E+05 d, dltime =  2.5305E+01 d
Steps completed =   939, iter =  9, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -53.5132

Stepping to zi=  1.1021E+01, delzi=  3.0877E-03, nord= 6
  time =  1.0629E+05 d, dltime =  2.9781E+01 d
Steps completed =   940, iter = 15, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -53.6053

Stepping to zi=  1.1024E+01, delzi=  3.3172E-03, nord= 6
  time =  1.0633E+05 d, dltime =  3.1994E+01 d
Steps completed =   941, iter = 21, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -53.6944

Stepping to zi=  1.1027E+01, delzi=  3.6028E-03, nord= 6
  time =  1.0636E+05 d, dltime =  3.4749E+01 d
Steps completed =   942, iter =  7, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -53.7818

Stepping to zi=  1.1031E+01, delzi=  3.9192E-03, nord= 6
  time =  1.0640E+05 d, dltime =  3.7801E+01 d
Steps completed =   943, iter = 18, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -53.8678
```

```
Stepping to zi=  1.1036E+01, delzi=  4.3117E-03, nord= 6
  time =  1.0644E+05 d, dltime =  4.1587E+01 d
Steps completed =   944, iter =  8, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -53.9536

Stepping to zi=  1.1040E+01, delzi=  4.7586E-03, nord= 6
  time =  1.0649E+05 d, dltime =  4.5897E+01 d
Steps completed =   945, iter =  8, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -54.0393

Stepping to zi=  1.1046E+01, delzi=  5.2683E-03, nord= 6
  time =  1.0654E+05 d, dltime =  5.0813E+01 d
Steps completed =   946, iter = 13, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -54.1252

Stepping to zi=  1.1052E+01, delzi=  5.8311E-03, nord= 6
  time =  1.0659E+05 d, dltime =  5.6242E+01 d
Steps completed =   947, iter =  8, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -54.2113

Stepping to zi=  1.1058E+01, delzi=  6.4450E-03, nord= 6
  time =  1.0666E+05 d, dltime =  6.2162E+01 d
Steps completed =   948, iter = 19, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -54.2975

Stepping to zi=  1.1065E+01, delzi=  7.1185E-03, nord= 6
  time =  1.0672E+05 d, dltime =  6.8658E+01 d
Steps completed =   949, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -54.3837

Stepping to zi=  1.1073E+01, delzi=  7.8602E-03, nord= 6
  time =  1.0680E+05 d, dltime =  7.5812E+01 d
Steps completed =   950, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -54.4698

Stepping to zi=  1.1082E+01, delzi=  8.6796E-03, nord= 6
  time =  1.0688E+05 d, dltime =  8.3715E+01 d
Steps completed =   951, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -54.5560

Stepping to zi=  1.1091E+01, delzi=  9.5852E-03, nord= 6
  time =  1.0698E+05 d, dltime =  9.2450E+01 d
Steps completed =   952, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -54.6421

Stepping to zi=  1.1102E+01, delzi=  1.0587E-02, nord= 6
  time =  1.0708E+05 d, dltime =  1.0211E+02 d
Steps completed =   953, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -54.7282

Stepping to zi=  1.1114E+01, delzi=  1.1693E-02, nord= 6
  time =  1.0719E+05 d, dltime =  1.1278E+02 d
Steps completed =   954, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -54.8143

Stepping to zi=  1.1126E+01, delzi=  1.2915E-02, nord= 6
  time =  1.0732E+05 d, dltime =  1.2457E+02 d
Steps completed =   955, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -54.9004

Stepping to zi=  1.1141E+01, delzi=  1.4265E-02, nord= 6
  time =  1.0745E+05 d, dltime =  1.3758E+02 d
Steps completed =   956, iter =  6, ncorr = 0
```

```
Most rapidly changing is zvclg1(Sr++                    ) =    -54.9866

Stepping to zi=  1.1156E+01, delzi=  1.5755E-02, nord= 6
  time =  1.0760E+05 d, dltime =  1.5196E+02 d
Steps completed =   957, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -55.0727

Stepping to zi=  1.1174E+01, delzi=  1.7401E-02, nord= 6
  time =  1.0777E+05 d, dltime =  1.6784E+02 d
Steps completed =   958, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -55.1588

Stepping to zi=  1.1193E+01, delzi=  1.9219E-02, nord= 6
  time =  1.0796E+05 d, dltime =  1.8537E+02 d
Steps completed =   959, iter = 13, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -55.2449

Stepping to zi=  1.1214E+01, delzi=  2.1227E-02, nord= 6
  time =  1.0816E+05 d, dltime =  2.0474E+02 d
Steps completed =   960, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -55.3310

Stepping to zi=  1.1238E+01, delzi=  2.3445E-02, nord= 6
  time =  1.0839E+05 d, dltime =  2.2613E+02 d
Steps completed =   961, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -55.4171

Stepping to zi=  1.1264E+01, delzi=  2.5895E-02, nord= 6
  time =  1.0864E+05 d, dltime =  2.4976E+02 d
Steps completed =   962, iter =  7, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -55.5032

Stepping to zi=  1.1292E+01, delzi=  2.8601E-02, nord= 6
  time =  1.0891E+05 d, dltime =  2.7586E+02 d
Steps completed =   963, iter =  6, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -55.5893

Stepping to zi=  1.1324E+01, delzi=  3.1590E-02, nord= 6
  time =  1.0922E+05 d, dltime =  3.0469E+02 d
Steps completed =   964, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -55.6754

Stepping to zi=  1.1359E+01, delzi=  3.4891E-02, nord= 6
  time =  1.0956E+05 d, dltime =  3.3652E+02 d
Steps completed =   965, iter = 10, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -55.7615

Stepping to zi=  1.1397E+01, delzi=  3.8537E-02, nord= 6
  time =  1.0993E+05 d, dltime =  3.7169E+02 d
Steps completed =   966, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -55.8476

Stepping to zi=  1.1440E+01, delzi=  4.2564E-02, nord= 6
  time =  1.1034E+05 d, dltime =  4.1053E+02 d
Steps completed =   967, iter =  7, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -55.9337

Stepping to zi=  1.1487E+01, delzi=  4.7012E-02, nord= 6
  time =  1.1079E+05 d, dltime =  4.5344E+02 d
Steps completed =   968, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -56.0198

Stepping to zi=  1.1539E+01, delzi=  5.1925E-02, nord= 6
```

```
  time =  1.1129E+05 d, dltime =  5.0082E+02 d
Steps completed =   969, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -56.1059

Stepping to zi=  1.1596E+01, delzi=  5.7352E-02, nord= 6
  time =  1.1185E+05 d, dltime =  5.5317E+02 d
Steps completed =   970, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -56.1919

Stepping to zi=  1.1659E+01, delzi=  6.3346E-02, nord= 6
  time =  1.1246E+05 d, dltime =  6.1098E+02 d
Steps completed =   971, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -56.2780

Stepping to zi=  1.1729E+01, delzi=  6.9967E-02, nord= 6
  time =  1.1313E+05 d, dltime =  6.7484E+02 d
Steps completed =   972, iter = 12, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -56.3641

Stepping to zi=  1.1807E+01, delzi=  7.7281E-02, nord= 6
  time =  1.1388E+05 d, dltime =  7.4538E+02 d
Steps completed =   973, iter =  8, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -56.4501

Stepping to zi=  1.1892E+01, delzi=  8.5359E-02, nord= 6
  time =  1.1470E+05 d, dltime =  8.2329E+02 d
Steps completed =   974, iter = 14, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -56.5362

Stepping to zi=  1.1986E+01, delzi=  9.4282E-02, nord= 6
  time =  1.1561E+05 d, dltime =  9.0936E+02 d
Steps completed =   975, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -56.6222

Stepping to zi=  1.2000E+01, delzi=  1.3652E-02, nord= 6
  time =  1.1574E+05 d, dltime =  1.3167E+02 d
Steps completed =   976, iter = 18, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -56.6340

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                    Reaction progress        =  1.20000000000000E+01
                    Log of reaction progress =       1.0791812



                    Time =  1.000E+10 sec
                         =  1.157E+05 days
                         =  3.169E+02 years

                    Log sec =       10.000
                    Log days =       5.063
                    Log years =      2.501

                    Temperature    =     25.000 degrees C
                    total pressure =      1.013 bars


Step size is limited by the P.R.S. shift requirement
```

Reactant	Moles	Delta moles	Mass, g	Delta Mass, g
Tuff	8.8000E+01	1.2000E+01	1.8116E+03	2.4704E+02

Current total mass = 1.81161E+03 grams
Delta total mass = 2.47038E+02 grams
Delta total volume = 0.00000 cc

Reactant	Rel. Rate mol/mol	Rate mol/s	Rate mol/s/cm2
Tuff	1.0000E+00	1.2000E-09	2.5000E-15

Reactant	Affinity kcal/mol	Surface Area mol/s/cm2
Tuff	999.00000	4.8000E+05

Reactant	Rate Constants, mol/s/cm2	
Tuff		
	Forward	2.5000E-15

Affinity of the overall irreversible reaction= 0.000 kcal
Contributions from irreversible reactions
with no thermodynamic data are not included

--- Element Totals for the Aqueous Solution ---

Element	mg/kg soln.	Molality	Moles
O	8.862438E+05	5.562616E+01	5.478572E+01
Al	5.873309E-03	2.185977E-07	2.152950E-07
B	1.354095E-01	1.257804E-05	1.238800E-05
Ba	1.388475E-05	1.015340E-10	1.000000E-10
Ca	8.065216E-04	2.020875E-08	1.990342E-08
Ce	1.416663E-19	1.015340E-24	9.999992E-25
Cl	7.219230E+00	2.044895E-04	2.014000E-04
Cr	3.039600E+02	5.870502E-03	5.781806E-03
Cs	6.784185E-18	5.126069E-23	5.048621E-23
Cu	6.746207E-10	1.066107E-14	1.050000E-14
F	2.298591E-01	1.214994E-05	1.196637E-05
Fe	1.136713E-08	2.043999E-13	2.013117E-13
Gd	1.589911E-09	1.015340E-14	9.999998E-15
H	1.114385E+05	1.110274E+02	1.093499E+02
C	1.355931E+02	1.133673E-02	1.116545E-02
P	1.412216E+01	4.578644E-04	4.509467E-04
K	2.048829E+00	5.262323E-05	5.182816E-05
La	1.404435E-09	1.015340E-14	9.999998E-15
Li	7.017852E-07	1.015340E-10	1.000000E-10
Mg	2.424941E-02	1.001925E-06	9.867870E-07
Mn	4.324381E-11	7.904607E-16	7.785179E-16
Mo	2.210842E+02	2.314129E-03	2.279166E-03

N	2.010979E+00	1.441783E-04	1.420000E-04
Na	1.243628E+03	5.432321E-02	5.350246E-02
Nd	1.458370E-09	1.015340E-14	9.999998E-15
Ni	1.028013E-04	1.758993E-09	1.732417E-09
Pb	4.953949E-07	2.400995E-12	2.364720E-12
Pu	2.467016E-09	1.015340E-14	9.999999E-15
S	3.784199E+02	1.185110E-02	1.167205E-02
Si	4.305105E+00	1.539328E-04	1.516071E-04
Sm	1.520248E-09	1.015340E-14	9.999998E-15
Sr	3.123228E-52	3.579563E-57	3.525480E-57
Ti	1.076311E-05	2.257424E-10	2.223318E-10
U	2.406645E-09	1.015341E-14	1.000000E-14
V	4.836896E+00	9.535085E-05	9.391022E-05
Zn	6.611401E-06	1.015340E-10	1.000000E-10
Zr	9.223414E-16	1.015341E-20	1.000001E-20

Single ion activities and activity coefficients are here defined
with respect to the modified NBS pH scale

	pH	Eh	pe
modified NBS pH scale	9.1981	0.6749	1.1409E+01
rational pH scale	9.1166	0.6797	1.1490E+01

pHCl = 12.9880

Oxygen fugacity = 2.09991E-01
Log oxygen fugacity = -0.67780

Activity of water = 0.99863
Log activity of water = -0.00059

Ionic strength = 7.275656E-02 molal
Sum of molalities = 0.0850491254682
Osmotic coefficient = 0.89179

Mass of solution = 0.989049 kg
Mass of solutes = 0.004158 kg
Conc. of solutes = 0.420379 per cent (w/w)

Moles of solvent H2O = 5.46698E+01
Mass of solvent H2O = 9.84891E-01 kg

Species	Molality	Log molality	Log gamma	Log activity
Na+	5.2264E-02	-1.2818	-0.1066	-1.3884
SO4--	1.0430E-02	-1.9817	-0.3888	-2.3705
HCO3-	9.4403E-03	-2.0250	-0.0911	-2.1161
CrO4--	5.8647E-03	-2.2318	-0.3888	-2.6205
MoO4--	2.3141E-03	-2.6356	-0.3759	-3.0115
NaSO4-	1.4196E-03	-2.8478	-0.0911	-2.9389
CO3--	1.3461E-03	-2.8709	-0.3759	-3.2468
NaHCO3(aq)	4.4628E-04	-3.3504	0.0000	-3.3504
HPO4--	3.8822E-04	-3.4109	-0.3888	-3.7997
O2(aq)	2.6079E-04	-3.5837	0.0076	-3.5761

Cl-	2.0338E-04	-3.6917	-0.0982	-3.7899
NO3-	1.4418E-04	-3.8411	-0.0982	-3.9393
SiO2(aq)	1.0016E-04	-3.9993	0.0000	-3.9993
NaCO3-	9.3387E-05	-4.0297	-0.0911	-4.1208
VO3OH--	8.5579E-05	-4.0676	-0.3888	-4.4564
NaHPO4-	6.6525E-05	-4.1770	-0.0911	-4.2681
K+	5.1013E-05	-4.2923	-0.1137	-4.4061
NaHSiO3(aq)	3.2049E-05	-4.4942	0.0000	-4.4942
HSiO3-	2.1716E-05	-4.6632	-0.0911	-4.7543
OH-	1.9812E-05	-4.7031	-0.0945	-4.7976
F-	1.2110E-05	-4.9169	-0.0945	-5.0114
CO2(aq)	1.0556E-05	-4.9765	0.0076	-4.9689
HVO4--	9.2186E-06	-5.0353	-0.3888	-5.4241
BO2-	6.4058E-06	-5.1934	-0.0911	-5.2845
HCrO4-	5.8458E-06	-5.2332	-0.0911	-5.3242
B(OH)3(aq)	5.7770E-06	-5.2383	0.0000	-5.2383
H2PO4-	1.9892E-06	-5.7013	-0.0911	-5.7924
KSO4-	1.5636E-06	-5.8059	-0.0911	-5.8970
NaCl(aq)	1.1084E-06	-5.9553	0.0000	-5.9553
PO4---	9.2624E-07	-6.0333	-0.8901	-6.9234
Mg++	4.7031E-07	-6.3276	-0.3353	-6.6629
NaB(OH)4(aq)	3.9519E-07	-6.4032	0.0000	-6.4032
H2VO4-	3.4030E-07	-6.4681	-0.0911	-6.5592
MgSO4(aq)	2.3893E-07	-6.6217	0.0000	-6.6217
AlO2-	2.1698E-07	-6.6636	-0.0911	-6.7546
VO2(OH)2-	2.1089E-07	-6.6759	-0.0911	-6.7670
MgPO4-	1.2410E-07	-6.9062	-0.0911	-6.9973
MgCO3(aq)	1.1727E-07	-6.9308	0.0000	-6.9308
NaOH(aq)	1.0335E-07	-6.9857	0.0000	-6.9857
KHPO4-	4.6273E-08	-7.3347	-0.0911	-7.4257
NaF(aq)	4.0051E-08	-7.3974	0.0000	-7.3974
MgHPO4(aq)	2.8015E-08	-7.5526	0.0000	-7.5526
MgHCO3+	2.3083E-08	-7.6367	-0.1066	-7.7433
Ca++	1.0069E-08	-7.9970	-0.3727	-8.3697
H2SiO4--	6.6756E-09	-8.1755	-0.3888	-8.5643
CaCO3(aq)	5.1358E-09	-8.2894	0.0000	-8.2894
VO4---	2.3540E-09	-8.6282	-0.8901	-9.5183
CaSO4(aq)	2.3490E-09	-8.6291	0.0000	-8.6291
Cr2O7--	1.8677E-09	-8.7287	-0.3888	-9.1175
CaPO4-	1.8113E-09	-8.7420	-0.0911	-8.8331
Ni++	1.4045E-09	-8.8525	-0.3727	-9.2252
NaAlO2(aq)	1.2991E-09	-8.8863	0.0000	-8.8863
H+	7.6452E-10	-9.1166	-0.0815	-9.1981
CaHCO3+	4.6506E-10	-9.3325	-0.1066	-9.4391
CaHPO4(aq)	3.7205E-10	-9.4294	0.0000	-9.4294
NiSO4(aq)	3.3887E-10	-9.4700	0.0000	-9.4700
HSO4-	3.1737E-10	-9.4984	-0.0911	-9.5895
HAlO2(aq)	3.1452E-10	-9.5024	0.0000	-9.5024
Ti(OH)4(aq)	2.2574E-10	-9.6464	0.0000	-9.6464
KOH(aq)	2.1451E-10	-9.6685	0.0000	-9.6685
KCl(aq)	2.0392E-10	-9.6905	0.0000	-9.6905
MgB(OH)4+	1.1381E-10	-9.9438	-0.1066	-10.0504

--- Summary of Instantaneously Precipitated Solid Phases ---
(defined by derivatives)

--- Theoretical Rock Composition ---
g/kg

O	5.181363E+01
Al	6.307695E+00
Ca	3.743594E-01

Cl	3.880287E-12
Cs	2.851040E-20
Fe	6.119356E-01
H	7.306994E-01
C	2.027808E-03
P	1.017021E-11
K	3.828022E+00
Mg	1.381792E-01
Mn	4.839756E-02
N	1.994480E-66
Na	2.488271E+00
Pb	1.133899E-10
Si	3.360178E+01
Ti	5.500766E-02

--- Oxide Percentages ---

Oxide	Theoretical rock

Total = 0.0000

Phase/end-member	d mol/d zi	d grams/d zi	d vol (cc)/d zi
Celadonite	1.2310E-03	4.8840E-01	1.9340E-01
Maximum_Microcline	1.9070E-02	5.3077E+00	2.0736E+00
Mesolite	3.1067E-03	1.2047E+00	5.3186E-01
Muscovite	1.0009E-03	3.9866E-01	1.4083E-01
Ni2SiO4	-2.6209E-12	-5.4898E-10	-1.1168E-10
Pyrolusite	1.9400E-04	1.6866E-02	9.7000E-02
Pyromorphite	2.4103E-14	3.2692E-11	4.6436E-12
Quartz	9.3849E-02	5.6388E+00	2.1292E+00
Rutile	2.5300E-04	2.0209E-02	4.7615E-03
fix CO2(g)	3.7179E-05	1.6362E-03	0.0000E+00
fix O2(g)	-7.0649E-04	-2.2607E-02	0.0000E+00
Clinoptilolite-ss			
Clinoptilolite-Ca	8.9269E-06	1.2001E-02	4.4634E-03
Clinoptilolite-Cs	1.3626E-23	2.3650E-20	6.8128E-21
Clinoptilolite-K	7.3704E-05	1.0396E-01	3.6852E-02
Clinoptilolite-NH4	9.0446E-69	1.2097E-65	4.5223E-66
Clinoptilolite-Na	6.1583E-03	8.3423E+00	3.0791E+00
Clinoptilolite-Sr	0.0000E+00	0.0000E+00	0.0000E+00
Smectite-di			
Beidellite-Ca	4.0469E-11	1.4834E-08	5.2420E-09
Beidellite-K	1.7470E-10	6.5136E-08	2.3357E-08
Beidellite-Mg	3.7563E-10	1.3671E-07	4.6274E-08
Beidellite-Na	1.7147E-08	6.3021E-06	2.2384E-06
Montmor-Ca	7.2652E-08	2.6594E-05	3.6326E-05
Montmor-K	5.1220E-07	1.9071E-04	2.5610E-04
Montmor-Mg	1.0960E-06	3.9832E-04	5.4798E-04
Montmor-Na	4.9027E-05	1.7994E-02	2.4513E-02
Nontronite-Ca	2.6316E-06	1.1166E-03	3.4500E-04
Nontronite-K	1.1360E-05	4.8915E-03	1.5367E-03
Nontronite-Mg	2.4443E-05	1.0308E-02	3.1718E-03
Nontronite-Na	1.1150E-03	4.7418E-01	1.4730E-01

--- Summary of Solid Phases (E.S.+P.R.S.) ---

Phase/End-member	Log moles	Moles	Mass, g	Volume, cc
Alunite	-2.5559	2.7801E-03	1.1516E+00	8.1624E-01

Celadonite	-1.8293	1.4814E-02	5.8771E+00	2.3272E+00
Diaspore	-1.6079	2.4665E-02	1.4796E+00	4.3804E-01
Fluorapatite	-3.9881	1.0278E-04	5.1834E-02	5.1392E-02
Hematite	-3.7144	1.9300E-04	3.0820E-02	5.8428E-03
Maximum_Microcline	-0.6654	2.1610E-01	6.0146E+01	2.3498E+01
Mesolite	-1.4324	3.6950E-02	1.4329E+01	6.3259E+00
Muscovite	-1.6495	2.2411E-02	8.9264E+00	3.1534E+00
Ni2SiO4	-2.1930	6.4125E-03	1.3432E+00	2.7324E-01
Nontronite-H	-4.9990	1.0023E-05	4.1899E-03	5.0117E-03
Pyrolusite	-2.5344	2.9217E-03	2.5400E-01	1.4608E+00
Pyromorphite	-10.7094	1.9527E-11	2.6486E-08	3.7621E-09
Quartz	0.1276	1.3416E+00	8.0610E+01	3.0439E+01
Rutile	-2.5177	3.0360E-03	2.4251E-01	5.7138E-02
fix CO2(g)	2.3010	1.9999E+02	8.8015E+03	0.0000E+00
fix O2(g)	2.3010	1.9999E+02	6.3995E+03	0.0000E+00
Clinoptilolite-ss	-1.2204	6.0203E-02		
Clinoptilolite-Ca	-4.0649	8.6116E-05	1.1578E-01	4.3058E-02
Clinoptilolite-Cs	-10.5400	2.8843E-11	5.0064E-08	1.4422E-08
Clinoptilolite-K	-3.1481	7.1101E-04	1.0029E+00	3.5550E-01
Clinoptilolite-NH4	-67.0666	8.5780E-68	1.1473E-64	4.2890E-65
Clinoptilolite-Na	-1.2262	5.9405E-02	8.0473E+01	2.9703E+01
Clinoptilolite-Sr	-10.2389	5.7687E-11	8.2309E-08	2.8843E-08
Smectite-di	-1.8451	1.4287E-02		
Beidellite-Ca	-9.0552	8.8068E-10	3.2283E-07	1.1407E-07
Beidellite-K	-8.5743	2.6652E-09	9.9372E-07	3.5634E-07
Beidellite-Mg	-8.3552	4.4134E-09	1.6063E-06	5.4369E-07
Beidellite-Na	-6.7601	1.7375E-07	6.3860E-05	2.2681E-05
Montmor-Ca	-5.9538	1.1123E-06	4.0715E-04	5.5614E-04
Montmor-K	-5.2472	5.6599E-06	2.1074E-03	2.8299E-03
Montmor-Mg	-4.9175	1.2091E-05	4.3943E-03	6.0454E-03
Montmor-Na	-3.3041	4.9645E-04	1.8221E-01	2.4823E-01
Nontronite-Ca	-3.3818	4.1511E-04	1.7613E-01	5.4421E-02
Nontronite-K	-3.1340	7.3450E-04	3.1626E-01	9.9356E-02
Nontronite-Mg	-3.1378	7.2806E-04	3.0702E-01	9.4473E-02
Nontronite-Na	-1.9247	1.1894E-02	5.0579E+00	1.5713E+00

	Mass, grams	Volume, cc
Created	1.546303E+04	1.010298E+02
Destroyed	2.470376E+02	0.000000E+00
Net	1.521600E+04	1.010298E+02

Warning-- these volume totals may be incomplete because
of missing partial molar volume data in the data base

--- Summary of Pure Mineral Saturation States ---

Mineral	Log Q/K	Aff, kcal	State
Alamosite	-3.337	-4.553	
Albite	-0.022	-0.030	
Albite_high	-1.341	-1.829	
Albite_low	-0.022	-0.030	
Alstonite	-7.220	-9.850	
Analcime	-0.148	-0.202	
Analcime-dehy	-6.510	-8.882	
Andalusite	-6.082	-8.298	

Anglesite	-6.578	-8.974	
Anhydrite	-6.434	-8.778	
Aragonite	-3.281	-4.476	
BaCrO4	-3.118	-4.254	
BaHPO4	-6.830	-9.318	
BaZrO3	83.673	114.154	ssatd
Barite	-2.830	-3.860	
Bassanite	-7.079	-9.658	
Beidellite-Ca	-2.466	-3.365	
Beidellite-H	-3.163	-4.315	
Beidellite-K	-2.257	-3.079	
Beidellite-Mg	-2.147	-2.929	
Beidellite-Na	-1.599	-2.182	
Boehmite	-0.634	-0.864	
Boric_acid	-5.080	-6.931	
Brucite	-4.566	-6.229	
Bunsenite	-3.301	-4.504	
CaSO4:0.5H2O(beta)	-7.247	-9.887	
CaZrO3	139.763	190.677	ssatd
Calcite	-3.136	-4.279	
CeO2	-3.253	-4.438	
Celadonite	0.000	0.000	satd
Cerussite	-1.769	-2.413	
Chalcedony	-0.271	-0.370	
Chrysotile	-3.927	-5.358	
Clinochlore-14A	-6.714	-9.160	
Clinoptilolite	-6.205	-8.465	
Clinoptilolite-K	-6.670	-9.100	
Clinoptilolite-Na	-0.020	-0.027	
Clinoptilolite-hy-K	-6.664	-9.092	
Clinoptilolite-hy-Na	-0.018	-0.024	
Coesite	-0.810	-1.105	
Corundum	-4.450	-6.072	
Cristobalite(alpha)	-0.551	-0.751	
Cristobalite(beta)	-0.994	-1.356	
Crocoite	-1.963	-2.678	
Dawsonite	-0.920	-1.256	
Diaspore	-0.230	-0.313	
Diopside	-7.204	-9.829	
Dolomite	-3.382	-4.614	
Dolomite-dis	-4.926	-6.721	
Dolomite-ord	-3.382	-4.614	
Enstatite	-3.594	-4.903	
Epsomite	-7.075	-9.653	
Fe(OH)3	-6.518	-8.893	
Ferrite-Zn	-6.369	-8.690	
Fluorapatite	-5.671	-7.736	
GdPO4:H2O	-4.376	-5.971	
Gibbsite	-0.826	-1.127	
Goethite	-1.397	-1.905	
Gypsum	-6.259	-8.539	
Halite	-6.764	-9.228	
Hematite	-1.832	-2.500	
Hexahydrite	-7.310	-9.973	
Hydrocerussite	-7.040	-9.605	
Ice	-0.139	-0.190	
Illite	-1.275	-1.739	
Jadeite	-1.647	-2.247	
K-Feldspar	0.000	0.000	
Kalicinite	-6.806	-9.285	
Kalsilite	-3.175	-4.332	
Kaolinite	-0.948	-1.294	
Kyanite	-5.812	-7.929	

LaPO4:H2O	-1.738	-2.371	
Lansfordite	-4.425	-6.037	
Laumontite	-5.779	-7.884	
Lawsonite	-6.325	-8.630	
Litharge	-6.309	-8.607	
Magnesite	-1.875	-2.557	
Manganite	-4.459	-6.084	
Massicot	-6.484	-8.846	
Maximum_Microcline	0.000	0.000	satd
Mesolite	0.000	0.000	satd
Mirabilite	-4.013	-5.475	
MnO2(gamma)	-1.518	-2.071	
Monohydrocalcite	-3.971	-5.417	
Montmor-Ca	-1.392	-1.900	
Montmor-Cs	-6.902	-9.416	
Montmor-K	-1.113	-1.518	
Montmor-Mg	-1.003	-1.369	
Montmor-Na	-0.459	-0.626	
Mordenite	-2.805	-3.827	
Muscovite	0.000	0.000	satd
Na2CO3	-6.877	-9.382	
Na2CO3:7H2O	-5.645	-7.701	
Nahcolite	-3.393	-4.629	
Natrolite	-1.039	-1.417	
Natron	-5.311	-7.246	
NdOHCO3	-7.229	-9.863	
NdPO4:H2O	-3.121	-4.257	
Nepheline	-3.060	-4.174	
Nesquehonite	-4.578	-6.246	
Ni(OH)2	-3.579	-4.882	
Ni2SiO4	0.000	0.000	satd
NiCO3	-5.655	-7.715	
Nontronite-Ca	-0.878	-1.198	
Nontronite-H	-1.574	-2.148	
Nontronite-K	-0.668	-0.912	
Nontronite-Mg	-0.559	-0.762	
Nontronite-Na	-0.011	-0.015	
Paragonite	-0.919	-1.253	
Paralaurionite	-6.856	-9.354	
Pb3(PO4)2	-5.409	-7.380	
Pb4O(PO4)2	-6.475	-8.834	
PbHPO4	-4.293	-5.857	
Petalite	-6.152	-8.393	
Phlogopite	-2.518	-3.435	
Plattnerite	-1.672	-2.281	
PuO2	-4.789	-6.534	
Pyrolusite	0.000	0.000	satd
Pyromorphite	0.000	0.000	satd
Pyrophyllite	-2.576	-3.514	
Quartz	0.000	0.000	satd
Rutile	0.000	0.000	satd
Sanidine_high	-1.199	-1.636	
Saponite-Ca	-1.828	-2.495	
Saponite-H	-2.525	-3.445	
Saponite-K	-1.619	-2.209	
Saponite-Mg	-1.509	-2.059	
Saponite-Na	-0.962	-1.312	
Scolecite	-3.989	-5.442	
Sellaite	-7.301	-9.961	
SiO2(am)	-1.286	-1.754	
Sillimanite	-6.446	-8.794	
SmPO4:H2O	-3.878	-5.290	
Smectite-low-Fe-Mg	-7.076	-9.653	

Smithsonite	-4.688	-6.396	
SrZrO3	74.076	101.060	ssatd
Stilbite	-1.918	-2.616	
Talc	-1.938	-2.644	
Thenardite	-4.838	-6.601	
Thermonatrite	-6.658	-9.083	
Trevorite	-2.341	-3.193	
Tridymite	-0.172	-0.234	
Witherite	-0.352	-0.480	
Zincite	-4.120	-5.621	
Zn(OH)2(beta)	-4.846	-6.612	
Zn(OH)2(epsilon)	-4.575	-6.241	
Zn(OH)2(gamma)	-4.795	-6.542	
fix CO2(g)	0.000	0.000	satd
fix O2(g)	0.000	0.000	satd

--- Summary of Solid Solutions ---

--- Carbonate-Calcite ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Calcite	5.1802E-02	-1.2857	0.0000	-1.2857
Magnesite	9.4674E-01	-0.0238	0.0000	-0.0238
Rhodochrosite	1.2060E-09	-8.9187	0.0000	-8.9187
Siderite	1.8681E-18	-17.7286	0.0000	-17.7286
Smithsonite	1.4532E-03	-2.8377	0.0000	-2.8377
Strontianite	1.6761E-48	-47.7757	0.0000	-47.7757

Mineral	Log Q/K	Aff, kcal	State
Carbonate-Calcite	-1.851	-2.525	
Calcite	-1.851	-2.525	
Magnesite	-1.851	-2.525	
Rhodochrosite	-1.851	-2.525	
Siderite	-1.851	-2.525	
Smithsonite	-1.851	-2.525	
Strontianite	-1.851	-2.525	

--- Clinoptilolite-hy-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-hy-Ca	1.5019E-10	-9.8234	0.0000	-9.8234
Clinoptilolite-hy-Cs	1.1264E-67	-66.9483	0.0000	-66.9483
Clinoptilolite-hy-K	2.2579E-07	-6.6463	0.0000	-6.6463
Clinoptilolite-hy-Na	1.0000E+00	0.0000	0.0000	0.0000
Clinoptilolite-hy-Sr	9.4466E-95	-94.0247	0.0000	-94.0247

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-hy-ss	-0.018	-0.024	
Clinoptilolite-hy-Ca	-0.018	-0.024	
Clinoptilolite-hy-Cs	-0.018	-0.024	

Clinoptilolite-hy-K	-0.018	-0.024
Clinoptilolite-hy-Na	-0.018	-0.024
Clinoptilolite-hy-Sr	-0.018	-0.024

--- Clinoptilolite-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-Ca	1.4304E-03	-2.8445	-6.9976	-9.8421
Clinoptilolite-Cs	4.4011E-20	-19.3564	-47.6168	-66.9733
Clinoptilolite-K	1.1810E-02	-1.9278	-4.7423	-6.6700
Clinoptilolite-NH4	1.4446E-66	-65.8403	-161.9670	-227.8073
Clinoptilolite-Na	9.8676E-01	-0.0058	-0.0142	-0.0200
Clinoptilolite-Sr	6.6124E-28	-27.1796	-66.8619	-94.0416

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-ss	0.000	0.000	satd
Clinoptilolite-Ca	0.000	0.000	satd
Clinoptilolite-Cs	0.000	0.000	satd
Clinoptilolite-K	0.000	0.000	satd
Clinoptilolite-NH4	0.000	0.000	satd
Clinoptilolite-Na	0.000	0.000	satd
Clinoptilolite-Sr	0.000	0.000	satd

--- Saponite-tri ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Saponite-Ca	2.2815E-03	-2.6418	1.7700	-0.8718
Saponite-H	1.7689E-05	-4.7523	3.1840	-1.5683
Saponite-K	9.8421E-03	-2.0069	1.3446	-0.6623
Saponite-Mg	2.1177E-02	-1.6741	1.1217	-0.5525
Saponite-Na	9.6668E-01	-0.0147	0.0099	-0.0049

Mineral	Log Q/K	Aff, kcal	State
Saponite-tri	-0.957	-1.305	
Saponite-Ca	-0.957	-1.305	
Saponite-H	-0.957	-1.305	
Saponite-K	-0.957	-1.305	
Saponite-Mg	-0.957	-1.305	
Saponite-Na	-0.957	-1.305	

--- Smectite-di ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Beidellite-Ca	3.3607E-08	-7.4736	5.0073	-2.4663

Beidellite-K	1.4508E-07	-6.8384	4.5817	-2.2567
Beidellite-Mg	3.1194E-07	-6.5059	4.3590	-2.1470
Beidellite-Na	1.4239E-05	-4.8465	3.2472	-1.5993
Montmor-Ca	6.0333E-05	-4.2194	2.8270	-1.3924
Montmor-K	4.2535E-04	-3.3712	2.2587	-1.1125
Montmor-Mg	9.1013E-04	-3.0409	2.0374	-1.0035
Montmor-Na	4.0713E-02	-1.3903	0.9315	-0.4588
Nontronite-Ca	2.1854E-03	-2.6605	1.7825	-0.8780
Nontronite-K	9.4340E-03	-2.0253	1.3570	-0.6684
Nontronite-Mg	2.0299E-02	-1.6925	1.1340	-0.5585
Nontronite-Na	9.2596E-01	-0.0334	0.0224	-0.0110

Mineral	Log Q/K	Aff, kcal	State
Smectite-di	0.000	0.000	satd
Beidellite-Ca	0.000	0.000	satd
Beidellite-K	0.000	0.000	satd
Beidellite-Mg	0.000	0.000	satd
Beidellite-Na	0.000	0.000	satd
Montmor-Ca	0.000	0.000	satd
Montmor-K	0.000	0.000	satd
Montmor-Mg	0.000	0.000	satd
Montmor-Na	0.000	0.000	satd
Nontronite-Ca	0.000	0.000	satd
Nontronite-K	0.000	0.000	satd
Nontronite-Mg	0.000	0.000	satd
Nontronite-Na	0.000	0.000	satd

--- Lanthanide hydroxide ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
La(OH)3	4.0962E-04	-3.3876	0.0000	-3.3876
Ce(OH)3	2.0037E-14	-13.6982	0.0000	-13.6982
Nd(OH)3(c)	8.5126E-01	-0.0699	0.0000	-0.0699
Gd(OH)3	1.1862E-01	-0.9258	0.0000	-0.9258
Sm(OH)3	2.9715E-02	-1.5270	0.0000	-1.5270

Mineral	Log Q/K	Aff, kcal	State
Lanthanide hydroxide	-8.835	-12.054	
La(OH)3	-8.835	-12.054	
Ce(OH)3	-8.835	-12.054	
Nd(OH)3(c)	-8.835	-12.054	
Gd(OH)3	-8.835	-12.054	
Sm(OH)3	-8.835	-12.054	

--- Rhabdophane-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaPO4:H2O	9.5146E-01	-0.0216	0.0000	-0.0216
CePO4:H2O	1.4718E-11	-10.8322	0.0000	-10.8322

NdPO4:H2O	3.9452E-02	-1.4039	0.0000	-1.4039
GdPO4:H2O	2.1886E-03	-2.6598	0.0000	-2.6598
SmPO4:H2O	6.9021E-03	-2.1610	0.0000	-2.1610

Mineral	Log Q/K	Aff, kcal	State
Rhabdophane-ss	-1.717	-2.342	
LaPO4:H2O	-1.717	-2.342	
CePO4:H2O	-1.717	-2.342	
NdPO4:H2O	-1.717	-2.342	
GdPO4:H2O	-1.717	-2.342	
SmPO4:H2O	-1.717	-2.342	

--- Lanthanide fluoride ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaF3:0.5H2O	9.4965E-01	-0.0224	0.0000	-0.0224
CeF3:0.5H2O	2.3282E-11	-10.6330	0.0000	-10.6330
NdF3:0.5H2O	4.9573E-02	-1.3048	0.0000	-1.3048
GdF3:0.5H2O	8.6965E-05	-4.0607	0.0000	-4.0607
SmF3:0.5H2O	6.8890E-04	-3.1618	0.0000	-3.1618

Mineral	Log Q/K	Aff, kcal	State
Lanthanide fluoride	-15.798	-21.553	
LaF3:0.5H2O	-15.798	-21.553	
CeF3:0.5H2O	-15.798	-21.553	
NdF3:0.5H2O	-15.798	-21.553	
GdF3:0.5H2O	-15.798	-21.553	
SmF3:0.5H2O	-15.798	-21.553	

--- Summary of Gases ---

Gas	Fugacity	Log fugacity
Al(g)	9.7073-192	-191.0129
B(g)	3.9971-204	-203.3983
BF3(g)	1.2630E-45	-44.8986
C(g)	3.0917-190	-189.5098
CH4(g)	3.5198-146	-145.4535
CO(g)	6.0395E-49	-48.2190
CO2(g)	3.1623E-04	-3.5000
Ca(g)	5.4464-154	-153.2639
Chlorine	1.7222E-31	-30.7639
Cs(g)	2.5311E-94	-93.5967
Cu(g)	1.9200E-82	-81.7167
Fluorine	1.1853E-86	-85.9262
H2(g)	6.1067E-42	-41.2142
H2O(g)	2.5942E-02	-1.5860
H2S(g)	1.1079-144	-143.9555
HCl(g)	5.0874E-20	-19.2935
HF(g)	4.7634E-16	-15.3221
K(g)	1.2715E-76	-75.8957

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Li(g)                        1.1238E-95    -94.9493
Mg(g)                        1.8676-129   -128.7287
Nitrogen                     1.2977E-22    -21.8868
NH3(g)                       1.3107E-70    -69.8825
NO(g)                        3.5870E-27    -26.4453
NO2(g)                       2.4527E-21    -20.6104
Na(g)                        6.9096E-73    -72.1605
O2(g)                        2.0999E-01     -0.6778
Pb(g)                        3.2701E-68    -67.4854
S2(g)                        7.3387-232   -231.1344
SO2(g)                       1.9642E-57    -56.7068
Si(g)                        4.2257-221   -220.3741
SiF4(g)                      2.2753E-46    -45.6430
Ti(g)                        3.8019-231   -230.4200
TiCl4(g)                     2.2500E-90    -89.6478
U(g)                         1.0240-302   -301.9897
U2Cl10(g)                    1.2462-269   -268.9044
U2Cl8(g)                     2.2433-269   -268.6491
U2F10(g)                     8.5430-187   -186.0684
UCl(g)                       4.6457-260   -259.3329
UCl2(g)                      6.3052-216   -215.2003
UCl3(g)                      1.8743-169   -168.7272
UCl4(g)                      3.0171-140   -139.5204
UCl5(g)                      2.4988-148   -147.6023
UCl6(g)                      3.8449-151   -150.4151
UF(g)                        9.2441-246   -245.0341
UF2(g)                       6.1891-207   -206.2084
UF3(g)                       1.0197-161   -160.9915
UF4(g)                       2.4800-113   -112.6056
UF5(g)                       2.7625-106   -105.5587
UF6(g)                       3.0302-113   -112.5185
UO(g)                        8.0873-218   -217.0922
UO2(g)                       1.4983-133   -132.8244
UO2Cl2(g)                    1.1267E-83    -82.9482
UO2F2(g)                     8.0228E-73    -72.0957
UO3(g)                       1.1021E-80    -79.9578
UOF4(g)                      7.3900E-91    -90.1314
Zn(g)                        2.9013E-77    -76.5374



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--- shifting e.s. solid(s) to the p.r.s. (shftz) ---

      shifted -- Celadonite
              - old mass=  1.24347E-03, new mass=  1.24347E-05
      shifted -- Maximum_Microcline
              - old mass=  1.92622E-02, new mass=  1.92622E-04
      shifted -- Mesolite
              - old mass=  3.13805E-03, new mass=  3.13805E-05
      shifted -- Muscovite
              - old mass=  1.01097E-03, new mass=  1.01097E-05
  not shifted -- Ni2SiO4
              - mass=  7.99975E-07
      shifted -- Pyrolusite
              - old mass=  1.95960E-04, new mass=  1.95960E-06
  not shifted -- Pyromorphite
              - mass=  1.95271E-11
      shifted -- Quartz
              - old mass=  9.47963E-02, new mass=  9.47963E-04
      shifted -- Rutile
```

```
                - old mass=  2.55556E-04, new mass=  2.55556E-06
        shifted -- Clinoptilolite-ss
                - old mass=  6.30395E-03, new mass=  6.30395E-05
        shifted -- Smectite-di
                - old mass=  1.21634E-03, new mass=  1.21634E-05

Stepping to zi=  1.2007E+01, delzi=  7.2808E-03, nord= 6
  time =  1.1581E+05 d, dltime =  7.0223E+01 d
Steps completed =   977, iter =  9, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -57.1045

Stepping to zi=  1.2008E+01, delzi=  9.1010E-04, nord= 6
  time =  1.1582E+05 d, dltime =  8.7779E+00 d
Steps completed =   978, iter = 24, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -57.1487

Stepping to zi=  1.2010E+01, delzi=  1.8202E-03, nord= 5
  time =  1.1584E+05 d, dltime =  1.7556E+01 d
Steps completed =   979, iter = 19, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -57.2309

Stepping to zi=  1.2014E+01, delzi=  3.6404E-03, nord= 6
  time =  1.1587E+05 d, dltime =  3.5112E+01 d
Steps completed =   980, iter =  9, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -57.3751

Stepping to zi=  1.2017E+01, delzi=  3.0944E-03, nord= 6
  time =  1.1590E+05 d, dltime =  2.9846E+01 d
Steps completed =   981, iter =  9, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -57.4813

Stepping to zi=  1.2019E+01, delzi=  2.2911E-03, nord= 6
  time =  1.1592E+05 d, dltime =  2.2098E+01 d
Steps completed =   982, iter = 14, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -57.5523

Stepping to zi=  1.2022E+01, delzi=  2.6919E-03, nord= 6
  time =  1.1595E+05 d, dltime =  2.5964E+01 d
Steps completed =   983, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -57.6289

Stepping to zi=  1.2025E+01, delzi=  3.2713E-03, nord= 6
  time =  1.1598E+05 d, dltime =  3.1552E+01 d
Steps completed =   984, iter = 10, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -57.7137

Stepping to zi=  1.2029E+01, delzi=  3.6193E-03, nord= 6
  time =  1.1602E+05 d, dltime =  3.4908E+01 d
Steps completed =   985, iter =  7, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -57.7987

Stepping to zi=  1.2033E+01, delzi=  4.0423E-03, nord= 6
  time =  1.1606E+05 d, dltime =  3.8988E+01 d
Steps completed =   986, iter =  8, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -57.8848

Stepping to zi=  1.2037E+01, delzi=  4.5179E-03, nord= 6
  time =  1.1610E+05 d, dltime =  4.3575E+01 d
Steps completed =   987, iter = 12, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -57.9718

Stepping to zi=  1.2042E+01, delzi=  4.9816E-03, nord= 6
  time =  1.1615E+05 d, dltime =  4.8048E+01 d
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```
Steps completed =   988, iter =  9, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -58.0587

Stepping to zi=  1.2048E+01, delzi=  5.4689E-03, nord= 6
  time =  1.1620E+05 d, dltime =  5.2748E+01 d
Steps completed =   989, iter =  9, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -58.1449

Stepping to zi=  1.2054E+01, delzi=  6.0257E-03, nord= 6
  time =  1.1626E+05 d, dltime =  5.8119E+01 d
Steps completed =   990, iter =  8, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -58.2310

Stepping to zi=  1.2060E+01, delzi=  6.6542E-03, nord= 6
  time =  1.1632E+05 d, dltime =  6.4180E+01 d
Steps completed =   991, iter = 20, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -58.3170

Stepping to zi=  1.2068E+01, delzi=  7.3503E-03, nord= 6
  time =  1.1639E+05 d, dltime =  7.0894E+01 d
Steps completed =   992, iter =  9, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -58.4031

Stepping to zi=  1.2076E+01, delzi=  8.1211E-03, nord= 6
  time =  1.1647E+05 d, dltime =  7.8329E+01 d
Steps completed =   993, iter = 24, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -58.4892

Stepping to zi=  1.2085E+01, delzi=  8.9728E-03, nord= 6
  time =  1.1656E+05 d, dltime =  8.6543E+01 d
Steps completed =   994, iter = 13, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -58.5753

Stepping to zi=  1.2095E+01, delzi=  9.9116E-03, nord= 6
  time =  1.1665E+05 d, dltime =  9.5598E+01 d
Steps completed =   995, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -58.6615

Stepping to zi=  1.2106E+01, delzi=  1.0947E-02, nord= 6
  time =  1.1676E+05 d, dltime =  1.0558E+02 d
Steps completed =   996, iter = 21, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -58.7476

Stepping to zi=  1.2118E+01, delzi=  1.2090E-02, nord= 6
  time =  1.1688E+05 d, dltime =  1.1661E+02 d
Steps completed =   997, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -58.8337

Stepping to zi=  1.2131E+01, delzi=  1.3353E-02, nord= 6
  time =  1.1700E+05 d, dltime =  1.2879E+02 d
Steps completed =   998, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -58.9198

Stepping to zi=  1.2146E+01, delzi=  1.4747E-02, nord= 6
  time =  1.1715E+05 d, dltime =  1.4224E+02 d
Steps completed =   999, iter = 16, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -59.0060

Stepping to zi=  1.2162E+01, delzi=  1.6288E-02, nord= 6
  time =  1.1730E+05 d, dltime =  1.5710E+02 d
Steps completed =  1000, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -59.0921
```

```
Stepping to zi=  1.2180E+01, delzi=  1.7990E-02, nord= 6
  time =  1.1748E+05 d, dltime =  1.7352E+02 d
Steps completed =  1001, iter = 19, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -59.1782

Stepping to zi=  1.2200E+01, delzi=  1.9870E-02, nord= 6
  time =  1.1767E+05 d, dltime =  1.9165E+02 d
Steps completed =  1002, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -59.2643

Stepping to zi=  1.2222E+01, delzi=  2.1946E-02, nord= 6
  time =  1.1788E+05 d, dltime =  2.1167E+02 d
Steps completed =  1003, iter = 21, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -59.3504

Stepping to zi=  1.2246E+01, delzi=  2.4240E-02, nord= 6
  time =  1.1811E+05 d, dltime =  2.3379E+02 d
Steps completed =  1004, iter = 20, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -59.4365

Stepping to zi=  1.2273E+01, delzi=  2.6772E-02, nord= 6
  time =  1.1837E+05 d, dltime =  2.5822E+02 d
Steps completed =  1005, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -59.5226

Stepping to zi=  1.2302E+01, delzi=  2.9570E-02, nord= 6
  time =  1.1866E+05 d, dltime =  2.8520E+02 d
Steps completed =  1006, iter = 14, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -59.6087

Stepping to zi=  1.2335E+01, delzi=  3.2660E-02, nord= 6
  time =  1.1897E+05 d, dltime =  3.1500E+02 d
Steps completed =  1007, iter =  6, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -59.6948

Stepping to zi=  1.2371E+01, delzi=  3.6073E-02, nord= 6
  time =  1.1932E+05 d, dltime =  3.4792E+02 d
Steps completed =  1008, iter =  8, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -59.7809

Stepping to zi=  1.2411E+01, delzi=  3.9842E-02, nord= 6
  time =  1.1971E+05 d, dltime =  3.8428E+02 d
Steps completed =  1009, iter = 20, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -59.8670

Stepping to zi=  1.2455E+01, delzi=  4.4006E-02, nord= 6
  time =  1.2013E+05 d, dltime =  4.2444E+02 d
Steps completed =  1010, iter =  9, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -59.9531

Stepping to zi=  1.2504E+01, delzi=  4.8605E-02, nord= 6
  time =  1.2060E+05 d, dltime =  4.6879E+02 d
Steps completed =  1011, iter = 19, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -60.0392

Stepping to zi=  1.2557E+01, delzi=  5.3684E-02, nord= 6
  time =  1.2112E+05 d, dltime =  5.1779E+02 d
Steps completed =  1012, iter = 15, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -60.1253

Stepping to zi=  1.2617E+01, delzi=  5.9295E-02, nord= 6
  time =  1.2169E+05 d, dltime =  5.7190E+02 d
Steps completed =  1013, iter =  7, ncorr = 0
```

```
Most rapidly changing is zvclg1(Sr++                    ) =    -60.2113

Stepping to zi=  1.2682E+01, delzi=  6.5492E-02, nord= 6
  time =  1.2232E+05 d, dltime =  6.3168E+02 d
Steps completed =  1014, iter = 20, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -60.2974

Stepping to zi=  1.2754E+01, delzi=  7.2338E-02, nord= 6
  time =  1.2302E+05 d, dltime =  6.9770E+02 d
Steps completed =  1015, iter =  6, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -60.3834

Stepping to zi=  1.2834E+01, delzi=  7.9899E-02, nord= 6
  time =  1.2379E+05 d, dltime =  7.7063E+02 d
Steps completed =  1016, iter = 18, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -60.4695

Stepping to zi=  1.2923E+01, delzi=  8.8251E-02, nord= 6
  time =  1.2464E+05 d, dltime =  8.5119E+02 d
Steps completed =  1017, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -60.5555

Stepping to zi=  1.3000E+01, delzi=  7.7376E-02, nord= 6
  time =  1.2539E+05 d, dltime =  7.4629E+02 d
Steps completed =  1018, iter =  6, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -60.6245

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                    Reaction progress        =  1.30000000000000E+01
                    Log of reaction progress =       1.1139434



                    Time =  1.083E+10 sec
                         =  1.254E+05 days
                         =  3.433E+02 years

                    Log sec =       10.035
                    Log days =       5.098
                    Log years =      2.536

                    Temperature    =     25.000 degrees C
                    total pressure =      1.013 bars


Step size is limited by the P.R.S. shift requirement


                              --- Reactant Summary ---


    Reactant                  Moles     Delta moles    Mass, g    Delta Mass, g

 Tuff                       8.7000E+01   1.3000E+01   1.7910E+03   2.6762E+02


               Current total mass =  1.79102E+03 grams
               Delta total mass   =  2.67624E+02 grams
               Delta total volume =      0.00000 cc
```

Reactant	Rel. Rate mol/mol	Rate mol/s	Rate mol/s/cm2
Tuff	1.0000E+00	1.2000E-09	2.5000E-15

Reactant	Affinity kcal/mol	Surface Area mol/s/cm2
Tuff	999.00000	4.8000E+05

Reactant	Rate Constants, mol/s/cm2	
Tuff		
	Forward	2.5000E-15

Affinity of the overall irreversible reaction= 0.000 kcal
Contributions from irreversible reactions
with no thermodynamic data are not included

--- Element Totals for the Aqueous Solution ---

Element	mg/kg soln.	Molality	Moles
O	8.862396E+05	5.562639E+01	5.470595E+01
Al	5.862921E-03	2.182131E-07	2.146024E-07
B	1.356063E-01	1.259643E-05	1.238800E-05
Ba	1.390493E-05	1.016825E-10	1.000000E-10
Ca	8.174912E-04	2.048380E-08	2.014486E-08
Ce	1.418721E-19	1.016824E-24	9.999992E-25
Cl	7.229722E+00	2.047886E-04	2.014000E-04
Cr	3.044017E+02	5.879086E-03	5.781806E-03
Cs	4.058434E-19	3.066545E-24	3.015803E-24
Cu	6.756011E-10	1.067666E-14	1.050000E-14
F	2.301932E-01	1.216771E-05	1.196637E-05
Fe	1.136040E-08	2.042807E-13	2.009005E-13
Gd	1.592221E-09	1.016825E-14	9.999998E-15
H	1.114375E+05	1.110274E+02	1.091903E+02
C	1.353384E+02	1.131554E-02	1.112831E-02
P	1.550694E+01	5.027658E-04	4.944467E-04
K	2.053490E+00	5.274340E-05	5.187066E-05
La	1.406476E-09	1.016825E-14	9.999998E-15
Li	7.028051E-07	1.016825E-10	1.000000E-10
Mg	2.469364E-02	1.020288E-06	1.003406E-06
Mn	4.318342E-11	7.893639E-16	7.763024E-16
Mo	2.214055E+02	2.317513E-03	2.279166E-03
N	2.013902E+00	1.443892E-04	1.420000E-04
Na	1.246438E+03	5.444645E-02	5.354554E-02
Nd	1.460490E-09	1.016825E-14	9.999998E-15
Ni	1.032629E-04	1.766907E-09	1.737670E-09
Pb	4.726912E-07	2.290979E-12	2.253071E-12
Pu	2.470601E-09	1.016825E-14	9.999999E-15
S	3.789699E+02	1.186843E-02	1.167205E-02
Si	4.303992E+00	1.538944E-04	1.513479E-04
Sm	1.522457E-09	1.016825E-14	9.999998E-15
Sr	3.196381E-56	3.663437E-61	3.602819E-61
Ti	1.076296E-05	2.257413E-10	2.220060E-10
U	2.410142E-09	1.016825E-14	1.000000E-14

V	4.843925E+00	9.549028E-05	9.391022E-05
Zn	6.621009E-06	1.016825E-10	1.000000E-10
Zr	9.236818E-16	1.016826E-20	1.000001E-20

Single ion activities and activity coefficients are here defined
with respect to the modified NBS pH scale

	pH	Eh	pe
modified NBS pH scale	9.1973	0.6750	1.1410E+01
rational pH scale	9.1157	0.6798	1.1491E+01

pHCl = 12.9866

Oxygen fugacity = 2.09991E-01
Log oxygen fugacity = -0.67780

Activity of water = 0.99863
Log activity of water = -0.00059

Ionic strength = 7.292933E-02 molal
Sum of molalities = 0.0852158751595
Osmotic coefficient = 0.89168

Mass of solution = 0.987614 kg
Mass of solutes = 0.004161 kg
Conc. of solutes = 0.421281 per cent (w/w)

Moles of solvent H2O = 5.45899E+01
Mass of solvent H2O = 9.83453E-01 kg

Species	Molality	Log molality	Log gamma	Log activity
Na+	5.2377E-02	-1.2809	-0.1067	-1.3876
SO4--	1.0443E-02	-1.9812	-0.3891	-2.3703
HCO3-	9.4235E-03	-2.0258	-0.0911	-2.1169
CrO4--	5.8732E-03	-2.2311	-0.3891	-2.6202
MoO4--	2.3175E-03	-2.6350	-0.3762	-3.0111
NaSO4-	1.4234E-03	-2.8467	-0.0911	-2.9378
CO3--	1.3418E-03	-2.8723	-0.3762	-3.2485
NaHCO3(aq)	4.4628E-04	-3.3504	0.0000	-3.3504
HPO4--	4.2621E-04	-3.3704	-0.3891	-3.7595
O2(aq)	2.6078E-04	-3.5837	0.0076	-3.5761
Cl-	2.0368E-04	-3.6911	-0.0983	-3.7893
NO3-	1.4439E-04	-3.8405	-0.0983	-3.9388
SiO2(aq)	1.0016E-04	-3.9993	0.0000	-3.9993
NaCO3-	9.3222E-05	-4.0305	-0.0911	-4.1216
VO3OH--	8.5703E-05	-4.0670	-0.3891	-4.4561
NaHPO4-	7.3133E-05	-4.1359	-0.0911	-4.2270
K+	5.1124E-05	-4.2914	-0.1138	-4.4052
NaHSiO3(aq)	3.2049E-05	-4.4942	0.0000	-4.4942
HSiO3-	2.1678E-05	-4.6640	-0.0911	-4.7551
OH-	1.9777E-05	-4.7038	-0.0946	-4.7984
F-	1.2127E-05	-4.9162	-0.0946	-5.0108
CO2(aq)	1.0555E-05	-4.9765	0.0076	-4.9689

HVO4--	9.2320E-06	-5.0347	-0.3891	-5.4238
BO2-	6.4096E-06	-5.1932	-0.0911	-5.2843
HCrO4-	5.8622E-06	-5.2319	-0.0911	-5.3231
B(OH)3(aq)	5.7906E-06	-5.2373	0.0000	-5.2373
H2PO4-	2.1868E-06	-5.6602	-0.0911	-5.7513
KSO4-	1.5677E-06	-5.8047	-0.0911	-5.8959
NaCl(aq)	1.1120E-06	-5.9539	0.0000	-5.9539
PO4---	1.0159E-06	-5.9931	-0.8909	-6.8840
Mg++	4.7240E-07	-6.3257	-0.3355	-6.6612
NaB(OH)4(aq)	3.9613E-07	-6.4022	0.0000	-6.4022
H2VO4-	3.4126E-07	-6.4669	-0.0911	-6.5581
MgSO4(aq)	2.3999E-07	-6.6198	0.0000	-6.6198
AlO2-	2.1660E-07	-6.6643	-0.0911	-6.7555
VO2(OH)2-	2.1149E-07	-6.6747	-0.0911	-6.7659
MgPO4-	1.3643E-07	-6.8651	-0.0911	-6.9562
MgCO3(aq)	1.1727E-07	-6.9308	0.0000	-6.9308
NaOH(aq)	1.0335E-07	-6.9857	0.0000	-6.9857
KHPO4-	5.0869E-08	-7.2935	-0.0911	-7.3847
NaF(aq)	4.0181E-08	-7.3960	0.0000	-7.3960
MgHPO4(aq)	3.0852E-08	-7.5107	0.0000	-7.5107
MgHCO3+	2.3133E-08	-7.6358	-0.1067	-7.7425
Ca++	1.0115E-08	-7.9951	-0.3730	-8.3680
H2SiO4--	6.6548E-09	-8.1769	-0.3891	-8.5660
CaCO3(aq)	5.1358E-09	-8.2894	0.0000	-8.2894
CaSO4(aq)	2.3595E-09	-8.6272	0.0000	-8.6272
VO4---	2.3552E-09	-8.6280	-0.8909	-9.5188
CaPO4-	1.9912E-09	-8.7009	-0.0911	-8.7920
Cr2O7--	1.8790E-09	-8.7261	-0.3891	-9.1152
Ni++	1.4109E-09	-8.8505	-0.3730	-9.2235
NaAlO2(aq)	1.2991E-09	-8.8863	0.0000	-8.8863
H+	7.6610E-10	-9.1157	-0.0815	-9.1973
CaHCO3+	4.6606E-10	-9.3316	-0.1067	-9.4383
CaHPO4(aq)	4.0973E-10	-9.3875	0.0000	-9.3875
NiSO4(aq)	3.4037E-10	-9.4680	0.0000	-9.4680
HSO4-	3.1821E-10	-9.4973	-0.0911	-9.5884
HAlO2(aq)	3.1452E-10	-9.5024	0.0000	-9.5024
Ti(OH)4(aq)	2.2574E-10	-9.6464	0.0000	-9.6464
KOH(aq)	2.1451E-10	-9.6685	0.0000	-9.6685
KCl(aq)	2.0457E-10	-9.6892	0.0000	-9.6892
MgB(OH)4+	1.1433E-10	-9.9418	-0.1067	-10.0485

--- Summary of Instantaneously Precipitated Solid Phases ---
(defined by derivatives)

--- Theoretical Rock Composition ---
g/kg

O	5.181362E+01
Al	6.307698E+00
Ca	3.743596E-01
Cl	3.331485E-12
Cs	1.668963E-21
Fe	6.119359E-01
H	7.306974E-01
C	2.023769E-03
P	8.731799E-12
K	3.828024E+00
Mg	1.381793E-01
Mn	4.839759E-02
N	2.000877E-66
Na	2.488262E+00
Pb	9.735276E-11

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      Si     3.360180E+01
      Ti     5.500769E-02

      --- Oxide Percentages ---

   Oxide   Theoretical rock


    Total =     0.0000


   Phase/end-member     d mol/d zi    d grams/d zi   d vol (cc)/d zi

Celadonite                  1.2310E-03   4.8840E-01   1.9340E-01
Maximum_Microcline          1.9070E-02   5.3077E+00   2.0736E+00
Mesolite                    3.1067E-03   1.2047E+00   5.3186E-01
Muscovite                   1.0009E-03   3.9868E-01   1.4084E-01
Ni2SiO4                    -2.6326E-12  -5.5144E-10  -1.1218E-10
Pyrolusite                  1.9400E-04   1.6866E-02   9.7000E-02
Pyromorphite                2.0694E-14   2.8068E-11   3.9869E-12
Quartz                      9.3849E-02   5.6388E+00   2.1292E+00
Rutile                      2.5300E-04   2.0209E-02   4.7615E-03
fix     CO2(g)              3.7105E-05   1.6330E-03   0.0000E+00
fix     O2(g)              -7.0649E-04  -2.2607E-02   0.0000E+00
Clinoptilolite-ss
  Clinoptilolite-Ca         8.9268E-06   1.2001E-02   4.4634E-03
  Clinoptilolite-Cs         7.9763E-25   1.3845E-21   3.9881E-22
  Clinoptilolite-K          7.3703E-05   1.0396E-01   3.6851E-02
  Clinoptilolite-NH4        9.0736E-69   1.2136E-65   4.5368E-66
  Clinoptilolite-Na         6.1582E-03   8.3423E+00   3.0791E+00
  Clinoptilolite-Sr         0.0000E+00   0.0000E+00   0.0000E+00
Smectite-di
  Beidellite-Ca             4.0469E-11   1.4834E-08   5.2420E-09
  Beidellite-K              1.7470E-10   6.5136E-08   2.3357E-08
  Beidellite-Mg             3.7563E-10   1.3671E-07   4.6274E-08
  Beidellite-Na             1.7147E-08   6.3022E-06   2.2384E-06
  Montmor-Ca                7.2652E-08   2.6594E-05   3.6326E-05
  Montmor-K                 5.1220E-07   1.9071E-04   2.5610E-04
  Montmor-Mg                1.0960E-06   3.9832E-04   5.4798E-04
  Montmor-Na                4.9027E-05   1.7994E-02   2.4513E-02
  Nontronite-Ca             2.6316E-06   1.1166E-03   3.4500E-04
  Nontronite-K              1.1360E-05   4.8914E-03   1.5367E-03
  Nontronite-Mg             2.4443E-05   1.0307E-02   3.1717E-03
  Nontronite-Na             1.1150E-03   4.7418E-01   1.4731E-01


                --- Summary of Solid Phases (E.S.+P.R.S.) ---

   Phase/End-member        Log moles     Moles       Mass, g     Volume, cc

Alunite                       -2.5559   2.7801E-03   1.1516E+00   8.1624E-01
Celadonite                    -1.7947   1.6045E-02   6.3655E+00   2.5206E+00
Diaspore                      -1.6079   2.4665E-02   1.4796E+00   4.3804E-01
Fluorapatite                  -3.9881   1.0278E-04   5.1834E-02   5.1392E-02
Hematite                      -3.7144   1.9300E-04   3.0820E-02   5.8428E-03
Maximum_Microcline            -0.6286   2.3516E-01   6.5454E+01   2.5572E+01
Mesolite                      -1.3973   4.0057E-02   1.5534E+01   6.8578E+00
Muscovite                     -1.6306   2.3412E-02   9.3251E+00   3.2943E+00
Ni2SiO4                       -2.1930   6.4125E-03   1.3432E+00   2.7324E-01
Nontronite-H                  -4.9990   1.0023E-05   4.1899E-03   5.0117E-03
Pyrolusite                    -2.5064   3.1157E-03   2.7087E-01   1.5578E+00
Pyromorphite                 -10.7089   1.9549E-11   2.6516E-08   3.7664E-09
Quartz                         0.1570   1.4355E+00   8.6249E+01   3.2568E+01
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Rutile	-2.4829	3.2890E-03	2.6272E-01	6.1899E-02
fix CO2(g)	2.3010	1.9999E+02	8.8015E+03	0.0000E+00
fix O2(g)	2.3010	1.9999E+02	6.3995E+03	0.0000E+00
Clinoptilolite-ss	-1.1775	6.6443E-02		
Clinoptilolite-Ca	-4.0221	9.5042E-05	1.2778E-01	4.7521E-02
Clinoptilolite-Cs	-10.5400	2.8843E-11	5.0064E-08	1.4422E-08
Clinoptilolite-K	-3.1053	7.8471E-04	1.1068E+00	3.9236E-01
Clinoptilolite-NH4	-67.0231	9.4825E-68	1.2683E-64	4.7413E-65
Clinoptilolite-Na	-1.1833	6.5564E-02	8.8816E+01	3.2782E+01
Clinoptilolite-Sr	-10.2389	5.7687E-11	8.2309E-08	2.8843E-08
Smectite-di	-1.8099	1.5491E-02		
Beidellite-Ca	-9.0357	9.2115E-10	3.3766E-07	1.1932E-07
Beidellite-K	-8.5467	2.8399E-09	1.0589E-06	3.7969E-07
Beidellite-Mg	-8.3197	4.7891E-09	1.7430E-06	5.8996E-07
Beidellite-Na	-6.7192	1.9090E-07	7.0162E-05	2.4920E-05
Montmor-Ca	-5.9263	1.1849E-06	4.3374E-04	5.9247E-04
Montmor-K	-5.2096	6.1721E-06	2.2981E-03	3.0860E-03
Montmor-Mg	-4.8799	1.3187E-05	4.7926E-03	6.5934E-03
Montmor-Na	-3.2632	5.4548E-04	2.0020E-01	2.7274E-01
Nontronite-Ca	-3.3791	4.1774E-04	1.7724E-01	5.4766E-02
Nontronite-K	-3.1273	7.4586E-04	3.2115E-01	1.0089E-01
Nontronite-Mg	-3.1235	7.5250E-04	3.1732E-01	9.7644E-02
Nontronite-Na	-1.8858	1.3009E-02	5.5321E+00	1.7186E+00

	Mass, grams	Volume, cc
Created	1.548505E+04	1.094987E+02
Destroyed	2.676241E+02	0.000000E+00
Net	1.521743E+04	1.094987E+02

Warning-- these volume totals may be incomplete because
of missing partial molar volume data in the data base

--- Summary of Pure Mineral Saturation States ---

Mineral	Log Q/K	Aff, kcal	State
Alamosite	-3.363	-4.587	
Albite	-0.022	-0.030	
Albite_high	-1.341	-1.829	
Albite_low	-0.022	-0.030	
Alstonite	-7.221	-9.852	
Analcime	-0.148	-0.202	
Analcime-dehy	-6.510	-8.882	
Andalusite	-6.082	-8.298	
Anglesite	-6.601	-9.006	
Anhydrite	-6.432	-8.775	
Aragonite	-3.281	-4.476	
BaCrO4	-3.118	-4.253	
BaHPO4	-6.789	-9.262	
BaZrO3	83.672	114.153	ssatd
Barite	-2.829	-3.859	
Bassanite	-7.077	-9.655	
Beidellite-Ca	-2.466	-3.365	
Beidellite-H	-3.163	-4.315	
Beidellite-K	-2.257	-3.079	
Beidellite-Mg	-2.147	-2.929	

Beidellite-Na	-1.599	-2.182	
Boehmite	-0.634	-0.864	
Boric_acid	-5.079	-6.929	
Brucite	-4.566	-6.229	
Bunsenite	-3.301	-4.504	
CaSO4:0.5H2O(beta)	-7.245	-9.884	
CaZrO3	139.764	190.678	ssatd
Calcite	-3.136	-4.279	
CeO2	-3.269	-4.460	
Celadonite	0.000	0.000	satd
Cerussite	-1.794	-2.448	
Chalcedony	-0.271	-0.370	
Chrysotile	-3.927	-5.358	
Clinochlore-14A	-6.714	-9.160	
Clinoptilolite	-6.349	-8.661	
Clinoptilolite-K	-6.670	-9.100	
Clinoptilolite-Na	-0.020	-0.027	
Clinoptilolite-hy-K	-6.664	-9.092	
Clinoptilolite-hy-Na	-0.018	-0.024	
Coesite	-0.810	-1.105	
Corundum	-4.450	-6.072	
Cristobalite(alpha)	-0.551	-0.751	
Cristobalite(beta)	-0.994	-1.356	
Crocoite	-1.987	-2.710	
Dawsonite	-0.920	-1.256	
Diaspore	-0.230	-0.313	
Diopside	-7.204	-9.829	
Dolomite	-3.382	-4.614	
Dolomite-dis	-4.926	-6.721	
Dolomite-ord	-3.382	-4.614	
Enstatite	-3.594	-4.903	
Epsomite	-7.073	-9.650	
Fe(OH)3	-6.518	-8.893	
Ferrite-Zn	-6.401	-8.732	
Fluorapatite	-5.544	-7.563	
GdPO4:H2O	-4.409	-6.015	
Gibbsite	-0.826	-1.127	
Goethite	-1.397	-1.905	
Gypsum	-6.257	-8.537	
Halite	-6.762	-9.226	
Hematite	-1.832	-2.500	
Hexahydrite	-7.308	-9.971	
Hydrocerussite	-7.116	-9.709	
Ice	-0.139	-0.190	
Illite	-1.275	-1.739	
Jadeite	-1.647	-2.247	
K-Feldspar	0.000	0.000	
Kalicinite	-6.806	-9.285	
Kalsilite	-3.175	-4.332	
Kaolinite	-0.948	-1.294	
Kyanite	-5.812	-7.929	
LaPO4:H2O	-1.708	-2.330	
Lansfordite	-4.425	-6.037	
Laumontite	-5.779	-7.884	
Lawsonite	-6.325	-8.630	
Litharge	-6.334	-8.641	
Magnesite	-1.875	-2.557	
Manganite	-4.459	-6.084	
Massicot	-6.509	-8.880	
Maximum_Microcline	0.000	0.000	satd
Mesolite	0.000	0.000	satd
Mirabilite	-4.012	-5.473	
MnO2(gamma)	-1.518	-2.071	

Monohydrocalcite	-3.971	-5.417	
Montmor-Ca	-1.392	-1.900	
Montmor-Cs	-7.306	-9.968	
Montmor-K	-1.113	-1.518	
Montmor-Mg	-1.003	-1.369	
Montmor-Na	-0.459	-0.626	
Mordenite	-2.805	-3.827	
Muscovite	0.000	0.000	satd
Na2CO3	-6.877	-9.382	
Na2CO3:7H2O	-5.645	-7.701	
Nahcolite	-3.393	-4.629	
Natrolite	-1.039	-1.417	
Natron	-5.311	-7.246	
NdOHCO3	-7.284	-9.937	
NdPO4:H2O	-3.133	-4.275	
Nepheline	-3.060	-4.174	
Nesquehonite	-4.578	-6.246	
Ni(OH)2	-3.579	-4.882	
Ni2SiO4	0.000	0.000	satd
NiCO3	-5.655	-7.715	
Nontronite-Ca	-0.878	-1.198	
Nontronite-H	-1.574	-2.148	
Nontronite-K	-0.668	-0.912	
Nontronite-Mg	-0.559	-0.762	
Nontronite-Na	-0.011	-0.015	
Paragonite	-0.919	-1.253	
Paralaurionite	-6.880	-9.386	
Pb3(PO4)2	-5.402	-7.369	
Pb4O(PO4)2	-6.493	-8.859	
PbHPO4	-4.277	-5.834	
Petalite	-6.152	-8.394	
Phlogopite	-2.518	-3.435	
Plattnerite	-1.697	-2.316	
PuO2	-4.792	-6.538	
Pyrolusite	0.000	0.000	satd
Pyromorphite	0.000	0.000	satd
Pyrophyllite	-2.576	-3.514	
Quartz	0.000	0.000	satd
Rutile	0.000	0.000	satd
Sanidine_high	-1.199	-1.636	
Saponite-Ca	-1.828	-2.495	
Saponite-H	-2.525	-3.445	
Saponite-K	-1.619	-2.209	
Saponite-Mg	-1.509	-2.059	
Saponite-Na	-0.962	-1.312	
Scolecite	-3.989	-5.442	
Sellaite	-7.299	-9.957	
SiO2(am)	-1.286	-1.754	
Sillimanite	-6.446	-8.794	
SmPO4:H2O	-3.910	-5.334	
Smectite-low-Fe-Mg	-7.076	-9.653	
Smithsonite	-4.720	-6.439	
SrZrO3	70.084	95.615	ssatd
Stilbite	-1.918	-2.616	
Talc	-1.938	-2.644	
Thenardite	-4.836	-6.598	
Thermonatrite	-6.658	-9.083	
Trevorite	-2.341	-3.193	
Tridymite	-0.172	-0.234	
Witherite	-0.353	-0.481	
Zincite	-4.152	-5.664	
Zn(OH)2(beta)	-4.878	-6.654	
Zn(OH)2(epsilon)	-4.606	-6.284	

```
Zn(OH)2(gamma)                  -4.827      -6.585
fix     CO2(g)                   0.000       0.000   satd
fix     O2(g)                    0.000       0.000   satd
```

--- Summary of Solid Solutions ---

--- Carbonate-Calcite ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Calcite	5.1807E-02	-1.2856	0.0000	-1.2856
Magnesite	9.4684E-01	-0.0237	0.0000	-0.0237
Rhodochrosite	1.2061E-09	-8.9186	0.0000	-8.9186
Siderite	1.8683E-18	-17.7286	0.0000	-17.7286
Smithsonite	1.3520E-03	-2.8690	0.0000	-2.8690
Strontianite	1.7077E-52	-51.7676	0.0000	-51.7676

Mineral	Log Q/K	Aff, kcal	State
Carbonate-Calcite	-1.851	-2.525	
Calcite	-1.851	-2.525	
Magnesite	-1.851	-2.525	
Rhodochrosite	-1.851	-2.525	
Siderite	-1.851	-2.525	
Smithsonite	-1.851	-2.525	
Strontianite	-1.851	-2.525	

--- Clinoptilolite-hy-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-hy-Ca	1.5019E-10	-9.8234	0.0000	-9.8234
Clinoptilolite-hy-Cs	6.4236E-72	-71.1922	0.0000	-71.1922
Clinoptilolite-hy-K	2.2579E-07	-6.6463	0.0000	-6.6463
Clinoptilolite-hy-Na	1.0000E+00	0.0000	0.0000	0.0000
Clinoptilolite-hy-Sr	1.1357-101	-100.9447	0.0000	-100.9447

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-hy-ss	-0.018	-0.024	
Clinoptilolite-hy-Ca	-0.018	-0.024	
Clinoptilolite-hy-Cs	-0.018	-0.024	
Clinoptilolite-hy-K	-0.018	-0.024	
Clinoptilolite-hy-Na	-0.018	-0.024	
Clinoptilolite-hy-Sr	-0.018	-0.024	

--- Clinoptilolite-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity

Clinoptilolite-Ca	1.4304E-03	-2.8445	-6.9976	-9.8421
Clinoptilolite-Cs	2.6121E-21	-20.5830	-50.6342	-71.2172
Clinoptilolite-K	1.1810E-02	-1.9278	-4.7423	-6.6700
Clinoptilolite-NH4	1.4492E-66	-65.8389	-161.9636	-227.8025
Clinoptilolite-Na	9.8676E-01	-0.0058	-0.0142	-0.0200
Clinoptilolite-Sr	6.6124E-30	-29.1796	-71.7819	-100.9616

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-ss	0.000	0.000	satd
Clinoptilolite-Ca	0.000	0.000	satd
Clinoptilolite-Cs	0.000	0.000	satd
Clinoptilolite-K	0.000	0.000	satd
Clinoptilolite-NH4	0.000	0.000	satd
Clinoptilolite-Na	0.000	0.000	satd
Clinoptilolite-Sr	0.000	0.000	satd

--- Saponite-tri ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Saponite-Ca	2.2815E-03	-2.6418	1.7700	-0.8718
Saponite-H	1.7689E-05	-4.7523	3.1840	-1.5683
Saponite-K	9.8420E-03	-2.0069	1.3446	-0.6623
Saponite-Mg	2.1177E-02	-1.6741	1.1217	-0.5525
Saponite-Na	9.6668E-01	-0.0147	0.0099	-0.0049

Mineral	Log Q/K	Aff, kcal	State
Saponite-tri	-0.957	-1.305	
Saponite-Ca	-0.957	-1.305	
Saponite-H	-0.957	-1.305	
Saponite-K	-0.957	-1.305	
Saponite-Mg	-0.957	-1.305	
Saponite-Na	-0.957	-1.305	

--- Smectite-di ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Beidellite-Ca	3.3607E-08	-7.4736	5.0073	-2.4663
Beidellite-K	1.4508E-07	-6.8384	4.5817	-2.2567
Beidellite-Mg	3.1194E-07	-6.5059	4.3590	-2.1470
Beidellite-Na	1.4240E-05	-4.8465	3.2472	-1.5993
Montmor-Ca	6.0333E-05	-4.2194	2.8270	-1.3924
Montmor-K	4.2535E-04	-3.3712	2.2587	-1.1125
Montmor-Mg	9.1013E-04	-3.0409	2.0374	-1.0035
Montmor-Na	4.0714E-02	-1.3903	0.9315	-0.4588
Nontronite-Ca	2.1854E-03	-2.6605	1.7825	-0.8780
Nontronite-K	9.4339E-03	-2.0253	1.3570	-0.6684
Nontronite-Mg	2.0299E-02	-1.6925	1.1340	-0.5585
Nontronite-Na	9.2596E-01	-0.0334	0.0224	-0.0110

Mineral	Log Q/K	Aff, kcal	State
Smectite-di	0.000	0.000	satd
Beidellite-Ca	0.000	0.000	satd
Beidellite-K	0.000	0.000	satd
Beidellite-Mg	0.000	0.000	satd
Beidellite-Na	0.000	0.000	satd
Montmor-Ca	0.000	0.000	satd
Montmor-K	0.000	0.000	satd
Montmor-Mg	0.000	0.000	satd
Montmor-Na	0.000	0.000	satd
Nontronite-Ca	0.000	0.000	satd
Nontronite-K	0.000	0.000	satd
Nontronite-Mg	0.000	0.000	satd
Nontronite-Na	0.000	0.000	satd

--- Lanthanide hydroxide ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
La(OH)3	4.5559E-04	-3.3414	0.0000	-3.3414
Ce(OH)3	2.2022E-14	-13.6572	0.0000	-13.6572
Nd(OH)3(c)	8.5681E-01	-0.0671	0.0000	-0.0671
Gd(OH)3	1.1414E-01	-0.9426	0.0000	-0.9426
Sm(OH)3	2.8599E-02	-1.5436	0.0000	-1.5436

Mineral	Log Q/K	Aff, kcal	State
Lanthanide hydroxide	-8.893	-12.132	
La(OH)3	-8.893	-12.132	
Ce(OH)3	-8.893	-12.132	
Nd(OH)3(c)	-8.893	-12.132	
Gd(OH)3	-8.893	-12.132	
Sm(OH)3	-8.893	-12.132	

--- Rhabdophane-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaPO4:H2O	9.5621E-01	-0.0194	0.0000	-0.0194
CePO4:H2O	1.4616E-11	-10.8352	0.0000	-10.8352
NdPO4:H2O	3.5881E-02	-1.4451	0.0000	-1.4451
GdPO4:H2O	1.9029E-03	-2.7206	0.0000	-2.7206
SmPO4:H2O	6.0026E-03	-2.2217	0.0000	-2.2217

Mineral	Log Q/K	Aff, kcal	State
Rhabdophane-ss	-1.688	-2.303	
LaPO4:H2O	-1.688	-2.303	
CePO4:H2O	-1.688	-2.303	
NdPO4:H2O	-1.688	-2.303	
GdPO4:H2O	-1.688	-2.303	

SmPO4:H2O	-1.688	-2.303

--- Lanthanide fluoride ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaF3:0.5H2O	9.5425E-01	-0.0203	0.0000	-0.0203
CeF3:0.5H2O	2.3117E-11	-10.6361	0.0000	-10.6361
NdF3:0.5H2O	4.5078E-02	-1.3460	0.0000	-1.3460
GdF3:0.5H2O	7.5599E-05	-4.1215	0.0000	-4.1215
SmF3:0.5H2O	5.9902E-04	-3.2226	0.0000	-3.2226

Mineral	Log Q/K	Aff, kcal	State
Lanthanide fluoride	-15.807	-21.566	
LaF3:0.5H2O	-15.807	-21.566	
CeF3:0.5H2O	-15.807	-21.566	
NdF3:0.5H2O	-15.807	-21.566	
GdF3:0.5H2O	-15.807	-21.566	
SmF3:0.5H2O	-15.807	-21.566	

--- Summary of Gases ---

Gas	Fugacity	Log fugacity
Al(g)	9.7073-192	-191.0129
B(g)	4.0065-204	-203.3972
BF3(g)	1.2783E-45	-44.8934
C(g)	3.0917-190	-189.5098
CH4(g)	3.5197-146	-145.4535
CO(g)	6.0395E-49	-48.2190
CO2(g)	3.1623E-04	-3.5000
Ca(g)	5.4464-154	-153.2639
Chlorine	1.7333E-31	-30.7611
Cs(g)	1.5109E-95	-94.8208
Cu(g)	1.9160E-82	-81.7176
Fluorine	1.1929E-86	-85.9234
H2(g)	6.1067E-42	-41.2142
H2O(g)	2.5942E-02	-1.5860
H2S(g)	1.1128-144	-143.9536
HCl(g)	5.1037E-20	-19.2921
HF(g)	4.7787E-16	-15.3207
K(g)	1.2715E-76	-75.8957
Li(g)	1.1230E-95	-94.9496
Mg(g)	1.8676-129	-128.7287
Nitrogen	1.3060E-22	-21.8840
NH3(g)	1.3149E-70	-69.8811
NO(g)	3.5986E-27	-26.4439
NO2(g)	2.4605E-21	-20.6090
Na(g)	6.9097E-73	-72.1605
O2(g)	2.0999E-01	-0.6778
Pb(g)	3.0842E-68	-67.5109
S2(g)	7.4039-232	-231.1305
SO2(g)	1.9729E-57	-56.7049
Si(g)	4.2257-221	-220.3741

```
SiF4(g)                    2.3048E-46    -45.6374
Ti(g)                      3.8019-231   -230.4200
TiCl4(g)                   2.2790E-90    -89.6423
U(g)                       1.0302-302   -301.9871
U2Cl10(g)                  1.3023-269   -268.8853
U2Cl8(g)                   2.3294-269   -268.6328
U2F10(g)                   8.9296-187   -186.0492
UCl(g)                     4.6889-260   -259.3289
UCl2(g)                    6.3841-216   -215.1949
UCl3(g)                    1.9039-169   -168.7204
UCl4(g)                    3.0745-140   -139.5122
UCl5(g)                    2.5545-148   -147.5927
UCl6(g)                    3.9432-151   -150.4042
UF(g)                      9.3302-246   -245.0301
UF2(g)                     6.2668-207   -206.2030
UF3(g)                     1.0359-161   -160.9847
UF4(g)                     2.5273-113   -112.5973
UF5(g)                     2.8243-106   -105.5491
UF6(g)                     3.1079-113   -112.5075
UO(g)                      8.1364-218   -217.0896
UO2(g)                     1.5074-133   -132.8218
UO2Cl2(g)                  1.1408E-83    -82.9428
UO2F2(g)                   8.1235E-73    -72.0903
UO3(g)                     1.1087E-80    -79.9552
UOF4(g)                    7.5311E-91    -90.1231
Zn(g)                      2.6990E-77    -76.5688



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--- shifting e.s. solid(s) to the p.r.s. (shftz) ---

      shifted -- Celadonite
              - old mass=  1.24347E-03, new mass=  1.24347E-05
      shifted -- Maximum_Microcline
              - old mass=  1.92622E-02, new mass=  1.92622E-04
      shifted -- Mesolite
              - old mass=  3.13805E-03, new mass=  3.13805E-05
      shifted -- Muscovite
              - old mass=  1.01101E-03, new mass=  1.01101E-05
  not shifted -- Ni2SiO4
              - mass=  7.99973E-07
      shifted -- Pyrolusite
              - old mass=  1.95960E-04, new mass=  1.95960E-06
  not shifted -- Pyromorphite
              - mass=  1.95494E-11
      shifted -- Quartz
              - old mass=  9.47967E-02, new mass=  9.47967E-04
      shifted -- Rutile
              - old mass=  2.55556E-04, new mass=  2.55556E-06
      shifted -- Clinoptilolite-ss
              - old mass=  6.30393E-03, new mass=  6.30393E-05
      shifted -- Smectite-di
              - old mass=  1.21634E-03, new mass=  1.21634E-05

Stepping to zi=  1.3007E+01, delzi=  6.7489E-03, nord= 6
  time =  1.2545E+05 d, dltime =  6.5094E+01 d
Steps completed =  1019, iter = 20, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -61.0681

Stepping to zi=  1.3008E+01, delzi=  8.4362E-04, nord= 5
```

```
  time =  1.2546E+05 d, dltime =  8.1367E+00 d
Steps completed =  1020, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -61.1104

Stepping to zi=  1.3009E+01, delzi=  1.6872E-03, nord= 4
  time =  1.2548E+05 d, dltime =  1.6273E+01 d
Steps completed =  1021, iter = 11, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -61.1894

Stepping to zi=  1.3013E+01, delzi=  3.3745E-03, nord= 5
  time =  1.2551E+05 d, dltime =  3.2547E+01 d
Steps completed =  1022, iter = 15, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -61.3285

Stepping to zi=  1.3017E+01, delzi=  4.5903E-03, nord= 6
  time =  1.2555E+05 d, dltime =  4.4274E+01 d
Steps completed =  1023, iter = 10, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -61.4878

Stepping to zi=  1.3020E+01, delzi=  3.1578E-03, nord= 6
  time =  1.2558E+05 d, dltime =  3.0458E+01 d
Steps completed =  1024, iter =  9, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -61.5825

Stepping to zi=  1.3023E+01, delzi=  2.6102E-03, nord= 6
  time =  1.2561E+05 d, dltime =  2.5175E+01 d
Steps completed =  1025, iter = 19, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -61.6537

Stepping to zi=  1.3026E+01, delzi=  3.2000E-03, nord= 6
  time =  1.2564E+05 d, dltime =  3.0864E+01 d
Steps completed =  1026, iter = 14, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -61.7336

Stepping to zi=  1.3030E+01, delzi=  3.5907E-03, nord= 6
  time =  1.2567E+05 d, dltime =  3.4633E+01 d
Steps completed =  1027, iter = 12, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -61.8154

Stepping to zi=  1.3034E+01, delzi=  4.0649E-03, nord= 6
  time =  1.2571E+05 d, dltime =  3.9206E+01 d
Steps completed =  1028, iter = 14, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -61.8994

Stepping to zi=  1.3038E+01, delzi=  4.6053E-03, nord= 6
  time =  1.2576E+05 d, dltime =  4.4419E+01 d
Steps completed =  1029, iter = 19, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -61.9858

Stepping to zi=  1.3044E+01, delzi=  5.1510E-03, nord= 6
  time =  1.2581E+05 d, dltime =  4.9682E+01 d
Steps completed =  1030, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -62.0731

Stepping to zi=  1.3049E+01, delzi=  5.6645E-03, nord= 6
  time =  1.2586E+05 d, dltime =  5.4635E+01 d
Steps completed =  1031, iter = 11, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -62.1600

Stepping to zi=  1.3056E+01, delzi=  6.2186E-03, nord= 6
  time =  1.2592E+05 d, dltime =  5.9979E+01 d
Steps completed =  1032, iter = 12, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -62.2463
```

```
Stepping to zi=  1.3062E+01, delzi=  6.8518E-03, nord= 6
  time =  1.2599E+05 d, dltime =  6.6086E+01 d
Steps completed =  1033, iter = 13, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -62.3324

Stepping to zi=  1.3070E+01, delzi=  7.5605E-03, nord= 6
  time =  1.2606E+05 d, dltime =  7.2922E+01 d
Steps completed =  1034, iter =  8, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -62.4185

Stepping to zi=  1.3078E+01, delzi=  8.3510E-03, nord= 6
  time =  1.2614E+05 d, dltime =  8.0546E+01 d
Steps completed =  1035, iter = 19, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -62.5045

Stepping to zi=  1.3087E+01, delzi=  9.2283E-03, nord= 6
  time =  1.2623E+05 d, dltime =  8.9007E+01 d
Steps completed =  1036, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -62.5906

Stepping to zi=  1.3098E+01, delzi=  1.0197E-02, nord= 6
  time =  1.2633E+05 d, dltime =  9.8351E+01 d
Steps completed =  1037, iter =  9, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -62.6767

Stepping to zi=  1.3109E+01, delzi=  1.1264E-02, nord= 6
  time =  1.2644E+05 d, dltime =  1.0864E+02 d
Steps completed =  1038, iter =  8, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -62.7628

Stepping to zi=  1.3121E+01, delzi=  1.2441E-02, nord= 6
  time =  1.2656E+05 d, dltime =  1.1999E+02 d
Steps completed =  1039, iter =  6, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -62.8490

Stepping to zi=  1.3135E+01, delzi=  1.3740E-02, nord= 6
  time =  1.2669E+05 d, dltime =  1.3252E+02 d
Steps completed =  1040, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -62.9351

Stepping to zi=  1.3150E+01, delzi=  1.5175E-02, nord= 6
  time =  1.2684E+05 d, dltime =  1.4636E+02 d
Steps completed =  1041, iter =  7, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -63.0212

Stepping to zi=  1.3167E+01, delzi=  1.6760E-02, nord= 6
  time =  1.2700E+05 d, dltime =  1.6165E+02 d
Steps completed =  1042, iter = 13, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -63.1073

Stepping to zi=  1.3186E+01, delzi=  1.8511E-02, nord= 6
  time =  1.2718E+05 d, dltime =  1.7854E+02 d
Steps completed =  1043, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -63.1934

Stepping to zi=  1.3206E+01, delzi=  2.0445E-02, nord= 6
  time =  1.2737E+05 d, dltime =  1.9719E+02 d
Steps completed =  1044, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -63.2796

Stepping to zi=  1.3229E+01, delzi=  2.2582E-02, nord= 6
  time =  1.2759E+05 d, dltime =  2.1780E+02 d
```

```
Steps completed =  1045, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -63.3657

Stepping to zi=  1.3254E+01, delzi=  2.4941E-02, nord= 6
  time =  1.2783E+05 d, dltime =  2.4056E+02 d
Steps completed =  1046, iter = 23, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -63.4518

Stepping to zi=  1.3281E+01, delzi=  2.7547E-02, nord= 6
  time =  1.2810E+05 d, dltime =  2.6570E+02 d
Steps completed =  1047, iter =  6, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -63.5379

Stepping to zi=  1.3312E+01, delzi=  3.0426E-02, nord= 6
  time =  1.2839E+05 d, dltime =  2.9346E+02 d
Steps completed =  1048, iter = 14, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -63.6240

Stepping to zi=  1.3345E+01, delzi=  3.3605E-02, nord= 6
  time =  1.2871E+05 d, dltime =  3.2412E+02 d
Steps completed =  1049, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -63.7101

Stepping to zi=  1.3382E+01, delzi=  3.7117E-02, nord= 6
  time =  1.2907E+05 d, dltime =  3.5799E+02 d
Steps completed =  1050, iter =  6, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -63.7962

Stepping to zi=  1.3423E+01, delzi=  4.0996E-02, nord= 6
  time =  1.2947E+05 d, dltime =  3.9541E+02 d
Steps completed =  1051, iter = 19, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -63.8823

Stepping to zi=  1.3469E+01, delzi=  4.5280E-02, nord= 6
  time =  1.2990E+05 d, dltime =  4.3673E+02 d
Steps completed =  1052, iter =  6, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -63.9684

Stepping to zi=  1.3519E+01, delzi=  5.0012E-02, nord= 6
  time =  1.3039E+05 d, dltime =  4.8237E+02 d
Steps completed =  1053, iter = 10, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -64.0544

Stepping to zi=  1.3574E+01, delzi=  5.5239E-02, nord= 6
  time =  1.3092E+05 d, dltime =  5.3278E+02 d
Steps completed =  1054, iter =  6, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -64.1405

Stepping to zi=  1.3635E+01, delzi=  6.1012E-02, nord= 6
  time =  1.3151E+05 d, dltime =  5.8846E+02 d
Steps completed =  1055, iter = 19, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -64.2266

Stepping to zi=  1.3702E+01, delzi=  6.7389E-02, nord= 6
  time =  1.3216E+05 d, dltime =  6.4997E+02 d
Steps completed =  1056, iter =  8, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -64.3126

Stepping to zi=  1.3777E+01, delzi=  7.4433E-02, nord= 6
  time =  1.3288E+05 d, dltime =  7.1791E+02 d
Steps completed =  1057, iter =  6, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -64.3987
```

```
Stepping to zi=  1.3859E+01, delzi=  8.2213E-02, nord= 6
  time =  1.3367E+05 d, dltime =  7.9295E+02 d
Steps completed =  1058, iter =  8, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -64.4847

Stepping to zi=  1.3950E+01, delzi=  9.0807E-02, nord= 6
  time =  1.3455E+05 d, dltime =  8.7584E+02 d
Steps completed =  1059, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -64.5708

Stepping to zi=  1.4000E+01, delzi=  5.0370E-02, nord= 6
  time =  1.3503E+05 d, dltime =  4.8582E+02 d
Steps completed =  1060, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -64.6150

- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -


                    Reaction progress        =  1.40000000000000E+01
                    Log of reaction progress =       1.1461280



                    Time =  1.167E+10 sec
                         =  1.350E+05 days
                         =  3.697E+02 years

                    Log sec =       10.067
                    Log days =       5.130
                    Log years =      2.568

                    Temperature    =     25.000 degrees C
                    total pressure =      1.013 bars


Step size is limited by the P.R.S. shift requirement


                              --- Reactant Summary ---


    Reactant                  Moles     Delta moles    Mass, g    Delta Mass, g

 Tuff                       8.6000E+01   1.4000E+01   1.7704E+03   2.8821E+02


               Current total mass =  1.77044E+03 grams
               Delta total mass   =  2.88211E+02 grams
               Delta total volume =      0.00000 cc


    Reactant                Rel. Rate      Rate         Rate
                             mol/mol       mol/s      mol/s/cm2

 Tuff                       1.0000E+00   1.2000E-09   2.5000E-15


    Reactant                  Affinity   Surface Area
                              kcal/mol     mol/s/cm2

 Tuff                        999.00000   4.8000E+05
```

Reactant Rate Constants, mol/s/cm2

Tuff
Forward 2.5000E-15

Affinity of the overall irreversible reaction= 0.000 kcal
Contributions from irreversible reactions
with no thermodynamic data are not included

--- Element Totals for the Aqueous Solution ---

Element	mg/kg soln.	Molality	Moles
O	8.862352E+05	5.562663E+01	5.462619E+01
Al	5.852538E-03	2.178286E-07	2.139110E-07
B	1.358037E-01	1.261488E-05	1.238800E-05
Ba	1.392517E-05	1.018314E-10	1.000000E-10
Ca	8.285247E-04	2.076045E-08	2.038708E-08
Ce	1.420786E-19	1.018314E-24	9.999992E-25
Cl	7.240243E+00	2.050885E-04	2.014000E-04
Cr	3.048448E+02	5.887696E-03	5.781806E-03
Cs	2.440230E-20	1.843849E-25	1.810688E-25
Cu	6.765843E-10	1.069230E-14	1.050000E-14
F	2.305282E-01	1.218553E-05	1.196637E-05
Fe	1.135368E-08	2.041616E-13	2.004898E-13
Gd	1.594538E-09	1.018314E-14	9.999998E-15
H	1.114366E+05	1.110275E+02	1.090306E+02
C	1.350839E+02	1.129437E-02	1.109124E-02
P	1.689575E+01	5.477988E-04	5.379467E-04
K	2.058167E+00	5.286401E-05	5.191326E-05
La	1.408523E-09	1.018314E-14	9.999998E-15
Li	7.038279E-07	1.018314E-10	1.000000E-10
Mg	2.514045E-02	1.038759E-06	1.020077E-06
Mn	4.312314E-11	7.882693E-16	7.740923E-16
Mo	2.217278E+02	2.320907E-03	2.279166E-03
N	2.016833E+00	1.446006E-04	1.420000E-04
Na	1.249259E+03	5.457016E-02	5.358872E-02
Nd	1.462615E-09	1.018314E-14	9.999998E-15
Ni	1.037272E-04	1.774868E-09	1.742948E-09
Pb	4.531129E-07	2.196110E-12	2.156613E-12
Pu	2.474197E-09	1.018314E-14	9.999999E-15
S	3.795214E+02	1.188581E-02	1.167205E-02
Si	4.302880E+00	1.538560E-04	1.510889E-04
Sm	1.524673E-09	1.018314E-14	9.999998E-15
Sr	3.271273E-60	3.749307E-65	3.681876E-65
Ti	1.076281E-05	2.257401E-10	2.216802E-10
U	2.413650E-09	1.018315E-14	1.000000E-14
V	4.850975E+00	9.563012E-05	9.391022E-05
Zn	6.630645E-06	1.018314E-10	1.000000E-10
Zr	9.250261E-16	1.018315E-20	1.000001E-20

Single ion activities and activity coefficients are here defined
with respect to the modified NBS pH scale

pH Eh pe

modified NBS pH scale	9.1964	0.6750	1.1411E+01
rational pH scale	9.1148	0.6798	1.1492E+01

pHCl = 12.9852

Oxygen fugacity = 2.09991E-01
Log oxygen fugacity = -0.67780

Activity of water = 0.99863
Log activity of water = -0.00060

Ionic strength = 7.310268E-02 molal
Sum of molalities = 0.0853832645063
Osmotic coefficient = 0.89157

Mass of solution = 0.986179 kg
Mass of solutes = 0.004164 kg
Conc. of solutes = 0.422187 per cent (w/w)

Moles of solvent H2O = 5.45101E+01
Mass of solvent H2O = 9.82015E-01 kg

Species	Molality	Log molality	Log gamma	Log activity
Na+	5.2490E-02	-1.2799	-0.1068	-1.3867
SO4--	1.0457E-02	-1.9806	-0.3894	-2.3700
HCO3-	9.4068E-03	-2.0266	-0.0912	-2.1178
CrO4--	5.8818E-03	-2.2305	-0.3894	-2.6199
MoO4--	2.3209E-03	-2.6343	-0.3765	-3.0108
NaSO4-	1.4272E-03	-2.8455	-0.0912	-2.9367
CO3--	1.3376E-03	-2.8737	-0.3765	-3.2502
HPO4--	4.6429E-04	-3.3332	-0.3894	-3.7226
NaHCO3(aq)	4.4629E-04	-3.3504	0.0000	-3.3504
O2(aq)	2.6077E-04	-3.5837	0.0076	-3.5761
Cl-	2.0397E-04	-3.6904	-0.0984	-3.7888
NO3-	1.4460E-04	-3.8398	-0.0984	-3.9382
SiO2(aq)	1.0016E-04	-3.9993	0.0000	-3.9993
NaCO3-	9.3057E-05	-4.0313	-0.0912	-4.1225
VO3OH--	8.5828E-05	-4.0664	-0.3894	-4.4558
NaHPO4-	7.9775E-05	-4.0981	-0.0912	-4.1893
K+	5.1236E-05	-4.2904	-0.1139	-4.4044
NaHSiO3(aq)	3.2049E-05	-4.4942	0.0000	-4.4942
HSiO3-	2.1639E-05	-4.6648	-0.0912	-4.7560
OH-	1.9742E-05	-4.7046	-0.0947	-4.7993
F-	1.2145E-05	-4.9156	-0.0947	-5.0103
CO2(aq)	1.0555E-05	-4.9765	0.0076	-4.9689
HVO4--	9.2455E-06	-5.0341	-0.3894	-5.4235
BO2-	6.4133E-06	-5.1929	-0.0912	-5.2841
HCrO4-	5.8787E-06	-5.2307	-0.0912	-5.3219
B(OH)3(aq)	5.8043E-06	-5.2362	0.0000	-5.2362
H2PO4-	2.3854E-06	-5.6224	-0.0912	-5.7137
KSO4-	1.5719E-06	-5.8036	-0.0912	-5.8948
NaCl(aq)	1.1155E-06	-5.9525	0.0000	-5.9525
PO4---	1.1057E-06	-5.9564	-0.8916	-6.8480
Mg++	4.7450E-07	-6.3238	-0.3358	-6.6595
NaB(OH)4(aq)	3.9707E-07	-6.4011	0.0000	-6.4011
H2VO4-	3.4221E-07	-6.4657	-0.0912	-6.5569
MgSO4(aq)	2.4106E-07	-6.6179	0.0000	-6.6179

AlO2-	2.1621E-07	-6.6651	-0.0912	-6.7563
VO2(OH)2-	2.1208E-07	-6.6735	-0.0912	-6.7647
MgPO4-	1.4882E-07	-6.8273	-0.0912	-6.9186
MgCO3(aq)	1.1727E-07	-6.9308	0.0000	-6.9308
NaOH(aq)	1.0335E-07	-6.9857	0.0000	-6.9857
KHPO4-	5.5489E-08	-7.2558	-0.0912	-7.3470
NaF(aq)	4.0310E-08	-7.3946	0.0000	-7.3946
MgHPO4(aq)	3.3714E-08	-7.4722	0.0000	-7.4722
MgHCO3+	2.3183E-08	-7.6348	-0.1068	-7.7416
Ca++	1.0161E-08	-7.9931	-0.3733	-8.3663
H2SiO4--	6.6340E-09	-8.1782	-0.3894	-8.5677
CaCO3(aq)	5.1358E-09	-8.2894	0.0000	-8.2894
CaSO4(aq)	2.3699E-09	-8.6253	0.0000	-8.6253
VO4---	2.3565E-09	-8.6277	-0.8916	-9.5194
CaPO4-	2.1720E-09	-8.6631	-0.0912	-8.7544
Cr2O7--	1.8904E-09	-8.7234	-0.3894	-9.1129
Ni++	1.4173E-09	-8.8485	-0.3733	-9.2218
NaAlO2(aq)	1.2991E-09	-8.8863	0.0000	-8.8863
H+	7.6768E-10	-9.1148	-0.0816	-9.1964
CaHCO3+	4.6706E-10	-9.3306	-0.1068	-9.4374
CaHPO4(aq)	4.4774E-10	-9.3490	0.0000	-9.3490
NiSO4(aq)	3.4188E-10	-9.4661	0.0000	-9.4661
HSO4-	3.1906E-10	-9.4961	-0.0912	-9.5873
HAlO2(aq)	3.1452E-10	-9.5024	0.0000	-9.5024
Ti(OH)4(aq)	2.2574E-10	-9.6464	0.0000	-9.6464
KOH(aq)	2.1451E-10	-9.6685	0.0000	-9.6685
KCl(aq)	2.0522E-10	-9.6878	0.0000	-9.6878
MgB(OH)4+	1.1485E-10	-9.9399	-0.1068	-10.0467

--- Summary of Instantaneously Precipitated Solid Phases ---
(defined by derivatives)

--- Theoretical Rock Composition ---
g/kg

O	5.181361E+01
Al	6.307701E+00
Ca	3.743598E-01
Cl	2.896044E-12
Cs	1.014362E-22
Fe	6.119362E-01
H	7.306953E-01
C	2.019713E-03
P	7.590512E-12
K	3.828026E+00
Mg	1.381793E-01
Mn	4.839761E-02
N	2.007304E-66
Na	2.488254E+00
Pb	8.462831E-11
Si	3.360181E+01
Ti	5.500772E-02

--- Oxide Percentages ---

Oxide Theoretical rock

Total = 0.0000

Phase/end-member d mol/d zi d grams/d zi d vol (cc)/d zi

Celadonite	1.2310E-03	4.8840E-01	1.9340E-01
Maximum_Microcline	1.9070E-02	5.3076E+00	2.0736E+00
Mesolite	3.1067E-03	1.2047E+00	5.3186E-01
Muscovite	1.0010E-03	3.9870E-01	1.4085E-01
Ni2SiO4	-2.6444E-12	-5.5391E-10	-1.1268E-10
Pyrolusite	1.9400E-04	1.6866E-02	9.7000E-02
Pyromorphite	1.7989E-14	2.4400E-11	3.4658E-12
Quartz	9.3849E-02	5.6389E+00	2.1293E+00
Rutile	2.5300E-04	2.0209E-02	4.7615E-03
fix CO2(g)	3.7031E-05	1.6297E-03	0.0000E+00
fix O2(g)	-7.0649E-04	-2.2607E-02	0.0000E+00
Clinoptilolite-ss			
Clinoptilolite-Ca	8.9266E-06	1.2001E-02	4.4633E-03
Clinoptilolite-Cs	4.8478E-26	8.4145E-23	2.4239E-23
Clinoptilolite-K	7.3702E-05	1.0396E-01	3.6851E-02
Clinoptilolite-NH4	9.1028E-69	1.2175E-65	4.5514E-66
Clinoptilolite-Na	6.1582E-03	8.3422E+00	3.0791E+00
Clinoptilolite-Sr	0.0000E+00	0.0000E+00	0.0000E+00
Smectite-di			
Beidellite-Ca	4.0469E-11	1.4835E-08	5.2420E-09
Beidellite-K	1.7470E-10	6.5136E-08	2.3357E-08
Beidellite-Mg	3.7563E-10	1.3672E-07	4.6274E-08
Beidellite-Na	1.7147E-08	6.3022E-06	2.2384E-06
Montmor-Ca	7.2652E-08	2.6594E-05	3.6326E-05
Montmor-K	5.1220E-07	1.9071E-04	2.5610E-04
Montmor-Mg	1.0960E-06	3.9832E-04	5.4798E-04
Montmor-Na	4.9027E-05	1.7994E-02	2.4514E-02
Nontronite-Ca	2.6316E-06	1.1166E-03	3.4500E-04
Nontronite-K	1.1360E-05	4.8914E-03	1.5367E-03
Nontronite-Mg	2.4443E-05	1.0307E-02	3.1717E-03
Nontronite-Na	1.1150E-03	4.7418E-01	1.4731E-01

--- Summary of Solid Phases (E.S.+P.R.S.) ---

Phase/End-member	Log moles	Moles	Mass, g	Volume, cc
Alunite	-2.5559	2.7801E-03	1.1516E+00	8.1624E-01
Celadonite	-1.7626	1.7276E-02	6.8538E+00	2.7140E+00
Diaspore	-1.6079	2.4665E-02	1.4796E+00	4.3804E-01
Fluorapatite	-3.9881	1.0278E-04	5.1834E-02	5.1392E-02
Hematite	-3.7144	1.9300E-04	3.0820E-02	5.8428E-03
Maximum_Microcline	-0.5948	2.5423E-01	7.0761E+01	2.7646E+01
Mesolite	-1.3649	4.3164E-02	1.6738E+01	7.3896E+00
Muscovite	-1.6124	2.4413E-02	9.7238E+00	3.4351E+00
Ni2SiO4	-2.1930	6.4125E-03	1.3432E+00	2.7324E-01
Nontronite-H	-4.9990	1.0023E-05	4.1899E-03	5.0117E-03
Pyrolusite	-2.4802	3.3097E-03	2.8773E-01	1.6548E+00
Pyromorphite	-10.7084	1.9569E-11	2.6542E-08	3.7701E-09
Quartz	0.1845	1.5293E+00	9.1888E+01	3.4697E+01
Rutile	-2.4508	3.5420E-03	2.8293E-01	6.6660E-02
fix CO2(g)	2.3010	1.9999E+02	8.8015E+03	0.0000E+00
fix O2(g)	2.3010	1.9999E+02	6.3994E+03	0.0000E+00
Clinoptilolite-ss	-1.1386	7.2684E-02		
Clinoptilolite-Ca	-3.9831	1.0397E-04	1.3978E-01	5.1985E-02
Clinoptilolite-Cs	-10.5400	2.8843E-11	5.0064E-08	1.4422E-08
Clinoptilolite-K	-3.0663	8.5842E-04	1.2108E+00	4.2921E-01
Clinoptilolite-NH4	-66.9834	1.0390E-67	1.3896E-64	5.1949E-65
Clinoptilolite-Na	-1.1443	7.1722E-02	9.7158E+01	3.5861E+01
Clinoptilolite-Sr	-10.2389	5.7687E-11	8.2309E-08	2.8843E-08

Smectite-di	-1.7774	1.6695E-02		
Beidellite-Ca	-9.0170	9.6162E-10	3.5249E-07	1.2456E-07
Beidellite-K	-8.5208	3.0146E-09	1.1240E-06	4.0305E-07
Beidellite-Mg	-8.2870	5.1647E-09	1.8797E-06	6.3624E-07
Beidellite-Na	-6.6818	2.0804E-07	7.6464E-05	2.7158E-05
Montmor-Ca	-5.9005	1.2576E-06	4.6033E-04	6.2880E-04
Montmor-K	-5.1749	6.6843E-06	2.4888E-03	3.3421E-03
Montmor-Mg	-4.8452	1.4283E-05	5.1909E-03	7.1414E-03
Montmor-Na	-3.2258	5.9451E-04	2.1819E-01	2.9725E-01
Nontronite-Ca	-3.3764	4.2037E-04	1.7836E-01	5.5111E-02
Nontronite-K	-3.1208	7.5722E-04	3.2605E-01	1.0243E-01
Nontronite-Mg	-3.1096	7.7694E-04	3.2763E-01	1.0082E-01
Nontronite-Na	-1.8501	1.4124E-02	6.0063E+00	1.8659E+00

	Mass, grams	Volume, cc
Created	1.550708E+04	1.179676E+02
Destroyed	2.882105E+02	0.000000E+00
Net	1.521887E+04	1.179676E+02

Warning-- these volume totals may be incomplete because of missing partial molar volume data in the data base

--- Summary of Pure Mineral Saturation States ---

Mineral	Log Q/K	Aff, kcal	State
Alamosite	-3.386	-4.619	
Albite	-0.022	-0.030	
Albite_high	-1.341	-1.829	
Albite_low	-0.022	-0.030	
Alstonite	-7.223	-9.854	
Analcime	-0.148	-0.202	
Analcime-dehy	-6.510	-8.882	
Andalusite	-6.082	-8.298	
Anglesite	-6.623	-9.036	
Anhydrite	-6.430	-8.772	
Aragonite	-3.281	-4.476	
BaCrO4	-3.117	-4.252	
BaHPO4	-6.752	-9.211	
BaZrO3	83.672	114.152	ssatd
Barite	-2.828	-3.858	
Bassanite	-7.075	-9.653	
Beidellite-Ca	-2.466	-3.365	
Beidellite-H	-3.163	-4.315	
Beidellite-K	-2.257	-3.079	
Beidellite-Mg	-2.147	-2.929	
Beidellite-Na	-1.599	-2.182	
Boehmite	-0.634	-0.864	
Boric_acid	-5.078	-6.928	
Brucite	-4.566	-6.229	
Bunsenite	-3.301	-4.504	
CaSO4:0.5H2O(beta)	-7.243	-9.882	
CaZrO3	139.765	190.679	ssatd
Calcite	-3.136	-4.279	
CeO2	-3.287	-4.484	
Celadonite	0.000	0.000	satd
Cerussite	-1.818	-2.480	
Chalcedony	-0.271	-0.370	

Chrysotile	-3.927	-5.358	
Clinochlore-14A	-6.714	-9.160	
Clinoptilolite	-6.492	-8.857	
Clinoptilolite-K	-6.670	-9.100	
Clinoptilolite-Na	-0.020	-0.027	
Clinoptilolite-hy-K	-6.664	-9.092	
Clinoptilolite-hy-Na	-0.018	-0.024	
Coesite	-0.810	-1.105	
Corundum	-4.450	-6.072	
Cristobalite(alpha)	-0.551	-0.751	
Cristobalite(beta)	-0.994	-1.356	
Crocoite	-2.008	-2.739	
Dawsonite	-0.920	-1.256	
Diaspore	-0.230	-0.313	
Diopside	-7.204	-9.829	
Dolomite	-3.382	-4.614	
Dolomite-dis	-4.926	-6.721	
Dolomite-ord	-3.382	-4.614	
Enstatite	-3.594	-4.903	
Epsomite	-7.071	-9.647	
Fe(OH)3	-6.518	-8.893	
Ferrite-Zn	-6.430	-8.772	
Fluorapatite	-5.427	-7.403	
GdPO4:H2O	-4.439	-6.056	
Gibbsite	-0.826	-1.127	
Goethite	-1.397	-1.905	
Gypsum	-6.255	-8.534	
Halite	-6.761	-9.224	
Hematite	-1.832	-2.500	
Hexahydrite	-7.306	-9.968	
Hydrocerussite	-7.187	-9.805	
Ice	-0.139	-0.190	
Illite	-1.275	-1.739	
Jadeite	-1.647	-2.247	
K-Feldspar	0.000	0.000	
Kalicinite	-6.806	-9.285	
Kalsilite	-3.175	-4.332	
Kaolinite	-0.948	-1.294	
Kyanite	-5.812	-7.929	
LaPO4:H2O	-1.681	-2.294	
Lansfordite	-4.425	-6.037	
Laumontite	-5.779	-7.884	
Lawsonite	-6.325	-8.630	
Litharge	-6.357	-8.673	
Magnesite	-1.875	-2.557	
Manganite	-4.459	-6.084	
Massicot	-6.533	-8.912	
Maximum_Microcline	0.000	0.000	satd
Mesolite	0.000	0.000	satd
Mirabilite	-4.010	-5.470	
MnO2(gamma)	-1.518	-2.071	
Monohydrocalcite	-3.971	-5.417	
Montmor-Ca	-1.392	-1.900	
Montmor-K	-1.113	-1.518	
Montmor-Mg	-1.003	-1.369	
Montmor-Na	-0.459	-0.626	
Mordenite	-2.805	-3.827	
Muscovite	0.000	0.000	satd
Na2CO3	-6.877	-9.382	
Na2CO3:7H2O	-5.645	-7.701	
Nahcolite	-3.393	-4.629	
Natrolite	-1.039	-1.417	
Natron	-5.311	-7.246	

NdPO4:H2O	-3.148	-4.294	
Nepheline	-3.060	-4.174	
Nesquehonite	-4.578	-6.246	
Ni(OH)2	-3.579	-4.882	
Ni2SiO4	0.000	0.000	satd
NiCO3	-5.655	-7.715	
Nontronite-Ca	-0.878	-1.198	
Nontronite-H	-1.574	-2.148	
Nontronite-K	-0.668	-0.912	
Nontronite-Mg	-0.559	-0.762	
Nontronite-Na	-0.011	-0.015	
Paragonite	-0.919	-1.253	
Paralaurionite	-6.902	-9.416	
Pb3(PO4)2	-5.395	-7.360	
Pb4O(PO4)2	-6.510	-8.881	
PbHPO4	-4.261	-5.814	
Petalite	-6.153	-8.394	
Phlogopite	-2.518	-3.435	
Plattnerite	-1.721	-2.348	
PuO2	-4.797	-6.544	
Pyrolusite	0.000	0.000	satd
Pyromorphite	0.000	0.000	satd
Pyrophyllite	-2.576	-3.514	
Quartz	0.000	0.000	satd
Rutile	0.000	0.000	satd
Sanidine_high	-1.199	-1.636	
Saponite-Ca	-1.828	-2.495	
Saponite-H	-2.525	-3.445	
Saponite-K	-1.619	-2.209	
Saponite-Mg	-1.509	-2.059	
Saponite-Na	-0.962	-1.312	
Scolecite	-3.989	-5.442	
Sellaite	-7.296	-9.954	
SiO2(am)	-1.286	-1.754	
Sillimanite	-6.446	-8.794	
SmPO4:H2O	-3.940	-5.376	
Smectite-low-Fe-Mg	-7.076	-9.653	
Smithsonite	-4.749	-6.479	
SrZrO3	66.093	90.170	ssatd
Stilbite	-1.918	-2.616	
Talc	-1.938	-2.644	
Thenardite	-4.834	-6.595	
Thermonatrite	-6.658	-9.083	
Trevorite	-2.341	-3.193	
Tridymite	-0.171	-0.234	
Witherite	-0.354	-0.483	
Zincite	-4.181	-5.704	
Zn(OH)2(beta)	-4.907	-6.694	
Zn(OH)2(epsilon)	-4.635	-6.324	
Zn(OH)2(gamma)	-4.856	-6.625	
fix CO2(g)	0.000	0.000	satd
fix O2(g)	0.000	0.000	satd

--- Summary of Solid Solutions ---

--- Carbonate-Calcite ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Calcite	5.1811E-02	-1.2856	0.0000	-1.2856

Magnesite	9.4692E-01	-0.0237	0.0000	-0.0237
Rhodochrosite	1.2062E-09	-8.9186	0.0000	-8.9186
Siderite	1.8684E-18	-17.7285	0.0000	-17.7285
Smithsonite	1.2638E-03	-2.8983	0.0000	-2.8983
Strontianite	1.7400E-56	-55.7595	0.0000	-55.7595

Mineral	Log Q/K	Aff, kcal	State
Carbonate-Calcite	-1.851	-2.525	
Calcite	-1.851	-2.525	
Magnesite	-1.851	-2.525	
Rhodochrosite	-1.851	-2.525	
Siderite	-1.851	-2.525	
Smithsonite	-1.851	-2.525	
Strontianite	-1.851	-2.525	

--- Clinoptilolite-hy-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-hy-Ca	1.5018E-10	-9.8234	0.0000	-9.8234
Clinoptilolite-hy-Cs	3.7283E-76	-75.4285	0.0000	-75.4285
Clinoptilolite-hy-K	2.2578E-07	-6.6463	0.0000	-6.6463
Clinoptilolite-hy-Na	1.0000E+00	0.0000	0.0000	0.0000
Clinoptilolite-hy-Sr	1.3655-108	-107.8647	0.0000	-107.8647

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-hy-ss	-0.018	-0.024	
Clinoptilolite-hy-Ca	-0.018	-0.024	
Clinoptilolite-hy-Cs	-0.018	-0.024	
Clinoptilolite-hy-K	-0.018	-0.024	
Clinoptilolite-hy-Na	-0.018	-0.024	
Clinoptilolite-hy-Sr	-0.018	-0.024	

--- Clinoptilolite-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-Ca	1.4304E-03	-2.8446	-6.9976	-9.8421
Clinoptilolite-Cs	1.5582E-22	-21.8074	-53.6461	-75.4535
Clinoptilolite-K	1.1810E-02	-1.9278	-4.7423	-6.6701
Clinoptilolite-NH4	1.4539E-66	-65.8375	-161.9602	-227.7977
Clinoptilolite-Na	9.8676E-01	-0.0058	-0.0142	-0.0200
Clinoptilolite-Sr	6.6124E-32	-31.1796	-76.7019	-107.8815

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-ss	0.000	0.000	satd
Clinoptilolite-Ca	0.000	0.000	satd
Clinoptilolite-Cs	0.000	0.000	satd
Clinoptilolite-K	0.000	0.000	satd

Clinoptilolite-NH4	0.000	0.000	satd
Clinoptilolite-Na	0.000	0.000	satd
Clinoptilolite-Sr	0.000	0.000	satd

--- Saponite-tri ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Saponite-Ca	2.2815E-03	-2.6418	1.7700	-0.8718
Saponite-H	1.7689E-05	-4.7523	3.1840	-1.5683
Saponite-K	9.8419E-03	-2.0069	1.3446	-0.6623
Saponite-Mg	2.1177E-02	-1.6741	1.1217	-0.5525
Saponite-Na	9.6668E-01	-0.0147	0.0099	-0.0049

Mineral	Log Q/K	Aff, kcal	State
Saponite-tri	-0.957	-1.305	
Saponite-Ca	-0.957	-1.305	
Saponite-H	-0.957	-1.305	
Saponite-K	-0.957	-1.305	
Saponite-Mg	-0.957	-1.305	
Saponite-Na	-0.957	-1.305	

--- Smectite-di ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Beidellite-Ca	3.3607E-08	-7.4736	5.0073	-2.4663
Beidellite-K	1.4508E-07	-6.8384	4.5817	-2.2567
Beidellite-Mg	3.1194E-07	-6.5059	4.3590	-2.1470
Beidellite-Na	1.4240E-05	-4.8465	3.2472	-1.5993
Montmor-Ca	6.0333E-05	-4.2194	2.8270	-1.3924
Montmor-K	4.2535E-04	-3.3712	2.2587	-1.1125
Montmor-Mg	9.1013E-04	-3.0409	2.0374	-1.0035
Montmor-Na	4.0714E-02	-1.3903	0.9315	-0.4588
Nontronite-Ca	2.1854E-03	-2.6605	1.7825	-0.8780
Nontronite-K	9.4339E-03	-2.0253	1.3570	-0.6684
Nontronite-Mg	2.0299E-02	-1.6925	1.1340	-0.5585
Nontronite-Na	9.2596E-01	-0.0334	0.0224	-0.0110

Mineral	Log Q/K	Aff, kcal	State
Smectite-di	0.000	0.000	satd
Beidellite-Ca	0.000	0.000	satd
Beidellite-K	0.000	0.000	satd
Beidellite-Mg	0.000	0.000	satd
Beidellite-Na	0.000	0.000	satd
Montmor-Ca	0.000	0.000	satd
Montmor-K	0.000	0.000	satd
Montmor-Mg	0.000	0.000	satd
Montmor-Na	0.000	0.000	satd
Nontronite-Ca	0.000	0.000	satd
Nontronite-K	0.000	0.000	satd

Nontronite-Mg	0.000	0.000	satd
Nontronite-Na	0.000	0.000	satd

--- Lanthanide hydroxide ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
La(OH)3	5.0322E-04	-3.2982	0.0000	-3.2982
Ce(OH)3	2.4023E-14	-13.6194	0.0000	-13.6194
Nd(OH)3(c)	8.6123E-01	-0.0649	0.0000	-0.0649
Gd(OH)3	1.1056E-01	-0.9564	0.0000	-0.9564
Sm(OH)3	2.7708E-02	-1.5574	0.0000	-1.5574

Mineral	Log Q/K	Aff, kcal	State
Lanthanide hydroxide	-8.948	-12.208	
La(OH)3	-8.948	-12.208	
Ce(OH)3	-8.948	-12.208	
Nd(OH)3(c)	-8.948	-12.208	
Gd(OH)3	-8.948	-12.208	
Sm(OH)3	-8.948	-12.208	

--- Rhabdophane-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaPO4:H2O	9.6025E-01	-0.0176	0.0000	-0.0176
CePO4:H2O	1.4496E-11	-10.8387	0.0000	-10.8387
NdPO4:H2O	3.2790E-02	-1.4843	0.0000	-1.4843
GdPO4:H2O	1.6758E-03	-2.7758	0.0000	-2.7758
SmPO4:H2O	5.2873E-03	-2.2768	0.0000	-2.2768

Mineral	Log Q/K	Aff, kcal	State
Rhabdophane-ss	-1.664	-2.270	
LaPO4:H2O	-1.664	-2.270	
CePO4:H2O	-1.664	-2.270	
NdPO4:H2O	-1.664	-2.270	
GdPO4:H2O	-1.664	-2.270	
SmPO4:H2O	-1.664	-2.270	

--- Lanthanide fluoride ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaF3:0.5H2O	9.5821E-01	-0.0185	0.0000	-0.0185
CeF3:0.5H2O	2.2927E-11	-10.6397	0.0000	-10.6397
NdF3:0.5H2O	4.1193E-02	-1.3852	0.0000	-1.3852
GdF3:0.5H2O	6.6572E-05	-4.1767	0.0000	-4.1767

SmF3:0.5H2O	5.2761E-04	-3.2777	0.0000	-3.2777

Mineral	Log Q/K	Aff, kcal	State
Lanthanide fluoride	-15.817	-21.579	
LaF3:0.5H2O	-15.817	-21.579	
CeF3:0.5H2O	-15.817	-21.579	
NdF3:0.5H2O	-15.817	-21.579	
GdF3:0.5H2O	-15.817	-21.579	
SmF3:0.5H2O	-15.817	-21.579	

--- Summary of Gases ---

Gas	Fugacity	Log fugacity
Al(g)	9.7073-192	-191.0129
B(g)	4.0160-204	-203.3962
BF3(g)	1.2938E-45	-44.8881
C(g)	3.0917-190	-189.5098
CH4(g)	3.5197-146	-145.4535
CO(g)	6.0395E-49	-48.2190
CO2(g)	3.1623E-04	-3.5000
Ca(g)	5.4464-154	-153.2639
Chlorine	1.7444E-31	-30.7583
Cs(g)	9.0645E-97	-96.0427
Cu(g)	1.9120E-82	-81.7185
Fluorine	1.2006E-86	-85.9206
H2(g)	6.1067E-42	-41.2142
H2O(g)	2.5942E-02	-1.5860
H2S(g)	1.1177-144	-143.9517
HCl(g)	5.1201E-20	-19.2907
HF(g)	4.7941E-16	-15.3193
K(g)	1.2715E-76	-75.8957
Li(g)	1.1223E-95	-94.9499
Mg(g)	1.8677-129	-128.7287
Nitrogen	1.3145E-22	-21.8813
NH3(g)	1.3191E-70	-69.8797
NO(g)	3.6101E-27	-26.4425
NO2(g)	2.4684E-21	-20.6076
Na(g)	6.9097E-73	-72.1605
O2(g)	2.0999E-01	-0.6778
Pb(g)	2.9225E-68	-67.5342
S2(g)	7.4698-232	-231.1267
SO2(g)	1.9817E-57	-56.7030
Si(g)	4.2257-221	-220.3741
SiF4(g)	2.3347E-46	-45.6318
Ti(g)	3.8019-231	-230.4200
TiCl4(g)	2.3084E-90	-89.6367
U(g)	1.0365-302	-301.9844
U2Cl10(g)	1.3611-269	-268.8661
U2Cl8(g)	2.4190-269	-268.6164
U2F10(g)	9.3343-187	-186.0299
UCl(g)	4.7325-260	-259.3249
UCl2(g)	6.4642-216	-215.1895
UCl3(g)	1.9339-169	-168.7136
UCl4(g)	3.1330-140	-139.5040
UCl5(g)	2.6115-148	-147.5831
UCl6(g)	4.0441-151	-150.3932
UF(g)	9.4171-246	-245.0261

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UF2(g)                      6.3456-207   -206.1975
UF3(g)                      1.0523-161   -160.9779
UF4(g)                      2.5756-113   -112.5891
UF5(g)                      2.8876-106   -105.5395
UF6(g)                      3.1878-113   -112.4965
UO(g)                       8.1858-218   -217.0869
UO2(g)                      1.5166-133   -132.8191
UO2Cl2(g)                   1.1551E-83    -82.9374
UO2F2(g)                    8.2257E-73    -72.0848
UO3(g)                      1.1155E-80    -79.9525
UOF4(g)                     7.6751E-91    -90.1149
Zn(g)                       2.5228E-77    -76.5981



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--- shifting e.s. solid(s) to the p.r.s. (shftz) ---

      shifted -- Celadonite
              - old mass=  1.24347E-03, new mass=  1.24347E-05
      shifted -- Maximum_Microcline
              - old mass=  1.92621E-02, new mass=  1.92621E-04
      shifted -- Mesolite
              - old mass=  3.13805E-03, new mass=  3.13805E-05
      shifted -- Muscovite
              - old mass=  1.01106E-03, new mass=  1.01106E-05
  not shifted -- Ni2SiO4
              - mass=  7.99970E-07
      shifted -- Pyrolusite
              - old mass=  1.95960E-04, new mass=  1.95960E-06
  not shifted -- Pyromorphite
              - mass=  1.95687E-11
      shifted -- Quartz
              - old mass=  9.47971E-02, new mass=  9.47971E-04
      shifted -- Rutile
              - old mass=  2.55556E-04, new mass=  2.55556E-06
      shifted -- Clinoptilolite-ss
              - old mass=  6.30390E-03, new mass=  6.30390E-05
      shifted -- Smectite-di
              - old mass=  1.21634E-03, new mass=  1.21634E-05

Stepping to zi=  1.4007E+01, delzi=  6.9737E-03, nord= 6
  time =  1.3510E+05 d, dltime =  6.7262E+01 d
Steps completed =  1061, iter = 21, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -65.0701

Stepping to zi=  1.4008E+01, delzi=  8.7172E-04, nord= 6
  time =  1.3511E+05 d, dltime =  8.4078E+00 d
Steps completed =  1062, iter =  9, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -65.1133

Stepping to zi=  1.4010E+01, delzi=  1.7434E-03, nord= 4
  time =  1.3512E+05 d, dltime =  1.6816E+01 d
Steps completed =  1063, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -65.1936

Stepping to zi=  1.4013E+01, delzi=  3.4869E-03, nord= 6
  time =  1.3516E+05 d, dltime =  3.3631E+01 d
Steps completed =  1064, iter = 20, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -65.3349
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Stepping to zi=  1.4017E+01, delzi=  4.1500E-03, nord= 6
  time =  1.3520E+05 d, dltime =  4.0027E+01 d
Steps completed =  1065, iter =  9, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -65.4777

Stepping to zi=  1.4020E+01, delzi=  2.9494E-03, nord= 6
  time =  1.3523E+05 d, dltime =  2.8447E+01 d
Steps completed =  1066, iter = 16, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -65.5666

Stepping to zi=  1.4023E+01, delzi=  2.6435E-03, nord= 6
  time =  1.3525E+05 d, dltime =  2.5496E+01 d
Steps completed =  1067, iter =  9, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -65.6391

Stepping to zi=  1.4026E+01, delzi=  3.2365E-03, nord= 6
  time =  1.3528E+05 d, dltime =  3.1217E+01 d
Steps completed =  1068, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -65.7204

Stepping to zi=  1.4030E+01, delzi=  3.6179E-03, nord= 6
  time =  1.3532E+05 d, dltime =  3.4895E+01 d
Steps completed =  1069, iter = 11, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -65.8031

Stepping to zi=  1.4034E+01, delzi=  4.0804E-03, nord= 6
  time =  1.3536E+05 d, dltime =  3.9356E+01 d
Steps completed =  1070, iter = 16, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -65.8877

Stepping to zi=  1.4038E+01, delzi=  4.6051E-03, nord= 6
  time =  1.3540E+05 d, dltime =  4.4416E+01 d
Steps completed =  1071, iter = 19, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -65.9743

Stepping to zi=  1.4043E+01, delzi=  5.1290E-03, nord= 6
  time =  1.3545E+05 d, dltime =  4.9469E+01 d
Steps completed =  1072, iter = 19, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -66.0615

Stepping to zi=  1.4049E+01, delzi=  5.6383E-03, nord= 6
  time =  1.3550E+05 d, dltime =  5.4382E+01 d
Steps completed =  1073, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -66.1482

Stepping to zi=  1.4055E+01, delzi=  6.1960E-03, nord= 6
  time =  1.3556E+05 d, dltime =  5.9761E+01 d
Steps completed =  1074, iter =  7, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -66.2344

Stepping to zi=  1.4062E+01, delzi=  6.8311E-03, nord= 6
  time =  1.3563E+05 d, dltime =  6.5887E+01 d
Steps completed =  1075, iter = 18, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -66.3205

Stepping to zi=  1.4070E+01, delzi=  7.5400E-03, nord= 6
  time =  1.3570E+05 d, dltime =  7.2724E+01 d
Steps completed =  1076, iter =  7, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -66.4065

Stepping to zi=  1.4078E+01, delzi=  8.3291E-03, nord= 6
  time =  1.3578E+05 d, dltime =  8.0334E+01 d
Steps completed =  1077, iter =  7, ncorr = 0
```

```
Most rapidly changing is zvclg1(Sr++                    ) =    -66.4926

Stepping to zi=  1.4087E+01, delzi=  9.2036E-03, nord= 6
  time =  1.3587E+05 d, dltime =  8.8769E+01 d
Steps completed =  1078, iter = 20, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -66.5787

Stepping to zi=  1.4097E+01, delzi=  1.0169E-02, nord= 6
  time =  1.3597E+05 d, dltime =  9.8079E+01 d
Steps completed =  1079, iter = 15, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -66.6648

Stepping to zi=  1.4109E+01, delzi=  1.1232E-02, nord= 6
  time =  1.3608E+05 d, dltime =  1.0834E+02 d
Steps completed =  1080, iter = 20, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -66.7509

Stepping to zi=  1.4121E+01, delzi=  1.2406E-02, nord= 6
  time =  1.3620E+05 d, dltime =  1.1965E+02 d
Steps completed =  1081, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -66.8371

Stepping to zi=  1.4135E+01, delzi=  1.3701E-02, nord= 6
  time =  1.3633E+05 d, dltime =  1.3215E+02 d
Steps completed =  1082, iter = 18, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -66.9232

Stepping to zi=  1.4150E+01, delzi=  1.5132E-02, nord= 6
  time =  1.3648E+05 d, dltime =  1.4595E+02 d
Steps completed =  1083, iter = 12, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -67.0093

Stepping to zi=  1.4167E+01, delzi=  1.6713E-02, nord= 6
  time =  1.3664E+05 d, dltime =  1.6120E+02 d
Steps completed =  1084, iter = 19, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -67.0954

Stepping to zi=  1.4185E+01, delzi=  1.8459E-02, nord= 6
  time =  1.3682E+05 d, dltime =  1.7804E+02 d
Steps completed =  1085, iter = 19, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -67.1815

Stepping to zi=  1.4205E+01, delzi=  2.0388E-02, nord= 6
  time =  1.3701E+05 d, dltime =  1.9664E+02 d
Steps completed =  1086, iter = 11, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -67.2677

Stepping to zi=  1.4228E+01, delzi=  2.2518E-02, nord= 6
  time =  1.3723E+05 d, dltime =  2.1719E+02 d
Steps completed =  1087, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -67.3538

Stepping to zi=  1.4253E+01, delzi=  2.4871E-02, nord= 6
  time =  1.3747E+05 d, dltime =  2.3988E+02 d
Steps completed =  1088, iter = 18, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -67.4399

Stepping to zi=  1.4280E+01, delzi=  2.7470E-02, nord= 6
  time =  1.3773E+05 d, dltime =  2.6495E+02 d
Steps completed =  1089, iter = 11, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -67.5260

Stepping to zi=  1.4311E+01, delzi=  3.0341E-02, nord= 6
```

```
  time =  1.3803E+05 d, dltime =  2.9264E+02 d
Steps completed =  1090, iter =  8, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -67.6121

Stepping to zi=  1.4344E+01, delzi=  3.3511E-02, nord= 6
  time =  1.3835E+05 d, dltime =  3.2322E+02 d
Steps completed =  1091, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -67.6982

Stepping to zi=  1.4381E+01, delzi=  3.7013E-02, nord= 6
  time =  1.3871E+05 d, dltime =  3.5699E+02 d
Steps completed =  1092, iter = 19, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -67.7843

Stepping to zi=  1.4422E+01, delzi=  4.0881E-02, nord= 6
  time =  1.3910E+05 d, dltime =  3.9430E+02 d
Steps completed =  1093, iter = 12, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -67.8704

Stepping to zi=  1.4467E+01, delzi=  4.5153E-02, nord= 6
  time =  1.3954E+05 d, dltime =  4.3550E+02 d
Steps completed =  1094, iter =  9, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -67.9565

Stepping to zi=  1.4517E+01, delzi=  4.9872E-02, nord= 6
  time =  1.4002E+05 d, dltime =  4.8101E+02 d
Steps completed =  1095, iter = 19, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -68.0425

Stepping to zi=  1.4572E+01, delzi=  5.5084E-02, nord= 6
  time =  1.4055E+05 d, dltime =  5.3129E+02 d
Steps completed =  1096, iter =  6, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -68.1286

Stepping to zi=  1.4633E+01, delzi=  6.0841E-02, nord= 6
  time =  1.4114E+05 d, dltime =  5.8681E+02 d
Steps completed =  1097, iter = 20, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -68.2147

Stepping to zi=  1.4700E+01, delzi=  6.7200E-02, nord= 6
  time =  1.4178E+05 d, dltime =  6.4815E+02 d
Steps completed =  1098, iter =  8, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -68.3007

Stepping to zi=  1.4774E+01, delzi=  7.4224E-02, nord= 6
  time =  1.4250E+05 d, dltime =  7.1589E+02 d
Steps completed =  1099, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -68.3868

Stepping to zi=  1.4856E+01, delzi=  8.1982E-02, nord= 6
  time =  1.4329E+05 d, dltime =  7.9073E+02 d
Steps completed =  1100, iter =  7, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -68.4728

Stepping to zi=  1.4947E+01, delzi=  9.0553E-02, nord= 6
  time =  1.4416E+05 d, dltime =  8.7339E+02 d
Steps completed =  1101, iter =  6, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -68.5589

Stepping to zi=  1.5000E+01, delzi=  5.3062E-02, nord= 6
  time =  1.4468E+05 d, dltime =  5.1179E+02 d
Steps completed =  1102, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -68.6056
```

```
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -


                    Reaction progress        =  1.50000000000000E+01
                    Log of reaction progress =       1.1760913



                    Time =  1.250E+10 sec
                         =  1.447E+05 days
                         =  3.961E+02 years

                    Log sec =       10.097
                    Log days =       5.160
                    Log years =      2.598

                    Temperature    =     25.000 degrees C
                    total pressure =      1.013 bars


Step size is limited by the P.R.S. shift requirement


                              --- Reactant Summary ---


   Reactant                   Moles     Delta moles    Mass, g    Delta Mass, g

 Tuff                       8.5000E+01   1.5000E+01   1.7498E+03   3.0880E+02


               Current total mass =  1.74985E+03 grams
               Delta total mass   =  3.08797E+02 grams
               Delta total volume =      0.00000 cc


   Reactant                Rel. Rate      Rate         Rate
                            mol/mol       mol/s      mol/s/cm2

 Tuff                      1.0000E+00   1.2000E-09   2.5000E-15


   Reactant                  Affinity   Surface Area
                             kcal/mol     mol/s/cm2

 Tuff                       999.00000   4.8000E+05


   Reactant                Rate Constants, mol/s/cm2

 Tuff
                  Forward    2.5000E-15


        Affinity of the overall irreversible reaction=     0.000 kcal
        Contributions from irreversible reactions
        with no thermodynamic data are not included


    --- Element Totals for the Aqueous Solution ---
```

Element	mg/kg soln.	Molality	Moles
O	8.862309E+05	5.562686E+01	5.454642E+01
Al	5.842157E-03	2.174442E-07	2.132208E-07
B	1.360016E-01	1.263338E-05	1.238800E-05
Ba	1.394546E-05	1.019808E-10	1.000000E-10
Ca	8.396226E-04	2.103873E-08	2.063009E-08
Ce	1.422857E-19	1.019807E-24	9.999992E-25
Cl	7.250796E+00	2.053893E-04	2.014000E-04
Cr	3.052891E+02	5.896331E-03	5.781806E-03
Cs	1.474730E-21	1.114323E-26	1.092680E-26
Cu	6.775705E-10	1.070798E-14	1.050000E-14
F	2.308642E-01	1.220340E-05	1.196637E-05
Fe	1.134695E-08	2.040425E-13	2.000794E-13
Gd	1.596862E-09	1.019808E-14	9.999998E-15
H	1.114356E+05	1.110275E+02	1.088710E+02
C	1.348296E+02	1.127321E-02	1.105425E-02
P	1.828861E+01	5.929638E-04	5.814467E-04
K	2.062861E+00	5.298507E-05	5.195594E-05
La	1.410575E-09	1.019808E-14	9.999998E-15
Li	7.048537E-07	1.019808E-10	1.000000E-10
Mg	2.558987E-02	1.057338E-06	1.036801E-06
Mn	4.306299E-11	7.871768E-16	7.718875E-16
Mo	2.220509E+02	2.324311E-03	2.279166E-03
N	2.019772E+00	1.448127E-04	1.420000E-04
Na	1.252090E+03	5.469432E-02	5.363199E-02
Nd	1.464747E-09	1.019808E-14	9.999998E-15
Ni	1.041943E-04	1.782877E-09	1.748248E-09
Pb	4.360373E-07	2.113368E-12	2.072320E-12
Pu	2.477803E-09	1.019808E-14	9.999999E-15
S	3.800746E+02	1.190325E-02	1.167205E-02
Si	4.301767E+00	1.538176E-04	1.508300E-04
Sm	1.526895E-09	1.019808E-14	9.999998E-15
Sr	3.347947E-64	3.837220E-69	3.762689E-69
Ti	1.076265E-05	2.257390E-10	2.213545E-10
U	2.417167E-09	1.019808E-14	1.000000E-14
V	4.858045E+00	9.577038E-05	9.391022E-05
Zn	6.640309E-06	1.019808E-10	1.000000E-10
Zr	9.263743E-16	1.019809E-20	1.000001E-20

Single ion activities and activity coefficients are here defined
with respect to the modified NBS pH scale

	pH	Eh	pe
modified NBS pH scale	9.1956	0.6751	1.1411E+01
rational pH scale	9.1139	0.6799	1.1493E+01

pHCl = 12.9838

Oxygen fugacity = 2.09991E-01
Log oxygen fugacity = -0.67780

Activity of water = 0.99863
Log activity of water = -0.00060

Ionic strength = 7.327662E-02 molal
Sum of molalities = 0.0855512962672
Osmotic coefficient = 0.89146

Mass of solution = 0.984743 kg
Mass of solutes = 0.004166 kg
Conc. of solutes = 0.423095 per cent (w/w)

Moles of solvent H2O = 5.44303E+01
Mass of solvent H2O = 9.80577E-01 kg

Species	Molality	Log molality	Log gamma	Log activity
Na+	5.2604E-02	-1.2790	-0.1069	-1.3859
SO4--	1.0470E-02	-1.9800	-0.3898	-2.3698
HCO3-	9.3900E-03	-2.0273	-0.0913	-2.1186
CrO4--	5.8904E-03	-2.2299	-0.3898	-2.6196
MoO4--	2.3243E-03	-2.6337	-0.3768	-3.0105
NaSO4-	1.4310E-03	-2.8444	-0.0913	-2.9357
CO3--	1.3333E-03	-2.8751	-0.3768	-3.2518
HPO4--	5.0247E-04	-3.2989	-0.3898	-3.6886
NaHCO3(aq)	4.4629E-04	-3.3504	0.0000	-3.3504
O2(aq)	2.6076E-04	-3.5838	0.0077	-3.5761
Cl-	2.0427E-04	-3.6898	-0.0985	-3.7883
NO3-	1.4481E-04	-3.8392	-0.0985	-3.9376
SiO2(aq)	1.0016E-04	-3.9993	0.0000	-3.9993
NaCO3-	9.2892E-05	-4.0320	-0.0913	-4.1233
NaHPO4-	8.6453E-05	-4.0632	-0.0913	-4.1545
VO3OH--	8.5953E-05	-4.0657	-0.3898	-4.4555
K+	5.1348E-05	-4.2895	-0.1141	-4.4035
NaHSiO3(aq)	3.2049E-05	-4.4942	0.0000	-4.4942
HSiO3-	2.1601E-05	-4.6655	-0.0913	-4.7568
OH-	1.9707E-05	-4.7054	-0.0947	-4.8001
F-	1.2163E-05	-4.9150	-0.0947	-5.0097
CO2(aq)	1.0554E-05	-4.9766	0.0077	-4.9689
HVO4--	9.2590E-06	-5.0334	-0.3898	-5.4232
BO2-	6.4171E-06	-5.1927	-0.0913	-5.2839
HCrO4-	5.8953E-06	-5.2295	-0.0913	-5.3208
B(OH)3(aq)	5.8181E-06	-5.2352	0.0000	-5.2352
H2PO4-	2.5850E-06	-5.5875	-0.0913	-5.6788
KSO4-	1.5761E-06	-5.8024	-0.0913	-5.8937
PO4---	1.1954E-06	-5.9225	-0.8924	-6.8149
NaCl(aq)	1.1191E-06	-5.9511	0.0000	-5.9511
Mg++	4.7662E-07	-6.3218	-0.3360	-6.6579
NaB(OH)4(aq)	3.9801E-07	-6.4001	0.0000	-6.4001
H2VO4-	3.4318E-07	-6.4645	-0.0913	-6.5558
MgSO4(aq)	2.4213E-07	-6.6159	0.0000	-6.6159
AlO2-	2.1583E-07	-6.6659	-0.0913	-6.7572
VO2(OH)2-	2.1268E-07	-6.6723	-0.0913	-6.7636
MgPO4-	1.6127E-07	-6.7924	-0.0913	-6.8837
MgCO3(aq)	1.1727E-07	-6.9308	0.0000	-6.9308
NaOH(aq)	1.0335E-07	-6.9857	0.0000	-6.9857
KHPO4-	6.0133E-08	-7.2209	-0.0913	-7.3122
NaF(aq)	4.0441E-08	-7.3932	0.0000	-7.3932
MgHPO4(aq)	3.6601E-08	-7.4365	0.0000	-7.4365
MgHCO3+	2.3233E-08	-7.6339	-0.1069	-7.7408
Ca++	1.0207E-08	-7.9911	-0.3736	-8.3647
H2SiO4--	6.6132E-09	-8.1796	-0.3898	-8.5693
CaCO3(aq)	5.1358E-09	-8.2894	0.0000	-8.2894
CaSO4(aq)	2.3805E-09	-8.6233	0.0000	-8.6233
VO4---	2.3577E-09	-8.6275	-0.8924	-9.5199

CaPO4-	2.3538E-09	-8.6282	-0.0913	-8.7195
Cr2O7--	1.9019E-09	-8.7208	-0.3898	-9.1106
Ni++	1.4238E-09	-8.8465	-0.3736	-9.2201
NaAlO2(aq)	1.2992E-09	-8.8863	0.0000	-8.8863
H+	7.6927E-10	-9.1139	-0.0817	-9.1956
CaHPO4(aq)	4.8608E-10	-9.3133	0.0000	-9.3133
CaHCO3+	4.6807E-10	-9.3297	-0.1069	-9.4366
NiSO4(aq)	3.4340E-10	-9.4642	0.0000	-9.4642
HSO4-	3.1990E-10	-9.4950	-0.0913	-9.5863
HAlO2(aq)	3.1452E-10	-9.5024	0.0000	-9.5024
Ti(OH)4(aq)	2.2574E-10	-9.6464	0.0000	-9.6464
KOH(aq)	2.1451E-10	-9.6685	0.0000	-9.6685
KCl(aq)	2.0588E-10	-9.6864	0.0000	-9.6864
MgB(OH)4+	1.1537E-10	-9.9379	-0.1069	-10.0448

--- Summary of Instantaneously Precipitated Solid Phases ---
(defined by derivatives)

--- Theoretical Rock Composition ---
g/kg

O	5.181360E+01
Al	6.307704E+00
Ca	3.743600E-01
Cl	2.544050E-12
Cs	6.114018E-24
Fe	6.119365E-01
H	7.306933E-01
C	2.015668E-03
P	6.667939E-12
K	3.828028E+00
Mg	1.381794E-01
Mn	4.839763E-02
N	2.013761E-66
Na	2.488245E+00
Pb	7.434233E-11
Si	3.360183E+01
Ti	5.500774E-02

--- Oxide Percentages ---

Oxide Theoretical rock

Total = 0.0000

Phase/end-member	d mol/d zi	d grams/d zi	d vol (cc)/d zi
Celadonite	1.2310E-03	4.8840E-01	1.9340E-01
Maximum_Microcline	1.9069E-02	5.3076E+00	2.0736E+00
Mesolite	3.1067E-03	1.2047E+00	5.3186E-01
Muscovite	1.0010E-03	3.9871E-01	1.4085E-01
Ni2SiO4	-2.6562E-12	-5.5638E-10	-1.1318E-10
Pyrolusite	1.9400E-04	1.6866E-02	9.7000E-02
Pyromorphite	1.5803E-14	2.1434E-11	3.0445E-12
Quartz	9.3850E-02	5.6389E+00	2.1293E+00
Rutile	2.5300E-04	2.0209E-02	4.7615E-03
fix CO2(g)	3.6956E-05	1.6264E-03	0.0000E+00
fix O2(g)	-7.0649E-04	-2.2607E-02	0.0000E+00
Clinoptilolite-ss			
Clinoptilolite-Ca	8.9265E-06	1.2001E-02	4.4633E-03

Clinoptilolite-Cs	2.9220E-27	5.0718E-24	1.4610E-24
Clinoptilolite-K	7.3701E-05	1.0396E-01	3.6851E-02
Clinoptilolite-NH4	9.1320E-69	1.2214E-65	4.5660E-66
Clinoptilolite-Na	6.1582E-03	8.3422E+00	3.0791E+00
Clinoptilolite-Sr	0.0000E+00	0.0000E+00	0.0000E+00
Smectite-di			
Beidellite-Ca	4.0469E-11	1.4835E-08	5.2420E-09
Beidellite-K	1.7470E-10	6.5137E-08	2.3357E-08
Beidellite-Mg	3.7563E-10	1.3672E-07	4.6274E-08
Beidellite-Na	1.7147E-08	6.3023E-06	2.2384E-06
Montmor-Ca	7.2652E-08	2.6594E-05	3.6326E-05
Montmor-K	5.1220E-07	1.9071E-04	2.5610E-04
Montmor-Mg	1.0960E-06	3.9832E-04	5.4798E-04
Montmor-Na	4.9028E-05	1.7994E-02	2.4514E-02
Nontronite-Ca	2.6315E-06	1.1165E-03	3.4500E-04
Nontronite-K	1.1360E-05	4.8914E-03	1.5367E-03
Nontronite-Mg	2.4443E-05	1.0307E-02	3.1717E-03
Nontronite-Na	1.1150E-03	4.7418E-01	1.4731E-01

--- Summary of Solid Phases (E.S.+P.R.S.) ---

Phase/End-member	Log moles	Moles	Mass, g	Volume, cc
Alunite	-2.5559	2.7801E-03	1.1516E+00	8.1624E-01
Celadonite	-1.7327	1.8507E-02	7.3422E+00	2.9074E+00
Diaspore	-1.6079	2.4665E-02	1.4796E+00	4.3804E-01
Fluorapatite	-3.9881	1.0278E-04	5.1834E-02	5.1392E-02
Hematite	-3.7144	1.9300E-04	3.0820E-02	5.8428E-03
Maximum_Microcline	-0.5634	2.7330E-01	7.6069E+01	2.9719E+01
Mesolite	-1.3347	4.6270E-02	1.7943E+01	7.9215E+00
Muscovite	-1.5949	2.5414E-02	1.0122E+01	3.5760E+00
Ni2SiO4	-2.1930	6.4125E-03	1.3432E+00	2.7324E-01
Nontronite-H	-4.9990	1.0023E-05	4.1899E-03	5.0117E-03
Pyrolusite	-2.4555	3.5037E-03	3.0460E-01	1.7518E+00
Pyromorphite	-10.7081	1.9586E-11	2.6565E-08	3.7733E-09
Quartz	0.2104	1.6232E+00	9.7527E+01	3.6826E+01
Rutile	-2.4208	3.7950E-03	3.0314E-01	7.1422E-02
fix CO2(g)	2.3010	1.9999E+02	8.8015E+03	0.0000E+00
fix O2(g)	2.3010	1.9999E+02	6.3994E+03	0.0000E+00
Clinoptilolite-ss	-1.1028	7.8925E-02		
Clinoptilolite-Ca	-3.9473	1.1290E-04	1.5178E-01	5.6448E-02
Clinoptilolite-Cs	-10.5400	2.8843E-11	5.0064E-08	1.4422E-08
Clinoptilolite-K	-3.0305	9.3212E-04	1.3147E+00	4.6606E-01
Clinoptilolite-NH4	-66.9469	1.1300E-67	1.5114E-64	5.6501E-65
Clinoptilolite-Na	-1.1086	7.7880E-02	1.0550E+02	3.8940E+01
Clinoptilolite-Sr	-10.2389	5.7687E-11	8.2309E-08	2.8843E-08
Smectite-di	-1.7472	1.7899E-02		
Beidellite-Ca	-8.9991	1.0021E-09	3.6733E-07	1.2980E-07
Beidellite-K	-8.4963	3.1893E-09	1.1891E-06	4.2641E-07
Beidellite-Mg	-8.2565	5.5403E-09	2.0165E-06	6.8251E-07
Beidellite-Na	-6.6474	2.2519E-07	8.2766E-05	2.9397E-05
Montmor-Ca	-5.8761	1.3302E-06	4.8693E-04	6.6512E-04
Montmor-K	-5.1429	7.1965E-06	2.6795E-03	3.5982E-03
Montmor-Mg	-4.8131	1.5379E-05	5.5892E-03	7.6893E-03
Montmor-Na	-3.1914	6.4354E-04	2.3619E-01	3.2177E-01
Nontronite-Ca	-3.3737	4.2300E-04	1.7948E-01	5.5456E-02
Nontronite-K	-3.1143	7.6858E-04	3.3094E-01	1.0397E-01
Nontronite-Mg	-3.0962	8.0139E-04	3.3794E-01	1.0399E-01
Nontronite-Na	-1.8171	1.5239E-02	6.4805E+00	2.0132E+00

	Mass, grams	Volume, cc
Created	1.552910E+04	1.264365E+02
Destroyed	3.087970E+02	0.000000E+00
Net	1.522030E+04	1.264365E+02

Warning-- these volume totals may be incomplete because of missing partial molar volume data in the data base

--- Summary of Pure Mineral Saturation States ---

Mineral	Log Q/K	Aff, kcal	State
Alamosite	-3.408	-4.649	
Albite	-0.022	-0.030	
Albite_high	-1.341	-1.829	
Albite_low	-0.022	-0.030	
Alstonite	-7.224	-9.855	
Analcime	-0.148	-0.202	
Analcime-dehy	-6.510	-8.882	
Andalusite	-6.082	-8.298	
Anglesite	-6.643	-9.063	
Anhydrite	-6.428	-8.770	
Aragonite	-3.281	-4.476	
BaCrO4	-3.116	-4.251	
BaHPO4	-6.717	-9.164	
BaZrO3	83.671	114.152	ssatd
Barite	-2.827	-3.857	
Bassanite	-7.073	-9.650	
Beidellite-Ca	-2.466	-3.365	
Beidellite-H	-3.163	-4.315	
Beidellite-K	-2.257	-3.079	
Beidellite-Mg	-2.147	-2.929	
Beidellite-Na	-1.599	-2.182	
Boehmite	-0.634	-0.864	
Boric_acid	-5.077	-6.926	
Brucite	-4.566	-6.229	
Bunsenite	-3.301	-4.504	
CaSO4:0.5H2O(beta)	-7.241	-9.879	
CaZrO3	139.765	190.680	ssatd
Calcite	-3.136	-4.279	
CeO2	-3.305	-4.509	
Celadonite	0.000	0.000	satd
Cerussite	-1.840	-2.510	
Chalcedony	-0.271	-0.370	
Chrysotile	-3.927	-5.358	
Clinochlore-14A	-6.714	-9.160	
Clinoptilolite	-6.636	-9.054	
Clinoptilolite-K	-6.670	-9.100	
Clinoptilolite-Na	-0.020	-0.027	
Clinoptilolite-hy-K	-6.664	-9.092	
Clinoptilolite-hy-Na	-0.018	-0.024	
Coesite	-0.810	-1.105	
Corundum	-4.450	-6.072	
Cristobalite(alpha)	-0.551	-0.751	
Cristobalite(beta)	-0.994	-1.356	
Crocoite	-2.028	-2.766	
Dawsonite	-0.920	-1.256	
Diaspore	-0.230	-0.313	

Diopside	-7.204	-9.829	
Dolomite	-3.382	-4.614	
Dolomite-dis	-4.926	-6.721	
Dolomite-ord	-3.382	-4.614	
Enstatite	-3.594	-4.903	
Epsomite	-7.070	-9.645	
Fe(OH)3	-6.518	-8.893	
Ferrite-Zn	-6.458	-8.810	
Fluorapatite	-5.318	-7.256	
GdPO4:H2O	-4.468	-6.096	
Gibbsite	-0.826	-1.127	
Goethite	-1.397	-1.905	
Gypsum	-6.253	-8.531	
Halite	-6.760	-9.222	
Hematite	-1.832	-2.500	
Hexahydrite	-7.304	-9.965	
Hydrocerussite	-7.252	-9.893	
Ice	-0.139	-0.190	
Illite	-1.275	-1.739	
Jadeite	-1.647	-2.247	
K-Feldspar	0.000	0.000	
Kalicinite	-6.806	-9.285	
Kalsilite	-3.175	-4.332	
Kaolinite	-0.948	-1.294	
Kyanite	-5.812	-7.929	
LaPO4:H2O	-1.658	-2.262	
Lansfordite	-4.425	-6.037	
Laumontite	-5.779	-7.884	
Lawsonite	-6.325	-8.630	
Litharge	-6.379	-8.703	
Magnesite	-1.875	-2.557	
Manganite	-4.459	-6.084	
Massicot	-6.554	-8.942	
Maximum_Microcline	0.000	0.000	satd
Mesolite	0.000	0.000	satd
Mirabilite	-4.008	-5.468	
MnO2(gamma)	-1.518	-2.071	
Monohydrocalcite	-3.971	-5.417	
Montmor-Ca	-1.392	-1.900	
Montmor-K	-1.113	-1.518	
Montmor-Mg	-1.003	-1.369	
Montmor-Na	-0.459	-0.626	
Mordenite	-2.805	-3.827	
Muscovite	0.000	0.000	satd
Na2CO3	-6.877	-9.382	
Na2CO3:7H2O	-5.645	-7.701	
Nahcolite	-3.393	-4.629	
Natrolite	-1.039	-1.417	
Natron	-5.311	-7.246	
NdPO4:H2O	-3.163	-4.316	
Nepheline	-3.060	-4.174	
Nesquehonite	-4.578	-6.246	
Ni(OH)2	-3.579	-4.882	
Ni2SiO4	0.000	0.000	satd
NiCO3	-5.655	-7.715	
Nontronite-Ca	-0.878	-1.198	
Nontronite-H	-1.574	-2.148	
Nontronite-K	-0.668	-0.912	
Nontronite-Mg	-0.559	-0.762	
Nontronite-Na	-0.011	-0.015	
Paragonite	-0.919	-1.253	
Paralaurionite	-6.922	-9.444	
Pb3(PO4)2	-5.389	-7.351	

Pb4O(PO4)2	-6.525	-8.902	
PbHPO4	-4.247	-5.795	
Petalite	-6.153	-8.394	
Phlogopite	-2.518	-3.435	
Plattnerite	-1.743	-2.377	
PuO2	-4.804	-6.555	
Pyrolusite	0.000	0.000	satd
Pyromorphite	0.000	0.000	satd
Pyrophyllite	-2.576	-3.514	
Quartz	0.000	0.000	satd
Rutile	0.000	0.000	satd
Sanidine_high	-1.199	-1.636	
Saponite-Ca	-1.828	-2.495	
Saponite-H	-2.525	-3.445	
Saponite-K	-1.619	-2.209	
Saponite-Mg	-1.509	-2.059	
Saponite-Na	-0.962	-1.312	
Scolecite	-3.989	-5.442	
Sellaite	-7.293	-9.950	
SiO2(am)	-1.286	-1.754	
Sillimanite	-6.446	-8.794	
SmPO4:H2O	-3.969	-5.415	
Smectite-low-Fe-Mg	-7.076	-9.653	
Smithsonite	-4.777	-6.517	
SrZrO3	62.102	84.725	ssatd
Stilbite	-1.918	-2.616	
Talc	-1.938	-2.644	
Thenardite	-4.832	-6.593	
Thermonatrite	-6.658	-9.083	
Trevorite	-2.341	-3.193	
Tridymite	-0.171	-0.234	
Witherite	-0.355	-0.485	
Zincite	-4.208	-5.742	
Zn(OH)2(beta)	-4.934	-6.732	
Zn(OH)2(epsilon)	-4.663	-6.361	
Zn(OH)2(gamma)	-4.884	-6.663	
fix CO2(g)	0.000	0.000	satd
fix O2(g)	0.000	0.000	satd

--- Summary of Solid Solutions ---

--- Carbonate-Calcite ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Calcite	5.1815E-02	-1.2855	0.0000	-1.2855
Magnesite	9.4700E-01	-0.0237	0.0000	-0.0237
Rhodochrosite	1.2063E-09	-8.9185	0.0000	-8.9185
Siderite	1.8686E-18	-17.7285	0.0000	-17.7285
Smithsonite	1.1863E-03	-2.9258	0.0000	-2.9258
Strontianite	1.7728E-60	-59.7513	0.0000	-59.7513

Mineral	Log Q/K	Aff, kcal	State
Carbonate-Calcite	-1.851	-2.525	
Calcite	-1.851	-2.525	
Magnesite	-1.851	-2.525	
Rhodochrosite	-1.851	-2.525	
Siderite	-1.851	-2.525	

Smithsonite	-1.851	-2.525
Strontianite	-1.851	-2.525

--- Clinoptilolite-hy-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-hy-Ca	1.5018E-10	-9.8234	0.0000	-9.8234
Clinoptilolite-hy-Cs	2.2024E-80	-79.6571	0.0000	-79.6571
Clinoptilolite-hy-K	2.2578E-07	-6.6463	0.0000	-6.6463
Clinoptilolite-hy-Na	1.0000E+00	0.0000	0.0000	0.0000
Clinoptilolite-hy-Sr	1.6417-115	-114.7847	0.0000	-114.7847

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-hy-ss	-0.018	-0.024	
Clinoptilolite-hy-Ca	-0.018	-0.024	
Clinoptilolite-hy-Cs	-0.018	-0.024	
Clinoptilolite-hy-K	-0.018	-0.024	
Clinoptilolite-hy-Na	-0.018	-0.024	
Clinoptilolite-hy-Sr	-0.018	-0.024	

--- Clinoptilolite-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-Ca	1.4304E-03	-2.8446	-6.9976	-9.8422
Clinoptilolite-Cs	9.3431E-24	-23.0295	-56.6526	-79.6821
Clinoptilolite-K	1.1810E-02	-1.9278	-4.7423	-6.6701
Clinoptilolite-NH4	1.4585E-66	-65.8361	-161.9568	-227.7928
Clinoptilolite-Na	9.8676E-01	-0.0058	-0.0142	-0.0200
Clinoptilolite-Sr	6.6125E-34	-33.1796	-81.6219	-114.8015

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-ss	0.000	0.000	satd
Clinoptilolite-Ca	0.000	0.000	satd
Clinoptilolite-Cs	0.000	0.000	satd
Clinoptilolite-K	0.000	0.000	satd
Clinoptilolite-NH4	0.000	0.000	satd
Clinoptilolite-Na	0.000	0.000	satd
Clinoptilolite-Sr	0.000	0.000	satd

--- Saponite-tri ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Saponite-Ca	2.2815E-03	-2.6418	1.7700	-0.8718
Saponite-H	1.7689E-05	-4.7523	3.1840	-1.5683

Saponite-K	9.8418E-03	-2.0069	1.3446	-0.6623
Saponite-Mg	2.1177E-02	-1.6741	1.1217	-0.5525
Saponite-Na	9.6668E-01	-0.0147	0.0099	-0.0049

Mineral	Log Q/K	Aff, kcal	State
Saponite-tri	-0.957	-1.305	
Saponite-Ca	-0.957	-1.305	
Saponite-H	-0.957	-1.305	
Saponite-K	-0.957	-1.305	
Saponite-Mg	-0.957	-1.305	
Saponite-Na	-0.957	-1.305	

--- Smectite-di ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Beidellite-Ca	3.3607E-08	-7.4736	5.0073	-2.4663
Beidellite-K	1.4508E-07	-6.8384	4.5817	-2.2567
Beidellite-Mg	3.1194E-07	-6.5059	4.3590	-2.1470
Beidellite-Na	1.4240E-05	-4.8465	3.2472	-1.5993
Montmor-Ca	6.0334E-05	-4.2194	2.8270	-1.3924
Montmor-K	4.2535E-04	-3.3712	2.2587	-1.1125
Montmor-Mg	9.1013E-04	-3.0409	2.0374	-1.0035
Montmor-Na	4.0714E-02	-1.3903	0.9315	-0.4588
Nontronite-Ca	2.1854E-03	-2.6605	1.7825	-0.8780
Nontronite-K	9.4338E-03	-2.0253	1.3570	-0.6684
Nontronite-Mg	2.0299E-02	-1.6925	1.1340	-0.5585
Nontronite-Na	9.2596E-01	-0.0334	0.0224	-0.0110

Mineral	Log Q/K	Aff, kcal	State
Smectite-di	0.000	0.000	satd
Beidellite-Ca	0.000	0.000	satd
Beidellite-K	0.000	0.000	satd
Beidellite-Mg	0.000	0.000	satd
Beidellite-Na	0.000	0.000	satd
Montmor-Ca	0.000	0.000	satd
Montmor-K	0.000	0.000	satd
Montmor-Mg	0.000	0.000	satd
Montmor-Na	0.000	0.000	satd
Nontronite-Ca	0.000	0.000	satd
Nontronite-K	0.000	0.000	satd
Nontronite-Mg	0.000	0.000	satd
Nontronite-Na	0.000	0.000	satd

--- Lanthanide hydroxide ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
La(OH)3	5.5210E-04	-3.2580	0.0000	-3.2580
Ce(OH)3	2.6023E-14	-13.5846	0.0000	-13.5846
Nd(OH)3(c)	8.6480E-01	-0.0631	0.0000	-0.0631

Gd(OH)3	1.0766E-01	-0.9680	0.0000	-0.9680
Sm(OH)3	2.6987E-02	-1.5688	0.0000	-1.5688

Mineral	Log Q/K	Aff, kcal	State
Lanthanide hydroxide	-9.001	-12.280	
La(OH)3	-9.001	-12.280	
Ce(OH)3	-9.001	-12.280	
Nd(OH)3(c)	-9.001	-12.280	
Gd(OH)3	-9.001	-12.280	
Sm(OH)3	-9.001	-12.280	

--- Rhabdophane-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaPO4:H2O	9.6368E-01	-0.0161	0.0000	-0.0161
CePO4:H2O	1.4364E-11	-10.8427	0.0000	-10.8427
NdPO4:H2O	3.0119E-02	-1.5212	0.0000	-1.5212
GdPO4:H2O	1.4927E-03	-2.8260	0.0000	-2.8260
SmPO4:H2O	4.7106E-03	-2.3269	0.0000	-2.3269

Mineral	Log Q/K	Aff, kcal	State
Rhabdophane-ss	-1.642	-2.240	
LaPO4:H2O	-1.642	-2.240	
CePO4:H2O	-1.642	-2.240	
NdPO4:H2O	-1.642	-2.240	
GdPO4:H2O	-1.642	-2.240	
SmPO4:H2O	-1.642	-2.240	

--- Lanthanide fluoride ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaF3:0.5H2O	9.6163E-01	-0.0170	0.0000	-0.0170
CeF3:0.5H2O	2.2717E-11	-10.6436	0.0000	-10.6436
NdF3:0.5H2O	3.7837E-02	-1.4221	0.0000	-1.4221
GdF3:0.5H2O	5.9298E-05	-4.2270	0.0000	-4.2270
SmF3:0.5H2O	4.7006E-04	-3.3278	0.0000	-3.3278

Mineral	Log Q/K	Aff, kcal	State
Lanthanide fluoride	-15.827	-21.593	
LaF3:0.5H2O	-15.827	-21.593	
CeF3:0.5H2O	-15.827	-21.593	
NdF3:0.5H2O	-15.827	-21.593	
GdF3:0.5H2O	-15.827	-21.593	
SmF3:0.5H2O	-15.827	-21.593	

--- Summary of Gases ---

Gas	Fugacity	Log fugacity
Al(g)	9.7073-192	-191.0129
B(g)	4.0256-204	-203.3952
BF3(g)	1.3095E-45	-44.8829
C(g)	3.0917-190	-189.5098
CH4(g)	3.5197-146	-145.4535
CO(g)	6.0395E-49	-48.2190
CO2(g)	3.1623E-04	-3.5000
Ca(g)	5.4464-154	-153.2639
Chlorine	1.7556E-31	-30.7556
Cs(g)	5.4660E-98	-97.2623
Cu(g)	1.9079E-82	-81.7194
Fluorine	1.2084E-86	-85.9178
H2(g)	6.1067E-42	-41.2142
H2O(g)	2.5942E-02	-1.5860
H2S(g)	1.1227-144	-143.9497
HCl(g)	5.1365E-20	-19.2893
HF(g)	4.8096E-16	-15.3179
K(g)	1.2715E-76	-75.8957
Li(g)	1.1215E-95	-94.9502
Mg(g)	1.8677-129	-128.7287
Nitrogen	1.3229E-22	-21.8785
NH3(g)	1.3234E-70	-69.8783
NO(g)	3.6218E-27	-26.4411
NO2(g)	2.4764E-21	-20.6062
Na(g)	6.9098E-73	-72.1605
O2(g)	2.0999E-01	-0.6778
Pb(g)	2.7801E-68	-67.5559
S2(g)	7.5363-232	-231.1228
SO2(g)	1.9905E-57	-56.7010
Si(g)	4.2257-221	-220.3741
SiF4(g)	2.3650E-46	-45.6262
Ti(g)	3.8019-231	-230.4200
TiCl4(g)	2.3382E-90	-89.6311
U(g)	1.0428-302	-301.9818
U2Cl10(g)	1.4226-269	-268.8469
U2Cl8(g)	2.5121-269	-268.6000
U2F10(g)	9.7579-187	-186.0106
UCl(g)	4.7765-260	-259.3209
UCl2(g)	6.5453-216	-215.1841
UCl3(g)	1.9645-169	-168.7067
UCl4(g)	3.1928-140	-139.4958
UCl5(g)	2.6699-148	-147.5735
UCl6(g)	4.1477-151	-150.3822
UF(g)	9.5050-246	-245.0220
UF2(g)	6.4255-207	-206.1921
UF3(g)	1.0690-161	-160.9710
UF4(g)	2.6250-113	-112.5809
UF5(g)	2.9524-106	-105.5298
UF6(g)	3.2699-113	-112.4855
UO(g)	8.2356-218	-217.0843
UO2(g)	1.5258-133	-132.8165
UO2Cl2(g)	1.1696E-83	-82.9320
UO2F2(g)	8.3293E-73	-72.0794
UO3(g)	1.1223E-80	-79.9499
UOF4(g)	7.8221E-91	-90.1067
Zn(g)	2.3677E-77	-76.6257

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--- shifting e.s. solid(s) to the p.r.s. (shftz) ---

      shifted -- Celadonite
              - old mass=  1.24347E-03, new mass=  1.24347E-05
      shifted -- Maximum_Microcline
              - old mass=  1.92621E-02, new mass=  1.92621E-04
      shifted -- Mesolite
              - old mass=  3.13805E-03, new mass=  3.13805E-05
      shifted -- Muscovite
              - old mass=  1.01111E-03, new mass=  1.01111E-05
  not shifted -- Ni2SiO4
              - mass=  7.99967E-07
      shifted -- Pyrolusite
              - old mass=  1.95960E-04, new mass=  1.95960E-06
  not shifted -- Pyromorphite
              - mass=  1.95855E-11
      shifted -- Quartz
              - old mass=  9.47975E-02, new mass=  9.47975E-04
      shifted -- Rutile
              - old mass=  2.55556E-04, new mass=  2.55556E-06
      shifted -- Clinoptilolite-ss
              - old mass=  6.30387E-03, new mass=  6.30387E-05
      shifted -- Smectite-di
              - old mass=  1.21634E-03, new mass=  1.21634E-05

Stepping to zi=  1.5007E+01, delzi=  6.9513E-03, nord= 6
  time =  1.4474E+05 d, dltime =  6.7046E+01 d
Steps completed =  1103, iter = 17, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -69.0595

Stepping to zi=  1.5008E+01, delzi=  8.6891E-04, nord= 6
  time =  1.4475E+05 d, dltime =  8.3807E+00 d
Steps completed =  1104, iter = 18, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -69.1026

Stepping to zi=  1.5010E+01, delzi=  1.7378E-03, nord= 4
  time =  1.4477E+05 d, dltime =  1.6761E+01 d
Steps completed =  1105, iter = 12, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -69.1828

Stepping to zi=  1.5013E+01, delzi=  3.4756E-03, nord= 6
  time =  1.4480E+05 d, dltime =  3.3523E+01 d
Steps completed =  1106, iter = 13, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -69.3239

Stepping to zi=  1.5017E+01, delzi=  4.2006E-03, nord= 6
  time =  1.4484E+05 d, dltime =  4.0515E+01 d
Steps completed =  1107, iter = 21, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -69.4685

Stepping to zi=  1.5020E+01, delzi=  2.9752E-03, nord= 6
  time =  1.4487E+05 d, dltime =  2.8696E+01 d
Steps completed =  1108, iter = 10, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -69.5581

Stepping to zi=  1.5023E+01, delzi=  2.6401E-03, nord= 6
  time =  1.4490E+05 d, dltime =  2.5464E+01 d
Steps completed =  1109, iter = 20, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -69.6305
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```
Stepping to zi=  1.5026E+01, delzi=  3.2331E-03, nord= 6
  time =  1.4493E+05 d, dltime =  3.1184E+01 d
Steps completed =  1110, iter =  8, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -69.7116

Stepping to zi=  1.5030E+01, delzi=  3.6157E-03, nord= 6
  time =  1.4496E+05 d, dltime =  3.4874E+01 d
Steps completed =  1111, iter =  7, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -69.7941

Stepping to zi=  1.5034E+01, delzi=  4.0797E-03, nord= 6
  time =  1.4500E+05 d, dltime =  3.9349E+01 d
Steps completed =  1112, iter = 23, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -69.8787

Stepping to zi=  1.5038E+01, delzi=  4.6063E-03, nord= 6
  time =  1.4505E+05 d, dltime =  4.4428E+01 d
Steps completed =  1113, iter = 10, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -69.9653

Stepping to zi=  1.5044E+01, delzi=  5.1328E-03, nord= 6
  time =  1.4510E+05 d, dltime =  4.9506E+01 d
Steps completed =  1114, iter = 18, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -70.0525

Stepping to zi=  1.5049E+01, delzi=  5.6428E-03, nord= 6
  time =  1.4515E+05 d, dltime =  5.4426E+01 d
Steps completed =  1115, iter =  8, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -70.1392

Stepping to zi=  1.5055E+01, delzi=  6.2002E-03, nord= 6
  time =  1.4521E+05 d, dltime =  5.9802E+01 d
Steps completed =  1116, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -70.2255

Stepping to zi=  1.5062E+01, delzi=  6.8353E-03, nord= 6
  time =  1.4528E+05 d, dltime =  6.5927E+01 d
Steps completed =  1117, iter = 15, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -70.3115

Stepping to zi=  1.5070E+01, delzi=  7.5443E-03, nord= 6
  time =  1.4535E+05 d, dltime =  7.2766E+01 d
Steps completed =  1118, iter = 11, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -70.3976

Stepping to zi=  1.5078E+01, delzi=  8.3338E-03, nord= 6
  time =  1.4543E+05 d, dltime =  8.0380E+01 d
Steps completed =  1119, iter = 12, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -70.4836

Stepping to zi=  1.5087E+01, delzi=  9.2088E-03, nord= 6
  time =  1.4552E+05 d, dltime =  8.8820E+01 d
Steps completed =  1120, iter =  7, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -70.5697

Stepping to zi=  1.5097E+01, delzi=  1.0175E-02, nord= 6
  time =  1.4562E+05 d, dltime =  9.8136E+01 d
Steps completed =  1121, iter = 17, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -70.6558

Stepping to zi=  1.5109E+01, delzi=  1.1239E-02, nord= 6
  time =  1.4572E+05 d, dltime =  1.0840E+02 d
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```
Steps completed =  1122, iter = 11, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -70.7420

Stepping to zi=  1.5121E+01, delzi=  1.2413E-02, nord= 6
  time =  1.4584E+05 d, dltime =  1.1972E+02 d
Steps completed =  1123, iter = 19, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -70.8281

Stepping to zi=  1.5135E+01, delzi=  1.3709E-02, nord= 6
  time =  1.4598E+05 d, dltime =  1.3223E+02 d
Steps completed =  1124, iter = 18, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -70.9142

Stepping to zi=  1.5150E+01, delzi=  1.5141E-02, nord= 6
  time =  1.4612E+05 d, dltime =  1.4603E+02 d
Steps completed =  1125, iter = 20, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -71.0004

Stepping to zi=  1.5167E+01, delzi=  1.6723E-02, nord= 6
  time =  1.4628E+05 d, dltime =  1.6129E+02 d
Steps completed =  1126, iter =  9, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -71.0865

Stepping to zi=  1.5185E+01, delzi=  1.8470E-02, nord= 6
  time =  1.4646E+05 d, dltime =  1.7814E+02 d
Steps completed =  1127, iter = 12, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -71.1726

Stepping to zi=  1.5206E+01, delzi=  2.0400E-02, nord= 6
  time =  1.4666E+05 d, dltime =  1.9676E+02 d
Steps completed =  1128, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -71.2587

Stepping to zi=  1.5228E+01, delzi=  2.2531E-02, nord= 6
  time =  1.4688E+05 d, dltime =  2.1732E+02 d
Steps completed =  1129, iter = 25, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -71.3448

Stepping to zi=  1.5253E+01, delzi=  2.4886E-02, nord= 6
  time =  1.4712E+05 d, dltime =  2.4003E+02 d
Steps completed =  1130, iter = 11, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -71.4309

Stepping to zi=  1.5280E+01, delzi=  2.7486E-02, nord= 6
  time =  1.4738E+05 d, dltime =  2.6511E+02 d
Steps completed =  1131, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -71.5170

Stepping to zi=  1.5311E+01, delzi=  3.0358E-02, nord= 6
  time =  1.4767E+05 d, dltime =  2.9281E+02 d
Steps completed =  1132, iter =  7, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -71.6031

Stepping to zi=  1.5344E+01, delzi=  3.3531E-02, nord= 6
  time =  1.4800E+05 d, dltime =  3.2340E+02 d
Steps completed =  1133, iter =  9, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -71.6892

Stepping to zi=  1.5381E+01, delzi=  3.7034E-02, nord= 6
  time =  1.4835E+05 d, dltime =  3.5720E+02 d
Steps completed =  1134, iter =  9, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -71.7753
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```
Stepping to zi=  1.5422E+01, delzi=  4.0905E-02, nord= 6
  time =  1.4875E+05 d, dltime =  3.9453E+02 d
Steps completed =  1135, iter = 10, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -71.8614

Stepping to zi=  1.5467E+01, delzi=  4.5179E-02, nord= 6
  time =  1.4918E+05 d, dltime =  4.3576E+02 d
Steps completed =  1136, iter = 13, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -71.9475

Stepping to zi=  1.5517E+01, delzi=  4.9901E-02, nord= 6
  time =  1.4967E+05 d, dltime =  4.8130E+02 d
Steps completed =  1137, iter =  8, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -72.0336

Stepping to zi=  1.5572E+01, delzi=  5.5116E-02, nord= 6
  time =  1.5020E+05 d, dltime =  5.3160E+02 d
Steps completed =  1138, iter = 17, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -72.1196

Stepping to zi=  1.5633E+01, delzi=  6.0876E-02, nord= 6
  time =  1.5078E+05 d, dltime =  5.8716E+02 d
Steps completed =  1139, iter = 20, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -72.2057

Stepping to zi=  1.5701E+01, delzi=  6.7239E-02, nord= 6
  time =  1.5143E+05 d, dltime =  6.4853E+02 d
Steps completed =  1140, iter = 12, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -72.2918

Stepping to zi=  1.5775E+01, delzi=  7.4267E-02, nord= 6
  time =  1.5215E+05 d, dltime =  7.1631E+02 d
Steps completed =  1141, iter =  9, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -72.3778

Stepping to zi=  1.5849E+01, delzi=  7.4070E-02, nord= 6
  time =  1.5286E+05 d, dltime =  7.1441E+02 d
Steps completed =  1142, iter =  6, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -72.4559

- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -


                    Reaction progress        =  1.58489319246103E+01
                    Log of reaction progress =       1.2000000



                    Time =  1.321E+10 sec
                         =  1.529E+05 days
                         =  4.185E+02 years

                    Log sec =       10.121
                    Log days =       5.184
                    Log years =      2.622

                    Temperature    =     25.000 degrees C
                    total pressure =      1.013 bars


Step size is limited by the print requirement
```

--- Reactant Summary ---

Reactant	Moles	Delta moles	Mass, g	Delta Mass, g
Tuff	8.4151E+01	1.5849E+01	1.7324E+03	3.2627E+02

Current total mass = 1.73237E+03 grams
Delta total mass = 3.26274E+02 grams
Delta total volume = 0.00000 cc

Reactant	Rel. Rate mol/mol	Rate mol/s	Rate mol/s/cm2
Tuff	1.0000E+00	1.2000E-09	2.5000E-15

Reactant	Affinity kcal/mol	Surface Area mol/s/cm2
Tuff	999.00000	4.8000E+05

Reactant	Rate Constants, mol/s/cm2	
Tuff		
	Forward	2.5000E-15

Affinity of the overall irreversible reaction= 0.000 kcal
Contributions from irreversible reactions
with no thermodynamic data are not included

--- Element Totals for the Aqueous Solution ---

Element	mg/kg soln.	Molality	Moles
O	8.862272E+05	5.562707E+01	5.447870E+01
Al	5.833348E-03	2.171180E-07	2.126359E-07
B	1.361701E-01	1.264913E-05	1.238800E-05
Ba	1.396274E-05	1.021079E-10	1.000000E-10
Ca	8.490948E-04	2.127624E-08	2.083701E-08
Ce	1.424620E-19	1.021078E-24	9.999992E-25
Cl	7.259778E+00	2.056453E-04	2.014000E-04
Cr	3.056673E+02	5.903681E-03	5.781806E-03
Cs	1.043286E-22	7.883252E-28	7.720511E-28
Cu	6.784098E-10	1.072133E-14	1.050000E-14
F	2.311502E-01	1.221861E-05	1.196637E-05
Fe	1.134124E-08	2.039414E-13	1.997313E-13
Gd	1.598841E-09	1.021079E-14	9.999998E-15
H	1.114347E+05	1.110275E+02	1.087355E+02
C	1.346138E+02	1.125525E-02	1.102290E-02
P	1.947424E+01	6.314100E-04	6.183752E-04
K	2.066860E+00	5.308820E-05	5.199225E-05
La	1.412323E-09	1.021079E-14	9.999998E-15
Li	7.057269E-07	1.021079E-10	1.000000E-10
Mg	2.597346E-02	1.073196E-06	1.051041E-06
Mn	4.301201E-11	7.862511E-16	7.700198E-16

Mo	2.223260E+02	2.327209E-03	2.279166E-03
N	2.022274E+00	1.449932E-04	1.420000E-04
Na	1.254501E+03	5.480008E-02	5.366879E-02
Nd	1.466561E-09	1.021079E-14	9.999998E-15
Ni	1.045931E-04	1.789713E-09	1.752767E-09
Pb	4.231561E-07	2.050952E-12	2.008613E-12
Pu	2.480872E-09	1.021079E-14	9.999999E-15
S	3.805454E+02	1.191808E-02	1.167205E-02
Si	4.300823E+00	1.537851E-04	1.506104E-04
Sm	1.528787E-09	1.021079E-14	9.999998E-15
Sr	4.731176E-68	5.422638E-73	5.310694E-73
Ti	1.076252E-05	2.257380E-10	2.210779E-10
U	2.420162E-09	1.021079E-14	1.000000E-14
V	4.864063E+00	9.588977E-05	9.391022E-05
Zn	6.648535E-06	1.021079E-10	1.000000E-10
Zr	9.275219E-16	1.021080E-20	1.000001E-20

Single ion activities and activity coefficients are here defined
with respect to the modified NBS pH scale

	pH	Eh	pe
modified NBS pH scale	9.1949	0.6751	1.1412E+01
rational pH scale	9.1132	0.6799	1.1494E+01

pHCl = 12.9826

Oxygen fugacity = 2.09991E-01
Log oxygen fugacity = -0.67780

Activity of water = 0.99862
Log activity of water = -0.00060

Ionic strength = 7.342474E-02 molal
Sum of molalities = 0.0856944500105
Osmotic coefficient = 0.89136

Mass of solution = 0.983525 kg
Mass of solutes = 0.004169 kg
Conc. of solutes = 0.423870 per cent (w/w)

Moles of solvent H2O = 5.43625E+01
Mass of solvent H2O = 9.79356E-01 kg

Species	Molality	Log molality	Log gamma	Log activity
Na+	5.2701E-02	-1.2782	-0.1070	-1.3851
SO4--	1.0482E-02	-1.9796	-0.3900	-2.3696
HCO3-	9.3758E-03	-2.0280	-0.0913	-2.1193
CrO4--	5.8978E-03	-2.2293	-0.3900	-2.6193
MoO4--	2.3272E-03	-2.6332	-0.3770	-3.0102
NaSO4-	1.4342E-03	-2.8434	-0.0913	-2.9347
CO3--	1.3297E-03	-2.8762	-0.3770	-3.2533
HPO4--	5.3496E-04	-3.2717	-0.3900	-3.6617
NaHCO3(aq)	4.4629E-04	-3.3504	0.0000	-3.3504

O2(aq)	2.6075E-04	-3.5838	0.0077	-3.5761
Cl-	2.0452E-04	-3.6893	-0.0985	-3.7878
NO3-	1.4499E-04	-3.8387	-0.0985	-3.9372
SiO2(aq)	1.0016E-04	-3.9993	0.0000	-3.9993
NaCO3-	9.2752E-05	-4.0327	-0.0913	-4.1240
NaHPO4-	9.2149E-05	-4.0355	-0.0913	-4.1269
VO3OH--	8.6060E-05	-4.0652	-0.3900	-4.4552
K+	5.1444E-05	-4.2887	-0.1141	-4.4028
NaHSiO3(aq)	3.2049E-05	-4.4942	0.0000	-4.4942
HSiO3-	2.1568E-05	-4.6662	-0.0913	-4.7575
OH-	1.9678E-05	-4.7060	-0.0948	-4.8008
F-	1.2178E-05	-4.9144	-0.0948	-5.0092
CO2(aq)	1.0554E-05	-4.9766	0.0077	-4.9689
HVO4--	9.2704E-06	-5.0329	-0.3900	-5.4229
BO2-	6.4204E-06	-5.1924	-0.0913	-5.2838
HCrO4-	5.9094E-06	-5.2285	-0.0913	-5.3198
B(OH)3(aq)	5.8298E-06	-5.2343	0.0000	-5.2343
H2PO4-	2.7553E-06	-5.5598	-0.0913	-5.6512
KSO4-	1.5796E-06	-5.8014	-0.0913	-5.8928
PO4---	1.2717E-06	-5.8956	-0.8930	-6.7886
NaCl(aq)	1.1222E-06	-5.9499	0.0000	-5.9499
Mg++	4.7842E-07	-6.3202	-0.3362	-6.6564
NaB(OH)4(aq)	3.9882E-07	-6.3992	0.0000	-6.3992
H2VO4-	3.4400E-07	-6.4634	-0.0913	-6.5548
MgSO4(aq)	2.4305E-07	-6.6143	0.0000	-6.6143
AlO2-	2.1550E-07	-6.6665	-0.0913	-6.7579
VO2(OH)2-	2.1318E-07	-6.6712	-0.0913	-6.7626
MgPO4-	1.7190E-07	-6.7647	-0.0913	-6.8561
MgCO3(aq)	1.1727E-07	-6.9308	0.0000	-6.9308
NaOH(aq)	1.0335E-07	-6.9857	0.0000	-6.9857
KHPO4-	6.4095E-08	-7.1932	-0.0913	-7.2845
NaF(aq)	4.0552E-08	-7.3920	0.0000	-7.3920
MgHPO4(aq)	3.9072E-08	-7.4081	0.0000	-7.4081
MgHCO3+	2.3276E-08	-7.6331	-0.1070	-7.7401
Ca++	1.0247E-08	-7.9894	-0.3738	-8.3632
H2SiO4--	6.5956E-09	-8.1807	-0.3900	-8.5708
CaCO3(aq)	5.1358E-09	-8.2894	0.0000	-8.2894
CaPO4-	2.5089E-09	-8.6005	-0.0913	-8.6919
CaSO4(aq)	2.3894E-09	-8.6217	0.0000	-8.6217
VO4---	2.3587E-09	-8.6273	-0.8930	-9.5204
Cr2O7--	1.9117E-09	-8.7186	-0.3900	-9.1086
Ni++	1.4294E-09	-8.8449	-0.3738	-9.2187
NaAlO2(aq)	1.2992E-09	-8.8863	0.0000	-8.8863
H+	7.7063E-10	-9.1132	-0.0817	-9.1949
CaHPO4(aq)	5.1888E-10	-9.2849	0.0000	-9.2849
CaHCO3+	4.6893E-10	-9.3289	-0.1070	-9.4359
NiSO4(aq)	3.4470E-10	-9.4626	0.0000	-9.4626
HSO4-	3.2063E-10	-9.4940	-0.0913	-9.5853
HAlO2(aq)	3.1452E-10	-9.5024	0.0000	-9.5024
Ti(OH)4(aq)	2.2574E-10	-9.6464	0.0000	-9.6464
KOH(aq)	2.1451E-10	-9.6685	0.0000	-9.6685
KCl(aq)	2.0644E-10	-9.6852	0.0000	-9.6852
MgB(OH)4+	1.1581E-10	-9.9362	-0.1070	-10.0432

--- Summary of Instantaneously Precipitated Solid Phases ---
(defined by derivatives)

--- Theoretical Rock Composition ---
g/kg

O	5.181360E+01
Al	6.307707E+00

Ca	3.743602E-01
Cl	2.295229E-12
Cs	4.953199E-25
Fe	6.119367E-01
H	7.306916E-01
C	2.012244E-03
P	6.015780E-12
K	3.828029E+00
Mg	1.381795E-01
Mn	4.839765E-02
N	2.018288E-66
Na	2.488238E+00
Pb	6.707127E-11
Si	3.360184E+01
Ti	5.500777E-02

--- Oxide Percentages ---

Oxide Theoretical rock

Total = 0.0000

Phase/end-member	d mol/d zi	d grams/d zi	d vol (cc)/d zi
Celadonite	1.2310E-03	4.8840E-01	1.9340E-01
Maximum_Microcline	1.9069E-02	5.3076E+00	2.0736E+00
Mesolite	3.1067E-03	1.2047E+00	5.3186E-01
Muscovite	1.0011E-03	3.9873E-01	1.4086E-01
Ni2SiO4	-2.6663E-12	-5.5850E-10	-1.1361E-10
Pyrolusite	1.9400E-04	1.6866E-02	9.7000E-02
Pyromorphite	1.4257E-14	1.9338E-11	2.7467E-12
Quartz	9.3850E-02	5.6389E+00	2.1293E+00
Rutile	2.5300E-04	2.0209E-02	4.7615E-03
fix CO2(g)	3.6894E-05	1.6237E-03	0.0000E+00
fix O2(g)	-7.0649E-04	-2.2607E-02	0.0000E+00
Clinoptilolite-ss			
Clinoptilolite-Ca	8.9265E-06	1.2001E-02	4.4632E-03
Clinoptilolite-Cs	2.3672E-28	4.1089E-25	1.1836E-25
Clinoptilolite-K	7.3700E-05	1.0395E-01	3.6850E-02
Clinoptilolite-NH4	9.1526E-69	1.2241E-65	4.5763E-66
Clinoptilolite-Na	6.1582E-03	8.3422E+00	3.0791E+00
Clinoptilolite-Sr	0.0000E+00	0.0000E+00	0.0000E+00
Smectite-di			
Beidellite-Ca	4.0469E-11	1.4835E-08	5.2420E-09
Beidellite-K	1.7470E-10	6.5137E-08	2.3357E-08
Beidellite-Mg	3.7563E-10	1.3672E-07	4.6274E-08
Beidellite-Na	1.7147E-08	6.3023E-06	2.2384E-06
Montmor-Ca	7.2653E-08	2.6594E-05	3.6326E-05
Montmor-K	5.1220E-07	1.9071E-04	2.5610E-04
Montmor-Mg	1.0960E-06	3.9832E-04	5.4799E-04
Montmor-Na	4.9028E-05	1.7994E-02	2.4514E-02
Nontronite-Ca	2.6315E-06	1.1165E-03	3.4499E-04
Nontronite-K	1.1360E-05	4.8913E-03	1.5366E-03
Nontronite-Mg	2.4443E-05	1.0307E-02	3.1717E-03
Nontronite-Na	1.1150E-03	4.7418E-01	1.4731E-01

--- Summary of Solid Phases (E.S.+P.R.S.) ---

Phase/End-member	Log moles	Moles	Mass, g	Volume, cc

Alunite	-2.5559	2.7801E-03	1.1516E+00	8.1624E-01
Celadonite	-1.7088	1.9552E-02	7.7569E+00	3.0716E+00
Diaspore	-1.6079	2.4665E-02	1.4796E+00	4.3804E-01
Fluorapatite	-3.9881	1.0278E-04	5.1834E-02	5.1392E-02
Hematite	-3.7144	1.9300E-04	3.0820E-02	5.8428E-03
Maximum_Microcline	-0.5384	2.8949E-01	8.0575E+01	3.1480E+01
Mesolite	-1.3106	4.8908E-02	1.8966E+01	8.3730E+00
Muscovite	-1.5806	2.6264E-02	1.0461E+01	3.6955E+00
Ni2SiO4	-2.1930	6.4125E-03	1.3432E+00	2.7324E-01
Nontronite-H	-4.9990	1.0023E-05	4.1899E-03	5.0117E-03
Pyrolusite	-2.4355	3.6684E-03	3.1892E-01	1.8342E+00
Pyromorphite	-10.7078	1.9598E-11	2.6582E-08	3.7758E-09
Quartz	0.2312	1.7028E+00	1.0231E+02	3.8634E+01
Rutile	-2.3969	4.0098E-03	3.2030E-01	7.5464E-02
fix CO2(g)	2.3010	1.9999E+02	8.8015E+03	0.0000E+00
fix O2(g)	2.3010	1.9999E+02	6.3994E+03	0.0000E+00
Clinoptilolite-ss	-1.0746	8.4223E-02		
Clinoptilolite-Ca	-3.9191	1.2047E-04	1.6197E-01	6.0237E-02
Clinoptilolite-Cs	-10.5400	2.8843E-11	5.0064E-08	1.4422E-08
Clinoptilolite-K	-3.0023	9.9468E-04	1.4030E+00	4.9734E-01
Clinoptilolite-NH4	-66.9181	1.2075E-67	1.6150E-64	6.0375E-65
Clinoptilolite-Na	-1.0804	8.3108E-02	1.1258E+02	4.1554E+01
Clinoptilolite-Sr	-10.2389	5.7687E-11	8.2309E-08	2.8843E-08
Smectite-di	-1.7230	1.8922E-02		
Beidellite-Ca	-8.9845	1.0364E-09	3.7992E-07	1.3425E-07
Beidellite-K	-8.4766	3.3376E-09	1.2444E-06	4.4624E-07
Beidellite-Mg	-8.2322	5.8592E-09	2.1325E-06	7.2180E-07
Beidellite-Na	-6.6202	2.3975E-07	8.8116E-05	3.1297E-05
Montmor-Ca	-5.8564	1.3919E-06	5.0950E-04	6.9596E-04
Montmor-K	-5.1174	7.6313E-06	2.8414E-03	3.8157E-03
Montmor-Mg	-4.7876	1.6309E-05	5.9274E-03	8.1545E-03
Montmor-Na	-3.1642	6.8516E-04	2.5146E-01	3.4258E-01
Nontronite-Ca	-3.3714	4.2524E-04	1.8042E-01	5.5748E-02
Nontronite-K	-3.1089	7.7822E-04	3.3509E-01	1.0527E-01
Nontronite-Mg	-3.0851	8.2214E-04	3.4669E-01	1.0668E-01
Nontronite-Na	-1.7909	1.6185E-02	6.8830E+00	2.1382E+00

	Mass, grams	Volume, cc
Created	1.554779E+04	1.336260E+02
Destroyed	3.262735E+02	0.000000E+00
Net	1.522152E+04	1.336260E+02

Warning-- these volume totals may be incomplete because of missing partial molar volume data in the data base

--- Summary of Pure Mineral Saturation States ---

Mineral	Log Q/K	Aff, kcal	State
Alamosite	-3.425	-4.673	
Albite	-0.022	-0.030	
Albite_high	-1.341	-1.829	
Albite_low	-0.022	-0.030	
Alstonite	-7.225	-9.857	
Analcime	-0.148	-0.202	
Analcime-dehy	-6.510	-8.882	

Andalusite	-6.082	-8.298	
Anglesite	-6.658	-9.084	
Anhydrite	-6.426	-8.767	
Aragonite	-3.281	-4.476	
BaCrO4	-3.115	-4.250	
BaHPO4	-6.690	-9.127	
BaZrO3	83.671	114.151	ssatd
Barite	-2.827	-3.856	
Bassanite	-7.072	-9.648	
Beidellite-Ca	-2.466	-3.365	
Beidellite-H	-3.163	-4.315	
Beidellite-K	-2.257	-3.079	
Beidellite-Mg	-2.147	-2.929	
Beidellite-Na	-1.599	-2.182	
Boehmite	-0.634	-0.864	
Boric_acid	-5.076	-6.925	
Brucite	-4.566	-6.229	
Bunsenite	-3.301	-4.504	
CaSO4:0.5H2O(beta)	-7.240	-9.877	
CaZrO3	139.766	190.680	ssatd
Calcite	-3.136	-4.279	
CeO2	-3.321	-4.531	
Celadonite	0.000	0.000	satd
Cerussite	-1.857	-2.533	
Chalcedony	-0.271	-0.370	
Chrysotile	-3.927	-5.358	
Clinochlore-14A	-6.714	-9.160	
Clinoptilolite	-6.775	-9.243	
Clinoptilolite-K	-6.670	-9.100	
Clinoptilolite-Na	-0.020	-0.027	
Clinoptilolite-hy-K	-6.664	-9.092	
Clinoptilolite-hy-Na	-0.018	-0.024	
Coesite	-0.810	-1.105	
Corundum	-4.450	-6.072	
Cristobalite(alpha)	-0.551	-0.751	
Cristobalite(beta)	-0.994	-1.356	
Crocoite	-2.043	-2.787	
Dawsonite	-0.920	-1.256	
Diaspore	-0.230	-0.313	
Diopside	-7.204	-9.829	
Dolomite	-3.382	-4.614	
Dolomite-dis	-4.926	-6.721	
Dolomite-ord	-3.382	-4.614	
Enstatite	-3.594	-4.903	
Epsomite	-7.068	-9.643	
Fe(OH)3	-6.518	-8.893	
Ferrite-Zn	-6.480	-8.840	
Fluorapatite	-5.232	-7.138	
GdPO4:H2O	-4.491	-6.128	
Gibbsite	-0.826	-1.127	
Goethite	-1.397	-1.905	
Gypsum	-6.252	-8.529	
Halite	-6.758	-9.220	
Hematite	-1.832	-2.500	
Hexahydrite	-7.303	-9.963	
Hydrocerussite	-7.303	-9.964	
Ice	-0.139	-0.190	
Illite	-1.275	-1.739	
Jadeite	-1.647	-2.247	
K-Feldspar	0.000	0.000	
Kalicinite	-6.806	-9.285	
Kalsilite	-3.175	-4.332	
Kaolinite	-0.948	-1.294	

Kyanite	-5.812	-7.929	
LaPO4:H2O	-1.641	-2.239	
Lansfordite	-4.425	-6.037	
Laumontite	-5.779	-7.884	
Lawsonite	-6.325	-8.630	
Litharge	-6.396	-8.726	
Magnesite	-1.875	-2.557	
Manganite	-4.459	-6.084	
Massicot	-6.571	-8.965	
Maximum_Microcline	0.000	0.000	satd
Mesolite	0.000	0.000	satd
Mirabilite	-4.006	-5.465	
MnO2(gamma)	-1.518	-2.071	
Monohydrocalcite	-3.971	-5.417	
Montmor-Ca	-1.392	-1.900	
Montmor-K	-1.113	-1.518	
Montmor-Mg	-1.003	-1.369	
Montmor-Na	-0.459	-0.626	
Mordenite	-2.805	-3.827	
Muscovite	0.000	0.000	satd
Na2CO3	-6.877	-9.382	
Na2CO3:7H2O	-5.645	-7.701	
Nahcolite	-3.393	-4.629	
Natrolite	-1.039	-1.417	
Natron	-5.311	-7.246	
NdPO4:H2O	-3.177	-4.334	
Nepheline	-3.060	-4.174	
Nesquehonite	-4.578	-6.246	
Ni(OH)2	-3.579	-4.882	
Ni2SiO4	0.000	0.000	satd
NiCO3	-5.655	-7.715	
Nontronite-Ca	-0.878	-1.198	
Nontronite-H	-1.574	-2.148	
Nontronite-K	-0.668	-0.912	
Nontronite-Mg	-0.559	-0.762	
Nontronite-Na	-0.011	-0.015	
Paragonite	-0.919	-1.253	
Paralaurionite	-6.938	-9.466	
Pb3(PO4)2	-5.384	-7.345	
Pb4O(PO4)2	-6.538	-8.919	
PbHPO4	-4.236	-5.780	
Petalite	-6.153	-8.395	
Phlogopite	-2.518	-3.435	
Plattnerite	-1.760	-2.401	
PuO2	-4.814	-6.567	
Pyrolusite	0.000	0.000	satd
Pyromorphite	0.000	0.000	satd
Pyrophyllite	-2.576	-3.514	
Quartz	0.000	0.000	satd
Rutile	0.000	0.000	satd
Sanidine_high	-1.199	-1.636	
Saponite-Ca	-1.828	-2.495	
Saponite-H	-2.525	-3.445	
Saponite-K	-1.619	-2.209	
Saponite-Mg	-1.509	-2.059	
Saponite-Na	-0.962	-1.312	
Scolecite	-3.989	-5.442	
Sellaite	-7.291	-9.946	
SiO2(am)	-1.286	-1.754	
Sillimanite	-6.446	-8.794	
SmPO4:H2O	-3.992	-5.447	
Smectite-low-Fe-Mg	-7.076	-9.653	
Smithsonite	-4.799	-6.547	

SrZrO3	58.251	79.471	ssatd
Stilbite	-1.918	-2.616	
Talc	-1.938	-2.644	
Thenardite	-4.831	-6.591	
Thermonatrite	-6.658	-9.083	
Trevorite	-2.341	-3.193	
Tridymite	-0.171	-0.234	
Witherite	-0.356	-0.486	
Zincite	-4.231	-5.772	
Zn(OH)2(beta)	-4.957	-6.762	
Zn(OH)2(epsilon)	-4.685	-6.392	
Zn(OH)2(gamma)	-4.906	-6.693	
fix CO2(g)	0.000	0.000	satd
fix O2(g)	0.000	0.000	satd

--- Summary of Solid Solutions ---

--- Carbonate-Calcite ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Calcite	5.1818E-02	-1.2855	0.0000	-1.2855
Magnesite	9.4705E-01	-0.0236	0.0000	-0.0236
Rhodochrosite	1.2064E-09	-8.9185	0.0000	-8.9185
Siderite	1.8687E-18	-17.7285	0.0000	-17.7285
Smithsonite	1.1274E-03	-2.9479	0.0000	-2.9479
Strontianite	2.4957E-64	-63.6028	0.0000	-63.6028

Mineral	Log Q/K	Aff, kcal	State
Carbonate-Calcite	-1.851	-2.525	
Calcite	-1.851	-2.525	
Magnesite	-1.851	-2.525	
Rhodochrosite	-1.851	-2.525	
Siderite	-1.851	-2.525	
Smithsonite	-1.851	-2.525	
Strontianite	-1.851	-2.525	

--- Clinoptilolite-hy-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-hy-Ca	1.5018E-10	-9.8234	0.0000	-9.8234
Clinoptilolite-hy-Cs	2.2488E-84	-83.6480	0.0000	-83.6480
Clinoptilolite-hy-K	2.2577E-07	-6.6463	0.0000	-6.6463
Clinoptilolite-hy-Na	1.0000E+00	0.0000	0.0000	0.0000
Clinoptilolite-hy-Sr	3.4572-122	-121.4613	0.0000	-121.4613

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-hy-ss	-0.018	-0.024	
Clinoptilolite-hy-Ca	-0.018	-0.024	
Clinoptilolite-hy-Cs	-0.018	-0.024	
Clinoptilolite-hy-K	-0.018	-0.024	

Clinoptilolite-hy-Na	-0.018	-0.024
Clinoptilolite-hy-Sr	-0.018	-0.024

--- Clinoptilolite-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-Ca	1.4304E-03	-2.8446	-6.9976	-9.8422
Clinoptilolite-Cs	6.5620E-25	-24.1830	-59.4901	-83.6730
Clinoptilolite-K	1.1810E-02	-1.9278	-4.7423	-6.6701
Clinoptilolite-NH4	1.4625E-66	-65.8349	-161.9538	-227.7887
Clinoptilolite-Na	9.8676E-01	-0.0058	-0.0142	-0.0200
Clinoptilolite-Sr	7.7754E-36	-35.1093	-86.3688	-121.4781

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-ss	0.000	0.000	satd
Clinoptilolite-Ca	0.000	0.000	satd
Clinoptilolite-Cs	0.000	0.000	satd
Clinoptilolite-K	0.000	0.000	satd
Clinoptilolite-NH4	0.000	0.000	satd
Clinoptilolite-Na	0.000	0.000	satd
Clinoptilolite-Sr	0.000	0.000	satd

--- Saponite-tri ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Saponite-Ca	2.2815E-03	-2.6418	1.7700	-0.8718
Saponite-H	1.7688E-05	-4.7523	3.1840	-1.5683
Saponite-K	9.8418E-03	-2.0069	1.3446	-0.6623
Saponite-Mg	2.1176E-02	-1.6741	1.1217	-0.5525
Saponite-Na	9.6668E-01	-0.0147	0.0099	-0.0049

Mineral	Log Q/K	Aff, kcal	State
Saponite-tri	-0.957	-1.305	
Saponite-Ca	-0.957	-1.305	
Saponite-H	-0.957	-1.305	
Saponite-K	-0.957	-1.305	
Saponite-Mg	-0.957	-1.305	
Saponite-Na	-0.957	-1.305	

--- Smectite-di ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Beidellite-Ca	3.3607E-08	-7.4736	5.0073	-2.4663
Beidellite-K	1.4508E-07	-6.8384	4.5817	-2.2567

Beidellite-Mg	3.1194E-07	-6.5059	4.3590	-2.1470
Beidellite-Na	1.4240E-05	-4.8465	3.2472	-1.5993
Montmor-Ca	6.0334E-05	-4.2194	2.8270	-1.3924
Montmor-K	4.2535E-04	-3.3712	2.2587	-1.1125
Montmor-Mg	9.1014E-04	-3.0409	2.0374	-1.0035
Montmor-Na	4.0715E-02	-1.3902	0.9315	-0.4588
Nontronite-Ca	2.1853E-03	-2.6605	1.7825	-0.8780
Nontronite-K	9.4337E-03	-2.0253	1.3570	-0.6684
Nontronite-Mg	2.0298E-02	-1.6925	1.1340	-0.5585
Nontronite-Na	9.2596E-01	-0.0334	0.0224	-0.0110

Mineral	Log Q/K	Aff, kcal	State
Smectite-di	0.000	0.000	satd
Beidellite-Ca	0.000	0.000	satd
Beidellite-K	0.000	0.000	satd
Beidellite-Mg	0.000	0.000	satd
Beidellite-Na	0.000	0.000	satd
Montmor-Ca	0.000	0.000	satd
Montmor-K	0.000	0.000	satd
Montmor-Mg	0.000	0.000	satd
Montmor-Na	0.000	0.000	satd
Nontronite-Ca	0.000	0.000	satd
Nontronite-K	0.000	0.000	satd
Nontronite-Mg	0.000	0.000	satd
Nontronite-Na	0.000	0.000	satd

--- Lanthanide hydroxide ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
La(OH)3	5.9429E-04	-3.2260	0.0000	-3.2260
Ce(OH)3	2.7706E-14	-13.5574	0.0000	-13.5574
Nd(OH)3(c)	8.6731E-01	-0.0618	0.0000	-0.0618
Gd(OH)3	1.0561E-01	-0.9763	0.0000	-0.9763
Sm(OH)3	2.6478E-02	-1.5771	0.0000	-1.5771

Mineral	Log Q/K	Aff, kcal	State
Lanthanide hydroxide	-9.044	-12.339	
La(OH)3	-9.044	-12.339	
Ce(OH)3	-9.044	-12.339	
Nd(OH)3(c)	-9.044	-12.339	
Gd(OH)3	-9.044	-12.339	
Sm(OH)3	-9.044	-12.339	

--- Rhabdophane-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaPO4:H2O	9.6620E-01	-0.0149	0.0000	-0.0149
CePO4:H2O	1.4244E-11	-10.8464	0.0000	-10.8464
NdPO4:H2O	2.8135E-02	-1.5508	0.0000	-1.5508

GdPO4:H2O	1.3639E-03	-2.8652	0.0000	-2.8652
SmPO4:H2O	4.3049E-03	-2.3660	0.0000	-2.3660

Mineral	Log Q/K	Aff, kcal	State
Rhabdophane-ss	-1.626	-2.219	
LaPO4:H2O	-1.626	-2.219	
CePO4:H2O	-1.626	-2.219	
NdPO4:H2O	-1.626	-2.219	
GdPO4:H2O	-1.626	-2.219	
SmPO4:H2O	-1.626	-2.219	

--- Lanthanide fluoride ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaF3:0.5H2O	9.6417E-01	-0.0158	0.0000	-0.0158
CeF3:0.5H2O	2.2528E-11	-10.6473	0.0000	-10.6473
NdF3:0.5H2O	3.5345E-02	-1.4517	0.0000	-1.4517
GdF3:0.5H2O	5.4185E-05	-4.2661	0.0000	-4.2661
SmF3:0.5H2O	4.2958E-04	-3.3670	0.0000	-3.3670

Mineral	Log Q/K	Aff, kcal	State
Lanthanide fluoride	-15.836	-21.605	
LaF3:0.5H2O	-15.836	-21.605	
CeF3:0.5H2O	-15.836	-21.605	
NdF3:0.5H2O	-15.836	-21.605	
GdF3:0.5H2O	-15.836	-21.605	
SmF3:0.5H2O	-15.836	-21.605	

--- Summary of Gases ---

Gas	Fugacity	Log fugacity
Al(g)	9.7073-192	-191.0129
B(g)	4.0337-204	-203.3943
BF3(g)	1.3230E-45	-44.8785
C(g)	3.0917-190	-189.5098
CH4(g)	3.5197-146	-145.4535
CO(g)	6.0395E-49	-48.2190
CO2(g)	3.1623E-04	-3.5000
Ca(g)	5.4464-154	-153.2639
Chlorine	1.7652E-31	-30.7532
Cs(g)	3.8597E-99	-98.4135
Cu(g)	1.9044E-82	-81.7202
Fluorine	1.2151E-86	-85.9154
H2(g)	6.1066E-42	-41.2142
H2O(g)	2.5942E-02	-1.5860
H2S(g)	1.1269-144	-143.9481
HCl(g)	5.1506E-20	-19.2881
HF(g)	4.8228E-16	-15.3167
K(g)	1.2715E-76	-75.8957
Li(g)	1.1209E-95	-94.9504

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Mg(g)                        1.8677-129   -128.7287
Nitrogen                     1.3302E-22    -21.8761
NH3(g)                       1.3270E-70    -69.8771
NO(g)                        3.6317E-27    -26.4399
NO2(g)                       2.4832E-21    -20.6050
Na(g)                        6.9098E-73    -72.1605
O2(g)                        2.0999E-01     -0.6778
Pb(g)                        2.6718E-68    -67.5732
S2(g)                        7.5934-232   -231.1196
SO2(g)                       1.9980E-57    -56.6994
Si(g)                        4.2257-221   -220.3741
SiF4(g)                      2.3911E-46    -45.6214
Ti(g)                        3.8019-231   -230.4200
TiCl4(g)                     2.3638E-90    -89.6264
U(g)                         1.0482-302   -301.9796
U2Cl10(g)                    1.4770-269   -268.8306
U2Cl8(g)                     2.5941-269   -268.5860
U2F10(g)                     1.0133-186   -185.9943
UCl(g)                       4.8143-260   -259.3175
UCl2(g)                      6.6151-216   -215.1795
UCl3(g)                      1.9909-169   -168.7010
UCl4(g)                      3.2445-140   -139.4889
UCl5(g)                      2.7205-148   -147.5654
UCl6(g)                      4.2379-151   -150.3729
UF(g)                        9.5803-246   -245.0186
UF2(g)                       6.4942-207   -206.1875
UF3(g)                       1.0834-161   -160.9652
UF4(g)                       2.6676-113   -112.5739
UF5(g)                       3.0086-106   -105.5216
UF6(g)                       3.3413-113   -112.4761
UO(g)                        8.2782-218   -217.0821
UO2(g)                       1.5337-133   -132.8143
UO2Cl2(g)                    1.1821E-83    -82.9274
UO2F2(g)                     8.4184E-73    -72.0748
UO3(g)                       1.1281E-80    -79.9477
UOF4(g)                      7.9492E-91    -90.0997
Zn(g)                        2.2501E-77    -76.6478



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Stepping to zi=  1.5940E+01, delzi=  9.0730E-02, nord= 6
  time =  1.5374E+05 d, dltime =  8.7509E+02 d
Steps completed =  1143, iter =  6, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -72.5428

Stepping to zi=  1.6000E+01, delzi=  6.0338E-02, nord= 6
  time =  1.5432E+05 d, dltime =  5.8197E+02 d
Steps completed =  1144, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -72.5961

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                    Reaction progress        =  1.60000000000000E+01
                    Log of reaction progress =       1.2041200



                    Time =  1.333E+10 sec
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                    =  1.543E+05 days
                    =  4.225E+02 years

                Log sec =       10.125
                Log days =       5.188
                Log years =      2.626

                Temperature    =     25.000 degrees C
                total pressure =      1.013 bars


Step size is limited by the P.R.S. shift requirement


                          --- Reactant Summary ---


   Reactant                  Moles     Delta moles    Mass, g    Delta Mass, g

 Tuff                      8.4000E+01   1.6000E+01   1.7293E+03   3.2938E+02


             Current total mass =  1.72926E+03 grams
             Delta total mass   =  3.29383E+02 grams
             Delta total volume =      0.00000 cc


   Reactant                Rel. Rate      Rate         Rate
                            mol/mol       mol/s      mol/s/cm2

 Tuff                      1.0000E+00   1.2000E-09   2.5000E-15


   Reactant                  Affinity   Surface Area
                             kcal/mol     mol/s/cm2

 Tuff                       999.00000   4.8000E+05


   Reactant                Rate Constants, mol/s/cm2

 Tuff
                  Forward    2.5000E-15


        Affinity of the overall irreversible reaction=     0.000 kcal
        Contributions from irreversible reactions
        with no thermodynamic data are not included


    --- Element Totals for the Aqueous Solution ---

 Element        mg/kg soln.          Molality             Moles

    O          8.862266E+05        5.562710E+01        5.446665E+01
    Al         5.831781E-03        2.170600E-07        2.125319E-07
    B          1.362001E-01        1.265193E-05        1.238800E-05
    Ba         1.396582E-05        1.021306E-10        1.000000E-10
    Ca         8.507853E-04        2.131863E-08        2.087390E-08
    Ce         1.424934E-19        1.021305E-24        9.999992E-25
    Cl         7.261379E+00        2.056909E-04        2.014000E-04
```

Cr	3.057347E+02	5.904991E-03	5.781806E-03
Cs	8.957820E-23	6.768695E-28	6.627492E-28
Cu	6.785594E-10	1.072371E-14	1.050000E-14
F	2.312012E-01	1.222133E-05	1.196637E-05
Fe	1.134023E-08	2.039235E-13	1.996694E-13
Gd	1.599193E-09	1.021305E-14	9.999998E-15
H	1.114346E+05	1.110275E+02	1.087114E+02
C	1.345754E+02	1.125206E-02	1.101733E-02
P	1.968554E+01	6.382615E-04	6.249467E-04
K	2.067573E+00	5.310658E-05	5.199872E-05
La	1.412634E-09	1.021305E-14	9.999998E-15
Li	7.058825E-07	1.021306E-10	1.000000E-10
Mg	2.604192E-02	1.076026E-06	1.053579E-06
Mn	4.300295E-11	7.860866E-16	7.696879E-16
Mo	2.223750E+02	2.327725E-03	2.279166E-03
N	2.022720E+00	1.450254E-04	1.420000E-04
Na	1.254931E+03	5.481894E-02	5.367535E-02
Nd	1.466885E-09	1.021305E-14	9.999998E-15
Ni	1.046642E-04	1.790934E-09	1.753573E-09
Pb	4.210002E-07	2.040506E-12	1.997939E-12
Pu	2.481419E-09	1.021306E-14	9.999999E-15
S	3.806293E+02	1.192073E-02	1.167205E-02
Si	4.300655E+00	1.537793E-04	1.505713E-04
Sm	1.529124E-09	1.021305E-14	9.999998E-15
Sr	3.426444E-68	3.927225E-73	3.845298E-73
Ti	1.076250E-05	2.257379E-10	2.210287E-10
U	2.420696E-09	1.021306E-14	1.000000E-14
V	4.865136E+00	9.591104E-05	9.391022E-05
Zn	6.650001E-06	1.021306E-10	1.000000E-10
Zr	9.277264E-16	1.021307E-20	1.000001E-20

Single ion activities and activity coefficients are here defined
with respect to the modified NBS pH scale

	pH	Eh	pe
modified NBS pH scale	9.1947	0.6751	1.1412E+01
rational pH scale	9.1130	0.6799	1.1494E+01

pHCl = 12.9824

Oxygen fugacity = 2.09991E-01
Log oxygen fugacity = -0.67780

Activity of water = 0.99862
Log activity of water = -0.00060

Ionic strength = 7.345114E-02 molal
Sum of molalities = 0.0857199731874
Osmotic coefficient = 0.89134

Mass of solution = 0.983308 kg
Mass of solutes = 0.004169 kg
Conc. of solutes = 0.424008 per cent (w/w)

Moles of solvent H2O = 5.43505E+01

Mass of solvent H2O = 9.79139E-01 kg

Species	Molality	Log molality	Log gamma	Log activity
Na+	5.2718E-02	-1.2780	-0.1070	-1.3850
SO4--	1.0484E-02	-1.9795	-0.3901	-2.3695
HCO3-	9.3733E-03	-2.0281	-0.0914	-2.1195
CrO4--	5.8991E-03	-2.2292	-0.3901	-2.6193
MoO4--	2.3277E-03	-2.6331	-0.3771	-3.0101
NaSO4-	1.4348E-03	-2.8432	-0.0914	-2.9346
CO3--	1.3291E-03	-2.8765	-0.3771	-3.2535
HPO4--	5.4074E-04	-3.2670	-0.3901	-3.6571
NaHCO3(aq)	4.4629E-04	-3.3504	0.0000	-3.3504
O2(aq)	2.6074E-04	-3.5838	0.0077	-3.5761
Cl-	2.0457E-04	-3.6892	-0.0985	-3.7877
NO3-	1.4503E-04	-3.8386	-0.0985	-3.9371
SiO2(aq)	1.0016E-04	-3.9993	0.0000	-3.9993
NaHPO4-	9.3165E-05	-4.0307	-0.0914	-4.1221
NaCO3-	9.2727E-05	-4.0328	-0.0914	-4.1241
VO3OH--	8.6079E-05	-4.0651	-0.3901	-4.4552
K+	5.1461E-05	-4.2885	-0.1142	-4.4027
NaHSiO3(aq)	3.2049E-05	-4.4942	0.0000	-4.4942
HSiO3-	2.1562E-05	-4.6663	-0.0914	-4.7577
OH-	1.9673E-05	-4.7061	-0.0948	-4.8010
F-	1.2181E-05	-4.9143	-0.0948	-5.0092
CO2(aq)	1.0554E-05	-4.9766	0.0077	-4.9689
HVO4--	9.2725E-06	-5.0328	-0.3901	-5.4229
BO2-	6.4209E-06	-5.1924	-0.0914	-5.2838
HCrO4-	5.9119E-06	-5.2283	-0.0914	-5.3196
B(OH)3(aq)	5.8319E-06	-5.2342	0.0000	-5.2342
H2PO4-	2.7857E-06	-5.5551	-0.0914	-5.6464
KSO4-	1.5802E-06	-5.8013	-0.0914	-5.8926
PO4---	1.2853E-06	-5.8910	-0.8932	-6.7842
NaCl(aq)	1.1227E-06	-5.9497	0.0000	-5.9497
Mg++	4.7874E-07	-6.3199	-0.3363	-6.6562
NaB(OH)4(aq)	3.9896E-07	-6.3991	0.0000	-6.3991
H2VO4-	3.4414E-07	-6.4633	-0.0914	-6.5546
MgSO4(aq)	2.4321E-07	-6.6140	0.0000	-6.6140
AlO2-	2.1545E-07	-6.6667	-0.0914	-6.7580
VO2(OH)2-	2.1327E-07	-6.6711	-0.0914	-6.7624
MgPO4-	1.7379E-07	-6.7600	-0.0914	-6.8513
MgCO3(aq)	1.1727E-07	-6.9308	0.0000	-6.9308
NaOH(aq)	1.0335E-07	-6.9857	0.0000	-6.9857
KHPO4-	6.4802E-08	-7.1884	-0.0914	-7.2798
NaF(aq)	4.0572E-08	-7.3918	0.0000	-7.3918
MgHPO4(aq)	3.9513E-08	-7.4033	0.0000	-7.4033
MgHCO3+	2.3283E-08	-7.6330	-0.1070	-7.7399
Ca++	1.0254E-08	-7.9891	-0.3739	-8.3630
H2SiO4--	6.5925E-09	-8.1810	-0.3901	-8.5710
CaCO3(aq)	5.1358E-09	-8.2894	0.0000	-8.2894
CaPO4-	2.5365E-09	-8.5958	-0.0914	-8.6871
CaSO4(aq)	2.3911E-09	-8.6214	0.0000	-8.6214
VO4---	2.3589E-09	-8.6273	-0.8932	-9.5204
Cr2O7--	1.9135E-09	-8.7182	-0.3901	-9.1083
Ni++	1.4303E-09	-8.8446	-0.3739	-9.2184
NaAlO2(aq)	1.2992E-09	-8.8863	0.0000	-8.8863
H+	7.7087E-10	-9.1130	-0.0817	-9.1947
CaHPO4(aq)	5.2475E-10	-9.2800	0.0000	-9.2800
CaHCO3+	4.6908E-10	-9.3287	-0.1070	-9.4357
NiSO4(aq)	3.4493E-10	-9.4623	0.0000	-9.4623
HSO4-	3.2076E-10	-9.4938	-0.0914	-9.5852
HAlO2(aq)	3.1452E-10	-9.5024	0.0000	-9.5024

Ti(OH)4(aq)	2.2574E-10	-9.6464	0.0000	-9.6464
KOH(aq)	2.1451E-10	-9.6685	0.0000	-9.6685
KCl(aq)	2.0654E-10	-9.6850	0.0000	-9.6850
MgB(OH)4+	1.1589E-10	-9.9359	-0.1070	-10.0429

--- Summary of Instantaneously Precipitated Solid Phases ---
(defined by derivatives)

--- Theoretical Rock Composition ---
g/kg

O	5.181360E+01
Al	6.307707E+00
Ca	3.743602E-01
Cl	2.254966E-12
Cs	3.702230E-25
Fe	6.119368E-01
H	7.306913E-01
C	2.011620E-03
P	5.910251E-12
K	3.828030E+00
Mg	1.381795E-01
Mn	4.839766E-02
N	2.020248E-66
Na	2.488237E+00
Pb	6.589471E-11
Si	3.360185E+01
Ti	5.500777E-02

--- Oxide Percentages ---

Oxide Theoretical rock

Total = 0.0000

Phase/end-member	d mol/d zi	d grams/d zi	d vol (cc)/d zi
Celadonite	1.2310E-03	4.8840E-01	1.9340E-01
Maximum_Microcline	1.9069E-02	5.3076E+00	2.0736E+00
Mesolite	3.1067E-03	1.2047E+00	5.3186E-01
Muscovite	1.0011E-03	3.9873E-01	1.4086E-01
Ni2SiO4	-2.6681E-12	-5.5888E-10	-1.1369E-10
Pyrolusite	1.9400E-04	1.6866E-02	9.7000E-02
Pyromorphite	1.4007E-14	1.8998E-11	2.6986E-12
Quartz	9.3850E-02	5.6389E+00	2.1293E+00
Rutile	2.5300E-04	2.0209E-02	4.7615E-03
fix CO2(g)	3.6882E-05	1.6232E-03	0.0000E+00
fix O2(g)	-7.0649E-04	-2.2607E-02	0.0000E+00
Clinoptilolite-ss			
Clinoptilolite-Ca	8.9264E-06	1.2001E-02	4.4632E-03
Clinoptilolite-Cs	1.7694E-28	3.0711E-25	8.8468E-26
Clinoptilolite-K	7.3700E-05	1.0395E-01	3.6850E-02
Clinoptilolite-NH4	9.1615E-69	1.2253E-65	4.5807E-66
Clinoptilolite-Na	6.1582E-03	8.3421E+00	3.0791E+00
Clinoptilolite-Sr	0.0000E+00	0.0000E+00	0.0000E+00
Smectite-di			
Beidellite-Ca	4.0469E-11	1.4835E-08	5.2420E-09
Beidellite-K	1.7470E-10	6.5137E-08	2.3357E-08
Beidellite-Mg	3.7564E-10	1.3672E-07	4.6274E-08
Beidellite-Na	1.7147E-08	6.3023E-06	2.2384E-06

Montmor-Ca	7.2653E-08	2.6594E-05	3.6326E-05
Montmor-K	5.1220E-07	1.9071E-04	2.5610E-04
Montmor-Mg	1.0960E-06	3.9832E-04	5.4799E-04
Montmor-Na	4.9028E-05	1.7994E-02	2.4514E-02
Nontronite-Ca	2.6315E-06	1.1165E-03	3.4499E-04
Nontronite-K	1.1360E-05	4.8913E-03	1.5366E-03
Nontronite-Mg	2.4443E-05	1.0307E-02	3.1717E-03
Nontronite-Na	1.1150E-03	4.7418E-01	1.4731E-01

--- Summary of Solid Phases (E.S.+P.R.S.) ---

Phase/End-member	Log moles	Moles	Mass, g	Volume, cc
Alunite	-2.5559	2.7801E-03	1.1516E+00	8.1624E-01
Celadonite	-1.7047	1.9738E-02	7.8306E+00	3.1008E+00
Diaspore	-1.6079	2.4665E-02	1.4796E+00	4.3804E-01
Fluorapatite	-3.9881	1.0278E-04	5.1834E-02	5.1392E-02
Hematite	-3.7144	1.9300E-04	3.0820E-02	5.8428E-03
Maximum_Microcline	-0.5341	2.9237E-01	8.1377E+01	3.1793E+01
Mesolite	-1.3065	4.9377E-02	1.9148E+01	8.4534E+00
Muscovite	-1.5782	2.6415E-02	1.0521E+01	3.7168E+00
Ni2SiO4	-2.1930	6.4125E-03	1.3432E+00	2.7324E-01
Nontronite-H	-4.9990	1.0023E-05	4.1899E-03	5.0117E-03
Pyrolusite	-2.4321	3.6977E-03	3.2146E-01	1.8488E+00
Pyromorphite	-10.7077	1.9600E-11	2.6585E-08	3.7762E-09
Quartz	0.2348	1.7170E+00	1.0317E+02	3.8956E+01
Rutile	-2.3928	4.0480E-03	3.2335E-01	7.6183E-02
fix CO2(g)	2.3010	1.9999E+02	8.8015E+03	0.0000E+00
fix O2(g)	2.3010	1.9999E+02	6.3994E+03	0.0000E+00
Clinoptilolite-ss	-1.0697	8.5166E-02		
Clinoptilolite-Ca	-3.9143	1.2182E-04	1.6378E-01	6.0911E-02
Clinoptilolite-Cs	-10.5400	2.8843E-11	5.0064E-08	1.4422E-08
Clinoptilolite-K	-2.9975	1.0058E-03	1.4187E+00	5.0291E-01
Clinoptilolite-NH4	-66.9132	1.2213E-67	1.6335E-64	6.1067E-65
Clinoptilolite-Na	-1.0755	8.4038E-02	1.1384E+02	4.2019E+01
Clinoptilolite-Sr	-10.2389	5.7687E-11	8.2309E-08	2.8843E-08
Smectite-di	-1.7189	1.9103E-02		
Beidellite-Ca	-8.9819	1.0426E-09	3.8216E-07	1.3504E-07
Beidellite-K	-8.4731	3.3640E-09	1.2543E-06	4.4976E-07
Beidellite-Mg	-8.2280	5.9160E-09	2.1532E-06	7.2879E-07
Beidellite-Na	-6.6156	2.4234E-07	8.9068E-05	3.1635E-05
Montmor-Ca	-5.8530	1.4029E-06	5.1352E-04	7.0145E-04
Montmor-K	-5.1130	7.7087E-06	2.8702E-03	3.8544E-03
Montmor-Mg	-4.7832	1.6475E-05	5.9876E-03	8.2373E-03
Montmor-Na	-3.1595	6.9256E-04	2.5418E-01	3.4628E-01
Nontronite-Ca	-3.3710	4.2563E-04	1.8059E-01	5.5801E-02
Nontronite-K	-3.1079	7.7994E-04	3.3583E-01	1.0550E-01
Nontronite-Mg	-3.0831	8.2583E-04	3.4824E-01	1.0716E-01
Nontronite-Na	-1.7864	1.6354E-02	6.9547E+00	2.1605E+00

	Mass, grams	Volume, cc
Created	1.555112E+04	1.349054E+02
Destroyed	3.293835E+02	0.000000E+00
Net	1.522174E+04	1.349054E+02

Warning-- these volume totals may be incomplete because of missing partial molar volume data in the data base

--- Summary of Pure Mineral Saturation States ---

Mineral	Log Q/K	Aff, kcal	State
Alamosite	-3.428	-4.677	
Albite	-0.022	-0.030	
Albite_high	-1.341	-1.829	
Albite_low	-0.022	-0.030	
Alstonite	-7.225	-9.857	
Analcime	-0.148	-0.202	
Analcime-dehy	-6.510	-8.882	
Andalusite	-6.082	-8.298	
Anglesite	-6.661	-9.087	
Anhydrite	-6.426	-8.767	
Aragonite	-3.281	-4.476	
BaCrO4	-3.115	-4.250	
BaHPO4	-6.685	-9.121	
BaZrO3	83.671	114.151	ssatd
Barite	-2.827	-3.856	
Bassanite	-7.071	-9.647	
Beidellite-Ca	-2.466	-3.365	
Beidellite-H	-3.163	-4.315	
Beidellite-K	-2.257	-3.079	
Beidellite-Mg	-2.147	-2.929	
Beidellite-Na	-1.599	-2.182	
Boehmite	-0.634	-0.864	
Boric_acid	-5.076	-6.925	
Brucite	-4.566	-6.229	
Bunsenite	-3.301	-4.504	
CaSO4:0.5H2O(beta)	-7.239	-9.877	
CaZrO3	139.766	190.681	ssatd
Calcite	-3.136	-4.279	
CeO2	-3.324	-4.535	
Celadonite	0.000	0.000	satd
Cerussite	-1.860	-2.537	
Chalcedony	-0.271	-0.370	
Chrysotile	-3.927	-5.358	
Clinochlore-14A	-6.714	-9.160	
Clinoptilolite	-6.780	-9.250	
Clinoptilolite-K	-6.670	-9.100	
Clinoptilolite-Na	-0.020	-0.027	
Clinoptilolite-hy-K	-6.664	-9.092	
Clinoptilolite-hy-Na	-0.018	-0.024	
Coesite	-0.810	-1.105	
Corundum	-4.450	-6.072	
Cristobalite(alpha)	-0.551	-0.751	
Cristobalite(beta)	-0.994	-1.356	
Crocoite	-2.046	-2.791	
Dawsonite	-0.920	-1.256	
Diaspore	-0.230	-0.313	
Diopside	-7.204	-9.829	
Dolomite	-3.382	-4.614	
Dolomite-dis	-4.926	-6.721	
Dolomite-ord	-3.382	-4.614	
Enstatite	-3.594	-4.903	
Epsomite	-7.068	-9.642	
Fe(OH)3	-6.518	-8.893	
Ferrite-Zn	-6.484	-8.845	
Fluorapatite	-5.217	-7.118	
GdPO4:H2O	-4.495	-6.133	

Gibbsite	-0.826	-1.127	
Goethite	-1.397	-1.905	
Gypsum	-6.251	-8.529	
Halite	-6.758	-9.220	
Hematite	-1.832	-2.500	
Hexahydrite	-7.303	-9.963	
Hydrocerussite	-7.312	-9.976	
Ice	-0.139	-0.190	
Illite	-1.275	-1.739	
Jadeite	-1.647	-2.247	
K-Feldspar	0.000	0.000	
Kalicinite	-6.806	-9.285	
Kalsilite	-3.175	-4.332	
Kaolinite	-0.948	-1.294	
Kyanite	-5.812	-7.929	
LaPO4:H2O	-1.638	-2.235	
Lansfordite	-4.425	-6.037	
Laumontite	-5.779	-7.884	
Lawsonite	-6.325	-8.630	
Litharge	-6.399	-8.730	
Magnesite	-1.875	-2.557	
Manganite	-4.459	-6.084	
Massicot	-6.574	-8.969	
Maximum_Microcline	0.000	0.000	satd
Mesolite	0.000	0.000	satd
Mirabilite	-4.006	-5.465	
MnO2(gamma)	-1.518	-2.071	
Monohydrocalcite	-3.971	-5.417	
Montmor-Ca	-1.392	-1.900	
Montmor-K	-1.113	-1.518	
Montmor-Mg	-1.003	-1.369	
Montmor-Na	-0.459	-0.626	
Mordenite	-2.805	-3.827	
Muscovite	0.000	0.000	satd
Na2CO3	-6.877	-9.382	
Na2CO3:7H2O	-5.645	-7.701	
Nahcolite	-3.393	-4.629	
Natrolite	-1.039	-1.417	
Natron	-5.311	-7.246	
NdPO4:H2O	-3.179	-4.338	
Nepheline	-3.060	-4.174	
Nesquehonite	-4.578	-6.246	
Ni(OH)2	-3.579	-4.882	
Ni2SiO4	0.000	0.000	satd
NiCO3	-5.655	-7.715	
Nontronite-Ca	-0.878	-1.198	
Nontronite-H	-1.574	-2.148	
Nontronite-K	-0.668	-0.912	
Nontronite-Mg	-0.559	-0.762	
Nontronite-Na	-0.011	-0.015	
Paragonite	-0.919	-1.253	
Paralaurionite	-6.941	-9.470	
Pb3(PO4)2	-5.383	-7.344	
Pb4O(PO4)2	-6.540	-8.922	
PbHPO4	-4.234	-5.777	
Petalite	-6.153	-8.395	
Phlogopite	-2.518	-3.435	
Plattnerite	-1.763	-2.405	
PuO2	-4.816	-6.570	
Pyrolusite	0.000	0.000	satd
Pyromorphite	0.000	0.000	satd
Pyrophyllite	-2.576	-3.514	
Quartz	0.000	0.000	satd

Rutile	0.000	0.000	satd
Sanidine_high	-1.199	-1.636	
Saponite-Ca	-1.828	-2.495	
Saponite-H	-2.525	-3.445	
Saponite-K	-1.619	-2.209	
Saponite-Mg	-1.509	-2.059	
Saponite-Na	-0.962	-1.312	
Scolecite	-3.989	-5.442	
Sellaite	-7.290	-9.946	
SiO2(am)	-1.286	-1.754	
Sillimanite	-6.446	-8.794	
SmPO4:H2O	-3.996	-5.452	
Smectite-low-Fe-Mg	-7.076	-9.653	
Smithsonite	-4.803	-6.552	
SrZrO3	58.111	79.279	ssatd
Stilbite	-1.918	-2.616	
Talc	-1.938	-2.644	
Thenardite	-4.830	-6.590	
Thermonatrite	-6.658	-9.083	
Trevorite	-2.341	-3.193	
Tridymite	-0.171	-0.234	
Witherite	-0.356	-0.486	
Zincite	-4.234	-5.777	
Zn(OH)2(beta)	-4.960	-6.767	
Zn(OH)2(epsilon)	-4.689	-6.397	
Zn(OH)2(gamma)	-4.910	-6.698	
fix CO2(g)	0.000	0.000	satd
fix O2(g)	0.000	0.000	satd

--- Summary of Solid Solutions ---

--- Carbonate-Calcite ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Calcite	5.1819E-02	-1.2855	0.0000	-1.2855
Magnesite	9.4706E-01	-0.0236	0.0000	-0.0236
Rhodochrosite	1.2064E-09	-8.9185	0.0000	-8.9185
Siderite	1.8687E-18	-17.7285	0.0000	-17.7285
Smithsonite	1.1175E-03	-2.9517	0.0000	-2.9517
Strontianite	1.8062E-64	-63.7432	0.0000	-63.7432

Mineral	Log Q/K	Aff, kcal	State
Carbonate-Calcite	-1.851	-2.525	
Calcite	-1.851	-2.525	
Magnesite	-1.851	-2.525	
Rhodochrosite	-1.851	-2.525	
Siderite	-1.851	-2.525	
Smithsonite	-1.851	-2.525	
Strontianite	-1.851	-2.525	

--- Clinoptilolite-hy-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity

Clinoptilolite-hy-Ca	1.5018E-10	-9.8234	0.0000	-9.8234
Clinoptilolite-hy-Cs	1.3242E-84	-83.8781	0.0000	-83.8781
Clinoptilolite-hy-K	2.2577E-07	-6.6463	0.0000	-6.6463
Clinoptilolite-hy-Na	1.0000E+00	0.0000	0.0000	0.0000
Clinoptilolite-hy-Sr	1.9737-122	-121.7047	0.0000	-121.7047

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-hy-ss	-0.018	-0.024	
Clinoptilolite-hy-Ca	-0.018	-0.024	
Clinoptilolite-hy-Cs	-0.018	-0.024	
Clinoptilolite-hy-K	-0.018	-0.024	
Clinoptilolite-hy-Na	-0.018	-0.024	
Clinoptilolite-hy-Sr	-0.018	-0.024	

--- Clinoptilolite-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-Ca	1.4303E-03	-2.8446	-6.9976	-9.8422
Clinoptilolite-Cs	5.6307E-25	-24.2494	-59.6536	-83.9031
Clinoptilolite-K	1.1810E-02	-1.9278	-4.7423	-6.6701
Clinoptilolite-NH4	1.4632E-66	-65.8347	-161.9533	-227.7880
Clinoptilolite-Na	9.8676E-01	-0.0058	-0.0142	-0.0200
Clinoptilolite-Sr	6.6125E-36	-35.1796	-86.5419	-121.7215

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-ss	0.000	0.000	satd
Clinoptilolite-Ca	0.000	0.000	satd
Clinoptilolite-Cs	0.000	0.000	satd
Clinoptilolite-K	0.000	0.000	satd
Clinoptilolite-NH4	0.000	0.000	satd
Clinoptilolite-Na	0.000	0.000	satd
Clinoptilolite-Sr	0.000	0.000	satd

--- Saponite-tri ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Saponite-Ca	2.2815E-03	-2.6418	1.7700	-0.8718
Saponite-H	1.7688E-05	-4.7523	3.1840	-1.5683
Saponite-K	9.8417E-03	-2.0069	1.3446	-0.6623
Saponite-Mg	2.1176E-02	-1.6741	1.1217	-0.5525
Saponite-Na	9.6668E-01	-0.0147	0.0099	-0.0049

Mineral	Log Q/K	Aff, kcal	State
Saponite-tri	-0.957	-1.305	
Saponite-Ca	-0.957	-1.305	
Saponite-H	-0.957	-1.305	

Saponite-K	-0.957	-1.305
Saponite-Mg	-0.957	-1.305
Saponite-Na	-0.957	-1.305

--- Smectite-di ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Beidellite-Ca	3.3607E-08	-7.4736	5.0073	-2.4663
Beidellite-K	1.4508E-07	-6.8384	4.5817	-2.2567
Beidellite-Mg	3.1194E-07	-6.5059	4.3590	-2.1470
Beidellite-Na	1.4240E-05	-4.8465	3.2472	-1.5993
Montmor-Ca	6.0334E-05	-4.2194	2.8270	-1.3924
Montmor-K	4.2535E-04	-3.3712	2.2587	-1.1125
Montmor-Mg	9.1014E-04	-3.0409	2.0374	-1.0035
Montmor-Na	4.0715E-02	-1.3902	0.9315	-0.4588
Nontronite-Ca	2.1853E-03	-2.6605	1.7825	-0.8780
Nontronite-K	9.4337E-03	-2.0253	1.3570	-0.6684
Nontronite-Mg	2.0298E-02	-1.6925	1.1340	-0.5585
Nontronite-Na	9.2596E-01	-0.0334	0.0224	-0.0110

Mineral	Log Q/K	Aff, kcal	State
Smectite-di	0.000	0.000	satd
Beidellite-Ca	0.000	0.000	satd
Beidellite-K	0.000	0.000	satd
Beidellite-Mg	0.000	0.000	satd
Beidellite-Na	0.000	0.000	satd
Montmor-Ca	0.000	0.000	satd
Montmor-K	0.000	0.000	satd
Montmor-Mg	0.000	0.000	satd
Montmor-Na	0.000	0.000	satd
Nontronite-Ca	0.000	0.000	satd
Nontronite-K	0.000	0.000	satd
Nontronite-Mg	0.000	0.000	satd
Nontronite-Na	0.000	0.000	satd

--- Lanthanide hydroxide ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
La(OH)3	6.0185E-04	-3.2205	0.0000	-3.2205
Ce(OH)3	2.8003E-14	-13.5528	0.0000	-13.5528
Nd(OH)3(c)	8.6772E-01	-0.0616	0.0000	-0.0616
Gd(OH)3	1.0528E-01	-0.9776	0.0000	-0.9776
Sm(OH)3	2.6396E-02	-1.5785	0.0000	-1.5785

Mineral	Log Q/K	Aff, kcal	State
Lanthanide hydroxide	-9.052	-12.349	
La(OH)3	-9.052	-12.349	
Ce(OH)3	-9.052	-12.349	
Nd(OH)3(c)	-9.052	-12.349	

Gd(OH)3	-9.052	-12.349
Sm(OH)3	-9.052	-12.349

--- Rhabdophane-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaPO4:H2O	9.6661E-01	-0.0147	0.0000	-0.0147
CePO4:H2O	1.4222E-11	-10.8470	0.0000	-10.8470
NdPO4:H2O	2.7806E-02	-1.5559	0.0000	-1.5559
GdPO4:H2O	1.3432E-03	-2.8719	0.0000	-2.8719
SmPO4:H2O	4.2394E-03	-2.3727	0.0000	-2.3727

Mineral	Log Q/K	Aff, kcal	State
Rhabdophane-ss	-1.624	-2.215	
LaPO4:H2O	-1.624	-2.215	
CePO4:H2O	-1.624	-2.215	
NdPO4:H2O	-1.624	-2.215	
GdPO4:H2O	-1.624	-2.215	
SmPO4:H2O	-1.624	-2.215	

--- Lanthanide fluoride ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaF3:0.5H2O	9.6459E-01	-0.0157	0.0000	-0.0157
CeF3:0.5H2O	2.2494E-11	-10.6479	0.0000	-10.6479
NdF3:0.5H2O	3.4933E-02	-1.4568	0.0000	-1.4568
GdF3:0.5H2O	5.3361E-05	-4.2728	0.0000	-4.2728
SmF3:0.5H2O	4.2306E-04	-3.3736	0.0000	-3.3736

Mineral	Log Q/K	Aff, kcal	State
Lanthanide fluoride	-15.838	-21.607	
LaF3:0.5H2O	-15.838	-21.607	
CeF3:0.5H2O	-15.838	-21.607	
NdF3:0.5H2O	-15.838	-21.607	
GdF3:0.5H2O	-15.838	-21.607	
SmF3:0.5H2O	-15.838	-21.607	

--- Summary of Gases ---

Gas	Fugacity	Log fugacity
Al(g)	9.7073-192	-191.0129
B(g)	4.0351-204	-203.3941
BF3(g)	1.3254E-45	-44.8777
C(g)	3.0917-190	-189.5098
CH4(g)	3.5197-146	-145.4535

CO(g)	6.0395E-49	-48.2190
CO2(g)	3.1623E-04	-3.5000
Ca(g)	5.4463-154	-153.2639
Chlorine	1.7670E-31	-30.7528
Cs(g)	3.3129E-99	-98.4798
Cu(g)	1.9038E-82	-81.7204
Fluorine	1.2162E-86	-85.9150
H2(g)	6.1066E-42	-41.2142
H2O(g)	2.5942E-02	-1.5860
H2S(g)	1.1277-144	-143.9478
HCl(g)	5.1530E-20	-19.2879
HF(g)	4.8251E-16	-15.3165
K(g)	1.2715E-76	-75.8957
Li(g)	1.1208E-95	-94.9505
Mg(g)	1.8677-129	-128.7287
Nitrogen	1.3315E-22	-21.8757
NH3(g)	1.3276E-70	-69.8769
NO(g)	3.6335E-27	-26.4397
NO2(g)	2.4844E-21	-20.6048
Na(g)	6.9098E-73	-72.1605
O2(g)	2.0999E-01	-0.6778
Pb(g)	2.6536E-68	-67.5762
S2(g)	7.6036-232	-231.1190
SO2(g)	1.9993E-57	-56.6991
Si(g)	4.2257-221	-220.3741
SiF4(g)	2.3957E-46	-45.6206
Ti(g)	3.8019-231	-230.4200
TiCl4(g)	2.3684E-90	-89.6255
U(g)	1.0491-302	-301.9792
U2Cl10(g)	1.4870-269	-268.8277
U2Cl8(g)	2.6090-269	-268.5835
U2F10(g)	1.0201-186	-185.9913
UCl(g)	4.8211-260	-259.3169
UCl2(g)	6.6276-216	-215.1786
UCl3(g)	1.9956-169	-168.6999
UCl4(g)	3.2538-140	-139.4876
UCl5(g)	2.7296-148	-147.5639
UCl6(g)	4.2541-151	-150.3712
UF(g)	9.5938-246	-245.0180
UF2(g)	6.5066-207	-206.1866
UF3(g)	1.0860-161	-160.9642
UF4(g)	2.6753-113	-112.5726
UF5(g)	3.0188-106	-105.5202
UF6(g)	3.3542-113	-112.4744
UO(g)	8.2858-218	-217.0817
UO2(g)	1.5351-133	-132.8139
UO2Cl2(g)	1.1843E-83	-82.9265
UO2F2(g)	8.4343E-73	-72.0739
UO3(g)	1.1291E-80	-79.9473
UOF4(g)	7.9721E-91	-90.0984
Zn(g)	2.2304E-77	-76.6516

- -

--- shifting e.s. solid(s) to the p.r.s. (shftz) ---

```
      shifted -- Celadonite
              - old mass=  1.24347E-03, new mass=  1.24347E-05
      shifted -- Maximum_Microcline
              - old mass=  1.92621E-02, new mass=  1.92621E-04
```

```
      shifted -- Mesolite
              - old mass=  3.13805E-03, new mass=  3.13805E-05
      shifted -- Muscovite
              - old mass=  1.01116E-03, new mass=  1.01116E-05
  not shifted -- Ni2SiO4
              - mass=  7.99965E-07
      shifted -- Pyrolusite
              - old mass=  1.95960E-04, new mass=  1.95960E-06
  not shifted -- Pyromorphite
              - mass=  1.96004E-11
      shifted -- Quartz
              - old mass=  9.47979E-02, new mass=  9.47979E-04
      shifted -- Rutile
              - old mass=  2.55556E-04, new mass=  2.55556E-06
      shifted -- Clinoptilolite-ss
              - old mass=  6.30384E-03, new mass=  6.30384E-05
      shifted -- Smectite-di
              - old mass=  1.21634E-03, new mass=  1.21634E-05

Stepping to zi=  1.6007E+01, delzi=  6.9334E-03, nord= 6
  time =  1.5439E+05 d, dltime =  6.6873E+01 d
Steps completed =  1145, iter = 16, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -73.0491

Stepping to zi=  1.6008E+01, delzi=  8.6667E-04, nord= 6
  time =  1.5440E+05 d, dltime =  8.3591E+00 d
Steps completed =  1146, iter = 21, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -73.0921

Stepping to zi=  1.6010E+01, delzi=  1.7333E-03, nord= 4
  time =  1.5441E+05 d, dltime =  1.6718E+01 d
Steps completed =  1147, iter = 18, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -73.1722

Stepping to zi=  1.6013E+01, delzi=  3.4667E-03, nord= 6
  time =  1.5445E+05 d, dltime =  3.3436E+01 d
Steps completed =  1148, iter = 20, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -73.3132

Stepping to zi=  1.6017E+01, delzi=  4.3381E-03, nord= 6
  time =  1.5449E+05 d, dltime =  4.1841E+01 d
Steps completed =  1149, iter = 10, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -73.4623

Stepping to zi=  1.6020E+01, delzi=  3.0438E-03, nord= 6
  time =  1.5452E+05 d, dltime =  2.9357E+01 d
Steps completed =  1150, iter = 13, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -73.5535

Stepping to zi=  1.6023E+01, delzi=  2.6372E-03, nord= 6
  time =  1.5454E+05 d, dltime =  2.5436E+01 d
Steps completed =  1151, iter =  9, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -73.6254

Stepping to zi=  1.6026E+01, delzi=  3.2332E-03, nord= 6
  time =  1.5457E+05 d, dltime =  3.1185E+01 d
Steps completed =  1152, iter = 11, ncorr = 0
Most rapidly changing is zvclg1(Sr++                    ) =    -73.7062

Stepping to zi=  1.6030E+01, delzi=  3
```

```
EQ3/6, Version 7.2b (EQ3/6-V7-REL-V7.2b-PC)
EQ6 Reaction-Path Code (EQ3/6-V7-EQ6-EXE-R137-P5)
Supported by the EQLIB library (EQ3/6-V7-EQLIB-LIB-R168-P5)
```

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```
Run  10:37:35  01/19/99

|-----------------------------------------------------------------------|
|EQ6 input file name= j13_All-22.6i.txt                                 |
|Description= React J-13 water with Carbon Steel and Alloy-22.          |
|Equilibrium with atmospheric gases.                                    |
|Version level= 7.2                                                     |
|Created 01/19/99    Creator= D.H. Lester                               |
|Revised             Revisor=                                           |
|                                                                       |
|Water from well J-13 at the Nevada Test site                           |
|                                                                       |
|Purpose: To model reaction with carbon steel (iron) and alloy C-22     |
|simultaneously to determine an expected Cr concentration in the water  |
|corroding the C-22 after breaching the CAM.                            |
|                                                                       |
|It is assumed that a significant amount of carbon steel is still       |
|present. The rate constant for the steel was assumed to be 1.0E-11     |
|which is the higher value suggested in simulation studies at LLNL.     |
|Reference: Eng. Barrier System & Near Field Envir. Perf. Assess.,      |
|FY-96 Activities: End-of-Year Summary, Sept 1996, Wm.G.Halsey, "Report|
|on Initial Simulation of Water Interaction With Mild Steel Containers  |
|Rate for C-22 is the median value for dripping at high temp. in the    |
|TSPA simulations for the VA document.                                  |
|The data base was modified to add the solid KFe(CrO4)2:2H2O            |
|Total amount of Steel and C-22 reduced to 20 moles each for a more     |
|realistic proportion of materials contacting 1L of water               |
|-----------------------------------------------------------------------|
| calculational mode   |*normal     | economy           | super economy|
|-----------------------------------------------------------------------|
| model type           |*titration  | closed            | open         |
|-----------------------------------------------------------------------|
| temperature model    |*power      | fluid mixing                     |
|-----------------------------------------------------------------------|
c power model  -->   temp = tstart + tk1*zi + tk2*zi**2 + tk3*zi**3    |
c mixing model -->   temp = (tstart * tk1 + zi*tk2) / (zi + tk1)        |
c-----------------------------------------------------------------------|
| tstart(c)|  25.00    |tk1| 0.0000    |tk2| 0.0000    |tk3| 0.0000    |
|-----------------------------------------------------------------------|
| starting value of zi | 0.00000    |max. value of zi    | 1.00000E+38 |
|-----------------------------------------------------------------------|
| starting time (sec)  | 0.00000    |max. time (sec)     | 1.00000E+38 |

|-----------------------------------------------------------------------|
| max. steps           |      400   |max. steps w/o print|     150     |
|-----------------------------------------------------------------------|
| linear print interval|  10.000    |log print interval  | 1.00000E+38 |
|-----------------------------------------------------------------------|
```

```
| suppress mineral phases                                                |
|------------------------------------------------------------------------|
| phases w/ elements|                          |                        |n
| phases except     |                          |                        |n
| phases except     |                          |                        |n
|------------------------------------------------------------------------|
| fixed fugacity phases- species, moles(per kg h2o), log fugacity(bars)|
| CO2(g)                              |10000.          | -3.5000        |n
| O2(g)                               |10000.          | -0.6778        |n
|------------------------------------------------------------------------|
|------------------------------------------------------------------------|
c                  R A T E     L A W S
c 1 = relative                  rate = rk1 + rk2*zi + (1/2)rk3*zi*zi
c 2 = transition state theory   rate = CHECK DOCUMENTATION
c 3 = specified rate
c 4 = activity term rate        rate = CHECK DOCUMENTATION
c
c                  R E A C T A N T     T Y P E S
c mineral     solid solution     special    aqueous    gas
c
c                  S U R F A C E    T Y P E
c 0 = fixed surface area     1 = fixed specific surface area
c
c                  N O T E S
c status and jreac are normally not set by the user
|------------------------------------------------------------------------|
| reactants   (ss) solid solution only     (sp) special reactant only  |
|------------------------------------------------------------------------|
| REACTANT          | carbon steel             |status    | 0            |
| moles remaining   | 20                       |destroyed| 0            |
| reactant type     | special                  |sk        | 100          |
| surface type      |   0                      |fk        | 1.00000      |
| end-member        |                          |mole fr   |              |ss,n
| volume            |                          |          |              |sp
| element           | C                        |mole fr   |0.0219        |sp,n
| element           | Mn                       |mole fr   |0.0103        |sp,n
| element           | S                        |mole fr   |8.53E-04      |sp,n
| element           | Si                       |mole fr   |5.36E-03      |sp,n
| element           | P                        |mole fr   |7.06E-04      |sp,n
| element           | Fe                       |mole fr   |0.961         |sp,n
| DISSOLUTION LAW   |    3                     |          |              |
| rate constant rk1|  1.E-11                  |csigma1   |              |
| temperature (c)   |   25.000                 |          |              |234
| PRECIPITATION LAW|    0                      |          |              |
c------------------------------------------------------------------------|
| REACTANT          | Alloy-22                 |status    | 0            |
| moles remaining   |20                        |destroyed| 0.00000      |
| reactant type     |  special                 |sk        | 100          |
| surface type      |   0                      |fk        | 1.00000      |
| end-member        |                          |mole fr   |              |ss,n
| volume            |                          |          |              |sp
| element           | Cr                       |moles     |0.256106      |sp,n
| element           | Fe                       |moles     |0.054204      |sp,n
| element           | Ni                       |moles     |0.568122      |sp,n
| element           | Mo                       |moles     |0.100962      |sp,n
| element           | V                        |moles     |0.004160      |sp,n
| element           | Mn                       |moles     |0.005510      |sp,n
| DISSOLUTION LAW   |    3                     |          |              |
| rate constant rk1| 1.13E-14                  |csigma1   |              |
| rate constant rk2| 0.00000                   |csigma2   |              |
| rate constant rk3| 0.00000                   |csigma3   |              |
| PRECIPITATION LAW|    0                      |          |              |
```

```
 * note  - (eq6/rdrate) In the case of rate constant 1,
       a corresponding temperature was not specified, or
       it was <= 0.  Will use a temperature of 25.0 Celsius.
       Check above INPUT file line   107.

 * note  - (eq6/rdrate) In the case of rate constant 2,
       a corresponding temperature was not specified, or
       it was <= 0.  Will use a temperature of 25.0 Celsius.
       Check above INPUT file line   107.

 * note  - (eq6/rdrate) In the case of rate constant 3,
       a corresponding temperature was not specified, or
       it was <= 0.  Will use a temperature of 25.0 Celsius.
       Check above INPUT file line   107.

 * note  - (eq6/rdrate) Only the first rate constant
       is used with rate law 3 (specified rate).  Check above
       INPUT file line   107.
|-----------------------------------------------------------------------|
| options                                                               |
|-----------------------------------------------------------------------|
| - SOLID SOLUTIONS -                                                   |
|     ignore solid solutions                                            |
|   * process solid solutions                                           |
| - LOADING OF SPECIES INTO MEMORY -                                    |
|   * don't print                                                       |
|     lists species loaded into memory                                  |
| - LIST DERIVATIVES OF BASIS ELEMENTS AT EACH PRINT POINT -            |
|   * don't print                                                       |
|     print                                                             |
| - LIST ALL SPECIES LOADED INTO MEMORY AND THEIR LOG K VALUES -        |
|   * don't print                                                       |
|     print                                                             |
| - LIST DISTRIBUTION OF AQUEOUS SPECIES AT EACH PRINT POINT -          |
|   * only species > 10**-12 molal                                      |
|     all species                                                       |
|     don't print                                                       |
| - LIST CATION/H+ ACTIVITY RATIOS AT EACH PRINT POINT -                |
|   * don't print                                                       |
|     print                                                             |
| - LIST BULK ELEMENT AND OXIDE COMPOSITION AT EACH PRINT POINT -       |
|   * don't print                                                       |
|     print                                                             |
| - MINERAL SATURATION STATES -                                         |
|   * print if affinity > -10 kcals                                     |
|     print all                                                         |
|     don't print                                                       |
| - LIST GAS SPECIES SUMMARY AT EACH PRINT POINT -                      |
|     don't print                                                       |
|   * print                                                             |
| - PRINT AQUEOUS MASS AND CONCENTRATION TOTALS -                       |
|   * don't print                                                       |
|     print                                                             |
| - TAB FILES -                                                         |
|   * write                                                             |
|     append to previous tabx file                                      |
|     don't write                                                       |
| - WRITE PICKUP FILE -                                                 |
|     write pickup file at end of run                                   |
|     don't write pickup file                                           |
|   * write pickup file for each print point                            |
| - PHYSICALLY REMOVED SUBSYSTEM -                                      |
|   * does nothing                                                      |
```

```
|     transfer minerals but leave trivial mass in the system                |
|     transfer minerals                                                     |
| - CLEAR INITIAL PHYSICALLY REMOVED SUBSYSTEM -                            |
|   * does nothing                                                          |
|     clear p.r.s. before first reaction progress advance                   |
| - PHASE BOUNDARY SEARCH -                                                 |
|   * step size constrained by predicted phase boundaries                   |
|     phase boundaries estimated from Taylor's series and printed           |
|     locations of phase boundaries ignored                                 |
| - AUTO BASIS SWITCHING -                                                  |
|   * off                                                                   |
|     on                                                                    |
| - SUPPRESS REDOX REACTIONS -                                              |
|   * does nothing                                                          |
|     suppress all redox reactions                                          |
| - LINEAR OR LOGARITHMIC TAYLOR'S SERIES -                                 |
|   * linear for kcol = 1,kdim, logarithmic for kcol = 1,kbt                |
|     logarithmic for kcol = 1,kbt                                          |
|     linear for kcol = 1,kdim                                              |
| - AZERO AND HYDRATION NUMBERS -                                           |
|   * no change                                                             |
|     read in new azero and hydration numbers                               |
| - PRINT MEAN MOLAL ACTIVITY COEFFICIENTS FOR DISSOLVED SPECIES -          |
|   * does nothing                                                          |
|     print                                                                 |
| - PITZER DATABASE INFORMATION -                                           |
|   * print only warnings                                                   |
|     print species in model and number of Pitzer coefficients              |
|     print species in model and names of Pitzer coefficients               |
| - PRINT DIAGNOSTIC MESSAGES -                                             |
|   * don't print                                                           |
|     print level 1 messages                                                |
|     print level 2 messages                                                |
| - PRINT PRE-NEWTON-RAPHSON OPTIMIZATION -                                 |
|   * don't print                                                           |
|     print summary information                                             |
|     print detailed information                                            |
| - PRINT STEP SIZE AND ORDER -                                             |
|   * don't print                                                           |
|     print scale factor                                                    |
|     print orders and step size scaling factors                            |
| - CONTROL STEP SIZE AND ORDER PRINT -                                     |
|   * does nothing                                                          |
|     print step size and order when delzi .le. dlzmx1                      |
| - NEWTON ITERATIONS -                                                     |
|   * don't print                                                           |
|     print summary of newton iterations                                    |
|     print summary, residual functions and correction terms                |
|     print summary, residual functions, correction terms and matrix        |
| - PRINT SEARCH ITERATIONS -                                               |
|   * don't print                                                           |
|     print                                                                 |
| - PRINT HPSAT ITERATIONS -                                                |
|   * don't print                                                           |
|     print                                                                 |
| - PRINT FINITE DIFFERENCE AND DERIVATIVE DATA -                           |
|   * don't print                                                           |
|     print computations from RDERIV, and RTAYLR                            |
|     print computations from RDERIV, RTAYLR, DERIV and TAYLOR              |
| - PRINT KINETICS DIAGNOSTIC MESSAGES -                                    |
|   * don't print                                                           |
|     print level 1 diagnostics                                             |
|     print level 1 and level 2 diagnostics                                 |
```

```
| - PRINT AKMATR -                                                      |
|   * don't print                                                       |
|     print level 1 diagnostics                                         |
| - KILL ITERATION VARIABLES -                                          |
|   * does nothing                                                      |
|     allow selection of variables to remove                            |
|-----------------------------------------------------------------------|
| development options  (used for code development)                      |
|-----------------------------------------------------------------------|
|    0 check finite difference and Taylor series expression             |
|    0 check reaction rate finite difference and Taylor series          |
|-----------------------------------------------------------------------|
| tolerances                       desired values - defaults info-only  |
|-----------------------------------------------------------------------|
| number of N-R iterations        |                  |  40      itermx |
| p.r.s. transfer interval        |                  |  varies  dlzidp |
| residual magnitude              |                  |  1.0e-06 tolbt  |
| correction magnitude            |                  |  1.0e-06 toldl  |
| search/find tolerance           |                  |  varies  tolx   |
| supersaturation                 |                  |  varies  tolsat |
| supersaturation set size        |                  |  varies  tolsst |
| max. size Taylor's series term  |                  |  1.0e-04 screw1 |
| max. initial value betamx       |                  |  n/a     screw2 |
| max. Taylor's series term (kin.)|                  |  1.0e-04 screw3 |
| corrector iteration             |                  |  1.0e-04 screw4 |
| max. size of N-R correction term|                  |  4.0     screw5 |
| step size (economy mode)        |                  |  4.0     screw6 |
| log mass of phases              |                  |  varies  zklogu |
| decrement mass (p.r.s.)         |                  |  2.0     zklogl |
| min. left after p.r.s.          |                  |  .98     zkfac  |
| initial step size               |                  |  varies  dlzmx1 |
| upper limit step size           |                  |  varies  dlzmx2 |
| maximum order                   |                  |  6       nordlm |
| num. attempted assemblages      |                  |  25      ntrymx |
| slide -> over phase bound.      |                  |  8       npslmx |
| slide -> over redox insta.      |                  |  3       nsslmx |
| fo2 scan control                |                  |  none    ioscan |
|-----------------------------------------------------------------------|
c pickup file written by EQ3NR.7.2bR139                                 |
c supported by eqlib.7.2bR168                                           |
|EQ3NR input file name= j13_V.3i                                        |
|Description= "J-13 well water for reaction with Alloy 22, V added      |
|Version level= 7.2b                                                    |
|Created 01/19/99    Creator= D. H. Lester                              |
|Revised             Revisor=                                           |
|                                                                       |
|  Water from well J-13 at the Nevada Test Site. The composition        |
|is nearly identical to that in the EQ3NR test case input file j13w.3i,|
|which is based on data reported by Harrar et al. (1990) and on p. 3 of|
|Preliminary Scenario Definitions, May 17, 1996, except for fixing of   |
|bicarbonate via fixed fugacity of CO2 and pH.  Al, Fe, Mn, etc. re-    |
|tained, as these are needed to model reaction with tuff, etc.  traces  |
|of Pu, U, Gd, Ba, La, Nd, Ce, Sm, Pb, Cr, Ni, Cu, Zr, Sr, Cs, V,       |
|Zn, & Mo added to enable modeling.    Nb isn't in data base.           |
|                                                                       |
|                                                                       |
|This run uses revised data base, with essentially no organics.  Also,  |
|several to many other unlikely aqueous species removed.                |
|                                                                       |
|Electrical balancing is on Cl-.  These data do not agree exactly with  |
|those reported in the SCP.  CO2 and O2 fixed at atmospheric values.    |
|                                                                       |
|  This run uses the revised data base, incorporating SKB data.         |
```

Purpose: To use as water in modeling the corrosion of Alloy 22 and determine species of Cr Mo, Ni, and V in resulting solution.

References

Harrar, J. E., Carley, J. F., Isherwood, W. F., and Raber, E., 1990, Report of the Committee to Review the Use of J-13 Well Water in Nevada Nuclear Waste Storage Investigations: UCID-21867, Lawrence Livermore National Laboratory, Livermore, California.

temperature (C)	25.000
electrical imbalance	5.752163835343278E-14
number of aqueous master species	38
position of last pure mineral	38
position of last solid solution	38

suppressed species	(suppress,replace,augmentk,augmentg)	value
Phlogopite	mineral	suppress	0.00000
Annite	mineral	suppress	0.00000
Clinochlore-14A	mineral	suppress	0.00000
Daphnite-14A	mineral	suppress	0.00000
Clinozoisite	mineral	suppress	0.00000
Epidote	mineral	suppress	0.00000
Epidote-ord	mineral	suppress	0.00000
Andradite	mineral	suppress	0.00000
Grossular	mineral	suppress	0.00000
Enstatite	mineral	suppress	0.00000
Ferrosilite	mineral	suppress	0.00000
Pyrite	mineral	suppress	0.00000
Pyrrhotite	mineral	suppress	0.00000
Troilite	mineral	suppress	0.00000
Alabandite	mineral	suppress	0.00000
Brezinaite	mineral	suppress	0.00000
Chalcocite	mineral	suppress	0.00000
Covellite	mineral	suppress	0.00000
Millerite	mineral	suppress	0.00000
Polydymite	mineral	suppress	0.00000
Vaesite	mineral	suppress	0.00000
Heazlewoodite	mineral	suppress	0.00000
Galena	mineral	suppress	0.00000
Sulfur	mineral	suppress	0.00000
CaZrO3	mineral	suppress	0.00000
BaZrO3	mineral	suppress	0.00000
SrZrO3	mineral	suppress	0.00000
U2S3	mineral	suppress	0.00000
U3S5	mineral	suppress	0.00000
US2	mineral	suppress	0.00000
US3	mineral	suppress	0.00000
US	mineral	suppress	0.00000
US1.9	mineral	suppress	0.00000
U3P4	mineral	suppress	0.00000
UP	mineral	suppress	0.00000
UP2	mineral	suppress	0.00000
HS-	aqueous	suppress	0.00000
H2S(aq)	aqueous	suppress	0.00000
S--	aqueous	suppress	0.00000

```
| iopg options                                                        |
|---------------------------------------------------------------------|
| - pH SCALE CONVENTION -                                             |
|    * modified NBS                                                   |
|      internal                                                       |
|      rational                                                       |
| - ACTIVITY COEFFICIENT OPTIONS -                                    |
|    * use B-dot equation                                             |
|      Davies' equation                                               |
|      Pitzer's equations                                             |
|---------------------------------------------------------------------|
| elements, moles and moles aqueous                                   |
|---------------------------------------------------------------------|
| O                        |  5.551824589007858E+01 |  0.000000000000000E+00 |
| Al                       |  1.482500000694482E-06 |  0.000000000000000E+00 |
| B                        |  1.238799999942330E-05 |  0.000000000000000E+00 |
| Ba                       |  1.000000000006594E-10 |  0.000000000000000E+00 |
| Ca                       |  3.243700000162714E-04 |  0.000000000000000E+00 |
| Ce                       |  1.000000000975802E-24 |  0.000000000000000E+00 |
| Cl                       |  2.014000000000269E-04 |  0.000000000000000E+00 |
| Cr                       |  3.448500000013120E-07 |  0.000000000000000E+00 |
| Cs                       |  1.000000000000039E-10 |  0.000000000000000E+00 |
| Cu                       |  1.050000000528221E-14 |  0.000000000000000E+00 |
| F                        |  1.147500000001528E-04 |  0.000000000000000E+00 |
| Fe                       |  1.000000000271118E-18 |  0.000000000000000E+00 |
| Gd                       |  1.000000001150365E-14 |  0.000000000000000E+00 |
| H                        |  1.110188738405208E+02 |  0.000000000000000E+00 |
| C                        |  1.990302777426031E-03 |  0.000000000000000E+00 |
| P                        |  1.271100000277239E-06 |  0.000000000000000E+00 |
| K                        |  1.289100000000803E-04 |  0.000000000000000E+00 |
| La                       |  1.000000000980088E-14 |  0.000000000000000E+00 |
| Li                       |  1.000000000000469E-10 |  0.000000000000000E+00 |
| Mg                       |  8.269900000408462E-05 |  0.000000000000000E+00 |
| Mn                       |  7.280900000563010E-18 |  0.000000000000000E+00 |
| Mo                       |  1.000000000000003E-10 |  0.000000000000000E+00 |
| N                        |  1.420000000000891E-04 |  0.000000000000000E+00 |
| Na                       |  1.992200000002518E-03 |  0.000000000000000E+00 |
| Nd                       |  1.000000000990082E-14 |  0.000000000000000E+00 |
| Ni                       |  1.000000000016510E-10 |  0.000000000000000E+00 |
| Pb                       |  1.000000000003566E-10 |  0.000000000000000E+00 |
| Pu                       |  1.000000001138469E-14 |  0.000000000000000E+00 |
| S                        |  1.915400000082276E-04 |  0.000000000000000E+00 |
| Si                       |  1.016899999988949E-03 |  0.000000000000000E+00 |
| Sm                       |  1.000000000991962E-14 |  0.000000000000000E+00 |
| Sr                       |  1.000000000034016E-10 |  0.000000000000000E+00 |
| Ti                       |  1.000000000000003E-10 |  0.000000000000000E+00 |
| U                        |  9.999999988006304E-15 |  0.000000000000000E+00 |
| V                        |  2.199999998976165E-10 |  0.000000000000000E+00 |
| Zn                       |  1.000000000089305E-10 |  0.000000000000000E+00 |
| Zr                       |  1.000000000323548E-20 |  0.000000000000000E+00 |
|---------------------------------------------------------------------|
| master species and logarithmic basis variables                      |
|---------------------------------------------------------------------|
| H2O                      | H2O                      |  1.744358983526984E+00 |
| Al+++                    | Al+++                    | -1.701441513807739E+01 |
| B(OH)3(aq)               | B(OH)3(aq)               | -4.996621382802428E+00 |
| Ba++                     | Ba++                     | -1.000502827151589E+01 |
| Ca++                     | Ca++                     | -3.524023215934110E+00 |
| Ce+++                    | Ce+++                    | -2.740976195827917E+01 |
| Cl-                      | Cl-                      | -3.696108192226354E+00 |
| CrO4--                   | CrO4--                   | -6.465387346629736E+00 |
| Cs+                      | Cs+                      | -1.000005574681568E+01 |
| Cu++                     | Cu++                     | -1.637870002604394E+01 |
```

```
| F-                        | F-                        | -3.941403593998085E+00 |
| Fe++                      | Fe++                      | -3.066562576298689E+01 |
| Gd+++                     | Gd+++                     | -1.793307213621704E+01 |
| H+                        | H+                        | -8.541613279486700E+00 |
| HCO3-                     | HCO3-                     | -2.718700996951416E+00 |
| HPO4--                    | HPO4--                    | -6.015929121852226E+00 |
| K+                        | K+                        | -3.890183397251213E+00 |
| La+++                     | La+++                     | -1.688827436029211E+01 |
| Li+                       | Li+                       | -1.000036844999928E+01 |
| Mg++                      | Mg++                      | -4.112490169764512E+00 |
| Mn++                      | Mn++                      | -1.809375682668663E+01 |
| MoO4--                    | MoO4--                    | -9.999999999999998E+00 |
| NO3-                      | NH3(aq)                   | -3.848218843518666E+00 |
| Na+                       | Na+                       | -2.702899458236068E+00 |
| Nd+++                     | Nd+++                     | -1.750588891510615E+01 |
| Ni++                      | Ni++                      | -1.000695082641410E+01 |
| Pb++                      | Pb++                      | -1.000242261283717E+01 |
| Pu++++                    | Pu++++                    | -4.296923228598299E+01 |
| SO4--                     | SO4--                     | -3.737397958632454E+00 |
| SiO2(aq)                  | SiO2(aq)                  | -3.012793768758593E+00 |
| Sm+++                     | Sm+++                     | -1.770774408408495E+01 |
| Sr++                      | Sr++                      | -1.001728322110878E+01 |
| Ti(OH)4(aq)               | Ti(OH)4(aq)               | -9.999999999999998E+00 |
| UO2++                     | UO2++                     | -2.250487864089675E+01 |
| VO++                      | VO++                      | -3.348456154039379E+01 |
| Zn++                      | Zn++                      | -1.014316586892381E+01 |
| Zr(OH)2++                 | Zr(OH)2++                 | -3.579534383659918E+01 |
| O2(g)                     | O2(g)                     | -6.777800000000000E-01 |
|-----------------------------------------------------------------------|
| physically removed subsystem  (solid solution, mineral, moles)        |
|-----------------------------------------------------------------------|
| none                      |                           |                        |
|-----------------------------------------------------------------------|

 --- Reading the data1 file ---


                    --- List of Solid Solutions ---

  1  Biotite                  No. components=   2
          Model type=   1  (Ideal solution               )
  2  Carbonate-Calcite        No. components=   6
          Model type=   1  (Ideal solution               )
  3  Chlorite-ss              No. components=   2
          Model type=   1  (Ideal solution               )
  4  Clinoptilolite-hy-ss     No. components=   5
          Model type=   1  (Ideal solution               )
  5  Clinoptilolite-ss        No. components=   6
          Model type=   1  (Ideal solution               )
  6  Epidote-ss               No. components=   2
          Model type=   1  (Ideal solution               )
  7  Garnet-ss                No. components=   2
          Model type=   1  (Ideal solution               )
  8  Orthopyroxene            No. components=   2
          Model type=   1  (Ideal solution               )
  9  Plagioclase              No. components=   2
          Model type=   1  (Ideal solution               )
 10  Sanidine-ss              No. components=   2
          Model type=   1  (Ideal solution               )
 11  Saponite-tri             No. components=   5
          Model type=   1  (Ideal solution               )
 12  Smectite-di              No. components=  12
          Model type=   1  (Ideal solution               )
```

```
13  Lanthanide hydroxide     No. components=   5
        Model type=   1  (Ideal solution               )
14  Rhabdophane-ss           No. components=   5
        Model type=   1  (Ideal solution               )
15  Lanthanide fluoride      No. components=   5
        Model type=   1  (Ideal solution               )

--- The data1 file has been successfully read ---

     Switching NO3- into the basis set for NH3(aq)


                      1.000  NO3-
                    + 1.000  H2O
                    + 1.000  H+
                         ==
                      1.000  NH3(aq)
                    + 2.000  O2(g)

                      1.000  NH3(aq)
                    + 2.000  O2(g)
                         ==
                      1.000  H2O
                    + 1.000  H+
                    + 1.000  NO3-

* note - (eq6/flgstz) This run involves at least
      one redox reaction.  The code will therefore use a
      redox parameter and the charge balance constraint.

The species Phlogopite               has been user-suppressed

The species Annite                   has been user-suppressed

The species Clinochlore-14A          has been user-suppressed

The species Daphnite-14A             has been user-suppressed

The species Clinozoisite             has been user-suppressed

The species Epidote                  has been user-suppressed

The species Epidote-ord              has been user-suppressed

The species Andradite                has been user-suppressed

The species Grossular                has been user-suppressed

The species Enstatite                has been user-suppressed

The species Ferrosilite              has been user-suppressed

The species Pyrite                   has been user-suppressed

The species Pyrrhotite               has been user-suppressed

The species Troilite                 has been user-suppressed

The species Alabandite               has been user-suppressed

The species Brezinaite               has been user-suppressed

The species Chalcocite               has been user-suppressed
```

```
The species Covellite                 has been user-suppressed

The species Millerite                 has been user-suppressed

The species Polydymite                has been user-suppressed

The species Vaesite                   has been user-suppressed

The species Heazlewoodite             has been user-suppressed

The species Galena                    has been user-suppressed

The species Sulfur                    has been user-suppressed

The species CaZrO3                    has been user-suppressed

The species BaZrO3                    has been user-suppressed

The species SrZrO3                    has been user-suppressed

The species U2S3                      has been user-suppressed

The species U3S5                      has been user-suppressed

The species US2                       has been user-suppressed

The species US3                       has been user-suppressed

The species US                        has been user-suppressed

The species US1.9                     has been user-suppressed

The species U3P4                      has been user-suppressed

The species UP                        has been user-suppressed

The species UP2                       has been user-suppressed

The species HS-                       has been user-suppressed

The species H2S(aq)                   has been user-suppressed

The species S--                       has been user-suppressed

--- recalculating component totals ---

               input            adjusted

    O      5.55182E+01    4.00555E+04
    Al     1.48250E-06    1.48250E-06
    B      1.23880E-05    1.23880E-05
    Ba     1.00000E-10    1.00000E-10
    Ca     3.24370E-04    3.24370E-04
    Ce     1.00000E-24    1.00000E-24
    Cl     2.01400E-04    2.01400E-04
    Cr     3.44850E-07    3.44850E-07
    Cs     1.00000E-10    1.00000E-10
    Cu     1.05000E-14    1.05000E-14
    F      1.14750E-04    1.14750E-04
    Fe     1.00000E-18    1.00000E-18
    Gd     1.00000E-14    1.00000E-14
    H      1.11019E+02    1.11019E+02
```

```
    C      1.99030E-03    1.00000E+04
    P      1.27110E-06    1.27110E-06
    K      1.28910E-04    1.28910E-04
    La     1.00000E-14    1.00000E-14
    Li     1.00000E-10    1.00000E-10
    Mg     8.26990E-05    8.26990E-05
    Mn     7.28090E-18    7.28090E-18
    Mo     1.00000E-10    1.00000E-10
    N      1.42000E-04    1.42000E-04
    Na     1.99220E-03    1.99220E-03
    Nd     1.00000E-14    1.00000E-14
    Ni     1.00000E-10    1.00000E-10
    Pb     1.00000E-10    1.00000E-10
    Pu     1.00000E-14    1.00000E-14
    S      1.91540E-04    1.91540E-04
    Si     1.01690E-03    1.01690E-03
    Sm     1.00000E-14    1.00000E-14
    Sr     1.00000E-10    1.00000E-10
    Ti     1.00000E-10    1.00000E-10
    U      1.00000E-14    1.00000E-14
    V      2.20000E-10    2.20000E-10
    Zn     1.00000E-10    1.00000E-10
    Zr     1.00000E-20    1.00000E-20

* note - (eqlib/inbdot) The following aqueous species
      have been assigned a default hard core diameter of
        4.000 Angstroms-
        Cu(NO2)2(aq)
        Nd(HPO4)2-
```

```
eeeee  qqq   666
e     q   q 6
eeee  q   q 6666
e     q q q 6   6
eeeee  qqq   666
          q
```

```
EQ36, version 7.2b (R137    )
 supported by EQLIB, version 7.2b (R168    )
```

```
|EQ6 input file name= j13_All-22.6i.txt                                |
|Description= React J-13 water with Carbon Steel and Alloy-22.         |
|Equilibrium with atmospheric gases.                                   |
|Version level= 7.2                                                    |
|Created 01/19/99    Creator= D.H. Lester                              |
|Revised             Revisor=                                          |
|                                                                      |
|Water from well J-13 at the Nevada Test site                          |
|                                                                      |
|Purpose: To model reaction with carbon steel (iron) and alloy C-22    |
|simultaneously to determine an expected Cr concentration in the water |
|corroding the C-22 after breaching the CAM.                           |
|                                                                      |
|It is assumed that a significant amount of carbon steel is still      |
|present. The rate constant for the steel was assumed to be 1.0E-11    |
```

```
|which is the higher value suggested in simulation studies at LLNL.    |
|Reference: Eng. Barrier System & Near Field Envir. Perf. Assess.,     |
|FY-96 Activities: End-of-Year Summary, Sept 1996, Wm.G.Halsey, "Report|
|on Initial Simulation of Water Interaction With Mild Steel Containers |
|Rate for C-22 is the median value for dripping at high temp. in the   |
|TSPA simulations for the VA document.                                 |
|The data base was modified to add the solid KFe(CrO4)2:2H2O           |
|Total amount of Steel and C-22 reduced to 20 moles each for a more    |
|realistic proportion of materials contacting 1L of water              |

|EQ3NR input file name= j13_V.3i                                       |
|Description= "J-13 well water for reaction with Alloy 22, V added     |
|Version level= 7.2b                                                   |
|Created 01/19/99    Creator= D. H. Lester                             |
|Revised             Revisor=                                          |
|                                                                      |
|  Water from well J-13 at the Nevada Test Site. The composition       |
|is nearly identical to that in the EQ3NR test case input file j13w.3i,|
|which is based on data reported by Harrar et al. (1990) and on p. 3 of|
|Preliminary Scenario Definitions, May 17, 1996, except for fixing of  |
|bicarbonate via fixed fugacity of CO2 and pH.  Al, Fe, Mn, etc. re-   |
|tained, as these are needed to model reaction with tuff, etc.  traces |
|of Pu, U, Gd, Ba, La, Nd, Ce, Sm, Pb, Cr, Ni, Cu, Zr, Sr, Cs, V,      |
|Zn, & Mo added to enable modeling.    Nb isn't in data base.          |
|                                                                      |
|                                                                      |
|This run uses revised data base, with essentially no organics.  Also, |
|several to many other unlikely aqueous species removed.               |
|                                                                      |
|Electrical balancing is on Cl-.  These data do not agree exactly with |
|those reported in the SCP.  CO2 and O2 fixed at atmospheric values.   |
|                                                                      |
|  This run uses the revised data base, incorporating SKB data.        |
|                                                                      |
|  Purpose: To use as water in modeling the corrosion of Alloy 22 and  |
|determine species of Cr Mo, Ni, and V in resulting solution.          |
|                                                                      |
|                            References                                |
|                                                                      |
|Harrar, J. E., Carley, J. F., Isherwood, W. F., and Raber, E., 1990,  |
|  Report of the Committee to Review the Use of J-13 Well Water in     |
|  Nevada Nuclear Waste Storage Investigations: UCID-21867, Lawrence   |
|  Livermore National Laboratory, Livermore, California.               |
```

data0.nuc.dhl
THERMODYNAMIC DATABASE
This data base is a modified version of data0.nuc.R3 as changed by D.H. Lester

The data base datao.nuc.R3is a composite of data0.alt.V8.R5 and data0.b19.skb, by P. L. Cloke on 15-aug-96. It was specially modified for evaluation of nuclear criticality needs on the Yucca Mt. Project. Six EQ3NR runs were made using input data for elements in J13 well water and components of the current design for waste glass packages. Three runs were saturated with air, at pH 4, 7.41, and 10. The other three were for highly reducing conditions, log fO2 = -80, and carbonated limited to the solubility of atmospheric CO2 in water, 1.0 E-5 m. Solid and solution species appearing on the outputs and which constituted less than 0.1% of dissolved elements, or whose affinities did not exceed 1.0 E-10, on any of the outputs, were deleted from this data base.

The lanthanide data from the .skb data base replaced those in the .alt file in those cases in which there was overlap, except for the lanthanide metals. This includes replacing data for LnO2H, LnO+, and LnO2- by the .skb data for Ln(OH)3 Ln(OH()2+, and Ln(OH)4-, respectively. Ce++++ was added as well as more data

for Y. Lanthanide data in the .skb base that aren't in the .alt base were added. LnPO4.xH2O, to which .skb assigned a value of 10 to x, was changed to LnPO4.H2O, in keeping with the formula for rhabdophane (and in keeping with the XRD pattern).

  Exceptions: the .skb data for Eu were not entered as replacements for .alt data. The .skb data for Pm were not entered. Divalent lanthanide data were not entered.

```
Output package:  eq3
Data set:        cm2
+-------------------------------------------------------------------
```

  The activity coefficients of aqueous solute species
and the activity of water are calculated according to the
B-dot equation plus others

```
   No. of elements in the data base =  79
   No. of elements dimensioned for = 100
   No. of active elements =  37

      No. of aqueous species dimensioned for = ***
      No. of aqueous species loaded = 665
      No. of active aqueous species = 583

         No. of aqueous reactions dimensioned for = ***
         No. of aqueous reactions loaded = 585
         No. of active aqueous reactions = 546


            No. of pure minerals dimensioned for = 850
            No. of pure minerals loaded = 690
            No. of active pure minerals = 604

            No. of gases dimensioned for =  80
            No. of gases loaded =  56
            No. of active gases =  56

               No. of solid solutions in the data base =  15
               No. of solid solutions dimensioned for =  50
               No. of active solid solutions =   8

   zistrt =  0.000000E+00 (initial value of zi)
   zimax  =  1.000000E+38 (maximum value of zi)
   timemx =  1.000000E+38 (maximum value of time, sec)
   kstpmx =           400 (maximum number of steps this run)


      dzprnt =  1.000000E+01 (linear print interval)
      dzprlg =  1.000000E+38 (logarithmic print interval)
      dlzidp =  1.000000E+38 (P.R.S. transfer interval)

      maximum permitted step sizes.....
         dlzmx1 =  1.000000E-09 (nord=0)
         dlzmx2 =  1.000000E+38 (nord.ge.1)
      nordlm =  6 (maximum permitted order)


   Temperature =     25.000 C


   nmodl1 =  1 (physical system switch)
```

```
  1 = titration, 2 = closed, 3 = flow-through)
nmodl2 =  0 (economy mode permission switch)
  0 = normal, 1 = economy, 3 = super economy)

   iopt1  =  1 (kinetic mode switch)
   iopt2  =  0 (suppress phase boundary location)
   iopt3  =  1 (interfacing output switch)
   iopt4  =  1 (permit solid solutions switch)
   iopt5  =  0 (remove initial solids switch)
   iopt6  =  0 (clear P.R.S. at start switch)
   iopt7  =  0 (auto basis switch mode switch)
   iopt8  =  0 (linear vs. log Taylor's series)
   iopt9  =  0 (not used)
   iopt10 =  0 (not used)
   iopt11 =  0 (suppress all redox reactions switch)
   iopt12 =  0 (not used)
   iopt13 =  0 (tab file output switch)
   iopt14 =  0 (not used)
   iopt15 =  0 (not used)
   iopt16-20   (not used)
   ifile  =  0 (supplementary input file)

      iopg1  =  0 (choice of act. coeff. equations)
      iopg2  =  0 (choice of pH scale)
      iopg3  =  0 (not used)
      iopg4  =  0 (not used)
      iopg5  =  0 (not used)
      iopg6  =  0 (not used)
      iopg7  =  0 (not used)
      iopg8  =  0 (not used)
      iopg9  =  0 (not used)
      iopg10 =  0 (not used)

   iopr1  =  0 (print loading of species from data1)
   iopr2  =  0 (print derivatives of basis elements)
   iopr3  =  0 (print loaded species and log K values)
   iopr4  =  0 (print aqueous species distribution)
   iopr5  =  0 (print cation/H+ activity ratios)
   iopr6  =  0 (print element/oxide comp. of mineral assemblage)
   iopr7  =  0 (print mineral affinity summary)
   iopr8  =  1 (print gas fugacity summary)
   iopr9  =  0 (print mean molal activity coefficient)
   iopr10 =  0 (print tabulation of Pitzer coefficients)
   iopr11 =  0 (print major species for each element)
   iopr12-20   (not used)

      iodb1  =  0 (enable comp. messages)
      iodb2  =  0 (print pre-Newton-Raphson optimization)
      iodb3  =  0 (print order/scaling info.)
      iodb4  =  0 (print newton iteration info.)
      iodb5  =  0 (print search iterations)
      iodb6  =  0 (print hpsatz iterations)
      iodb7  =  0 (print f.d. and t.s. calculations)
      iodb8  =  0 (turns iodb3 on and off)
      iodb9  =  0 (print kinetics info.)
      iodb10 =  0 (check basis var. f.d. and t.s.)
      iodb11 =  0 (check reac. rate f.d. and t.s.)
      iodb12 =  0 (iteration variable killer option)
      iodb13 =  0 (not used)
      iodb14 =  0 (not used)
      iodb15 =  0 (not used)
      iodb16 =  0 (turn on akmatr prints)
      iodb17-20   (not used)
```

```
    tolbt  =  1.000000E-06 (residual function convergence tolerance)
    toldl  =  1.000000E-06 (correction term convergence tolerance)
    tolx   =  1.000000E-06 (sol-sol reactant/product identity tolerance)
    tolsat =  5.000000E-03 (lower supersaturation tolerance)
    tolsst =  1.000000E-02 (upper supersaturation tolerance)


screw1 =  1.000E-04 (primary step-size parameter for basis variables)
screw2 =    0.00000 (not used)
screw3 =  1.000E-04 (step size parameter for rate functions)
screw4 =  1.000E-04 (corrector parameter for rate functions)
screw5 =    4.00000 (under-relaxation control for n-r iteration)
screw6 =    4.00000 (step size parameter for economy mode)

    zklogu =     -6.000 (threshhold log mass for solids)
    zklogl =      2.000 (log mass decrement for P.R.S shift)
     zkfac =      0.800 (shift adjustment factor)
    zklgmn =     -6.097 (minimum log mass after a shift)


        itermx= 90 (Newton-Raphson iteration limit)
        ntrymx= 25 (phase assemblage try limit)
        npslmx= 12 (critical phase instability slide limit)
        nsslmx=  8 (critical redox instability slide limit)



--- Inactive Loaded Aqueous Species ---


  Ag+                           Am+++
  Ar(aq)                        Au+
  Be++                          Br-
  Cd++                          Co++
  Dy+++                         Er+++
  Eu+++                         Ga+++
  H2AsO4-                       He(aq)
  Hg++                          Ho+++
  I-                            In+++
  Kr(aq)                        Lu+++
  Ne(aq)                        Np++++
  Pd++                          Pr+++
  Ra++                          Rb+
  ReO4-                         Rn(aq)
  RuO4--                        Sb(OH)3(aq)
  Sc+++                         SeO3--
  Sn++                          Tb+++
  TcO4-                         Th++++
  Tl+                           Tm+++
  WO4--                         Xe(aq)
  Y+++                          Yb+++
  HS-                           Ag++
  Am++                          Am++++
  AmO2+                         AmO2++
  Au+++                         Br3-
  BrO-                          BrO3-
  BrO4-                         Co+++
  Eu++                          H2AsO3-
  HSe-                          Hg2++
  I3-                           IO-
  IO3-                          IO4-
  Np+++                         NpO2+
```

NpO2++	Ru(OH)2++
Ru++	Ru+++
RuO4(aq)	RuO4-
Se--	SeO4--
Sn++++	Tc+++
TcO++	TcO4--
TcO4---	Tl+++
Yb++	H2S(aq)
S--	

--- Inactive Loaded Minerals ---

Alabandite	Andradite
Annite	BaZrO3
Beidellite-Ca	Beidellite-K
Beidellite-Mg	Beidellite-Na
Brezinaite	CaZrO3
Calcite	Ce(OH)3
CePO4:H2O	CeF3:0.5H2O
Chalcocite	Clinochlore-14A
Clinoptilolite-Ca	Clinoptilolite-Cs
Clinoptilolite-K	Clinoptilolite-NH4
Clinoptilolite-Na	Clinoptilolite-Sr
Clinoptilolite-hy-Ca	Clinoptilolite-hy-Cs
Clinoptilolite-hy-K	Clinoptilolite-hy-Na
Clinoptilolite-hy-Sr	Clinozoisite
Covellite	Daphnite-14A
Enstatite	Epidote
Epidote-ord	Ferrosilite
Galena	Gd(OH)3
GdPO4:H2O	GdF3:0.5H2O
Grossular	Heazlewoodite
La(OH)3	LaPO4:H2O
LaF3:0.5H2O	Magnesite
Millerite	Montmor-Ca
Montmor-K	Montmor-Mg
Montmor-Na	Nd(OH)3(c)
NdPO4:H2O	NdF3:0.5H2O
Nontronite-Ca	Nontronite-K
Nontronite-Mg	Nontronite-Na
Phlogopite	Polydymite
Pyrite	Pyrrhotite
Rhodochrosite	Sulfur
Saponite-Ca	Saponite-H
Saponite-K	Saponite-Mg
Saponite-Na	Siderite
Sm(OH)3	SmPO4:H2O
SmF3:0.5H2O	Smithsonite
SrZrO3	Strontianite
Titanite	Troilite
U2S3	U3P4
U3S5	UP
UP2	US
US1.9	US2
US3	Vaesite

--- Reactants and Rate Coefficients ---

Forward (dissolution/dissociation/destruction)

```
  carbon steel
      Specified forward net rate
              rk0=  1.00000E-11   trk0=   25.0
              hact=  0.00000     kcal

  Alloy-22
      Specified forward net rate
              rk0=  1.13000E-14   trk0=   25.0
              hact=  0.00000     kcal


     Backward (precipitation/association/formation)


  carbon steel
      Instantaneous partial equilibrium

  Alloy-22
      Instantaneous partial equilibrium


             --- Special Reactants ---


  carbon steel
           Mol. wt. =       54.698g/mol
           Molar volume =        0.000 cc
                         mol/mol

             Fe        9.610000000000000E-01
             C         2.190000000000000E-02
             P         7.060000000000000E-04
             Mn        1.030000000000000E-02
             S         8.530000000000000E-04
             Si        5.360000000000000E-03

  Alloy-22
           Mol. wt. =       59.888g/mol
           Molar volume =        0.000 cc
                         mol/mol

             Cr        2.561060000000000E-01
             Fe        5.420400000000000E-02
             Mn        5.510000000000000E-03
             Mo        1.009620000000000E-01
             Ni        5.681220000000000E-01
             V         4.160000000000000E-03

- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -


Stepping to zi=  0.0000E+00, delzi=  0.0000E+00, nord= 0
  time =  0.0000E+00 d, dltime =  0.0000E+00 d

  Attempted species assemblage no.   1

             1      1  H2O
             2      3  Al+++
             3      7  B(OH)3(aq)
             4      8  Ba++
             5     11  Ca++
```

```
             6     13  Ce+++
             7     14  Cl-
             8     16  CrO4--
             9     17  Cs+
            10     18  Cu++
            11     22  F-
            12     23  Fe++
            13     25  Gd+++
            14     26  H+
            15     28  HCO3-
            16     29  HPO4--
            17     35  K+
            18     37  La+++
            19     38  Li+
            20     40  Mg++
            21     41  Mn++
            22     42  MoO4--
            23     43  NO3-
            24     44  Na+
            25     45  Nd+++
            26     47  Ni++
            27     49  Pb++
            28     52  Pu++++
            29     58  SO4--
            30     62  SiO2(aq)
            31     63  Sm+++
            32     65  Sr++
            33     69  Ti(OH)4(aq)
            34     72  UO2++
            35     73  VO++
            36     78  Zn++
            37     79  Zr(OH)2++
            38     80  O2(g)
            39    689  fix     CO2(g)
            40    690  fix     O2(g)

iter =    2
     52 supersaturated pure minerals
      5 supersaturated solid solutions

               The most supersaturated phases           Affinity, kcal

                 1     475   Quartz                        1.34587596
                 2     563   Tridymite                     1.11190103
                 3     124   Chalcedony                    0.97588178
                 4     171   Cristobalite(alpha)           0.59483689
                 5   51200   Smectite-di                   8.43939911
                 6   51100   Saponite-tri                  8.87930350
                 7     548   Talc                          7.58952864
                 8     198   Dolomite-ord                  1.74514732


  Attempted species assemblage no.   2

             1      1  H2O
             2      3  Al+++
             3      7  B(OH)3(aq)
             4      8  Ba++
             5     11  Ca++
             6     13  Ce+++
             7     14  Cl-
             8     16  CrO4--
             9     17  Cs+
```

```
            10     18  Cu++
            11     22  F-
            12     23  Fe++
            13     25  Gd+++
            14     26  H+
            15     28  HCO3-
            16     29  HPO4--
            17     35  K+
            18     37  La+++
            19     38  Li+
            20     40  Mg++
            21     41  Mn++
            22     42  MoO4--
            23     43  NO3-
            24     44  Na+
            25     45  Nd+++
            26     47  Ni++
            27     49  Pb++
            28     52  Pu++++
            29     58  SO4--
            30     62  SiO2(aq)
            31     63  Sm+++
            32     65  Sr++
            33     69  Ti(OH)4(aq)
            34     72  UO2++
            35     73  VO++
            36     78  Zn++
            37     79  Zr(OH)2++
            38     80  O2(g)
            39    475  Quartz
            40    689  fix     CO2(g)
            41    690  fix     O2(g)

iter =   11
     31 supersaturated pure minerals
      5 supersaturated solid solutions

               The most supersaturated phases          Affinity, kcal

                 1     198   Dolomite-ord                 1.78783425
                 2     196   Dolomite                     1.78783425
                 3   51100   Saponite-tri                 4.00473215
                 4   51200   Smectite-di                  3.05313606
                 5   50200   Carbonate-Calcite            0.53795611
                 6     548   Talc                         2.27094562
                 7      35   Aragonite                    0.28797976
                 8     222   Fluorapatite                13.91861605


  Attempted species assemblage no.   3

            1      1  H2O
            2      3  Al+++
            3      7  B(OH)3(aq)
            4      8  Ba++
            5     11  Ca++
            6     13  Ce+++
            7     14  Cl-
            8     16  CrO4--
            9     17  Cs+
           10     18  Cu++
           11     22  F-
           12     23  Fe++
```

```
            13     25  Gd+++
            14     26  H+
            15     28  HCO3-
            16     29  HPO4--
            17     35  K+
            18     37  La+++
            19     38  Li+
            20     40  Mg++
            21     41  Mn++
            22     42  MoO4--
            23     43  NO3-
            24     44  Na+
            25     45  Nd+++
            26     47  Ni++
            27     49  Pb++
            28     52  Pu++++
            29     58  SO4--
            30     62  SiO2(aq)
            31     63  Sm+++
            32     65  Sr++
            33     69  Ti(OH)4(aq)
            34     72  UO2++
            35     73  VO++
            36     78  Zn++
            37     79  Zr(OH)2++
            38     80  O2(g)
            39    198  Dolomite-ord
            40    475  Quartz
            41    689  fix     CO2(g)
            42    690  fix     O2(g)

iter =   23
     23 supersaturated pure minerals
      4 supersaturated solid solutions

               The most supersaturated phases          Affinity, kcal

                 1   51200   Smectite-di                  2.66149525
                 2   50200   Carbonate-Calcite            0.19283597
                 3     222   Fluorapatite                13.16863494
                 4     192   Diaspore                     1.83906920
                 5     368   Muscovite                    6.19442388
                 6     328   Mesolite                     5.35327074
                 7      77   Boehmite                     1.28803436
                 8     542   Stilbite                     6.25350099


  Attempted species assemblage no.   4

             1      1  H2O
             2      3  Al+++
             3      7  B(OH)3(aq)
             4      8  Ba++
             5     11  Ca++
             6     13  Ce+++
             7     14  Cl-
             8     16  CrO4--
             9     17  Cs+
            10     18  Cu++
            11     22  F-
            12     23  Fe++
            13     25  Gd+++
            14     26  H+
```

```
            15     28  HCO3-
            16     29  HPO4--
            17     35  K+
            18     37  La+++
            19     38  Li+
            20     40  Mg++
            21     41  Mn++
            22     42  MoO4--
            23     43  NO3-
            24     44  Na+
            25     45  Nd+++
            26     47  Ni++
            27     49  Pb++
            28     52  Pu++++
            29     58  SO4--
            30     62  SiO2(aq)
            31     63  Sm+++
            32     65  Sr++
            33     69  Ti(OH)4(aq)
            34     72  UO2++
            35     73  VO++
            36     78  Zn++
            37     79  Zr(OH)2++
            38     80  O2(g)
            39    198  Dolomite-ord
            40    475  Quartz
            41    689  fix     CO2(g)
            42    690  fix     O2(g)
            43      1  SmectiteBeidellite-Ca
            44      2  SmectiteBeidellite-K
            45      3  SmectiteBeidellite-Mg
            46      4  SmectiteBeidellite-Na
            47      5  SmectiteMontmor-Ca
            48      6  SmectiteMontmor-K
            49      7  SmectiteMontmor-Mg
            50      8  SmectiteMontmor-Na
            51      9  SmectiteNontronite-Ca
            52     10  SmectiteNontronite-K
            53     11  SmectiteNontronite-Mg
            54     12  SmectiteNontronite-Na

iter =   12
     11 supersaturated pure minerals
      1 supersaturated solid solutions

               The most supersaturated phases          Affinity, kcal

                 1   50200   Carbonate-Calcite            0.19419987
                 2     222   Fluorapatite                13.17192295
                 3     328   Mesolite                     2.28113175
                 4     471   Pyromorphite                 1.27438609
                 5     542   Stilbite                     2.88816356
                 6     368   Muscovite                    1.56159320
                 7     192   Diaspore                     0.29465061
                 8     323   Maximum_Microcline           0.34540289


  Attempted species assemblage no.   5

            1      1  H2O
            2      3  Al+++
            3      7  B(OH)3(aq)
            4      8  Ba++
```

```
     5     11  Ca++
     6     13  Ce+++
     7     14  Cl-
     8     16  CrO4--
     9     17  Cs+
    10     18  Cu++
    11     22  F-
    12     23  Fe++
    13     25  Gd+++
    14     26  H+
    15     28  HCO3-
    16     29  HPO4--
    17     35  K+
    18     37  La+++
    19     38  Li+
    20     40  Mg++
    21     41  Mn++
    22     42  MoO4--
    23     43  NO3-
    24     44  Na+
    25     45  Nd+++
    26     47  Ni++
    27     49  Pb++
    28     52  Pu++++
    29     58  SO4--
    30     62  SiO2(aq)
    31     63  Sm+++
    32     65  Sr++
    33     69  Ti(OH)4(aq)
    34     72  UO2++
    35     73  VO++
    36     78  Zn++
    37     79  Zr(OH)2++
    38     80  O2(g)
    39    198  Dolomite-ord
    40    475  Quartz
    41    689  fix     CO2(g)
    42    690  fix     O2(g)
    43      1  CarbonatCalcite
    44      2  CarbonatMagnesite
    45      3  CarbonatRhodochrosite
    46      4  CarbonatSiderite
    47      5  CarbonatSmithsonite
    48      6  CarbonatStrontianite
    49      1  SmectiteBeidellite-Ca
    50      2  SmectiteBeidellite-K
    51      3  SmectiteBeidellite-Mg
    52      4  SmectiteBeidellite-Na
    53      5  SmectiteMontmor-Ca
    54      6  SmectiteMontmor-K
    55      7  SmectiteMontmor-Mg
    56      8  SmectiteMontmor-Na
    57      9  SmectiteNontronite-Ca
    58     10  SmectiteNontronite-K
    59     11  SmectiteNontronite-Mg
    60     12  SmectiteNontronite-Na

iter =   16
      9 supersaturated pure minerals
      0 supersaturated solid solutions

                The most supersaturated phases           Affinity, kcal
```

1	222	Fluorapatite	12.42879978
2	471	Pyromorphite	1.24950453
3	328	Mesolite	2.06401400
4	542	Stilbite	2.60773506
5	368	Muscovite	1.43411209
6	192	Diaspore	0.26199550
7	120	Celadonite	0.63365151
8	323	Maximum_Microcline	0.28323198

Attempted species assemblage no. 6

1	1	H2O
2	3	Al+++
3	7	B(OH)3(aq)
4	8	Ba++
5	11	Ca++
6	13	Ce+++
7	14	Cl-
8	16	CrO4--
9	17	Cs+
10	18	Cu++
11	22	F-
12	23	Fe++
13	25	Gd+++
14	26	H+
15	28	HCO3-
16	29	HPO4--
17	35	K+
18	37	La+++
19	38	Li+
20	40	Mg++
21	41	Mn++
22	42	MoO4--
23	43	NO3-
24	44	Na+
25	45	Nd+++
26	47	Ni++
27	49	Pb++
28	52	Pu++++
29	58	SO4--
30	62	SiO2(aq)
31	63	Sm+++
32	65	Sr++
33	69	Ti(OH)4(aq)
34	72	UO2++
35	73	VO++
36	78	Zn++
37	79	Zr(OH)2++
38	80	O2(g)
39	198	Dolomite-ord
40	222	Fluorapatite
41	475	Quartz
42	689	fix CO2(g)
43	690	fix O2(g)
44	1	CarbonatCalcite
45	2	CarbonatMagnesite
46	3	CarbonatRhodochrosite
47	4	CarbonatSiderite
48	5	CarbonatSmithsonite
49	6	CarbonatStrontianite
50	1	SmectiteBeidellite-Ca
51	2	SmectiteBeidellite-K

```
            52      3  SmectiteBeidellite-Mg
            53      4  SmectiteBeidellite-Na
            54      5  SmectiteMontmor-Ca
            55      6  SmectiteMontmor-K
            56      7  SmectiteMontmor-Mg
            57      8  SmectiteMontmor-Na
            58      9  SmectiteNontronite-Ca
            59     10  SmectiteNontronite-K
            60     11  SmectiteNontronite-Mg
            61     12  SmectiteNontronite-Na

iter =   14
      7 supersaturated pure minerals
      0 supersaturated solid solutions

               The most supersaturated phases          Affinity, kcal

                 1     328   Mesolite                     2.06441394
                 2     542   Stilbite                     2.60778394
                 3     368   Muscovite                    1.43470335
                 4     192   Diaspore                     0.26197558
                 5     120   Celadonite                   0.63428266
                 6     323   Maximum_Microcline           0.28386309
                 7     273   K-Feldspar                   0.28386309


  Attempted species assemblage no.   7

            1      1  H2O
            2      3  Al+++
            3      7  B(OH)3(aq)
            4      8  Ba++
            5     11  Ca++
            6     13  Ce+++
            7     14  Cl-
            8     16  CrO4--
            9     17  Cs+
           10     18  Cu++
           11     22  F-
           12     23  Fe++
           13     25  Gd+++
           14     26  H+
           15     28  HCO3-
           16     29  HPO4--
           17     35  K+
           18     37  La+++
           19     38  Li+
           20     40  Mg++
           21     41  Mn++
           22     42  MoO4--
           23     43  NO3-
           24     44  Na+
           25     45  Nd+++
           26     47  Ni++
           27     49  Pb++
           28     52  Pu++++
           29     58  SO4--
           30     62  SiO2(aq)
           31     63  Sm+++
           32     65  Sr++
           33     69  Ti(OH)4(aq)
           34     72  UO2++
           35     73  VO++
```

```
            36     78  Zn++
            37     79  Zr(OH)2++
            38     80  O2(g)
            39    198  Dolomite-ord
            40    222  Fluorapatite
            41    328  Mesolite
            42    475  Quartz
            43    689  fix     CO2(g)
            44    690  fix     O2(g)
            45      1  CarbonatCalcite
            46      2  CarbonatMagnesite
            47      3  CarbonatRhodochrosite
            48      4  CarbonatSiderite
            49      5  CarbonatSmithsonite
            50      6  CarbonatStrontianite
            51      1  SmectiteBeidellite-Ca
            52      2  SmectiteBeidellite-K
            53      3  SmectiteBeidellite-Mg
            54      4  SmectiteBeidellite-Na
            55      5  SmectiteMontmor-Ca
            56      6  SmectiteMontmor-K
            57      7  SmectiteMontmor-Mg
            58      8  SmectiteMontmor-Na
            59      9  SmectiteNontronite-Ca
            60     10  SmectiteNontronite-K
            61     11  SmectiteNontronite-Mg
            62     12  SmectiteNontronite-Na

--- Iteration has gone sour (iter=  16) ---
     The phase to be dropped is Smectite-di               (51200)


  Attempted species assemblage no.   8

             1      1  H2O
             2      3  Al+++
             3      7  B(OH)3(aq)
             4      8  Ba++
             5     11  Ca++
             6     13  Ce+++
             7     14  Cl-
             8     16  CrO4--
             9     17  Cs+
            10     18  Cu++
            11     22  F-
            12     23  Fe++
            13     25  Gd+++
            14     26  H+
            15     28  HCO3-
            16     29  HPO4--
            17     35  K+
            18     37  La+++
            19     38  Li+
            20     40  Mg++
            21     41  Mn++
            22     42  MoO4--
            23     43  NO3-
            24     44  Na+
            25     45  Nd+++
            26     47  Ni++
            27     49  Pb++
            28     52  Pu++++
            29     58  SO4--
```

```
            30     62  SiO2(aq)
            31     63  Sm+++
            32     65  Sr++
            33     69  Ti(OH)4(aq)
            34     72  UO2++
            35     73  VO++
            36     78  Zn++
            37     79  Zr(OH)2++
            38     80  O2(g)
            39    198  Dolomite-ord
            40    222  Fluorapatite
            41    328  Mesolite
            42    475  Quartz
            43    689  fix     CO2(g)
            44    690  fix     O2(g)
            45      1  CarbonatCalcite
            46      2  CarbonatMagnesite
            47      3  CarbonatRhodochrosite
            48      4  CarbonatSiderite
            49      5  CarbonatSmithsonite
            50      6  CarbonatStrontianite

iter =   20
      1 supersaturated pure minerals
      0 supersaturated solid solutions

               The most supersaturated phases           Affinity, kcal

                 1     542   Stilbite                      0.34640175


  Attempted species assemblage no.   9

             1      1  H2O
             2      3  Al+++
             3      7  B(OH)3(aq)
             4      8  Ba++
             5     11  Ca++
             6     13  Ce+++
             7     14  Cl-
             8     16  CrO4--
             9     17  Cs+
            10     18  Cu++
            11     22  F-
            12     23  Fe++
            13     25  Gd+++
            14     26  H+
            15     28  HCO3-
            16     29  HPO4--
            17     35  K+
            18     37  La+++
            19     38  Li+
            20     40  Mg++
            21     41  Mn++
            22     42  MoO4--
            23     43  NO3-
            24     44  Na+
            25     45  Nd+++
            26     47  Ni++
            27     49  Pb++
            28     52  Pu++++
            29     58  SO4--
            30     62  SiO2(aq)
```

```
          31     63  Sm+++
          32     65  Sr++
          33     69  Ti(OH)4(aq)
          34     72  UO2++
          35     73  VO++
          36     78  Zn++
          37     79  Zr(OH)2++
          38     80  O2(g)
          39    198  Dolomite-ord
          40    222  Fluorapatite
          41    328  Mesolite
          42    475  Quartz
          43    542  Stilbite
          44    689  fix     CO2(g)
          45    690  fix     O2(g)
          46      1  CarbonatCalcite
          47      2  CarbonatMagnesite
          48      3  CarbonatRhodochrosite
          49      4  CarbonatSiderite
          50      5  CarbonatSmithsonite
          51      6  CarbonatStrontianite

--- Iteration has gone sour (iter=  16) ---
     The phase to be dropped is Mesolite                  (  328)


  Attempted species assemblage no.  10

           1      1  H2O
           2      3  Al+++
           3      7  B(OH)3(aq)
           4      8  Ba++
           5     11  Ca++
           6     13  Ce+++
           7     14  Cl-
           8     16  CrO4--
           9     17  Cs+
          10     18  Cu++
          11     22  F-
          12     23  Fe++
          13     25  Gd+++
          14     26  H+
          15     28  HCO3-
          16     29  HPO4--
          17     35  K+
          18     37  La+++
          19     38  Li+
          20     40  Mg++
          21     41  Mn++
          22     42  MoO4--
          23     43  NO3-
          24     44  Na+
          25     45  Nd+++
          26     47  Ni++
          27     49  Pb++
          28     52  Pu++++
          29     58  SO4--
          30     62  SiO2(aq)
          31     63  Sm+++
          32     65  Sr++
          33     69  Ti(OH)4(aq)
          34     72  UO2++
          35     73  VO++
```

```
            36     78  Zn++
            37     79  Zr(OH)2++
            38     80  O2(g)
            39    198  Dolomite-ord
            40    222  Fluorapatite
            41    475  Quartz
            42    542  Stilbite
            43    689  fix     CO2(g)
            44    690  fix     O2(g)
            45      1  CarbonatCalcite
            46      2  CarbonatMagnesite
            47      3  CarbonatRhodochrosite
            48      4  CarbonatSiderite
            49      5  CarbonatSmithsonite
            50      6  CarbonatStrontianite

iter =   12


- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -


                    Reaction progress        =  0.00000000000000E+00
                    Log of reaction progress =    -999.0000000



                    Time =  0.000E+00 sec
                         =  0.000E+00 days
                         =  0.000E+00 years

                    Log sec =     -999.000
                    Log days =    -999.000
                    Log years =   -999.000

                    Temperature    =     25.000 degrees C
                    total pressure =      1.013 bars


Change in the product phase assemblage

Start or re-start of run


                              --- Reactant Summary ---


    Definitions and conventions

         Delta x = x now - x at start
         Affinity is + for forward direction (dissolution),
                     - for reverse direction (precipitation)
         Rates are + for forward direction (dissolution),
                   - for reverse direction (precipitation)


    Reactant                  Moles     Delta moles    Mass, g    Delta Mass, g

 carbon steel               2.0000E+01   0.0000E+00   1.0940E+03   0.0000E+00
 Alloy-22                   2.0000E+01   0.0000E+00   1.1978E+03   0.0000E+00


               Current total mass =  2.29171E+03 grams
```

```
Delta total mass   =  0.00000E+00 grams
Delta total volume =      0.00000 cc
```

Reactant	Rel. Rate mol/mol	Rate mol/s	Rate mol/s/cm2
carbon steel	9.9887E-01	1.0000E-09	1.0000E-11
Alloy-22	1.1287E-03	1.1300E-12	1.1300E-14

Reactant	Affinity kcal/mol	Surface Area mol/s/cm2
carbon steel	999.00000	1.0000E+02
Alloy-22	999.00000	1.0000E+02

Reactant	Rate Constants, mol/s/cm2	
carbon steel		
	Forward	1.0000E-11
Alloy-22		
	Forward	1.1300E-14

```
Affinity of the overall irreversible reaction=     0.000 kcal
Contributions from irreversible reactions
with no thermodynamic data are not included
```

--- Element Totals for the Aqueous Solution ---

Element	mg/kg soln.	Molality	Moles
O	8.880243E+05	5.551539E+01	5.551556E+01
Al	3.526938E-04	1.307444E-08	1.307448E-08
B	1.338978E-01	1.238796E-05	1.238800E-05
Ba	1.372974E-05	9.999970E-11	1.000000E-10
Ca	7.824455E+00	1.952721E-04	1.952727E-04
Ce	1.400848E-19	9.999970E-25	1.000000E-24
Cl	7.138636E+00	2.013994E-04	2.014000E-04
Cr	1.792699E-02	3.448489E-07	3.448500E-07
Cs	1.328768E-05	9.999969E-11	1.000000E-10
Cu	6.670893E-10	1.049997E-14	1.050000E-14
F	2.171556E+00	1.143263E-04	1.143267E-04
Fe	5.583497E-14	9.999970E-19	1.000000E-18
Gd	1.572161E-09	9.999970E-15	1.000000E-14
H	1.118763E+05	1.110185E+02	1.110189E+02
C	1.996573E+01	1.662640E-03	1.662645E-03
P	3.629736E-05	1.172123E-09	1.172127E-09
K	5.038918E+00	1.289056E-04	1.289060E-04
La	1.388756E-09	9.999970E-15	1.000000E-14
Li	6.939505E-07	9.999969E-11	1.000000E-10
Mg	3.225615E-01	1.327422E-05	1.327426E-05
Mn	5.876328E-14	1.069855E-18	1.069858E-18
Mo	9.591934E-06	9.999969E-11	1.000000E-10
N	1.988529E+00	1.419996E-04	1.420000E-04
Na	4.578825E+01	1.992102E-03	1.992108E-03
Nd	1.442089E-09	9.999970E-15	1.000000E-14
Ni	5.867736E-06	9.999970E-11	1.000000E-10
Pb	2.071554E-05	9.999969E-11	1.000000E-10

Pu	2.439474E-09	9.999970E-15	1.000000E-14
S	6.140599E+00	1.915394E-04	1.915400E-04
Si	2.924631E+00	1.041552E-04	1.041556E-04
Sm	1.503276E-09	9.999970E-15	1.000000E-14
Sr	1.924091E-07	2.196415E-12	2.196422E-12
Ti	4.786969E-06	9.999969E-11	1.000000E-10
U	2.379776E-09	9.999969E-15	1.000000E-14
V	1.120472E-05	2.199993E-10	2.200000E-10
Zn	9.546379E-07	1.460224E-11	1.460229E-11
Zr	9.120435E-16	9.999970E-21	1.000000E-20

Single ion activities and activity coefficients are here defined
with respect to the modified NBS pH scale

	pH	Eh	pe
modified NBS pH scale	8.4953	0.7165	1.2112E+01
rational pH scale	8.4710	0.7179	1.2136E+01

pHCl = 12.2169

Oxygen fugacity = 2.09991E-01
Log oxygen fugacity = -0.67780

Activity of water = 0.99991
Log activity of water = -0.00004

Ionic strength = 2.918138E-03 molal
Sum of molalities = 0.0050070615802
Osmotic coefficient = 0.97787

Mass of solution = 1.000215 kg
Mass of solutes = 0.000212 kg
Conc. of solutes = 0.021233 per cent (w/w)

Moles of solvent H2O = 5.55086E+01
Mass of solvent H2O = 1.00000E+00 kg

Species	Molality	Log molality	Log gamma	Log activity
Na+	1.9856E-03	-2.7021	-0.0262	-2.7283
HCO3-	1.6097E-03	-2.7932	-0.0251	-2.8184
O2(aq)	2.6521E-04	-3.5764	0.0003	-3.5761
Cl-	2.0133E-04	-3.6961	-0.0256	-3.7216
SO4--	1.8633E-04	-3.7297	-0.1019	-3.8317
Ca++	1.8283E-04	-3.7379	-0.1008	-3.8388
NO3-	1.4190E-04	-3.8480	-0.0256	-3.8736
K+	1.2876E-04	-3.8902	-0.0267	-3.9169
F-	1.1420E-04	-3.9423	-0.0253	-3.9677
SiO2(aq)	1.0016E-04	-3.9993	0.0000	-3.9993
CO3--	2.8132E-05	-4.5508	-0.1011	-4.6519
Mg++	1.2480E-05	-4.9038	-0.0977	-5.0015
CO2(aq)	1.0735E-05	-4.9692	0.0003	-4.9689
B(OH)3(aq)	1.0400E-05	-4.9830	0.0000	-4.9830
CaCO3(aq)	6.8613E-06	-5.1636	0.0000	-5.1636

NaHCO3(aq)	4.0495E-06	-5.3926	0.0000	-5.3926
HSiO3-	3.7030E-06	-5.4314	-0.0251	-5.4566
OH-	3.3533E-06	-5.4745	-0.0253	-5.4999
CaSO4(aq)	2.7583E-06	-5.5594	0.0000	-5.5594
CaHCO3+	2.6047E-06	-5.5842	-0.0262	-5.6105
BO2-	1.9613E-06	-5.7075	-0.0251	-5.7326
NaSO4-	1.9281E-06	-5.7149	-0.0251	-5.7400
MgSO4(aq)	3.7890E-07	-6.4215	0.0000	-6.4215
CrO4--	3.4199E-07	-6.4660	-0.1019	-6.5679
NaHSiO3(aq)	2.9080E-07	-6.5364	0.0000	-6.5364
MgCO3(aq)	2.1159E-07	-6.6745	0.0000	-6.6745
MgHCO3+	1.7460E-07	-6.7580	-0.0262	-6.7842
NaCO3-	1.4431E-07	-6.8407	-0.0251	-6.8658
KSO4-	1.4328E-07	-6.8438	-0.0251	-6.8689
CaNO3+	1.0324E-07	-6.9862	-0.0262	-7.0124
CaF+	7.9701E-08	-7.0985	-0.0262	-7.1248
NaCl(aq)	5.9296E-08	-7.2270	0.0000	-7.2270
MgF+	2.5671E-08	-7.5906	-0.0262	-7.6168
NaF(aq)	2.0249E-08	-7.6936	0.0000	-7.6936
CaB(OH)4+	1.8945E-08	-7.7225	-0.0262	-7.7487
AlO2-	1.2960E-08	-7.8874	-0.0251	-7.9125
CaOH+	6.8025E-09	-8.1673	-0.0262	-8.1936
NaB(OH)4(aq)	6.4553E-09	-8.1901	0.0000	-8.1901
CaCl+	5.8910E-09	-8.2298	-0.0262	-8.2560
H+	3.3805E-09	-8.4710	-0.0243	-8.4953
HCrO4-	2.8597E-09	-8.5437	-0.0251	-8.5688
MgB(OH)4+	1.5498E-09	-8.8097	-0.0262	-8.8360
MgCl+	1.4729E-09	-8.8318	-0.0262	-8.8581
HPO4--	9.9058E-10	-9.0041	-0.1019	-9.1061
NaOH(aq)	9.3777E-10	-9.0279	0.0000	-9.0279
KCl(aq)	7.3601E-10	-9.1331	0.0000	-9.1331
HF(aq)	5.0718E-10	-9.2948	0.0000	-9.2948
VO3OH--	1.8937E-10	-9.7227	-0.1019	-9.8246
H2SiO4--	1.3587E-10	-9.8669	-0.1019	-9.9688
KOH(aq)	1.3133E-10	-9.8816	0.0000	-9.8816
HAlO2(aq)	1.1031E-10	-9.9574	0.0000	-9.9574

--- Summary of Solid Product Phases---

Product	Log moles	Moles	Mass, g	Volume, cc
Dolomite-ord	-4.1676	6.7986E-05	1.2537E-02	4.3742E-03
Fluorapatite	-6.3733	4.2331E-07	2.1348E-04	2.1165E-04
Quartz	-3.0418	9.0815E-04	5.4565E-02	2.0604E-02
Stilbite	-6.1713	6.7405E-07	4.8168E-04	2.2480E-04
fix CO2(g)	4.0000	1.0000E+04	4.4010E+05	0.0000E+00
fix O2(g)	4.0000	1.0000E+04	3.1999E+05	0.0000E+00
Carbonate-Calcite	-4.2237	5.9748E-05	5.9573E-03	2.1939E-03
Calcite	-4.2343	5.8308E-05	5.8359E-03	2.1536E-03
Magnesite	-5.8419	1.4392E-06	1.2134E-04	4.0323E-05
Rhodochrosite	-17.2068	6.2110E-18	7.1394E-16	1.9301E-16
Siderite	-28.9788	1.0500E-29	1.2165E-27	3.0848E-28
Smithsonite	-10.0686	8.5398E-11	1.0709E-08	2.4146E-09
Strontianite	-10.0096	9.7804E-11	1.4439E-08	3.8153E-09

	Mass, grams	Volume, cc
Created	7.600861E+05	2.760858E-02
Destroyed	0.000000E+00	0.000000E+00

```
 Net              7.600861E+05       2.760858E-02

Warning-- these volume totals may be incomplete because
of missing partial molar volume data in the data base


 --- Summary of Pure Mineral Saturation States ---


   Mineral                      Log Q/K     Aff, kcal  State

Alamosite                        -2.788      -3.803
Albite                           -2.520      -3.438
Albite_high                      -3.839      -5.237
Albite_low                       -2.520      -3.438
Alstonite                        -5.176      -7.061
Analcime                         -2.545      -3.473
Andalusite                       -6.993      -9.540
Anglesite                        -6.084      -8.301
Anhydrite                        -3.364      -4.590
Aragonite                        -0.155      -0.211
Artinite                         -6.992      -9.539
BaCrO4                           -6.742      -9.198
BaZrO3                           82.584     112.668   ssatd
Barite                           -3.967      -5.412
Barytocalcite                    -5.333      -7.276
Bassanite                        -4.009      -5.469
Beidellite-Ca                    -3.011      -4.108
Beidellite-Cs                    -5.249      -7.161
Beidellite-H                     -4.223      -5.761
Beidellite-K                     -3.387      -4.621
Beidellite-Mg                    -3.165      -4.318
Beidellite-Na                    -3.334      -4.548
Boehmite                         -1.089      -1.485
Boric_acid                       -4.825      -6.582
Brucite                          -4.309      -5.879
Bunsenite                        -5.589      -7.626
CaSO4:0.5H2O(beta)               -4.177      -5.699
CaZrO3                          142.881     194.931   ssatd
Calcite                          -0.011      -0.014
CeO2                             -2.555      -3.486
Celadonite                       -0.412      -0.562
Cerussite                        -1.219      -1.664
Chalcedony                       -0.271      -0.370
Chrysotile                       -3.157      -4.307
Clinochlore-14A                  -6.341      -8.651
Clinoptilolite                   -6.005      -8.192
Clinoptilolite-Ca                -6.076      -8.290
Clinoptilolite-hy-Ca             -6.075      -8.288
Coesite                          -0.810      -1.105
Corundum                         -5.361      -7.314
Cristobalite(alpha)              -0.551      -0.751
Cristobalite(beta)               -0.994      -1.356
Crocoite                         -3.956      -5.397
Dawsonite                        -3.418      -4.663
Diaspore                         -0.685      -0.934
Diopside                         -3.822      -5.215
Dolomite                          0.000       0.000
Dolomite-dis                     -1.544      -2.107
Dolomite-ord                      0.000       0.000   satd
Enstatite                        -3.337      -4.553
Epsomite                         -6.871      -9.374
```

Fluorapatite	0.000	0.000	satd
Fluorite	-1.737	-2.370	
GdOHCO3	-6.576	-8.971	
GdPO4:H2O	-6.568	-8.961	
Gibbsite	-1.281	-1.747	
Gismondine	-5.509	-7.516	
Goethite	-6.572	-8.966	
Gypsum	-3.188	-4.350	
Heulandite	-4.800	-6.548	
Hexahydrite	-7.107	-9.695	
Huntite	-6.437	-8.782	
Hydrocerussite	-5.391	-7.355	
Ice	-0.139	-0.189	
Illite	-2.386	-3.255	
Jadeite	-4.145	-5.655	
K-Feldspar	-0.669	-0.912	
Kalicinite	-7.019	-9.576	
Kalsilite	-3.844	-5.244	
Kaolinite	-1.858	-2.534	
Kyanite	-6.722	-9.171	
LaPO4:H2O	-5.166	-7.048	
Lanarkite	-6.583	-8.981	
Lansfordite	-4.166	-5.683	
Laumontite	-3.561	-4.859	
Lawsonite	-4.109	-5.606	
Litharge	-5.759	-7.857	
Magnesite	-1.618	-2.208	
Manganite	-6.673	-9.104	
Massicot	-5.934	-8.096	
Maximum_Microcline	-0.669	-0.912	
Mesolite	-0.232	-0.316	
MnO2(gamma)	-3.732	-5.091	
Monohydrocalcite	-0.844	-1.152	
Montmor-Ca	-1.552	-2.117	
Montmor-Cs	-3.724	-5.080	
Montmor-K	-1.858	-2.535	
Montmor-Mg	-1.636	-2.233	
Montmor-Na	-1.808	-2.467	
Mordenite	-3.063	-4.179	
Muscovite	-1.579	-2.154	
Nahcolite	-5.435	-7.415	
Natrolite	-6.033	-8.231	
NdOHCO3	-6.149	-8.389	
NdPO4:H2O	-5.942	-8.106	
Nepheline	-5.557	-7.582	
Nesquehonite	-4.320	-5.894	
Ni(OH)2	-5.866	-8.003	
Ni2SiO4	-4.576	-6.243	
Okenite	-5.229	-7.133	
Paragonite	-4.326	-5.903	
Paralaurionite	-5.535	-7.552	
PbCO3.PbO	-7.215	-9.843	
Petalite	-7.237	-9.873	
Phlogopite	-2.417	-3.298	
Plattnerite	-1.122	-1.531	
Prehnite	-5.674	-7.741	
Pseudowollastonite	-4.847	-6.613	
PuO2	-1.656	-2.260	
PuO2(OH)2	-6.232	-8.502	
Pyrolusite	-2.214	-3.020	
Pyrophyllite	-3.486	-4.756	
Quartz	0.000	0.000	satd
Rutile	-0.355	-0.484	

Sanidine_high	-1.868	-2.548	
Saponite-Ca	-0.694	-0.946	
Saponite-Cs	-2.932	-4.000	
Saponite-H	-1.906	-2.600	
Saponite-K	-1.070	-1.460	
Saponite-Mg	-0.848	-1.156	
Saponite-Na	-1.016	-1.387	
Scolecite	-1.772	-2.417	
Sellaite	-3.553	-4.847	
Sepiolite	-6.484	-8.846	
SiO2(am)	-1.286	-1.754	
SmPO4:H2O	-6.141	-8.379	
Smithsonite	-5.845	-7.974	
SrZrO3	117.909	160.861	ssatd
Stilbite	0.000	0.000	satd
Strontianite	-5.786	-7.894	
Talc	-1.169	-1.594	
Tenorite	-7.005	-9.556	
Tremolite	-6.983	-9.526	
Tridymite	-0.172	-0.234	
Witherite	-1.433	-1.955	
Wollastonite	-4.608	-6.287	
Zincite	-5.277	-7.199	
Zn(OH)2(beta)	-6.002	-8.189	
Zn(OH)2(epsilon)	-5.731	-7.818	
Zn(OH)2(gamma)	-5.951	-8.119	
fix CO2(g)	0.000	0.000	satd
fix O2(g)	0.000	0.000	satd

--- Summary of Solid Solutions ---

--- Carbonate-Calcite ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Calcite	9.7591E-01	-0.0106	0.0000	-0.0106
Magnesite	2.4087E-02	-1.6182	0.0000	-1.6182
Rhodochrosite	1.0395E-13	-12.9832	0.0000	-12.9832
Siderite	1.7574E-25	-24.7551	0.0000	-24.7551
Smithsonite	1.4293E-06	-5.8449	0.0000	-5.8449
Strontianite	1.6369E-06	-5.7860	0.0000	-5.7860

Mineral	Log Q/K	Aff, kcal	State
Carbonate-Calcite	0.000	0.000	satd
Calcite	0.000	0.000	satd
Magnesite	0.000	0.000	satd
Rhodochrosite	0.000	0.000	satd
Siderite	0.000	0.000	satd
Smithsonite	0.000	0.000	satd
Strontianite	0.000	0.000	satd

--- Clinoptilolite-hy-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity

Clinoptilolite-hy-Ca	9.9687E-01	-0.0014	0.0000	-0.0014
Clinoptilolite-hy-Cs	8.7354E-23	-22.0587	0.0000	-22.0587
Clinoptilolite-hy-K	1.0352E-03	-2.9850	0.0000	-2.9850
Clinoptilolite-hy-Na	2.0974E-03	-2.6783	0.0000	-2.6783
Clinoptilolite-hy-Sr	2.3846E-14	-13.6226	0.0000	-13.6226

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-hy-ss	-6.074	-8.286	
Clinoptilolite-hy-Ca	-6.074	-8.286	
Clinoptilolite-hy-Cs	-6.074	-8.286	
Clinoptilolite-hy-K	-6.074	-8.286	
Clinoptilolite-hy-Na	-6.074	-8.286	
Clinoptilolite-hy-Sr	-6.074	-8.286	

--- Clinoptilolite-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-Ca	7.6601E-01	-0.1158	-0.2848	-0.4006
Clinoptilolite-Cs	3.2236E-07	-6.4917	-15.9695	-22.4611
Clinoptilolite-K	1.0499E-01	-0.9788	-2.4080	-3.3868
Clinoptilolite-NH4	1.2399E-64	-63.9066	-157.2102	-221.1168
Clinoptilolite-Na	1.2892E-01	-0.8897	-2.1887	-3.0783
Clinoptilolite-Sr	8.8646E-05	-4.0523	-9.9688	-14.0211

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-ss	-5.676	-7.743	
Clinoptilolite-Ca	-5.676	-7.743	
Clinoptilolite-Cs	-5.676	-7.743	
Clinoptilolite-K	-5.676	-7.743	
Clinoptilolite-NH4	-5.676	-7.743	
Clinoptilolite-Na	-5.676	-7.743	
Clinoptilolite-Sr	-5.676	-7.743	

--- Saponite-tri ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Saponite-Ca	6.5849E-01	-0.1815	0.1216	-0.0599
Saponite-H	1.3977E-04	-3.8546	2.5826	-1.2720
Saponite-K	4.7547E-02	-1.3229	0.8863	-0.4365
Saponite-Mg	2.2461E-01	-0.6486	0.4345	-0.2140
Saponite-Na	6.9217E-02	-1.1598	0.7771	-0.3827

Mineral	Log Q/K	Aff, kcal	State
Saponite-tri	-0.634	-0.864	
Saponite-Ca	-0.634	-0.864	
Saponite-H	-0.634	-0.864	

Saponite-K	-0.634	-0.864
Saponite-Mg	-0.634	-0.864
Saponite-Na	-0.634	-0.864

--- Smectite-di ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Beidellite-Ca	2.0614E-05	-4.6858	3.1395	-1.5463
Beidellite-K	1.4895E-06	-5.8270	3.9041	-1.9229
Beidellite-Mg	7.0313E-06	-5.1530	3.4525	-1.7005
Beidellite-Na	2.1668E-06	-5.6642	3.7950	-1.8692
Montmor-Ca	5.4353E-01	-0.2648	0.1774	-0.0874
Montmor-K	6.4141E-02	-1.1929	0.7992	-0.3936
Montmor-Mg	3.0131E-01	-0.5210	0.3491	-0.1719
Montmor-Na	9.0993E-02	-1.0410	0.6975	-0.3435
Nontronite-Ca	3.2993E-29	-28.4816	19.0827	-9.3989
Nontronite-K	2.3840E-30	-29.6227	19.8472	-9.7755
Nontronite-Mg	1.1262E-29	-28.9484	19.3954	-9.5530
Nontronite-Na	3.4681E-30	-29.4599	19.7381	-9.7218

Mineral	Log Q/K	Aff, kcal	State
Smectite-di	-1.465	-1.998	
Beidellite-Ca	-1.465	-1.998	
Beidellite-K	-1.465	-1.998	
Beidellite-Mg	-1.465	-1.998	
Beidellite-Na	-1.465	-1.998	
Montmor-Ca	-1.465	-1.998	
Montmor-K	-1.465	-1.998	
Montmor-Mg	-1.465	-1.998	
Montmor-Na	-1.465	-1.998	
Nontronite-Ca	-1.465	-1.998	
Nontronite-K	-1.465	-1.998	
Nontronite-Mg	-1.465	-1.998	
Nontronite-Na	-1.465	-1.998	

--- Lanthanide hydroxide ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
La(OH)3	6.9242E-05	-4.1596	0.0000	-4.1596
Ce(OH)3	5.6723E-15	-14.2462	0.0000	-14.2462
Nd(OH)3(c)	5.8171E-01	-0.2353	0.0000	-0.2353
Gd(OH)3	3.4498E-01	-0.4622	0.0000	-0.4622
Sm(OH)3	7.3244E-02	-1.1352	0.0000	-1.1352

Mineral	Log Q/K	Aff, kcal	State
Lanthanide hydroxide	-7.589	-10.354	
La(OH)3	-7.589	-10.354	
Ce(OH)3	-7.589	-10.354	
Nd(OH)3(c)	-7.589	-10.354	

Gd(OH)3	-7.589	-10.354
Sm(OH)3	-7.589	-10.354

--- Rhabdophane-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaPO4:H2O	7.6163E-01	-0.1183	0.0000	-0.1183
CePO4:H2O	1.9730E-11	-10.7049	0.0000	-10.7049
NdPO4:H2O	1.2767E-01	-0.8939	0.0000	-0.8939
GdPO4:H2O	3.0142E-02	-1.5208	0.0000	-1.5208
SmPO4:H2O	8.0565E-02	-1.0939	0.0000	-1.0939

Mineral	Log Q/K	Aff, kcal	State
Rhabdophane-ss	-5.048	-6.886	
LaPO4:H2O	-5.048	-6.886	
CePO4:H2O	-5.048	-6.886	
NdPO4:H2O	-5.048	-6.886	
GdPO4:H2O	-5.048	-6.886	
SmPO4:H2O	-5.048	-6.886	

--- Lanthanide fluoride ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaF3:0.5H2O	8.1754E-01	-0.0875	0.0000	-0.0875
CeF3:0.5H2O	3.3566E-11	-10.4741	0.0000	-10.4741
NdF3:0.5H2O	1.7252E-01	-0.7632	0.0000	-0.7632
GdF3:0.5H2O	1.2881E-03	-2.8901	0.0000	-2.8901
SmF3:0.5H2O	8.6479E-03	-2.0631	0.0000	-2.0631

Mineral	Log Q/K	Aff, kcal	State
Lanthanide fluoride	-10.021	-13.671	
LaF3:0.5H2O	-10.021	-13.671	
CeF3:0.5H2O	-10.021	-13.671	
NdF3:0.5H2O	-10.021	-13.671	
GdF3:0.5H2O	-10.021	-13.671	
SmF3:0.5H2O	-10.021	-13.671	

--- Summary of Gases ---

Gas	Fugacity	Log fugacity
Al(g)	3.4023-192	-191.4682
B(g)	7.1817-204	-203.1438
BF3(g)	3.9329E-40	-39.4053
C(g)	3.0917-190	-189.5098
CH4(g)	3.5288-146	-145.4524

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CO(g)                        6.0395E-49    -48.2190
CO2(g)                       3.1623E-04     -3.5000
Ca(g)                        7.2763-151   -150.1381
Chlorine                     5.9939E-30    -29.2223
Cs(g)                        1.2071E-82    -81.9182
Cu(g)                        5.9932E-82    -81.2223
Fluorine                     3.6843E-83    -82.4336
H2(g)                        6.1145E-42    -41.2136
H2O(g)                       2.5975E-02     -1.5854
H2S(g)                       9.7498-145   -144.0110
HCl(g)                       3.0032E-19    -18.5224
HF(g)                        2.6574E-14    -13.5755
K(g)                         7.7790E-77    -76.1091
Li(g)                        2.6377E-96    -95.5788
Mg(g)                        3.3697-129   -128.4724
Nitrogen                     4.4641E-21    -20.3503
NH3(g)                       7.7021E-70    -69.1134
NO(g)                        2.1038E-26    -25.6770
NO2(g)                       1.4385E-20    -19.8421
Na(g)                        6.2657E-75    -74.2030
O2(g)                        2.0999E-01     -0.6778
Pb(g)                        1.1592E-67    -66.9359
S2(g)                        5.6692-232   -231.2465
SO2(g)                       1.7264E-57    -56.7629
Si(g)                        4.2257-221   -220.3741
SiF4(g)                      2.1985E-39    -38.6579
Ti(g)                        1.6799-231   -230.7747
TiCl4(g)                     1.2042E-87    -86.9193
U(g)                         6.3845-299   -298.1949
U2Cl10(g)                    2.4735-254   -253.6067
U2Cl8(g)                     1.2794-255   -254.8930
U2F10(g)                     9.6372-162   -161.0160
UCl(g)                       1.7088-255   -254.7673
UCl2(g)                      1.3682-210   -209.8639
UCl3(g)                      2.3994-163   -162.6199
UCl4(g)                      2.2785-133   -132.6423
UCl5(g)                      1.1133-140   -139.9534
UCl6(g)                      1.0106-142   -141.9954
UF(g)                        3.2133-240   -239.4930
UF2(g)                       1.1995-199   -198.9210
UF3(g)                       1.1018-152   -151.9579
UF4(g)                       1.4940-102   -101.8257
UF5(g)                       9.2785E-94    -93.0325
UF6(g)                       5.6742E-99    -98.2461
UO(g)                        5.0423-214   -213.2974
UO2(g)                       9.3417-130   -129.0296
UO2Cl2(g)                    2.4448E-78    -77.6118
UO2F2(g)                     1.5548E-65    -64.8083
UO3(g)                       6.8711E-77    -76.1630
UOF4(g)                      4.4519E-80    -79.3515
Zn(g)                        2.0236E-78    -77.6939



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Stepping to zi=  1.0000E-09, delzi=  1.0000E-09, nord= 0
  time =  1.1561E-05 d, dltime =  1.1561E-05 d
iter =   12
      9 supersaturated pure minerals
      1 supersaturated solid solutions
```

```
                The most supersaturated phases           Affinity, kcal

                  1     470   Pyrolusite                    5.37073815
                  2     252   Hematite                      7.88663069
                  3     353   MnO2(gamma)                   3.30002592
                  4     241   Goethite                      3.28815941
                  5   51200   Smectite-di                   9.76958024
                  6     421   Nontronite-H                  8.03417478
                  7     559   Todorokite                   13.64129816
                  8      73   Birnessite                   16.20573334
--- Go back to reduce the extent of supersaturation ---
--- Cutting step size and trying again ---

Stepping to zi=  2.5000E-10, delzi=  2.5000E-10, nord= 0
  time =  2.8903E-06 d, dltime =  2.8903E-06 d
iter =   12
      8 supersaturated pure minerals
      1 supersaturated solid solutions

                The most supersaturated phases           Affinity, kcal

                  1     470   Pyrolusite                    4.54935797
                  2     252   Hematite                      6.24386749
                  3     353   MnO2(gamma)                   2.47864573
                  4     241   Goethite                      2.46677781
                  5   51200   Smectite-di                   8.12681704
                  6     421   Nontronite-H                  6.39141157
                  7      73   Birnessite                    9.63469185
                  8     559   Todorokite                    7.89163685
--- Go back to reduce the extent of supersaturation ---
--- Cutting step size and trying again ---

Stepping to zi=  1.0000E-10, delzi=  1.0000E-10, nord= 0
  time =  1.1561E-06 d, dltime =  1.1561E-06 d
iter =   12
      8 supersaturated pure minerals
      1 supersaturated solid solutions

                The most supersaturated phases           Affinity, kcal

                  1     470   Pyrolusite                    4.00645683
                  2     252   Hematite                      5.15806014
                  3     353   MnO2(gamma)                   1.93574459
                  4   51200   Smectite-di                   7.04100968
                  5     241   Goethite                      1.92387413
                  6     421   Nontronite-H                  5.30560421
                  7      73   Birnessite                    5.29148276
                  8     559   Todorokite                    4.09132890


  Attempted species assemblage no.   2

             1      1  H2O
             2      3  Al+++
             3      7  B(OH)3(aq)
             4      8  Ba++
             5     11  Ca++
             6     13  Ce+++
             7     14  Cl-
             8     16  CrO4--
             9     17  Cs+
            10     18  Cu++
```

```
          11     22  F-
          12     23  Fe++
          13     25  Gd+++
          14     26  H+
          15     28  HCO3-
          16     29  HPO4--
          17     35  K+
          18     37  La+++
          19     38  Li+
          20     40  Mg++
          21     41  Mn++
          22     42  MoO4--
          23     43  NO3-
          24     44  Na+
          25     45  Nd+++
          26     47  Ni++
          27     49  Pb++
          28     52  Pu++++
          29     58  SO4--
          30     62  SiO2(aq)
          31     63  Sm+++
          32     65  Sr++
          33     69  Ti(OH)4(aq)
          34     72  UO2++
          35     73  VO++
          36     78  Zn++
          37     79  Zr(OH)2++
          38     80  O2(g)
          39    198  Dolomite-ord
          40    222  Fluorapatite
          41    470  Pyrolusite
          42    475  Quartz
          43    542  Stilbite
          44    689  fix     CO2(g)
          45    690  fix     O2(g)
          46      1  CarbonatCalcite
          47      2  CarbonatMagnesite
          48      3  CarbonatRhodochrosite
          49      4  CarbonatSiderite
          50      5  CarbonatSmithsonite
          51      6  CarbonatStrontianite

iter =   12
      4 supersaturated pure minerals
      1 supersaturated solid solutions

               The most supersaturated phases          Affinity, kcal

                 1     252   Hematite                     5.15806014
                 2   51200   Smectite-di                  7.04100968
                 3     241   Goethite                     1.92387413
                 4     421   Nontronite-H                 5.30560421
                 5     562   Trevorite                    1.34316407


  Attempted species assemblage no.   3

           1      1  H2O
           2      3  Al+++
           3      7  B(OH)3(aq)
           4      8  Ba++
           5     11  Ca++
           6     13  Ce+++
```

```
             7     14  Cl-
             8     16  CrO4--
             9     17  Cs+
            10     18  Cu++
            11     22  F-
            12     23  Fe++
            13     25  Gd+++
            14     26  H+
            15     28  HCO3-
            16     29  HPO4--
            17     35  K+
            18     37  La+++
            19     38  Li+
            20     40  Mg++
            21     41  Mn++
            22     42  MoO4--
            23     43  NO3-
            24     44  Na+
            25     45  Nd+++
            26     47  Ni++
            27     49  Pb++
            28     52  Pu++++
            29     58  SO4--
            30     62  SiO2(aq)
            31     63  Sm+++
            32     65  Sr++
            33     69  Ti(OH)4(aq)
            34     72  UO2++
            35     73  VO++
            36     78  Zn++
            37     79  Zr(OH)2++
            38     80  O2(g)
            39    198  Dolomite-ord
            40    222  Fluorapatite
            41    252  Hematite
            42    470  Pyrolusite
            43    475  Quartz
            44    542  Stilbite
            45    689  fix     CO2(g)
            46    690  fix     O2(g)
            47      1  CarbonatCalcite
            48      2  CarbonatMagnesite
            49      3  CarbonatRhodochrosite
            50      4  CarbonatSiderite
            51      5  CarbonatSmithsonite
            52      6  CarbonatStrontianite

iter =   13
      1 supersaturated pure minerals
      1 supersaturated solid solutions

               The most supersaturated phases           Affinity, kcal

                 1   51200   Smectite-di                   1.88294955
                 2     421   Nontronite-H                  0.14754407


  Attempted species assemblage no.   4

             1      1  H2O
             2      3  Al+++
             3      7  B(OH)3(aq)
             4      8  Ba++
```

```
     5     11  Ca++
     6     13  Ce+++
     7     14  Cl-
     8     16  CrO4--
     9     17  Cs+
    10     18  Cu++
    11     22  F-
    12     23  Fe++
    13     25  Gd+++
    14     26  H+
    15     28  HCO3-
    16     29  HPO4--
    17     35  K+
    18     37  La+++
    19     38  Li+
    20     40  Mg++
    21     41  Mn++
    22     42  MoO4--
    23     43  NO3-
    24     44  Na+
    25     45  Nd+++
    26     47  Ni++
    27     49  Pb++
    28     52  Pu++++
    29     58  SO4--
    30     62  SiO2(aq)
    31     63  Sm+++
    32     65  Sr++
    33     69  Ti(OH)4(aq)
    34     72  UO2++
    35     73  VO++
    36     78  Zn++
    37     79  Zr(OH)2++
    38     80  O2(g)
    39    198  Dolomite-ord
    40    222  Fluorapatite
    41    252  Hematite
    42    470  Pyrolusite
    43    475  Quartz
    44    542  Stilbite
    45    689  fix     CO2(g)
    46    690  fix     O2(g)
    47      1  CarbonatCalcite
    48      2  CarbonatMagnesite
    49      3  CarbonatRhodochrosite
    50      4  CarbonatSiderite
    51      5  CarbonatSmithsonite
    52      6  CarbonatStrontianite
    53      1  SmectiteBeidellite-Ca
    54      2  SmectiteBeidellite-K
    55      3  SmectiteBeidellite-Mg
    56      4  SmectiteBeidellite-Na
    57      5  SmectiteMontmor-Ca
    58      6  SmectiteMontmor-K
    59      7  SmectiteMontmor-Mg
    60      8  SmectiteMontmor-Na
    61      9  SmectiteNontronite-Ca
    62     10  SmectiteNontronite-K
    63     11  SmectiteNontronite-Mg
    64     12  SmectiteNontronite-Na

--- Iteration has gone sour (iter=  16) ---
     The phase to be dropped is Hematite                    (  252)
```

```
Attempted species assemblage no.   5

           1      1  H2O
           2      3  Al+++
           3      7  B(OH)3(aq)
           4      8  Ba++
           5     11  Ca++
           6     13  Ce+++
           7     14  Cl-
           8     16  CrO4--
           9     17  Cs+
          10     18  Cu++
          11     22  F-
          12     23  Fe++
          13     25  Gd+++
          14     26  H+
          15     28  HCO3-
          16     29  HPO4--
          17     35  K+
          18     37  La+++
          19     38  Li+
          20     40  Mg++
          21     41  Mn++
          22     42  MoO4--
          23     43  NO3-
          24     44  Na+
          25     45  Nd+++
          26     47  Ni++
          27     49  Pb++
          28     52  Pu++++
          29     58  SO4--
          30     62  SiO2(aq)
          31     63  Sm+++
          32     65  Sr++
          33     69  Ti(OH)4(aq)
          34     72  UO2++
          35     73  VO++
          36     78  Zn++
          37     79  Zr(OH)2++
          38     80  O2(g)
          39    198  Dolomite-ord
          40    222  Fluorapatite
          41    470  Pyrolusite
          42    475  Quartz
          43    542  Stilbite
          44    689  fix     CO2(g)
          45    690  fix     O2(g)
          46      1  CarbonatCalcite
          47      2  CarbonatMagnesite
          48      3  CarbonatRhodochrosite
          49      4  CarbonatSiderite
          50      5  CarbonatSmithsonite
          51      6  CarbonatStrontianite
          52      1  SmectiteBeidellite-Ca
          53      2  SmectiteBeidellite-K
          54      3  SmectiteBeidellite-Mg
          55      4  SmectiteBeidellite-Na
          56      5  SmectiteMontmor-Ca
          57      6  SmectiteMontmor-K
          58      7  SmectiteMontmor-Mg
          59      8  SmectiteMontmor-Na
```

```
            60      9  SmectiteNontronite-Ca
            61     10  SmectiteNontronite-K
            62     11  SmectiteNontronite-Mg
            63     12  SmectiteNontronite-Na

Steps completed =     1, iter = 17, ncorr = 0

- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -


                    Reaction progress        =  1.00000001335143E-10
                    Log of reaction progress =     -10.0000000



                    Time =  9.989E-02 sec
                         =  1.156E-06 days
                         =  3.165E-09 years

                    Log sec =       -1.000
                    Log days =      -5.937
                    Log years =     -8.500

                    Temperature    =     25.000 degrees C
                    total pressure =      1.013 bars


Change in the product phase assemblage


                              --- Reactant Summary ---


    Reactant                  Moles     Delta moles    Mass, g    Delta Mass, g

 carbon steel               2.0000E+01   9.9887E-11   1.0940E+03   5.4636E-09
 Alloy-22                   2.0000E+01   1.1287E-13   1.1978E+03   6.7597E-12


               Current total mass =  2.29171E+03 grams
               Delta total mass   =  5.47035E-09 grams
               Delta total volume =      0.00000 cc


    Reactant                Rel. Rate      Rate         Rate
                             mol/mol       mol/s      mol/s/cm2

 carbon steel               9.9887E-01   1.0000E-09   1.0000E-11
 Alloy-22                   1.1287E-03   1.1300E-12   1.1300E-14


    Reactant                  Affinity   Surface Area
                              kcal/mol     mol/s/cm2

 carbon steel                 999.00000   1.0000E+02
 Alloy-22                     999.00000   1.0000E+02


    Reactant                Rate Constants, mol/s/cm2

 carbon steel
                   Forward    1.0000E-11
```

Alloy-22

Forward 1.1300E-14

Affinity of the overall irreversible reaction= 0.000 kcal
Contributions from irreversible reactions
with no thermodynamic data are not included

--- Element Totals for the Aqueous Solution ---

Element	mg/kg soln.	Molality	Moles
O	8.880243E+05	5.551539E+01	5.551556E+01
Al	3.526938E-04	1.307444E-08	1.307448E-08
B	1.338978E-01	1.238796E-05	1.238800E-05
Ba	1.372974E-05	9.999970E-11	1.000000E-10
Ca	7.824455E+00	1.952721E-04	1.952727E-04
Ce	1.400848E-19	9.999970E-25	1.000000E-24
Cl	7.138636E+00	2.013994E-04	2.014000E-04
Cr	1.792699E-02	3.448490E-07	3.448500E-07
Cs	1.328768E-05	9.999969E-11	1.000000E-10
Cu	6.670893E-10	1.049997E-14	1.050000E-14
F	2.171556E+00	1.143263E-04	1.143267E-04
Fe	1.408279E-08	2.522209E-13	2.522217E-13
Gd	1.572161E-09	9.999970E-15	1.000000E-14
H	1.118763E+05	1.110185E+02	1.110189E+02
C	1.996573E+01	1.662640E-03	1.662645E-03
P	3.629736E-05	1.172123E-09	1.172127E-09
K	5.038918E+00	1.289056E-04	1.289060E-04
La	1.388756E-09	9.999970E-15	1.000000E-14
Li	6.939505E-07	9.999969E-11	1.000000E-10
Mg	3.225615E-01	1.327422E-05	1.327426E-05
Mn	9.613076E-12	1.750175E-16	1.750180E-16
Mo	9.593027E-06	1.000111E-10	1.000114E-10
N	1.988529E+00	1.419996E-04	1.420000E-04
Na	4.578825E+01	1.992102E-03	1.992108E-03
Nd	1.442089E-09	9.999970E-15	1.000000E-14
Ni	5.871499E-06	1.000638E-10	1.000641E-10
Pb	2.071554E-05	9.999969E-11	1.000000E-10
Pu	2.439474E-09	9.999970E-15	1.000000E-14
S	6.140599E+00	1.915394E-04	1.915400E-04
Si	2.924631E+00	1.041552E-04	1.041556E-04
Sm	1.503276E-09	9.999970E-15	1.000000E-14
Sr	1.924090E-07	2.196415E-12	2.196422E-12
Ti	4.786969E-06	9.999969E-11	1.000000E-10
U	2.379776E-09	9.999969E-15	1.000000E-14
V	1.120474E-05	2.199998E-10	2.200005E-10
Zn	9.546379E-07	1.460224E-11	1.460229E-11
Zr	9.120435E-16	9.999970E-21	1.000000E-20

Single ion activities and activity coefficients are here defined
with respect to the modified NBS pH scale

	pH	Eh	pe
modified NBS pH scale	8.4953	0.7165	1.2112E+01
rational pH scale	8.4710	0.7179	1.2136E+01

pHCl = 12.2169

Oxygen fugacity = 2.09991E-01
Log oxygen fugacity = -0.67780

Activity of water = 0.99991
Log activity of water = -0.00004

Ionic strength = 2.918138E-03 molal
Sum of molalities = 0.0050070615794
Osmotic coefficient = 0.97787

Mass of solution = 1.000215 kg
Mass of solutes = 0.000212 kg
Conc. of solutes = 0.021233 per cent (w/w)

Moles of solvent H2O = 5.55086E+01
Mass of solvent H2O = 1.00000E+00 kg

Species	Molality	Log molality	Log gamma	Log activity
Na+	1.9856E-03	-2.7021	-0.0262	-2.7283
HCO3-	1.6097E-03	-2.7932	-0.0251	-2.8184
O2(aq)	2.6521E-04	-3.5764	0.0003	-3.5761
Cl-	2.0133E-04	-3.6961	-0.0256	-3.7216
SO4--	1.8633E-04	-3.7297	-0.1019	-3.8317
Ca++	1.8283E-04	-3.7379	-0.1008	-3.8388
NO3-	1.4190E-04	-3.8480	-0.0256	-3.8736
K+	1.2876E-04	-3.8902	-0.0267	-3.9169
F-	1.1420E-04	-3.9423	-0.0253	-3.9677
SiO2(aq)	1.0016E-04	-3.9993	0.0000	-3.9993
CO3--	2.8132E-05	-4.5508	-0.1011	-4.6519
Mg++	1.2480E-05	-4.9038	-0.0977	-5.0015
CO2(aq)	1.0735E-05	-4.9692	0.0003	-4.9689
B(OH)3(aq)	1.0400E-05	-4.9830	0.0000	-4.9830
CaCO3(aq)	6.8613E-06	-5.1636	0.0000	-5.1636
NaHCO3(aq)	4.0495E-06	-5.3926	0.0000	-5.3926
HSiO3-	3.7030E-06	-5.4314	-0.0251	-5.4566
OH-	3.3533E-06	-5.4745	-0.0253	-5.4999
CaSO4(aq)	2.7583E-06	-5.5594	0.0000	-5.5594
CaHCO3+	2.6047E-06	-5.5842	-0.0262	-5.6105
BO2-	1.9613E-06	-5.7075	-0.0251	-5.7326
NaSO4-	1.9281E-06	-5.7149	-0.0251	-5.7400
MgSO4(aq)	3.7890E-07	-6.4215	0.0000	-6.4215
CrO4--	3.4199E-07	-6.4660	-0.1019	-6.5679
NaHSiO3(aq)	2.9080E-07	-6.5364	0.0000	-6.5364
MgCO3(aq)	2.1159E-07	-6.6745	0.0000	-6.6745
MgHCO3+	1.7460E-07	-6.7580	-0.0262	-6.7842
NaCO3-	1.4431E-07	-6.8407	-0.0251	-6.8658
KSO4-	1.4328E-07	-6.8438	-0.0251	-6.8689
CaNO3+	1.0324E-07	-6.9862	-0.0262	-7.0124
CaF+	7.9701E-08	-7.0985	-0.0262	-7.1248
NaCl(aq)	5.9296E-08	-7.2270	0.0000	-7.2270
MgF+	2.5671E-08	-7.5906	-0.0262	-7.6168
NaF(aq)	2.0249E-08	-7.6936	0.0000	-7.6936
CaB(OH)4+	1.8945E-08	-7.7225	-0.0262	-7.7487
AlO2-	1.2960E-08	-7.8874	-0.0251	-7.9125
CaOH+	6.8025E-09	-8.1673	-0.0262	-8.1936

NaB(OH)4(aq)	6.4553E-09	-8.1901	0.0000	-8.1901
CaCl+	5.8910E-09	-8.2298	-0.0262	-8.2560
H+	3.3805E-09	-8.4710	-0.0243	-8.4953
HCrO4-	2.8597E-09	-8.5437	-0.0251	-8.5688
MgB(OH)4+	1.5498E-09	-8.8097	-0.0262	-8.8360
MgCl+	1.4729E-09	-8.8318	-0.0262	-8.8581
HPO4--	9.9058E-10	-9.0041	-0.1019	-9.1061
NaOH(aq)	9.3777E-10	-9.0279	0.0000	-9.0279
KCl(aq)	7.3601E-10	-9.1331	0.0000	-9.1331
HF(aq)	5.0718E-10	-9.2948	0.0000	-9.2948
VO3OH--	1.8937E-10	-9.7227	-0.1019	-9.8246
H2SiO4--	1.3587E-10	-9.8669	-0.1019	-9.9688
KOH(aq)	1.3133E-10	-9.8816	0.0000	-9.8816
HAlO2(aq)	1.1031E-10	-9.9574	0.0000	-9.9574
MoO4--	1.0001E-10	-10.0000	-0.1011	-10.1010

--- Summary of Solid Product Phases---

Product	Log moles	Moles	Mass, g	Volume, cc
Dolomite-ord	-4.1676	6.7986E-05	1.2537E-02	4.3742E-03
Fluorapatite	-6.3733	4.2331E-07	2.1348E-04	2.1165E-04
Pyrolusite	-11.9879	1.0283E-12	8.9395E-11	5.1414E-10
Quartz	-3.0418	9.0815E-04	5.4565E-02	2.0604E-02
Stilbite	-6.1713	6.7404E-07	4.8167E-04	2.2479E-04
fix CO2(g)	4.0000	1.0000E+04	4.4010E+05	0.0000E+00
fix O2(g)	4.0000	1.0000E+04	3.1999E+05	0.0000E+00
Carbonate-Calcite	-4.2237	5.9748E-05	5.9573E-03	2.1939E-03
Calcite	-4.2343	5.8308E-05	5.8359E-03	2.1536E-03
Magnesite	-5.8419	1.4392E-06	1.2134E-04	4.0323E-05
Rhodochrosite	-14.9931	1.0161E-15	1.1679E-13	3.1574E-14
Siderite	-23.5770	2.6484E-24	3.0683E-22	7.7804E-23
Smithsonite	-10.0686	8.5398E-11	1.0709E-08	2.4146E-09
Strontianite	-10.0096	9.7804E-11	1.4439E-08	3.8153E-09
Smectite-di	-10.3199	4.7874E-11	2.0302E-08	6.2754E-09
Beidellite-Ca	-19.4437	3.5997E-20	1.3195E-17	4.6627E-18
Beidellite-K	-20.5848	2.6011E-21	9.6982E-19	3.4777E-19
Beidellite-Mg	-19.9108	1.2279E-20	4.4690E-18	1.5126E-18
Beidellite-Na	-20.4221	3.7839E-21	1.3907E-18	4.9395E-19
Montmor-Ca	-15.0227	9.4915E-16	3.4743E-13	4.7458E-13
Montmor-K	-15.9507	1.1201E-16	4.1704E-14	5.6004E-14
Montmor-Mg	-15.2789	5.2617E-16	1.9123E-13	2.6309E-13
Montmor-Na	-15.7989	1.5890E-16	5.8319E-14	7.9450E-14
Nontronite-Ca	-10.5014	3.1522E-11	1.3375E-08	4.1325E-09
Nontronite-K	-11.6425	2.2777E-12	9.8074E-10	3.0810E-10
Nontronite-Mg	-10.9682	1.0760E-11	4.5372E-09	1.3962E-09
Nontronite-Na	-11.4797	3.3135E-12	1.4091E-09	4.3774E-10

	Mass, grams	Volume, cc
Created	7.600861E+05	2.760858E-02
Destroyed	5.470349E-09	0.000000E+00
Net	7.600861E+05	2.760858E-02

Warning-- these volume totals may be incomplete because
of missing partial molar volume data in the data base

--- Summary of Pure Mineral Saturation States ---

Mineral	Log Q/K	Aff, kcal	State
Alamosite	-2.788	-3.803	
Albite	-2.520	-3.438	
Albite_high	-3.839	-5.237	
Albite_low	-2.520	-3.438	
Alstonite	-5.176	-7.061	
Analcime	-2.545	-3.473	
Andalusite	-6.993	-9.540	
Andradite	-7.150	-9.754	
Anglesite	-6.084	-8.301	
Anhydrite	-3.364	-4.590	
Aragonite	-0.155	-0.211	
Artinite	-6.992	-9.539	
BaCrO4	-6.742	-9.198	
BaZrO3	82.584	112.668	ssatd
Barite	-3.967	-5.412	
Barytocalcite	-5.333	-7.276	
Bassanite	-4.009	-5.469	
Beidellite-Ca	-3.011	-4.108	
Beidellite-Cs	-5.249	-7.161	
Beidellite-H	-4.223	-5.761	
Beidellite-K	-3.387	-4.621	
Beidellite-Mg	-3.165	-4.318	
Beidellite-Na	-3.334	-4.548	
Boehmite	-1.089	-1.485	
Boric_acid	-4.825	-6.582	
Brucite	-4.309	-5.879	
Bunsenite	-5.589	-7.625	
CaSO4:0.5H2O(beta)	-4.177	-5.699	
CaZrO3	142.881	194.931	ssatd
Calcite	-0.011	-0.014	
CeO2	-2.555	-3.486	
Celadonite	-0.412	-0.562	
Cerussite	-1.219	-1.664	
Chalcedony	-0.271	-0.370	
Chrysotile	-3.157	-4.307	
Clinochlore-14A	-6.341	-8.651	
Clinoptilolite	-5.908	-8.061	
Clinoptilolite-Ca	-5.985	-8.165	
Clinoptilolite-hy-Ca	-5.983	-8.163	
Coesite	-0.810	-1.105	
Corundum	-5.361	-7.314	
Cristobalite(alpha)	-0.551	-0.751	
Cristobalite(beta)	-0.994	-1.356	
Crocoite	-3.956	-5.397	
Dawsonite	-3.418	-4.663	
Diaspore	-0.685	-0.934	
Diopside	-3.822	-5.215	
Dolomite	0.000	0.000	
Dolomite-dis	-1.544	-2.107	
Dolomite-ord	0.000	0.000	satd
Enstatite	-3.337	-4.553	
Epidote	-6.309	-8.607	
Epidote-ord	-6.309	-8.607	
Epsomite	-6.871	-9.374	
Fe(OH)3	-6.291	-8.583	
Ferrite-Zn	-7.074	-9.651	
Fluorapatite	0.000	0.000	satd

Fluorite	-1.737	-2.370
GdOHCO3	-6.576	-8.971
GdPO4:H2O	-6.568	-8.961
Gibbsite	-1.281	-1.747
Gismondine	-5.509	-7.516
Goethite	-1.170	-1.597
Gypsum	-3.188	-4.350
Hematite	-1.380	-1.883
Heulandite	-4.800	-6.548
Hexahydrite	-7.107	-9.695
Huntite	-6.437	-8.782
Hydrocerussite	-5.391	-7.355
Ice	-0.139	-0.189
Illite	-2.386	-3.255
Jadeite	-4.145	-5.655
K-Feldspar	-0.669	-0.912
Kalicinite	-7.019	-9.576
Kalsilite	-3.844	-5.244
Kaolinite	-1.858	-2.534
Kyanite	-6.722	-9.171
LaPO4:H2O	-5.166	-7.048
Lanarkite	-6.583	-8.981
Lansfordite	-4.166	-5.683
Laumontite	-3.561	-4.859
Lawsonite	-4.109	-5.606
Litharge	-5.759	-7.857
Magnesite	-1.618	-2.208
Manganite	-4.459	-6.084
Massicot	-5.934	-8.096
Maximum_Microcline	-0.669	-0.912
Mesolite	-0.232	-0.316
MnO2(gamma)	-1.518	-2.071
Monohydrocalcite	-0.844	-1.152
Montmor-Ca	-1.552	-2.117
Montmor-Cs	-3.724	-5.080
Montmor-K	-1.858	-2.535
Montmor-Mg	-1.636	-2.233
Montmor-Na	-1.808	-2.467
Mordenite	-3.063	-4.179
Muscovite	-1.579	-2.154
Nahcolite	-5.435	-7.415
Natrolite	-6.033	-8.231
NdOHCO3	-6.149	-8.389
NdPO4:H2O	-5.942	-8.106
Nepheline	-5.557	-7.582
Nesquehonite	-4.320	-5.894
Ni(OH)2	-5.866	-8.003
Ni2SiO4	-4.575	-6.242
Nontronite-Ca	-0.060	-0.082
Nontronite-H	-1.272	-1.735
Nontronite-K	-0.436	-0.595
Nontronite-Mg	-0.214	-0.292
Nontronite-Na	-0.383	-0.522
Okenite	-5.229	-7.133
Paragonite	-4.326	-5.903
Paralaurionite	-5.535	-7.552
PbCO3.PbO	-7.215	-9.843
Petalite	-7.237	-9.873
Phlogopite	-2.417	-3.298
Plattnerite	-1.122	-1.531
Prehnite	-5.674	-7.741
Pseudowollastonite	-4.847	-6.613
PuO2	-1.656	-2.260

PuO2(OH)2	-6.232	-8.502	
Pyrolusite	0.000	0.000	satd
Pyrophyllite	-3.486	-4.756	
Quartz	0.000	0.000	satd
Rutile	-0.355	-0.484	
Sanidine_high	-1.868	-2.548	
Saponite-Ca	-0.694	-0.946	
Saponite-Cs	-2.932	-4.000	
Saponite-H	-1.906	-2.600	
Saponite-K	-1.070	-1.460	
Saponite-Mg	-0.848	-1.156	
Saponite-Na	-1.016	-1.387	
Scolecite	-1.772	-2.417	
Sellaite	-3.553	-4.847	
Sepiolite	-6.484	-8.846	
SiO2(am)	-1.286	-1.754	
SmPO4:H2O	-6.141	-8.379	
Smithsonite	-5.845	-7.974	
SrZrO3	117.909	160.861	ssatd
Stilbite	0.000	0.000	satd
Strontianite	-5.786	-7.894	
Talc	-1.169	-1.594	
Tenorite	-7.005	-9.556	
Tremolite	-6.983	-9.526	
Trevorite	-4.176	-5.698	
Tridymite	-0.171	-0.234	
Witherite	-1.433	-1.955	
Wollastonite	-4.608	-6.287	
Zincite	-5.277	-7.199	
Zn(OH)2(beta)	-6.002	-8.189	
Zn(OH)2(epsilon)	-5.731	-7.818	
Zn(OH)2(gamma)	-5.951	-8.119	
fix CO2(g)	0.000	0.000	satd
fix O2(g)	0.000	0.000	satd

--- Summary of Solid Solutions ---

--- Carbonate-Calcite ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Calcite	9.7591E-01	-0.0106	0.0000	-0.0106
Magnesite	2.4087E-02	-1.6182	0.0000	-1.6182
Rhodochrosite	1.7006E-11	-10.7694	0.0000	-10.7694
Siderite	4.4326E-20	-19.3533	0.0000	-19.3533
Smithsonite	1.4293E-06	-5.8449	0.0000	-5.8449
Strontianite	1.6369E-06	-5.7860	0.0000	-5.7860

Mineral	Log Q/K	Aff, kcal	State
Carbonate-Calcite	0.000	0.000	satd
Calcite	0.000	0.000	satd
Magnesite	0.000	0.000	satd
Rhodochrosite	0.000	0.000	satd
Siderite	0.000	0.000	satd
Smithsonite	0.000	0.000	satd
Strontianite	0.000	0.000	satd

--- Clinoptilolite-hy-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-hy-Ca	9.9687E-01	-0.0014	0.0000	-0.0014
Clinoptilolite-hy-Cs	8.7354E-23	-22.0587	0.0000	-22.0587
Clinoptilolite-hy-K	1.0352E-03	-2.9850	0.0000	-2.9850
Clinoptilolite-hy-Na	2.0974E-03	-2.6783	0.0000	-2.6783
Clinoptilolite-hy-Sr	2.3846E-14	-13.6226	0.0000	-13.6226

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-hy-ss	-5.982	-8.161	
Clinoptilolite-hy-Ca	-5.982	-8.161	
Clinoptilolite-hy-Cs	-5.982	-8.161	
Clinoptilolite-hy-K	-5.982	-8.161	
Clinoptilolite-hy-Na	-5.982	-8.161	
Clinoptilolite-hy-Sr	-5.982	-8.161	

--- Clinoptilolite-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-Ca	7.6601E-01	-0.1158	-0.2848	-0.4006
Clinoptilolite-Cs	3.2236E-07	-6.4917	-15.9695	-22.4611
Clinoptilolite-K	1.0499E-01	-0.9788	-2.4080	-3.3868
Clinoptilolite-NH4	1.2399E-64	-63.9066	-157.2102	-221.1168
Clinoptilolite-Na	1.2892E-01	-0.8897	-2.1887	-3.0783
Clinoptilolite-Sr	8.8646E-05	-4.0523	-9.9688	-14.0211

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-ss	-5.584	-7.618	
Clinoptilolite-Ca	-5.584	-7.618	
Clinoptilolite-Cs	-5.584	-7.618	
Clinoptilolite-K	-5.584	-7.618	
Clinoptilolite-NH4	-5.584	-7.618	
Clinoptilolite-Na	-5.584	-7.618	
Clinoptilolite-Sr	-5.584	-7.618	

--- Saponite-tri ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Saponite-Ca	6.5849E-01	-0.1815	0.1216	-0.0599
Saponite-H	1.3977E-04	-3.8546	2.5826	-1.2720
Saponite-K	4.7547E-02	-1.3229	0.8863	-0.4365
Saponite-Mg	2.2461E-01	-0.6486	0.4345	-0.2140
Saponite-Na	6.9217E-02	-1.1598	0.7771	-0.3827

Mineral	Log Q/K	Aff, kcal	State
Saponite-tri	-0.634	-0.864	
Saponite-Ca	-0.634	-0.864	
Saponite-H	-0.634	-0.864	
Saponite-K	-0.634	-0.864	
Saponite-Mg	-0.634	-0.864	
Saponite-Na	-0.634	-0.864	

--- Smectite-di ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Beidellite-Ca	7.5191E-10	-9.1238	6.1130	-3.0109
Beidellite-K	5.4331E-11	-10.2649	6.8775	-3.3874
Beidellite-Mg	2.5648E-10	-9.5909	6.4259	-3.1650
Beidellite-Na	7.9038E-11	-10.1022	6.7685	-3.3337
Montmor-Ca	1.9826E-05	-4.7028	3.1509	-1.5519
Montmor-K	2.3396E-06	-5.6309	3.7727	-1.8582
Montmor-Mg	1.0991E-05	-4.9590	3.3225	-1.6365
Montmor-Na	3.3191E-06	-5.4790	3.6709	-1.8081
Nontronite-Ca	6.5843E-01	-0.1815	0.1216	-0.0599
Nontronite-K	4.7577E-02	-1.3226	0.8861	-0.4365
Nontronite-Mg	2.2475E-01	-0.6483	0.4344	-0.2139
Nontronite-Na	6.9211E-02	-1.1598	0.7771	-0.3827

Mineral	Log Q/K	Aff, kcal	State
Smectite-di	0.000	0.000	satd
Beidellite-Ca	0.000	0.000	satd
Beidellite-K	0.000	0.000	satd
Beidellite-Mg	0.000	0.000	satd
Beidellite-Na	0.000	0.000	satd
Montmor-Ca	0.000	0.000	satd
Montmor-K	0.000	0.000	satd
Montmor-Mg	0.000	0.000	satd
Montmor-Na	0.000	0.000	satd
Nontronite-Ca	0.000	0.000	satd
Nontronite-K	0.000	0.000	satd
Nontronite-Mg	0.000	0.000	satd
Nontronite-Na	0.000	0.000	satd

--- Lanthanide hydroxide ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
La(OH)3	6.9242E-05	-4.1596	0.0000	-4.1596
Ce(OH)3	5.6723E-15	-14.2462	0.0000	-14.2462
Nd(OH)3(c)	5.8171E-01	-0.2353	0.0000	-0.2353
Gd(OH)3	3.4498E-01	-0.4622	0.0000	-0.4622
Sm(OH)3	7.3244E-02	-1.1352	0.0000	-1.1352

Mineral	Log Q/K	Aff, kcal	State
Lanthanide hydroxide	-7.589	-10.354	
La(OH)3	-7.589	-10.354	
Ce(OH)3	-7.589	-10.354	
Nd(OH)3(c)	-7.589	-10.354	
Gd(OH)3	-7.589	-10.354	
Sm(OH)3	-7.589	-10.354	

--- Rhabdophane-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaPO4:H2O	7.6163E-01	-0.1183	0.0000	-0.1183
CePO4:H2O	1.9730E-11	-10.7049	0.0000	-10.7049
NdPO4:H2O	1.2767E-01	-0.8939	0.0000	-0.8939
GdPO4:H2O	3.0142E-02	-1.5208	0.0000	-1.5208
SmPO4:H2O	8.0565E-02	-1.0939	0.0000	-1.0939

Mineral	Log Q/K	Aff, kcal	State
Rhabdophane-ss	-5.048	-6.886	
LaPO4:H2O	-5.048	-6.886	
CePO4:H2O	-5.048	-6.886	
NdPO4:H2O	-5.048	-6.886	
GdPO4:H2O	-5.048	-6.886	
SmPO4:H2O	-5.048	-6.886	

--- Lanthanide fluoride ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaF3:0.5H2O	8.1754E-01	-0.0875	0.0000	-0.0875
CeF3:0.5H2O	3.3566E-11	-10.4741	0.0000	-10.4741
NdF3:0.5H2O	1.7252E-01	-0.7632	0.0000	-0.7632
GdF3:0.5H2O	1.2881E-03	-2.8901	0.0000	-2.8901
SmF3:0.5H2O	8.6479E-03	-2.0631	0.0000	-2.0631

Mineral	Log Q/K	Aff, kcal	State
Lanthanide fluoride	-10.021	-13.671	
LaF3:0.5H2O	-10.021	-13.671	
CeF3:0.5H2O	-10.021	-13.671	
NdF3:0.5H2O	-10.021	-13.671	
GdF3:0.5H2O	-10.021	-13.671	
SmF3:0.5H2O	-10.021	-13.671	

--- Summary of Gases ---

Gas	Fugacity	Log fugacity

Al(g)	3.4023-192	-191.4682
B(g)	7.1817-204	-203.1438
BF3(g)	3.9329E-40	-39.4053
C(g)	3.0917-190	-189.5098
CH4(g)	3.5288-146	-145.4524
CO(g)	6.0395E-49	-48.2190
CO2(g)	3.1623E-04	-3.5000
Ca(g)	7.2763-151	-150.1381
Chlorine	5.9939E-30	-29.2223
Cs(g)	1.2071E-82	-81.9182
Cu(g)	5.9932E-82	-81.2223
Fluorine	3.6843E-83	-82.4336
H2(g)	6.1145E-42	-41.2136
H2O(g)	2.5975E-02	-1.5854
H2S(g)	9.7498-145	-144.0110
HCl(g)	3.0032E-19	-18.5224
HF(g)	2.6574E-14	-13.5755
K(g)	7.7790E-77	-76.1091
Li(g)	2.6377E-96	-95.5788
Mg(g)	3.3697-129	-128.4724
Nitrogen	4.4641E-21	-20.3503
NH3(g)	7.7021E-70	-69.1134
NO(g)	2.1038E-26	-25.6770
NO2(g)	1.4385E-20	-19.8421
Na(g)	6.2657E-75	-74.2030
O2(g)	2.0999E-01	-0.6778
Pb(g)	1.1592E-67	-66.9359
S2(g)	5.6692-232	-231.2465
SO2(g)	1.7264E-57	-56.7629
Si(g)	4.2257-221	-220.3741
SiF4(g)	2.1985E-39	-38.6579
Ti(g)	1.6799-231	-230.7747
TiCl4(g)	1.2042E-87	-86.9193
U(g)	6.3845-299	-298.1949
U2Cl10(g)	2.4735-254	-253.6067
U2Cl8(g)	1.2794-255	-254.8930
U2F10(g)	9.6372-162	-161.0160
UCl(g)	1.7088-255	-254.7673
UCl2(g)	1.3682-210	-209.8639
UCl3(g)	2.3994-163	-162.6199
UCl4(g)	2.2785-133	-132.6423
UCl5(g)	1.1133-140	-139.9534
UCl6(g)	1.0106-142	-141.9954
UF(g)	3.2133-240	-239.4930
UF2(g)	1.1995-199	-198.9210
UF3(g)	1.1018-152	-151.9579
UF4(g)	1.4940-102	-101.8257
UF5(g)	9.2785E-94	-93.0325
UF6(g)	5.6742E-99	-98.2461
UO(g)	5.0423-214	-213.2974
UO2(g)	9.3417-130	-129.0296
UO2Cl2(g)	2.4448E-78	-77.6118
UO2F2(g)	1.5548E-65	-64.8083
UO3(g)	6.8711E-77	-76.1630
UOF4(g)	4.4519E-80	-79.3515
Zn(g)	2.0236E-78	-77.6939

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Stepping to zi=  1.1000E-09, delzi=  1.0000E-09, nord= 0
  time =  1.2717E-05 d, dltime =  1.1561E-05 d
Steps completed =     2, iter = 12, ncorr = 0
Most rapidly changing is zvclg1(Nontronite-Ca           ) =     -9.4590

Stepping to zi=  2.1000E-09, delzi=  1.0000E-09, nord= 0
  time =  2.4278E-05 d, dltime =  1.1561E-05 d
Steps completed =     3, iter =  9, ncorr = 0
Most rapidly changing is zvclg1(Nontronite-Ca           ) =     -9.1781

Stepping to zi=  3.1000E-09, delzi=  1.0000E-09, nord= 0
  time =  3.5839E-05 d, dltime =  1.1561E-05 d
Steps completed =     4, iter =  8, ncorr = 0
Most rapidly changing is zvclg1(Nontronite-Ca           ) =     -9.0089

Stepping to zi=  4.1000E-09, delzi=  1.0000E-09, nord= 0
  time =  4.7400E-05 d, dltime =  1.1561E-05 d
Steps completed =     5, iter =  8, ncorr = 0
Most rapidly changing is zvclg1(Nontronite-Ca           ) =     -8.8875

Stepping to zi=  6.6000E-09, delzi=  2.5000E-09, nord= 2
  time =  7.6303E-05 d, dltime =  2.8903E-05 d
Steps completed =     6, iter =  9, ncorr = 0
Most rapidly changing is zvclg1(Nontronite-Ca           ) =     -8.6807

Stepping to zi=  1.1600E-08, delzi=  5.0000E-09, nord= 2
  time =  1.3411E-04 d, dltime =  5.7805E-05 d
Steps completed =     7, iter =  9, ncorr = 0
Most rapidly changing is zvclg1(Nontronite-Ca           ) =     -8.4358

Stepping to zi=  2.1600E-08, delzi=  1.0000E-08, nord= 2
  time =  2.4972E-04 d, dltime =  1.1561E-04 d
Steps completed =     8, iter =  9, ncorr = 0
Most rapidly changing is zvclg1(Nontronite-Ca           ) =     -8.1658

Stepping to zi=  4.1600E-08, delzi=  2.0000E-08, nord= 2
  time =  4.8094E-04 d, dltime =  2.3122E-04 d
Steps completed =     9, iter =  9, ncorr = 0
Most rapidly changing is zvclg1(Nontronite-Ca           ) =     -7.8812

Stepping to zi=  8.1600E-08, delzi=  4.0000E-08, nord= 2
  time =  9.4338E-04 d, dltime =  4.6244E-04 d
Steps completed =    10, iter =  9, ncorr = 0
Most rapidly changing is zvclg1(Nontronite-Ca           ) =     -7.5886

Stepping to zi=  1.6160E-07, delzi=  8.0000E-08, nord= 2
  time =  1.8683E-03 d, dltime =  9.2488E-04 d
Steps completed =    11, iter =  9, ncorr = 0
Most rapidly changing is zvclg1(Nontronite-Ca           ) =     -7.2918

Stepping to zi=  3.2160E-07, delzi=  1.6000E-07, nord= 2
  time =  3.7180E-03 d, dltime =  1.8498E-03 d
Steps completed =    12, iter =  9, ncorr = 0
Most rapidly changing is zvclg1(Nontronite-Ca           ) =     -6.9929

Stepping to zi=  7.2160E-07, delzi=  4.0000E-07, nord= 2
  time =  8.3424E-03 d, dltime =  4.6244E-03 d
Steps completed =    13, iter =  9, ncorr = 0
Most rapidly changing is zvclg1(Nontronite-Ca           ) =     -6.6419

Stepping to zi=  1.5216E-06, delzi=  8.0000E-07, nord= 2
  time =  1.7591E-02 d, dltime =  9.2488E-03 d
```

```
Steps completed =    14, iter =  9, ncorr = 0
Most rapidly changing is zvclg1(Nontronite-Ca           ) =     -6.3179

Stepping to zi=  3.1216E-06, delzi=  1.6000E-06, nord= 2
  time =  3.6089E-02 d, dltime =  1.8498E-02 d
Steps completed =    15, iter =  9, ncorr = 0
Most rapidly changing is zvclg1(Nontronite-Ca           ) =     -6.0059

Stepping to zi=  6.3216E-06, delzi=  3.2000E-06, nord= 2
  time =  7.3084E-02 d, dltime =  3.6995E-02 d
Steps completed =    16, iter =  9, ncorr = 0
Most rapidly changing is zvclg1(Stilbite                ) =     -6.6683

Stepping to zi=  9.2752E-06, delzi=  2.9536E-06, nord= 2
  time =  1.0723E-01 d, dltime =  3.4147E-02 d
--- Iteration has gone sour (iter=  19) ---
     The phase to be dropped is Stilbite                  (  542)


  Attempted species assemblage no.   2

            1      1  H2O
            2      3  Al+++
            3      7  B(OH)3(aq)
            4      8  Ba++
            5     11  Ca++
            6     13  Ce+++
            7     14  Cl-
            8     16  CrO4--
            9     17  Cs+
           10     18  Cu++
           11     22  F-
           12     23  Fe++
           13     25  Gd+++
           14     26  H+
           15     28  HCO3-
           16     29  HPO4--
           17     35  K+
           18     37  La+++
           19     38  Li+
           20     40  Mg++
           21     41  Mn++
           22     42  MoO4--
           23     43  NO3-
           24     44  Na+
           25     45  Nd+++
           26     47  Ni++
           27     49  Pb++
           28     52  Pu++++
           29     58  SO4--
           30     62  SiO2(aq)
           31     63  Sm+++
           32     65  Sr++
           33     69  Ti(OH)4(aq)
           34     72  UO2++
           35     73  VO++
           36     78  Zn++
           37     79  Zr(OH)2++
           38     80  O2(g)
           39    198  Dolomite-ord
           40    222  Fluorapatite
           41    470  Pyrolusite
           42    475  Quartz
```

```
43    689  fix     CO2(g)
44    690  fix     O2(g)
45      1  CarbonatCalcite
46      2  CarbonatMagnesite
47      3  CarbonatRhodochrosite
48      4  CarbonatSiderite
49      5  CarbonatSmithsonite
50      6  CarbonatStrontianite
51      1  SmectiteBeidellite-Ca
52      2  SmectiteBeidellite-K
53      3  SmectiteBeidellite-Mg
54      4  SmectiteBeidellite-Na
55      5  SmectiteMontmor-Ca
56      6  SmectiteMontmor-K
57      7  SmectiteMontmor-Mg
58      8  SmectiteMontmor-Na
59      9  SmectiteNontronite-Ca
60     10  SmectiteNontronite-K
61     11  SmectiteNontronite-Mg
62     12  SmectiteNontronite-Na

Steps completed =    17, iter =  1, ncorr = 0

- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -


                    Reaction progress        =  9.27519405070754E-06
                    Log of reaction progress =      -5.0326770



                    Time =  9.265E+03 sec
                         =  1.072E-01 days
                         =  2.936E-04 years

                    Log sec =        3.967
                    Log days =      -0.970
                    Log years =     -3.532

                    Temperature    =     25.000 degrees C
                    total pressure =      1.013 bars


Change in the product phase assemblage


                              --- Reactant Summary ---


    Reactant                   Moles     Delta moles    Mass, g    Delta Mass, g

 carbon steel               2.0000E+01   9.2647E-06   1.0940E+03   5.0676E-04
 Alloy-22                   2.0000E+01   1.0469E-08   1.1978E+03   6.2697E-07


                Current total mass =  2.29170E+03 grams
                Delta total mass   =  5.07385E-04 grams
                Delta total volume =      0.00000 cc


    Reactant                Rel. Rate      Rate         Rate
                             mol/mol       mol/s      mol/s/cm2
```

```
carbon steel                9.9887E-01   1.0000E-09   1.0000E-11
Alloy-22                    1.1287E-03   1.1300E-12   1.1300E-14


   Reactant                   Affinity   Surface Area
                              kcal/mol     mol/s/cm2

carbon steel                 999.00000   1.0000E+02
Alloy-22                     999.00000   1.0000E+02


   Reactant                 Rate Constants, mol/s/cm2

carbon steel
                   Forward    1.0000E-11
Alloy-22
                   Forward    1.1300E-14


        Affinity of the overall irreversible reaction=     0.000 kcal
        Contributions from irreversible reactions
        with no thermodynamic data are not included


    --- Element Totals for the Aqueous Solution ---

 Element        mg/kg soln.          Molality             Moles

    O          8.880243E+05        5.551539E+01        5.551556E+01
    Al         3.526834E-04        1.307406E-08        1.307410E-08
    B          1.338978E-01        1.238796E-05        1.238800E-05
    Ba         1.372974E-05        9.999969E-11        1.000000E-10
    Ca         7.824960E+00        1.952847E-04        1.952853E-04
    Ce         1.400848E-19        9.999971E-25        1.000000E-24
    Cl         7.138636E+00        2.013994E-04        2.014000E-04
    Cr         1.806638E-02        3.475301E-07        3.475312E-07
    Cs         1.328768E-05        9.999969E-11        1.000000E-10
    Cu         6.670894E-10        1.049997E-14        1.050000E-14
    F          2.171515E+00        1.143242E-04        1.143245E-04
    Fe         1.408282E-08        2.522214E-13        2.522222E-13
    Gd         1.572162E-09        9.999972E-15        1.000000E-14
    H          1.118763E+05        1.110185E+02        1.110189E+02
    C          1.996506E+01        1.662584E-03        1.662590E-03
    P          3.629498E-05        1.172047E-09        1.172050E-09
    K          5.036345E+00        1.288397E-04        1.288401E-04
    La         1.388756E-09        9.999971E-15        1.000000E-14
    Li         6.939505E-07        9.999969E-11        1.000000E-10
    Mg         3.225829E-01        1.327510E-05        1.327514E-05
    Mn         9.612952E-12        1.750152E-16        1.750157E-16
    Mo         1.109773E-04        1.156982E-09        1.156985E-09
    N          1.988529E+00        1.419996E-04        1.420000E-04
    Na         4.578802E+01        1.992092E-03        1.992098E-03
    Nd         1.442090E-09        9.999971E-15        1.000000E-14
    Ni         3.548659E-04        6.047730E-09        6.047748E-09
    Pb         2.071554E-05        9.999969E-11        1.000000E-10
    Pu         2.439475E-09        9.999972E-15        1.000000E-14
    S          6.140852E+00        1.915473E-04        1.915479E-04
    Si         2.924627E+00        1.041551E-04        1.041554E-04
    Sm         1.503276E-09        9.999971E-15        1.000000E-14
    Sr         1.912844E-07        2.183577E-12        2.183584E-12
    Ti         4.786969E-06        9.999969E-11        1.000000E-10
```

U	2.379776E-09	9.999967E-15	9.999998E-15
V	1.342282E-05	2.635508E-10	2.635516E-10
Zn	9.497556E-07	1.452756E-11	1.452761E-11
Zr	9.120436E-16	9.999970E-21	1.000000E-20

Single ion activities and activity coefficients are here defined
with respect to the modified NBS pH scale

	pH	Eh	pe
modified NBS pH scale	8.4953	0.7165	1.2112E+01
rational pH scale	8.4710	0.7179	1.2136E+01

pHCl = 12.2169

Oxygen fugacity = 2.09991E-01
Log oxygen fugacity = -0.67780

Activity of water = 0.99991
Log activity of water = -0.00004

Ionic strength = 2.918128E-03 molal
Sum of molalities = 0.0050069580759
Osmotic coefficient = 0.97787

Mass of solution = 1.000215 kg
Mass of solutes = 0.000212 kg
Conc. of solutes = 0.021233 per cent (w/w)

Moles of solvent H2O = 5.55086E+01
Mass of solvent H2O = 1.00000E+00 kg

Species	Molality	Log molality	Log gamma	Log activity
Na+	1.9856E-03	-2.7021	-0.0262	-2.7283
HCO3-	1.6097E-03	-2.7933	-0.0251	-2.8184
O2(aq)	2.6521E-04	-3.5764	0.0003	-3.5761
Cl-	2.0133E-04	-3.6961	-0.0256	-3.7216
SO4--	1.8634E-04	-3.7297	-0.1019	-3.8316
Ca++	1.8285E-04	-3.7379	-0.1008	-3.8388
NO3-	1.4190E-04	-3.8480	-0.0256	-3.8736
K+	1.2870E-04	-3.8904	-0.0267	-3.9171
F-	1.1420E-04	-3.9423	-0.0253	-3.9677
SiO2(aq)	1.0016E-04	-3.9993	0.0000	-3.9993
CO3--	2.8130E-05	-4.5508	-0.1011	-4.6519
Mg++	1.2481E-05	-4.9037	-0.0977	-5.0015
CO2(aq)	1.0735E-05	-4.9692	0.0003	-4.9689
B(OH)3(aq)	1.0400E-05	-4.9830	0.0000	-4.9830
CaCO3(aq)	6.8614E-06	-5.1636	0.0000	-5.1636
NaHCO3(aq)	4.0493E-06	-5.3926	0.0000	-5.3926
HSiO3-	3.7029E-06	-5.4315	-0.0251	-5.4566
OH-	3.3532E-06	-5.4745	-0.0253	-5.4999
CaSO4(aq)	2.7586E-06	-5.5593	0.0000	-5.5593
CaHCO3+	2.6048E-06	-5.5842	-0.0262	-5.6104
BO2-	1.9613E-06	-5.7075	-0.0251	-5.7326

NaSO4-	1.9281E-06	-5.7149	-0.0251	-5.7400
MgSO4(aq)	3.7894E-07	-6.4214	0.0000	-6.4214
CrO4--	3.4465E-07	-6.4626	-0.1019	-6.5646
NaHSiO3(aq)	2.9079E-07	-6.5364	0.0000	-6.5364
MgCO3(aq)	2.1159E-07	-6.6745	0.0000	-6.6745
MgHCO3+	1.7461E-07	-6.7579	-0.0262	-6.7842
NaCO3-	1.4430E-07	-6.8407	-0.0251	-6.8659
KSO4-	1.4321E-07	-6.8440	-0.0251	-6.8691
CaNO3+	1.0325E-07	-6.9861	-0.0262	-7.0123
CaF+	7.9705E-08	-7.0985	-0.0262	-7.1247
NaCl(aq)	5.9295E-08	-7.2270	0.0000	-7.2270
MgF+	2.5672E-08	-7.5905	-0.0262	-7.6168
NaF(aq)	2.0248E-08	-7.6936	0.0000	-7.6936
CaB(OH)4+	1.8945E-08	-7.7225	-0.0262	-7.7487
AlO2-	1.2959E-08	-7.8874	-0.0251	-7.9125
CaOH+	6.8027E-09	-8.1673	-0.0262	-8.1935
NaB(OH)4(aq)	6.4551E-09	-8.1901	0.0000	-8.1901
Ni++	5.9484E-09	-8.2256	-0.1008	-8.3264
CaCl+	5.8914E-09	-8.2298	-0.0262	-8.2560
H+	3.3806E-09	-8.4710	-0.0243	-8.4953
HCrO4-	2.8820E-09	-8.5403	-0.0251	-8.5654
MgB(OH)4+	1.5498E-09	-8.8097	-0.0262	-8.8359
MgCl+	1.4730E-09	-8.8318	-0.0262	-8.8580
MoO4--	1.1570E-09	-8.9367	-0.1011	-9.0378
HPO4--	9.9050E-10	-9.0041	-0.1019	-9.1061
NaOH(aq)	9.3774E-10	-9.0279	0.0000	-9.0279
KCl(aq)	7.3563E-10	-9.1333	0.0000	-9.1333
HF(aq)	5.0719E-10	-9.2948	0.0000	-9.2948
VO3OH--	2.2686E-10	-9.6443	-0.1019	-9.7462
H2SiO4--	1.3586E-10	-9.8669	-0.1019	-9.9689
KOH(aq)	1.3126E-10	-9.8819	0.0000	-9.8819
HAlO2(aq)	1.1031E-10	-9.9574	0.0000	-9.9574

--- Summary of Solid Product Phases---

Product	Log moles	Moles	Mass, g	Volume, cc
Dolomite-ord	-4.1687	6.7811E-05	1.2504E-02	4.3629E-03
Fluorapatite	-6.3711	4.2549E-07	2.1458E-04	2.1274E-04
Pyrolusite	-7.0201	9.5484E-08	8.3011E-06	4.7742E-05
Quartz	-3.0475	8.9645E-04	5.3863E-02	2.0339E-02
fix CO2(g)	4.0000	1.0000E+04	4.4010E+05	0.0000E+00
fix O2(g)	4.0000	1.0000E+04	3.1999E+05	0.0000E+00
Carbonate-Calcite	-4.2210	6.0111E-05	5.9935E-03	2.2072E-03
Calcite	-4.2316	5.8663E-05	5.8714E-03	2.1666E-03
Magnesite	-5.8393	1.4479E-06	1.2208E-04	4.0568E-05
Rhodochrosite	-14.9904	1.0222E-15	1.1750E-13	3.1766E-14
Siderite	-23.5744	2.6645E-24	3.0870E-22	7.8278E-23
Smithsonite	-10.0682	8.5472E-11	1.0718E-08	2.4167E-09
Strontianite	-10.0096	9.7816E-11	1.4441E-08	3.8158E-09
Smectite-di	-5.3514	4.4521E-06	1.8880E-03	5.8359E-04
Beidellite-Ca	-14.4753	3.3477E-15	1.2271E-12	4.3363E-13
Beidellite-K	-15.6166	2.4177E-16	9.0143E-14	3.2324E-14
Beidellite-Mg	-14.9424	1.1419E-15	4.1561E-13	1.4067E-13
Beidellite-Na	-15.4536	3.5188E-16	1.2933E-13	4.5935E-14
Montmor-Ca	-10.0542	8.8270E-11	3.2310E-08	4.4135E-08
Montmor-K	-10.9825	1.0411E-11	3.8763E-09	5.2055E-09
Montmor-Mg	-10.3104	4.8933E-11	1.7784E-08	2.4467E-08
Montmor-Na	-10.8304	1.4777E-11	5.4234E-09	7.3885E-09

Nontronite-Ca	-5.5329	2.9315E-06	1.2438E-03	3.8432E-04
Nontronite-K	-6.6743	2.1171E-07	9.1158E-05	2.8638E-05
Nontronite-Mg	-5.9997	1.0006E-06	4.2196E-04	1.2984E-04
Nontronite-Na	-6.5113	3.0814E-07	1.3104E-04	4.0708E-05

	Mass, grams	Volume, cc
Created	7.600861E+05	2.775301E-02
Destroyed	5.073854E-04	0.000000E+00
Net	7.600861E+05	2.775301E-02

Warning-- these volume totals may be incomplete because
of missing partial molar volume data in the data base

--- Summary of Pure Mineral Saturation States ---

Mineral	Log Q/K	Aff, kcal	State
Alamosite	-2.788	-3.803	
Albite	-2.520	-3.438	
Albite_high	-3.839	-5.237	
Albite_low	-2.520	-3.438	
Alstonite	-5.176	-7.061	
Analcime	-2.545	-3.473	
Andalusite	-6.993	-9.540	
Andradite	-7.150	-9.754	
Anglesite	-6.084	-8.301	
Anhydrite	-3.364	-4.589	
Aragonite	-0.155	-0.211	
Artinite	-6.992	-9.539	
BaCrO4	-6.739	-9.193	
BaZrO3	82.584	112.668	ssatd
Barite	-3.967	-5.412	
Barytocalcite	-5.333	-7.276	
Bassanite	-4.009	-5.469	
Beidellite-Ca	-3.011	-4.108	
Beidellite-Cs	-5.249	-7.161	
Beidellite-H	-4.223	-5.761	
Beidellite-K	-3.388	-4.622	
Beidellite-Mg	-3.165	-4.318	
Beidellite-Na	-3.334	-4.548	
Boehmite	-1.089	-1.485	
Boric_acid	-4.825	-6.582	
Brucite	-4.309	-5.879	
Bunsenite	-3.808	-5.195	
CaSO4:0.5H2O(beta)	-4.177	-5.699	
CaZrO3	142.881	194.931	ssatd
Calcite	-0.011	-0.014	
CeO2	-2.555	-3.486	
Celadonite	-0.412	-0.562	
Cerussite	-1.219	-1.664	
Chalcedony	-0.271	-0.370	
Chrysotile	-3.157	-4.307	
Clinochlore-14A	-6.341	-8.651	
Clinoptilolite	-5.909	-8.061	
Clinoptilolite-Ca	-5.984	-8.165	
Clinoptilolite-hy-Ca	-5.983	-8.163	
Coesite	-0.810	-1.105	
Corundum	-5.361	-7.314	

Cristobalite(alpha)	-0.551	-0.751	
Cristobalite(beta)	-0.994	-1.356	
Crocoite	-3.952	-5.392	
Dawsonite	-3.418	-4.663	
Diaspore	-0.685	-0.934	
Diopside	-3.822	-5.215	
Dolomite	0.000	0.000	ssatd
Dolomite-dis	-1.544	-2.107	
Dolomite-ord	0.000	0.000	satd
Enstatite	-3.337	-4.553	
Epidote	-6.309	-8.607	
Epidote-ord	-6.309	-8.607	
Epsomite	-6.871	-9.374	
Fe(OH)3	-6.291	-8.583	
Ferrite-Zn	-7.076	-9.654	
Fluorapatite	0.000	0.000	satd
Fluorite	-1.737	-2.370	
GdOHCO3	-6.576	-8.971	
GdPO4:H2O	-6.568	-8.961	
Gibbsite	-1.281	-1.747	
Gismondine	-5.509	-7.516	
Goethite	-1.170	-1.597	
Gypsum	-3.188	-4.350	
Hematite	-1.380	-1.883	
Heulandite	-4.800	-6.549	
Hexahydrite	-7.107	-9.695	
Huntite	-6.437	-8.782	
Hydrocerussite	-5.391	-7.355	
Ice	-0.139	-0.189	
Illite	-2.386	-3.255	
Jadeite	-4.145	-5.655	
K-Feldspar	-0.669	-0.913	
Kalicinite	-7.019	-9.576	
Kalsilite	-3.844	-5.245	
Kaolinite	-1.858	-2.534	
Kyanite	-6.722	-9.171	
LaPO4:H2O	-5.166	-7.048	
Lanarkite	-6.583	-8.981	
Lansfordite	-4.166	-5.683	
Laumontite	-3.561	-4.859	
Lawsonite	-4.109	-5.606	
Litharge	-5.759	-7.857	
Magnesite	-1.618	-2.208	
Manganite	-4.459	-6.084	
Massicot	-5.934	-8.096	
Maximum_Microcline	-0.669	-0.913	
Mesolite	-0.232	-0.316	
MnO2(gamma)	-1.518	-2.071	
Monohydrocalcite	-0.844	-1.152	
Montmor-Ca	-1.552	-2.117	
Montmor-Cs	-3.724	-5.080	
Montmor-K	-1.858	-2.535	
Montmor-Mg	-1.636	-2.233	
Montmor-Na	-1.808	-2.467	
Mordenite	-3.063	-4.179	
Muscovite	-1.579	-2.154	
Nahcolite	-5.435	-7.415	
Natrolite	-6.034	-8.231	
NdOHCO3	-6.149	-8.389	
NdPO4:H2O	-5.941	-8.106	
Nepheline	-5.557	-7.582	
Nesquehonite	-4.320	-5.894	
Ni(OH)2	-4.085	-5.572	

Ni2SiO4	-1.013	-1.382	
NiCO3	-6.161	-8.406	
Nontronite-Ca	-0.060	-0.082	
Nontronite-H	-1.272	-1.735	
Nontronite-K	-0.437	-0.596	
Nontronite-Mg	-0.214	-0.292	
Nontronite-Na	-0.383	-0.522	
Okenite	-5.229	-7.133	
Paragonite	-4.326	-5.903	
Paralaurionite	-5.535	-7.552	
PbCO3.PbO	-7.215	-9.843	
Petalite	-7.237	-9.873	
Phlogopite	-2.417	-3.298	
Plattnerite	-1.122	-1.531	
Prehnite	-5.674	-7.741	
Pseudowollastonite	-4.847	-6.613	
PuO2	-1.656	-2.260	
PuO2(OH)2	-6.232	-8.502	
Pyrolusite	0.000	0.000	satd
Pyrophyllite	-3.486	-4.756	
Quartz	0.000	0.000	satd
Rutile	-0.355	-0.484	
Sanidine_high	-1.868	-2.549	
Saponite-Ca	-0.694	-0.946	
Saponite-Cs	-2.932	-4.000	
Saponite-H	-1.906	-2.600	
Saponite-K	-1.070	-1.460	
Saponite-Mg	-0.848	-1.156	
Saponite-Na	-1.016	-1.387	
Scolecite	-1.772	-2.417	
Sellaite	-3.553	-4.847	
Sepiolite	-6.484	-8.846	
SiO2(am)	-1.286	-1.754	
SmPO4:H2O	-6.141	-8.379	
Smithsonite	-5.847	-7.977	
SrZrO3	117.906	160.857	ssatd
Stilbite	0.000	0.000	ssatd
Strontianite	-5.789	-7.897	
Talc	-1.169	-1.594	
Tenorite	-7.005	-9.556	
Tremolite	-6.983	-9.526	
Trevorite	-2.395	-3.268	
Tridymite	-0.172	-0.234	
Witherite	-1.433	-1.955	
Wollastonite	-4.608	-6.287	
Zincite	-5.279	-7.202	
Zn(OH)2(beta)	-6.004	-8.192	
Zn(OH)2(epsilon)	-5.733	-7.821	
Zn(OH)2(gamma)	-5.953	-8.122	
fix CO2(g)	0.000	0.000	satd
fix O2(g)	0.000	0.000	satd

--- Summary of Solid Solutions ---

--- Carbonate-Calcite ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Calcite	9.7591E-01	-0.0106	0.0000	-0.0106
Magnesite	2.4087E-02	-1.6182	0.0000	-1.6182

Rhodochrosite	1.7006E-11	-10.7694	0.0000	-10.7694
Siderite	4.4326E-20	-19.3533	0.0000	-19.3533
Smithsonite	1.4219E-06	-5.8471	0.0000	-5.8471
Strontianite	1.6273E-06	-5.7885	0.0000	-5.7885

Mineral	Log Q/K	Aff, kcal	State
Carbonate-Calcite	0.000	0.000	satd
Calcite	0.000	0.000	satd
Magnesite	0.000	0.000	satd
Rhodochrosite	0.000	0.000	satd
Siderite	0.000	0.000	satd
Smithsonite	0.000	0.000	satd
Strontianite	0.000	0.000	satd

--- Clinoptilolite-hy-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-hy-Ca	9.9687E-01	-0.0014	0.0000	-0.0014
Clinoptilolite-hy-Cs	8.7344E-23	-22.0588	0.0000	-22.0588
Clinoptilolite-hy-K	1.0333E-03	-2.9858	0.0000	-2.9858
Clinoptilolite-hy-Na	2.0971E-03	-2.6784	0.0000	-2.6784
Clinoptilolite-hy-Sr	2.3602E-14	-13.6270	0.0000	-13.6270

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-hy-ss	-5.982	-8.161	
Clinoptilolite-hy-Ca	-5.982	-8.161	
Clinoptilolite-hy-Cs	-5.982	-8.161	
Clinoptilolite-hy-K	-5.982	-8.161	
Clinoptilolite-hy-Na	-5.982	-8.161	
Clinoptilolite-hy-Sr	-5.982	-8.161	

--- Clinoptilolite-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-Ca	7.6605E-01	-0.1157	-0.2847	-0.4005
Clinoptilolite-Cs	3.2237E-07	-6.4916	-15.9694	-22.4611
Clinoptilolite-K	1.0494E-01	-0.9791	-2.4085	-3.3875
Clinoptilolite-NH4	1.2401E-64	-63.9066	-157.2101	-221.1167
Clinoptilolite-Na	1.2892E-01	-0.8897	-2.1886	-3.0783
Clinoptilolite-Sr	8.8389E-05	-4.0536	-9.9719	-14.0255

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-ss	-5.584	-7.618	
Clinoptilolite-Ca	-5.584	-7.618	
Clinoptilolite-Cs	-5.584	-7.618	
Clinoptilolite-K	-5.584	-7.618	
Clinoptilolite-NH4	-5.584	-7.618	

Clinoptilolite-Na	-5.584	-7.618
Clinoptilolite-Sr	-5.584	-7.618

--- Saponite-tri ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Saponite-Ca	6.5850E-01	-0.1814	0.1216	-0.0599
Saponite-H	1.3977E-04	-3.8546	2.5826	-1.2720
Saponite-K	4.7523E-02	-1.3231	0.8865	-0.4366
Saponite-Mg	2.2462E-01	-0.6486	0.4345	-0.2140
Saponite-Na	6.9217E-02	-1.1598	0.7771	-0.3827

Mineral	Log Q/K	Aff, kcal	State
Saponite-tri	-0.634	-0.865	
Saponite-Ca	-0.634	-0.865	
Saponite-H	-0.634	-0.865	
Saponite-K	-0.634	-0.865	
Saponite-Mg	-0.634	-0.865	
Saponite-Na	-0.634	-0.865	

--- Smectite-di ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Beidellite-Ca	7.5193E-10	-9.1238	6.1130	-3.0109
Beidellite-K	5.4303E-11	-10.2652	6.8777	-3.3875
Beidellite-Mg	2.5649E-10	-9.5909	6.4259	-3.1650
Beidellite-Na	7.9037E-11	-10.1022	6.7685	-3.3337
Montmor-Ca	1.9826E-05	-4.7028	3.1508	-1.5519
Montmor-K	2.3384E-06	-5.6311	3.7728	-1.8583
Montmor-Mg	1.0991E-05	-4.9590	3.3225	-1.6365
Montmor-Na	3.3191E-06	-5.4790	3.6709	-1.8081
Nontronite-Ca	6.5845E-01	-0.1815	0.1216	-0.0599
Nontronite-K	4.7552E-02	-1.3228	0.8863	-0.4365
Nontronite-Mg	2.2475E-01	-0.6483	0.4344	-0.2139
Nontronite-Na	6.9211E-02	-1.1598	0.7771	-0.3827

Mineral	Log Q/K	Aff, kcal	State
Smectite-di	0.000	0.000	satd
Beidellite-Ca	0.000	0.000	satd
Beidellite-K	0.000	0.000	satd
Beidellite-Mg	0.000	0.000	satd
Beidellite-Na	0.000	0.000	satd
Montmor-Ca	0.000	0.000	satd
Montmor-K	0.000	0.000	satd
Montmor-Mg	0.000	0.000	satd
Montmor-Na	0.000	0.000	satd
Nontronite-Ca	0.000	0.000	satd
Nontronite-K	0.000	0.000	satd
Nontronite-Mg	0.000	0.000	satd

```
  Nontronite-Na                  0.000       0.000   satd


              --- Lanthanide hydroxide     ---

  Ideal solution

   Component                     x           Log x   Log lambda  Log activity

La(OH)3                     6.9240E-05     -4.1596      0.0000     -4.1596
Ce(OH)3                     5.6722E-15    -14.2462      0.0000    -14.2462
Nd(OH)3(c)                  5.8170E-01     -0.2353      0.0000     -0.2353
Gd(OH)3                     3.4498E-01     -0.4622      0.0000     -0.4622
Sm(OH)3                     7.3243E-02     -1.1352      0.0000     -1.1352


   Mineral                      Log Q/K     Aff, kcal  State

Lanthanide hydroxide             -7.589     -10.354
  La(OH)3                        -7.589     -10.354
  Ce(OH)3                        -7.589     -10.354
  Nd(OH)3(c)                     -7.589     -10.354
  Gd(OH)3                        -7.589     -10.354
  Sm(OH)3                        -7.589     -10.354


              --- Rhabdophane-ss           ---

  Ideal solution

   Component                     x           Log x   Log lambda  Log activity

LaPO4:H2O                   7.6162E-01     -0.1183      0.0000     -0.1183
CePO4:H2O                   1.9730E-11    -10.7049      0.0000    -10.7049
NdPO4:H2O                   1.2767E-01     -0.8939      0.0000     -0.8939
GdPO4:H2O                   3.0143E-02     -1.5208      0.0000     -1.5208
SmPO4:H2O                   8.0566E-02     -1.0938      0.0000     -1.0938


   Mineral                      Log Q/K     Aff, kcal  State

Rhabdophane-ss                   -5.048      -6.886
  LaPO4:H2O                      -5.048      -6.886
  CePO4:H2O                      -5.048      -6.886
  NdPO4:H2O                      -5.048      -6.886
  GdPO4:H2O                      -5.048      -6.886
  SmPO4:H2O                      -5.048      -6.886


              --- Lanthanide fluoride      ---

  Ideal solution

   Component                     x           Log x   Log lambda  Log activity

LaF3:0.5H2O                 8.1754E-01     -0.0875      0.0000     -0.0875
CeF3:0.5H2O                 3.3567E-11    -10.4741      0.0000    -10.4741
NdF3:0.5H2O                 1.7253E-01     -0.7631      0.0000     -0.7631
GdF3:0.5H2O                 1.2881E-03     -2.8901      0.0000     -2.8901
SmF3:0.5H2O                 8.6481E-03     -2.0631      0.0000     -2.0631
```

Mineral	Log Q/K	Aff, kcal	State
Lanthanide fluoride	-10.021	-13.671	
LaF3:0.5H2O	-10.021	-13.671	
CeF3:0.5H2O	-10.021	-13.671	
NdF3:0.5H2O	-10.021	-13.671	
GdF3:0.5H2O	-10.021	-13.671	
SmF3:0.5H2O	-10.021	-13.671	

--- Summary of Gases ---

Gas	Fugacity	Log fugacity
Al(g)	3.4023-192	-191.4682
B(g)	7.1817-204	-203.1438
BF3(g)	3.9331E-40	-39.4053
C(g)	3.0917-190	-189.5098
CH4(g)	3.5288-146	-145.4524
CO(g)	6.0395E-49	-48.2190
CO2(g)	3.1623E-04	-3.5000
Ca(g)	7.2763-151	-150.1381
Chlorine	5.9943E-30	-29.2223
Cs(g)	1.2071E-82	-81.9183
Cu(g)	5.9932E-82	-81.2223
Fluorine	3.6844E-83	-82.4336
H2(g)	6.1145E-42	-41.2136
H2O(g)	2.5975E-02	-1.5854
H2S(g)	9.7509-145	-144.0110
HCl(g)	3.0033E-19	-18.5224
HF(g)	2.6575E-14	-13.5755
K(g)	7.7748E-77	-76.1093
Li(g)	2.6376E-96	-95.5788
Mg(g)	3.3697-129	-128.4724
Nitrogen	4.4644E-21	-20.3502
NH3(g)	7.7023E-70	-69.1134
NO(g)	2.1039E-26	-25.6770
NO2(g)	1.4386E-20	-19.8421
Na(g)	6.2654E-75	-74.2030
O2(g)	2.0999E-01	-0.6778
Pb(g)	1.1591E-67	-66.9359
S2(g)	5.6704-232	-231.2464
SO2(g)	1.7266E-57	-56.7628
Si(g)	4.2257-221	-220.3741
SiF4(g)	2.1986E-39	-38.6579
Ti(g)	1.6799-231	-230.7747
TiCl4(g)	1.2044E-87	-86.9192
U(g)	6.3852-299	-298.1948
U2Cl10(g)	2.4749-254	-253.6064
U2Cl8(g)	1.2800-255	-254.8928
U2F10(g)	9.6407-162	-161.0159
UCl(g)	1.7090-255	-254.7673
UCl2(g)	1.3684-210	-209.8638
UCl3(g)	2.3999-163	-162.6198
UCl4(g)	2.2791-133	-132.6422
UCl5(g)	1.1136-140	-139.9533
UCl6(g)	1.0109-142	-141.9953
UF(g)	3.2137-240	-239.4930
UF2(g)	1.1996-199	-198.9210

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UF3(g)                      1.1020-152   -151.9578
UF4(g)                      1.4942-102   -101.8256
UF5(g)                      9.2801E-94    -93.0324
UF6(g)                      5.6753E-99    -98.2460
UO(g)                       5.0428-214   -213.2973
UO2(g)                      9.3427-130   -129.0295
UO2Cl2(g)                   2.4452E-78    -77.6117
UO2F2(g)                    1.5551E-65    -64.8083
UO3(g)                      6.8719E-77    -76.1629
UOF4(g)                     4.4526E-80    -79.3514
Zn(g)                       2.0131E-78    -77.6961



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Stepping to zi=  9.2762E-06, delzi=  1.0000E-09, nord= 0
  time =  1.0724E-01 d, dltime =  1.1561E-05 d
Steps completed =    18, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-Ca           ) =    -14.5091

Stepping to zi=  9.2772E-06, delzi=  1.0000E-09, nord= 0
  time =  1.0725E-01 d, dltime =  1.1561E-05 d
Steps completed =    19, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-K            ) =    -15.6848

Stepping to zi=  9.2782E-06, delzi=  1.0000E-09, nord= 0
  time =  1.0727E-01 d, dltime =  1.1561E-05 d
Steps completed =    20, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-K            ) =    -15.7197

Stepping to zi=  9.2792E-06, delzi=  1.0000E-09, nord= 0
  time =  1.0728E-01 d, dltime =  1.1561E-05 d
Steps completed =    21, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-K            ) =    -15.7551

Stepping to zi=  9.2813E-06, delzi=  2.1030E-09, nord= 2
  time =  1.0730E-01 d, dltime =  2.4313E-05 d
Steps completed =    22, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-K            ) =    -15.8314

Stepping to zi=  9.2895E-06, delzi=  8.1959E-09, nord= 3
  time =  1.0740E-01 d, dltime =  9.4753E-05 d
Steps completed =    23, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-K            ) =    -16.1544

Stepping to zi=  9.3061E-06, delzi=  1.6585E-08, nord= 4
  time =  1.0759E-01 d, dltime =  1.9174E-04 d
Steps completed =    24, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-K            ) =    -16.9630

Stepping to zi=  9.3278E-06, delzi=  2.1696E-08, nord= 5
  time =  1.0784E-01 d, dltime =  2.5083E-04 d
Steps completed =    25, iter =  6, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-K            ) =    -18.5526

Stepping to zi=  9.3282E-06, delzi=  3.8516E-10, nord= 6
  time =  1.0784E-01 d, dltime =  4.4529E-06 d
Steps completed =    26, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-K            ) =    -18.5901
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```
Stepping to zi=  9.3292E-06, delzi=  1.0000E-09, nord= 0
  time =  1.0785E-01 d, dltime =  1.1561E-05 d
Steps completed =    27, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-K            ) =    -18.6895

Stepping to zi=  9.3312E-06, delzi=  2.0000E-09, nord= 3
  time =  1.0788E-01 d, dltime =  2.3122E-05 d
Steps completed =    28, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-K            ) =    -18.8986

Stepping to zi=  9.3352E-06, delzi=  4.0000E-09, nord= 4
  time =  1.0792E-01 d, dltime =  4.6244E-05 d
Steps completed =    29, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-K            ) =    -19.3655

Stepping to zi=  9.3372E-06, delzi=  2.0000E-09, nord= 5
  time =  1.0795E-01 d, dltime =  2.3122E-05 d
Steps completed =    30, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-K            ) =    -19.6288

Stepping to zi=  9.3412E-06, delzi=  4.0000E-09, nord= 4
  time =  1.0799E-01 d, dltime =  4.6244E-05 d
Steps completed =    31, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-K            ) =    -20.2350

Stepping to zi=  9.3492E-06, delzi=  8.0000E-09, nord= 6
  time =  1.0809E-01 d, dltime =  9.2488E-05 d
Steps completed =    32, iter =  6, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-K            ) =    -21.9986

Stepping to zi=  9.3513E-06, delzi=  2.1181E-09, nord= 6
  time =  1.0811E-01 d, dltime =  2.4487E-05 d
Steps completed =    33, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-K            ) =    -22.7054

Stepping to zi=  9.3514E-06, delzi=  1.0000E-10, nord= 0
  time =  1.0811E-01 d, dltime =  1.1561E-06 d
Steps completed =    34, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-K            ) =    -22.7432

Stepping to zi=  9.3524E-06, delzi=  1.0000E-09, nord= 0
  time =  1.0812E-01 d, dltime =  1.1561E-05 d
Steps completed =    35, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-K            ) =    -23.1489

Stepping to zi=  9.3544E-06, delzi=  2.0000E-09, nord= 4
  time =  1.0815E-01 d, dltime =  2.3122E-05 d
Steps completed =    36, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-K            ) =    -24.1686

Stepping to zi=  9.3553E-06, delzi=  9.5102E-10, nord= 6
  time =  1.0816E-01 d, dltime =  1.0995E-05 d
Steps completed =    37, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-K            ) =    -24.8056

Stepping to zi=  9.3554E-06, delzi=  1.1888E-10, nord= 5
  time =  1.0816E-01 d, dltime =  1.3743E-06 d
Steps completed =    38, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-K            ) =    -24.8954

Stepping to zi=  9.3564E-06, delzi=  1.0000E-09, nord= 0
  time =  1.0817E-01 d, dltime =  1.1561E-05 d
Steps completed =    39, iter =  4, ncorr = 0
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```
Most rapidly changing is zvclg1(Beidellite-K            ) =    -25.7777

Stepping to zi=  9.3569E-06, delzi=  5.0000E-10, nord= 6
  time =  1.0818E-01 d, dltime =  5.7805E-06 d
Steps completed =    40, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-K            ) =    -26.3369

Stepping to zi=  9.3579E-06, delzi=  1.0000E-09, nord= 0
  time =  1.0819E-01 d, dltime =  1.1561E-05 d
Steps completed =    41, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-K            ) =    -27.9038

Stepping to zi=  9.3583E-06, delzi=  3.3634E-10, nord= 6
  time =  1.0819E-01 d, dltime =  3.8884E-06 d
Steps completed =    42, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-K            ) =    -28.6827

Stepping to zi=  9.3593E-06, delzi=  1.0000E-09, nord= 0
  time =  1.0820E-01 d, dltime =  1.1561E-05 d
Steps completed =    43, iter =  7, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-K            ) =    -34.7053

Stepping to zi=  9.3603E-06, delzi=  1.0000E-09, nord= 0
  time =  1.0821E-01 d, dltime =  1.1561E-05 d
iter =   36
      3 supersaturated pure minerals
      0 supersaturated solid solutions

               The most supersaturated phases          Affinity, kcal

                 1     252   Hematite                     7.67662420
                 2     241   Goethite                     3.18315617
                 3     562   Trevorite                    6.29723774
--- Go back to reduce the extent of supersaturation ---
--- Cutting step size and trying again ---

Stepping to zi=  9.3595E-06, delzi=  2.5000E-10, nord= 0
  time =  1.0821E-01 d, dltime =  2.8903E-06 d
iter =   26
      3 supersaturated pure minerals
      0 supersaturated solid solutions

               The most supersaturated phases          Affinity, kcal

                 1     252   Hematite                     5.00109481
                 2     241   Goethite                     1.84539147
                 3     562   Trevorite                    3.62166168
--- Go back to reduce the extent of supersaturation ---
--- Cutting step size and trying again ---

Stepping to zi=  9.3594E-06, delzi=  1.0000E-10, nord= 0
  time =  1.0820E-01 d, dltime =  1.1561E-06 d
Steps completed =    44, iter =  6, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-K            ) =    -37.6101

Stepping to zi=  9.3595E-06, delzi=  1.1250E-10, nord= 0
  time =  1.0821E-01 d, dltime =  1.3006E-06 d
iter =   22
      3 supersaturated pure minerals
      0 supersaturated solid solutions

               The most supersaturated phases          Affinity, kcal
```

```
                 1     252   Hematite                      4.33889807
                 2     241   Goethite                      1.51429310
                 3     562   Trevorite                     2.95946261
--- Go back to reduce the extent of supersaturation ---
--- Cutting step size and trying again ---

Stepping to zi=  9.3595E-06, delzi=  1.0000E-10, nord= 0
  time =  1.0821E-01 d, dltime =  1.1561E-06 d
iter =   21
      3 supersaturated pure minerals
      0 supersaturated solid solutions

               The most supersaturated phases          Affinity, kcal

                 1     252   Hematite                      3.99873228
                 2     241   Goethite                      1.34421021
                 3     562   Trevorite                     2.61929604


  Attempted species assemblage no.   2

            1      1  H2O
            2      3  Al+++
            3      7  B(OH)3(aq)
            4      8  Ba++
            5     11  Ca++
            6     13  Ce+++
            7     14  Cl-
            8     16  CrO4--
            9     17  Cs+
           10     18  Cu++
           11     22  F-
           12     23  Fe++
           13     25  Gd+++
           14     26  H+
           15     28  HCO3-
           16     29  HPO4--
           17     35  K+
           18     37  La+++
           19     38  Li+
           20     40  Mg++
           21     41  Mn++
           22     42  MoO4--
           23     43  NO3-
           24     44  Na+
           25     45  Nd+++
           26     47  Ni++
           27     49  Pb++
           28     52  Pu++++
           29     58  SO4--
           30     62  SiO2(aq)
           31     63  Sm+++
           32     65  Sr++
           33     69  Ti(OH)4(aq)
           34     72  UO2++
           35     73  VO++
           36     78  Zn++
           37     79  Zr(OH)2++
           38     80  O2(g)
           39    198  Dolomite-ord
           40    222  Fluorapatite
           41    252  Hematite
           42    470  Pyrolusite
```

```
43    475  Quartz
44    689  fix     CO2(g)
45    690  fix     O2(g)
46      1  CarbonatCalcite
47      2  CarbonatMagnesite
48      3  CarbonatRhodochrosite
49      4  CarbonatSiderite
50      5  CarbonatSmithsonite
51      6  CarbonatStrontianite
52      1  SmectiteBeidellite-Ca
53      2  SmectiteBeidellite-K
54      3  SmectiteBeidellite-Mg
55      4  SmectiteBeidellite-Na
56      5  SmectiteMontmor-Ca
57      6  SmectiteMontmor-K
58      7  SmectiteMontmor-Mg
59      8  SmectiteMontmor-Na
60      9  SmectiteNontronite-Ca
61     10  SmectiteNontronite-K
62     11  SmectiteNontronite-Mg
63     12  SmectiteNontronite-Na

Steps completed =    45, iter = 30, ncorr = 0

- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -


                    Reaction progress        =  9.35948410445123E-06
                    Log of reaction progress =      -5.0287481



                    Time =  9.349E+03 sec
                         =  1.082E-01 days
                         =  2.962E-04 years

                    Log sec =        3.971
                    Log days =      -0.966
                    Log years =     -3.528

                    Temperature    =     25.000 degrees C
                    total pressure =      1.013 bars


Change in the product phase assemblage


                              --- Reactant Summary ---


    Reactant                  Moles     Delta moles    Mass, g    Delta Mass, g

 carbon steel               2.0000E+01   9.3489E-06   1.0940E+03   5.1136E-04
 Alloy-22                   2.0000E+01   1.0564E-08   1.1978E+03   6.3267E-07


                Current total mass =  2.29170E+03 grams
                Delta total mass   =  5.11996E-04 grams
                Delta total volume =      0.00000 cc


    Reactant                Rel. Rate      Rate         Rate
```

	mol/mol	mol/s	mol/s/cm2
carbon steel	9.9887E-01	1.0000E-09	1.0000E-11
Alloy-22	1.1287E-03	1.1300E-12	1.1300E-14

Reactant	Affinity kcal/mol	Surface Area mol/s/cm2
carbon steel	999.00000	1.0000E+02
Alloy-22	999.00000	1.0000E+02

Reactant		Rate Constants, mol/s/cm2
carbon steel		
	Forward	1.0000E-11
Alloy-22		
	Forward	1.1300E-14

Affinity of the overall irreversible reaction= 0.000 kcal
Contributions from irreversible reactions
with no thermodynamic data are not included

--- Element Totals for the Aqueous Solution ---

Element	mg/kg soln.	Molality	Moles
O	8.880243E+05	5.551539E+01	5.551556E+01
Al	2.317691E-08	8.591738E-13	8.591764E-13
B	1.338978E-01	1.238796E-05	1.238800E-05
Ba	1.372974E-05	9.999969E-11	1.000000E-10
Ca	7.824890E+00	1.952830E-04	1.952836E-04
Ce	1.400848E-19	9.999969E-25	1.000000E-24
Cl	7.138636E+00	2.013994E-04	2.014000E-04
Cr	1.806764E-02	3.475545E-07	3.475556E-07
Cs	1.328768E-05	9.999969E-11	1.000000E-10
Cu	6.670893E-10	1.049997E-14	1.050000E-14
F	2.171515E+00	1.143241E-04	1.143245E-04
Fe	6.898854E-08	1.235576E-12	1.235579E-12
Gd	1.572161E-09	9.999969E-15	1.000000E-14
H	1.118763E+05	1.110185E+02	1.110189E+02
C	1.996515E+01	1.662592E-03	1.662597E-03
P	3.629531E-05	1.172057E-09	1.172061E-09
K	5.036321E+00	1.288391E-04	1.288395E-04
La	1.388756E-09	9.999969E-15	1.000000E-14
Li	6.939505E-07	9.999969E-11	1.000000E-10
Mg	3.225800E-01	1.327498E-05	1.327502E-05
Mn	9.612968E-12	1.750155E-16	1.750160E-16
Mo	1.118986E-04	1.166587E-09	1.166591E-09
N	1.988529E+00	1.419996E-04	1.420000E-04
Na	4.578800E+01	1.992091E-03	1.992097E-03
Nd	1.442089E-09	9.999969E-15	1.000000E-14
Ni	3.580375E-04	6.101781E-09	6.101800E-09
Pb	2.071554E-05	9.999969E-11	1.000000E-10
Pu	2.439474E-09	9.999969E-15	1.000000E-14
S	6.140854E+00	1.915474E-04	1.915480E-04
Si	2.924628E+00	1.041551E-04	1.041554E-04
Sm	1.503276E-09	9.999969E-15	1.000000E-14
Sr	1.912874E-07	2.183611E-12	2.183617E-12

Ti	4.786969E-06	9.999969E-11	1.000000E-10
U	2.379776E-09	9.999969E-15	1.000000E-14
V	1.344298E-05	2.639466E-10	2.639474E-10
Zn	9.497691E-07	1.452777E-11	1.452781E-11
Zr	9.120435E-16	9.999969E-21	1.000000E-20

Single ion activities and activity coefficients are here defined
with respect to the modified NBS pH scale

	pH	Eh	pe
modified NBS pH scale	8.4953	0.7165	1.2112E+01
rational pH scale	8.4710	0.7179	1.2136E+01

pHCl = 12.2169

Oxygen fugacity = 2.09991E-01
Log oxygen fugacity = -0.67780

Activity of water = 0.99991
Log activity of water = -0.00004

Ionic strength = 2.918122E-03 molal
Sum of molalities = 0.0050069491224
Osmotic coefficient = 0.97787

Mass of solution = 1.000215 kg
Mass of solutes = 0.000212 kg
Conc. of solutes = 0.021232 per cent (w/w)

Moles of solvent H2O = 5.55086E+01
Mass of solvent H2O = 1.00000E+00 kg

Species	Molality	Log molality	Log gamma	Log activity
Na+	1.9856E-03	-2.7021	-0.0262	-2.7283
HCO3-	1.6097E-03	-2.7933	-0.0251	-2.8184
O2(aq)	2.6521E-04	-3.5764	0.0003	-3.5761
Cl-	2.0133E-04	-3.6961	-0.0256	-3.7216
SO4--	1.8634E-04	-3.7297	-0.1019	-3.8316
Ca++	1.8284E-04	-3.7379	-0.1008	-3.8388
NO3-	1.4190E-04	-3.8480	-0.0256	-3.8736
K+	1.2870E-04	-3.8904	-0.0267	-3.9171
F-	1.1420E-04	-3.9423	-0.0253	-3.9677
SiO2(aq)	1.0016E-04	-3.9993	0.0000	-3.9993
CO3--	2.8130E-05	-4.5508	-0.1011	-4.6519
Mg++	1.2481E-05	-4.9037	-0.0977	-5.0015
CO2(aq)	1.0735E-05	-4.9692	0.0003	-4.9689
B(OH)3(aq)	1.0400E-05	-4.9830	0.0000	-4.9830
CaCO3(aq)	6.8613E-06	-5.1636	0.0000	-5.1636
NaHCO3(aq)	4.0493E-06	-5.3926	0.0000	-5.3926
HSiO3-	3.7029E-06	-5.4315	-0.0251	-5.4566
OH-	3.3532E-06	-5.4745	-0.0253	-5.4999
CaSO4(aq)	2.7586E-06	-5.5593	0.0000	-5.5593
CaHCO3+	2.6048E-06	-5.5842	-0.0262	-5.6104

BO2-	1.9613E-06	-5.7075	-0.0251	-5.7326
NaSO4-	1.9281E-06	-5.7149	-0.0251	-5.7400
MgSO4(aq)	3.7894E-07	-6.4214	0.0000	-6.4214
CrO4--	3.4467E-07	-6.4626	-0.1019	-6.5645
NaHSiO3(aq)	2.9079E-07	-6.5364	0.0000	-6.5364
MgCO3(aq)	2.1159E-07	-6.6745	0.0000	-6.6745
MgHCO3+	1.7461E-07	-6.7579	-0.0262	-6.7842
NaCO3-	1.4430E-07	-6.8407	-0.0251	-6.8659
KSO4-	1.4321E-07	-6.8440	-0.0251	-6.8691
CaNO3+	1.0325E-07	-6.9861	-0.0262	-7.0124
CaF+	7.9704E-08	-7.0985	-0.0262	-7.1247
NaCl(aq)	5.9295E-08	-7.2270	0.0000	-7.2270
MgF+	2.5672E-08	-7.5905	-0.0262	-7.6168
NaF(aq)	2.0248E-08	-7.6936	0.0000	-7.6936
CaB(OH)4+	1.8945E-08	-7.7225	-0.0262	-7.7487
CaOH+	6.8027E-09	-8.1673	-0.0262	-8.1935
NaB(OH)4(aq)	6.4551E-09	-8.1901	0.0000	-8.1901
Ni++	6.0016E-09	-8.2217	-0.1008	-8.3226
CaCl+	5.8914E-09	-8.2298	-0.0262	-8.2560
H+	3.3806E-09	-8.4710	-0.0243	-8.4953
HCrO4-	2.8822E-09	-8.5403	-0.0251	-8.5654
MgB(OH)4+	1.5498E-09	-8.8097	-0.0262	-8.8359
MgCl+	1.4730E-09	-8.8318	-0.0262	-8.8580
MoO4--	1.1666E-09	-8.9331	-0.1011	-9.0342
HPO4--	9.9051E-10	-9.0041	-0.1019	-9.1061
NaOH(aq)	9.3774E-10	-9.0279	0.0000	-9.0279
KCl(aq)	7.3563E-10	-9.1333	0.0000	-9.1333
HF(aq)	5.0718E-10	-9.2948	0.0000	-9.2948
VO3OH--	2.2720E-10	-9.6436	-0.1019	-9.7455
H2SiO4--	1.3586E-10	-9.8669	-0.1019	-9.9689
KOH(aq)	1.3126E-10	-9.8819	0.0000	-9.8819

--- Summary of Solid Product Phases---

Product	Log moles	Moles	Mass, g	Volume, cc
Dolomite-ord	-4.1687	6.7809E-05	1.2504E-02	4.3629E-03
Fluorapatite	-6.3711	4.2551E-07	2.1459E-04	2.1275E-04
Hematite	-10.6983	2.0030E-11	3.1987E-09	6.0640E-10
Pyrolusite	-7.0161	9.6352E-08	8.3765E-06	4.8176E-05
Quartz	-3.0475	8.9631E-04	5.3854E-02	2.0335E-02
fix CO2(g)	4.0000	1.0000E+04	4.4010E+05	0.0000E+00
fix O2(g)	4.0000	1.0000E+04	3.1999E+05	0.0000E+00
Carbonate-Calcite	-4.2211	6.0109E-05	5.9933E-03	2.2072E-03
Calcite	-4.2316	5.8661E-05	5.8712E-03	2.1666E-03
Magnesite	-5.8393	1.4479E-06	1.2208E-04	4.0567E-05
Rhodochrosite	-14.9905	1.0222E-15	1.1750E-13	3.1765E-14
Siderite	-22.8843	1.3052E-23	1.5122E-21	3.8345E-22
Smithsonite	-10.0682	8.5472E-11	1.0718E-08	2.4167E-09
Strontianite	-10.0096	9.7816E-11	1.4441E-08	3.8158E-09
Smectite-di	-5.3475	4.4924E-06	1.9051E-03	5.8881E-04
Beidellite-Ca	-44.0011	9.9739E-45	3.6561E-42	1.2919E-42
Beidellite-K	-45.1425	7.2030E-46	2.6857E-43	9.6304E-44
Beidellite-Mg	-44.4683	3.4021E-45	1.2382E-42	4.1911E-43
Beidellite-Na	-44.9795	1.0484E-45	3.8532E-43	1.3686E-43
Montmor-Ca	-31.2154	6.0896E-32	2.2291E-29	3.0448E-29
Montmor-K	-32.1437	7.1824E-33	2.6742E-30	3.5912E-30
Montmor-Mg	-31.4716	3.3758E-32	1.2269E-29	1.6879E-29
Montmor-Na	-31.9916	1.0194E-32	3.7415E-30	5.0972E-30

Nontronite-Ca	-5.5290	2.9581E-06	1.2551E-03	3.8781E-04
Nontronite-K	-6.6703	2.1363E-07	9.1986E-05	2.8898E-05
Nontronite-Mg	-5.9958	1.0097E-06	4.2579E-04	1.3102E-04
Nontronite-Na	-6.5073	3.1094E-07	1.3223E-04	4.1078E-05

	Mass, grams	Volume, cc
Created	7.600861E+05	2.775520E-02
Destroyed	5.119964E-04	0.000000E+00
Net	7.600861E+05	2.775520E-02

Warning-- these volume totals may be incomplete because
of missing partial molar volume data in the data base

--- Summary of Pure Mineral Saturation States ---

Mineral	Log Q/K	Aff, kcal	State
Alamosite	-2.788	-3.803	
Albite	-6.702	-9.144	
Albite_low	-6.702	-9.144	
Alstonite	-5.176	-7.061	
Analcime	-6.561	-8.950	
Andradite	-5.769	-7.871	
Anglesite	-6.084	-8.301	
Anhydrite	-3.364	-4.589	
Aragonite	-0.155	-0.211	
Artinite	-6.992	-9.539	
BaCrO4	-6.739	-9.193	
BaZrO3	82.584	112.668	ssatd
Barite	-3.967	-5.412	
Barytocalcite	-5.333	-7.276	
Bassanite	-4.009	-5.469	
Boehmite	-5.271	-7.191	
Boric_acid	-4.825	-6.582	
Brucite	-4.309	-5.879	
Bunsenite	-3.804	-5.190	
CaSO4:0.5H2O(beta)	-4.177	-5.699	
CaZrO3	142.881	194.931	ssatd
Calcite	-0.011	-0.014	
CeO2	-2.555	-3.486	
Celadonite	-4.594	-6.268	
Cerussite	-1.219	-1.664	
Chalcedony	-0.271	-0.370	
Chrysotile	-3.157	-4.307	
Coesite	-0.810	-1.105	
Cristobalite(alpha)	-0.551	-0.751	
Cristobalite(beta)	-0.994	-1.356	
Crocoite	-3.952	-5.392	
Diaspore	-4.867	-6.640	
Diopside	-3.822	-5.215	
Dolomite	0.000	0.000	ssatd
Dolomite-dis	-1.544	-2.107	
Dolomite-ord	0.000	0.000	satd
Enstatite	-3.337	-4.553	
Epsomite	-6.871	-9.374	
Fe(OH)3	-5.601	-7.642	
Ferrite-Zn	-5.696	-7.771	
Fluorapatite	0.000	0.000	satd

Fluorite	-1.737	-2.370	
GdOHCO3	-6.576	-8.971	
GdPO4:H2O	-6.568	-8.961	
Gibbsite	-5.463	-7.453	
Goethite	-0.480	-0.655	
Gypsum	-3.188	-4.350	
Hematite	0.000	0.000	satd
Hexahydrite	-7.107	-9.695	
Huntite	-6.437	-8.782	
Hydrocerussite	-5.391	-7.355	
Ice	-0.139	-0.189	
K-Feldspar	-4.851	-6.619	
Kalicinite	-7.019	-9.576	
LaPO4:H2O	-5.166	-7.048	
Lanarkite	-6.583	-8.981	
Lansfordite	-4.166	-5.683	
Litharge	-5.759	-7.857	
Magnesite	-1.618	-2.208	
Manganite	-4.459	-6.084	
Massicot	-5.934	-8.096	
Maximum_Microcline	-4.851	-6.619	
MnO2(gamma)	-1.518	-2.071	
Monohydrocalcite	-0.844	-1.152	
Mordenite	-6.995	-9.543	
Nahcolite	-5.435	-7.415	
NdOHCO3	-6.149	-8.389	
NdPO4:H2O	-5.941	-8.106	
Nesquehonite	-4.320	-5.894	
Ni(OH)2	-4.081	-5.567	
Ni2SiO4	-1.005	-1.371	
NiCO3	-6.158	-8.401	
Nontronite-Ca	-0.060	-0.082	
Nontronite-H	-1.272	-1.735	
Nontronite-K	-0.437	-0.596	
Nontronite-Mg	-0.214	-0.292	
Nontronite-Na	-0.383	-0.522	
Okenite	-5.229	-7.133	
Paralaurionite	-5.535	-7.552	
PbCO3.PbO	-7.215	-9.843	
Phlogopite	-6.600	-9.004	
Plattnerite	-1.122	-1.531	
Pseudowollastonite	-4.847	-6.613	
PuO2	-1.656	-2.260	
PuO2(OH)2	-6.232	-8.502	
Pyrolusite	0.000	0.000	satd
Quartz	0.000	0.000	satd
Rutile	-0.355	-0.484	
Sanidine_high	-6.050	-8.255	
Saponite-Ca	-2.074	-2.829	
Saponite-Cs	-4.312	-5.883	
Saponite-H	-3.286	-4.483	
Saponite-K	-2.450	-3.343	
Saponite-Mg	-2.228	-3.039	
Saponite-Na	-2.397	-3.270	
Sellaite	-3.553	-4.847	
Sepiolite	-6.484	-8.846	
SiO2(am)	-1.286	-1.754	
SmPO4:H2O	-6.141	-8.379	
Smithsonite	-5.847	-7.977	
SrZrO3	117.906	160.857	ssatd
Strontianite	-5.789	-7.897	
Talc	-1.169	-1.594	
Tenorite	-7.005	-9.556	

Tremolite	-6.983	-9.526	
Trevorite	-1.011	-1.379	
Tridymite	-0.172	-0.234	
Witherite	-1.433	-1.955	
Wollastonite	-4.608	-6.287	
Zincite	-5.279	-7.202	
Zn(OH)2(beta)	-6.004	-8.192	
Zn(OH)2(epsilon)	-5.733	-7.821	
Zn(OH)2(gamma)	-5.953	-8.122	
fix CO2(g)	0.000	0.000	satd
fix O2(g)	0.000	0.000	satd

--- Summary of Solid Solutions ---

--- Carbonate-Calcite ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Calcite	9.7591E-01	-0.0106	0.0000	-0.0106
Magnesite	2.4087E-02	-1.6182	0.0000	-1.6182
Rhodochrosite	1.7006E-11	-10.7694	0.0000	-10.7694
Siderite	2.1715E-19	-18.6633	0.0000	-18.6633
Smithsonite	1.4219E-06	-5.8471	0.0000	-5.8471
Strontianite	1.6273E-06	-5.7885	0.0000	-5.7885

Mineral	Log Q/K	Aff, kcal	State
Carbonate-Calcite	0.000	0.000	satd
Calcite	0.000	0.000	satd
Magnesite	0.000	0.000	satd
Rhodochrosite	0.000	0.000	satd
Siderite	0.000	0.000	satd
Smithsonite	0.000	0.000	satd
Strontianite	0.000	0.000	satd

--- Clinoptilolite-hy-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-hy-Ca	9.9687E-01	-0.0014	0.0000	-0.0014
Clinoptilolite-hy-Cs	8.7345E-23	-22.0588	0.0000	-22.0588
Clinoptilolite-hy-K	1.0333E-03	-2.9858	0.0000	-2.9858
Clinoptilolite-hy-Na	2.0971E-03	-2.6784	0.0000	-2.6784
Clinoptilolite-hy-Sr	2.3603E-14	-13.6270	0.0000	-13.6270

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-hy-ss	-20.399	-27.830	
Clinoptilolite-hy-Ca	-20.399	-27.830	
Clinoptilolite-hy-Cs	-20.399	-27.830	
Clinoptilolite-hy-K	-20.399	-27.830	
Clinoptilolite-hy-Na	-20.399	-27.830	
Clinoptilolite-hy-Sr	-20.399	-27.830	

--- Clinoptilolite-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-Ca	7.6605E-01	-0.1157	-0.2847	-0.4005
Clinoptilolite-Cs	3.2237E-07	-6.4916	-15.9694	-22.4611
Clinoptilolite-K	1.0494E-01	-0.9791	-2.4085	-3.3875
Clinoptilolite-NH4	1.2401E-64	-63.9066	-157.2101	-221.1167
Clinoptilolite-Na	1.2892E-01	-0.8897	-2.1886	-3.0783
Clinoptilolite-Sr	8.8390E-05	-4.0536	-9.9718	-14.0254

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-ss	-20.001	-27.288	
Clinoptilolite-Ca	-20.001	-27.288	
Clinoptilolite-Cs	-20.001	-27.288	
Clinoptilolite-K	-20.001	-27.288	
Clinoptilolite-NH4	-20.001	-27.288	
Clinoptilolite-Na	-20.001	-27.288	
Clinoptilolite-Sr	-20.001	-27.288	

--- Saponite-tri ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Saponite-Ca	6.5850E-01	-0.1814	0.1216	-0.0599
Saponite-H	1.3977E-04	-3.8546	2.5826	-1.2720
Saponite-K	4.7523E-02	-1.3231	0.8865	-0.4366
Saponite-Mg	2.2462E-01	-0.6486	0.4345	-0.2140
Saponite-Na	6.9217E-02	-1.1598	0.7771	-0.3827

Mineral	Log Q/K	Aff, kcal	State
Saponite-tri	-2.014	-2.747	
Saponite-Ca	-2.014	-2.747	
Saponite-H	-2.014	-2.747	
Saponite-K	-2.014	-2.747	
Saponite-Mg	-2.014	-2.747	
Saponite-Na	-2.014	-2.747	

--- Smectite-di ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Beidellite-Ca	2.2202E-39	-38.6536	25.8979	-12.7557
Beidellite-K	1.6034E-40	-39.7950	26.6626	-13.1323
Beidellite-Mg	7.5730E-40	-39.1207	26.2109	-12.9098
Beidellite-Na	2.3337E-40	-39.6320	26.5534	-13.0785
Montmor-Ca	1.3555E-26	-25.8679	17.3315	-8.5364

Montmor-K	1.5988E-27	-26.7962	17.9535	-8.8428
Montmor-Mg	7.5145E-27	-26.1241	17.5031	-8.6210
Montmor-Na	2.2693E-27	-26.6441	17.8516	-8.7926
Nontronite-Ca	6.5847E-01	-0.1815	0.1216	-0.0599
Nontronite-K	4.7554E-02	-1.3228	0.8863	-0.4365
Nontronite-Mg	2.2476E-01	-0.6483	0.4343	-0.2139
Nontronite-Na	6.9213E-02	-1.1598	0.7771	-0.3827

Mineral	Log Q/K	Aff, kcal	State
Smectite-di	0.000	0.000	satd
Beidellite-Ca	0.000	0.000	satd
Beidellite-K	0.000	0.000	satd
Beidellite-Mg	0.000	0.000	satd
Beidellite-Na	0.000	0.000	satd
Montmor-Ca	0.000	0.000	satd
Montmor-K	0.000	0.000	satd
Montmor-Mg	0.000	0.000	satd
Montmor-Na	0.000	0.000	satd
Nontronite-Ca	0.000	0.000	satd
Nontronite-K	0.000	0.000	satd
Nontronite-Mg	0.000	0.000	satd
Nontronite-Na	0.000	0.000	satd

--- Lanthanide hydroxide ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
La(OH)3	6.9240E-05	-4.1596	0.0000	-4.1596
Ce(OH)3	5.6723E-15	-14.2462	0.0000	-14.2462
Nd(OH)3(c)	5.8170E-01	-0.2353	0.0000	-0.2353
Gd(OH)3	3.4498E-01	-0.4622	0.0000	-0.4622
Sm(OH)3	7.3243E-02	-1.1352	0.0000	-1.1352

Mineral	Log Q/K	Aff, kcal	State
Lanthanide hydroxide	-7.589	-10.354	
La(OH)3	-7.589	-10.354	
Ce(OH)3	-7.589	-10.354	
Nd(OH)3(c)	-7.589	-10.354	
Gd(OH)3	-7.589	-10.354	
Sm(OH)3	-7.589	-10.354	

--- Rhabdophane-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaPO4:H2O	7.6162E-01	-0.1183	0.0000	-0.1183
CePO4:H2O	1.9730E-11	-10.7049	0.0000	-10.7049
NdPO4:H2O	1.2767E-01	-0.8939	0.0000	-0.8939
GdPO4:H2O	3.0143E-02	-1.5208	0.0000	-1.5208
SmPO4:H2O	8.0566E-02	-1.0938	0.0000	-1.0938

Mineral	Log Q/K	Aff, kcal	State
Rhabdophane-ss	-5.048	-6.886	
LaPO4:H2O	-5.048	-6.886	
CePO4:H2O	-5.048	-6.886	
NdPO4:H2O	-5.048	-6.886	
GdPO4:H2O	-5.048	-6.886	
SmPO4:H2O	-5.048	-6.886	

--- Lanthanide fluoride ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaF3:0.5H2O	8.1754E-01	-0.0875	0.0000	-0.0875
CeF3:0.5H2O	3.3566E-11	-10.4741	0.0000	-10.4741
NdF3:0.5H2O	1.7253E-01	-0.7631	0.0000	-0.7631
GdF3:0.5H2O	1.2881E-03	-2.8901	0.0000	-2.8901
SmF3:0.5H2O	8.6481E-03	-2.0631	0.0000	-2.0631

Mineral	Log Q/K	Aff, kcal	State
Lanthanide fluoride	-10.021	-13.671	
LaF3:0.5H2O	-10.021	-13.671	
CeF3:0.5H2O	-10.021	-13.671	
NdF3:0.5H2O	-10.021	-13.671	
GdF3:0.5H2O	-10.021	-13.671	
SmF3:0.5H2O	-10.021	-13.671	

--- Summary of Gases ---

Gas	Fugacity	Log fugacity
Al(g)	2.2359-196	-195.6506
B(g)	7.1817-204	-203.1438
BF3(g)	3.9331E-40	-39.4053
C(g)	3.0917-190	-189.5098
CH4(g)	3.5288-146	-145.4524
CO(g)	6.0395E-49	-48.2190
CO2(g)	3.1623E-04	-3.5000
Ca(g)	7.2763-151	-150.1381
Chlorine	5.9943E-30	-29.2223
Cs(g)	1.2071E-82	-81.9183
Cu(g)	5.9932E-82	-81.2223
Fluorine	3.6844E-83	-82.4336
H2(g)	6.1145E-42	-41.2136
H2O(g)	2.5975E-02	-1.5854
H2S(g)	9.7508-145	-144.0110
HCl(g)	3.0033E-19	-18.5224
HF(g)	2.6574E-14	-13.5755
K(g)	7.7748E-77	-76.1093
Li(g)	2.6376E-96	-95.5788
Mg(g)	3.3697-129	-128.4724
Nitrogen	4.4643E-21	-20.3502
NH3(g)	7.7023E-70	-69.1134

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NO(g)                       2.1039E-26    -25.6770
NO2(g)                      1.4386E-20    -19.8421
Na(g)                       6.2654E-75    -74.2030
O2(g)                       2.0999E-01     -0.6778
Pb(g)                       1.1591E-67    -66.9359
S2(g)                       5.6703-232   -231.2464
SO2(g)                      1.7265E-57    -56.7628
Si(g)                       4.2257-221   -220.3741
SiF4(g)                     2.1985E-39    -38.6579
Ti(g)                       1.6799-231   -230.7747
TiCl4(g)                    1.2043E-87    -86.9192
U(g)                        6.3851-299   -298.1948
U2Cl10(g)                   2.4747-254   -253.6065
U2Cl8(g)                    1.2799-255   -254.8928
U2F10(g)                    9.6400-162   -161.0159
UCl(g)                      1.7090-255   -254.7673
UCl2(g)                     1.3684-210   -209.8638
UCl3(g)                     2.3998-163   -162.6198
UCl4(g)                     2.2790-133   -132.6423
UCl5(g)                     1.1136-140   -139.9533
UCl6(g)                     1.0108-142   -141.9953
UF(g)                       3.2137-240   -239.4930
UF2(g)                      1.1996-199   -198.9210
UF3(g)                      1.1020-152   -151.9578
UF4(g)                      1.4942-102   -101.8256
UF5(g)                      9.2798E-94    -93.0325
UF6(g)                      5.6751E-99    -98.2460
UO(g)                       5.0428-214   -213.2973
UO2(g)                      9.3426-130   -129.0295
UO2Cl2(g)                   2.4452E-78    -77.6117
UO2F2(g)                    1.5550E-65    -64.8083
UO3(g)                      6.8718E-77    -76.1629
UOF4(g)                     4.4525E-80    -79.3514
Zn(g)                       2.0132E-78    -77.6961



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Stepping to zi=  9.3605E-06, delzi=  1.0000E-09, nord= 0
  time =  1.0822E-01 d, dltime =  1.1561E-05 d
Steps completed =    46, iter = 12, ncorr = 0
Most rapidly changing is zvclg1(Hematite                ) =     -9.3010

Stepping to zi=  9.3615E-06, delzi=  1.0000E-09, nord= 0
  time =  1.0823E-01 d, dltime =  1.1561E-05 d
Steps completed =    47, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Hematite                ) =     -9.0088

Stepping to zi=  9.3625E-06, delzi=  1.0000E-09, nord= 0
  time =  1.0824E-01 d, dltime =  1.1561E-05 d
Steps completed =    48, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Hematite                ) =     -8.8356

Stepping to zi=  9.3635E-06, delzi=  1.0000E-09, nord= 0
  time =  1.0825E-01 d, dltime =  1.1561E-05 d
Steps completed =    49, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Hematite                ) =     -8.7122

Stepping to zi=  9.3735E-06, delzi=  1.0000E-08, nord= 2
  time =  1.0837E-01 d, dltime =  1.1561E-04 d
```

```
Steps completed =    50, iter = 10, ncorr = 0
Most rapidly changing is zvclg1(Hematite                ) =     -8.1713

Stepping to zi=  9.4735E-06, delzi=  1.0000E-07, nord= 2
  time =  1.0952E-01 d, dltime =  1.1561E-03 d
Steps completed =    51, iter = 14, ncorr = 0
Most rapidly changing is zvclg1(Hematite                ) =     -7.2617

Stepping to zi=  1.0473E-05, delzi=  1.0000E-06, nord= 2
  time =  1.2108E-01 d, dltime =  1.1561E-02 d
Steps completed =    52, iter = 16, ncorr = 0
Most rapidly changing is zvclg1(Hematite                ) =     -6.2719

Stepping to zi=  2.0473E-05, delzi=  1.0000E-05, nord= 2
  time =  2.3669E-01 d, dltime =  1.1561E-01 d
Steps completed =    53, iter = 12, ncorr = 0
Most rapidly changing is zvclg1(Hematite                ) =     -5.2729

Stepping to zi=  3.0317E-05, delzi=  9.8436E-06, nord= 3
  time =  3.5050E-01 d, dltime =  1.1380E-01 d
iter =    7
      1 supersaturated pure minerals
      0 supersaturated solid solutions

               The most supersaturated phases           Affinity, kcal

                 1     405   Ni2SiO4                       0.00797413


  Attempted species assemblage no.   2

            1      1  H2O
            2      3  Al+++
            3      7  B(OH)3(aq)
            4      8  Ba++
            5     11  Ca++
            6     13  Ce+++
            7     14  Cl-
            8     16  CrO4--
            9     17  Cs+
           10     18  Cu++
           11     22  F-
           12     23  Fe++
           13     25  Gd+++
           14     26  H+
           15     28  HCO3-
           16     29  HPO4--
           17     35  K+
           18     37  La+++
           19     38  Li+
           20     40  Mg++
           21     41  Mn++
           22     42  MoO4--
           23     43  NO3-
           24     44  Na+
           25     45  Nd+++
           26     47  Ni++
           27     49  Pb++
           28     52  Pu++++
           29     58  SO4--
           30     62  SiO2(aq)
           31     63  Sm+++
           32     65  Sr++
```

```
 33     69  Ti(OH)4(aq)
 34     72  UO2++
 35     73  VO++
 36     78  Zn++
 37     79  Zr(OH)2++
 38     80  O2(g)
 39    198  Dolomite-ord
 40    222  Fluorapatite
 41    252  Hematite
 42    405  Ni2SiO4
 43    470  Pyrolusite
 44    475  Quartz
 45    689  fix     CO2(g)
 46    690  fix     O2(g)
 47      1  CarbonatCalcite
 48      2  CarbonatMagnesite
 49      3  CarbonatRhodochrosite
 50      4  CarbonatSiderite
 51      5  CarbonatSmithsonite
 52      6  CarbonatStrontianite
 53      1  SmectiteBeidellite-Ca
 54      2  SmectiteBeidellite-K
 55      3  SmectiteBeidellite-Mg
 56      4  SmectiteBeidellite-Na
 57      5  SmectiteMontmor-Ca
 58      6  SmectiteMontmor-K
 59      7  SmectiteMontmor-Mg
 60      8  SmectiteMontmor-Na
 61      9  SmectiteNontronite-Ca
 62     10  SmectiteNontronite-K
 63     11  SmectiteNontronite-Mg
 64     12  SmectiteNontronite-Na

Steps completed =    54, iter = 13, ncorr = 0

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                    Reaction progress        =  3.03170438767875E-05
                    Log of reaction progress =      -4.5183131



                    Time =  3.028E+04 sec
                         =  3.505E-01 days
                         =  9.596E-04 years

                    Log sec =        4.481
                    Log days =      -0.455
                    Log years =     -3.018

                    Temperature    =     25.000 degrees C
                    total pressure =      1.013 bars


Change in the product phase assemblage


                              --- Reactant Summary ---


    Reactant                  Moles     Delta moles    Mass, g    Delta Mass, g
```

```
carbon steel                2.0000E+01   3.0283E-05   1.0940E+03   1.6564E-03
Alloy-22                    2.0000E+01   3.4220E-08   1.1978E+03   2.0493E-06


              Current total mass =  2.29170E+03 grams
              Delta total mass   =  1.65845E-03 grams
              Delta total volume =      0.00000 cc


   Reactant                 Rel. Rate      Rate         Rate
                             mol/mol       mol/s      mol/s/cm2

carbon steel                9.9887E-01   1.0000E-09   1.0000E-11
Alloy-22                    1.1287E-03   1.1300E-12   1.1300E-14


   Reactant                   Affinity   Surface Area
                              kcal/mol     mol/s/cm2

carbon steel                 999.00000   1.0000E+02
Alloy-22                     999.00000   1.0000E+02


   Reactant                 Rate Constants, mol/s/cm2

carbon steel
                  Forward    1.0000E-11
Alloy-22
                  Forward    1.1300E-14


        Affinity of the overall irreversible reaction=     0.000 kcal
        Contributions from irreversible reactions
        with no thermodynamic data are not included


    --- Element Totals for the Aqueous Solution ---

 Element        mg/kg soln.          Molality             Moles

    O          8.880243E+05        5.551539E+01        5.551556E+01
    Al         2.317676E-08        8.591682E-13        8.591709E-13
    B          1.338978E-01        1.238796E-05        1.238800E-05
    Ba         1.372974E-05        9.999969E-11        1.000000E-10
    Ca         7.825044E+00        1.952868E-04        1.952874E-04
    Ce         1.400848E-19        9.999969E-25        1.000000E-24
    Cl         7.138636E+00        2.013994E-04        2.014000E-04
    Cr         1.838258E-02        3.536128E-07        3.536138E-07
    Cs         1.328768E-05        9.999969E-11        1.000000E-10
    Cu         6.670893E-10        1.049997E-14        1.050000E-14
    F          2.171421E+00        1.143192E-04        1.143196E-04
    Fe         6.898850E-08        1.235575E-12        1.235579E-12
    Gd         1.572161E-09        9.999969E-15        1.000000E-14
    H          1.118763E+05        1.110185E+02        1.110189E+02
    C          1.996500E+01        1.662579E-03        1.662584E-03
    P          3.629530E-05        1.172057E-09        1.172060E-09
    K          5.036321E+00        1.288391E-04        1.288395E-04
    La         1.388756E-09        9.999969E-15        1.000000E-14
    Li         6.939505E-07        9.999969E-11        1.000000E-10
    Mg         3.225867E-01        1.327526E-05        1.327530E-05
    Mn         9.612950E-12        1.750152E-16        1.750157E-16
```

Mo	3.409816E-04	3.554868E-09	3.554878E-09
N	1.988529E+00	1.419996E-04	1.420000E-04
Na	4.578800E+01	1.992091E-03	1.992097E-03
Nd	1.442089E-09	9.999969E-15	1.000000E-14
Ni	1.138919E-03	1.940979E-08	1.940985E-08
Pb	2.071554E-05	9.999969E-11	1.000000E-10
Pu	2.439474E-09	9.999969E-15	1.000000E-14
S	6.141427E+00	1.915652E-04	1.915658E-04
Si	2.924627E+00	1.041551E-04	1.041554E-04
Sm	1.503276E-09	9.999969E-15	1.000000E-14
Sr	1.913835E-07	2.184708E-12	2.184715E-12
Ti	4.786969E-06	9.999969E-11	1.000000E-10
U	2.379776E-09	9.999969E-15	1.000000E-14
V	1.845486E-05	3.623524E-10	3.623535E-10
Zn	9.501827E-07	1.453410E-11	1.453414E-11
Zr	9.120435E-16	9.999969E-21	1.000000E-20

Single ion activities and activity coefficients are here defined
with respect to the modified NBS pH scale

	pH	Eh	pe
modified NBS pH scale	8.4953	0.7165	1.2112E+01
rational pH scale	8.4710	0.7179	1.2136E+01

pHCl = 12.2169

Oxygen fugacity = 2.09991E-01
Log oxygen fugacity = -0.67780

Activity of water = 0.99991
Log activity of water = -0.00004

Ionic strength = 2.918197E-03 molal
Sum of molalities = 0.0050069746899
Osmotic coefficient = 0.97787

Mass of solution = 1.000215 kg
Mass of solutes = 0.000212 kg
Conc. of solutes = 0.021233 per cent (w/w)

Moles of solvent H2O = 5.55086E+01
Mass of solvent H2O = 1.00000E+00 kg

Species	Molality	Log molality	Log gamma	Log activity
Na+	1.9856E-03	-2.7021	-0.0262	-2.7283
HCO3-	1.6097E-03	-2.7933	-0.0251	-2.8184
O2(aq)	2.6521E-04	-3.5764	0.0003	-3.5761
Cl-	2.0133E-04	-3.6961	-0.0256	-3.7216
SO4--	1.8636E-04	-3.7297	-0.1019	-3.8316
Ca++	1.8285E-04	-3.7379	-0.1008	-3.8388
NO3-	1.4190E-04	-3.8480	-0.0256	-3.8736
K+	1.2870E-04	-3.8904	-0.0267	-3.9171
F-	1.1419E-04	-3.9424	-0.0253	-3.9677

SiO2(aq)	1.0016E-04	-3.9993	0.0000	-3.9993
CO3--	2.8130E-05	-4.5508	-0.1011	-4.6519
Mg++	1.2481E-05	-4.9037	-0.0977	-5.0015
CO2(aq)	1.0735E-05	-4.9692	0.0003	-4.9689
B(OH)3(aq)	1.0400E-05	-4.9830	0.0000	-4.9830
CaCO3(aq)	6.8613E-06	-5.1636	0.0000	-5.1636
NaHCO3(aq)	4.0493E-06	-5.3926	0.0000	-5.3926
HSiO3-	3.7029E-06	-5.4315	-0.0251	-5.4566
OH-	3.3531E-06	-5.4745	-0.0253	-5.4999
CaSO4(aq)	2.7589E-06	-5.5593	0.0000	-5.5593
CaHCO3+	2.6048E-06	-5.5842	-0.0262	-5.6104
BO2-	1.9613E-06	-5.7075	-0.0251	-5.7326
NaSO4-	1.9283E-06	-5.7148	-0.0251	-5.7399
MgSO4(aq)	3.7898E-07	-6.4214	0.0000	-6.4214
CrO4--	3.5068E-07	-6.4551	-0.1019	-6.5570
NaHSiO3(aq)	2.9079E-07	-6.5364	0.0000	-6.5364
MgCO3(aq)	2.1159E-07	-6.6745	0.0000	-6.6745
MgHCO3+	1.7461E-07	-6.7579	-0.0262	-6.7842
NaCO3-	1.4430E-07	-6.8407	-0.0251	-6.8659
KSO4-	1.4322E-07	-6.8440	-0.0251	-6.8691
CaNO3+	1.0325E-07	-6.9861	-0.0262	-7.0123
CaF+	7.9702E-08	-7.0985	-0.0262	-7.1248
NaCl(aq)	5.9295E-08	-7.2270	0.0000	-7.2270
MgF+	2.5671E-08	-7.5905	-0.0262	-7.6168
NaF(aq)	2.0247E-08	-7.6936	0.0000	-7.6936
Ni++	1.9091E-08	-7.7192	-0.1008	-7.8200
CaB(OH)4+	1.8945E-08	-7.7225	-0.0262	-7.7487
CaOH+	6.8027E-09	-8.1673	-0.0262	-8.1935
NaB(OH)4(aq)	6.4551E-09	-8.1901	0.0000	-8.1901
CaCl+	5.8915E-09	-8.2298	-0.0262	-8.2560
MoO4--	3.5549E-09	-8.4492	-0.1011	-8.5503
H+	3.3806E-09	-8.4710	-0.0243	-8.4953
HCrO4-	2.9324E-09	-8.5328	-0.0251	-8.5579
MgB(OH)4+	1.5498E-09	-8.8097	-0.0262	-8.8359
MgCl+	1.4730E-09	-8.8318	-0.0262	-8.8580
HPO4--	9.9051E-10	-9.0041	-0.1019	-9.1061
NaOH(aq)	9.3773E-10	-9.0279	0.0000	-9.0279
KCl(aq)	7.3563E-10	-9.1333	0.0000	-9.1333
HF(aq)	5.0717E-10	-9.2949	0.0000	-9.2949
VO3OH--	3.1190E-10	-9.5060	-0.1019	-9.6079
NiSO4(aq)	2.9790E-10	-9.5259	0.0000	-9.5259
H2SiO4--	1.3586E-10	-9.8669	-0.1019	-9.9689
KOH(aq)	1.3125E-10	-9.8819	0.0000	-9.8819

--- Summary of Solid Product Phases---

Product	Log moles	Moles	Mass, g	Volume, cc
Dolomite-ord	-4.1687	6.7810E-05	1.2504E-02	4.3629E-03
Fluorapatite	-6.3661	4.3044E-07	2.1707E-04	2.1522E-04
Hematite	-4.9974	1.0059E-05	1.6064E-03	3.0454E-04
Ni2SiO4	-10.1836	6.5525E-11	1.3725E-08	2.7920E-09
Pyrolusite	-6.5057	3.1210E-07	2.7133E-05	1.5605E-04
Quartz	-3.0475	8.9642E-04	5.3861E-02	2.0338E-02
fix CO2(g)	4.0000	1.0000E+04	4.4010E+05	0.0000E+00
fix O2(g)	4.0000	1.0000E+04	3.1999E+05	0.0000E+00
Carbonate-Calcite	-4.2213	6.0080E-05	5.9904E-03	2.2061E-03
Calcite	-4.2319	5.8632E-05	5.8684E-03	2.1655E-03
Magnesite	-5.8395	1.4472E-06	1.2202E-04	4.0547E-05
Rhodochrosite	-14.9907	1.0217E-15	1.1744E-13	3.1750E-14

Siderite	-22.8845	1.3046E-23	1.5115E-21	3.8327E-22
Smithsonite	-10.0682	8.5466E-11	1.0717E-08	2.4165E-09
Strontianite	-10.0096	9.7815E-11	1.4440E-08	3.8158E-09
Smectite-di	-5.3475	4.4924E-06	1.9051E-03	5.8881E-04
Beidellite-Ca	-44.0011	9.9740E-45	3.6561E-42	1.2919E-42
Beidellite-K	-45.1425	7.2030E-46	2.6856E-43	9.6304E-44
Beidellite-Mg	-44.4682	3.4021E-45	1.2382E-42	4.1911E-43
Beidellite-Na	-44.9795	1.0484E-45	3.8532E-43	1.3686E-43
Montmor-Ca	-31.2154	6.0897E-32	2.2291E-29	3.0448E-29
Montmor-K	-32.1437	7.1824E-33	2.6742E-30	3.5912E-30
Montmor-Mg	-31.4716	3.3759E-32	1.2269E-29	1.6879E-29
Montmor-Na	-31.9916	1.0194E-32	3.7415E-30	5.0972E-30
Nontronite-Ca	-5.5290	2.9581E-06	1.2551E-03	3.8781E-04
Nontronite-K	-6.6703	2.1363E-07	9.1985E-05	2.8898E-05
Nontronite-Mg	-5.9958	1.0097E-06	4.2579E-04	1.3102E-04
Nontronite-Na	-6.5073	3.1093E-07	1.3223E-04	4.1077E-05

	Mass, grams	Volume, cc
Created	7.600861E+05	2.817156E-02
Destroyed	1.658448E-03	0.000000E+00
Net	7.600861E+05	2.817156E-02

Warning-- these volume totals may be incomplete because
of missing partial molar volume data in the data base

--- Summary of Pure Mineral Saturation States ---

Mineral	Log Q/K	Aff, kcal	State
Alamosite	-2.788	-3.803	
Albite	-6.702	-9.144	
Albite_low	-6.702	-9.144	
Alstonite	-5.176	-7.061	
Analcime	-6.561	-8.950	
Andradite	-5.769	-7.871	
Anglesite	-6.084	-8.301	
Anhydrite	-3.364	-4.589	
Aragonite	-0.155	-0.211	
Artinite	-6.992	-9.539	
BaCrO4	-6.731	-9.183	
BaZrO3	82.584	112.668	ssatd
Barite	-3.967	-5.412	
Barytocalcite	-5.333	-7.276	
Bassanite	-4.009	-5.469	
Boehmite	-5.271	-7.191	
Boric_acid	-4.825	-6.582	
Brucite	-4.309	-5.879	
Bunsenite	-3.301	-4.504	
CaSO4:0.5H2O(beta)	-4.177	-5.699	
CaZrO3	142.881	194.931	ssatd
Calcite	-0.011	-0.014	
CeO2	-2.555	-3.486	
Celadonite	-4.594	-6.268	
Cerussite	-1.219	-1.664	
Chalcedony	-0.271	-0.370	
Chrysotile	-3.157	-4.307	
Coesite	-0.810	-1.105	

Cristobalite(alpha)	-0.551	-0.751	
Cristobalite(beta)	-0.994	-1.356	
Crocoite	-3.945	-5.382	
Diaspore	-4.867	-6.640	
Diopside	-3.822	-5.215	
Dolomite	0.000	0.000	ssatd
Dolomite-dis	-1.544	-2.107	
Dolomite-ord	0.000	0.000	satd
Enstatite	-3.337	-4.553	
Epsomite	-6.871	-9.374	
Fe(OH)3	-5.601	-7.642	
Ferrite-Zn	-5.696	-7.770	
Fluorapatite	0.000	0.000	satd
Fluorite	-1.737	-2.370	
GdOHCO3	-6.576	-8.971	
GdPO4:H2O	-6.568	-8.961	
Gibbsite	-5.463	-7.453	
Goethite	-0.480	-0.655	
Gypsum	-3.188	-4.350	
Hematite	0.000	0.000	satd
Hexahydrite	-7.107	-9.695	
Huntite	-6.437	-8.782	
Hydrocerussite	-5.391	-7.355	
Ice	-0.139	-0.189	
K-Feldspar	-4.851	-6.619	
Kalicinite	-7.019	-9.576	
LaPO4:H2O	-5.166	-7.048	
Lanarkite	-6.583	-8.981	
Lansfordite	-4.166	-5.683	
Litharge	-5.759	-7.857	
Magnesite	-1.618	-2.208	
Manganite	-4.459	-6.084	
Massicot	-5.934	-8.096	
Maximum_Microcline	-4.851	-6.619	
MnO2(gamma)	-1.518	-2.071	
Monohydrocalcite	-0.844	-1.152	
Mordenite	-6.995	-9.543	
Nahcolite	-5.435	-7.415	
NdOHCO3	-6.149	-8.389	
NdPO4:H2O	-5.941	-8.106	
Nesquehonite	-4.320	-5.894	
Ni(OH)2	-3.578	-4.882	
Ni2SiO4	0.000	0.000	satd
NiCO3	-5.655	-7.715	
Nontronite-Ca	-0.060	-0.082	
Nontronite-H	-1.272	-1.735	
Nontronite-K	-0.437	-0.596	
Nontronite-Mg	-0.214	-0.292	
Nontronite-Na	-0.383	-0.522	
Okenite	-5.229	-7.133	
Paralaurionite	-5.535	-7.552	
PbCO3.PbO	-7.215	-9.843	
Phlogopite	-6.600	-9.004	
Plattnerite	-1.122	-1.531	
Pseudowollastonite	-4.847	-6.613	
PuO2	-1.656	-2.260	
PuO2(OH)2	-6.232	-8.502	
Pyrolusite	0.000	0.000	satd
Quartz	0.000	0.000	satd
Rutile	-0.355	-0.484	
Sanidine_high	-6.050	-8.255	
Saponite-Ca	-2.074	-2.829	
Saponite-Cs	-4.312	-5.883	

Saponite-H	-3.286	-4.483	
Saponite-K	-2.450	-3.343	
Saponite-Mg	-2.228	-3.039	
Saponite-Na	-2.397	-3.270	
Sellaite	-3.553	-4.847	
Sepiolite	-6.484	-8.846	
SiO2(am)	-1.286	-1.754	
SmPO4:H2O	-6.141	-8.379	
Smithsonite	-5.847	-7.977	
SrZrO3	117.906	160.858	ssatd
Strontianite	-5.788	-7.897	
Talc	-1.169	-1.594	
Tenorite	-7.005	-9.556	
Tremolite	-6.983	-9.526	
Trevorite	-0.509	-0.694	
Tridymite	-0.172	-0.234	
Witherite	-1.433	-1.955	
Wollastonite	-4.608	-6.287	
Zincite	-5.279	-7.202	
Zn(OH)2(beta)	-6.004	-8.191	
Zn(OH)2(epsilon)	-5.733	-7.821	
Zn(OH)2(gamma)	-5.953	-8.122	
fix CO2(g)	0.000	0.000	satd
fix O2(g)	0.000	0.000	satd

--- Summary of Solid Solutions ---

--- Carbonate-Calcite ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Calcite	9.7591E-01	-0.0106	0.0000	-0.0106
Magnesite	2.4087E-02	-1.6182	0.0000	-1.6182
Rhodochrosite	1.7006E-11	-10.7694	0.0000	-10.7694
Siderite	2.1715E-19	-18.6632	0.0000	-18.6632
Smithsonite	1.4225E-06	-5.8469	0.0000	-5.8469
Strontianite	1.6281E-06	-5.7883	0.0000	-5.7883

Mineral	Log Q/K	Aff, kcal	State
Carbonate-Calcite	0.000	0.000	satd
Calcite	0.000	0.000	satd
Magnesite	0.000	0.000	satd
Rhodochrosite	0.000	0.000	satd
Siderite	0.000	0.000	satd
Smithsonite	0.000	0.000	satd
Strontianite	0.000	0.000	satd

--- Clinoptilolite-hy-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-hy-Ca	9.9687E-01	-0.0014	0.0000	-0.0014
Clinoptilolite-hy-Cs	8.7343E-23	-22.0588	0.0000	-22.0588
Clinoptilolite-hy-K	1.0332E-03	-2.9858	0.0000	-2.9858

Clinoptilolite-hy-Na	2.0971E-03	-2.6784	0.0000	-2.6784
Clinoptilolite-hy-Sr	2.3623E-14	-13.6267	0.0000	-13.6267

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-hy-ss	-20.399	-27.830	
Clinoptilolite-hy-Ca	-20.399	-27.830	
Clinoptilolite-hy-Cs	-20.399	-27.830	
Clinoptilolite-hy-K	-20.399	-27.830	
Clinoptilolite-hy-Na	-20.399	-27.830	
Clinoptilolite-hy-Sr	-20.399	-27.830	

--- Clinoptilolite-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-Ca	7.6605E-01	-0.1157	-0.2847	-0.4005
Clinoptilolite-Cs	3.2237E-07	-6.4916	-15.9694	-22.4611
Clinoptilolite-K	1.0494E-01	-0.9791	-2.4085	-3.3876
Clinoptilolite-NH4	1.2401E-64	-63.9066	-157.2101	-221.1167
Clinoptilolite-Na	1.2892E-01	-0.8897	-2.1886	-3.0783
Clinoptilolite-Sr	8.8412E-05	-4.0535	-9.9716	-14.0251

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-ss	-20.001	-27.288	
Clinoptilolite-Ca	-20.001	-27.288	
Clinoptilolite-Cs	-20.001	-27.288	
Clinoptilolite-K	-20.001	-27.288	
Clinoptilolite-NH4	-20.001	-27.288	
Clinoptilolite-Na	-20.001	-27.288	
Clinoptilolite-Sr	-20.001	-27.288	

--- Saponite-tri ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Saponite-Ca	6.5850E-01	-0.1814	0.1216	-0.0599
Saponite-H	1.3977E-04	-3.8546	2.5826	-1.2720
Saponite-K	4.7523E-02	-1.3231	0.8865	-0.4366
Saponite-Mg	2.2462E-01	-0.6486	0.4345	-0.2140
Saponite-Na	6.9216E-02	-1.1598	0.7771	-0.3827

Mineral	Log Q/K	Aff, kcal	State
Saponite-tri	-2.014	-2.747	
Saponite-Ca	-2.014	-2.747	
Saponite-H	-2.014	-2.747	
Saponite-K	-2.014	-2.747	
Saponite-Mg	-2.014	-2.747	
Saponite-Na	-2.014	-2.747	

--- Smectite-di ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Beidellite-Ca	2.2202E-39	-38.6536	25.8979	-12.7557
Beidellite-K	1.6034E-40	-39.7950	26.6626	-13.1323
Beidellite-Mg	7.5731E-40	-39.1207	26.2109	-12.9098
Beidellite-Na	2.3337E-40	-39.6320	26.5534	-13.0785
Montmor-Ca	1.3555E-26	-25.8679	17.3315	-8.5364
Montmor-K	1.5988E-27	-26.7962	17.9535	-8.8428
Montmor-Mg	7.5146E-27	-26.1241	17.5031	-8.6210
Montmor-Na	2.2693E-27	-26.6441	17.8516	-8.7926
Nontronite-Ca	6.5847E-01	-0.1815	0.1216	-0.0599
Nontronite-K	4.7553E-02	-1.3228	0.8863	-0.4365
Nontronite-Mg	2.2476E-01	-0.6483	0.4343	-0.2139
Nontronite-Na	6.9213E-02	-1.1598	0.7771	-0.3827

Mineral	Log Q/K	Aff, kcal	State
Smectite-di	0.000	0.000	satd
Beidellite-Ca	0.000	0.000	satd
Beidellite-K	0.000	0.000	satd
Beidellite-Mg	0.000	0.000	satd
Beidellite-Na	0.000	0.000	satd
Montmor-Ca	0.000	0.000	satd
Montmor-K	0.000	0.000	satd
Montmor-Mg	0.000	0.000	satd
Montmor-Na	0.000	0.000	satd
Nontronite-Ca	0.000	0.000	satd
Nontronite-K	0.000	0.000	satd
Nontronite-Mg	0.000	0.000	satd
Nontronite-Na	0.000	0.000	satd

--- Lanthanide hydroxide ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
La(OH)3	6.9240E-05	-4.1596	0.0000	-4.1596
Ce(OH)3	5.6722E-15	-14.2462	0.0000	-14.2462
Nd(OH)3(c)	5.8170E-01	-0.2353	0.0000	-0.2353
Gd(OH)3	3.4498E-01	-0.4622	0.0000	-0.4622
Sm(OH)3	7.3243E-02	-1.1352	0.0000	-1.1352

Mineral	Log Q/K	Aff, kcal	State
Lanthanide hydroxide	-7.589	-10.354	
La(OH)3	-7.589	-10.354	
Ce(OH)3	-7.589	-10.354	
Nd(OH)3(c)	-7.589	-10.354	
Gd(OH)3	-7.589	-10.354	
Sm(OH)3	-7.589	-10.354	

--- Rhabdophane-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaPO4:H2O	7.6162E-01	-0.1183	0.0000	-0.1183
CePO4:H2O	1.9731E-11	-10.7049	0.0000	-10.7049
NdPO4:H2O	1.2767E-01	-0.8939	0.0000	-0.8939
GdPO4:H2O	3.0143E-02	-1.5208	0.0000	-1.5208
SmPO4:H2O	8.0566E-02	-1.0938	0.0000	-1.0938

Mineral	Log Q/K	Aff, kcal	State
Rhabdophane-ss	-5.048	-6.886	
LaPO4:H2O	-5.048	-6.886	
CePO4:H2O	-5.048	-6.886	
NdPO4:H2O	-5.048	-6.886	
GdPO4:H2O	-5.048	-6.886	
SmPO4:H2O	-5.048	-6.886	

--- Lanthanide fluoride ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaF3:0.5H2O	8.1754E-01	-0.0875	0.0000	-0.0875
CeF3:0.5H2O	3.3567E-11	-10.4741	0.0000	-10.4741
NdF3:0.5H2O	1.7253E-01	-0.7631	0.0000	-0.7631
GdF3:0.5H2O	1.2881E-03	-2.8900	0.0000	-2.8900
SmF3:0.5H2O	8.6481E-03	-2.0631	0.0000	-2.0631

Mineral	Log Q/K	Aff, kcal	State
Lanthanide fluoride	-10.021	-13.671	
LaF3:0.5H2O	-10.021	-13.671	
CeF3:0.5H2O	-10.021	-13.671	
NdF3:0.5H2O	-10.021	-13.671	
GdF3:0.5H2O	-10.021	-13.671	
SmF3:0.5H2O	-10.021	-13.671	

--- Summary of Gases ---

Gas	Fugacity	Log fugacity
Al(g)	2.2359-196	-195.6506
B(g)	7.1818-204	-203.1438
BF3(g)	3.9327E-40	-39.4053
C(g)	3.0917-190	-189.5098
CH4(g)	3.5288-146	-145.4524
CO(g)	6.0395E-49	-48.2190
CO2(g)	3.1623E-04	-3.5000
Ca(g)	7.2763-151	-150.1381
Chlorine	5.9944E-30	-29.2223

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Cs(g)                        1.2071E-82    -81.9183
Cu(g)                        5.9932E-82    -81.2223
Fluorine                     3.6841E-83    -82.4337
H2(g)                        6.1145E-42    -41.2136
H2O(g)                       2.5975E-02     -1.5854
H2S(g)                       9.7518-145   -144.0109
HCl(g)                       3.0033E-19    -18.5224
HF(g)                        2.6574E-14    -13.5756
K(g)                         7.7747E-77    -76.1093
Li(g)                        2.6376E-96    -95.5788
Mg(g)                        3.3697-129   -128.4724
Nitrogen                     4.4644E-21    -20.3502
NH3(g)                       7.7023E-70    -69.1134
NO(g)                        2.1039E-26    -25.6770
NO2(g)                       1.4386E-20    -19.8421
Na(g)                        6.2654E-75    -74.2031
O2(g)                        2.0999E-01     -0.6778
Pb(g)                        1.1591E-67    -66.9359
S2(g)                        5.6715-232   -231.2463
SO2(g)                       1.7267E-57    -56.7628
Si(g)                        4.2257-221   -220.3741
SiF4(g)                      2.1982E-39    -38.6579
Ti(g)                        1.6799-231   -230.7747
TiCl4(g)                     1.2044E-87    -86.9192
U(g)                         6.3852-299   -298.1948
U2Cl10(g)                    2.4750-254   -253.6064
U2Cl8(g)                     1.2801-255   -254.8928
U2F10(g)                     9.6369-162   -161.0161
UCl(g)                       1.7090-255   -254.7673
UCl2(g)                      1.3684-210   -209.8638
UCl3(g)                      2.3999-163   -162.6198
UCl4(g)                      2.2791-133   -132.6422
UCl5(g)                      1.1136-140   -139.9533
UCl6(g)                      1.0109-142   -141.9953
UF(g)                        3.2136-240   -239.4930
UF2(g)                       1.1995-199   -198.9210
UF3(g)                       1.1019-152   -151.9579
UF4(g)                       1.4940-102   -101.8256
UF5(g)                       9.2783E-94    -93.0325
UF6(g)                       5.6740E-99    -98.2461
UO(g)                        5.0429-214   -213.2973
UO2(g)                       9.3428-130   -129.0295
UO2Cl2(g)                    2.4452E-78    -77.6117
UO2F2(g)                     1.5549E-65    -64.8083
UO3(g)                       6.8719E-77    -76.1629
UOF4(g)                      4.4520E-80    -79.3514
Zn(g)                        2.0140E-78    -77.6959



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Stepping to zi=  3.0318E-05, delzi=  1.0000E-09, nord= 0
  time =  3.5051E-01 d, dltime =  1.1561E-05 d
Steps completed =    55, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Ni2SiO4                 ) =    -10.1815

Stepping to zi=  3.0319E-05, delzi=  1.0000E-09, nord= 0
  time =  3.5052E-01 d, dltime =  1.1561E-05 d
Steps completed =    56, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Ni2SiO4                 ) =    -10.1794
```

```
Stepping to zi=  3.0320E-05, delzi=  1.0000E-09, nord= 0
  time =  3.5053E-01 d, dltime =  1.1561E-05 d
Steps completed =    57, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Ni2SiO4                ) =    -10.1773

Stepping to zi=  3.0322E-05, delzi=  2.0961E-09, nord= 1
  time =  3.5055E-01 d, dltime =  2.4233E-05 d
Steps completed =    58, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Ni2SiO4                ) =    -10.1729

Stepping to zi=  3.0343E-05, delzi=  2.0961E-08, nord= 2
  time =  3.5080E-01 d, dltime =  2.4233E-04 d
Steps completed =    59, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Ni2SiO4                ) =    -10.1315

Stepping to zi=  3.0553E-05, delzi=  2.0961E-07, nord= 2
  time =  3.5322E-01 d, dltime =  2.4233E-03 d
Steps completed =    60, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Ni2SiO4                ) =     -9.8505

Stepping to zi=  3.2649E-05, delzi=  2.0961E-06, nord= 2
  time =  3.7745E-01 d, dltime =  2.4233E-02 d
Steps completed =    61, iter = 12, ncorr = 0
Most rapidly changing is zvclg1(Ni2SiO4                ) =     -9.0899

Stepping to zi=  5.3609E-05, delzi=  2.0961E-05, nord= 2
  time =  6.1978E-01 d, dltime =  2.4233E-01 d
Steps completed =    62, iter = 12, ncorr = 0
Most rapidly changing is zvclg1(Ni2SiO4                ) =     -8.1230

Stepping to zi=  1.0601E-04, delzi=  5.2402E-05, nord= 3
  time =  1.2256E+00 d, dltime =  6.0581E-01 d
Steps completed =    63, iter =  9, ncorr = 0
Most rapidly changing is zvclg1(Ni2SiO4                ) =     -7.6138

Stepping to zi=  2.1081E-04, delzi=  1.0480E-04, nord= 3
  time =  2.4372E+00 d, dltime =  1.2116E+00 d
Steps completed =    64, iter =  8, ncorr = 0
Most rapidly changing is zvclg1(Ni2SiO4                ) =     -7.2371

Stepping to zi=  4.2042E-04, delzi=  2.0961E-04, nord= 3
  time =  4.8605E+00 d, dltime =  2.4233E+00 d
Steps completed =    65, iter =  8, ncorr = 0
Most rapidly changing is zvclg1(Ni2SiO4                ) =     -6.9026

Stepping to zi=  8.3963E-04, delzi=  4.1921E-04, nord= 3
  time =  9.7070E+00 d, dltime =  4.8465E+00 d
Steps completed =    66, iter =  9, ncorr = 0
Most rapidly changing is zvclg1(Ni2SiO4                ) =     -6.5858

Stepping to zi=  1.6781E-03, delzi=  8.3842E-04, nord= 3
  time =  1.9400E+01 d, dltime =  9.6930E+00 d
Steps completed =    67, iter = 10, ncorr = 0
Most rapidly changing is zvclg1(Ni2SiO4                ) =     -6.2771

Stepping to zi=  3.3549E-03, delzi=  1.6768E-03, nord= 3
  time =  3.8786E+01 d, dltime =  1.9386E+01 d
Steps completed =    68, iter = 10, ncorr = 0
Most rapidly changing is zvclg1(Ni2SiO4                ) =     -5.9723

Stepping to zi=  6.7086E-03, delzi=  3.3537E-03, nord= 4
  time =  7.7558E+01 d, dltime =  3.8772E+01 d
```

```
Steps completed =    69, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(VO++                    ) =    -31.0289

Stepping to zi=  1.2867E-02, delzi=  6.1588E-03, nord= 6
  time =  1.4876E+02 d, dltime =  7.1202E+01 d
Steps completed =    70, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(VO++                    ) =    -30.7381

Stepping to zi=  2.0650E-02, delzi=  7.7829E-03, nord= 6
  time =  2.3874E+02 d, dltime =  8.9979E+01 d
Steps completed =    71, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(VO++                    ) =    -30.5213

Stepping to zi=  2.7912E-02, delzi=  7.2616E-03, nord= 6
  time =  3.2269E+02 d, dltime =  8.3951E+01 d
Steps completed =    72, iter =  9, ncorr = 0
Most rapidly changing is zvclg1(Calcite                 ) =     -4.8182

Stepping to zi=  3.4324E-02, delzi=  6.4118E-03, nord= 6
  time =  3.9682E+02 d, dltime =  7.4127E+01 d
Steps completed =    73, iter =  8, ncorr = 0
Most rapidly changing is zvclg1(Calcite                 ) =     -5.2892

Stepping to zi=  3.5623E-02, delzi=  1.2996E-03, nord= 6
  time =  4.1184E+02 d, dltime =  1.5025E+01 d
Steps completed =    74, iter =  8, ncorr = 0
Most rapidly changing is zvclg1(Calcite                 ) =     -5.5090

Stepping to zi=  3.6273E-02, delzi=  6.4982E-04, nord= 6
  time =  4.1935E+02 d, dltime =  7.5125E+00 d
Steps completed =    75, iter =  6, ncorr = 0
Most rapidly changing is zvclg1(Calcite                 ) =     -5.6826

Stepping to zi=  3.7573E-02, delzi=  1.2996E-03, nord= 5
  time =  4.3438E+02 d, dltime =  1.5025E+01 d
--- Iteration has gone sour (iter=  16) ---
     The phase to be dropped is Carbonate-Calcite         (50200)


  Attempted species assemblage no.   2

            1      1  H2O
            2      3  Al+++
            3      7  B(OH)3(aq)
            4      8  Ba++
            5     11  Ca++
            6     13  Ce+++
            7     14  Cl-
            8     16  CrO4--
            9     17  Cs+
           10     18  Cu++
           11     22  F-
           12     23  Fe++
           13     25  Gd+++
           14     26  H+
           15     28  HCO3-
           16     29  HPO4--
           17     35  K+
           18     37  La+++
           19     38  Li+
           20     40  Mg++
           21     41  Mn++
           22     42  MoO4--
```

```
 23     43  NO3-
 24     44  Na+
 25     45  Nd+++
 26     47  Ni++
 27     49  Pb++
 28     52  Pu++++
 29     58  SO4--
 30     62  SiO2(aq)
 31     63  Sm+++
 32     65  Sr++
 33     69  Ti(OH)4(aq)
 34     72  UO2++
 35     73  VO++
 36     78  Zn++
 37     79  Zr(OH)2++
 38     80  O2(g)
 39    198  Dolomite-ord
 40    222  Fluorapatite
 41    252  Hematite
 42    405  Ni2SiO4
 43    470  Pyrolusite
 44    475  Quartz
 45    689  fix     CO2(g)
 46    690  fix     O2(g)
 47      1  SmectiteBeidellite-Ca
 48      2  SmectiteBeidellite-K
 49      3  SmectiteBeidellite-Mg
 50      4  SmectiteBeidellite-Na
 51      5  SmectiteMontmor-Ca
 52      6  SmectiteMontmor-K
 53      7  SmectiteMontmor-Mg
 54      8  SmectiteMontmor-Na
 55      9  SmectiteNontronite-Ca
 56     10  SmectiteNontronite-K
 57     11  SmectiteNontronite-Mg
 58     12  SmectiteNontronite-Na

Steps completed =    76, iter =  9, ncorr = 0

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                    Reaction progress        =  3.75728077415156E-02
                    Log of reaction progress =      -1.4251263



                    Time =  3.753E+07 sec
                         =  4.344E+02 days
                         =  1.189E+00 years

                    Log sec =        7.574
                    Log days =       2.638
                    Log years =      0.075

                    Temperature    =     25.000 degrees C
                    total pressure =      1.013 bars


Change in the product phase assemblage
```

Reactant	Moles	Delta moles	Mass, g	Delta Mass, g
carbon steel	1.9962E+01	3.7530E-02	1.0919E+03	2.0528E+00
Alloy-22	2.0000E+01	4.2409E-05	1.1978E+03	2.5398E-03

Current total mass = 2.28965E+03 grams
Delta total mass = 2.05536E+00 grams
Delta total volume = 0.00000 cc

Reactant	Rel. Rate mol/mol	Rate mol/s	Rate mol/s/cm2
carbon steel	9.9887E-01	1.0000E-09	1.0000E-11
Alloy-22	1.1287E-03	1.1300E-12	1.1300E-14

Reactant	Affinity kcal/mol	Surface Area mol/s/cm2
carbon steel	999.00000	1.0000E+02
Alloy-22	999.00000	1.0000E+02

Reactant	Rate Constants, mol/s/cm2	
carbon steel		
	Forward	1.0000E-11
Alloy-22		
	Forward	1.1300E-14

Affinity of the overall irreversible reaction= 0.000 kcal
Contributions from irreversible reactions
with no thermodynamic data are not included

--- Element Totals for the Aqueous Solution ---

Element	mg/kg soln.	Molality	Moles
O	8.880228E+05	5.551542E+01	5.551561E+01
Al	2.252646E-08	8.350633E-13	8.350662E-13
B	1.338975E-01	1.238796E-05	1.238800E-05
Ba	1.372971E-05	9.999965E-11	1.000000E-10
Ca	8.388270E+00	2.093435E-04	2.093443E-04
Ce	1.400845E-19	9.999965E-25	1.000000E-24
Cl	7.138617E+00	2.013993E-04	2.014000E-04
Cr	5.825485E-01	1.120610E-05	1.120614E-05
Cs	1.328765E-05	9.999965E-11	1.000000E-10
Cu	6.670875E-10	1.049996E-14	1.050000E-14
F	2.003790E+00	1.054941E-04	1.054945E-04
Fe	6.883516E-08	1.232831E-12	1.232836E-12
Gd	1.572157E-09	9.999965E-15	1.000000E-14
H	1.118760E+05	1.110185E+02	1.110189E+02
C	1.932237E+01	1.609068E-03	1.609074E-03
P	3.481838E-05	1.124366E-09	1.124370E-09
K	5.036390E+00	1.288412E-04	1.288416E-04

La	1.388752E-09	9.999965E-15	1.000000E-14
Li	6.939487E-07	9.999965E-11	1.000000E-10
Mg	3.468408E-01	1.427341E-05	1.427346E-05
Mn	9.513419E-12	1.732035E-16	1.732041E-16
Mo	4.107095E-01	4.281818E-06	4.281833E-06
N	1.988523E+00	1.419995E-04	1.420000E-04
Na	4.578795E+01	1.992093E-03	1.992100E-03
Nd	1.442086E-09	9.999965E-15	1.000000E-14
Ni	1.224404E-03	2.086670E-08	2.086677E-08
Pb	2.071548E-05	9.999965E-11	1.000000E-10
Pu	2.439468E-09	9.999965E-15	1.000000E-14
S	7.166901E+00	2.235526E-04	2.235534E-04
Si	2.921003E+00	1.040263E-04	1.040266E-04
Sm	1.503272E-09	9.999965E-15	1.000000E-14
Sr	8.760090E-06	9.999965E-11	1.000000E-10
Ti	4.786956E-06	9.999965E-11	1.000000E-10
U	2.379770E-09	9.999965E-15	1.000000E-14
V	8.996492E-03	1.766423E-07	1.766429E-07
Zn	6.537574E-06	9.999965E-11	1.000000E-10
Zr	9.120411E-16	9.999965E-21	1.000000E-20

Single ion activities and activity coefficients are here defined
with respect to the modified NBS pH scale

	pH	Eh	pe
modified NBS pH scale	8.4807	0.7173	1.2126E+01
rational pH scale	8.4562	0.7188	1.2151E+01

pHCl = 12.2027

Oxygen fugacity = 2.09991E-01
Log oxygen fugacity = -0.67780

Activity of water = 0.99991
Log activity of water = -0.00004

Ionic strength = 3.005058E-03 molal
Sum of molalities = 0.0050057076797
Osmotic coefficient = 0.97691

Mass of solution = 1.000218 kg
Mass of solutes = 0.000215 kg
Conc. of solutes = 0.021451 per cent (w/w)

Moles of solvent H2O = 5.55086E+01
Mass of solvent H2O = 1.00000E+00 kg

Species	Molality	Log molality	Log gamma	Log activity
Na+	1.9854E-03	-2.7021	-0.0266	-2.7287
HCO3-	1.5579E-03	-2.8074	-0.0255	-2.8329
O2(aq)	2.6521E-04	-3.5764	0.0003	-3.5761
SO4--	2.1725E-04	-3.6630	-0.1033	-3.7664
Cl-	2.0133E-04	-3.6961	-0.0259	-3.7220

Ca++	1.9613E-04	-3.7074	-0.1022	-3.8097
NO3-	1.4189E-04	-3.8481	-0.0259	-3.8740
K+	1.2867E-04	-3.8905	-0.0270	-3.9176
F-	1.0537E-04	-3.9773	-0.0257	-4.0030
SiO2(aq)	1.0016E-04	-3.9993	0.0000	-3.9993
CO3--	2.6393E-05	-4.5785	-0.1025	-4.6810
Mg++	1.3382E-05	-4.8735	-0.0990	-4.9725
CrO4--	1.1110E-05	-4.9543	-0.1033	-5.0576
CO2(aq)	1.0735E-05	-4.9692	0.0003	-4.9689
B(OH)3(aq)	1.0452E-05	-4.9808	0.0000	-4.9808
CaCO3(aq)	6.8624E-06	-5.1635	0.0000	-5.1635
MoO4--	4.2818E-06	-5.3684	-0.1025	-5.4708
NaHCO3(aq)	3.9125E-06	-5.4075	0.0000	-5.4075
HSiO3-	3.5839E-06	-5.4456	-0.0255	-5.4711
CaSO4(aq)	3.4282E-06	-5.4649	0.0000	-5.4649
OH-	3.2454E-06	-5.4887	-0.0257	-5.5144
CaHCO3+	2.6961E-06	-5.5693	-0.0266	-5.5959
NaSO4-	2.2405E-06	-5.6497	-0.0255	-5.6751
BO2-	1.9079E-06	-5.7195	-0.0255	-5.7449
MgSO4(aq)	4.7078E-07	-6.3272	0.0000	-6.3272
NaHSiO3(aq)	2.8097E-07	-6.5513	0.0000	-6.5513
MgCO3(aq)	2.1156E-07	-6.6746	0.0000	-6.6746
MgHCO3+	1.8067E-07	-6.7431	-0.0266	-6.7697
KSO4-	1.6639E-07	-6.7789	-0.0255	-6.8043
VO3OH--	1.5183E-07	-6.8187	-0.1033	-6.9220
NaCO3-	1.3494E-07	-6.8699	-0.0255	-6.8953
CaNO3+	1.1040E-07	-6.9570	-0.0266	-6.9836
HCrO4-	9.5833E-08	-7.0185	-0.0255	-7.0439
CaF+	7.8647E-08	-7.1043	-0.0266	-7.1309
NaCl(aq)	5.9193E-08	-7.2277	0.0000	-7.2277
MgF+	2.5324E-08	-7.5965	-0.0266	-7.6231
Ni++	2.0475E-08	-7.6888	-0.1022	-7.7910
CaB(OH)4+	1.9709E-08	-7.7053	-0.0266	-7.7319
NaF(aq)	1.8651E-08	-7.7293	0.0000	-7.7293
HVO4--	1.6355E-08	-7.7864	-0.1033	-7.8897
CaOH+	7.0410E-09	-8.1524	-0.0266	-8.1790
CaCl+	6.3001E-09	-8.2007	-0.0266	-8.2272
NaB(OH)4(aq)	6.2687E-09	-8.2028	0.0000	-8.2028
H2VO4-	5.2244E-09	-8.2820	-0.0255	-8.3074
H+	3.4981E-09	-8.4562	-0.0246	-8.4807
VO2(OH)2-	3.2377E-09	-8.4898	-0.0255	-8.5152
MgB(OH)4+	1.6118E-09	-8.7927	-0.0266	-8.8193
MgCl+	1.5747E-09	-8.8028	-0.0266	-8.8294
HPO4--	9.4408E-10	-9.0250	-0.1033	-9.1283
NaOH(aq)	9.0606E-10	-9.0428	0.0000	-9.0428
KCl(aq)	7.3427E-10	-9.1341	0.0000	-9.1341
HF(aq)	4.8351E-10	-9.3156	0.0000	-9.3156
NiSO4(aq)	3.7012E-10	-9.4317	0.0000	-9.4317
H2SiO4--	1.2747E-10	-9.8946	-0.1033	-9.9979
KOH(aq)	1.2681E-10	-9.8969	0.0000	-9.8969

--- Summary of Solid Product Phases---

Product	Log moles	Moles	Mass, g	Volume, cc
Dolomite-ord	-4.1658	6.8258E-05	1.2587E-02	4.3917E-03
Fluorapatite	-5.0336	9.2555E-06	4.6676E-03	4.6277E-03
Hematite	-1.7440	1.8030E-02	2.8793E+00	5.4584E-01
Ni2SiO4	-4.9195	1.2036E-05	2.5212E-03	5.1287E-04
Pyrolusite	-3.4125	3.8680E-04	3.3627E-02	1.9340E-01
Quartz	-2.9644	1.0855E-03	6.5222E-02	2.4628E-02

fix	CO2(g)	4.0000	1.0000E+04	4.4010E+05	0.0000E+00
fix	O2(g)	4.0000	1.0000E+04	3.1999E+05	0.0000E+00
Smectite-di		-5.3475	4.4924E-06	1.9051E-03	5.8877E-04
Beidellite-Ca		-43.9891	1.0255E-44	3.7591E-42	1.3283E-42
Beidellite-K		-45.1454	7.1544E-46	2.6675E-43	9.5654E-44
Beidellite-Mg		-44.4562	3.4975E-45	1.2729E-42	4.3085E-43
Beidellite-Na		-44.9824	1.0414E-45	3.8276E-43	1.3595E-43
Montmor-Ca		-31.2068	6.2113E-32	2.2736E-29	3.1057E-29
Montmor-K		-32.1501	7.0771E-33	2.6350E-30	3.5385E-30
Montmor-Mg		-31.4631	3.4428E-32	1.2513E-29	1.7214E-29
Montmor-Na		-31.9980	1.0046E-32	3.6871E-30	5.0231E-30
Nontronite-Ca		-5.5272	2.9700E-06	1.2601E-03	3.8937E-04
Nontronite-K		-6.6836	2.0720E-07	8.9218E-05	2.8028E-05
Nontronite-Mg		-5.9941	1.0136E-06	4.2743E-04	1.3153E-04
Nontronite-Na		-6.5206	3.0161E-07	1.2827E-04	3.9846E-05

	Mass, grams	Volume, cc
Created	7.600881E+05	7.739882E-01
Destroyed	2.055364E+00	0.000000E+00
Net	7.600861E+05	7.739882E-01

Warning-- these volume totals may be incomplete because
of missing partial molar volume data in the data base

--- Summary of Pure Mineral Saturation States ---

Mineral	Log Q/K	Aff, kcal	State
Alamosite	-2.818	-3.845	
Albite	-6.716	-9.162	
Albite_low	-6.716	-9.162	
Alstonite	-5.206	-7.102	
Analcime	-6.573	-8.968	
Andradite	-5.769	-7.871	
Anglesite	-6.021	-8.214	
Anhydrite	-3.270	-4.461	
Aragonite	-0.155	-0.211	
Artinite	-6.992	-9.539	
BaCrO4	-5.233	-7.139	
BaZrO3	82.554	112.627	ssatd
Barite	-3.903	-5.324	
Barytocalcite	-5.363	-7.317	
Bassanite	-3.915	-5.341	
Boehmite	-5.269	-7.189	
Boric_acid	-4.822	-6.579	
Brucite	-4.309	-5.879	
Bunsenite	-3.301	-4.504	
CaSO4:0.5H2O(beta)	-4.083	-5.570	
CaZrO3	142.881	194.931	ssatd
Calcite	-0.011	-0.014	
CeO2	-2.552	-3.481	
Celadonite	-4.608	-6.286	
Cerussite	-1.250	-1.705	
Chalcedony	-0.271	-0.370	
Chrysotile	-3.157	-4.307	
Coesite	-0.810	-1.105	
Cristobalite(alpha)	-0.551	-0.751	

Cristobalite(beta)	-0.994	-1.356	
Crocoite	-2.447	-3.338	
Diaspore	-4.865	-6.638	
Diopside	-3.822	-5.215	
Dolomite	0.000	0.000	
Dolomite-dis	-1.544	-2.107	
Dolomite-ord	0.000	0.000	satd
Enstatite	-3.337	-4.553	
Epsomite	-6.777	-9.246	
Fe(OH)3	-5.601	-7.642	
Ferrite-Zn	-4.885	-6.664	
Fluorapatite	0.000	0.000	satd
Fluorite	-1.779	-2.426	
GdOHCO3	-6.567	-8.960	
GdPO4:H2O	-6.553	-8.940	
Gibbsite	-5.461	-7.451	
Goethite	-0.480	-0.655	
Gypsum	-3.094	-4.221	
Hematite	0.000	0.000	satd
Hexahydrite	-7.012	-9.567	
Huntite	-6.437	-8.782	
Hydrocerussite	-5.482	-7.479	
Ice	-0.139	-0.189	
K-Feldspar	-4.865	-6.637	
Kalicinite	-7.034	-9.597	
LaPO4:H2O	-5.162	-7.043	
Lanarkite	-6.549	-8.935	
Lansfordite	-4.166	-5.683	
Litharge	-5.789	-7.898	
Magnesite	-1.618	-2.208	
Manganite	-4.459	-6.084	
Massicot	-5.965	-8.137	
Maximum_Microcline	-4.865	-6.637	
MnO2(gamma)	-1.518	-2.071	
Monohydrocalcite	-0.844	-1.152	
Mordenite	-6.999	-9.548	
Nahcolite	-5.450	-7.435	
NdOHCO3	-6.144	-8.382	
NdPO4:H2O	-5.930	-8.090	
Nesquehonite	-4.320	-5.894	
Ni(OH)2	-3.578	-4.882	
Ni2SiO4	0.000	0.000	satd
NiCO3	-5.655	-7.715	
Nontronite-Ca	-0.059	-0.081	
Nontronite-H	-1.271	-1.735	
Nontronite-K	-0.441	-0.602	
Nontronite-Mg	-0.213	-0.291	
Nontronite-Na	-0.387	-0.528	
Okenite	-5.229	-7.133	
Paralaurionite	-5.552	-7.574	
PbCO3.PbO	-7.276	-9.926	
Phlogopite	-6.613	-9.022	
Plattnerite	-1.153	-1.573	
Pseudowollastonite	-4.847	-6.613	
PuO2	-1.639	-2.236	
PuO2(OH)2	-6.214	-8.478	
Pyrolusite	0.000	0.000	satd
Quartz	0.000	0.000	satd
Rutile	-0.355	-0.484	
Sanidine_high	-6.064	-8.273	
Saponite-Ca	-2.073	-2.829	
Saponite-Cs	-4.317	-5.889	
Saponite-H	-3.285	-4.482	

Saponite-K	-2.455	-3.349	
Saponite-Mg	-2.228	-3.039	
Saponite-Na	-2.401	-3.276	
Sellaite	-3.594	-4.903	
Sepiolite	-6.484	-8.846	
SiO2(am)	-1.286	-1.754	
SmPO4:H2O	-6.130	-8.363	
Smithsonite	-5.036	-6.870	
SrZrO3	119.535	163.080	ssatd
Strontianite	-4.159	-5.675	
Talc	-1.169	-1.595	
Tenorite	-7.005	-9.557	
Tremolite	-6.983	-9.527	
Trevorite	-0.509	-0.694	
Tridymite	-0.172	-0.234	
Witherite	-1.463	-1.996	
Wollastonite	-4.608	-6.287	
Zincite	-4.468	-6.095	
Zn(OH)2(beta)	-5.193	-7.085	
Zn(OH)2(epsilon)	-4.922	-6.714	
Zn(OH)2(gamma)	-5.142	-7.016	
fix CO2(g)	0.000	0.000	satd
fix O2(g)	0.000	0.000	satd

--- Summary of Solid Solutions ---

--- Carbonate-Calcite ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Calcite	9.7584E-01	-0.0106	0.0000	-0.0106
Magnesite	2.4079E-02	-1.6184	0.0000	-1.6184
Rhodochrosite	1.7002E-11	-10.7695	0.0000	-10.7695
Siderite	2.1710E-19	-18.6633	0.0000	-18.6633
Smithsonite	9.2033E-06	-5.0361	0.0000	-5.0361
Strontianite	6.9275E-05	-4.1594	0.0000	-4.1594

Mineral	Log Q/K	Aff, kcal	State
Carbonate-Calcite	0.000	0.000	satd
Calcite	0.000	0.000	satd
Magnesite	0.000	0.000	satd
Rhodochrosite	0.000	0.000	satd
Siderite	0.000	0.000	satd
Smithsonite	0.000	0.000	satd
Strontianite	0.000	0.000	satd

--- Clinoptilolite-hy-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-hy-Ca	9.9722E-01	-0.0012	0.0000	-0.0012
Clinoptilolite-hy-Cs	7.7550E-23	-22.1104	0.0000	-22.1104
Clinoptilolite-hy-K	9.1693E-04	-3.0377	0.0000	-3.0377
Clinoptilolite-hy-Na	1.8617E-03	-2.7301	0.0000	-2.7301

Clinoptilolite-hy-Sr	1.5748E-11	-10.8028	0.0000	-10.8028

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-hy-ss	-20.393	-27.822	
Clinoptilolite-hy-Ca	-20.393	-27.822	
Clinoptilolite-hy-Cs	-20.393	-27.822	
Clinoptilolite-hy-K	-20.393	-27.822	
Clinoptilolite-hy-Na	-20.393	-27.822	
Clinoptilolite-hy-Sr	-20.393	-27.822	

--- Clinoptilolite-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-Ca	7.7181E-01	-0.1125	-0.2767	-0.3892
Clinoptilolite-Cs	3.1379E-07	-6.5034	-15.9983	-22.5016
Clinoptilolite-K	1.0213E-01	-0.9908	-2.4375	-3.4283
Clinoptilolite-NH4	1.2907E-64	-63.8892	-157.1673	-221.0565
Clinoptilolite-Na	1.2548E-01	-0.9014	-2.2175	-3.1189
Clinoptilolite-Sr	5.8327E-04	-3.2341	-7.9560	-11.1901

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-ss	-20.007	-27.295	
Clinoptilolite-Ca	-20.007	-27.295	
Clinoptilolite-Cs	-20.007	-27.295	
Clinoptilolite-K	-20.007	-27.295	
Clinoptilolite-NH4	-20.007	-27.295	
Clinoptilolite-Na	-20.007	-27.295	
Clinoptilolite-Sr	-20.007	-27.295	

--- Saponite-tri ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Saponite-Ca	6.6114E-01	-0.1797	0.1204	-0.0593
Saponite-H	1.4032E-04	-3.8529	2.5814	-1.2715
Saponite-K	4.6093E-02	-1.3364	0.8954	-0.4410
Saponite-Mg	2.2548E-01	-0.6469	0.4334	-0.2135
Saponite-Na	6.7141E-02	-1.1730	0.7859	-0.3871

Mineral	Log Q/K	Aff, kcal	State
Saponite-tri	-2.014	-2.748	
Saponite-Ca	-2.014	-2.748	
Saponite-H	-2.014	-2.748	
Saponite-K	-2.014	-2.748	
Saponite-Mg	-2.014	-2.748	
Saponite-Na	-2.014	-2.748	

--- Smectite-di ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Beidellite-Ca	2.2827E-39	-38.6415	25.8898	-12.7517
Beidellite-K	1.5925E-40	-39.7979	26.6646	-13.1333
Beidellite-Mg	7.7852E-40	-39.1087	26.2028	-12.9059
Beidellite-Na	2.3182E-40	-39.6349	26.5554	-13.0795
Montmor-Ca	1.3826E-26	-25.8593	17.3257	-8.5336
Montmor-K	1.5753E-27	-26.8026	17.9578	-8.8449
Montmor-Mg	7.6636E-27	-26.1156	17.4974	-8.6181
Montmor-Na	2.2362E-27	-26.6505	17.8558	-8.7947
Nontronite-Ca	6.6111E-01	-0.1797	0.1204	-0.0593
Nontronite-K	4.6123E-02	-1.3361	0.8952	-0.4409
Nontronite-Mg	2.2563E-01	-0.6466	0.4332	-0.2134
Nontronite-Na	6.7138E-02	-1.1730	0.7859	-0.3871

Mineral	Log Q/K	Aff, kcal	State
Smectite-di	0.000	0.000	satd
Beidellite-Ca	0.000	0.000	satd
Beidellite-K	0.000	0.000	satd
Beidellite-Mg	0.000	0.000	satd
Beidellite-Na	0.000	0.000	satd
Montmor-Ca	0.000	0.000	satd
Montmor-K	0.000	0.000	satd
Montmor-Mg	0.000	0.000	satd
Montmor-Na	0.000	0.000	satd
Nontronite-Ca	0.000	0.000	satd
Nontronite-K	0.000	0.000	satd
Nontronite-Mg	0.000	0.000	satd
Nontronite-Na	0.000	0.000	satd

--- Lanthanide hydroxide ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
La(OH)3	6.7744E-05	-4.1691	0.0000	-4.1691
Ce(OH)3	5.6431E-15	-14.2485	0.0000	-14.2485
Nd(OH)3(c)	5.7996E-01	-0.2366	0.0000	-0.2366
Gd(OH)3	3.4695E-01	-0.4597	0.0000	-0.4597
Sm(OH)3	7.3026E-02	-1.1365	0.0000	-1.1365

Mineral	Log Q/K	Aff, kcal	State
Lanthanide hydroxide	-7.583	-10.345	
La(OH)3	-7.583	-10.345	
Ce(OH)3	-7.583	-10.345	
Nd(OH)3(c)	-7.583	-10.345	
Gd(OH)3	-7.583	-10.345	
Sm(OH)3	-7.583	-10.345	

--- Rhabdophane-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaPO4:H2O	7.5798E-01	-0.1203	0.0000	-0.1203
CePO4:H2O	1.9967E-11	-10.6997	0.0000	-10.6997
NdPO4:H2O	1.2947E-01	-0.8878	0.0000	-0.8878
GdPO4:H2O	3.0836E-02	-1.5109	0.0000	-1.5109
SmPO4:H2O	8.1708E-02	-1.0877	0.0000	-1.0877

Mineral	Log Q/K	Aff, kcal	State
Rhabdophane-ss	-5.042	-6.879	
LaPO4:H2O	-5.042	-6.879	
CePO4:H2O	-5.042	-6.879	
NdPO4:H2O	-5.042	-6.879	
GdPO4:H2O	-5.042	-6.879	
SmPO4:H2O	-5.042	-6.879	

--- Lanthanide fluoride ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaF3:0.5H2O	8.1470E-01	-0.0890	0.0000	-0.0890
CeF3:0.5H2O	3.4013E-11	-10.4684	0.0000	-10.4684
NdF3:0.5H2O	1.7520E-01	-0.7565	0.0000	-0.7565
GdF3:0.5H2O	1.3194E-03	-2.8796	0.0000	-2.8796
SmF3:0.5H2O	8.7823E-03	-2.0564	0.0000	-2.0564

Mineral	Log Q/K	Aff, kcal	State
Lanthanide fluoride	-10.085	-13.758	
LaF3:0.5H2O	-10.085	-13.758	
CeF3:0.5H2O	-10.085	-13.758	
NdF3:0.5H2O	-10.085	-13.758	
GdF3:0.5H2O	-10.085	-13.758	
SmF3:0.5H2O	-10.085	-13.758	

--- Summary of Gases ---

Gas	Fugacity	Log fugacity
Al(g)	2.2447-196	-195.6489
B(g)	7.2182-204	-203.1416
BF3(g)	3.4250E-40	-39.4653
C(g)	3.0917-190	-189.5098
CH4(g)	3.5288-146	-145.4524
CO(g)	6.0395E-49	-48.2190
CO2(g)	3.1623E-04	-3.5000
Ca(g)	7.2774-151	-150.1380
Chlorine	6.3986E-30	-29.1939
Cs(g)	1.1664E-82	-81.9332

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Cu(g)                       5.9910E-82    -81.2225
Fluorine                    3.3486E-83    -82.4751
H2(g)                       6.1145E-42    -41.2136
H2O(g)                      2.5975E-02     -1.5854
H2S(g)                      1.2116-144   -143.9166
HCl(g)                      3.1030E-19    -18.5082
HF(g)                       2.5334E-14    -13.5963
K(g)                        7.5113E-77    -76.1243
Li(g)                       2.5484E-96    -95.5937
Mg(g)                       3.3692-129   -128.4725
Nitrogen                    4.7650E-21    -20.3219
NH3(g)                      7.9574E-70    -69.0992
NO(g)                       2.1736E-26    -25.6628
NO2(g)                      1.4862E-20    -19.8279
Na(g)                       6.0538E-75    -74.2180
O2(g)                       2.0999E-01     -0.6778
Pb(g)                       1.0806E-67    -66.9663
S2(g)                       8.7545-232   -231.0578
SO2(g)                      2.1453E-57    -56.6685
Si(g)                       4.2257-221   -220.3741
SiF4(g)                     1.8160E-39    -38.7409
Ti(g)                       1.6799-231   -230.7747
TiCl4(g)                    1.3723E-87    -86.8625
U(g)                        7.0380-299   -298.1525
U2Cl10(g)                   4.1672-254   -253.3802
U2Cl8(g)                    2.0191-255   -254.6948
U2F10(g)                    7.2626-162   -161.1389
UCl(g)                      1.9462-255   -254.7108
UCl2(g)                     1.6100-210   -209.7932
UCl3(g)                     2.9173-163   -162.5350
UCl4(g)                     2.8624-133   -132.5433
UCl5(g)                     1.4450-140   -139.8401
UCl6(g)                     1.3552-142   -141.8680
UF(g)                       3.3770-240   -239.4715
UF2(g)                      1.2017-199   -198.9202
UF3(g)                      1.0524-152   -151.9778
UF4(g)                      1.3604-102   -101.8663
UF5(g)                      8.0546E-94    -93.0940
UF6(g)                      4.6960E-99    -98.3283
UO(g)                       5.5584-214   -213.2550
UO2(g)                      1.0298-129   -128.9872
UO2Cl2(g)                   2.8770E-78    -77.5411
UO2F2(g)                    1.5578E-65    -64.8075
UO3(g)                      7.5745E-77    -76.1206
UOF4(g)                     4.0538E-80    -79.3921
Zn(g)                       1.3033E-77    -76.8850



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Stepping to zi=  3.7573E-02, delzi=  1.0000E-09, nord= 0
  time =  4.3438E+02 d, dltime =  1.1561E-05 d
Steps completed =    77, iter =  1, ncorr = 0
Most rapidly changing is zvclg1(VO++                    ) =    -30.2359

Stepping to zi=  3.7573E-02, delzi=  1.0000E-09, nord= 0
  time =  4.3438E+02 d, dltime =  1.1561E-05 d
Steps completed =    78, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(VO++                    ) =    -30.2359
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```
Stepping to zi=  3.7573E-02, delzi=  1.0000E-09, nord= 0
  time =  4.3438E+02 d, dltime =  1.1561E-05 d
Steps completed =    79, iter =  1, ncorr = 0
Most rapidly changing is zvclg1(VO++                    ) =    -30.2359

Stepping to zi=  3.7573E-02, delzi=  1.0000E-08, nord= 1
  time =  4.3438E+02 d, dltime =  1.1561E-04 d
Steps completed =    80, iter =  1, ncorr = 0
Most rapidly changing is zvclg1(VO++                    ) =    -30.2359

Stepping to zi=  3.7573E-02, delzi=  1.0000E-07, nord= 1
  time =  4.3438E+02 d, dltime =  1.1561E-03 d
Steps completed =    81, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(VO++                    ) =    -30.2359

Stepping to zi=  3.7574E-02, delzi=  1.0000E-06, nord= 1
  time =  4.3439E+02 d, dltime =  1.1561E-02 d
Steps completed =    82, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(VO++                    ) =    -30.2359

Stepping to zi=  3.7584E-02, delzi=  1.0000E-05, nord= 2
  time =  4.3451E+02 d, dltime =  1.1561E-01 d
Steps completed =    83, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(VO++                    ) =    -30.2358

Stepping to zi=  3.7684E-02, delzi=  1.0000E-04, nord= 2
  time =  4.3566E+02 d, dltime =  1.1561E+00 d
Steps completed =    84, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(VO++                    ) =    -30.2342

Stepping to zi=  3.8595E-02, delzi=  9.1104E-04, nord= 3
  time =  4.4620E+02 d, dltime =  1.0533E+01 d
Steps completed =    85, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(VO++                    ) =    -30.2204

Stepping to zi=  4.3212E-02, delzi=  4.6175E-03, nord= 3
  time =  4.9958E+02 d, dltime =  5.3383E+01 d
Steps completed =    86, iter = 18, ncorr = 0
Most rapidly changing is zvclg1(VO++                    ) =    -30.1539

Stepping to zi=  5.2162E-02, delzi=  8.9492E-03, nord= 4
  time =  6.0304E+02 d, dltime =  1.0346E+02 d
Steps completed =    87, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(VO++                    ) =    -30.0384

Stepping to zi=  7.0990E-02, delzi=  1.8828E-02, nord= 4
  time =  8.2071E+02 d, dltime =  2.1767E+02 d
Steps completed =    88, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(VO++                    ) =    -29.8345

Stepping to zi=  9.7296E-02, delzi=  2.6306E-02, nord= 5
  time =  1.1248E+03 d, dltime =  3.0412E+02 d
Steps completed =    89, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Montmor-Mg              ) =    -30.8805

Stepping to zi=  1.3528E-01, delzi=  3.7984E-02, nord= 6
  time =  1.5640E+03 d, dltime =  4.3913E+02 d
Steps completed =    90, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Montmor-Mg              ) =    -30.5970

Stepping to zi=  1.4064E-01, delzi=  5.3647E-03, nord= 6
  time =  1.6260E+03 d, dltime =  6.2021E+01 d
iter =    3
```

```
    1 supersaturated pure minerals
    0 supersaturated solid solutions

              The most supersaturated phases          Affinity, kcal

                1     548   Talc                          0.00765528


Attempted species assemblage no.   2

            1      1  H2O
            2      3  Al+++
            3      7  B(OH)3(aq)
            4      8  Ba++
            5     11  Ca++
            6     13  Ce+++
            7     14  Cl-
            8     16  CrO4--
            9     17  Cs+
           10     18  Cu++
           11     22  F-
           12     23  Fe++
           13     25  Gd+++
           14     26  H+
           15     28  HCO3-
           16     29  HPO4--
           17     35  K+
           18     37  La+++
           19     38  Li+
           20     40  Mg++
           21     41  Mn++
           22     42  MoO4--
           23     43  NO3-
           24     44  Na+
           25     45  Nd+++
           26     47  Ni++
           27     49  Pb++
           28     52  Pu++++
           29     58  SO4--
           30     62  SiO2(aq)
           31     63  Sm+++
           32     65  Sr++
           33     69  Ti(OH)4(aq)
           34     72  UO2++
           35     73  VO++
           36     78  Zn++
           37     79  Zr(OH)2++
           38     80  O2(g)
           39    198  Dolomite-ord
           40    222  Fluorapatite
           41    252  Hematite
           42    405  Ni2SiO4
           43    470  Pyrolusite
           44    475  Quartz
           45    548  Talc
           46    689  fix     CO2(g)
           47    690  fix     O2(g)
           48      1  SmectiteBeidellite-Ca
           49      2  SmectiteBeidellite-K
           50      3  SmectiteBeidellite-Mg
           51      4  SmectiteBeidellite-Na
           52      5  SmectiteMontmor-Ca
           53      6  SmectiteMontmor-K
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            54      7  SmectiteMontmor-Mg
            55      8  SmectiteMontmor-Na
            56      9  SmectiteNontronite-Ca
            57     10  SmectiteNontronite-K
            58     11  SmectiteNontronite-Mg
            59     12  SmectiteNontronite-Na

Steps completed =    91, iter = 16, ncorr = 0

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                    Reaction progress        =  1.40644601981697E-01
                    Log of reaction progress =      -0.8518769



                    Time =  1.405E+08 sec
                         =  1.626E+03 days
                         =  4.452E+00 years

                    Log sec =        8.148
                    Log days =       3.211
                    Log years =      0.649

                    Temperature    =     25.000 degrees C
                    total pressure =      1.013 bars


Change in the product phase assemblage


                              --- Reactant Summary ---


   Reactant                  Moles     Delta moles    Mass, g    Delta Mass, g

 carbon steel               1.9860E+01   1.4049E-01   1.0863E+03   7.6842E+00
 Alloy-22                   2.0000E+01   1.5875E-04   1.1977E+03   9.5071E-03


               Current total mass =  2.28401E+03 grams
               Delta total mass   =  7.69375E+00 grams
               Delta total volume =      0.00000 cc


   Reactant                Rel. Rate      Rate         Rate
                            mol/mol       mol/s      mol/s/cm2

 carbon steel               9.9887E-01   1.0000E-09   1.0000E-11
 Alloy-22                   1.1287E-03   1.1300E-12   1.1300E-14


   Reactant                  Affinity   Surface Area
                             kcal/mol     mol/s/cm2

 carbon steel                999.00000   1.0000E+02
 Alloy-22                    999.00000   1.0000E+02


   Reactant                Rate Constants, mol/s/cm2
```

```
carbon steel
                    Forward    1.0000E-11
Alloy-22
                    Forward    1.1300E-14

        Affinity of the overall irreversible reaction=     0.000 kcal
        Contributions from irreversible reactions
        with no thermodynamic data are not included


    --- Element Totals for the Aqueous Solution ---

 Element        mg/kg soln.          Molality             Moles

    O          8.880232E+05        5.551502E+01        5.551536E+01
    Al         2.115939E-08        7.843797E-13        7.843845E-13
    B          1.338981E-01        1.238792E-05        1.238800E-05
    Ba         1.372977E-05        9.999939E-11        1.000000E-10
    Ca         5.133911E+00        1.281245E-04        1.281253E-04
    Ce         1.400851E-19        9.999939E-25        1.000000E-24
    Cl         7.138653E+00        2.013988E-04        2.014000E-04
    Cr         2.131460E+00        4.100117E-05        4.100142E-05
    Cs         1.328771E-05        9.999939E-11        1.000000E-10
    Cu         6.670908E-10        1.049994E-14        1.050000E-14
    F          1.543603E+00        8.126591E-05        8.126641E-05
    Fe         6.799374E-08        1.217752E-12        1.217760E-12
    Gd         1.572165E-09        9.999939E-15        1.000000E-14
    H          1.118765E+05        1.110182E+02        1.110189E+02
    C          1.565642E+01        1.303777E-03        1.303785E-03
    P          1.033794E-04        3.338334E-09        3.338354E-09
    K          5.036584E+00        1.288451E-04        1.288459E-04
    La         1.388759E-09        9.999939E-15        1.000000E-14
    Li         6.939521E-07        9.999939E-11        1.000000E-10
    Mg         1.292528E+00        5.319050E-05        5.319083E-05
    Mn         9.181021E-12        1.671505E-16        1.671515E-16
    Mo         1.537372E+00        1.602762E-05        1.602772E-05
    N          1.988533E+00        1.419991E-04        1.420000E-04
    Na         4.578832E+01        1.992094E-03        1.992107E-03
    Nd         1.442093E-09        9.999939E-15        1.000000E-14
    Ni         1.863476E-03        3.175774E-08        3.175793E-08
    Pb         2.071559E-05        9.999939E-11        1.000000E-10
    Pu         2.439480E-09        9.999939E-15        1.000000E-14
    S          9.982405E+00        3.113725E-04        3.113744E-04
    Si         2.900764E+00        1.033047E-04        1.033054E-04
    Sm         1.503280E-09        9.999939E-15        1.000000E-14
    Sr         8.760133E-06        9.999939E-11        1.000000E-10
    Ti         4.786980E-06        9.999939E-11        1.000000E-10
    U          2.379782E-09        9.999938E-15        1.000000E-14
    V          3.364560E-02        6.606118E-07        6.606159E-07
    Zn         6.537607E-06        9.999939E-11        1.000000E-10
    Zr         9.120457E-16        9.999939E-21        1.000000E-20

 Single ion activities and activity coefficients are here defined
 with respect to the modified NBS pH scale


                                        pH           Eh           pe

   modified NBS pH scale            8.3910        0.7226    1.2216E+01
```

```
  rational pH scale              8.3664        0.7241    1.2240E+01

pHCl =     12.1130


          Oxygen fugacity =  2.09991E-01
      Log oxygen fugacity =  -0.67780


              Activity of water =   0.99992
           Log activity of water =  -0.00004

               Ionic strength =  3.005092E-03 molal
             Sum of molalities =    0.0047656098673
           Osmotic coefficient =    0.97574

                    Mass of solution =   1.000213 kg
                    Mass of solutes  =   0.000207 kg
                    Conc. of solutes  =   0.020690 per cent (w/w)

               Moles of solvent H2O =  5.55088E+01
               Mass of solvent H2O  =  1.00001E+00 kg
```

Species	Molality	Log molality	Log gamma	Log activity
Na+	1.9854E-03	-2.7022	-0.0266	-2.7287
HCO3-	1.2671E-03	-2.8972	-0.0255	-2.9226
SO4--	3.0264E-04	-3.5191	-0.1033	-3.6224
O2(aq)	2.6521E-04	-3.5764	0.0003	-3.5761
Cl-	2.0133E-04	-3.6961	-0.0259	-3.7220
NO3-	1.4193E-04	-3.8479	-0.0259	-3.8738
K+	1.2861E-04	-3.8907	-0.0270	-3.9178
Ca++	1.2091E-04	-3.9175	-0.1022	-4.0198
SiO2(aq)	1.0016E-04	-3.9993	0.0000	-3.9993
F-	8.1141E-05	-4.0908	-0.0257	-4.1164
Mg++	4.9612E-05	-4.3044	-0.0990	-4.4034
CrO4--	4.0571E-05	-4.3918	-0.1033	-4.4951
CO3--	1.7458E-05	-4.7580	-0.1025	-4.8605
MoO4--	1.6028E-05	-4.7951	-0.1025	-4.8976
B(OH)3(aq)	1.0769E-05	-4.9678	0.0000	-4.9678
CO2(aq)	1.0735E-05	-4.9692	0.0003	-4.9689
NaHCO3(aq)	3.1820E-06	-5.4973	0.0000	-5.4973
NaSO4-	3.1211E-06	-5.5057	-0.0255	-5.5312
CaSO4(aq)	2.9440E-06	-5.5311	0.0000	-5.5311
HSiO3-	2.9148E-06	-5.5354	-0.0255	-5.5608
CaCO3(aq)	2.7983E-06	-5.5531	0.0000	-5.5531
OH-	2.6396E-06	-5.5785	-0.0257	-5.6041
MgSO4(aq)	2.4314E-06	-5.6141	0.0000	-5.6141
BO2-	1.5986E-06	-5.7962	-0.0255	-5.8217
CaHCO3+	1.3517E-06	-5.8691	-0.0266	-5.8957
VO3OH--	5.6162E-07	-6.2506	-0.1033	-6.3539
MgHCO3+	5.4477E-07	-6.2638	-0.0266	-6.2904
MgCO3(aq)	5.1881E-07	-6.2850	0.0000	-6.2850
HCrO4-	4.3028E-07	-6.3663	-0.0255	-6.3917
KSO4-	2.3168E-07	-6.6351	-0.0255	-6.6606
NaHSiO3(aq)	2.2851E-07	-6.6411	0.0000	-6.6411
NaCO3-	8.9259E-08	-7.0493	-0.0255	-7.0748
MgF+	7.2298E-08	-7.1409	-0.0266	-7.1675
CaNO3+	6.8079E-08	-7.1670	-0.0266	-7.1936
HVO4--	6.0499E-08	-7.2183	-0.1033	-7.3216

NaCl(aq)	5.9191E-08	-7.2277	0.0000	-7.2277
CaF+	3.7334E-08	-7.4279	-0.0266	-7.4545
Ni++	3.0954E-08	-7.5093	-0.1022	-7.6115
H2VO4-	2.3762E-08	-7.6241	-0.0255	-7.6496
VO2(OH)2-	1.4726E-08	-7.8319	-0.0255	-7.8574
NaF(aq)	1.4362E-08	-7.8428	0.0000	-7.8428
CaB(OH)4+	1.0180E-08	-7.9922	-0.0266	-8.0188
MgCl+	5.8380E-09	-8.2337	-0.0266	-8.2603
NaB(OH)4(aq)	5.2526E-09	-8.2796	0.0000	-8.2796
MgB(OH)4+	5.0071E-09	-8.3004	-0.0266	-8.3270
H+	4.3011E-09	-8.3664	-0.0246	-8.3910
CaCl+	3.8837E-09	-8.4108	-0.0266	-8.4374
CaOH+	3.5301E-09	-8.4522	-0.0266	-8.4788
HPO4--	2.8363E-09	-8.5473	-0.1033	-8.6506
NiSO4(aq)	7.7948E-10	-9.1082	0.0000	-9.1082
NaOH(aq)	7.3689E-10	-9.1326	0.0000	-9.1326
KCl(aq)	7.3391E-10	-9.1344	0.0000	-9.1344
HF(aq)	4.5780E-10	-9.3393	0.0000	-9.3393
H2PO4-	1.5463E-10	-9.8107	-0.0255	-9.8362
CaHPO4(aq)	1.1740E-10	-9.9303	0.0000	-9.9303
KOH(aq)	1.0308E-10	-9.9868	0.0000	-9.9868

--- Summary of Solid Product Phases---

Product	Log moles	Moles	Mass, g	Volume, cc
Dolomite-ord	-4.5457	2.8466E-05	5.2492E-03	1.8315E-03
Fluorapatite	-4.4752	3.3484E-05	1.6886E-02	1.6742E-02
Hematite	-1.1707	6.7503E-02	1.0780E+01	2.0436E+00
Ni2SiO4	-4.3460	4.5079E-05	9.4423E-03	1.9208E-03
Pyrolusite	-2.8393	1.4479E-03	1.2587E-01	7.2394E-01
Quartz	-2.7948	1.6040E-03	9.6378E-02	3.6393E-02
Talc	-6.6078	2.4674E-07	9.3580E-05	3.3618E-05
fix CO2(g)	4.0000	1.0000E+04	4.4010E+05	0.0000E+00
fix O2(g)	4.0000	9.9999E+03	3.1998E+05	0.0000E+00
Smectite-di	-5.3475	4.4924E-06	1.9028E-03	5.8760E-04
Beidellite-Ca	-43.7484	1.7849E-44	6.5428E-42	2.3120E-42
Beidellite-K	-44.7999	1.5853E-45	5.9107E-43	2.1195E-43
Beidellite-Mg	-43.8260	1.4929E-44	5.4335E-42	1.8391E-42
Beidellite-Na	-44.6366	2.3086E-45	8.4850E-43	3.0137E-43
Montmor-Ca	-30.6999	1.9957E-31	7.3053E-29	9.9787E-29
Montmor-K	-31.5384	2.8948E-32	1.0778E-29	1.4474E-29
Montmor-Mg	-30.5666	2.7128E-31	9.8594E-29	1.3564E-28
Montmor-Na	-31.3860	4.1111E-32	1.5089E-29	2.0556E-29
Nontronite-Ca	-5.6604	2.1860E-06	9.2749E-04	2.8658E-04
Nontronite-K	-6.7119	1.9415E-07	8.3596E-05	2.6262E-05
Nontronite-Mg	-5.7376	1.8296E-06	7.7152E-04	2.3741E-04
Nontronite-Na	-6.5486	2.8273E-07	1.2024E-04	3.7352E-05

	Mass, grams	Volume, cc
Created	7.600938E+05	2.825041E+00
Destroyed	7.693750E+00	0.000000E+00
Net	7.600861E+05	2.825041E+00

Warning-- these volume totals may be incomplete because
of missing partial molar volume data in the data base

--- Summary of Pure Mineral Saturation States ---

Mineral	Log Q/K	Aff, kcal	State
Alamosite	-2.997	-4.089	
Albite	-6.744	-9.200	
Albite_low	-6.744	-9.200	
Alstonite	-5.774	-7.877	
Analcime	-6.600	-9.005	
Andradite	-6.938	-9.465	
Anglesite	-5.877	-8.017	
Anhydrite	-3.336	-4.551	
Aragonite	-0.545	-0.743	
Artinite	-6.213	-8.476	
BaCrO4	-4.669	-6.370	
BaZrO3	82.375	112.383	ssatd
Barite	-3.758	-5.127	
Barytocalcite	-5.931	-8.092	
Bassanite	-3.981	-5.431	
Boehmite	-5.208	-7.105	
Boric_acid	-4.810	-6.562	
Brucite	-3.920	-5.347	
Bunsenite	-3.301	-4.504	
CaSO4:0.5H2O(beta)	-4.149	-5.660	
CaZrO3	142.492	194.400	ssatd
Calcite	-0.400	-0.546	
CeO2	-2.537	-3.461	
Celadonite	-4.246	-5.793	
Cerussite	-1.429	-1.950	
Chalcedony	-0.271	-0.370	
Chrysotile	-1.989	-2.713	
Coesite	-0.810	-1.105	
Cristobalite(alpha)	-0.551	-0.751	
Cristobalite(beta)	-0.994	-1.356	
Crocoite	-1.884	-2.571	
Diaspore	-4.804	-6.554	
Diopside	-3.822	-5.215	
Dolomite	0.000	0.000	ssatd
Dolomite-dis	-1.544	-2.107	
Dolomite-ord	0.000	0.000	satd
Enstatite	-2.948	-4.021	
Epsomite	-6.064	-8.273	
Fe(OH)3	-5.601	-7.642	
Ferrite-Zn	-5.044	-6.882	
Fluorapatite	0.000	0.000	satd
Fluorite	-2.216	-3.023	
Forsterite	-7.105	-9.693	
GdOHCO3	-6.520	-8.894	
GdPO4:H2O	-5.848	-7.978	
Gibbsite	-5.399	-7.366	
Goethite	-0.480	-0.655	
Gypsum	-3.160	-4.311	
Hematite	0.000	0.000	satd
Hexahydrite	-6.299	-8.594	
Huntite	-5.658	-7.719	
Hydrocerussite	-6.021	-8.214	
Ice	-0.139	-0.189	
K-Feldspar	-4.893	-6.675	
Kalicinite	-7.124	-9.719	
LaPO4:H2O	-4.534	-6.186	
Lanarkite	-6.585	-8.984	

Lansfordite	-3.776	-5.152	
Litharge	-5.969	-8.143	
Magnesite	-1.229	-1.676	
Manganite	-4.459	-6.084	
Massicot	-6.144	-8.382	
Maximum_Microcline	-4.893	-6.675	
MnO2(gamma)	-1.518	-2.071	
Monohydrocalcite	-1.234	-1.683	
Mordenite	-7.086	-9.667	
Nahcolite	-5.540	-7.558	
NdOHCO3	-6.122	-8.353	
NdPO4:H2O	-5.251	-7.163	
Nesquehonite	-3.931	-5.363	
Ni(OH)2	-3.578	-4.882	
Ni2SiO4	0.000	0.000	satd
NiCO3	-5.655	-7.715	
Nontronite-Ca	-0.103	-0.141	
Nontronite-H	-1.251	-1.707	
Nontronite-K	-0.450	-0.614	
Nontronite-Mg	-0.129	-0.176	
Nontronite-Na	-0.396	-0.541	
Okenite	-5.618	-7.665	
Paralaurionite	-5.641	-7.696	
PbHPO4	-7.191	-9.810	
Pentahydrite	-6.639	-9.057	
Phlogopite	-5.473	-7.466	
Plattnerite	-1.332	-1.818	
Pseudowollastonite	-5.237	-7.145	
PuO2	-1.540	-2.101	
PuO2(OH)2	-6.115	-8.343	
Pyrolusite	0.000	0.000	satd
Pyromorphite	-7.139	-9.740	
Quartz	0.000	0.000	satd
Rutile	-0.355	-0.484	
Sanidine_high	-6.092	-8.311	
Saponite-Ca	-0.948	-1.294	
Saponite-Cs	-3.157	-4.307	
Saponite-H	-2.096	-2.860	
Saponite-K	-1.296	-1.768	
Saponite-Mg	-0.974	-1.329	
Saponite-Na	-1.242	-1.694	
Sellaite	-3.252	-4.437	
Sepiolite	-4.926	-6.720	
SiO2(am)	-1.286	-1.754	
SmPO4:H2O	-5.451	-7.436	
Smithsonite	-5.196	-7.088	
SrZrO3	119.353	162.831	ssatd
Starkeyite	-7.026	-9.586	
Strontianite	-4.342	-5.923	
Talc	0.000	0.000	satd
Tenorite	-7.008	-9.561	
Tremolite	-5.814	-7.932	
Trevorite	-0.509	-0.694	
Tridymite	-0.171	-0.234	
Witherite	-1.642	-2.240	
Wollastonite	-4.998	-6.818	
Zincite	-4.627	-6.313	
Zn(OH)2(beta)	-5.353	-7.303	
Zn(OH)2(epsilon)	-5.081	-6.932	
Zn(OH)2(gamma)	-5.302	-7.233	
fix CO2(g)	0.000	0.000	satd
fix O2(g)	0.000	0.000	satd

--- Summary of Solid Solutions ---

--- Carbonate-Calcite ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Calcite	8.7068E-01	-0.0601	0.0000	-0.0601
Magnesite	1.2921E-01	-0.8887	0.0000	-0.8887
Rhodochrosite	3.7202E-11	-10.4294	0.0000	-10.4294
Siderite	4.7503E-19	-18.3233	0.0000	-18.3233
Smithsonite	1.3941E-05	-4.8557	0.0000	-4.8557
Strontianite	9.9647E-05	-4.0015	0.0000	-4.0015

Mineral	Log Q/K	Aff, kcal	State
Carbonate-Calcite	-0.340	-0.464	
Calcite	-0.340	-0.464	
Magnesite	-0.340	-0.464	
Rhodochrosite	-0.340	-0.464	
Siderite	-0.340	-0.464	
Smithsonite	-0.340	-0.464	
Strontianite	-0.340	-0.464	

--- Clinoptilolite-hy-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-hy-Ca	9.9360E-01	-0.0028	0.0000	-0.0028
Clinoptilolite-hy-Cs	1.7873E-22	-21.7478	0.0000	-21.7478
Clinoptilolite-hy-K	2.1098E-03	-2.6758	0.0000	-2.6758
Clinoptilolite-hy-Na	4.2906E-03	-2.3675	0.0000	-2.3675
Clinoptilolite-hy-Sr	3.5909E-11	-10.4448	0.0000	-10.4448

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-hy-ss	-20.854	-28.451	
Clinoptilolite-hy-Ca	-20.854	-28.451	
Clinoptilolite-hy-Cs	-20.854	-28.451	
Clinoptilolite-hy-K	-20.854	-28.451	
Clinoptilolite-hy-Na	-20.854	-28.451	
Clinoptilolite-hy-Sr	-20.854	-28.451	

--- Clinoptilolite-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-Ca	7.2639E-01	-0.1388	-0.3415	-0.4803
Clinoptilolite-Cs	3.7632E-07	-6.4244	-15.8041	-22.2286
Clinoptilolite-K	1.2242E-01	-0.9121	-2.2438	-3.1560
Clinoptilolite-NH4	2.3429E-64	-63.6303	-156.5304	-220.1607

Clinoptilolite-Na	1.5049E-01	-0.8225	-2.0234	-2.8459
Clinoptilolite-Sr	6.9734E-04	-3.1566	-7.7651	-10.9217

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-ss	-20.378	-27.801	
Clinoptilolite-Ca	-20.378	-27.801	
Clinoptilolite-Cs	-20.378	-27.801	
Clinoptilolite-K	-20.378	-27.801	
Clinoptilolite-NH4	-20.378	-27.801	
Clinoptilolite-Na	-20.378	-27.801	
Clinoptilolite-Sr	-20.378	-27.801	

--- Saponite-tri ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Saponite-Ca	4.8666E-01	-0.3128	0.2096	-0.1032
Saponite-H	1.6175E-04	-3.7912	2.5401	-1.2511
Saponite-K	4.3193E-02	-1.3646	0.9143	-0.4503
Saponite-Mg	4.0704E-01	-0.3904	0.2615	-0.1288
Saponite-Na	6.2946E-02	-1.2010	0.8047	-0.3963

Mineral	Log Q/K	Aff, kcal	State
Saponite-tri	-0.845	-1.153	
Saponite-Ca	-0.845	-1.153	
Saponite-H	-0.845	-1.153	
Saponite-K	-0.845	-1.153	
Saponite-Mg	-0.845	-1.153	
Saponite-Na	-0.845	-1.153	

--- Smectite-di ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Beidellite-Ca	3.9732E-39	-38.4009	25.7286	-12.6723
Beidellite-K	3.5288E-40	-39.4524	26.4331	-13.0193
Beidellite-Mg	3.3231E-39	-38.4785	25.7806	-12.6979
Beidellite-Na	5.1389E-40	-39.2891	26.3237	-12.9654
Montmor-Ca	4.4424E-26	-25.3524	16.9861	-8.3663
Montmor-K	6.4437E-27	-26.1909	17.5479	-8.6430
Montmor-Mg	6.0386E-26	-25.2191	16.8968	-8.3223
Montmor-Na	9.1512E-27	-26.0385	17.4458	-8.5927
Nontronite-Ca	4.8659E-01	-0.3128	0.2096	-0.1032
Nontronite-K	4.3216E-02	-1.3644	0.9141	-0.4502
Nontronite-Mg	4.0726E-01	-0.3901	0.2614	-0.1287
Nontronite-Na	6.2936E-02	-1.2011	0.8047	-0.3964

Mineral	Log Q/K	Aff, kcal	State
Smectite-di	0.000	0.000	satd

Beidellite-Ca	0.000	0.000	satd
Beidellite-K	0.000	0.000	satd
Beidellite-Mg	0.000	0.000	satd
Beidellite-Na	0.000	0.000	satd
Montmor-Ca	0.000	0.000	satd
Montmor-K	0.000	0.000	satd
Montmor-Mg	0.000	0.000	satd
Montmor-Na	0.000	0.000	satd
Nontronite-Ca	0.000	0.000	satd
Nontronite-K	0.000	0.000	satd
Nontronite-Mg	0.000	0.000	satd
Nontronite-Na	0.000	0.000	satd

--- Lanthanide hydroxide ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
La(OH)3	5.9015E-05	-4.2290	0.0000	-4.2290
Ce(OH)3	5.4375E-15	-14.2646	0.0000	-14.2646
Nd(OH)3(c)	5.6782E-01	-0.2458	0.0000	-0.2458
Gd(OH)3	3.6059E-01	-0.4430	0.0000	-0.4430
Sm(OH)3	7.1522E-02	-1.1456	0.0000	-1.1456

Mineral	Log Q/K	Aff, kcal	State
Lanthanide hydroxide	-7.552	-10.303	
La(OH)3	-7.552	-10.303	
Ce(OH)3	-7.552	-10.303	
Nd(OH)3(c)	-7.552	-10.303	
Gd(OH)3	-7.552	-10.303	
Sm(OH)3	-7.552	-10.303	

--- Rhabdophane-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaPO4:H2O	7.3437E-01	-0.1341	0.0000	-0.1341
CePO4:H2O	2.1397E-11	-10.6696	0.0000	-10.6696
NdPO4:H2O	1.4098E-01	-0.8508	0.0000	-0.8508
GdPO4:H2O	3.5643E-02	-1.4480	0.0000	-1.4480
SmPO4:H2O	8.9001E-02	-1.0506	0.0000	-1.0506

Mineral	Log Q/K	Aff, kcal	State
Rhabdophane-ss	-4.400	-6.003	
LaPO4:H2O	-4.400	-6.003	
CePO4:H2O	-4.400	-6.003	
NdPO4:H2O	-4.400	-6.003	
GdPO4:H2O	-4.400	-6.003	
SmPO4:H2O	-4.400	-6.003	

--- Lanthanide fluoride ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaF3:0.5H2O	7.9635E-01	-0.0989	0.0000	-0.0989
CeF3:0.5H2O	3.6774E-11	-10.4345	0.0000	-10.4345
NdF3:0.5H2O	1.9246E-01	-0.7156	0.0000	-0.7156
GdF3:0.5H2O	1.5387E-03	-2.8128	0.0000	-2.8128
SmF3:0.5H2O	9.6511E-03	-2.0154	0.0000	-2.0154

Mineral	Log Q/K	Aff, kcal	State
Lanthanide fluoride	-10.175	-13.881	
LaF3:0.5H2O	-10.175	-13.881	
CeF3:0.5H2O	-10.175	-13.881	
NdF3:0.5H2O	-10.175	-13.881	
GdF3:0.5H2O	-10.175	-13.881	
SmF3:0.5H2O	-10.175	-13.881	

--- Summary of Gases ---

Gas	Fugacity	Log fugacity
Al(g)	2.5872-196	-195.5872
B(g)	7.4366-204	-203.1286
BF3(g)	2.9950E-40	-39.5236
C(g)	3.0917-190	-189.5098
CH4(g)	3.5288-146	-145.4524
CO(g)	6.0395E-49	-48.2190
CO2(g)	3.1623E-04	-3.5000
Ca(g)	2.9675-151	-150.5276
Chlorine	9.6730E-30	-29.0144
Cs(g)	9.4862E-83	-82.0229
Cu(g)	5.9477E-82	-81.2256
Fluorine	3.0018E-83	-82.5226
H2(g)	6.1145E-42	-41.2136
H2O(g)	2.5975E-02	-1.5854
H2S(g)	2.5516-144	-143.5932
HCl(g)	3.8152E-19	-18.4185
HF(g)	2.3987E-14	-13.6200
K(g)	6.1061E-77	-76.2142
Li(g)	2.0719E-96	-95.6836
Mg(g)	8.2625-129	-128.0829
Nitrogen	7.2078E-21	-20.1422
NH3(g)	9.7869E-70	-69.0094
NO(g)	2.6733E-26	-25.5729
NO2(g)	1.8279E-20	-19.7380
Na(g)	4.9235E-75	-74.3077
O2(g)	2.0999E-01	-0.6778
Pb(g)	7.1488E-68	-67.1458
S2(g)	3.8829-231	-230.4108
SO2(g)	4.5181E-57	-56.3450
Si(g)	4.2257-221	-220.3741
SiF4(g)	1.4594E-39	-38.8358
Ti(g)	1.6798-231	-230.7747
TiCl4(g)	3.1361E-87	-86.5036
U(g)	1.3156-298	-297.8809

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U2Cl10(g)                    1.1495-252   -251.9395
U2Cl8(g)                     3.6844-254   -253.4336
U2F10(g)                     1.4691-161   -160.8330
UCl(g)                       4.4729-255   -254.3494
UCl2(g)                      4.5496-210   -209.3420
UCl3(g)                      1.0136-162   -161.9941
UCl4(g)                      1.2227-132   -131.9127
UCl5(g)                      7.5895-140   -139.1198
UCl6(g)                      8.7517-142   -141.0579
UF(g)                        5.9766-240   -239.2235
UF2(g)                       2.0137-199   -198.6960
UF3(g)                       1.6697-152   -151.7774
UF4(g)                       2.0435-102   -101.6896
UF5(g)                       1.1456E-93    -92.9410
UF6(g)                       6.3236E-99    -98.1990
UO(g)                        1.0390-213   -212.9834
UO2(g)                       1.9249-129   -128.7156
UO2Cl2(g)                    8.1296E-78    -77.0899
UO2F2(g)                     2.6103E-65    -64.5833
UO3(g)                       1.4158E-76    -75.8490
UOF4(g)                      6.0895E-80    -79.2154
Zn(g)                        9.0225E-78    -77.0447



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Stepping to zi=  1.4064E-01, delzi=  1.0000E-09, nord= 0
  time =  1.6260E+03 d, dltime =  1.1561E-05 d
Steps completed =    92, iter =  1, ncorr = 0
Most rapidly changing is zvclg1(Talc                    ) =     -6.6078

Stepping to zi=  1.4064E-01, delzi=  1.0000E-09, nord= 0
  time =  1.6260E+03 d, dltime =  1.1561E-05 d
Steps completed =    93, iter =  1, ncorr = 0
Most rapidly changing is zvclg1(Talc                    ) =     -6.6078

Stepping to zi=  1.4064E-01, delzi=  1.0000E-09, nord= 0
  time =  1.6260E+03 d, dltime =  1.1561E-05 d
Steps completed =    94, iter =  1, ncorr = 0
Most rapidly changing is zvclg1(Talc                    ) =     -6.6078

Stepping to zi=  1.4064E-01, delzi=  1.0000E-08, nord= 1
  time =  1.6260E+03 d, dltime =  1.1561E-04 d
Steps completed =    95, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Talc                    ) =     -6.6077

Stepping to zi=  1.4064E-01, delzi=  1.0000E-07, nord= 1
  time =  1.6260E+03 d, dltime =  1.1561E-03 d
Steps completed =    96, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Talc                    ) =     -6.6077

Stepping to zi=  1.4065E-01, delzi=  1.0000E-06, nord= 1
  time =  1.6260E+03 d, dltime =  1.1561E-02 d
Steps completed =    97, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Talc                    ) =     -6.6069

Stepping to zi=  1.4066E-01, delzi=  1.0000E-05, nord= 2
  time =  1.6261E+03 d, dltime =  1.1561E-01 d
Steps completed =    98, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Talc                    ) =     -6.5991
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```
Stepping to zi=  1.4076E-01, delzi=  1.0000E-04, nord= 2
  time =  1.6273E+03 d, dltime =  1.1561E+00 d
Steps completed =    99, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Talc                    ) =     -6.5281

Stepping to zi=  1.4176E-01, delzi=  1.0000E-03, nord= 2
  time =  1.6388E+03 d, dltime =  1.1561E+01 d
Steps completed =   100, iter =  6, ncorr = 0
Most rapidly changing is zvclg1(Talc                    ) =     -6.1286

Stepping to zi=  1.4919E-01, delzi=  7.4389E-03, nord= 3
  time =  1.7248E+03 d, dltime =  8.6001E+01 d
Steps completed =   101, iter =  7, ncorr = 0
Most rapidly changing is zvclg1(Talc                    ) =     -5.3899

Stepping to zi=  1.5997E-01, delzi=  1.0776E-02, nord= 4
  time =  1.8494E+03 d, dltime =  1.2458E+02 d
     The phase to be dropped is Dolomite-ord              (  198)


  Attempted species assemblage no.   2

            1      1  H2O
            2      3  Al+++
            3      7  B(OH)3(aq)
            4      8  Ba++
            5     11  Ca++
            6     13  Ce+++
            7     14  Cl-
            8     16  CrO4--
            9     17  Cs+
           10     18  Cu++
           11     22  F-
           12     23  Fe++
           13     25  Gd+++
           14     26  H+
           15     28  HCO3-
           16     29  HPO4--
           17     35  K+
           18     37  La+++
           19     38  Li+
           20     40  Mg++
           21     41  Mn++
           22     42  MoO4--
           23     43  NO3-
           24     44  Na+
           25     45  Nd+++
           26     47  Ni++
           27     49  Pb++
           28     52  Pu++++
           29     58  SO4--
           30     62  SiO2(aq)
           31     63  Sm+++
           32     65  Sr++
           33     69  Ti(OH)4(aq)
           34     72  UO2++
           35     73  VO++
           36     78  Zn++
           37     79  Zr(OH)2++
           38     80  O2(g)
           39    222  Fluorapatite
           40    252  Hematite
```

```
            41    405  Ni2SiO4
            42    470  Pyrolusite
            43    475  Quartz
            44    548  Talc
            45    689  fix     CO2(g)
            46    690  fix     O2(g)
            47      1  SmectiteBeidellite-Ca
            48      2  SmectiteBeidellite-K
            49      3  SmectiteBeidellite-Mg
            50      4  SmectiteBeidellite-Na
            51      5  SmectiteMontmor-Ca
            52      6  SmectiteMontmor-K
            53      7  SmectiteMontmor-Mg
            54      8  SmectiteMontmor-Na
            55      9  SmectiteNontronite-Ca
            56     10  SmectiteNontronite-K
            57     11  SmectiteNontronite-Mg
            58     12  SmectiteNontronite-Na

Steps completed =   102, iter =  4, ncorr = 0

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                    Reaction progress        =  1.59970829274713E-01
                    Log of reaction progress =      -0.7959592



                    Time =  1.598E+08 sec
                         =  1.849E+03 days
                         =  5.063E+00 years

                    Log sec =        8.204
                    Log days =       3.267
                    Log years =      0.704

                    Temperature    =     25.000 degrees C
                    total pressure =      1.013 bars


Change in the product phase assemblage


                              --- Reactant Summary ---


    Reactant                   Moles     Delta moles    Mass, g    Delta Mass, g

 carbon steel               1.9840E+01   1.5979E-01   1.0852E+03   8.7401E+00
 Alloy-22                   2.0000E+01   1.8056E-04   1.1977E+03   1.0813E-02


               Current total mass =  2.28295E+03 grams
               Delta total mass   =  8.75096E+00 grams
               Delta total volume =      0.00000 cc


    Reactant                Rel. Rate      Rate         Rate
                             mol/mol       mol/s      mol/s/cm2

 carbon steel               9.9887E-01   1.0000E-09   1.0000E-11
```

```
Alloy-22                    1.1287E-03   1.1300E-12   1.1300E-14


   Reactant                   Affinity   Surface Area
                              kcal/mol     mol/s/cm2

carbon steel                 999.00000   1.0000E+02
Alloy-22                     999.00000   1.0000E+02


   Reactant                 Rate Constants, mol/s/cm2

carbon steel
                  Forward    1.0000E-11
Alloy-22
                  Forward    1.1300E-14


        Affinity of the overall irreversible reaction=     0.000 kcal
        Contributions from irreversible reactions
        with no thermodynamic data are not included


    --- Element Totals for the Aqueous Solution ---

 Element        mg/kg soln.          Molality             Moles

    O          8.880224E+05        5.551503E+01        5.551538E+01
    Al         2.077634E-08        7.701807E-13        7.701855E-13
    B          1.338980E-01        1.238792E-05        1.238800E-05
    Ba         1.372976E-05        9.999938E-11        1.000000E-10
    Ca         5.364314E+00        1.338747E-04        1.338755E-04
    Ce         1.400850E-19        9.999938E-25        1.000000E-24
    Cl         7.138644E+00        2.013987E-04        2.014000E-04
    Cr         2.421881E+00        4.658783E-05        4.658812E-05
    Cs         1.328770E-05        9.999938E-11        1.000000E-10
    Cu         6.670900E-10        1.049993E-14        1.050000E-14
    F          1.457310E+00        7.672293E-05        7.672341E-05
    Fe         6.792121E-08        1.216455E-12        1.216462E-12
    Gd         1.572163E-09        9.999938E-15        1.000000E-14
    H          1.118764E+05        1.110182E+02        1.110188E+02
    C          1.533481E+01        1.276996E-03        1.277004E-03
    P          1.008842E-04        3.257765E-09        3.257785E-09
    K          5.036626E+00        1.288464E-04        1.288472E-04
    La         1.388757E-09        9.999938E-15        1.000000E-14
    Li         6.939513E-07        9.999938E-11        1.000000E-10
    Mg         1.352550E+00        5.566063E-05        5.566098E-05
    Mn         9.194507E-12        1.673962E-16        1.673972E-16
    Mo         1.748621E+00        1.822999E-05        1.823010E-05
    N          1.988531E+00        1.419991E-04        1.420000E-04
    Na         4.578830E+01        1.992096E-03        1.992108E-03
    Nd         1.442091E-09        9.999938E-15        1.000000E-14
    Ni         1.949559E-03        3.322483E-08        3.322504E-08
    Pb         2.071556E-05        9.999938E-11        1.000000E-10
    Pu         2.439477E-09        9.999938E-15        1.000000E-14
    S          1.051030E+01        3.278391E-04        3.278411E-04
    Si         2.898941E+00        1.032399E-04        1.032405E-04
    Sm         1.503278E-09        9.999938E-15        1.000000E-14
    Sr         8.760122E-06        9.999938E-11        1.000000E-10
    Ti         4.786974E-06        9.999938E-11        1.000000E-10
    U          2.379779E-09        9.999938E-15        1.000000E-14
    V          3.826731E-02        7.513574E-07        7.513621E-07
```

Zn	6.537599E-06	9.999938E-11	1.000000E-10
Zr	9.120445E-16	9.999938E-21	1.000000E-20

Single ion activities and activity coefficients are here defined
with respect to the modified NBS pH scale

	pH	Eh	pe
modified NBS pH scale	8.3818	0.7232	1.2225E+01
rational pH scale	8.3571	0.7247	1.2250E+01

pHCl = 12.1040

Oxygen fugacity = 2.09991E-01
Log oxygen fugacity = -0.67780

Activity of water = 0.99992
Log activity of water = -0.00004

Ionic strength = 3.050927E-03 molal
Sum of molalities = 0.0047660854913
Osmotic coefficient = 0.97521

Mass of solution = 1.000214 kg
Mass of solutes = 0.000208 kg
Conc. of solutes = 0.020805 per cent (w/w)

Moles of solvent H2O = 5.55088E+01
Mass of solvent H2O = 1.00001E+00 kg

Species	Molality	Log molality	Log gamma	Log activity
Na+	1.9853E-03	-2.7022	-0.0268	-2.7290
HCO3-	1.2410E-03	-2.9062	-0.0256	-2.9318
SO4--	3.1843E-04	-3.4970	-0.1041	-3.6010
O2(aq)	2.6520E-04	-3.5764	0.0003	-3.5761
Cl-	2.0133E-04	-3.6961	-0.0261	-3.7222
NO3-	1.4193E-04	-3.8479	-0.0261	-3.8740
K+	1.2860E-04	-3.8908	-0.0272	-3.9180
Ca++	1.2634E-04	-3.8984	-0.1029	-4.0014
SiO2(aq)	1.0016E-04	-3.9993	0.0000	-3.9993
F-	7.6601E-05	-4.1158	-0.0259	-4.1416
Mg++	5.1838E-05	-4.2854	-0.0997	-4.3850
CrO4--	4.6089E-05	-4.3364	-0.1041	-4.4405
MoO4--	1.8230E-05	-4.7392	-0.1032	-4.8424
CO3--	1.6762E-05	-4.7757	-0.1032	-4.8789
B(OH)3(aq)	1.0797E-05	-4.9667	0.0000	-4.9667
CO2(aq)	1.0734E-05	-4.9692	0.0003	-4.9689
NaSO4-	3.2781E-06	-5.4844	-0.0256	-5.5100
CaSO4(aq)	3.2262E-06	-5.4913	0.0000	-5.4913
NaHCO3(aq)	3.1139E-06	-5.5067	0.0000	-5.5067
HSiO3-	2.8549E-06	-5.5444	-0.0256	-5.5700
CaCO3(aq)	2.7982E-06	-5.5531	0.0000	-5.5531
MgSO4(aq)	2.6645E-06	-5.5744	0.0000	-5.5744
OH-	2.5853E-06	-5.5875	-0.0259	-5.6133

BO2-	1.5699E-06	-5.8041	-0.0256	-5.8298
CaHCO3+	1.3813E-06	-5.8597	-0.0268	-5.8865
VO3OH--	6.3802E-07	-6.1952	-0.1041	-6.2992
MgHCO3+	5.5668E-07	-6.2544	-0.0268	-6.2812
MgCO3(aq)	5.1881E-07	-6.2850	0.0000	-6.2850
HCrO4-	4.9863E-07	-6.3022	-0.0256	-6.3279
KSO4-	2.4333E-07	-6.6138	-0.0256	-6.6394
NaHSiO3(aq)	2.2361E-07	-6.6505	0.0000	-6.6505
NaCO3-	8.5551E-08	-7.0678	-0.0256	-7.0934
MgF+	7.1208E-08	-7.1475	-0.0268	-7.1743
CaNO3+	7.1024E-08	-7.1486	-0.0268	-7.1754
HVO4--	6.8729E-08	-7.1629	-0.1041	-7.2669
NaCl(aq)	5.9138E-08	-7.2281	0.0000	-7.2281
CaF+	3.6770E-08	-7.4345	-0.0268	-7.4613
Ni++	3.2346E-08	-7.4902	-0.1029	-7.5931
H2VO4-	2.7537E-08	-7.5601	-0.0256	-7.5857
VO2(OH)2-	1.7066E-08	-7.7679	-0.0256	-7.7935
NaF(aq)	1.3546E-08	-7.8682	0.0000	-7.8682
CaB(OH)4+	1.0430E-08	-7.9817	-0.0268	-8.0085
MgCl+	6.0908E-09	-8.2153	-0.0268	-8.2421
NaB(OH)4(aq)	5.1536E-09	-8.2879	0.0000	-8.2879
MgB(OH)4+	5.1300E-09	-8.2899	-0.0268	-8.3167
H+	4.3948E-09	-8.3571	-0.0247	-8.3818
CaCl+	4.0517E-09	-8.3924	-0.0268	-8.4191
CaOH+	3.6073E-09	-8.4428	-0.0268	-8.4696
HPO4--	2.7569E-09	-8.5596	-0.1041	-8.6636
NiSO4(aq)	8.5419E-10	-9.0684	0.0000	-9.0684
KCl(aq)	7.3321E-10	-9.1348	0.0000	-9.1348
NaOH(aq)	7.2111E-10	-9.1420	0.0000	-9.1420
HF(aq)	4.4125E-10	-9.3553	0.0000	-9.3553
H2PO4-	1.5332E-10	-9.8144	-0.0256	-9.8400
CaHPO4(aq)	1.1885E-10	-9.9250	0.0000	-9.9250
HSO4-	1.0517E-10	-9.9781	-0.0256	-10.0037
KOH(aq)	1.0087E-10	-9.9962	0.0000	-9.9962

--- Summary of Solid Product Phases---

Product	Log moles	Moles	Mass, g	Volume, cc
Fluorapatite	-4.4199	3.8027E-05	1.9177E-02	1.9013E-02
Hematite	-1.1148	7.6780E-02	1.2261E+01	2.3244E+00
Ni2SiO4	-4.2901	5.1274E-05	1.0740E-02	2.1848E-03
Pyrolusite	-2.7834	1.6468E-03	1.4317E-01	8.2342E-01
Quartz	-2.7781	1.6667E-03	1.0014E-01	3.7815E-02
Talc	-5.0500	8.9118E-06	3.3799E-03	1.2142E-03
fix CO2(g)	4.0000	1.0000E+04	4.4010E+05	0.0000E+00
fix O2(g)	4.0000	9.9999E+03	3.1998E+05	0.0000E+00
Smectite-di	-5.3475	4.4924E-06	1.9028E-03	5.8757E-04
Beidellite-Ca	-43.7414	1.8139E-44	6.6491E-42	2.3495E-42
Beidellite-K	-44.8023	1.5764E-45	5.8777E-43	2.1077E-43
Beidellite-Mg	-43.8190	1.5171E-44	5.5217E-42	1.8689E-42
Beidellite-Na	-44.6391	2.2959E-45	8.4381E-43	2.9970E-43
Montmor-Ca	-30.6949	2.0189E-31	7.3901E-29	1.0095E-28
Montmor-K	-31.5428	2.8655E-32	1.0669E-29	1.4328E-29
Montmor-Mg	-30.5616	2.7443E-31	9.9739E-29	1.3722E-28
Montmor-Na	-31.3904	4.0698E-32	1.4937E-29	2.0349E-29
Nontronite-Ca	-5.6594	2.1909E-06	9.2960E-04	2.8723E-04
Nontronite-K	-6.7203	1.9041E-07	8.1987E-05	2.5757E-05
Nontronite-Mg	-5.7367	1.8338E-06	7.7328E-04	2.3795E-04
Nontronite-Na	-6.5570	2.7731E-07	1.1793E-04	3.6635E-05

	Mass, grams	Volume, cc
Created	7.600948E+05	3.208658E+00
Destroyed	8.750962E+00	0.000000E+00
Net	7.600861E+05	3.208658E+00

Warning-- these volume totals may be incomplete because of missing partial molar volume data in the data base

--- Summary of Pure Mineral Saturation States ---

Mineral	Log Q/K	Aff, kcal	State
Alamosite	-3.017	-4.115	
Albite	-6.752	-9.212	
Albite_low	-6.752	-9.212	
Alstonite	-5.793	-7.903	
Analcime	-6.608	-9.016	
Andradite	-6.938	-9.465	
Anglesite	-5.856	-7.989	
Anhydrite	-3.296	-4.497	
Aragonite	-0.545	-0.743	
Artinite	-6.213	-8.476	
BaCrO4	-4.615	-6.297	
BaZrO3	82.356	112.357	ssatd
Barite	-3.737	-5.098	
Barytocalcite	-5.950	-8.118	
Bassanite	-3.941	-5.377	
Boehmite	-5.207	-7.103	
Boric_acid	-4.808	-6.560	
Brucite	-3.920	-5.347	
Bunsenite	-3.301	-4.504	
CaSO4:0.5H2O(beta)	-4.109	-5.606	
CaZrO3	142.492	194.400	ssatd
Calcite	-0.400	-0.546	
CeO2	-2.536	-3.460	
Celadonite	-4.255	-5.805	
Cerussite	-1.448	-1.976	
Chalcedony	-0.271	-0.370	
Chrysotile	-1.989	-2.713	
Coesite	-0.810	-1.105	
Cristobalite(alpha)	-0.551	-0.751	
Cristobalite(beta)	-0.994	-1.356	
Crocoite	-1.830	-2.497	
Diaspore	-4.803	-6.552	
Diopside	-3.822	-5.215	
Dolomite	0.000	0.000	
Dolomite-dis	-1.544	-2.107	
Dolomite-ord	0.000	0.000	
Enstatite	-2.948	-4.021	
Epsomite	-6.024	-8.219	
Fe(OH)3	-5.601	-7.642	
Ferrite-Zn	-5.062	-6.905	
Fluorapatite	0.000	0.000	satd
Fluorite	-2.248	-3.066	
Forsterite	-7.105	-9.693	
GdOHCO3	-6.516	-8.889	
GdPO4:H2O	-5.839	-7.966	

Gibbsite	-5.398	-7.365	
Goethite	-0.480	-0.655	
Gypsum	-3.120	-4.257	
Hematite	0.000	0.000	satd
Hexahydrite	-6.260	-8.540	
Huntite	-5.658	-7.719	
Hydrocerussite	-6.078	-8.292	
Ice	-0.139	-0.189	
K-Feldspar	-4.901	-6.687	
Kalicinite	-7.134	-9.732	
LaPO4:H2O	-4.533	-6.184	
Lanarkite	-6.583	-8.982	
Lansfordite	-3.776	-5.152	
Litharge	-5.988	-8.169	
Magnesite	-1.229	-1.676	
Manganite	-4.459	-6.084	
Massicot	-6.163	-8.408	
Maximum_Microcline	-4.901	-6.687	
MnO2(gamma)	-1.518	-2.071	
Monohydrocalcite	-1.234	-1.683	
Mordenite	-7.088	-9.670	
Nahcolite	-5.549	-7.570	
NdOHCO3	-6.121	-8.351	
NdPO4:H2O	-5.244	-7.155	
Nesquehonite	-3.931	-5.363	
Ni(OH)2	-3.578	-4.882	
Ni2SiO4	0.000	0.000	satd
NiCO3	-5.655	-7.715	
Nontronite-Ca	-0.103	-0.140	
Nontronite-H	-1.251	-1.706	
Nontronite-K	-0.453	-0.618	
Nontronite-Mg	-0.128	-0.175	
Nontronite-Na	-0.399	-0.545	
Okenite	-5.618	-7.665	
Paralaurionite	-5.651	-7.710	
PbHPO4	-7.204	-9.829	
Pentahydrite	-6.599	-9.003	
Phlogopite	-5.481	-7.478	
Plattnerite	-1.351	-1.844	
Pseudowollastonite	-5.237	-7.145	
PuO2	-1.531	-2.089	
PuO2(OH)2	-6.107	-8.331	
Pyrolusite	0.000	0.000	satd
Pyromorphite	-7.210	-9.837	
Quartz	0.000	0.000	satd
Rutile	-0.355	-0.484	
Sanidine_high	-6.100	-8.323	
Saponite-Ca	-0.948	-1.294	
Saponite-Cs	-3.160	-4.311	
Saponite-H	-2.096	-2.860	
Saponite-K	-1.298	-1.771	
Saponite-Mg	-0.974	-1.329	
Saponite-Na	-1.244	-1.698	
Sellaite	-3.284	-4.480	
Sepiolite	-4.926	-6.720	
SiO2(am)	-1.286	-1.754	
SmPO4:H2O	-5.444	-7.427	
Smithsonite	-5.213	-7.112	
SrZrO3	119.333	162.805	ssatd
Starkeyite	-6.986	-9.531	
Strontianite	-4.361	-5.950	
Talc	0.000	0.000	satd
Tenorite	-7.009	-9.562	

Tremolite	-5.814	-7.932	
Trevorite	-0.509	-0.694	
Tridymite	-0.172	-0.234	
Witherite	-1.661	-2.266	
Wollastonite	-4.998	-6.818	
Zincite	-4.645	-6.337	
Zn(OH)2(beta)	-5.370	-7.326	
Zn(OH)2(epsilon)	-5.098	-6.956	
Zn(OH)2(gamma)	-5.319	-7.257	
fix CO2(g)	0.000	0.000	satd
fix O2(g)	0.000	0.000	satd

--- Summary of Solid Solutions ---

--- Carbonate-Calcite ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Calcite	8.7068E-01	-0.0601	0.0000	-0.0601
Magnesite	1.2921E-01	-0.8887	0.0000	-0.8887
Rhodochrosite	3.7203E-11	-10.4294	0.0000	-10.4294
Siderite	4.7504E-19	-18.3233	0.0000	-18.3233
Smithsonite	1.3402E-05	-4.8728	0.0000	-4.8728
Strontianite	9.5221E-05	-4.0213	0.0000	-4.0213

Mineral	Log Q/K	Aff, kcal	State
Carbonate-Calcite	-0.340	-0.464	
Calcite	-0.340	-0.464	
Magnesite	-0.340	-0.464	
Rhodochrosite	-0.340	-0.464	
Siderite	-0.340	-0.464	
Smithsonite	-0.340	-0.464	
Strontianite	-0.340	-0.464	

--- Clinoptilolite-hy-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-hy-Ca	9.9406E-01	-0.0026	0.0000	-0.0026
Clinoptilolite-hy-Cs	1.6589E-22	-21.7802	0.0000	-21.7802
Clinoptilolite-hy-K	1.9577E-03	-2.7082	0.0000	-2.7082
Clinoptilolite-hy-Na	3.9821E-03	-2.3999	0.0000	-2.3999
Clinoptilolite-hy-Sr	3.3204E-11	-10.4788	0.0000	-10.4788

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-hy-ss	-20.851	-28.447	
Clinoptilolite-hy-Ca	-20.851	-28.447	
Clinoptilolite-hy-Cs	-20.851	-28.447	
Clinoptilolite-hy-K	-20.851	-28.447	
Clinoptilolite-hy-Na	-20.851	-28.447	
Clinoptilolite-hy-Sr	-20.851	-28.447	

--- Clinoptilolite-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-Ca	7.3069E-01	-0.1363	-0.3352	-0.4715
Clinoptilolite-Cs	3.7043E-07	-6.4313	-15.8210	-22.2523
Clinoptilolite-K	1.2050E-01	-0.9190	-2.2608	-3.1798
Clinoptilolite-NH4	2.4062E-64	-63.6187	-156.5019	-220.1206
Clinoptilolite-Na	1.4813E-01	-0.8294	-2.0402	-2.8696
Clinoptilolite-Sr	6.8568E-04	-3.1639	-7.7831	-10.9470

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-ss	-20.383	-27.809	
Clinoptilolite-Ca	-20.383	-27.809	
Clinoptilolite-Cs	-20.383	-27.809	
Clinoptilolite-K	-20.383	-27.809	
Clinoptilolite-NH4	-20.383	-27.809	
Clinoptilolite-Na	-20.383	-27.809	
Clinoptilolite-Sr	-20.383	-27.809	

--- Saponite-tri ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Saponite-Ca	4.8777E-01	-0.3118	0.2089	-0.1029
Saponite-H	1.6212E-04	-3.7902	2.5394	-1.2508
Saponite-K	4.2361E-02	-1.3730	0.9199	-0.4531
Saponite-Mg	4.0797E-01	-0.3894	0.2609	-0.1285
Saponite-Na	6.1738E-02	-1.2095	0.8103	-0.3991

Mineral	Log Q/K	Aff, kcal	State
Saponite-tri	-0.845	-1.153	
Saponite-Ca	-0.845	-1.153	
Saponite-H	-0.845	-1.153	
Saponite-K	-0.845	-1.153	
Saponite-Mg	-0.845	-1.153	
Saponite-Na	-0.845	-1.153	

--- Smectite-di ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Beidellite-Ca	4.0377E-39	-38.3939	25.7239	-12.6700
Beidellite-K	3.5090E-40	-39.4548	26.4347	-13.0201
Beidellite-Mg	3.3771E-39	-38.4715	25.7759	-12.6956
Beidellite-Na	5.1105E-40	-39.2915	26.3253	-12.9662
Montmor-Ca	4.4940E-26	-25.3474	16.9827	-8.3646

Montmor-K	6.3785E-27	-26.1953	17.5508	-8.6444
Montmor-Mg	6.1087E-26	-25.2140	16.8934	-8.3206
Montmor-Na	9.0592E-27	-26.0429	17.4488	-8.5942
Nontronite-Ca	4.8770E-01	-0.3118	0.2089	-0.1029
Nontronite-K	4.2384E-02	-1.3728	0.9198	-0.4530
Nontronite-Mg	4.0819E-01	-0.3891	0.2607	-0.1284
Nontronite-Na	6.1728E-02	-1.2095	0.8104	-0.3991

Mineral	Log Q/K	Aff, kcal	State
Smectite-di	0.000	0.000	satd
Beidellite-Ca	0.000	0.000	satd
Beidellite-K	0.000	0.000	satd
Beidellite-Mg	0.000	0.000	satd
Beidellite-Na	0.000	0.000	satd
Montmor-Ca	0.000	0.000	satd
Montmor-K	0.000	0.000	satd
Montmor-Mg	0.000	0.000	satd
Montmor-Na	0.000	0.000	satd
Nontronite-Ca	0.000	0.000	satd
Nontronite-K	0.000	0.000	satd
Nontronite-Mg	0.000	0.000	satd
Nontronite-Na	0.000	0.000	satd

--- Lanthanide hydroxide ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
La(OH)3	5.8177E-05	-4.2352	0.0000	-4.2352
Ce(OH)3	5.4133E-15	-14.2665	0.0000	-14.2665
Nd(OH)3(c)	5.6646E-01	-0.2468	0.0000	-0.2468
Gd(OH)3	3.6213E-01	-0.4411	0.0000	-0.4411
Sm(OH)3	7.1354E-02	-1.1466	0.0000	-1.1466

Mineral	Log Q/K	Aff, kcal	State
Lanthanide hydroxide	-7.550	-10.300	
La(OH)3	-7.550	-10.300	
Ce(OH)3	-7.550	-10.300	
Nd(OH)3(c)	-7.550	-10.300	
Gd(OH)3	-7.550	-10.300	
Sm(OH)3	-7.550	-10.300	

--- Rhabdophane-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaPO4:H2O	7.3187E-01	-0.1356	0.0000	-0.1356
CePO4:H2O	2.1535E-11	-10.6669	0.0000	-10.6669
NdPO4:H2O	1.4218E-01	-0.8472	0.0000	-0.8472
GdPO4:H2O	3.6187E-02	-1.4415	0.0000	-1.4415
SmPO4:H2O	8.9763E-02	-1.0469	0.0000	-1.0469

Mineral	Log Q/K	Aff, kcal	State
Rhabdophane-ss	-4.397	-5.999	
LaPO4:H2O	-4.397	-5.999	
CePO4:H2O	-4.397	-5.999	
NdPO4:H2O	-4.397	-5.999	
GdPO4:H2O	-4.397	-5.999	
SmPO4:H2O	-4.397	-5.999	

--- Lanthanide fluoride ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaF3:0.5H2O	7.9440E-01	-0.1000	0.0000	-0.1000
CeF3:0.5H2O	3.7047E-11	-10.4313	0.0000	-10.4313
NdF3:0.5H2O	1.9429E-01	-0.7115	0.0000	-0.7115
GdF3:0.5H2O	1.5637E-03	-2.8058	0.0000	-2.8058
SmF3:0.5H2O	9.7433E-03	-2.0113	0.0000	-2.0113

Mineral	Log Q/K	Aff, kcal	State
Lanthanide fluoride	-10.226	-13.951	
LaF3:0.5H2O	-10.226	-13.951	
CeF3:0.5H2O	-10.226	-13.951	
NdF3:0.5H2O	-10.226	-13.951	
GdF3:0.5H2O	-10.226	-13.951	
SmF3:0.5H2O	-10.226	-13.951	

--- Summary of Gases ---

Gas	Fugacity	Log fugacity
Al(g)	2.5931-196	-195.5862
B(g)	7.4562-204	-203.1275
BF3(g)	2.6889E-40	-39.5704
C(g)	3.0917-190	-189.5098
CH4(g)	3.5288-146	-145.4524
CO(g)	6.0395E-49	-48.2190
CO2(g)	3.1623E-04	-3.5000
Ca(g)	2.9674-151	-150.5276
Chlorine	1.0083E-29	-28.9964
Cs(g)	9.2831E-83	-82.0323
Cu(g)	5.9393E-82	-81.2263
Fluorine	2.7887E-83	-82.5546
H2(g)	6.1145E-42	-41.2136
H2O(g)	2.5975E-02	-1.5854
H2S(g)	2.7962-144	-143.5534
HCl(g)	3.8952E-19	-18.4095
HF(g)	2.3120E-14	-13.6360
K(g)	5.9749E-77	-76.2237
Li(g)	2.0275E-96	-95.6930
Mg(g)	8.2625-129	-128.0829
Nitrogen	7.5131E-21	-20.1242
NH3(g)	9.9920E-70	-69.0003

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NO(g)                        2.7293E-26    -25.5639
NO2(g)                       1.8662E-20    -19.7290
Na(g)                        4.8180E-75    -74.3171
O2(g)                        2.0999E-01     -0.6778
Pb(g)                        6.8408E-68    -67.1649
S2(g)                        4.6629-231   -230.3313
SO2(g)                       4.9511E-57    -56.3053
Si(g)                        4.2257-221   -220.3741
SiF4(g)                      1.2595E-39    -38.8998
Ti(g)                        1.6798-231   -230.7747
TiCl4(g)                     3.4077E-87    -86.4675
U(g)                         1.3920-298   -297.8563
U2Cl10(g)                    1.5840-252   -251.8002
U2Cl8(g)                     4.8705-254   -253.3124
U2F10(g)                     1.1383-161   -160.9438
UCl(g)                       4.8322-255   -254.3159
UCl2(g)                      5.0182-210   -209.2995
UCl3(g)                      1.1414-162   -161.9426
UCl4(g)                      1.4058-132   -131.8521
UCl5(g)                      8.9091-140   -139.0502
UCl6(g)                      1.0489-141   -140.9793
UF(g)                        6.0954-240   -239.2150
UF2(g)                       1.9795-199   -198.7034
UF3(g)                       1.5820-152   -151.8008
UF4(g)                       1.8662-102   -101.7290
UF5(g)                       1.0084E-93    -92.9964
UF6(g)                       5.3650E-99    -98.2704
UO(g)                        1.0994-213   -212.9588
UO2(g)                       2.0368-129   -128.6910
UO2Cl2(g)                    8.9669E-78    -77.0474
UO2F2(g)                     2.5660E-65    -64.5907
UO3(g)                       1.4981E-76    -75.8244
UOF4(g)                      5.5612E-80    -79.2548
Zn(g)                        8.6734E-78    -77.0618



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Stepping to zi=  1.5997E-01, delzi=  1.0000E-09, nord= 0
  time =  1.8494E+03 d, dltime =  1.1561E-05 d
Steps completed =   103, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-Mg           ) =    -43.8190

Stepping to zi=  1.5997E-01, delzi=  1.0000E-09, nord= 0
  time =  1.8494E+03 d, dltime =  1.1561E-05 d
Steps completed =   104, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-Mg           ) =    -43.8190

Stepping to zi=  1.5997E-01, delzi=  1.0000E-09, nord= 0
  time =  1.8494E+03 d, dltime =  1.1561E-05 d
Steps completed =   105, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-Mg           ) =    -43.8190

Stepping to zi=  1.5997E-01, delzi=  1.0000E-08, nord= 1
  time =  1.8494E+03 d, dltime =  1.1561E-04 d
Steps completed =   106, iter =  1, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-Mg           ) =    -43.8190

Stepping to zi=  1.5997E-01, delzi=  1.0000E-07, nord= 1
  time =  1.8494E+03 d, dltime =  1.1561E-03 d
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Steps completed =   107, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-Mg           ) =    -43.8190

Stepping to zi=  1.5997E-01, delzi=  1.0000E-06, nord= 1
  time =  1.8494E+03 d, dltime =  1.1561E-02 d
Steps completed =   108, iter =  7, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-Mg           ) =    -43.8190

Stepping to zi=  1.5998E-01, delzi=  1.0000E-05, nord= 2
  time =  1.8496E+03 d, dltime =  1.1561E-01 d
Steps completed =   109, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-Mg           ) =    -43.8188

Stepping to zi=  1.6008E-01, delzi=  1.0000E-04, nord= 2
  time =  1.8507E+03 d, dltime =  1.1561E+00 d
Steps completed =   110, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-Mg           ) =    -43.8177

Stepping to zi=  1.6095E-01, delzi=  8.6962E-04, nord= 3
  time =  1.8608E+03 d, dltime =  1.0054E+01 d
Steps completed =   111, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-Mg           ) =    -43.8074

Stepping to zi=  1.6428E-01, delzi=  3.3250E-03, nord= 3
  time =  1.8992E+03 d, dltime =  3.8440E+01 d
Steps completed =   112, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-Mg           ) =    -43.7680

Stepping to zi=  1.7249E-01, delzi=  8.2151E-03, nord= 4
  time =  1.9942E+03 d, dltime =  9.4975E+01 d
Steps completed =   113, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-Mg           ) =    -43.6689

Stepping to zi=  1.8147E-01, delzi=  8.9781E-03, nord= 5
  time =  2.0980E+03 d, dltime =  1.0380E+02 d
Steps completed =   114, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-Mg           ) =    -43.5578

Stepping to zi=  1.9432E-01, delzi=  1.2853E-02, nord= 5
  time =  2.2466E+03 d, dltime =  1.4860E+02 d
Steps completed =   115, iter = 12, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-Mg           ) =    -43.3928

Stepping to zi=  2.1236E-01, delzi=  1.8040E-02, nord= 6
  time =  2.4551E+03 d, dltime =  2.0856E+02 d
Steps completed =   116, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Talc                    ) =     -5.7400

Stepping to zi=  2.2291E-01, delzi=  1.0551E-02, nord= 6
  time =  2.5771E+03 d, dltime =  1.2198E+02 d
     The phase to be dropped is Talc                      (  548)


  Attempted species assemblage no.   2

            1      1  H2O
            2      3  Al+++
            3      7  B(OH)3(aq)
            4      8  Ba++
            5     11  Ca++
            6     13  Ce+++
            7     14  Cl-
            8     16  CrO4--
```

```
  9     17  Cs+
 10     18  Cu++
 11     22  F-
 12     23  Fe++
 13     25  Gd+++
 14     26  H+
 15     28  HCO3-
 16     29  HPO4--
 17     35  K+
 18     37  La+++
 19     38  Li+
 20     40  Mg++
 21     41  Mn++
 22     42  MoO4--
 23     43  NO3-
 24     44  Na+
 25     45  Nd+++
 26     47  Ni++
 27     49  Pb++
 28     52  Pu++++
 29     58  SO4--
 30     62  SiO2(aq)
 31     63  Sm+++
 32     65  Sr++
 33     69  Ti(OH)4(aq)
 34     72  UO2++
 35     73  VO++
 36     78  Zn++
 37     79  Zr(OH)2++
 38     80  O2(g)
 39    222  Fluorapatite
 40    252  Hematite
 41    405  Ni2SiO4
 42    470  Pyrolusite
 43    475  Quartz
 44    689  fix     CO2(g)
 45    690  fix     O2(g)
 46      1  SmectiteBeidellite-Ca
 47      2  SmectiteBeidellite-K
 48      3  SmectiteBeidellite-Mg
 49      4  SmectiteBeidellite-Na
 50      5  SmectiteMontmor-Ca
 51      6  SmectiteMontmor-K
 52      7  SmectiteMontmor-Mg
 53      8  SmectiteMontmor-Na
 54      9  SmectiteNontronite-Ca
 55     10  SmectiteNontronite-K
 56     11  SmectiteNontronite-Mg
 57     12  SmectiteNontronite-Na

Steps completed =   117, iter =  6, ncorr = 0

- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -


                    Reaction progress        =  2.22913322919927E-01
                    Log of reaction progress =      -0.6518640


                    Time =  2.227E+08 sec
                         =  2.577E+03 days
                         =  7.056E+00 years
```

```
Log sec =        8.348
Log days =       3.411
Log years =      0.849

Temperature    =     25.000 degrees C
total pressure =      1.013 bars
```

Change in the product phase assemblage

--- Reactant Summary ---

Reactant	Moles	Delta moles	Mass, g	Delta Mass, g
carbon steel	1.9777E+01	2.2266E-01	1.0818E+03	1.2179E+01
Alloy-22	2.0000E+01	2.5161E-04	1.1977E+03	1.5068E-02

```
Current total mass =  2.27951E+03 grams
Delta total mass   =  1.21941E+01 grams
Delta total volume =      0.00000 cc
```

Reactant	Rel. Rate mol/mol	Rate mol/s	Rate mol/s/cm2
carbon steel	9.9887E-01	1.0000E-09	1.0000E-11
Alloy-22	1.1287E-03	1.1300E-12	1.1300E-14

Reactant	Affinity kcal/mol	Surface Area mol/s/cm2
carbon steel	999.00000	1.0000E+02
Alloy-22	999.00000	1.0000E+02

Reactant	Rate Constants, mol/s/cm2	
carbon steel		
	Forward	1.0000E-11
Alloy-22		
	Forward	1.1300E-14

```
Affinity of the overall irreversible reaction=     0.000 kcal
Contributions from irreversible reactions
with no thermodynamic data are not included
```

--- Element Totals for the Aqueous Solution ---

Element	mg/kg soln.	Molality	Moles
O	8.880237E+05	5.551466E+01	5.551513E+01
Al	2.243128E-08	8.315228E-13	8.315298E-13
B	1.338988E-01	1.238790E-05	1.238800E-05
Ba	1.372984E-05	9.999916E-11	1.000000E-10

Ca	2.404880E+00	6.001698E-05	6.001748E-05
Ce	1.400858E-19	9.999916E-25	1.000000E-24
Cl	7.138687E+00	2.013983E-04	2.014000E-04
Cr	3.367767E+00	6.478256E-05	6.478310E-05
Cs	1.328778E-05	9.999916E-11	1.000000E-10
Cu	6.670940E-10	1.049991E-14	1.050000E-14
F	1.176361E+00	6.193132E-05	6.193184E-05
Fe	6.732903E-08	1.205839E-12	1.205849E-12
Gd	1.572173E-09	9.999916E-15	1.000000E-14
H	1.118770E+05	1.110179E+02	1.110189E+02
C	1.258275E+01	1.047812E-03	1.047821E-03
P	4.893104E-04	1.580074E-08	1.580087E-08
K	5.036464E+00	1.288412E-04	1.288423E-04
La	1.388766E-09	9.999916E-15	1.000000E-14
Li	6.939554E-07	9.999916E-11	1.000000E-10
Mg	1.999950E+00	8.230201E-05	8.230270E-05
Mn	9.605158E-12	1.748711E-16	1.748726E-16
Mo	2.436649E+00	2.540271E-05	2.540292E-05
N	1.988543E+00	1.419988E-04	1.420000E-04
Na	4.578841E+01	1.992085E-03	1.992101E-03
Nd	1.442100E-09	9.999916E-15	1.000000E-14
Ni	2.885450E-03	4.917409E-08	4.917450E-08
Pb	2.071568E-05	9.999916E-11	1.000000E-10
Pu	2.439492E-09	9.999916E-15	1.000000E-14
S	1.222968E+01	3.814672E-04	3.814704E-04
Si	2.883613E+00	1.026932E-04	1.026940E-04
Sm	1.503287E-09	9.999916E-15	1.000000E-14
Sr	8.760175E-06	9.999916E-11	1.000000E-10
Ti	4.787003E-06	9.999916E-11	1.000000E-10
U	2.379793E-09	9.999916E-15	1.000000E-14
V	5.331997E-02	1.046899E-06	1.046908E-06
Zn	6.537638E-06	9.999916E-11	1.000000E-10
Zr	9.120500E-16	9.999916E-21	1.000000E-20

Single ion activities and activity coefficients are here defined
with respect to the modified NBS pH scale

	pH	Eh	pe
modified NBS pH scale	8.2971	0.7282	1.2310E+01
rational pH scale	8.2726	0.7296	1.2334E+01

pHCl = 12.0190

Oxygen fugacity = 2.09991E-01
Log oxygen fugacity = -0.67780

Activity of water = 0.99992
Log activity of water = -0.00003

Ionic strength = 2.988043E-03 molal
Sum of molalities = 0.0045555609858
Osmotic coefficient = 0.97483

Mass of solution = 1.000208 kg
Mass of solutes = 0.000200 kg

Conc. of solutes = 0.019989 per cent (w/w)

Moles of solvent H2O = 5.55089E+01
Mass of solvent H2O = 1.00001E+00 kg

Species	Molality	Log molality	Log gamma	Log activity
Na+	1.9854E-03	-2.7022	-0.0265	-2.7287
HCO3-	1.0206E-03	-2.9912	-0.0254	-3.0165
SO4--	3.7106E-04	-3.4306	-0.1031	-3.5336
O2(aq)	2.6521E-04	-3.5764	0.0003	-3.5761
Cl-	2.0133E-04	-3.6961	-0.0258	-3.7219
NO3-	1.4197E-04	-3.8478	-0.0258	-3.8736
K+	1.2856E-04	-3.8909	-0.0270	-3.9179
SiO2(aq)	1.0016E-04	-3.9993	0.0000	-3.9993
Mg++	7.6409E-05	-4.1169	-0.0988	-4.2156
CrO4--	6.3940E-05	-4.1942	-0.1031	-4.2973
F-	6.1822E-05	-4.2089	-0.0256	-4.2345
Ca++	5.6896E-05	-4.2449	-0.1019	-4.3469
MoO4--	2.5403E-05	-4.5951	-0.1022	-4.6973
CO3--	1.1322E-05	-4.9461	-0.1022	-5.0483
B(OH)3(aq)	1.1052E-05	-4.9566	0.0000	-4.9566
CO2(aq)	1.0735E-05	-4.9692	0.0003	-4.9689
MgSO4(aq)	4.5967E-06	-5.3376	0.0000	-5.3376
NaSO4-	3.8290E-06	-5.4169	-0.0254	-5.4423
NaHCO3(aq)	2.5637E-06	-5.5911	0.0000	-5.5911
HSiO3-	2.3477E-06	-5.6294	-0.0254	-5.6547
OH-	2.1260E-06	-5.6724	-0.0256	-5.6980
CaSO4(aq)	1.7006E-06	-5.7694	0.0000	-5.7694
BO2-	1.3214E-06	-5.8790	-0.0254	-5.9043
VO3OH--	8.7766E-07	-6.0567	-0.1031	-6.1597
CaCO3(aq)	8.5502E-07	-6.0680	0.0000	-6.0680
HCrO4-	8.4220E-07	-6.0746	-0.0254	-6.1000
MgHCO3+	6.7616E-07	-6.1700	-0.0265	-6.1965
MgCO3(aq)	5.1882E-07	-6.2850	0.0000	-6.2850
CaHCO3+	5.1264E-07	-6.2902	-0.0265	-6.3167
KSO4-	2.8411E-07	-6.5465	-0.0254	-6.5719
NaHSiO3(aq)	1.8411E-07	-6.7349	0.0000	-6.7349
HVO4--	9.4542E-08	-7.0244	-0.1031	-7.1274
MgF+	8.4884E-08	-7.0712	-0.0265	-7.0977
NaCl(aq)	5.9209E-08	-7.2276	0.0000	-7.2276
NaCO3-	5.7923E-08	-7.2372	-0.0254	-7.2625
Ni++	4.7671E-08	-7.3217	-0.1019	-7.4237
H2VO4-	4.6117E-08	-7.3361	-0.0254	-7.3615
CaNO3+	3.2063E-08	-7.4940	-0.0265	-7.5205
VO2(OH)2-	2.8580E-08	-7.5439	-0.0254	-7.5693
HPO4--	1.3518E-08	-7.8691	-0.1031	-7.9722
CaF+	1.3393E-08	-7.8731	-0.0265	-7.8996
NaF(aq)	1.0946E-08	-7.9608	0.0000	-7.9608
MgCl+	8.9963E-09	-8.0459	-0.0265	-8.0725
MgB(OH)4+	6.3780E-09	-8.1953	-0.0265	-8.2218
H+	5.3385E-09	-8.2726	-0.0245	-8.2971
NaB(OH)4(aq)	4.3431E-09	-8.3622	0.0000	-8.3622
CaB(OH)4+	3.9623E-09	-8.4021	-0.0265	-8.4286
CaCl+	1.8286E-09	-8.7379	-0.0265	-8.7644
NiSO4(aq)	1.4736E-09	-8.8316	0.0000	-8.8316
CaOH+	1.3388E-09	-8.8733	-0.0265	-8.8998
H2PO4-	9.1527E-10	-9.0385	-0.0254	-9.0638
KCl(aq)	7.3382E-10	-9.1344	0.0000	-9.1344
NaOH(aq)	5.9371E-10	-9.2264	0.0000	-9.2264
MgHPO4(aq)	5.2749E-10	-9.2778	0.0000	-9.2778
HF(aq)	4.3305E-10	-9.3635	0.0000	-9.3635

CaHPO4(aq)	2.6362E-10	-9.5790	0.0000	-9.5790
MgPO4-	2.5229E-10	-9.5981	-0.0254	-9.6235
NaHPO4-	1.7561E-10	-9.7554	-0.0254	-9.7808
HSO4-	1.4920E-10	-9.8262	-0.0254	-9.8516
CaPO4-	1.3857E-10	-9.8583	-0.0254	-9.8837

--- Summary of Solid Product Phases---

Product	Log moles	Moles	Mass, g	Volume, cc
Fluorapatite	-4.2772	5.2818E-05	2.6636E-02	2.6409E-02
Hematite	-0.9707	1.0699E-01	1.7086E+01	3.2391E+00
Ni2SiO4	-4.1460	7.1447E-05	1.4966E-02	3.0444E-03
Pyrolusite	-2.6393	2.2948E-03	1.9950E-01	1.1474E+00
Quartz	-2.6947	2.0197E-03	1.2135E-01	4.5824E-02
fix CO2(g)	4.0000	1.0000E+04	4.4010E+05	0.0000E+00
fix O2(g)	4.0000	9.9998E+03	3.1998E+05	0.0000E+00
Smectite-di	-5.3475	4.4924E-06	1.9014E-03	5.8690E-04
Beidellite-Ca	-43.1714	6.7398E-44	2.4705E-41	8.7300E-42
Beidellite-K	-44.0594	8.7210E-45	3.2516E-42	1.1660E-42
Beidellite-Mg	-42.9915	1.0198E-43	3.7116E-41	1.2563E-41
Beidellite-Na	-43.8960	1.2706E-44	4.6698E-42	1.6586E-42
Montmor-Ca	-30.3592	4.3728E-31	1.6006E-28	2.1864E-28
Montmor-K	-31.0343	9.2407E-32	3.4406E-29	4.6204E-29
Montmor-Mg	-29.9685	1.0753E-30	3.9080E-28	5.3764E-28
Montmor-Na	-30.8818	1.3129E-31	4.8186E-29	6.5645E-29
Nontronite-Ca	-5.7996	1.5863E-06	6.7305E-04	2.0796E-04
Nontronite-K	-6.6877	2.0526E-07	8.8381E-05	2.7765E-05
Nontronite-Mg	-5.6195	2.4018E-06	1.0128E-03	3.1166E-04
Nontronite-Na	-6.5243	2.9905E-07	1.2717E-04	3.9507E-05

	Mass, grams	Volume, cc
Created	7.600983E+05	4.462319E+00
Destroyed	1.219414E+01	0.000000E+00
Net	7.600861E+05	4.462319E+00

Warning-- these volume totals may be incomplete because of missing partial molar volume data in the data base

--- Summary of Pure Mineral Saturation States ---

Mineral	Log Q/K	Aff, kcal	State
Alamosite	-3.185	-4.345	
Albite	-6.719	-9.167	
Albite_low	-6.719	-9.167	
Alstonite	-6.475	-8.834	
Analcime	-6.577	-8.973	
Anglesite	-5.787	-7.896	
Anhydrite	-3.574	-4.876	
Aragonite	-1.059	-1.445	
Artinite	-6.213	-8.476	
BaCrO4	-4.470	-6.099	
BaZrO3	82.189	112.129	ssatd
Barite	-3.668	-5.004	

Barytocalcite	-6.633	-9.050	
Bassanite	-4.219	-5.756	
Boehmite	-5.089	-6.943	
Boric_acid	-4.798	-6.546	
Brucite	-3.920	-5.347	
Bunsenite	-3.301	-4.504	
CaSO4:0.5H2O(beta)	-4.387	-5.985	
CaZrO3	141.977	193.697	ssatd
Calcite	-0.915	-1.248	
CeO2	-2.544	-3.470	
Celadonite	-4.222	-5.760	
Cerussite	-1.617	-2.206	
Chalcedony	-0.271	-0.370	
Chrysotile	-1.989	-2.713	
Coesite	-0.810	-1.105	
Cristobalite(alpha)	-0.551	-0.751	
Cristobalite(beta)	-0.994	-1.356	
Crocoite	-1.686	-2.300	
Diaspore	-4.686	-6.392	
Diopside	-4.337	-5.917	
Dolomite	-0.515	-0.702	
Dolomite-dis	-2.059	-2.809	
Dolomite-ord	-0.515	-0.702	
Enstatite	-2.948	-4.021	
Epsomite	-5.787	-7.895	
Fe(OH)3	-5.601	-7.642	
Ferrite-Zn	-5.215	-7.114	
Fluorapatite	0.000	0.000	satd
Fluorite	-2.779	-3.791	
Forsterite	-7.105	-9.693	
GdOHCO3	-6.486	-8.848	
GdPO4:H2O	-4.948	-6.750	
Gibbsite	-5.281	-7.205	
Goethite	-0.480	-0.655	
Gypsum	-3.398	-4.636	
Hematite	0.000	0.000	satd
Hexahydrite	-6.023	-8.217	
Huntite	-6.173	-8.421	
Hydrocerussite	-6.583	-8.981	
Ice	-0.139	-0.189	
K-Feldspar	-4.869	-6.642	
Kalicinite	-7.218	-9.848	
LaPO4:H2O	-3.715	-5.069	
Lanarkite	-6.683	-9.118	
Lansfordite	-3.776	-5.152	
Litharge	-6.156	-8.399	
Magnesite	-1.229	-1.676	
Manganite	-4.459	-6.084	
Massicot	-6.332	-8.638	
Maximum_Microcline	-4.869	-6.642	
MnO2(gamma)	-1.518	-2.071	
Monohydrocalcite	-1.749	-2.386	
Mordenite	-7.158	-9.765	
Nahcolite	-5.633	-7.686	
NdOHCO3	-6.119	-8.349	
NdPO4:H2O	-4.382	-5.978	
Nesquehonite	-3.931	-5.363	
Ni(OH)2	-3.578	-4.882	
Ni2SiO4	0.000	0.000	satd
NiCO3	-5.655	-7.715	
Nontronite-Ca	-0.149	-0.204	
Nontronite-H	-1.212	-1.654	
Nontronite-K	-0.442	-0.603	

Nontronite-Mg	-0.090	-0.122	
Nontronite-Na	-0.388	-0.530	
Okenite	-6.133	-8.367	
Paralaurionite	-5.735	-7.824	
PbHPO4	-6.512	-8.884	
Pentahydrite	-6.362	-8.680	
Phlogopite	-5.448	-7.433	
Plattnerite	-1.520	-2.074	
Pseudowollastonite	-5.752	-7.847	
PuO2	-1.461	-1.993	
PuO2(OH)2	-6.036	-8.235	
Pyrolusite	0.000	0.000	satd
Pyromorphite	-5.384	-7.346	
Quartz	0.000	0.000	satd
Rutile	-0.355	-0.484	
Sanidine_high	-6.068	-8.278	
Saponite-Ca	-0.994	-1.357	
Saponite-Cs	-3.149	-4.296	
Saponite-H	-2.057	-2.807	
Saponite-K	-1.288	-1.757	
Saponite-Mg	-0.935	-1.276	
Saponite-Na	-1.234	-1.683	
Sellaite	-3.300	-4.503	
Sepiolite	-4.926	-6.720	
SiO2(am)	-1.286	-1.754	
SmPO4:H2O	-4.581	-6.250	
Smithsonite	-5.366	-7.320	
SrZrO3	119.163	162.572	ssatd
Starkeyite	-6.749	-9.208	
Strontianite	-4.531	-6.182	
Talc	0.000	0.000	ssatd
Tenorite	-7.016	-9.572	
Tremolite	-6.844	-9.337	
Trevorite	-0.509	-0.694	
Tridymite	-0.171	-0.234	
Witherite	-1.828	-2.494	
Wollastonite	-5.513	-7.521	
Zincite	-4.798	-6.545	
Zn(OH)2(beta)	-5.523	-7.535	
Zn(OH)2(epsilon)	-5.251	-7.164	
Zn(OH)2(gamma)	-5.472	-7.466	
fix CO2(g)	0.000	0.000	satd
fix O2(g)	0.000	0.000	satd

--- Summary of Solid Solutions ---

--- Carbonate-Calcite ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Calcite	6.7297E-01	-0.1720	0.0000	-0.1720
Magnesite	3.2684E-01	-0.4857	0.0000	-0.4857
Rhodochrosite	9.4107E-11	-10.0264	0.0000	-10.0264
Siderite	1.2016E-18	-17.9202	0.0000	-17.9202
Smithsonite	2.3835E-05	-4.6228	0.0000	-4.6228
Strontianite	1.6279E-04	-3.7884	0.0000	-3.7884

Mineral	Log Q/K	Aff, kcal	State

Carbonate-Calcite	-0.743	-1.014
Calcite	-0.743	-1.014
Magnesite	-0.743	-1.014
Rhodochrosite	-0.743	-1.014
Siderite	-0.743	-1.014
Smithsonite	-0.743	-1.014
Strontianite	-0.743	-1.014

--- Clinoptilolite-hy-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-hy-Ca	9.7678E-01	-0.0102	0.0000	-0.0102
Clinoptilolite-hy-Cs	6.4875E-22	-21.1879	0.0000	-21.1879
Clinoptilolite-hy-K	7.6464E-03	-2.1165	0.0000	-2.1165
Clinoptilolite-hy-Na	1.5573E-02	-1.8076	0.0000	-1.8076
Clinoptilolite-hy-Sr	1.2918E-10	-9.8888	0.0000	-9.8888

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-hy-ss	-21.332	-29.103	
Clinoptilolite-hy-Ca	-21.332	-29.103	
Clinoptilolite-hy-Cs	-21.332	-29.103	
Clinoptilolite-hy-K	-21.332	-29.103	
Clinoptilolite-hy-Na	-21.332	-29.103	
Clinoptilolite-hy-Sr	-21.332	-29.103	

--- Clinoptilolite-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-Ca	6.4544E-01	-0.1901	-0.4677	-0.6579
Clinoptilolite-Cs	4.8776E-07	-6.3118	-15.5270	-21.8388
Clinoptilolite-K	1.5861E-01	-0.7997	-1.9672	-2.7669
Clinoptilolite-NH4	4.6847E-64	-63.3293	-155.7901	-219.1194
Clinoptilolite-Na	1.9504E-01	-0.7099	-1.7463	-2.4561
Clinoptilolite-Sr	9.0151E-04	-3.0450	-7.4908	-10.5358

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-ss	-20.685	-28.221	
Clinoptilolite-Ca	-20.685	-28.221	
Clinoptilolite-Cs	-20.685	-28.221	
Clinoptilolite-K	-20.685	-28.221	
Clinoptilolite-NH4	-20.685	-28.221	
Clinoptilolite-Na	-20.685	-28.221	
Clinoptilolite-Sr	-20.685	-28.221	

--- Saponite-tri ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Saponite-Ca	3.5317E-01	-0.4520	0.3029	-0.1492
Saponite-H	2.1235E-04	-3.6729	2.4609	-1.2121
Saponite-K	4.5667E-02	-1.3404	0.8981	-0.4423
Saponite-Mg	5.3437E-01	-0.2722	0.1823	-0.0898
Saponite-Na	6.6579E-02	-1.1767	0.7884	-0.3883

Mineral	Log Q/K	Aff, kcal	State
Saponite-tri	-0.845	-1.153	
Saponite-Ca	-0.845	-1.153	
Saponite-H	-0.845	-1.153	
Saponite-K	-0.845	-1.153	
Saponite-Mg	-0.845	-1.153	
Saponite-Na	-0.845	-1.153	

--- Smectite-di ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Beidellite-Ca	1.5003E-38	-37.8238	25.3420	-12.4819
Beidellite-K	1.9413E-39	-38.7119	25.9370	-12.7749
Beidellite-Mg	2.2700E-38	-37.6440	25.2215	-12.4225
Beidellite-Na	2.8283E-39	-38.5485	25.8275	-12.7210
Montmor-Ca	9.7336E-26	-25.0117	16.7579	-8.2539
Montmor-K	2.0570E-26	-25.6868	17.2101	-8.4766
Montmor-Mg	2.3936E-25	-24.6210	16.4960	-8.1249
Montmor-Na	2.9225E-26	-25.5342	17.1079	-8.4263
Nontronite-Ca	3.5310E-01	-0.4521	0.3029	-0.1492
Nontronite-K	4.5690E-02	-1.3402	0.8979	-0.4423
Nontronite-Mg	5.3464E-01	-0.2719	0.1822	-0.0897
Nontronite-Na	6.6567E-02	-1.1767	0.7884	-0.3883

Mineral	Log Q/K	Aff, kcal	State
Smectite-di	0.000	0.000	satd
Beidellite-Ca	0.000	0.000	satd
Beidellite-K	0.000	0.000	satd
Beidellite-Mg	0.000	0.000	satd
Beidellite-Na	0.000	0.000	satd
Montmor-Ca	0.000	0.000	satd
Montmor-K	0.000	0.000	satd
Montmor-Mg	0.000	0.000	satd
Montmor-Na	0.000	0.000	satd
Nontronite-Ca	0.000	0.000	satd
Nontronite-K	0.000	0.000	satd
Nontronite-Mg	0.000	0.000	satd
Nontronite-Na	0.000	0.000	satd

--- Lanthanide hydroxide ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
La(OH)3	5.1154E-05	-4.2911	0.0000	-4.2911
Ce(OH)3	5.1754E-15	-14.2861	0.0000	-14.2861
Nd(OH)3(c)	5.5304E-01	-0.2572	0.0000	-0.2572
Gd(OH)3	3.7721E-01	-0.4234	0.0000	-0.4234
Sm(OH)3	6.9698E-02	-1.1568	0.0000	-1.1568

Mineral	Log Q/K	Aff, kcal	State
Lanthanide hydroxide	-7.538	-10.283	
La(OH)3	-7.538	-10.283	
Ce(OH)3	-7.538	-10.283	
Nd(OH)3(c)	-7.538	-10.283	
Gd(OH)3	-7.538	-10.283	
Sm(OH)3	-7.538	-10.283	

--- Rhabdophane-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaPO4:H2O	7.0895E-01	-0.1494	0.0000	-0.1494
CePO4:H2O	2.2682E-11	-10.6443	0.0000	-10.6443
NdPO4:H2O	1.5293E-01	-0.8155	0.0000	-0.8155
GdPO4:H2O	4.1526E-02	-1.3817	0.0000	-1.3817
SmPO4:H2O	9.6596E-02	-1.0150	0.0000	-1.0150

Mineral	Log Q/K	Aff, kcal	State
Rhabdophane-ss	-3.566	-4.865	
LaPO4:H2O	-3.566	-4.865	
CePO4:H2O	-3.566	-4.865	
NdPO4:H2O	-3.566	-4.865	
GdPO4:H2O	-3.566	-4.865	
SmPO4:H2O	-3.566	-4.865	

--- Lanthanide fluoride ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaF3:0.5H2O	7.7668E-01	-0.1098	0.0000	-0.1098
CeF3:0.5H2O	3.9383E-11	-10.4047	0.0000	-10.4047
NdF3:0.5H2O	2.1092E-01	-0.6759	0.0000	-0.6759
GdF3:0.5H2O	1.8111E-03	-2.7421	0.0000	-2.7421
SmF3:0.5H2O	1.0583E-02	-1.9754	0.0000	-1.9754

Mineral	Log Q/K	Aff, kcal	State
Lanthanide fluoride	-10.284	-14.031	
LaF3:0.5H2O	-10.284	-14.031	
CeF3:0.5H2O	-10.284	-14.031	
NdF3:0.5H2O	-10.284	-14.031	

GdF3:0.5H2O	-10.284	-14.031
SmF3:0.5H2O	-10.284	-14.031

--- Summary of Gases ---

Gas	Fugacity	Log fugacity
Al(g)	3.3964-196	-195.4690
B(g)	7.6319-204	-203.1174
BF3(g)	2.6017E-40	-39.5847
C(g)	3.0917-190	-189.5098
CH4(g)	3.5288-146	-145.4524
CO(g)	6.0395E-49	-48.2190
CO2(g)	3.1623E-04	-3.5000
Ca(g)	9.0672-152	-151.0425
Chlorine	1.4911E-29	-28.8265
Cs(g)	7.6430E-83	-82.1167
Cu(g)	5.8402E-82	-81.2336
Fluorine	2.6861E-83	-82.5709
H2(g)	6.1146E-42	-41.2136
H2O(g)	2.5976E-02	-1.5854
H2S(g)	4.8239-144	-143.3166
HCl(g)	4.7368E-19	-18.3245
HF(g)	2.2690E-14	-13.6442
K(g)	4.9175E-77	-76.3083
Li(g)	1.6687E-96	-95.7776
Mg(g)	8.2625-129	-128.0829
Nitrogen	1.1116E-20	-19.9540
NH3(g)	1.2154E-69	-68.9153
NO(g)	3.3199E-26	-25.4789
NO2(g)	2.2700E-20	-19.6440
Na(g)	3.9668E-75	-74.4016
O2(g)	2.0999E-01	-0.6778
Pb(g)	4.6424E-68	-67.3333
S2(g)	1.3878-230	-229.8577
SO2(g)	8.5415E-57	-56.0685
Si(g)	4.2257-221	-220.3741
SiF4(g)	1.1685E-39	-38.9324
Ti(g)	1.6798-231	-230.7747
TiCl4(g)	7.4517E-87	-86.1277
U(g)	2.3623-298	-297.6267
U2Cl10(g)	3.2260-251	-250.4913
U2Cl8(g)	6.7076-253	-252.1734
U2F10(g)	2.7176-161	-160.5658
UCl(g)	9.9722-255	-254.0012
UCl2(g)	1.2593-209	-208.8999
UCl3(g)	3.4833-162	-161.4580
UCl4(g)	5.2172-132	-131.2826
UCl5(g)	4.0205-139	-138.3957
UCl6(g)	5.7561-141	-140.2399
UF(g)	1.0152-239	-238.9934
UF2(g)	3.2356-199	-198.4900
UF3(g)	2.5379-152	-151.5955
UF4(g)	2.9382-102	-101.5319
UF5(g)	1.5581E-93	-92.8074
UF6(g)	8.1358E-99	-98.0896
UO(g)	1.8657-213	-212.7292
UO2(g)	3.4565-129	-128.4614
UO2Cl2(g)	2.2503E-77	-76.6478
UO2F2(g)	4.1943E-65	-64.3773

```
UO3(g)                      2.5424E-76    -75.5948
UOF4(g)                     8.7555E-80    -79.0577
Zn(g)                       6.0981E-78    -77.2148



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Stepping to zi=  2.2291E-01, delzi=  1.0000E-09, nord= 0
  time =  2.5771E+03 d, dltime =  1.1561E-05 d
Steps completed =   118, iter =  1, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-Na           ) =    -43.8960

Stepping to zi=  2.2291E-01, delzi=  1.0000E-09, nord= 0
  time =  2.5771E+03 d, dltime =  1.1561E-05 d
Steps completed =   119, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-Na           ) =    -43.8960

Stepping to zi=  2.2291E-01, delzi=  1.0000E-09, nord= 0
  time =  2.5771E+03 d, dltime =  1.1561E-05 d
Steps completed =   120, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-Na           ) =    -43.8960

Stepping to zi=  2.2291E-01, delzi=  1.0000E-08, nord= 1
  time =  2.5771E+03 d, dltime =  1.1561E-04 d
Steps completed =   121, iter =  1, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-Na           ) =    -43.8960

Stepping to zi=  2.2291E-01, delzi=  1.0000E-07, nord= 1
  time =  2.5771E+03 d, dltime =  1.1561E-03 d
Steps completed =   122, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-Na           ) =    -43.8960

Stepping to zi=  2.2291E-01, delzi=  1.0000E-06, nord= 1
  time =  2.5771E+03 d, dltime =  1.1561E-02 d
Steps completed =   123, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-Na           ) =    -43.8960

Stepping to zi=  2.2292E-01, delzi=  1.0000E-05, nord= 2
  time =  2.5772E+03 d, dltime =  1.1561E-01 d
Steps completed =   124, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-Na           ) =    -43.8958

Stepping to zi=  2.2302E-01, delzi=  1.0000E-04, nord= 2
  time =  2.5784E+03 d, dltime =  1.1561E+00 d
Steps completed =   125, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-Na           ) =    -43.8936

Stepping to zi=  2.2402E-01, delzi=  1.0000E-03, nord= 3
  time =  2.5899E+03 d, dltime =  1.1561E+01 d
Steps completed =   126, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-Na           ) =    -43.8719

Stepping to zi=  2.2561E-01, delzi=  1.5845E-03, nord= 3
  time =  2.6083E+03 d, dltime =  1.8319E+01 d
Steps completed =   127, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-Na           ) =    -43.8371

Stepping to zi=  2.2924E-01, delzi=  3.6297E-03, nord= 4
  time =  2.6502E+03 d, dltime =  4.1963E+01 d
Steps completed =   128, iter =  3, ncorr = 0
```

```
Most rapidly changing is zvclg1(Beidellite-Na           ) =    -43.7554

Stepping to zi=  2.3521E-01, delzi=  5.9678E-03, nord= 5
  time =  2.7192E+03 d, dltime =  6.8994E+01 d
Steps completed =   129, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-Na           ) =    -43.6144

Stepping to zi=  2.4372E-01, delzi=  8.5144E-03, nord= 6
  time =  2.8177E+03 d, dltime =  9.8436E+01 d
Steps completed =   130, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-Na           ) =    -43.3959

Stepping to zi=  2.5195E-01, delzi=  8.2333E-03, nord= 6
  time =  2.9128E+03 d, dltime =  9.5185E+01 d
Steps completed =   131, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(HPO4--                  ) =     -7.1954

Stepping to zi=  2.5972E-01, delzi=  7.7705E-03, nord= 6
  time =  3.0027E+03 d, dltime =  8.9835E+01 d
Steps completed =   132, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(HPO4--                  ) =     -6.8695

Stepping to zi=  2.6674E-01, delzi=  7.0128E-03, nord= 6
  time =  3.0838E+03 d, dltime =  8.1076E+01 d
Steps completed =   133, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(HPO4--                  ) =     -6.4147

Stepping to zi=  2.7281E-01, delzi=  6.0728E-03, nord= 6
  time =  3.1540E+03 d, dltime =  7.0208E+01 d
iter =   10
      1 supersaturated pure minerals
      0 supersaturated solid solutions

               The most supersaturated phases           Affinity, kcal

                 1     471   Pyromorphite                  0.56267088
--- Go back to reduce the extent of supersaturation ---
--- Cutting step size and trying again ---

Stepping to zi=  2.6826E-01, delzi=  1.5182E-03, nord= 6
  time =  3.1013E+03 d, dltime =  1.7552E+01 d
Steps completed =   134, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(HPO4--                  ) =     -6.2829

Stepping to zi=  2.7129E-01, delzi=  3.0364E-03, nord= 6
  time =  3.1364E+03 d, dltime =  3.5104E+01 d
Steps completed =   135, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(HPO4--                  ) =     -5.9873

Stepping to zi=  2.7140E-01, delzi=  1.0325E-04, nord= 6
  time =  3.1376E+03 d, dltime =  1.1937E+00 d
iter =    3
      1 supersaturated pure minerals
      0 supersaturated solid solutions

               The most supersaturated phases           Affinity, kcal

                 1     471   Pyromorphite                  0.00650483


  Attempted species assemblage no.   2

            1      1  H2O
```

```
  2      3  Al+++
  3      7  B(OH)3(aq)
  4      8  Ba++
  5     11  Ca++
  6     13  Ce+++
  7     14  Cl-
  8     16  CrO4--
  9     17  Cs+
 10     18  Cu++
 11     22  F-
 12     23  Fe++
 13     25  Gd+++
 14     26  H+
 15     28  HCO3-
 16     29  HPO4--
 17     35  K+
 18     37  La+++
 19     38  Li+
 20     40  Mg++
 21     41  Mn++
 22     42  MoO4--
 23     43  NO3-
 24     44  Na+
 25     45  Nd+++
 26     47  Ni++
 27     49  Pb++
 28     52  Pu++++
 29     58  SO4--
 30     62  SiO2(aq)
 31     63  Sm+++
 32     65  Sr++
 33     69  Ti(OH)4(aq)
 34     72  UO2++
 35     73  VO++
 36     78  Zn++
 37     79  Zr(OH)2++
 38     80  O2(g)
 39    222  Fluorapatite
 40    252  Hematite
 41    405  Ni2SiO4
 42    470  Pyrolusite
 43    471  Pyromorphite
 44    475  Quartz
 45    689  fix     CO2(g)
 46    690  fix     O2(g)
 47      1  SmectiteBeidellite-Ca
 48      2  SmectiteBeidellite-K
 49      3  SmectiteBeidellite-Mg
 50      4  SmectiteBeidellite-Na
 51      5  SmectiteMontmor-Ca
 52      6  SmectiteMontmor-K
 53      7  SmectiteMontmor-Mg
 54      8  SmectiteMontmor-Na
 55      9  SmectiteNontronite-Ca
 56     10  SmectiteNontronite-K
 57     11  SmectiteNontronite-Mg
 58     12  SmectiteNontronite-Na

Steps completed =   136, iter = 14, ncorr = 0

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```

```
Reaction progress        =  2.71395417479151E-01
Log of reaction progress =      -0.5663975


Time =  2.711E+08 sec
     =  3.138E+03 days
     =  8.590E+00 years

Log sec =        8.433
Log days =       3.497
Log years =      0.934

Temperature    =     25.000 degrees C
total pressure =      1.013 bars
```

Change in the product phase assemblage

--- Reactant Summary ---

Reactant	Moles	Delta moles	Mass, g	Delta Mass, g
carbon steel	1.9729E+01	2.7109E-01	1.0791E+03	1.4828E+01
Alloy-22	2.0000E+01	3.0633E-04	1.1977E+03	1.8345E-02

```
Current total mass =  2.27686E+03 grams
Delta total mass   =  1.48463E+01 grams
Delta total volume =      0.00000 cc
```

Reactant	Rel. Rate mol/mol	Rate mol/s	Rate mol/s/cm2
carbon steel	9.9887E-01	1.0000E-09	1.0000E-11
Alloy-22	1.1287E-03	1.1300E-12	1.1300E-14

Reactant	Affinity kcal/mol	Surface Area mol/s/cm2
carbon steel	999.00000	1.0000E+02
Alloy-22	999.00000	1.0000E+02

Reactant	Rate Constants, mol/s/cm2	
carbon steel		
	Forward	1.0000E-11
Alloy-22		
	Forward	1.1300E-14

```
Affinity of the overall irreversible reaction=     0.000 kcal
Contributions from irreversible reactions
with no thermodynamic data are not included
```

--- Element Totals for the Aqueous Solution ---

Element	mg/kg soln.	Molality	Moles
O	8.880253E+05	5.551426E+01	5.551483E+01
Al	2.995045E-08	1.110247E-12	1.110258E-12
B	1.338997E-01	1.238787E-05	1.238800E-05
Ba	1.372994E-05	9.999897E-11	1.000000E-10
Ca	2.082852E-01	5.197988E-06	5.198041E-06
Ce	1.400868E-19	9.999897E-25	1.000000E-24
Cl	7.138738E+00	2.013979E-04	2.014000E-04
Cr	4.096363E+00	7.879716E-05	7.879797E-05
Cs	1.328787E-05	9.999897E-11	1.000000E-10
Cu	6.670988E-10	1.049989E-14	1.050000E-14
F	9.675116E-01	5.093567E-05	5.093619E-05
Fe	6.682900E-08	1.196873E-12	1.196885E-12
Gd	1.572184E-09	9.999897E-15	1.000000E-14
H	1.118778E+05	1.110177E+02	1.110189E+02
C	9.983315E+00	8.313397E-04	8.313482E-04
P	3.773632E-02	1.218565E-06	1.218577E-06
K	5.035620E+00	1.288184E-04	1.288197E-04
La	1.388776E-09	9.999897E-15	1.000000E-14
Li	6.939604E-07	9.999897E-11	1.000000E-10
Mg	1.996779E+00	8.217075E-05	8.217159E-05
Mn	1.117446E-11	2.034400E-16	2.034421E-16
Mo	2.966622E+00	3.092754E-05	3.092786E-05
N	1.988557E+00	1.419985E-04	1.420000E-04
Na	4.578798E+01	1.992048E-03	1.992068E-03
Nd	1.442110E-09	9.999897E-15	1.000000E-14
Ni	4.566982E-03	7.783019E-08	7.783099E-08
Pb	2.067040E-05	9.977965E-11	9.978067E-11
Pu	2.439509E-09	9.999897E-15	1.000000E-14
S	1.355410E+01	4.227746E-04	4.227790E-04
Si	2.869009E+00	1.021722E-04	1.021732E-04
Sm	1.503298E-09	9.999897E-15	1.000000E-14
Sr	8.760238E-06	9.999897E-11	1.000000E-10
Ti	4.787037E-06	9.999897E-11	1.000000E-10
U	2.379810E-09	9.999897E-15	1.000000E-14
V	6.491471E-02	1.274542E-06	1.274556E-06
Zn	6.537685E-06	9.999897E-11	1.000000E-10
Zr	9.120565E-16	9.999897E-21	1.000000E-20

Single ion activities and activity coefficients are here defined
with respect to the modified NBS pH scale

	pH	Eh	pe
modified NBS pH scale	8.1974	0.7341	1.2409E+01
rational pH scale	8.1732	0.7355	1.2434E+01

pHCl = 11.9189

Oxygen fugacity = 2.09991E-01
Log oxygen fugacity = -0.67780

Activity of water = 0.99992

Log activity of water = -0.00003

Ionic strength = 2.888471E-03 molal
Sum of molalities = 0.0043371539816
Osmotic coefficient = 0.97483

Mass of solution = 1.000201 kg
Mass of solutes = 0.000191 kg
Conc. of solutes = 0.019086 per cent (w/w)

Moles of solvent H2O = 5.55090E+01
Mass of solvent H2O = 1.00001E+00 kg

Species	Molality	Log molality	Log gamma	Log activity
Na+	1.9855E-03	-2.7021	-0.0261	-2.7282
HCO3-	8.1046E-04	-3.0913	-0.0250	-3.1163
SO4--	4.1289E-04	-3.3842	-0.1015	-3.4856
O2(aq)	2.6521E-04	-3.5764	0.0003	-3.5761
Cl-	2.0133E-04	-3.6961	-0.0254	-3.7215
NO3-	1.4200E-04	-3.8477	-0.0254	-3.8732
K+	1.2850E-04	-3.8911	-0.0265	-3.9176
SiO2(aq)	1.0016E-04	-3.9993	0.0000	-3.9993
CrO4--	7.7509E-05	-4.1106	-0.1015	-4.2121
Mg++	7.6040E-05	-4.1190	-0.0973	-4.2163
F-	5.0856E-05	-4.2937	-0.0252	-4.3189
MoO4--	3.0928E-05	-4.5097	-0.1006	-4.6103
B(OH)3(aq)	1.1305E-05	-4.9467	0.0000	-4.9467
CO2(aq)	1.0735E-05	-4.9692	0.0003	-4.9689
CO3--	7.1271E-06	-5.1471	-0.1006	-5.2477
MgSO4(aq)	5.1263E-06	-5.2902	0.0000	-5.2902
Ca++	4.9430E-06	-5.3060	-0.1004	-5.4064
NaSO4-	4.2769E-06	-5.3689	-0.0250	-5.3939
NaHCO3(aq)	2.0398E-06	-5.6904	0.0000	-5.6904
HSiO3-	1.8644E-06	-5.7295	-0.0250	-5.7545
OH-	1.6883E-06	-5.7726	-0.0252	-5.7978
HCrO4-	1.2880E-06	-5.8901	-0.0250	-5.9151
BO2-	1.0735E-06	-5.9692	-0.0250	-5.9942
HPO4--	1.0545E-06	-5.9769	-0.1015	-6.0784
VO3OH--	1.0489E-06	-5.9793	-0.1015	-6.0807
MgHCO3+	5.3613E-07	-6.2707	-0.0261	-6.2968
MgCO3(aq)	3.2729E-07	-6.4851	0.0000	-6.4851
KSO4-	3.1720E-07	-6.4987	-0.0250	-6.5237
CaSO4(aq)	1.6560E-07	-6.7809	0.0000	-6.7809
NaHSiO3(aq)	1.4648E-07	-6.8342	0.0000	-6.8342
HVO4--	1.1299E-07	-6.9470	-0.1015	-7.0484
H2PO4-	9.0081E-08	-7.0454	-0.0250	-7.0704
Ni++	7.5187E-08	-7.1239	-0.1004	-7.2242
MgF+	6.9721E-08	-7.1566	-0.0261	-7.1827
H2VO4-	6.9538E-08	-7.1578	-0.0250	-7.1828
NaCl(aq)	5.9324E-08	-7.2268	0.0000	-7.2268
CaCO3(aq)	4.7097E-08	-7.3270	0.0000	-7.3270
VO2(OH)2-	4.3094E-08	-7.3656	-0.0250	-7.3906
MgHPO4(aq)	4.1241E-08	-7.3847	0.0000	-7.3847
NaCO3-	3.6597E-08	-7.4366	-0.0250	-7.4616
CaHCO3+	3.5492E-08	-7.4499	-0.0261	-7.4760
MgPO4-	1.5664E-08	-7.8051	-0.0250	-7.8301
NaHPO4-	1.3752E-08	-7.8616	-0.0250	-7.8867
NaF(aq)	9.0216E-09	-8.0447	0.0000	-8.0447
MgCl+	8.9829E-09	-8.0466	-0.0261	-8.0727
H+	6.7110E-09	-8.1732	-0.0241	-8.1974
MgB(OH)4+	5.1732E-09	-8.2862	-0.0261	-8.3123

NaB(OH)4(aq)	3.5349E-09	-8.4516	0.0000	-8.4516
CaNO3+	2.7961E-09	-8.5535	-0.0261	-8.5796
NiSO4(aq)	2.6051E-09	-8.5842	0.0000	-8.5842
CaHPO4(aq)	1.7997E-09	-8.7448	0.0000	-8.7448
CaF+	9.6057E-10	-9.0175	-0.0261	-9.0436
CaPO4-	7.5120E-10	-9.1242	-0.0250	-9.1492
KCl(aq)	7.3492E-10	-9.1338	0.0000	-9.1338
KHPO4-	6.4411E-10	-9.1910	-0.0250	-9.2160
NaOH(aq)	4.7237E-10	-9.3257	0.0000	-9.3257
HF(aq)	4.4860E-10	-9.3481	0.0000	-9.3481
CaB(OH)4+	2.8062E-10	-9.5519	-0.0261	-9.5780
HSO4-	2.0946E-10	-9.6789	-0.0250	-9.7039
CaCl+	1.5943E-10	-9.7974	-0.0261	-9.8235
PO4---	1.0627E-10	-9.9736	-0.2293	-10.2029

--- Summary of Solid Product Phases---

Product	Log moles	Moles	Mass, g	Volume, cc
Fluorapatite	-4.1951	6.3814E-05	3.2181E-02	3.1907E-02
Hematite	-0.8852	1.3026E-01	2.0802E+01	3.9436E+00
Ni2SiO4	-4.0606	8.6978E-05	1.8219E-02	3.7061E-03
Pyrolusite	-2.5538	2.7939E-03	2.4289E-01	1.3970E+00
Pyromorphite	-13.3579	4.3866E-14	5.9498E-11	8.4512E-12
Quartz	-2.6451	2.2643E-03	1.3605E-01	5.1372E-02
fix CO2(g)	4.0000	1.0000E+04	4.4010E+05	0.0000E+00
fix O2(g)	4.0000	9.9998E+03	3.1998E+05	0.0000E+00
Smectite-di	-5.3475	4.4924E-06	1.8999E-03	5.8622E-04
Beidellite-Ca	-42.2181	6.0514E-43	2.2182E-40	7.8384E-41
Beidellite-K	-42.5762	2.6533E-43	9.8929E-41	3.5475E-41
Beidellite-Mg	-41.5088	3.0986E-42	1.1278E-39	3.8172E-40
Beidellite-Na	-42.4126	3.8674E-43	1.4214E-40	5.0485E-41
Montmor-Ca	-30.0544	8.8219E-31	3.2292E-28	4.4109E-28
Montmor-K	-30.1995	6.3172E-31	2.3521E-28	3.1586E-28
Montmor-Mg	-29.1342	7.3414E-30	2.6682E-27	3.6707E-27
Montmor-Na	-30.0468	8.9794E-31	3.2956E-28	4.4897E-28
Nontronite-Ca	-6.2049	6.2381E-07	2.6468E-04	8.1781E-05
Nontronite-K	-6.5630	2.7352E-07	1.1777E-04	3.6998E-05
Nontronite-Mg	-5.4953	3.1964E-06	1.3479E-03	4.1477E-04
Nontronite-Na	-6.3994	3.9867E-07	1.6954E-04	5.2668E-05

	Mass, grams	Volume, cc
Created	7.601009E+05	5.428080E+00
Destroyed	1.484628E+01	0.000000E+00
Net	7.600861E+05	5.428080E+00

Warning-- these volume totals may be incomplete because
of missing partial molar volume data in the data base

--- Summary of Pure Mineral Saturation States ---

Mineral	Log Q/K	Aff, kcal	State
Alamosite	-3.384	-4.617	
Albite	-6.594	-8.997	

Albite_low	-6.594	-8.997	
Analcime	-6.457	-8.809	
Anglesite	-5.739	-7.830	
Anhydrite	-4.586	-6.256	
Aragonite	-2.318	-3.163	
Artinite	-6.613	-9.022	
BaCrO4	-4.383	-5.980	
BaZrO3	81.991	111.859	ssatd
Barite	-3.618	-4.936	
Bassanite	-5.231	-7.136	
Boehmite	-4.865	-6.638	
Boric_acid	-4.788	-6.533	
Brucite	-4.120	-5.620	
Bunsenite	-3.301	-4.504	
CaSO4:0.5H2O(beta)	-5.399	-7.365	
CaZrO3	140.718	191.979	ssatd
Calcite	-2.174	-2.966	
CeO2	-2.594	-3.539	
Celadonite	-4.298	-5.863	
Cerussite	-1.816	-2.477	
Chalcedony	-0.271	-0.370	
Chrysotile	-2.589	-3.532	
Coesite	-0.810	-1.105	
Cristobalite(alpha)	-0.551	-0.751	
Cristobalite(beta)	-0.994	-1.356	
Crocoite	-1.601	-2.184	
Diaspore	-4.461	-6.087	
Diopside	-5.796	-7.908	
Dolomite	-1.974	-2.693	
Dolomite-dis	-3.518	-4.800	
Dolomite-ord	-1.974	-2.693	
Enstatite	-3.148	-4.294	
Epsomite	-5.740	-7.831	
Fe(OH)3	-5.601	-7.642	
Ferrite-Zn	-5.400	-7.367	
Fluorapatite	0.000	0.000	satd
Fluorite	-4.007	-5.467	
GdOHCO3	-6.518	-8.893	
GdPO4:H2O	-2.887	-3.939	
Gibbsite	-5.057	-6.899	
Goethite	-0.480	-0.655	
Gypsum	-4.410	-6.016	
Hematite	0.000	0.000	satd
Hexahydrite	-5.975	-8.152	
Hydrocerussite	-7.180	-9.796	
Ice	-0.139	-0.189	
K-Feldspar	-4.744	-6.472	
Kalicinite	-7.318	-9.983	
LaPO4:H2O	-1.705	-2.326	
Lanarkite	-6.834	-9.324	
Lansfordite	-3.976	-5.425	
Litharge	-6.355	-8.671	
Magnesite	-1.429	-1.949	
Manganite	-4.459	-6.084	
Massicot	-6.531	-8.910	
Maximum_Microcline	-4.744	-6.472	
MnO2(gamma)	-1.518	-2.071	
Monohydrocalcite	-3.008	-4.103	
Nahcolite	-5.733	-7.821	
NdOHCO3	-6.179	-8.430	
NdPO4:H2O	-2.348	-3.204	
Nesquehonite	-4.131	-5.636	
Ni(OH)2	-3.578	-4.882	

Ni2SiO4	0.000	0.000	satd
NiCO3	-5.655	-7.715	
Nontronite-Ca	-0.283	-0.386	
Nontronite-H	-1.138	-1.553	
Nontronite-K	-0.401	-0.547	
Nontronite-Mg	-0.049	-0.067	
Nontronite-Na	-0.347	-0.474	
Paralaurionite	-5.834	-7.959	
Pb3(PO4)2	-6.106	-8.331	
Pb4O(PO4)2	-7.219	-9.849	
PbHPO4	-4.618	-6.300	
Pentahydrite	-6.315	-8.615	
Phlogopite	-5.924	-8.082	
Plattnerite	-1.719	-2.345	
Pseudowollastonite	-7.011	-9.565	
PuO2	-1.402	-1.912	
PuO2(OH)2	-5.977	-8.154	
Pyrolusite	0.000	0.000	satd
Pyromorphite	0.000	0.000	satd
Quartz	0.000	0.000	satd
Rutile	-0.355	-0.484	
Sanidine_high	-5.943	-8.108	
Saponite-Ca	-1.728	-2.358	
Saponite-Cs	-3.708	-5.059	
Saponite-H	-2.584	-3.525	
Saponite-K	-1.847	-2.519	
Saponite-Mg	-1.494	-2.039	
Saponite-Na	-1.793	-2.446	
Sellaite	-3.470	-4.734	
Sepiolite	-5.726	-7.812	
SiO2(am)	-1.286	-1.754	
SmPO4:H2O	-2.558	-3.490	
Smithsonite	-5.551	-7.573	
SrZrO3	118.964	162.300	ssatd
Starkeyite	-6.702	-9.144	
Strontianite	-4.731	-6.454	
Talc	-0.600	-0.819	
Tenorite	-7.033	-9.594	
Trevorite	-0.509	-0.694	
Tridymite	-0.172	-0.234	
Witherite	-2.026	-2.764	
Wollastonite	-6.772	-9.238	
Zincite	-4.983	-6.798	
Zn(OH)2(beta)	-5.708	-7.788	
Zn(OH)2(epsilon)	-5.437	-7.417	
Zn(OH)2(gamma)	-5.657	-7.718	
fix CO2(g)	0.000	0.000	satd
fix O2(g)	0.000	0.000	satd

--- Summary of Solid Solutions ---

--- Carbonate-Calcite ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Calcite	1.5232E-01	-0.8173	0.0000	-0.8173
Magnesite	8.4720E-01	-0.0720	0.0000	-0.0720
Rhodochrosite	3.8669E-10	-9.4126	0.0000	-9.4126
Siderite	4.9375E-18	-17.3065	0.0000	-17.3065
Smithsonite	6.3950E-05	-4.1942	0.0000	-4.1942

Strontianite	4.2264E-04	-3.3740	0.0000	-3.3740

Mineral	Log Q/K	Aff, kcal	State
Carbonate-Calcite	-1.357	-1.851	
Calcite	-1.357	-1.851	
Magnesite	-1.357	-1.851	
Rhodochrosite	-1.357	-1.851	
Siderite	-1.357	-1.851	
Smithsonite	-1.357	-1.851	
Strontianite	-1.357	-1.851	

--- Clinoptilolite-hy-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-hy-Ca	3.7922E-01	-0.4211	0.0000	-0.4211
Clinoptilolite-hy-Cs	1.7353E-20	-19.7606	0.0000	-19.7606
Clinoptilolite-hy-K	2.0421E-01	-0.6899	0.0000	-0.6899
Clinoptilolite-hy-Na	4.1657E-01	-0.3803	0.0000	-0.3803
Clinoptilolite-hy-Sr	3.4444E-09	-8.4629	0.0000	-8.4629

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-hy-ss	-22.330	-30.464	
Clinoptilolite-hy-Ca	-22.330	-30.464	
Clinoptilolite-hy-Cs	-22.330	-30.464	
Clinoptilolite-hy-K	-22.330	-30.464	
Clinoptilolite-hy-Na	-22.330	-30.464	
Clinoptilolite-hy-Sr	-22.330	-30.464	

--- Clinoptilolite-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-Ca	3.4886E-01	-0.4573	-1.1251	-1.5824
Clinoptilolite-Cs	8.9596E-07	-6.0477	-14.8774	-20.9251
Clinoptilolite-K	2.9121E-01	-0.5358	-1.3181	-1.8538
Clinoptilolite-NH4	1.3636E-63	-62.8653	-154.6487	-217.5140
Clinoptilolite-Na	3.5827E-01	-0.4458	-1.0966	-1.5424
Clinoptilolite-Sr	1.6544E-03	-2.7814	-6.8421	-9.6235

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-ss	-21.170	-28.882	
Clinoptilolite-Ca	-21.170	-28.882	
Clinoptilolite-Cs	-21.170	-28.882	
Clinoptilolite-K	-21.170	-28.882	
Clinoptilolite-NH4	-21.170	-28.882	
Clinoptilolite-Na	-21.170	-28.882	
Clinoptilolite-Sr	-21.170	-28.882	

--- Saponite-tri ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Saponite-Ca	1.3888E-01	-0.8573	0.5744	-0.2829
Saponite-H	3.5581E-04	-3.4488	2.3107	-1.1381
Saponite-K	6.0853E-02	-1.2157	0.8145	-0.4012
Saponite-Mg	7.1115E-01	-0.1480	0.0992	-0.0489
Saponite-Na	8.8759E-02	-1.0518	0.7047	-0.3471

Mineral	Log Q/K	Aff, kcal	State
Saponite-tri	-1.446	-1.972	
Saponite-Ca	-1.446	-1.972	
Saponite-H	-1.446	-1.972	
Saponite-K	-1.446	-1.972	
Saponite-Mg	-1.446	-1.972	
Saponite-Na	-1.446	-1.972	

--- Smectite-di ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Beidellite-Ca	1.3470E-37	-36.8706	24.7033	-12.1673
Beidellite-K	5.9062E-38	-37.2287	24.9432	-12.2855
Beidellite-Mg	6.8974E-37	-36.1613	24.2281	-11.9332
Beidellite-Na	8.6087E-38	-37.0651	24.8336	-12.2315
Montmor-Ca	1.9637E-25	-24.7069	16.5536	-8.1533
Montmor-K	1.4062E-25	-24.8520	16.6508	-8.2011
Montmor-Mg	1.6342E-24	-23.7867	15.9371	-7.8496
Montmor-Na	1.9988E-25	-24.6992	16.5485	-8.1507
Nontronite-Ca	1.3886E-01	-0.8574	0.5745	-0.2830
Nontronite-K	6.0884E-02	-1.2155	0.8144	-0.4011
Nontronite-Mg	7.1151E-01	-0.1478	0.0990	-0.0488
Nontronite-Na	8.8743E-02	-1.0519	0.7047	-0.3471

Mineral	Log Q/K	Aff, kcal	State
Smectite-di	0.000	0.000	satd
Beidellite-Ca	0.000	0.000	satd
Beidellite-K	0.000	0.000	satd
Beidellite-Mg	0.000	0.000	satd
Beidellite-Na	0.000	0.000	satd
Montmor-Ca	0.000	0.000	satd
Montmor-K	0.000	0.000	satd
Montmor-Mg	0.000	0.000	satd
Montmor-Na	0.000	0.000	satd
Nontronite-Ca	0.000	0.000	satd
Nontronite-K	0.000	0.000	satd
Nontronite-Mg	0.000	0.000	satd
Nontronite-Na	0.000	0.000	satd

--- Lanthanide hydroxide ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
La(OH)3	4.7454E-05	-4.3237	0.0000	-4.3237
Ce(OH)3	5.1737E-15	-14.2862	0.0000	-14.2862
Nd(OH)3(c)	5.4078E-01	-0.2670	0.0000	-0.2670
Gd(OH)3	3.9259E-01	-0.4061	0.0000	-0.4061
Sm(OH)3	6.6584E-02	-1.1766	0.0000	-1.1766

Mineral	Log Q/K	Aff, kcal	State
Lanthanide hydroxide	-7.588	-10.352	
La(OH)3	-7.588	-10.352	
Ce(OH)3	-7.588	-10.352	
Nd(OH)3(c)	-7.588	-10.352	
Gd(OH)3	-7.588	-10.352	
Sm(OH)3	-7.588	-10.352	

--- Rhabdophane-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaPO4:H2O	6.9764E-01	-0.1564	0.0000	-0.1564
CePO4:H2O	2.4052E-11	-10.6188	0.0000	-10.6188
NdPO4:H2O	1.5863E-01	-0.7996	0.0000	-0.7996
GdPO4:H2O	4.5845E-02	-1.3387	0.0000	-1.3387
SmPO4:H2O	9.7887E-02	-1.0093	0.0000	-1.0093

Mineral	Log Q/K	Aff, kcal	State
Rhabdophane-ss	-1.549	-2.113	
LaPO4:H2O	-1.549	-2.113	
CePO4:H2O	-1.549	-2.113	
NdPO4:H2O	-1.549	-2.113	
GdPO4:H2O	-1.549	-2.113	
SmPO4:H2O	-1.549	-2.113	

--- Lanthanide fluoride ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaF3:0.5H2O	7.6752E-01	-0.1149	0.0000	-0.1149
CeF3:0.5H2O	4.1939E-11	-10.3774	0.0000	-10.3774
NdF3:0.5H2O	2.1970E-01	-0.6582	0.0000	-0.6582
GdF3:0.5H2O	2.0079E-03	-2.6972	0.0000	-2.6972
SmF3:0.5H2O	1.0769E-02	-1.9678	0.0000	-1.9678

Mineral	Log Q/K	Aff, kcal	State

Lanthanide fluoride	-10.316	-14.074
LaF3:0.5H2O	-10.316	-14.074
CeF3:0.5H2O	-10.316	-14.074
NdF3:0.5H2O	-10.316	-14.074
GdF3:0.5H2O	-10.316	-14.074
SmF3:0.5H2O	-10.316	-14.074

--- Summary of Gases ---

Gas	Fugacity	Log fugacity
Al(g)	5.6908-196	-195.2448
B(g)	7.8070-204	-203.1075
BF3(g)	2.9585E-40	-39.5289
C(g)	3.0917-190	-189.5098
CH4(g)	3.5289-146	-145.4524
CO(g)	6.0395E-49	-48.2190
CO2(g)	3.1623E-04	-3.5000
Ca(g)	4.9945-153	-152.3015
Chlorine	2.3646E-29	-28.6262
Cs(g)	6.0811E-83	-82.2160
Cu(g)	5.6207E-82	-81.2502
Fluorine	2.8824E-83	-82.5402
H2(g)	6.1146E-42	-41.2136
H2O(g)	2.5976E-02	-1.5854
H2S(g)	8.5280-144	-143.0692
HCl(g)	5.9650E-19	-18.2244
HF(g)	2.3505E-14	-13.6288
K(g)	3.9108E-77	-76.4077
Li(g)	1.3273E-96	-95.8770
Mg(g)	5.2123-129	-128.2830
Nitrogen	1.7636E-20	-19.7536
NH3(g)	1.5309E-69	-68.8151
NO(g)	4.1817E-26	-25.3787
NO2(g)	2.8592E-20	-19.5438
Na(g)	3.1561E-75	-74.5008
O2(g)	2.0999E-01	-0.6778
Pb(g)	2.9352E-68	-67.5324
S2(g)	4.3372-230	-229.3628
SO2(g)	1.5100E-56	-55.8210
Si(g)	4.2257-221	-220.3741
SiF4(g)	1.3456E-39	-38.8711
Ti(g)	1.6798-231	-230.7747
TiCl4(g)	1.8740E-86	-85.7272
U(g)	4.0303-298	-297.3947
U2Cl10(g)	9.4183-250	-249.0260
U2Cl8(g)	1.2348-251	-250.9084
U2F10(g)	1.1256-160	-159.9486
UCl(g)	2.1425-254	-253.6691
UCl2(g)	3.4072-209	-208.4676
UCl3(g)	1.1868-161	-160.9256
UCl4(g)	2.2385-131	-130.6500
UCl5(g)	2.1724-138	-137.6631
UCl6(g)	3.9167-140	-139.4071
UF(g)	1.7942-239	-238.7461
UF2(g)	5.9238-199	-198.2274
UF3(g)	4.8131-152	-151.3176
UF4(g)	5.7724-102	-101.2386
UF5(g)	3.1709E-93	-92.4988

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UF6(g)                      1.7152E-98    -97.7657
UO(g)                       3.1830-213   -212.4972
UO2(g)                      5.8971-129   -128.2294
UO2Cl2(g)                   6.0883E-77    -76.2155
UO2F2(g)                    7.6789E-65    -64.1147
UO3(g)                      4.3375E-76    -75.3628
UOF4(g)                     1.7201E-79    -78.7644
Zn(g)                       3.9818E-78    -77.3999



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Stepping to zi=  2.7140E-01, delzi=  1.0000E-09, nord= 0
  time =  3.1376E+03 d, dltime =  1.1561E-05 d
Steps completed =   137, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Pyromorphite            ) =    -13.3578

Stepping to zi=  2.7140E-01, delzi=  1.0000E-09, nord= 0
  time =  3.1376E+03 d, dltime =  1.1561E-05 d
Steps completed =   138, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Pyromorphite            ) =    -13.3578

Stepping to zi=  2.7140E-01, delzi=  1.0000E-09, nord= 0
  time =  3.1376E+03 d, dltime =  1.1561E-05 d
Steps completed =   139, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Pyromorphite            ) =    -13.3578

Stepping to zi=  2.7140E-01, delzi=  1.0000E-08, nord= 1
  time =  3.1376E+03 d, dltime =  1.1561E-04 d
Steps completed =   140, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Pyromorphite            ) =    -13.3575

Stepping to zi=  2.7140E-01, delzi=  1.0000E-07, nord= 1
  time =  3.1376E+03 d, dltime =  1.1561E-03 d
Steps completed =   141, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Pyromorphite            ) =    -13.3549

Stepping to zi=  2.7140E-01, delzi=  1.0000E-06, nord= 2
  time =  3.1376E+03 d, dltime =  1.1561E-02 d
Steps completed =   142, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Pyromorphite            ) =    -13.3291

Stepping to zi=  2.7141E-01, delzi=  1.0000E-05, nord= 2
  time =  3.1377E+03 d, dltime =  1.1561E-01 d
Steps completed =   143, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Pyromorphite            ) =    -13.1318

Stepping to zi=  2.7151E-01, delzi=  1.0000E-04, nord= 3
  time =  3.1389E+03 d, dltime =  1.1561E+00 d
Steps completed =   144, iter =  8, ncorr = 0
Most rapidly changing is zvclg1(Pyromorphite            ) =    -12.4669

Stepping to zi=  2.7209E-01, delzi=  5.8365E-04, nord= 3
  time =  3.1456E+03 d, dltime =  6.7476E+00 d
Steps completed =   145, iter = 19, ncorr = 0
Most rapidly changing is zvclg1(Pyromorphite            ) =    -11.7395

Stepping to zi=  2.7296E-01, delzi=  8.7436E-04, nord= 4
  time =  3.1557E+03 d, dltime =  1.0108E+01 d
Steps completed =   146, iter =  5, ncorr = 0
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Most rapidly changing is zvclg1(Pyromorphite            ) =    -11.4221

Stepping to zi=  2.7516E-01, delzi=  2.1926E-03, nord= 5
  time =  3.1811E+03 d, dltime =  2.5349E+01 d
Steps completed =   147, iter =  6, ncorr = 0
Most rapidly changing is zvclg1(Pyromorphite            ) =    -11.1268

Stepping to zi=  2.7712E-01, delzi=  1.9670E-03, nord= 6
  time =  3.2038E+03 d, dltime =  2.2741E+01 d
Steps completed =   148, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(HPO4--                  ) =     -5.4895

Stepping to zi=  2.7930E-01, delzi=  2.1734E-03, nord= 6
  time =  3.2290E+03 d, dltime =  2.5126E+01 d
Steps completed =   149, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(HPO4--                  ) =     -5.3622

Stepping to zi=  2.8189E-01, delzi=  2.5923E-03, nord= 6
  time =  3.2589E+03 d, dltime =  2.9970E+01 d
Steps completed =   150, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(HPO4--                  ) =     -5.2409

Stepping to zi=  2.8411E-01, delzi=  2.2153E-03, nord= 6
  time =  3.2845E+03 d, dltime =  2.5611E+01 d
Steps completed =   151, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(HPO4--                  ) =     -5.1560

Stepping to zi=  2.8662E-01, delzi=  2.5127E-03, nord= 5
  time =  3.3136E+03 d, dltime =  2.9049E+01 d
Steps completed =   152, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(HPO4--                  ) =     -5.0749

Stepping to zi=  2.9020E-01, delzi=  3.5811E-03, nord= 6
  time =  3.3550E+03 d, dltime =  4.1402E+01 d
Steps completed =   153, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(HPO4--                  ) =     -4.9793

Stepping to zi=  2.9366E-01, delzi=  3.4608E-03, nord= 6
  time =  3.3950E+03 d, dltime =  4.0011E+01 d
Steps completed =   154, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(HPO4--                  ) =     -4.9026

Stepping to zi=  2.9735E-01, delzi=  3.6896E-03, nord= 6
  time =  3.4377E+03 d, dltime =  4.2656E+01 d
Steps completed =   155, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(HPO4--                  ) =     -4.8332

Stepping to zi=  3.0154E-01, delzi=  4.1936E-03, nord= 6
  time =  3.4861E+03 d, dltime =  4.8482E+01 d
Steps completed =   156, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-Na           ) =    -41.7549

Stepping to zi=  3.0639E-01, delzi=  4.8500E-03, nord= 6
  time =  3.5422E+03 d, dltime =  5.6071E+01 d
Steps completed =   157, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-Na           ) =    -41.6753

Stepping to zi=  3.1201E-01, delzi=  5.6217E-03, nord= 6
  time =  3.6072E+03 d, dltime =  6.4993E+01 d
Steps completed =   158, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-Na           ) =    -41.5827

Stepping to zi=  3.1856E-01, delzi=  6.5471E-03, nord= 6
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```
  time =  3.6829E+03 d, dltime =  7.5691E+01 d
Steps completed =   159, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -41.2014

Stepping to zi=  3.2420E-01, delzi=  5.6403E-03, nord= 6
  time =  3.7481E+03 d, dltime =  6.5208E+01 d
Steps completed =   160, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -41.3285

Stepping to zi=  3.3000E-01, delzi=  5.7967E-03, nord= 6
  time =  3.8151E+03 d, dltime =  6.7016E+01 d
Steps completed =   161, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -41.4670

Stepping to zi=  3.3594E-01, delzi=  5.9459E-03, nord= 6
  time =  3.8839E+03 d, dltime =  6.8740E+01 d
Steps completed =   162, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -41.6091

Stepping to zi=  3.4127E-01, delzi=  5.3220E-03, nord= 6
  time =  3.9454E+03 d, dltime =  6.1528E+01 d
Steps completed =   163, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -41.7321

Stepping to zi=  3.4791E-01, delzi=  6.6455E-03, nord= 6
  time =  4.0222E+03 d, dltime =  7.6829E+01 d
Steps completed =   164, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -41.8778

Stepping to zi=  3.5470E-01, delzi=  6.7879E-03, nord= 4
  time =  4.1007E+03 d, dltime =  7.8475E+01 d
Steps completed =   165, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -42.0165

Stepping to zi=  3.6093E-01, delzi=  6.2293E-03, nord= 6
  time =  4.1727E+03 d, dltime =  7.2018E+01 d
Steps completed =   166, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-Na           ) =    -40.6895

Stepping to zi=  3.7190E-01, delzi=  1.0967E-02, nord= 5
  time =  4.2995E+03 d, dltime =  1.2679E+02 d
Steps completed =   167, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-Na           ) =    -40.4538

Stepping to zi=  3.8046E-01, delzi=  8.5663E-03, nord= 6
  time =  4.3985E+03 d, dltime =  9.9036E+01 d
Steps completed =   168, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-Ca           ) =    -40.4997

Stepping to zi=  3.9138E-01, delzi=  1.0917E-02, nord= 6
  time =  4.5247E+03 d, dltime =  1.2621E+02 d
Steps completed =   169, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-Ca           ) =    -40.2276

Stepping to zi=  4.0079E-01, delzi=  9.4124E-03, nord= 6
  time =  4.6336E+03 d, dltime =  1.0882E+02 d
Steps completed =   170, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-Ca           ) =    -39.9714

Stepping to zi=  4.1043E-01, delzi=  9.6342E-03, nord= 6
  time =  4.7449E+03 d, dltime =  1.1138E+02 d
Steps completed =   171, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-Ca           ) =    -39.6851
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Stepping to zi=  4.2070E-01, delzi=  1.0271E-02, nord= 6
  time =  4.8637E+03 d, dltime =  1.1875E+02 d
Steps completed =   172, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-Ca           ) =    -39.3493

Stepping to zi=  4.3185E-01, delzi=  1.1156E-02, nord= 6
  time =  4.9927E+03 d, dltime =  1.2897E+02 d
Steps completed =   173, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-Ca           ) =    -38.9432

Stepping to zi=  4.4414E-01, delzi=  1.2291E-02, nord= 6
  time =  5.1348E+03 d, dltime =  1.4209E+02 d
Steps completed =   174, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-Ca           ) =    -38.4387

Stepping to zi=  4.5678E-01, delzi=  1.2633E-02, nord= 6
  time =  5.2808E+03 d, dltime =  1.4605E+02 d
Steps completed =   175, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-Ca           ) =    -37.8510

Stepping to zi=  4.6903E-01, delzi=  1.2253E-02, nord= 6
  time =  5.4225E+03 d, dltime =  1.4165E+02 d
Steps completed =   176, iter =  6, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-Ca           ) =    -37.2154

Stepping to zi=  4.8103E-01, delzi=  1.2003E-02, nord= 6
  time =  5.5612E+03 d, dltime =  1.3877E+02 d
Steps completed =   177, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-Ca           ) =    -36.5473

Stepping to zi=  4.9307E-01, delzi=  1.2033E-02, nord= 6
  time =  5.7003E+03 d, dltime =  1.3912E+02 d
Steps completed =   178, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-Ca           ) =    -35.8695

Stepping to zi=  5.0582E-01, delzi=  1.2759E-02, nord= 6
  time =  5.8478E+03 d, dltime =  1.4750E+02 d
Steps completed =   179, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-Ca           ) =    -35.1951

Stepping to zi=  5.2219E-01, delzi=  1.6363E-02, nord= 6
  time =  6.0370E+03 d, dltime =  1.8918E+02 d
Steps completed =   180, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-Ca           ) =    -34.4576

Stepping to zi=  5.3764E-01, delzi=  1.5452E-02, nord= 6
  time =  6.2157E+03 d, dltime =  1.7864E+02 d
Steps completed =   181, iter =  6, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-Ca           ) =    -33.9025

Stepping to zi=  5.5381E-01, delzi=  1.6170E-02, nord= 6
  time =  6.4026E+03 d, dltime =  1.8694E+02 d
Steps completed =   182, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-Ca           ) =    -33.4421

Stepping to zi=  5.7217E-01, delzi=  1.8365E-02, nord= 6
  time =  6.6149E+03 d, dltime =  2.1232E+02 d
Steps completed =   183, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-Ca           ) =    -33.0283

Stepping to zi=  5.8879E-01, delzi=  1.6618E-02, nord= 6
  time =  6.8070E+03 d, dltime =  1.9212E+02 d
```

```
Steps completed =   184, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-Ca           ) =    -32.7248

Stepping to zi=  6.0873E-01, delzi=  1.9938E-02, nord= 6
  time =  7.0375E+03 d, dltime =  2.3051E+02 d
Steps completed =   185, iter =  6, ncorr = 0
Most rapidly changing is zvclg1(Pyromorphite            ) =    -11.8684

Stepping to zi=  6.2907E-01, delzi=  2.0336E-02, nord= 6
  time =  7.2727E+03 d, dltime =  2.3511E+02 d
Steps completed =   186, iter =  9, ncorr = 0
Most rapidly changing is zvclg1(Pyromorphite            ) =    -13.6934

Stepping to zi=  6.2940E-01, delzi=  3.2984E-04, nord= 6
  time =  7.2765E+03 d, dltime =  3.8132E+00 d
Steps completed =   187, iter = 11, ncorr = 0
Most rapidly changing is zvclg1(Pyromorphite            ) =    -16.2260

Stepping to zi=  6.2940E-01, delzi=  1.1607E-06, nord= 3
  time =  7.2765E+03 d, dltime =  1.3419E-02 d
Steps completed =   188, iter =  9, ncorr = 0
Most rapidly changing is zvclg1(Pyromorphite            ) =    -43.3390

Stepping to zi=  6.2941E-01, delzi=  1.1607E-05, nord= 2
  time =  7.2766E+03 d, dltime =  1.3419E-01 d
--- Iteration has gone sour (iter=  16) ---
     The phase to be dropped is Pyromorphite              (  471)


  Attempted species assemblage no.   2

            1      1  H2O
            2      3  Al+++
            3      7  B(OH)3(aq)
            4      8  Ba++
            5     11  Ca++
            6     13  Ce+++
            7     14  Cl-
            8     16  CrO4--
            9     17  Cs+
           10     18  Cu++
           11     22  F-
           12     23  Fe++
           13     25  Gd+++
           14     26  H+
           15     28  HCO3-
           16     29  HPO4--
           17     35  K+
           18     37  La+++
           19     38  Li+
           20     40  Mg++
           21     41  Mn++
           22     42  MoO4--
           23     43  NO3-
           24     44  Na+
           25     45  Nd+++
           26     47  Ni++
           27     49  Pb++
           28     52  Pu++++
           29     58  SO4--
           30     62  SiO2(aq)
           31     63  Sm+++
           32     65  Sr++
```

```
33     69  Ti(OH)4(aq)
34     72  UO2++
35     73  VO++
36     78  Zn++
37     79  Zr(OH)2++
38     80  O2(g)
39    222  Fluorapatite
40    252  Hematite
41    405  Ni2SiO4
42    470  Pyrolusite
43    475  Quartz
44    689  fix     CO2(g)
45    690  fix     O2(g)
46      1  SmectiteBeidellite-Ca
47      2  SmectiteBeidellite-K
48      3  SmectiteBeidellite-Mg
49      4  SmectiteBeidellite-Na
50      5  SmectiteMontmor-Ca
51      6  SmectiteMontmor-K
52      7  SmectiteMontmor-Mg
53      8  SmectiteMontmor-Na
54      9  SmectiteNontronite-Ca
55     10  SmectiteNontronite-K
56     11  SmectiteNontronite-Mg
57     12  SmectiteNontronite-Na

Steps completed =   189, iter =  3, ncorr = 0

- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -


                    Reaction progress        =  6.29410232792038E-01
                    Log of reaction progress =      -0.2010662



                    Time =  6.287E+08 sec
                         =  7.277E+03 days
                         =  1.992E+01 years

                    Log sec =        8.798
                    Log days =       3.862
                    Log years =      1.299

                    Temperature    =     25.000 degrees C
                    total pressure =      1.013 bars


Change in the product phase assemblage


                              --- Reactant Summary ---


    Reactant                  Moles     Delta moles    Mass, g    Delta Mass, g

 carbon steel               1.9371E+01   6.2870E-01   1.0596E+03   3.4388E+01
 Alloy-22                   1.9999E+01   7.1043E-04   1.1977E+03   4.2546E-02


                Current total mass =  2.25727E+03 grams
                Delta total mass   =  3.44309E+01 grams
```

Delta total volume = 0.00000 cc

Reactant	Rel. Rate mol/mol	Rate mol/s	Rate mol/s/cm2
carbon steel	9.9887E-01	1.0000E-09	1.0000E-11
Alloy-22	1.1287E-03	1.1300E-12	1.1300E-14

Reactant	Affinity kcal/mol	Surface Area mol/s/cm2
carbon steel	999.00000	1.0000E+02
Alloy-22	999.00000	1.0000E+02

Reactant	Rate Constants, mol/s/cm2	
carbon steel		
	Forward	1.0000E-11
Alloy-22		
	Forward	1.1300E-14

Affinity of the overall irreversible reaction= 0.000 kcal
Contributions from irreversible reactions
with no thermodynamic data are not included

--- Element Totals for the Aqueous Solution ---

Element	mg/kg soln.	Molality	Moles
O	8.880026E+05	5.551466E+01	5.551536E+01
Al	2.863936E-07	1.061680E-11	1.061694E-11
B	1.338950E-01	1.238784E-05	1.238800E-05
Ba	1.372946E-05	9.999873E-11	1.000000E-10
Ca	2.047143E-01	5.109041E-06	5.109105E-06
Ce	1.400819E-19	9.999873E-25	1.000000E-24
Cl	7.138487E+00	2.013974E-04	2.014000E-04
Cr	9.476152E+00	1.822881E-04	1.822904E-04
Cs	1.328740E-05	9.999873E-11	1.000000E-10
Cu	6.670754E-10	1.049987E-14	1.050000E-14
F	9.671399E-01	5.091777E-05	5.091842E-05
Fe	1.048274E-07	1.877465E-12	1.877489E-12
Gd	1.572128E-09	9.999873E-15	1.000000E-14
H	1.118739E+05	1.110175E+02	1.110189E+02
C	3.518184E-01	2.929790E-05	2.929827E-05
P	7.854279E+00	2.536352E-04	2.536384E-04
K	5.035360E+00	1.288160E-04	1.288176E-04
La	1.388727E-09	9.999873E-15	1.000000E-14
Li	6.939360E-07	9.999873E-11	1.000000E-10
Mg	1.996776E+00	8.217331E-05	8.217435E-05
Mn	1.531169E-08	2.787706E-13	2.787741E-13
Mo	6.879825E+00	7.172570E-05	7.172661E-05
N	1.988487E+00	1.419982E-04	1.420000E-04
Na	4.578630E+01	1.992040E-03	1.992065E-03
Nd	1.442059E-09	9.999873E-15	1.000000E-14
Ni	9.327223E+00	1.589591E-04	1.589611E-04
Pb	2.071510E-05	9.999873E-11	1.000000E-10
Pu	2.439424E-09	9.999873E-15	1.000000E-14

S	2.333279E+01	7.278117E-04	7.278209E-04
Si	2.813739E+00	1.002072E-04	1.002084E-04
Sm	1.503245E-09	9.999873E-15	1.000000E-14
Sr	8.759930E-06	9.999873E-11	1.000000E-10
Ti	4.786869E-06	9.999873E-11	1.000000E-10
U	2.379727E-09	9.999873E-15	1.000000E-14
V	1.505277E-01	2.955575E-06	2.955612E-06
Zn	6.537455E-06	9.999873E-11	1.000000E-10
Zr	9.120245E-16	9.999873E-21	1.000000E-20

Single ion activities and activity coefficients are here defined
with respect to the modified NBS pH scale

	pH	Eh	pe
modified NBS pH scale	6.5528	0.8314	1.4054E+01
rational pH scale	6.5258	0.8330	1.4081E+01

pHCl = 10.2775

Oxygen fugacity = 2.09991E-01
Log oxygen fugacity = -0.67780

Activity of water = 0.99992
Log activity of water = -0.00003

Ionic strength = 3.731404E-03 molal
Sum of molalities = 0.0043799360510
Osmotic coefficient = 0.96393

Mass of solution = 1.000236 kg
Mass of solutes = 0.000224 kg
Conc. of solutes = 0.022360 per cent (w/w)

Moles of solvent H2O = 5.55091E+01
Mass of solvent H2O = 1.00001E+00 kg

Species	Molality	Log molality	Log gamma	Log activity
Na+	1.9842E-03	-2.7024	-0.0295	-2.7319
SO4--	7.0369E-04	-3.1526	-0.1141	-3.2667
O2(aq)	2.6516E-04	-3.5765	0.0004	-3.5761
Cl-	2.0133E-04	-3.6961	-0.0286	-3.7247
H2PO4-	1.9737E-04	-3.7047	-0.0281	-3.7328
Ni++	1.5052E-04	-3.8224	-0.1128	-3.9351
NO3-	1.4195E-04	-3.8479	-0.0286	-3.8765
K+	1.2826E-04	-3.8919	-0.0300	-3.9219
CrO4--	1.0590E-04	-3.9751	-0.1141	-4.0892
SiO2(aq)	1.0016E-04	-3.9993	0.0000	-3.9993
HCrO4-	7.5936E-05	-4.1196	-0.0281	-4.1476
Mg++	7.2329E-05	-4.1407	-0.1089	-4.2496
MoO4--	7.1726E-05	-4.1443	-0.1131	-4.2574
HPO4--	5.3549E-05	-4.2712	-0.1141	-4.3854
F-	5.0812E-05	-4.2940	-0.0283	-4.3224
HCO3-	1.8503E-05	-4.7327	-0.0281	-4.7608

B(OH)3(aq)	1.2361E-05	-4.9080	0.0000	-4.9080
CO2(aq)	1.0733E-05	-4.9693	0.0004	-4.9689
NiSO4(aq)	8.3910E-06	-5.0762	0.0000	-5.0762
MgSO4(aq)	7.8593E-06	-5.1046	0.0000	-5.1046
NaSO4-	7.0706E-06	-5.1505	-0.0281	-5.1786
Ca++	4.7639E-06	-5.3220	-0.1128	-5.4348
MgHPO4(aq)	1.8839E-06	-5.7249	0.0000	-5.7249
H2VO4-	1.4714E-06	-5.8323	-0.0281	-5.8603
VO2(OH)2-	9.1189E-07	-6.0401	-0.0281	-6.0681
NaHPO4-	6.7737E-07	-6.1692	-0.0281	-6.1972
KSO4-	5.2362E-07	-6.2810	-0.0281	-6.3091
VO3OH--	5.1441E-07	-6.2887	-0.1141	-6.4028
H+	2.9798E-07	-6.5258	-0.0270	-6.5528
CaSO4(aq)	2.5678E-07	-6.5904	0.0000	-6.5904
Cr2O7--	2.2352E-07	-6.6507	-0.1141	-6.7648
CaHPO4(aq)	8.3145E-08	-7.0802	0.0000	-7.0802
MgF+	6.4552E-08	-7.1901	-0.0295	-7.2195
NaCl(aq)	5.8400E-08	-7.2336	0.0000	-7.2336
HVO4--	5.5413E-08	-7.2564	-0.1141	-7.3705
NaHCO3(aq)	4.5857E-08	-7.3386	0.0000	-7.3386
HSiO3-	4.2565E-08	-7.3709	-0.0281	-7.3990
NiNO3+	4.1480E-08	-7.3822	-0.0295	-7.4116
OH-	3.8550E-08	-7.4140	-0.0283	-7.4423
KHPO4-	3.1680E-08	-7.4992	-0.0281	-7.5273
BO2-	2.6796E-08	-7.5719	-0.0281	-7.6000
HF(aq)	1.9630E-08	-7.7071	0.0000	-7.7071
MgPO4-	1.6336E-08	-7.7869	-0.0281	-7.8149
HSO4-	1.5403E-08	-7.8124	-0.0281	-7.8405
MgHCO3+	1.1344E-08	-7.9452	-0.0295	-7.9747
PO3F--	1.1295E-08	-7.9471	-0.1141	-8.0612
NaF(aq)	8.8747E-09	-8.0518	0.0000	-8.0518
MgCl+	8.3227E-09	-8.0797	-0.0295	-8.1092
H3PO4(aq)	7.6578E-09	-8.1159	0.0000	-8.1159
CO3--	3.7692E-09	-8.4237	-0.1131	-8.5368
NaHSiO3(aq)	3.2931E-09	-8.4824	0.0000	-8.4824
CaNO3+	2.6194E-09	-8.5818	-0.0295	-8.6113
VO(OH)3(aq)	2.3936E-09	-8.6209	0.0000	-8.6209
NiCl+	2.3626E-09	-8.6266	-0.0295	-8.6561
CaF+	8.9948E-10	-9.0460	-0.0295	-9.0755
CaPO4-	7.9236E-10	-9.1011	-0.0281	-9.1291
CaHCO3+	7.5953E-10	-9.1195	-0.0295	-9.1489
KCl(aq)	7.2239E-10	-9.1412	0.0000	-9.1412
HP2O7---	2.4227E-10	-9.6157	-0.2580	-9.8737
H2P2O7--	2.0356E-10	-9.6913	-0.1141	-9.8054
MgCO3(aq)	1.5578E-10	-9.8075	0.0000	-9.8075
CaCl+	1.4940E-10	-9.8257	-0.0295	-9.8551
PO4---	1.2696E-10	-9.8963	-0.2580	-10.1544
MgB(OH)4+	1.1968E-10	-9.9220	-0.0295	-9.9514

--- Summary of Solid Product Phases---

Product	Log moles	Moles	Mass, g	Volume, cc
Fluorapatite	-4.1950	6.3832E-05	3.2190E-02	3.1916E-02
Hematite	-0.5198	3.0211E-01	4.8244E+01	9.1459E+00
Ni2SiO4	-3.9125	1.2233E-04	2.5623E-02	5.2123E-03
Pyrolusite	-2.1885	6.4795E-03	5.6331E-01	3.2398E+00
Quartz	-2.3822	4.1477E-03	2.4921E-01	9.4103E-02
fix CO2(g)	4.0000	1.0000E+04	4.4010E+05	0.0000E+00
fix O2(g)	4.0000	9.9995E+03	3.1997E+05	0.0000E+00

Smectite-di	-5.3475	4.4924E-06	1.9000E-03	5.8627E-04
Beidellite-Ca	-32.1638	6.8574E-33	2.5137E-30	8.8824E-31
Beidellite-K	-32.5120	3.0762E-33	1.1470E-30	4.1128E-31
Beidellite-Mg	-31.4570	3.4915E-32	1.2708E-29	4.3012E-30
Beidellite-Na	-32.3477	4.4904E-33	1.6504E-30	5.8618E-31
Montmor-Ca	-26.6404	2.2887E-27	8.3778E-25	1.1444E-24
Montmor-K	-26.7755	1.6768E-27	6.2432E-25	8.3839E-25
Montmor-Mg	-25.7226	1.8939E-26	6.8832E-24	9.4695E-24
Montmor-Na	-26.6222	2.3870E-27	8.7605E-25	1.1935E-24
Nontronite-Ca	-6.2048	6.2407E-07	2.6479E-04	8.1816E-05
Nontronite-K	-6.5529	2.7995E-07	1.2054E-04	3.7869E-05
Nontronite-Mg	-5.4976	3.1797E-06	1.3409E-03	4.1260E-04
Nontronite-Na	-6.3886	4.0866E-07	1.7379E-04	5.3988E-05

	Mass, grams	Volume, cc
Created	7.601205E+05	1.251751E+01
Destroyed	3.443093E+01	0.000000E+00
Net	7.600861E+05	1.251751E+01

Warning-- these volume totals may be incomplete because
of missing partial molar volume data in the data base

--- Summary of Pure Mineral Saturation States ---

Mineral	Log Q/K	Aff, kcal	State
Alamosite	-6.702	-9.143	
Albite	-6.584	-8.982	
Albite_low	-6.584	-8.982	
Analcime	-6.447	-8.795	
Anglesite	-5.549	-7.570	
Anhydrite	-4.395	-5.996	
Aragonite	-5.636	-7.689	
BaCrO4	-4.272	-5.829	
BaHPO4	-7.101	-9.687	
BaZrO3	78.690	107.356	ssatd
Barite	-3.411	-4.653	
Bassanite	-5.040	-6.876	
Berlinite	-5.924	-8.083	
Boehmite	-3.206	-4.374	
Boric_acid	-4.750	-6.480	
Bunsenite	-3.301	-4.504	
CaSO4:0.5H2O(beta)	-5.208	-7.105	
CaZrO3	137.400	187.453	ssatd
Calcite	-5.491	-7.492	
CeO2	-6.423	-8.762	
Cerussite	-5.134	-7.004	
Chalcedony	-0.271	-0.370	
Coesite	-0.810	-1.105	
CrO2	-7.092	-9.676	
Cristobalite(alpha)	-0.551	-0.751	
Cristobalite(beta)	-0.994	-1.356	
Crocoite	-1.506	-2.055	
Diaspore	-2.802	-3.823	
Enstatite	-6.470	-8.827	
Epsomite	-5.554	-7.578	
Fe(OH)3	-5.601	-7.642	
Fluorapatite	0.000	0.000	satd

Fluorite	-4.043	-5.515	
GdPO4:H2O	-2.034	-2.775	
Gibbsite	-3.398	-4.636	
Goethite	-0.480	-0.655	
Gypsum	-4.219	-5.756	
Hematite	0.000	0.000	satd
Hexahydrite	-5.790	-7.899	
Ice	-0.139	-0.189	
K-Feldspar	-4.734	-6.458	
Kaolinite	-6.093	-8.313	
Kieserite	-7.249	-9.890	
LaPO4:H2O	-0.674	-0.920	
Lansfordite	-7.299	-9.957	
Magnesite	-4.751	-6.482	
Manganite	-4.459	-6.084	
Maximum_Microcline	-4.734	-6.458	
MnHPO4	-4.193	-5.720	
MnO2(gamma)	-1.518	-2.071	
Monohydrocalcite	-6.325	-8.629	
Montmor-Ca	-7.027	-9.586	
Montmor-K	-7.071	-9.647	
Montmor-Mg	-6.724	-9.173	
Montmor-Na	-7.021	-9.578	
Morenosite	-5.188	-7.078	
NdPO4:H2O	-1.456	-1.986	
Ni(OH)2	-3.578	-4.882	
Ni2SiO4	0.000	0.000	satd
Ni3(PO4)2	-0.829	-1.131	
NiCO3	-5.655	-7.715	
NiSO4:6H2O(alpha)	-5.195	-7.087	
Nontronite-Ca	-0.283	-0.386	
Nontronite-H	-0.591	-0.806	
Nontronite-K	-0.398	-0.543	
Nontronite-Mg	-0.050	-0.068	
Nontronite-Na	-0.344	-0.469	
Parsonsite	-6.633	-9.049	
Pb3(PO4)2	-6.095	-8.315	
PbHPO4	-2.953	-4.029	
Pentahydrite	-6.129	-8.362	
Plattnerite	-5.037	-6.871	
Pyrolusite	0.000	0.000	satd
Pyromorphite	0.000	0.000	
Quartz	0.000	0.000	satd
Rutile	-0.355	-0.484	
Sanidine_high	-5.933	-8.094	
Sellaite	-3.510	-4.789	
SiO2(am)	-1.286	-1.754	
SmPO4:H2O	-1.729	-2.358	
SrZrO3	115.649	157.778	ssatd
Starkeyite	-6.517	-8.890	
Strengite	-6.094	-8.314	
Trevorite	-0.509	-0.694	
Tridymite	-0.172	-0.234	
Witherite	-5.327	-7.267	
fix CO2(g)	0.000	0.000	satd
fix O2(g)	0.000	0.000	satd

--- Summary of Solid Solutions ---

--- Carbonate-Calcite ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Calcite	1.5378E-01	-0.8131	0.0000	-0.8131
Magnesite	8.4571E-01	-0.0728	0.0000	-0.0728
Rhodochrosite	8.1097E-07	-6.0910	0.0000	-6.0910
Siderite	1.0355E-14	-13.9848	0.0000	-13.9848
Smithsonite	7.3369E-05	-4.1345	0.0000	-4.1345
Strontianite	4.2948E-04	-3.3671	0.0000	-3.3671

Mineral	Log Q/K	Aff, kcal	State
Carbonate-Calcite	-4.678	-6.383	
Calcite	-4.678	-6.383	
Magnesite	-4.678	-6.383	
Rhodochrosite	-4.678	-6.383	
Siderite	-4.678	-6.383	
Smithsonite	-4.678	-6.383	
Strontianite	-4.678	-6.383	

--- Clinoptilolite-hy-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-hy-Ca	3.5997E-01	-0.4437	0.0000	-0.4437
Clinoptilolite-hy-Cs	1.7937E-20	-19.7463	0.0000	-19.7463
Clinoptilolite-hy-K	2.0982E-01	-0.6782	0.0000	-0.6782
Clinoptilolite-hy-Na	4.3022E-01	-0.3663	0.0000	-0.3663
Clinoptilolite-hy-Sr	3.3065E-09	-8.4806	0.0000	-8.4806

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-hy-ss	-22.335	-30.471	
Clinoptilolite-hy-Ca	-22.335	-30.471	
Clinoptilolite-hy-Cs	-22.335	-30.471	
Clinoptilolite-hy-K	-22.335	-30.471	
Clinoptilolite-hy-Na	-22.335	-30.471	
Clinoptilolite-hy-Sr	-22.335	-30.471	

--- Clinoptilolite-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-Ca	3.4351E-01	-0.4641	-1.1416	-1.6056
Clinoptilolite-Cs	9.0419E-07	-6.0437	-14.8676	-20.9113
Clinoptilolite-K	2.9338E-01	-0.5326	-1.3101	-1.8427
Clinoptilolite-NH4	2.7203E-60	-59.5654	-146.5309	-206.0962
Clinoptilolite-Na	3.6148E-01	-0.4419	-1.0871	-1.5290
Clinoptilolite-Sr	1.6343E-03	-2.7867	-6.8552	-9.6419

Mineral	Log Q/K	Aff, kcal	State

Clinoptilolite-ss	-21.174	-28.888
Clinoptilolite-Ca	-21.174	-28.888
Clinoptilolite-Cs	-21.174	-28.888
Clinoptilolite-K	-21.174	-28.888
Clinoptilolite-NH4	-21.174	-28.888
Clinoptilolite-Na	-21.174	-28.888
Clinoptilolite-Sr	-21.174	-28.888

--- Saponite-tri ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Saponite-Ca	1.3677E-01	-0.8640	0.5789	-0.2851
Saponite-H	1.5970E-02	-1.7967	1.2038	-0.5929
Saponite-K	6.1312E-02	-1.2125	0.8123	-0.4001
Saponite-Mg	6.9638E-01	-0.1572	0.1053	-0.0519
Saponite-Na	8.9562E-02	-1.0479	0.7021	-0.3458

Mineral	Log Q/K	Aff, kcal	State
Saponite-tri	-11.411	-15.567	
Saponite-Ca	-11.411	-15.567	
Saponite-H	-11.411	-15.567	
Saponite-K	-11.411	-15.567	
Saponite-Mg	-11.411	-15.567	
Saponite-Na	-11.411	-15.567	

--- Smectite-di ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Beidellite-Ca	1.5265E-27	-26.8163	17.9669	-8.8494
Beidellite-K	6.8475E-28	-27.1645	18.2002	-8.9643
Beidellite-Mg	7.7720E-27	-26.1095	17.4933	-8.6161
Beidellite-Na	9.9956E-28	-27.0002	18.0901	-8.9101
Montmor-Ca	5.0947E-22	-21.2929	14.2662	-7.0267
Montmor-K	3.7325E-22	-21.4280	14.3568	-7.0712
Montmor-Mg	4.2158E-21	-20.3751	13.6513	-6.7238
Montmor-Na	5.3133E-22	-21.2746	14.2540	-7.0206
Nontronite-Ca	1.3892E-01	-0.8572	0.5744	-0.2829
Nontronite-K	6.2317E-02	-1.2054	0.8076	-0.3978
Nontronite-Mg	7.0780E-01	-0.1501	0.1006	-0.0495
Nontronite-Na	9.0967E-02	-1.0411	0.6975	-0.3436

Mineral	Log Q/K	Aff, kcal	State
Smectite-di	0.000	0.000	satd
Beidellite-Ca	0.000	0.000	satd
Beidellite-K	0.000	0.000	satd
Beidellite-Mg	0.000	0.000	satd
Beidellite-Na	0.000	0.000	satd
Montmor-Ca	0.000	0.000	satd
Montmor-K	0.000	0.000	satd

Montmor-Mg	0.000	0.000	satd
Montmor-Na	0.000	0.000	satd
Nontronite-Ca	0.000	0.000	satd
Nontronite-K	0.000	0.000	satd
Nontronite-Mg	0.000	0.000	satd
Nontronite-Na	0.000	0.000	satd

--- Lanthanide hydroxide ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
La(OH)3	6.8206E-05	-4.1662	0.0000	-4.1662
Ce(OH)3	9.8613E-15	-14.0061	0.0000	-14.0061
Nd(OH)3(c)	5.6487E-01	-0.2480	0.0000	-0.2480
Gd(OH)3	3.7489E-01	-0.4261	0.0000	-0.4261
Sm(OH)3	6.0173E-02	-1.2206	0.0000	-1.2206

Mineral	Log Q/K	Aff, kcal	State
Lanthanide hydroxide	-11.697	-15.957	
La(OH)3	-11.697	-15.957	
Ce(OH)3	-11.697	-15.957	
Nd(OH)3(c)	-11.697	-15.957	
Gd(OH)3	-11.697	-15.957	
Sm(OH)3	-11.697	-15.957	

--- Rhabdophane-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaPO4:H2O	7.7093E-01	-0.1130	0.0000	-0.1130
CePO4:H2O	3.5248E-11	-10.4529	0.0000	-10.4529
NdPO4:H2O	1.2739E-01	-0.8949	0.0000	-0.8949
GdPO4:H2O	3.3659E-02	-1.4729	0.0000	-1.4729
SmPO4:H2O	6.8014E-02	-1.1674	0.0000	-1.1674

Mineral	Log Q/K	Aff, kcal	State
Rhabdophane-ss	-0.561	-0.766	
LaPO4:H2O	-0.561	-0.766	
CePO4:H2O	-0.561	-0.766	
NdPO4:H2O	-0.561	-0.766	
GdPO4:H2O	-0.561	-0.766	
SmPO4:H2O	-0.561	-0.766	

--- Lanthanide fluoride ---

Ideal solution

Component	x	Log x	Log lambda	Log activity

LaF3:0.5H2O	8.2062E-01	-0.0859	0.0000	-0.0859
CeF3:0.5H2O	5.9464E-11	-10.2257	0.0000	-10.2257
NdF3:0.5H2O	1.7072E-01	-0.7677	0.0000	-0.7677
GdF3:0.5H2O	1.4263E-03	-2.8458	0.0000	-2.8458
SmF3:0.5H2O	7.2397E-03	-2.1403	0.0000	-2.1403

Mineral	Log Q/K	Aff, kcal	State
Lanthanide fluoride	-9.373	-12.787	
LaF3:0.5H2O	-9.373	-12.787	
CeF3:0.5H2O	-9.373	-12.787	
NdF3:0.5H2O	-9.373	-12.787	
GdF3:0.5H2O	-9.373	-12.787	
SmF3:0.5H2O	-9.373	-12.787	

--- Summary of Gases ---

Gas	Fugacity	Log fugacity
Al(g)	2.5948-194	-193.5859
B(g)	8.5359-204	-203.0688
BF3(g)	2.7102E-35	-34.5670
C(g)	3.0917-190	-189.5098
CH4(g)	3.5289-146	-145.4524
CO(g)	6.0395E-49	-48.2190
CO2(g)	3.1623E-04	-3.5000
Ca(g)	2.4044-156	-155.6190
Chlorine	4.5340E-26	-25.3435
Cs(g)	1.3674E-84	-83.8641
Cu(g)	7.0660E-84	-83.1508
Fluorine	5.5190E-80	-79.2581
H2(g)	6.1146E-42	-41.2136
H2O(g)	2.5976E-02	-1.5854
H2S(g)	2.7468-140	-139.5612
HCl(g)	2.6120E-17	-16.5830
HF(g)	1.0285E-12	-11.9878
K(g)	8.7788E-79	-78.0566
Li(g)	2.9836E-98	-97.5253
Mg(g)	2.4809-132	-131.6054
Nitrogen	3.3796E-17	-16.4711
NH3(g)	6.7017E-68	-67.1738
NO(g)	1.8306E-24	-23.7374
NO2(g)	1.2517E-18	-17.9025
Na(g)	7.0953E-77	-76.1490
O2(g)	2.0999E-01	-0.6778
Pb(g)	1.4128E-71	-70.8499
S2(g)	4.4997-223	-222.3468
SO2(g)	4.8637E-53	-52.3130
Si(g)	4.2257-221	-220.3741
SiF4(g)	4.9332E-33	-32.3069
Ti(g)	1.6798-231	-230.7747
TiCl4(g)	6.8899E-80	-79.1618
U(g)	4.3282-299	-298.3637
U2Cl10(g)	2.8151-235	-234.5505
U2Cl8(g)	1.9249-240	-239.7156
U2F10(g)	3.3406-146	-145.4762
UCl(g)	1.0075-253	-252.9968
UCl2(g)	7.0158-207	-206.1539
UCl3(g)	1.0701-157	-156.9706

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UCl4(g)                     8.8381-126   -125.0536
UCl5(g)                     3.7557-131   -130.4253
UCl6(g)                     2.9651-131   -130.5280
UF(g)                       8.4311-239   -238.0741
UF2(g)                      1.2181-196   -195.9143
UF3(g)                      4.3306-148   -147.3635
UF4(g)                      2.2726E-96    -95.6435
UF5(g)                      5.4628E-86    -85.2626
UF6(g)                      1.2930E-89    -88.8884
UO(g)                       3.4182-214   -213.4662
UO2(g)                      6.3329-130   -129.1984
UO2Cl2(g)                   1.2537E-74    -73.9018
UO2F2(g)                    1.5789E-62    -61.8016
UO3(g)                      4.6580E-77    -76.3318
UOF4(g)                     6.7722E-74    -73.1693
Zn(g)                       2.1783E-81    -80.6619



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Stepping to zi=  6.2941E-01, delzi=  1.0000E-09, nord= 0
  time =  7.2766E+03 d, dltime =  1.1561E-05 d
Steps completed =   190, iter =  1, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-Ca           ) =    -32.1638

Stepping to zi=  6.2941E-01, delzi=  1.0000E-09, nord= 0
  time =  7.2766E+03 d, dltime =  1.1561E-05 d
Steps completed =   191, iter =  1, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-Ca           ) =    -32.1638

Stepping to zi=  6.2941E-01, delzi=  1.0000E-09, nord= 0
  time =  7.2766E+03 d, dltime =  1.1561E-05 d
Steps completed =   192, iter =  1, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-Ca           ) =    -32.1638

Stepping to zi=  6.2941E-01, delzi=  1.0000E-08, nord= 1
  time =  7.2766E+03 d, dltime =  1.1561E-04 d
Steps completed =   193, iter =  1, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-Ca           ) =    -32.1638

Stepping to zi=  6.2941E-01, delzi=  1.0000E-07, nord= 1
  time =  7.2766E+03 d, dltime =  1.1561E-03 d
Steps completed =   194, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-Ca           ) =    -32.1638

Stepping to zi=  6.2941E-01, delzi=  1.0000E-06, nord= 1
  time =  7.2766E+03 d, dltime =  1.1561E-02 d
Steps completed =   195, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-Ca           ) =    -32.1638

Stepping to zi=  6.2942E-01, delzi=  1.0000E-05, nord= 2
  time =  7.2767E+03 d, dltime =  1.1561E-01 d
Steps completed =   196, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-Ca           ) =    -32.1637

Stepping to zi=  6.2952E-01, delzi=  1.0000E-04, nord= 2
  time =  7.2779E+03 d, dltime =  1.1561E+00 d
Steps completed =   197, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-Ca           ) =    -32.1626
```

```
Stepping to zi=  6.3052E-01, delzi=  1.0000E-03, nord= 2
  time =  7.2895E+03 d, dltime =  1.1561E+01 d
Steps completed =   198, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-Ca           ) =    -32.1511

Stepping to zi=  6.3658E-01, delzi=  6.0570E-03, nord= 3
  time =  7.3595E+03 d, dltime =  7.0025E+01 d
Steps completed =   199, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-Ca           ) =    -32.0834

Stepping to zi=  6.4508E-01, delzi=  8.5031E-03, nord= 3
  time =  7.4578E+03 d, dltime =  9.8304E+01 d
Steps completed =   200, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-Ca           ) =    -31.9934

Stepping to zi=  6.6296E-01, delzi=  1.7881E-02, nord= 4
  time =  7.6645E+03 d, dltime =  2.0673E+02 d
Steps completed =   201, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-Ca           ) =    -31.8207

Stepping to zi=  6.9129E-01, delzi=  2.8323E-02, nord= 5
  time =  7.9920E+03 d, dltime =  3.2744E+02 d
Steps completed =   202, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-Ca           ) =    -31.5839

Stepping to zi=  7.3039E-01, delzi=  3.9105E-02, nord= 6
  time =  8.4440E+03 d, dltime =  4.5209E+02 d
Steps completed =   203, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-Ca           ) =    -31.3114

Stepping to zi=  7.7252E-01, delzi=  4.2133E-02, nord= 6
  time =  8.9311E+03 d, dltime =  4.8710E+02 d
Steps completed =   204, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-Ca           ) =    -31.0678

Stepping to zi=  8.0761E-01, delzi=  3.5084E-02, nord= 6
  time =  9.3367E+03 d, dltime =  4.0560E+02 d
Steps completed =   205, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-Ca           ) =    -30.8937

Stepping to zi=  8.1044E-01, delzi=  2.8357E-03, nord= 6
  time =  9.3695E+03 d, dltime =  3.2784E+01 d
iter =    3
      1 supersaturated pure minerals
      0 supersaturated solid solutions

               The most supersaturated phases           Affinity, kcal

                 1     406   Ni3(PO4)2                     0.00709668


  Attempted species assemblage no.   2

            1      1  H2O
            2      3  Al+++
            3      7  B(OH)3(aq)
            4      8  Ba++
            5     11  Ca++
            6     13  Ce+++
            7     14  Cl-
            8     16  CrO4--
            9     17  Cs+
           10     18  Cu++
```

```
 11     22  F-
 12     23  Fe++
 13     25  Gd+++
 14     26  H+
 15     28  HCO3-
 16     29  HPO4--
 17     35  K+
 18     37  La+++
 19     38  Li+
 20     40  Mg++
 21     41  Mn++
 22     42  MoO4--
 23     43  NO3-
 24     44  Na+
 25     45  Nd+++
 26     47  Ni++
 27     49  Pb++
 28     52  Pu++++
 29     58  SO4--
 30     62  SiO2(aq)
 31     63  Sm+++
 32     65  Sr++
 33     69  Ti(OH)4(aq)
 34     72  UO2++
 35     73  VO++
 36     78  Zn++
 37     79  Zr(OH)2++
 38     80  O2(g)
 39    222  Fluorapatite
 40    252  Hematite
 41    405  Ni2SiO4
 42    406  Ni3(PO4)2
 43    470  Pyrolusite
 44    475  Quartz
 45    689  fix     CO2(g)
 46    690  fix     O2(g)
 47      1  SmectiteBeidellite-Ca
 48      2  SmectiteBeidellite-K
 49      3  SmectiteBeidellite-Mg
 50      4  SmectiteBeidellite-Na
 51      5  SmectiteMontmor-Ca
 52      6  SmectiteMontmor-K
 53      7  SmectiteMontmor-Mg
 54      8  SmectiteMontmor-Na
 55      9  SmectiteNontronite-Ca
 56     10  SmectiteNontronite-K
 57     11  SmectiteNontronite-Mg
 58     12  SmectiteNontronite-Na

Steps completed =   206, iter = 13, ncorr = 0

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                    Reaction progress        =  8.10441992257150E-01
                    Log of reaction progress =      -0.0912781


                    Time =  8.095E+08 sec
                         =  9.370E+03 days
                         =  2.565E+01 years
```

```
Log sec =        8.908
Log days =       3.972
Log years =      1.409

Temperature    =     25.000 degrees C
total pressure =      1.013 bars
```

Change in the product phase assemblage

--- Reactant Summary ---

Reactant	Moles	Delta moles	Mass, g	Delta Mass, g
carbon steel	1.9190E+01	8.0953E-01	1.0497E+03	4.4279E+01
Alloy-22	1.9999E+01	9.1477E-04	1.1977E+03	5.4783E-02

```
Current total mass =  2.24737E+03 grams
Delta total mass   =  4.43340E+01 grams
Delta total volume =      0.00000 cc
```

Reactant	Rel. Rate mol/mol	Rate mol/s	Rate mol/s/cm2
carbon steel	9.9887E-01	1.0000E-09	1.0000E-11
Alloy-22	1.1287E-03	1.1300E-12	1.1300E-14

Reactant	Affinity kcal/mol	Surface Area mol/s/cm2
carbon steel	999.00000	1.0000E+02
Alloy-22	999.00000	1.0000E+02

Reactant	Rate Constants, mol/s/cm2	
carbon steel		
	Forward	1.0000E-11
Alloy-22		
	Forward	1.1300E-14

```
Affinity of the overall irreversible reaction=     0.000 kcal
Contributions from irreversible reactions
with no thermodynamic data are not included
```

--- Element Totals for the Aqueous Solution ---

Element	mg/kg soln.	Molality	Moles
O	8.879791E+05	5.551606E+01	5.551661E+01
Al	1.581268E-06	5.862168E-11	5.862226E-11
B	1.338885E-01	1.238788E-05	1.238800E-05
Ba	1.372878E-05	9.999900E-11	1.000000E-10
Ca	2.784971E-01	6.950791E-06	6.950861E-06

Ce	1.400750E-19	9.999900E-25	1.000000E-24
Cl	7.138137E+00	2.013980E-04	2.014000E-04
Cr	1.219594E+01	2.346195E-04	2.346219E-04
Cs	1.328675E-05	9.999900E-11	1.000000E-10
Cu	6.670426E-10	1.049989E-14	1.050000E-14
F	9.741433E-01	5.128914E-05	5.128965E-05
Fe	1.326870E-07	2.376556E-12	2.376580E-12
Gd	1.572051E-09	9.999900E-15	1.000000E-14
H	1.118684E+05	1.110178E+02	1.110189E+02
C	2.689180E-01	2.239548E-05	2.239570E-05
P	1.178562E+01	3.806082E-04	3.806120E-04
K	5.035165E+00	1.288177E-04	1.288190E-04
La	1.388659E-09	9.999900E-15	1.000000E-14
Li	6.939020E-07	9.999900E-11	1.000000E-10
Mg	1.996989E+00	8.218636E-05	8.218718E-05
Mn	4.073600E-08	7.416940E-13	7.417014E-13
Mo	8.858172E+00	9.235576E-05	9.235668E-05
N	1.988390E+00	1.419986E-04	1.420000E-04
Na	4.578410E+01	1.992047E-03	1.992067E-03
Nd	1.441988E-09	9.999900E-15	1.000000E-14
Ni	2.474033E+01	4.216586E-04	4.216629E-04
Pb	2.071409E-05	9.999900E-11	1.000000E-10
Pu	2.439304E-09	9.999900E-15	1.000000E-14
S	2.827628E+01	8.820579E-04	8.820667E-04
Si	2.813114E+00	1.001901E-04	1.001911E-04
Sm	1.503171E-09	9.999900E-15	1.000000E-14
Sr	8.759500E-06	9.999900E-11	1.000000E-10
Ti	4.786634E-06	9.999900E-11	1.000000E-10
U	2.379610E-09	9.999900E-15	1.000000E-14
V	1.938100E-01	3.805607E-06	3.805646E-06
Zn	6.537134E-06	9.999900E-11	1.000000E-10
Zr	9.119797E-16	9.999900E-21	1.000000E-20

Single ion activities and activity coefficients are here defined
with respect to the modified NBS pH scale

	pH	Eh	pe
modified NBS pH scale	6.3482	0.8435	1.4259E+01
rational pH scale	6.3186	0.8452	1.4288E+01

pHCl = 10.0759

Oxygen fugacity = 2.09991E-01
Log oxygen fugacity = -0.67780

Activity of water = 0.99991
Log activity of water = -0.00004

Ionic strength = 4.633439E-03 molal
Sum of molalities = 0.0049738139641
Osmotic coefficient = 0.95666

Mass of solution = 1.000285 kg
Mass of solutes = 0.000275 kg
Conc. of solutes = 0.027529 per cent (w/w)

Moles of solvent H2O = 5.55090E+01
Mass of solvent H2O = 1.00001E+00 kg

Species	Molality	Log molality	Log gamma	Log activity
Na+	1.9831E-03	-2.7027	-0.0326	-2.7353
SO4--	8.3906E-04	-3.0762	-0.1259	-3.2021
Ni++	3.9656E-04	-3.4017	-0.1243	-3.5259
H2PO4-	3.2218E-04	-3.4919	-0.0309	-3.5228
O2(aq)	2.6510E-04	-3.5766	0.0005	-3.5761
Cl-	2.0133E-04	-3.6961	-0.0316	-3.7277
NO3-	1.4189E-04	-3.8481	-0.0316	-3.8796
K+	1.2818E-04	-3.8922	-0.0333	-3.9255
HCrO4-	1.2358E-04	-3.9081	-0.0309	-3.9390
CrO4--	1.0984E-04	-3.9592	-0.1259	-4.0852
SiO2(aq)	1.0016E-04	-3.9993	0.0000	-3.9993
MoO4--	9.2356E-05	-4.0345	-0.1246	-4.1592
Mg++	7.1468E-05	-4.1459	-0.1196	-4.2655
HPO4--	5.5709E-05	-4.2541	-0.1259	-4.3800
F-	5.1166E-05	-4.2910	-0.0312	-4.3223
NiSO4(aq)	2.4982E-05	-4.6024	0.0000	-4.6024
B(OH)3(aq)	1.2371E-05	-4.9076	0.0000	-4.9076
HCO3-	1.1628E-05	-4.9345	-0.0309	-4.9654
CO2(aq)	1.0730E-05	-4.9694	0.0005	-4.9689
MgSO4(aq)	8.7920E-06	-5.0559	0.0000	-5.0559
NaSO4-	8.1945E-06	-5.0865	-0.0309	-5.1174
Ca++	6.4414E-06	-5.1910	-0.1243	-5.3153
H2VO4-	2.0360E-06	-5.6912	-0.0309	-5.7221
MgHPO4(aq)	1.8387E-06	-5.7355	0.0000	-5.7355
VO2(OH)2-	1.2617E-06	-5.8990	-0.0309	-5.9299
NaHPO4-	6.8493E-07	-6.1644	-0.0309	-6.1953
KSO4-	6.0663E-07	-6.2171	-0.0309	-6.2480
Cr2O7--	6.0036E-07	-6.2216	-0.1259	-6.3475
H+	4.8019E-07	-6.3186	-0.0296	-6.3482
VO3OH--	4.5362E-07	-6.3433	-0.1259	-6.4692
CaSO4(aq)	3.9237E-07	-6.4063	0.0000	-6.4063
CaHPO4(aq)	1.1085E-07	-6.9553	0.0000	-6.9553
NiNO3+	1.0642E-07	-6.9730	-0.0326	-7.0056
MgF+	6.2698E-08	-7.2027	-0.0326	-7.2354
NaCl(aq)	5.7550E-08	-7.2400	0.0000	-7.2400
HVO4--	4.8864E-08	-7.3110	-0.1259	-7.4369
KHPO4-	3.2023E-08	-7.4945	-0.0309	-7.5255
HF(aq)	3.1450E-08	-7.5024	0.0000	-7.5024
HSO4-	2.8819E-08	-7.5403	-0.0309	-7.5712
NaHCO3(aq)	2.8406E-08	-7.5466	0.0000	-7.5466
HSiO3-	2.6748E-08	-7.5727	-0.0309	-7.6036
OH-	2.4228E-08	-7.6157	-0.0312	-7.6469
H3PO4(aq)	1.9892E-08	-7.7013	0.0000	-7.7013
PO3F--	1.8827E-08	-7.7252	-0.1259	-7.8511
BO2-	1.6853E-08	-7.7733	-0.0309	-7.8042
MgPO4-	1.0019E-08	-7.9992	-0.0309	-8.0301
NaF(aq)	8.8078E-09	-8.0551	0.0000	-8.0551
MgCl+	8.0266E-09	-8.0955	-0.0326	-8.1281
MgHCO3+	6.8770E-09	-8.1626	-0.0326	-8.1952
NiCl+	6.0642E-09	-8.2172	-0.0326	-8.2498
VO(OH)3(aq)	5.2703E-09	-8.2782	0.0000	-8.2782
CaNO3+	3.4490E-09	-8.4623	-0.0326	-8.4949
NaHSiO3(aq)	2.0399E-09	-8.6904	0.0000	-8.6904
CO3--	1.5087E-09	-8.8214	-0.1246	-8.9460
CaF+	1.1933E-09	-8.9232	-0.0326	-8.9558
KCl(aq)	7.1163E-10	-9.1477	0.0000	-9.1477

CaPO4-	6.6383E-10	-9.1779	-0.0309	-9.2089
CaHCO3+	6.2894E-10	-9.2014	-0.0326	-9.2340
H2P2O7--	5.5008E-10	-9.2596	-0.1259	-9.3855
HP2O7---	4.2311E-10	-9.3735	-0.2848	-9.6584
CaCl+	1.9681E-10	-9.7060	-0.0326	-9.7386
VO2HPO4-	1.4276E-10	-9.8454	-0.0309	-9.8763

--- Summary of Solid Product Phases---

Product	Log moles	Moles	Mass, g	Volume, cc
Fluorapatite	-4.1975	6.3460E-05	3.2003E-02	3.1730E-02
Hematite	-0.4101	3.8900E-01	6.2120E+01	1.1777E+01
Ni2SiO4	-4.3218	4.7665E-05	9.9840E-03	2.0310E-03
Ni3(PO4)2	-6.0447	9.0215E-07	3.3020E-04	4.5107E-04
Pyrolusite	-2.0787	8.3432E-03	7.2533E-01	4.1716E+00
Quartz	-2.2847	5.1916E-03	3.1194E-01	1.1779E-01
fix CO2(g)	4.0000	1.0000E+04	4.4010E+05	0.0000E+00
fix O2(g)	4.0000	9.9994E+03	3.1997E+05	0.0000E+00
Smectite-di	-5.3475	4.4922E-06	1.9001E-03	5.8633E-04
Beidellite-Ca	-30.8837	1.3071E-31	4.7915E-29	1.6931E-29
Beidellite-K	-31.2951	5.0683E-32	1.8897E-29	6.7764E-30
Beidellite-Mg	-30.2445	5.6946E-31	2.0726E-28	7.0151E-29
Beidellite-Na	-31.1307	7.4012E-32	2.7202E-29	9.6615E-30
Montmor-Ca	-26.1890	6.4713E-27	2.3688E-24	3.2357E-24
Montmor-K	-26.3874	4.0979E-27	1.5258E-24	2.0490E-24
Montmor-Mg	-25.3390	4.5818E-26	1.6652E-23	2.2909E-23
Montmor-Na	-26.2339	5.8357E-27	2.1418E-24	2.9178E-24
Nontronite-Ca	-6.1478	7.1153E-07	3.0190E-04	9.3282E-05
Nontronite-K	-6.5593	2.7589E-07	1.1879E-04	3.7320E-05
Nontronite-Mg	-5.5084	3.1019E-06	1.3081E-03	4.0251E-04
Nontronite-Na	-6.3948	4.0288E-07	1.7133E-04	5.3224E-05

	Mass, grams	Volume, cc
Created	7.601303E+05	1.610070E+01
Destroyed	4.433400E+01	0.000000E+00
Net	7.600860E+05	1.610070E+01

Warning-- these volume totals may be incomplete because of missing partial molar volume data in the data base

--- Summary of Pure Mineral Saturation States ---

Mineral	Log Q/K	Aff, kcal	State
Alamosite	-7.123	-9.717	
Albite	-6.590	-8.990	
Albite_low	-6.590	-8.990	
Analcime	-6.453	-8.803	
Anglesite	-5.496	-7.498	
Anhydrite	-4.211	-5.745	
Aragonite	-5.926	-8.084	
BaCrO4	-4.280	-5.839	
BaHPO4	-7.107	-9.696	
BaZrO3	78.269	106.781	ssatd

Barite	-3.358	-4.581	
Bassanite	-4.856	-6.625	
Berlinite	-5.308	-7.242	
Boehmite	-3.005	-4.099	
Boric_acid	-4.749	-6.479	
Bunsenite	-3.301	-4.504	
CaSO4:0.5H2O(beta)	-5.024	-6.854	
CaZrO3	137.111	187.058	ssatd
Calcite	-5.781	-7.887	
CeO2	-6.944	-9.473	
Cerussite	-5.555	-7.578	
Chalcedony	-0.271	-0.370	
Coesite	-0.810	-1.105	
CrO2	-6.679	-9.112	
Cristobalite(alpha)	-0.551	-0.751	
Cristobalite(beta)	-0.994	-1.356	
Crocoite	-1.514	-2.066	
Diaspore	-2.601	-3.548	
Enstatite	-6.895	-9.407	
Epsomite	-5.506	-7.511	
Fe(OH)3	-5.601	-7.642	
Fluorapatite	0.000	0.000	satd
Fluorite	-3.923	-5.352	
GdPO4:H2O	-2.091	-2.853	
Gibbsite	-3.196	-4.361	
Goethite	-0.480	-0.655	
Gypsum	-4.035	-5.505	
Hematite	0.000	0.000	satd
Hexahydrite	-5.741	-7.832	
Ice	-0.139	-0.189	
K-Feldspar	-4.740	-6.467	
Kaolinite	-5.689	-7.762	
Kieserite	-7.201	-9.824	
LaPO4:H2O	-0.823	-1.122	
Magnesite	-5.176	-7.062	
Manganite	-4.459	-6.084	
Maximum_Microcline	-4.740	-6.467	
MnHPO4	-3.778	-5.154	
MnO2(gamma)	-1.518	-2.071	
Monohydrocalcite	-6.615	-9.025	
Montmor-Ca	-6.878	-9.383	
Montmor-K	-6.943	-9.472	
Montmor-Mg	-6.597	-9.000	
Montmor-Na	-6.893	-9.403	
Mordenite	-7.312	-9.976	
Morenosite	-4.714	-6.432	
NdPO4:H2O	-1.531	-2.089	
Ni(OH)2	-3.578	-4.882	
Ni2P2O7	-6.913	-9.431	
Ni2SiO4	0.000	0.000	satd
Ni3(PO4)2	0.000	0.000	satd
NiCO3	-5.655	-7.715	
NiSO4:6H2O(alpha)	-4.721	-6.441	
Nontronite-Ca	-0.264	-0.360	
Nontronite-H	-0.524	-0.715	
Nontronite-K	-0.400	-0.546	
Nontronite-Mg	-0.053	-0.072	
Nontronite-Na	-0.346	-0.472	
Parsonsite	-6.941	-9.470	
Pb3(PO4)2	-6.529	-8.907	
PbHPO4	-2.960	-4.038	
Pentahydrite	-6.081	-8.296	
Plattnerite	-5.458	-7.446	

Pyrolusite	0.000	0.000	satd
Pyromorphite	-0.660	-0.900	
Pyrophyllite	-7.318	-9.983	
Quartz	0.000	0.000	satd
Rutile	-0.355	-0.484	
Sanidine_high	-5.939	-8.103	
Sellaite	-3.526	-4.810	
SiO2(am)	-1.286	-1.754	
SmPO4:H2O	-1.787	-2.438	
SrZrO3	115.224	157.198	ssatd
Starkeyite	-6.468	-8.824	
Strengite	-5.679	-7.748	
Trevorite	-0.509	-0.694	
Tridymite	-0.171	-0.234	
Witherite	-5.748	-7.842	
fix CO2(g)	0.000	0.000	satd
fix O2(g)	0.000	0.000	satd

--- Summary of Solid Solutions ---

--- Carbonate-Calcite ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Calcite	1.9886E-01	-0.7014	0.0000	-0.7014
Magnesite	8.0066E-01	-0.0966	0.0000	-0.0966
Rhodochrosite	2.0433E-06	-5.6897	0.0000	-5.6897
Siderite	2.6091E-14	-13.5835	0.0000	-13.5835
Smithsonite	7.0463E-05	-4.1520	0.0000	-4.1520
Strontianite	4.0636E-04	-3.3911	0.0000	-3.3911

Mineral	Log Q/K	Aff, kcal	State
Carbonate-Calcite	-5.080	-6.930	
Calcite	-5.080	-6.930	
Magnesite	-5.080	-6.930	
Rhodochrosite	-5.080	-6.930	
Siderite	-5.080	-6.930	
Smithsonite	-5.080	-6.930	
Strontianite	-5.080	-6.930	

--- Clinoptilolite-hy-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-hy-Ca	4.8226E-01	-0.3167	0.0000	-0.3167
Clinoptilolite-hy-Cs	1.4523E-20	-19.8380	0.0000	-19.8380
Clinoptilolite-hy-K	1.6959E-01	-0.7706	0.0000	-0.7706
Clinoptilolite-hy-Na	3.4815E-01	-0.4582	0.0000	-0.4582
Clinoptilolite-hy-Sr	2.5774E-09	-8.5888	0.0000	-8.5888

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-hy-ss	-22.268	-30.380	

```
  Clinoptilolite-hy-Ca         -22.268     -30.380
  Clinoptilolite-hy-Cs         -22.268     -30.380
  Clinoptilolite-hy-K          -22.268     -30.380
  Clinoptilolite-hy-Na         -22.268     -30.380
  Clinoptilolite-hy-Sr         -22.268     -30.380


              --- Clinoptilolite-ss        ---

  Ideal solution

   Component                     x           Log x   Log lambda  Log activity

Clinoptilolite-Ca           3.7712E-01     -0.4235     -1.0419     -1.4654
Clinoptilolite-Cs           8.5818E-07     -6.0664    -14.9234    -20.9898
Clinoptilolite-K            2.7831E-01     -0.5555     -1.3665     -1.9219
Clinoptilolite-NH4          6.6392E-60    -59.1779   -145.5776   -204.7555
Clinoptilolite-Na           3.4304E-01     -0.4647     -1.1431     -1.6077
Clinoptilolite-Sr           1.5342E-03     -2.8141     -6.9227     -9.7368

   Mineral                      Log Q/K     Aff, kcal  State

Clinoptilolite-ss               -21.120     -28.814
  Clinoptilolite-Ca             -21.120     -28.814
  Clinoptilolite-Cs             -21.120     -28.814
  Clinoptilolite-K              -21.120     -28.814
  Clinoptilolite-NH4            -21.120     -28.814
  Clinoptilolite-Na             -21.120     -28.814
  Clinoptilolite-Sr             -21.120     -28.814


              --- Saponite-tri             ---

  Ideal solution

   Component                     x           Log x   Log lambda  Log activity

Saponite-Ca                 1.5448E-01     -0.8111      0.5434     -0.2677
Saponite-H                  2.5179E-02     -1.5990      1.0713     -0.5277
Saponite-K                  5.9858E-02     -1.2229      0.8193     -0.4035
Saponite-Mg                 6.7301E-01     -0.1720      0.1152     -0.0568
Saponite-Na                 8.7470E-02     -1.0581      0.7090     -0.3492

   Mineral                      Log Q/K     Aff, kcal  State

Saponite-tri                    -12.684     -17.305
  Saponite-Ca                   -12.684     -17.305
  Saponite-H                    -12.684     -17.305
  Saponite-K                    -12.684     -17.305
  Saponite-Mg                   -12.684     -17.305
  Saponite-Na                   -12.684     -17.305


              --- Smectite-di              ---

  Ideal solution

   Component                     x           Log x   Log lambda  Log activity
```

Beidellite-Ca	2.9098E-26	-25.5361	17.1092	-8.4269
Beidellite-K	1.1282E-26	-25.9476	17.3849	-8.5627
Beidellite-Mg	1.2676E-25	-24.8970	16.6810	-8.2160
Beidellite-Na	1.6475E-26	-25.7832	17.2747	-8.5084
Montmor-Ca	1.4406E-21	-20.8415	13.9638	-6.8777
Montmor-K	9.1222E-22	-21.0399	14.0967	-6.9432
Montmor-Mg	1.0199E-20	-19.9914	13.3943	-6.5972
Montmor-Na	1.2991E-21	-20.8864	13.9939	-6.8925
Nontronite-Ca	1.5839E-01	-0.8003	0.5362	-0.2641
Nontronite-K	6.1415E-02	-1.2117	0.8119	-0.3999
Nontronite-Mg	6.9051E-01	-0.1608	0.1078	-0.0531
Nontronite-Na	8.9683E-02	-1.0473	0.7017	-0.3456

Mineral	Log Q/K	Aff, kcal	State
Smectite-di	0.000	0.000	satd
Beidellite-Ca	0.000	0.000	satd
Beidellite-K	0.000	0.000	satd
Beidellite-Mg	0.000	0.000	satd
Beidellite-Na	0.000	0.000	satd
Montmor-Ca	0.000	0.000	satd
Montmor-K	0.000	0.000	satd
Montmor-Mg	0.000	0.000	satd
Montmor-Na	0.000	0.000	satd
Nontronite-Ca	0.000	0.000	satd
Nontronite-K	0.000	0.000	satd
Nontronite-Mg	0.000	0.000	satd
Nontronite-Na	0.000	0.000	satd

--- Lanthanide hydroxide ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
La(OH)3	5.6595E-05	-4.2472	0.0000	-4.2472
Ce(OH)3	9.0127E-15	-14.0451	0.0000	-14.0451
Nd(OH)3(c)	5.5453E-01	-0.2561	0.0000	-0.2561
Gd(OH)3	3.8402E-01	-0.4156	0.0000	-0.4156
Sm(OH)3	6.1396E-02	-1.2119	0.0000	-1.2119

Mineral	Log Q/K	Aff, kcal	State
Lanthanide hydroxide	-12.179	-16.615	
La(OH)3	-12.179	-16.615	
Ce(OH)3	-12.179	-16.615	
Nd(OH)3(c)	-12.179	-16.615	
Gd(OH)3	-12.179	-16.615	
Sm(OH)3	-12.179	-16.615	

--- Rhabdophane-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity

LaPO4:H2O	7.3644E-01	-0.1329	0.0000	-0.1329
CePO4:H2O	3.7086E-11	-10.4308	0.0000	-10.4308
NdPO4:H2O	1.4397E-01	-0.8417	0.0000	-0.8417
GdPO4:H2O	3.9693E-02	-1.4013	0.0000	-1.4013
SmPO4:H2O	7.9891E-02	-1.0975	0.0000	-1.0975

Mineral	Log Q/K	Aff, kcal	State
Rhabdophane-ss	-0.690	-0.941	
LaPO4:H2O	-0.690	-0.941	
CePO4:H2O	-0.690	-0.941	
NdPO4:H2O	-0.690	-0.941	
GdPO4:H2O	-0.690	-0.941	
SmPO4:H2O	-0.690	-0.941	

--- Lanthanide fluoride ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaF3:0.5H2O	7.9421E-01	-0.1001	0.0000	-0.1001
CeF3:0.5H2O	6.3388E-11	-10.1980	0.0000	-10.1980
NdF3:0.5H2O	1.9547E-01	-0.7089	0.0000	-0.7089
GdF3:0.5H2O	1.7042E-03	-2.7685	0.0000	-2.7685
SmF3:0.5H2O	8.6158E-03	-2.0647	0.0000	-2.0647

Mineral	Log Q/K	Aff, kcal	State
Lanthanide fluoride	-9.308	-12.698	
LaF3:0.5H2O	-9.308	-12.698	
CeF3:0.5H2O	-9.308	-12.698	
NdF3:0.5H2O	-9.308	-12.698	
GdF3:0.5H2O	-9.308	-12.698	
SmF3:0.5H2O	-9.308	-12.698	

--- Summary of Gases ---

Gas	Fugacity	Log fugacity
Al(g)	4.1298-194	-193.3841
B(g)	8.5429-204	-203.0684
BF3(g)	1.1155E-34	-33.9525
C(g)	3.0917-190	-189.5098
CH4(g)	3.5288-146	-145.4524
CO(g)	6.0395E-49	-48.2190
CO2(g)	3.1623E-04	-3.5000
Ca(g)	1.2340-156	-155.9087
Chlorine	1.1474E-25	-24.9403
Cs(g)	8.4716E-85	-84.0720
Cu(g)	3.0339E-84	-83.5180
Fluorine	1.4167E-79	-78.8487
H2(g)	6.1145E-42	-41.2136
H2O(g)	2.5975E-02	-1.5854
H2S(g)	8.1779-140	-139.0874
HCl(g)	4.1553E-17	-16.3814

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HF(g)                        1.6479E-12    -11.7831
K(g)                         5.4361E-79    -78.2647
Li(g)                        1.8492E-98    -97.7330
Mg(g)                        9.3220-133   -132.0305
Nitrogen                     8.5454E-17    -16.0683
NH3(g)                       1.0656E-67    -66.9724
NO(g)                        2.9108E-24    -23.5360
NO2(g)                       1.9903E-18    -17.7011
Na(g)                        4.3952E-77    -76.3570
O2(g)                        2.0999E-01     -0.6778
Pb(g)                        5.3581E-72    -71.2710
S2(g)                        3.9885-222   -221.3992
SO2(g)                       1.4480E-52    -51.8392
Si(g)                        4.2257-221   -220.3741
SiF4(g)                      3.2505E-32    -31.4881
Ti(g)                        1.6798-231   -230.7747
TiCl4(g)                     4.4130E-79    -78.3553
U(g)                         2.1918-299   -298.6592
U2Cl10(g)                    7.4949-234   -233.1252
U2Cl8(g)                     2.0250-239   -238.6936
U2F10(g)                     9.5472-145   -144.0201
UCl(g)                       8.1165-254   -253.0906
UCl2(g)                      8.9915-207   -206.0462
UCl3(g)                      2.1817-157   -156.6612
UCl4(g)                      2.8666-125   -124.5426
UCl5(g)                      1.9379-130   -129.7127
UCl6(g)                      2.4339-130   -129.6137
UF(g)                        6.8405-239   -238.1649
UF2(g)                       1.5833-196   -195.8004
UF3(g)                       9.0191-148   -147.0448
UF4(g)                       7.5832E-96    -95.1201
UF5(g)                       2.9204E-85    -84.5346
UF6(g)                       1.1075E-88    -87.9557
UO(g)                        1.7310-214   -213.7617
UO2(g)                       3.2070-130   -129.4939
UO2Cl2(g)                    1.6067E-74    -73.7941
UO2F2(g)                     2.0525E-62    -61.6877
UO3(g)                       2.3589E-77    -76.6273
UOF4(g)                      2.2597E-73    -72.6459
Zn(g)                        8.3028E-82    -81.0808



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Stepping to zi=  8.1044E-01, delzi=  1.0000E-09, nord= 0
  time =  9.3695E+03 d, dltime =  1.1561E-05 d
Steps completed =   207, iter =  1, ncorr = 0
Most rapidly changing is zvclg1(Ni3(PO4)2              ) =     -6.0447

Stepping to zi=  8.1044E-01, delzi=  1.0000E-09, nord= 0
  time =  9.3695E+03 d, dltime =  1.1561E-05 d
Steps completed =   208, iter =  1, ncorr = 0
Most rapidly changing is zvclg1(Ni3(PO4)2              ) =     -6.0447

Stepping to zi=  8.1044E-01, delzi=  1.0000E-09, nord= 0
  time =  9.3695E+03 d, dltime =  1.1561E-05 d
Steps completed =   209, iter =  1, ncorr = 0
Most rapidly changing is zvclg1(Ni3(PO4)2              ) =     -6.0447

Stepping to zi=  8.1044E-01, delzi=  1.0000E-08, nord= 1
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  time =  9.3695E+03 d, dltime =  1.1561E-04 d
Steps completed =   210, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Ni3(PO4)2              ) =     -6.0447

Stepping to zi=  8.1044E-01, delzi=  1.0000E-07, nord= 1
  time =  9.3695E+03 d, dltime =  1.1561E-03 d
Steps completed =   211, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Ni3(PO4)2              ) =     -6.0447

Stepping to zi=  8.1044E-01, delzi=  1.0000E-06, nord= 1
  time =  9.3695E+03 d, dltime =  1.1561E-02 d
Steps completed =   212, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Ni3(PO4)2              ) =     -6.0444

Stepping to zi=  8.1045E-01, delzi=  1.0000E-05, nord= 2
  time =  9.3697E+03 d, dltime =  1.1561E-01 d
Steps completed =   213, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Ni3(PO4)2              ) =     -6.0417

Stepping to zi=  8.1055E-01, delzi=  1.0000E-04, nord= 2
  time =  9.3708E+03 d, dltime =  1.1561E+00 d
Steps completed =   214, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Ni3(PO4)2              ) =     -6.0156

Stepping to zi=  8.1155E-01, delzi=  1.0000E-03, nord= 2
  time =  9.3824E+03 d, dltime =  1.1561E+01 d
Steps completed =   215, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Ni3(PO4)2              ) =     -5.8159

Stepping to zi=  8.1720E-01, delzi=  5.6452E-03, nord= 3
  time =  9.4476E+03 d, dltime =  6.5264E+01 d
Steps completed =   216, iter = 10, ncorr = 0
Most rapidly changing is zvclg1(Ni3(PO4)2              ) =     -5.3283

Stepping to zi=  8.2925E-01, delzi=  1.2050E-02, nord= 3
  time =  9.5870E+03 d, dltime =  1.3931E+02 d
Steps completed =   217, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Ni3(PO4)2              ) =     -4.9429

Stepping to zi=  8.6055E-01, delzi=  3.1297E-02, nord= 4
  time =  9.9488E+03 d, dltime =  3.6183E+02 d
     The phase to be dropped is Ni2SiO4                  (  405)


  Attempted species assemblage no.   2

            1      1  H2O
            2      3  Al+++
            3      7  B(OH)3(aq)
            4      8  Ba++
            5     11  Ca++
            6     13  Ce+++
            7     14  Cl-
            8     16  CrO4--
            9     17  Cs+
           10     18  Cu++
           11     22  F-
           12     23  Fe++
           13     25  Gd+++
           14     26  H+
           15     28  HCO3-
           16     29  HPO4--
           17     35  K+
```

```
            18     37  La+++
            19     38  Li+
            20     40  Mg++
            21     41  Mn++
            22     42  MoO4--
            23     43  NO3-
            24     44  Na+
            25     45  Nd+++
            26     47  Ni++
            27     49  Pb++
            28     52  Pu++++
            29     58  SO4--
            30     62  SiO2(aq)
            31     63  Sm+++
            32     65  Sr++
            33     69  Ti(OH)4(aq)
            34     72  UO2++
            35     73  VO++
            36     78  Zn++
            37     79  Zr(OH)2++
            38     80  O2(g)
            39    222  Fluorapatite
            40    252  Hematite
            41    406  Ni3(PO4)2
            42    470  Pyrolusite
            43    475  Quartz
            44    689  fix     CO2(g)
            45    690  fix     O2(g)
            46      1  SmectiteBeidellite-Ca
            47      2  SmectiteBeidellite-K
            48      3  SmectiteBeidellite-Mg
            49      4  SmectiteBeidellite-Na
            50      5  SmectiteMontmor-Ca
            51      6  SmectiteMontmor-K
            52      7  SmectiteMontmor-Mg
            53      8  SmectiteMontmor-Na
            54      9  SmectiteNontronite-Ca
            55     10  SmectiteNontronite-K
            56     11  SmectiteNontronite-Mg
            57     12  SmectiteNontronite-Na

Steps completed =   218, iter =  6, ncorr = 0

- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -


                    Reaction progress        =  8.60545988999075E-01
                    Log of reaction progress =      -0.0652259



                    Time =  8.596E+08 sec
                         =  9.949E+03 days
                         =  2.724E+01 years

                    Log sec =        8.934
                    Log days =       3.998
                    Log years =      1.435

                    Temperature    =     25.000 degrees C
                    total pressure =      1.013 bars
```

Change in the product phase assemblage

--- Reactant Summary ---

Reactant	Moles	Delta moles	Mass, g	Delta Mass, g
carbon steel	1.9140E+01	8.5957E-01	1.0469E+03	4.7017E+01
Alloy-22	1.9999E+01	9.7132E-04	1.1977E+03	5.8170E-02

Current total mass = 2.24463E+03 grams
Delta total mass = 4.70749E+01 grams
Delta total volume = 0.00000 cc

Reactant	Rel. Rate mol/mol	Rate mol/s	Rate mol/s/cm2
carbon steel	9.9887E-01	1.0000E-09	1.0000E-11
Alloy-22	1.1287E-03	1.1300E-12	1.1300E-14

Reactant	Affinity kcal/mol	Surface Area mol/s/cm2
carbon steel	999.00000	1.0000E+02
Alloy-22	999.00000	1.0000E+02

Reactant	Rate Constants, mol/s/cm2	
carbon steel		
	Forward	1.0000E-11
Alloy-22		
	Forward	1.1300E-14

Affinity of the overall irreversible reaction= 0.000 kcal
Contributions from irreversible reactions
with no thermodynamic data are not included

--- Element Totals for the Aqueous Solution ---

Element	mg/kg soln.	Molality	Moles
O	8.879752E+05	5.551623E+01	5.551680E+01
Al	1.882772E-06	6.979973E-11	6.980044E-11
B	1.338874E-01	1.238787E-05	1.238800E-05
Ba	1.372868E-05	9.999898E-11	1.000000E-10
Ca	3.045520E-01	7.601131E-06	7.601209E-06
Ce	1.400739E-19	9.999898E-25	1.000000E-24
Cl	7.138082E+00	2.013979E-04	2.014000E-04
Cr	1.294872E+01	2.491030E-04	2.491056E-04
Cs	1.328665E-05	9.999898E-11	1.000000E-10
Cu	6.670375E-10	1.049989E-14	1.050000E-14
F	9.766233E-01	5.142010E-05	5.142062E-05
Fe	1.361216E-07	2.438091E-12	2.438116E-12
Gd	1.572039E-09	9.999898E-15	1.000000E-14

H	1.118676E+05	1.110177E+02	1.110189E+02
C	2.626282E-01	2.187182E-05	2.187205E-05
P	1.118319E+01	3.611556E-04	3.611593E-04
K	5.035148E+00	1.288182E-04	1.288195E-04
La	1.388648E-09	9.999898E-15	1.000000E-14
Li	6.938966E-07	9.999898E-11	1.000000E-10
Mg	1.997067E+00	8.219018E-05	8.219102E-05
Mn	4.467622E-08	8.134409E-13	8.134492E-13
Mo	9.405738E+00	9.806544E-05	9.806645E-05
N	1.988374E+00	1.419985E-04	1.420000E-04
Na	4.578376E+01	1.992047E-03	1.992068E-03
Nd	1.441977E-09	9.999898E-15	1.000000E-14
Ni	2.736224E+01	4.663482E-04	4.663530E-04
Pb	2.071393E-05	9.999898E-11	1.000000E-10
Pu	2.439285E-09	9.999898E-15	1.000000E-14
S	2.964458E+01	9.247477E-04	9.247572E-04
Si	2.813057E+00	1.001888E-04	1.001898E-04
Sm	1.503159E-09	9.999898E-15	1.000000E-14
Sr	8.759433E-06	9.999898E-11	1.000000E-10
Ti	4.786597E-06	9.999898E-11	1.000000E-10
U	2.379592E-09	9.999898E-15	1.000000E-14
V	2.057896E-01	4.040867E-06	4.040909E-06
Zn	6.537084E-06	9.999898E-11	1.000000E-10
Zr	9.119727E-16	9.999898E-21	1.000000E-20

Single ion activities and activity coefficients are here defined
with respect to the modified NBS pH scale

	pH	Eh	pe
modified NBS pH scale	6.3278	0.8447	1.4279E+01
rational pH scale	6.2977	0.8465	1.4309E+01

pHCl = 10.0560

Oxygen fugacity = 2.09991E-01
Log oxygen fugacity = -0.67780

Activity of water = 0.99991
Log activity of water = -0.00004

Ionic strength = 4.801386E-03 molal
Sum of molalities = 0.0050582726313
Osmotic coefficient = 0.95515

Mass of solution = 1.000293 kg
Mass of solutes = 0.000283 kg
Conc. of solutes = 0.028275 per cent (w/w)

Moles of solvent H2O = 5.55090E+01
Mass of solvent H2O = 1.00001E+00 kg

Species	Molality	Log molality	Log gamma	Log activity
Na+	1.9828E-03	-2.7027	-0.0332	-2.7359

SO4--	8.7745E-04	-3.0568	-0.1280	-3.1847
Ni++	4.3766E-04	-3.3589	-0.1262	-3.4851
H2PO4-	3.0773E-04	-3.5118	-0.0314	-3.5432
O2(aq)	2.6509E-04	-3.5766	0.0005	-3.5761
Cl-	2.0132E-04	-3.6961	-0.0321	-3.7282
NO3-	1.4188E-04	-3.8481	-0.0321	-3.8802
HCrO4-	1.3381E-04	-3.8735	-0.0314	-3.9049
K+	1.2816E-04	-3.8923	-0.0338	-3.9261
CrO4--	1.1388E-04	-3.9436	-0.1280	-4.0715
SiO2(aq)	1.0016E-04	-3.9993	0.0000	-3.9993
MoO4--	9.8065E-05	-4.0085	-0.1266	-4.1351
Mg++	7.1344E-05	-4.1466	-0.1214	-4.2681
F-	5.1296E-05	-4.2899	-0.0317	-4.3217
HPO4--	5.0948E-05	-4.2929	-0.1280	-4.4208
NiSO4(aq)	2.8566E-05	-4.5442	0.0000	-4.5442
B(OH)3(aq)	1.2372E-05	-4.9076	0.0000	-4.9076
HCO3-	1.1106E-05	-4.9544	-0.0314	-4.9858
CO2(aq)	1.0730E-05	-4.9694	0.0005	-4.9689
MgSO4(aq)	9.0966E-06	-5.0411	0.0000	-5.0411
NaSO4-	8.5270E-06	-5.0692	-0.0314	-5.1006
Ca++	7.0404E-06	-5.1524	-0.1262	-5.2786
H2VO4-	2.1739E-06	-5.6628	-0.0314	-5.6942
MgHPO4(aq)	1.6637E-06	-5.7789	0.0000	-5.7789
VO2(OH)2-	1.3472E-06	-5.8706	-0.0314	-5.9020
Cr2O7--	7.0562E-07	-6.1514	-0.1280	-6.2794
KSO4-	6.3120E-07	-6.1998	-0.0314	-6.2312
NaHPO4-	6.2330E-07	-6.2053	-0.0314	-6.2367
H+	5.0383E-07	-6.2977	-0.0301	-6.3278
VO3OH--	4.6376E-07	-6.3337	-0.1280	-6.4617
CaSO4(aq)	4.4434E-07	-6.3523	0.0000	-6.3523
NiNO3+	1.1691E-07	-6.9321	-0.0332	-6.9653
CaHPO4(aq)	1.0978E-07	-6.9595	0.0000	-6.9595
MgF+	6.2489E-08	-7.2042	-0.0332	-7.2373
NaCl(aq)	5.7402E-08	-7.2411	0.0000	-7.2411
HVO4--	4.9957E-08	-7.3014	-0.1280	-7.4294
HF(aq)	3.3009E-08	-7.4814	0.0000	-7.4814
HSO4-	3.1475E-08	-7.5020	-0.0314	-7.5334
KHPO4-	2.9139E-08	-7.5355	-0.0314	-7.5669
NaHCO3(aq)	2.7064E-08	-7.5676	0.0000	-7.5676
HSiO3-	2.5549E-08	-7.5926	-0.0314	-7.6240
OH-	2.3143E-08	-7.6356	-0.0317	-7.6673
H3PO4(aq)	1.9891E-08	-7.7013	0.0000	-7.7013
PO3F--	1.8072E-08	-7.7430	-0.1280	-7.8710
BO2-	1.6098E-08	-7.7932	-0.0314	-7.8246
NaF(aq)	8.8077E-09	-8.0551	0.0000	-8.0551
MgPO4-	8.6595E-09	-8.0625	-0.0314	-8.0939
MgCl+	7.9794E-09	-8.0980	-0.0332	-8.1312
NiCl+	6.6625E-09	-8.1764	-0.0332	-8.2095
MgHCO3+	6.5303E-09	-8.1851	-0.0332	-8.2182
VO(OH)3(aq)	5.8915E-09	-8.2298	0.0000	-8.2298
CaNO3+	3.7525E-09	-8.4257	-0.0332	-8.4588
NaHSiO3(aq)	1.9435E-09	-8.7114	0.0000	-8.7114
CO3--	1.3797E-09	-8.8602	-0.1266	-8.9868
CaF+	1.3018E-09	-8.8855	-0.0332	-8.9186
KCl(aq)	7.0974E-10	-9.1489	0.0000	-9.1489
CaHCO3+	6.5368E-10	-9.1846	-0.0332	-9.2178
CaPO4-	6.2795E-10	-9.2021	-0.0314	-9.2335
H2P2O7--	5.0308E-10	-9.2984	-0.1280	-9.4263
HP2O7---	3.7140E-10	-9.4302	-0.2895	-9.7196
CaCl+	2.1414E-10	-9.6693	-0.0332	-9.7024
VO2HPO4-	1.5243E-10	-9.8169	-0.0314	-9.8483

--- Summary of Solid Product Phases---

Product	Log moles	Moles	Mass, g	Volume, cc
Fluorapatite	-4.1984	6.3329E-05	3.1937E-02	3.1665E-02
Hematite	-0.3840	4.1305E-01	6.5960E+01	1.2505E+01
Ni3(PO4)2	-4.5453	2.8492E-05	1.0428E-02	1.4246E-02
Pyrolusite	-2.0526	8.8590E-03	7.7017E-01	4.4295E+00
Quartz	-2.2590	5.5075E-03	3.3092E-01	1.2496E-01
fix CO2(g)	4.0000	1.0000E+04	4.4010E+05	0.0000E+00
fix O2(g)	4.0000	9.9993E+03	3.1997E+05	0.0000E+00
Smectite-di	-5.3475	4.4922E-06	1.9001E-03	5.8635E-04
Beidellite-Ca	-30.7555	1.7558E-31	6.4360E-29	2.2743E-29
Beidellite-K	-31.1859	6.5171E-32	2.4299E-29	8.7134E-30
Beidellite-Mg	-30.1360	7.3113E-31	2.6610E-28	9.0068E-29
Beidellite-Na	-31.0215	9.5176E-32	3.4981E-29	1.2424E-29
Montmor-Ca	-26.1412	7.2246E-27	2.6445E-24	3.6123E-24
Montmor-K	-26.3586	4.3796E-27	1.6307E-24	2.1898E-24
Montmor-Mg	-25.3107	4.8893E-26	1.7770E-23	2.4447E-23
Montmor-Na	-26.2050	6.2373E-27	2.2892E-24	3.1186E-24
Nontronite-Ca	-6.1315	7.3882E-07	3.1347E-04	9.6859E-05
Nontronite-K	-6.5619	2.7423E-07	1.1808E-04	3.7096E-05
Nontronite-Mg	-5.5116	3.0787E-06	1.2982E-03	3.9949E-04
Nontronite-Na	-6.3974	4.0049E-07	1.7032E-04	5.2909E-05

	Mass, grams	Volume, cc
Created	7.601331E+05	1.710554E+01
Destroyed	4.707487E+01	0.000000E+00
Net	7.600860E+05	1.710554E+01

Warning-- these volume totals may be incomplete because
of missing partial molar volume data in the data base

--- Summary of Pure Mineral Saturation States ---

Mineral	Log Q/K	Aff, kcal	State
Alamosite	-7.164	-9.774	
Albite	-6.592	-8.994	
Albite_low	-6.592	-8.994	
Analcime	-6.455	-8.806	
Anglesite	-5.479	-7.475	
Anhydrite	-4.157	-5.671	
Aragonite	-5.930	-8.090	
BaCrO4	-4.269	-5.823	
BaHPO4	-7.150	-9.755	
BaZrO3	78.226	106.723	ssatd
Barite	-3.343	-4.561	
Bassanite	-4.802	-6.551	
Berlinite	-5.290	-7.216	
Boehmite	-2.986	-4.074	
Boric_acid	-4.749	-6.479	
Bunsenite	-3.301	-4.504	
CaSO4:0.5H2O(beta)	-4.970	-6.781	
CaZrO3	137.107	187.052	ssatd
Calcite	-5.785	-7.893	

CeO2	-6.964	-9.501	
Cerussite	-5.596	-7.635	
Chalcedony	-0.271	-0.370	
Coesite	-0.810	-1.105	
CrO2	-6.624	-9.038	
Cristobalite(alpha)	-0.551	-0.751	
Cristobalite(beta)	-0.994	-1.356	
Crocoite	-1.501	-2.048	
Diaspore	-2.582	-3.523	
Enstatite	-6.939	-9.466	
Epsomite	-5.491	-7.491	
Fe(OH)3	-5.601	-7.642	
Fluorapatite	0.000	0.000	satd
Fluorite	-3.885	-5.300	
GdPO4:H2O	-2.097	-2.861	
Gibbsite	-3.178	-4.336	
Goethite	-0.480	-0.655	
Gypsum	-3.981	-5.431	
Hematite	0.000	0.000	satd
Hexahydrite	-5.726	-7.812	
Ice	-0.139	-0.189	
K-Feldspar	-4.743	-6.471	
Kaolinite	-5.653	-7.712	
Kieserite	-7.186	-9.804	
LaPO4:H2O	-0.851	-1.162	
Magnesite	-5.220	-7.121	
Manganite	-4.459	-6.084	
Maximum_Microcline	-4.743	-6.471	
MnHPO4	-3.778	-5.154	
MnO2(gamma)	-1.518	-2.071	
Monohydrocalcite	-6.619	-9.030	
Montmor-Ca	-6.862	-9.362	
Montmor-K	-6.934	-9.459	
Montmor-Mg	-6.588	-8.988	
Montmor-Na	-6.883	-9.390	
Mordenite	-7.304	-9.965	
Morenosite	-4.656	-6.352	
NdPO4:H2O	-1.544	-2.106	
Ni(OH)2	-3.578	-4.882	
Ni2P2O7	-6.913	-9.431	
Ni2SiO4	0.000	0.000	ssatd
Ni3(PO4)2	0.000	0.000	satd
NiCO3	-5.655	-7.715	
NiSO4:6H2O(alpha)	-4.663	-6.361	
Nontronite-Ca	-0.259	-0.353	
Nontronite-H	-0.518	-0.707	
Nontronite-K	-0.401	-0.547	
Nontronite-Mg	-0.054	-0.074	
Nontronite-Na	-0.346	-0.473	
Parsonsite	-7.014	-9.569	
Pb3(PO4)2	-6.653	-9.076	
PbHPO4	-3.001	-4.094	
Pentahydrite	-6.066	-8.275	
Plattnerite	-5.499	-7.502	
Pyrolusite	0.000	0.000	satd
Pyromorphite	-0.847	-1.156	
Pyrophyllite	-7.281	-9.933	
Quartz	0.000	0.000	satd
Rutile	-0.355	-0.484	
Sanidine_high	-5.942	-8.107	
Sellaite	-3.527	-4.812	
SiO2(am)	-1.286	-1.754	
SmPO4:H2O	-1.795	-2.449	

SrZrO3	115.180	157.138	ssatd
Starkeyite	-6.453	-8.804	
Strengite	-5.679	-7.748	
Trevorite	-0.509	-0.694	
Tridymite	-0.172	-0.234	
Witherite	-5.791	-7.900	
fix CO2(g)	0.000	0.000	satd
fix O2(g)	0.000	0.000	satd

--- Summary of Solid Solutions ---

--- Carbonate-Calcite ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Calcite	2.1365E-01	-0.6703	0.0000	-0.6703
Magnesite	7.8588E-01	-0.1046	0.0000	-0.1046
Rhodochrosite	2.2166E-06	-5.6543	0.0000	-5.6543
Siderite	2.8303E-14	-13.5482	0.0000	-13.5482
Smithsonite	6.9649E-05	-4.1571	0.0000	-4.1571
Strontianite	3.9826E-04	-3.3998	0.0000	-3.3998

Mineral	Log Q/K	Aff, kcal	State
Carbonate-Calcite	-5.115	-6.978	
Calcite	-5.115	-6.978	
Magnesite	-5.115	-6.978	
Rhodochrosite	-5.115	-6.978	
Siderite	-5.115	-6.978	
Smithsonite	-5.115	-6.978	
Strontianite	-5.115	-6.978	

--- Clinoptilolite-hy-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-hy-Ca	5.2002E-01	-0.2840	0.0000	-0.2840
Clinoptilolite-hy-Cs	1.3467E-20	-19.8707	0.0000	-19.8707
Clinoptilolite-hy-K	1.5719E-01	-0.8036	0.0000	-0.8036
Clinoptilolite-hy-Na	3.2279E-01	-0.4911	0.0000	-0.4911
Clinoptilolite-hy-Sr	2.3701E-09	-8.6252	0.0000	-8.6252

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-hy-ss	-22.244	-30.347	
Clinoptilolite-hy-Ca	-22.244	-30.347	
Clinoptilolite-hy-Cs	-22.244	-30.347	
Clinoptilolite-hy-K	-22.244	-30.347	
Clinoptilolite-hy-Na	-22.244	-30.347	
Clinoptilolite-hy-Sr	-22.244	-30.347	

--- Clinoptilolite-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-Ca	3.8744E-01	-0.4118	-1.0130	-1.4248
Clinoptilolite-Cs	8.4405E-07	-6.0736	-14.9411	-21.0148
Clinoptilolite-K	2.7369E-01	-0.5627	-1.3843	-1.9471
Clinoptilolite-NH4	7.1755E-60	-59.1441	-145.4946	-204.6388
Clinoptilolite-Na	3.3737E-01	-0.4719	-1.1609	-1.6328
Clinoptilolite-Sr	1.5053E-03	-2.8224	-6.9430	-9.7654

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-ss	-21.105	-28.793	
Clinoptilolite-Ca	-21.105	-28.793	
Clinoptilolite-Cs	-21.105	-28.793	
Clinoptilolite-K	-21.105	-28.793	
Clinoptilolite-NH4	-21.105	-28.793	
Clinoptilolite-Na	-21.105	-28.793	
Clinoptilolite-Sr	-21.105	-28.793	

--- Saponite-tri ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Saponite-Ca	1.6023E-01	-0.7952	0.5328	-0.2624
Saponite-H	2.6242E-02	-1.5810	1.0593	-0.5217
Saponite-K	5.9434E-02	-1.2260	0.8214	-0.4046
Saponite-Mg	6.6723E-01	-0.1757	0.1177	-0.0580
Saponite-Na	8.6858E-02	-1.0612	0.7110	-0.3502

Mineral	Log Q/K	Aff, kcal	State
Saponite-tri	-12.815	-17.483	
Saponite-Ca	-12.815	-17.483	
Saponite-H	-12.815	-17.483	
Saponite-K	-12.815	-17.483	
Saponite-Mg	-12.815	-17.483	
Saponite-Na	-12.815	-17.483	

--- Smectite-di ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Beidellite-Ca	3.9085E-26	-25.4080	17.0234	-8.3846
Beidellite-K	1.4508E-26	-25.8384	17.3117	-8.5267
Beidellite-Mg	1.6276E-25	-24.7885	16.6083	-8.1802
Beidellite-Na	2.1187E-26	-25.6739	17.2015	-8.4724
Montmor-Ca	1.6083E-21	-20.7936	13.9317	-6.8619
Montmor-K	9.7493E-22	-21.0110	14.0774	-6.9336
Montmor-Mg	1.0884E-20	-19.9632	13.3754	-6.5879
Montmor-Na	1.3885E-21	-20.8575	13.9745	-6.8830

Nontronite-Ca	1.6447E-01	-0.7839	0.5252	-0.2587
Nontronite-K	6.1046E-02	-1.2143	0.8136	-0.4007
Nontronite-Mg	6.8534E-01	-0.1641	0.1099	-0.0542
Nontronite-Na	8.9152E-02	-1.0499	0.7034	-0.3465

Mineral	Log Q/K	Aff, kcal	State
Smectite-di	0.000	0.000	satd
Beidellite-Ca	0.000	0.000	satd
Beidellite-K	0.000	0.000	satd
Beidellite-Mg	0.000	0.000	satd
Beidellite-Na	0.000	0.000	satd
Montmor-Ca	0.000	0.000	satd
Montmor-K	0.000	0.000	satd
Montmor-Mg	0.000	0.000	satd
Montmor-Na	0.000	0.000	satd
Nontronite-Ca	0.000	0.000	satd
Nontronite-K	0.000	0.000	satd
Nontronite-Mg	0.000	0.000	satd
Nontronite-Na	0.000	0.000	satd

--- Lanthanide hydroxide ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
La(OH)3	5.4124E-05	-4.2666	0.0000	-4.2666
Ce(OH)3	8.7873E-15	-14.0561	0.0000	-14.0561
Nd(OH)3(c)	5.5107E-01	-0.2588	0.0000	-0.2588
Gd(OH)3	3.8721E-01	-0.4121	0.0000	-0.4121
Sm(OH)3	6.1669E-02	-1.2099	0.0000	-1.2099

Mineral	Log Q/K	Aff, kcal	State
Lanthanide hydroxide	-12.188	-16.628	
La(OH)3	-12.188	-16.628	
Ce(OH)3	-12.188	-16.628	
Nd(OH)3(c)	-12.188	-16.628	
Gd(OH)3	-12.188	-16.628	
Sm(OH)3	-12.188	-16.628	

--- Rhabdophane-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaPO4:H2O	7.2784E-01	-0.1380	0.0000	-0.1380
CePO4:H2O	3.7368E-11	-10.4275	0.0000	-10.4275
NdPO4:H2O	1.4786E-01	-0.8301	0.0000	-0.8301
GdPO4:H2O	4.1361E-02	-1.3834	0.0000	-1.3834
SmPO4:H2O	8.2932E-02	-1.0813	0.0000	-1.0813

Mineral	Log Q/K	Aff, kcal	State

Rhabdophane-ss	-0.714	-0.973
LaPO4:H2O	-0.714	-0.973
CePO4:H2O	-0.714	-0.973
NdPO4:H2O	-0.714	-0.973
GdPO4:H2O	-0.714	-0.973
SmPO4:H2O	-0.714	-0.973

--- Lanthanide fluoride ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaF3:0.5H2O	7.8777E-01	-0.1036	0.0000	-0.1036
CeF3:0.5H2O	6.4101E-11	-10.1931	0.0000	-10.1931
NdF3:0.5H2O	2.0147E-01	-0.6958	0.0000	-0.6958
GdF3:0.5H2O	1.7822E-03	-2.7490	0.0000	-2.7490
SmF3:0.5H2O	8.9759E-03	-2.0469	0.0000	-2.0469

Mineral	Log Q/K	Aff, kcal	State
Lanthanide fluoride	-9.270	-12.647	
LaF3:0.5H2O	-9.270	-12.647	
CeF3:0.5H2O	-9.270	-12.647	
NdF3:0.5H2O	-9.270	-12.647	
GdF3:0.5H2O	-9.270	-12.647	
SmF3:0.5H2O	-9.270	-12.647	

--- Summary of Gases ---

Gas	Fugacity	Log fugacity
Al(g)	4.3090-194	-193.3656
B(g)	8.5435-204	-203.0684
BF3(g)	1.2899E-34	-33.8895
C(g)	3.0917-190	-189.5098
CH4(g)	3.5288-146	-145.4524
CO(g)	6.0395E-49	-48.2190
CO2(g)	3.1623E-04	-3.5000
Ca(g)	1.2221-156	-155.9129
Chlorine	1.2576E-25	-24.9005
Cs(g)	8.0718E-85	-84.0930
Cu(g)	2.8716E-84	-83.5419
Fluorine	1.5607E-79	-78.8067
H2(g)	6.1145E-42	-41.2136
H2O(g)	2.5975E-02	-1.5854
H2S(g)	9.3510-140	-139.0291
HCl(g)	4.3501E-17	-16.3615
HF(g)	1.7296E-12	-11.7621
K(g)	5.1788E-79	-78.2858
Li(g)	1.7620E-98	-97.7540
Mg(g)	8.4349-133	-132.0739
Nitrogen	9.3642E-17	-16.0285
NH3(g)	1.1155E-67	-66.9525
NO(g)	3.0471E-24	-23.5161
NO2(g)	2.0835E-18	-17.6812
Na(g)	4.1875E-77	-76.3780

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O2(g)                        2.0999E-01     -0.6778
Pb(g)                        4.8710E-72    -71.3124
S2(g)                        5.2149-222   -221.2828
SO2(g)                       1.6558E-52    -51.7810
Si(g)                        4.2257-221   -220.3741
SiF4(g)                      3.9447E-32    -31.4040
Ti(g)                        1.6799-231   -230.7747
TiCl4(g)                     5.3008E-79    -78.2757
U(g)                         2.2424-299   -298.6493
U2Cl10(g)                    1.2405-233   -232.9064
U2Cl8(g)                     3.0582-239   -238.5145
U2F10(g)                     1.6213-144   -143.7901
UCl(g)                       8.6932-254   -253.0608
UCl2(g)                      1.0082-206   -205.9965
UCl3(g)                      2.5610-157   -156.5916
UCl4(g)                      3.5227-125   -124.4531
UCl5(g)                      2.4932-130   -129.6033
UCl6(g)                      3.2781-130   -129.4844
UF(g)                        7.3454-239   -238.1340
UF2(g)                       1.7845-196   -195.7485
UF3(g)                       1.0669-147   -146.9719
UF4(g)                       9.4152E-96    -95.0262
UF5(g)                       3.8057E-85    -84.4196
UF6(g)                       1.5147E-88    -87.8197
UO(g)                        1.7710-214   -213.7518
UO2(g)                       3.2811-130   -129.4840
UO2Cl2(g)                    1.8016E-74    -73.7444
UO2F2(g)                     2.3132E-62    -61.6358
UO3(g)                       2.4133E-77    -76.6174
UOF4(g)                      2.8056E-73    -72.5520
Zn(g)                        7.5655E-82    -81.1212



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Stepping to zi=  8.6055E-01, delzi=  1.0000E-09, nord= 0
  time =  9.9488E+03 d, dltime =  1.1561E-05 d
Steps completed =   219, iter =  1, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-Ca           ) =    -30.7555

Stepping to zi=  8.6055E-01, delzi=  1.0000E-09, nord= 0
  time =  9.9488E+03 d, dltime =  1.1561E-05 d
Steps completed =   220, iter =  1, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-Ca           ) =    -30.7555

Stepping to zi=  8.6055E-01, delzi=  1.0000E-09, nord= 0
  time =  9.9488E+03 d, dltime =  1.1561E-05 d
Steps completed =   221, iter =  1, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-Ca           ) =    -30.7555

Stepping to zi=  8.6055E-01, delzi=  1.0000E-08, nord= 1
  time =  9.9488E+03 d, dltime =  1.1561E-04 d
Steps completed =   222, iter =  1, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-Ca           ) =    -30.7555

Stepping to zi=  8.6055E-01, delzi=  1.0000E-07, nord= 1
  time =  9.9488E+03 d, dltime =  1.1561E-03 d
Steps completed =   223, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-Ca           ) =    -30.7555
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Stepping to zi=  8.6055E-01, delzi=  1.0000E-06, nord= 1
  time =  9.9488E+03 d, dltime =  1.1561E-02 d
Steps completed =   224, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-Ca           ) =    -30.7555

Stepping to zi=  8.6056E-01, delzi=  1.0000E-05, nord= 2
  time =  9.9489E+03 d, dltime =  1.1561E-01 d
Steps completed =   225, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-Ca           ) =    -30.7554

Stepping to zi=  8.6066E-01, delzi=  1.0000E-04, nord= 2
  time =  9.9501E+03 d, dltime =  1.1561E+00 d
Steps completed =   226, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-Ca           ) =    -30.7541

Stepping to zi=  8.6146E-01, delzi=  8.0395E-04, nord= 2
  time =  9.9594E+03 d, dltime =  9.2945E+00 d
Steps completed =   227, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-Ca           ) =    -30.7437

Stepping to zi=  8.6543E-01, delzi=  3.9652E-03, nord= 3
  time =  1.0005E+04 d, dltime =  4.5842E+01 d
Steps completed =   228, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-Ca           ) =    -30.6931

Stepping to zi=  8.7102E-01, delzi=  5.5918E-03, nord= 3
  time =  1.0070E+04 d, dltime =  6.4647E+01 d
Steps completed =   229, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-Ca           ) =    -30.6230

Stepping to zi=  8.8863E-01, delzi=  1.7612E-02, nord= 4
  time =  1.0273E+04 d, dltime =  2.0361E+02 d
Steps completed =   230, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-Ca           ) =    -30.4111

Stepping to zi=  9.1759E-01, delzi=  2.8961E-02, nord= 5
  time =  1.0608E+04 d, dltime =  3.3482E+02 d
Steps completed =   231, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Ni3(PO4)2               ) =     -5.0793

Stepping to zi=  9.4066E-01, delzi=  2.3064E-02, nord= 5
  time =  1.0875E+04 d, dltime =  2.6665E+02 d
     The phase to be dropped is Ni3(PO4)2                 (  406)


  Attempted species assemblage no.   2

            1      1  H2O
            2      3  Al+++
            3      7  B(OH)3(aq)
            4      8  Ba++
            5     11  Ca++
            6     13  Ce+++
            7     14  Cl-
            8     16  CrO4--
            9     17  Cs+
           10     18  Cu++
           11     22  F-
           12     23  Fe++
           13     25  Gd+++
           14     26  H+
           15     28  HCO3-
           16     29  HPO4--
```

```
            17     35  K+
            18     37  La+++
            19     38  Li+
            20     40  Mg++
            21     41  Mn++
            22     42  MoO4--
            23     43  NO3-
            24     44  Na+
            25     45  Nd+++
            26     47  Ni++
            27     49  Pb++
            28     52  Pu++++
            29     58  SO4--
            30     62  SiO2(aq)
            31     63  Sm+++
            32     65  Sr++
            33     69  Ti(OH)4(aq)
            34     72  UO2++
            35     73  VO++
            36     78  Zn++
            37     79  Zr(OH)2++
            38     80  O2(g)
            39    222  Fluorapatite
            40    252  Hematite
            41    470  Pyrolusite
            42    475  Quartz
            43    689  fix     CO2(g)
            44    690  fix     O2(g)
            45      1  SmectiteBeidellite-Ca
            46      2  SmectiteBeidellite-K
            47      3  SmectiteBeidellite-Mg
            48      4  SmectiteBeidellite-Na
            49      5  SmectiteMontmor-Ca
            50      6  SmectiteMontmor-K
            51      7  SmectiteMontmor-Mg
            52      8  SmectiteMontmor-Na
            53      9  SmectiteNontronite-Ca
            54     10  SmectiteNontronite-K
            55     11  SmectiteNontronite-Mg
            56     12  SmectiteNontronite-Na

Steps completed =   232, iter =  7, ncorr = 0

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                    Reaction progress        =  9.40655096118580E-01
                    Log of reaction progress =      -0.0265696



                    Time =  9.396E+08 sec
                         =  1.087E+04 days
                         =  2.977E+01 years

                    Log sec =        8.973
                    Log days =       4.036
                    Log years =      1.474

                    Temperature    =     25.000 degrees C
                    total pressure =      1.013 bars
```

Change in the product phase assemblage

--- Reactant Summary ---

Reactant	Moles	Delta moles	Mass, g	Delta Mass, g
carbon steel	1.9060E+01	9.3959E-01	1.0426E+03	5.1394E+01
Alloy-22	1.9999E+01	1.0617E-03	1.1977E+03	6.3585E-02

Current total mass = 2.24025E+03 grams
Delta total mass = 5.14571E+01 grams
Delta total volume = 0.00000 cc

Reactant	Rel. Rate mol/mol	Rate mol/s	Rate mol/s/cm2
carbon steel	9.9887E-01	1.0000E-09	1.0000E-11
Alloy-22	1.1287E-03	1.1300E-12	1.1300E-14

Reactant	Affinity kcal/mol	Surface Area mol/s/cm2
carbon steel	999.00000	1.0000E+02
Alloy-22	999.00000	1.0000E+02

Reactant	Rate Constants, mol/s/cm2	
carbon steel		
	Forward	1.0000E-11
Alloy-22		
	Forward	1.1300E-14

Affinity of the overall irreversible reaction= 0.000 kcal
Contributions from irreversible reactions
with no thermodynamic data are not included

--- Element Totals for the Aqueous Solution ---

Element	mg/kg soln.	Molality	Moles
O	8.879624E+05	5.551708E+01	5.551752E+01
Al	7.102559E-06	2.633200E-10	2.633221E-10
B	1.338838E-01	1.238790E-05	1.238800E-05
Ba	1.372830E-05	9.999921E-11	1.000000E-10
Ca	3.837519E-01	9.578119E-06	9.578195E-06
Ce	1.400701E-19	9.999921E-25	1.000000E-24
Cl	7.137886E+00	2.013984E-04	2.014000E-04
Cr	1.415208E+01	2.722608E-04	2.722630E-04
Cs	1.328628E-05	9.999921E-11	1.000000E-10
Cu	6.670192E-10	1.049992E-14	1.050000E-14
F	9.841524E-01	5.181805E-05	5.181846E-05
Fe	1.713103E-07	3.068452E-12	3.068476E-12
Gd	1.571996E-09	9.999921E-15	1.000000E-14

H	1.118645E+05	1.110180E+02	1.110189E+02
C	2.243158E-01	1.868170E-05	1.868185E-05
P	1.473350E+01	4.758256E-04	4.758294E-04
K	5.035070E+00	1.288200E-04	1.288210E-04
La	1.388610E-09	9.999921E-15	1.000000E-14
Li	6.938776E-07	9.999921E-11	1.000000E-10
Mg	1.997266E+00	8.220079E-05	8.220144E-05
Mn	8.937335E-08	1.627311E-12	1.627324E-12
Mo	1.028105E+01	1.071947E-04	1.071955E-04
N	1.988320E+00	1.419989E-04	1.420000E-04
Na	4.578256E+01	1.992054E-03	1.992070E-03
Nd	1.441938E-09	9.999921E-15	1.000000E-14
Ni	3.539036E+01	6.031935E-04	6.031982E-04
Pb	2.071336E-05	9.999921E-11	1.000000E-10
Pu	2.439218E-09	9.999921E-15	1.000000E-14
S	3.183176E+01	9.930053E-04	9.930131E-04
Si	2.812752E+00	1.001809E-04	1.001817E-04
Sm	1.503118E-09	9.999921E-15	1.000000E-14
Sr	8.759192E-06	9.999921E-11	1.000000E-10
Ti	4.786466E-06	9.999921E-11	1.000000E-10
U	2.379526E-09	9.999921E-15	1.000000E-14
V	2.249396E-01	4.417026E-06	4.417060E-06
Zn	6.536905E-06	9.999921E-11	1.000000E-10
Zr	9.119477E-16	9.999921E-21	1.000000E-20

Single ion activities and activity coefficients are here defined
with respect to the modified NBS pH scale

	pH	Eh	pe
modified NBS pH scale	6.1802	0.8534	1.4427E+01
rational pH scale	6.1489	0.8553	1.4458E+01

pHCl = 9.9097

Oxygen fugacity = 2.09991E-01
Log oxygen fugacity = -0.67780

Activity of water = 0.99991
Log activity of water = -0.00004

Ionic strength = 5.241733E-03 molal
Sum of molalities = 0.0053989389075
Osmotic coefficient = 0.95237

Mass of solution = 1.000321 kg
Mass of solutes = 0.000313 kg
Conc. of solutes = 0.031255 per cent (w/w)

Moles of solvent H2O = 5.55089E+01
Mass of solvent H2O = 1.00001E+00 kg

Species	Molality	Log molality	Log gamma	Log activity
Na+	1.9824E-03	-2.7028	-0.0345	-2.7373

SO4--	9.3494E-04	-3.0292	-0.1331	-3.1623
Ni++	5.6467E-04	-3.2482	-0.1313	-3.3795
H2PO4-	4.2307E-04	-3.3736	-0.0326	-3.4062
O2(aq)	2.6506E-04	-3.5767	0.0006	-3.5761
Cl-	2.0132E-04	-3.6961	-0.0334	-3.7295
HCrO4-	1.6759E-04	-3.7757	-0.0326	-3.8084
NO3-	1.4185E-04	-3.8482	-0.0334	-3.8816
K+	1.2813E-04	-3.8924	-0.0353	-3.9276
MoO4--	1.0719E-04	-3.9698	-0.1317	-4.1015
CrO4--	1.0244E-04	-3.9895	-0.1331	-4.1226
SiO2(aq)	1.0016E-04	-3.9993	0.0000	-3.9993
Mg++	7.1079E-05	-4.1483	-0.1261	-4.2743
F-	5.1673E-05	-4.2867	-0.0330	-4.3198
HPO4--	5.0309E-05	-4.2984	-0.1331	-4.4315
NiSO4(aq)	3.8361E-05	-4.4161	0.0000	-4.4161
B(OH)3(aq)	1.2376E-05	-4.9074	0.0000	-4.9074
CO2(aq)	1.0729E-05	-4.9695	0.0006	-4.9689
MgSO4(aq)	9.4410E-06	-5.0250	0.0000	-5.0250
NaSO4-	8.9735E-06	-5.0470	-0.0326	-5.0797
Ca++	8.8555E-06	-5.0528	-0.1313	-5.1841
HCO3-	7.9279E-06	-5.1008	-0.0326	-5.1335
H2VO4-	2.4629E-06	-5.6085	-0.0326	-5.6412
MgHPO4(aq)	1.6002E-06	-5.7958	0.0000	-5.7958
VO2(OH)2-	1.5263E-06	-5.8163	-0.0326	-5.8490
Cr2O7--	1.1137E-06	-5.9532	-0.1331	-6.0863
H+	7.0969E-07	-6.1489	-0.0312	-6.1802
KSO4-	6.6414E-07	-6.1777	-0.0326	-6.2104
NaHPO4-	6.0788E-07	-6.2162	-0.0326	-6.2488
CaSO4(aq)	5.8171E-07	-6.2353	0.0000	-6.2353
VO3OH--	3.7738E-07	-6.4232	-0.1331	-6.5563
NiNO3+	1.4910E-07	-6.8265	-0.0345	-6.8611
CaHPO4(aq)	1.3319E-07	-6.8755	0.0000	-6.8755
MgF+	6.2064E-08	-7.2072	-0.0345	-7.2417
NaCl(aq)	5.7036E-08	-7.2438	0.0000	-7.2438
HSO4-	4.6694E-08	-7.3307	-0.0326	-7.3634
HF(aq)	4.6579E-08	-7.3318	0.0000	-7.3318
HVO4--	4.0652E-08	-7.3909	-0.1331	-7.5240
H3PO4(aq)	3.8311E-08	-7.4167	0.0000	-7.4167
KHPO4-	2.8413E-08	-7.5465	-0.0326	-7.5791
PO3F--	2.5181E-08	-7.5989	-0.1331	-7.7320
NaHCO3(aq)	1.9198E-08	-7.7167	0.0000	-7.7167
HSiO3-	1.8237E-08	-7.7390	-0.0326	-7.7717
OH-	1.6521E-08	-7.7820	-0.0330	-7.8150
BO2-	1.1496E-08	-7.9395	-0.0326	-7.9721
VO(OH)3(aq)	9.3509E-09	-8.0291	0.0000	-8.0291
NaF(aq)	8.8165E-09	-8.0547	0.0000	-8.0547
NiCl+	8.4990E-09	-8.0706	-0.0345	-8.1052
MgCl+	7.8667E-09	-8.1042	-0.0345	-8.1387
MgPO4-	5.9453E-09	-8.2258	-0.0326	-8.2585
CaNO3+	4.6655E-09	-8.3311	-0.0345	-8.3656
MgHCO3+	4.5963E-09	-8.3376	-0.0345	-8.3721
CaF+	1.6309E-09	-8.7876	-0.0345	-8.8221
NaHSiO3(aq)	1.3787E-09	-8.8605	0.0000	-8.8605
H2P2O7--	9.5675E-10	-9.0192	-0.1331	-9.1523
CO3--	7.0718E-10	-9.1505	-0.1317	-9.2821
KCl(aq)	7.0510E-10	-9.1517	0.0000	-9.1517
CaHCO3+	5.8036E-10	-9.2363	-0.0345	-9.2708
CaPO4-	5.4383E-10	-9.2645	-0.0326	-9.2972
HP2O7---	5.1043E-10	-9.2921	-0.3012	-9.5933
VO2HPO4-	3.3262E-10	-9.4780	-0.0326	-9.5107
CaCl+	2.6631E-10	-9.5746	-0.0345	-9.6092
HPO3F-	1.6594E-10	-9.7800	-0.0326	-9.8127
AlF2+	1.4949E-10	-9.8254	-0.0345	-9.8599

--- Summary of Solid Product Phases---

Product	Log moles	Moles	Mass, g	Volume, cc
Fluorapatite	-4.2011	6.2932E-05	3.1737E-02	3.1466E-02
Hematite	-0.3453	4.5150E-01	7.2101E+01	1.3669E+01
Pyrolusite	-2.0140	9.6837E-03	8.4187E-01	4.8418E+00
Quartz	-2.2265	5.9365E-03	3.5669E-01	1.3469E-01
fix CO2(g)	4.0000	1.0000E+04	4.4010E+05	0.0000E+00
fix O2(g)	4.0000	9.9993E+03	3.1997E+05	0.0000E+00
Smectite-di	-5.3476	4.4916E-06	1.9000E-03	5.8633E-04
Beidellite-Ca	-29.8545	1.3981E-30	5.1249E-28	1.8110E-28
Beidellite-K	-30.3337	4.6374E-31	1.7291E-28	6.2003E-29
Beidellite-Mg	-29.2854	5.1836E-30	1.8866E-27	6.3857E-28
Beidellite-Na	-30.1692	6.7736E-31	2.4896E-28	8.8423E-29
Montmor-Ca	-25.8254	1.4950E-26	5.4723E-24	7.4750E-24
Montmor-K	-26.0916	8.0987E-27	3.0154E-24	4.0493E-24
Montmor-Mg	-25.0454	9.0084E-26	3.2740E-23	4.5042E-23
Montmor-Na	-25.9380	1.1536E-26	4.2338E-24	5.7679E-24
Nontronite-Ca	-6.0900	8.1276E-07	3.4485E-04	1.0655E-04
Nontronite-K	-6.5693	2.6959E-07	1.1608E-04	3.6467E-05
Nontronite-Mg	-5.5206	3.0155E-06	1.2716E-03	3.9129E-04
Nontronite-Na	-6.4048	3.9377E-07	1.6746E-04	5.2021E-05

	Mass, grams	Volume, cc
Created	7.601374E+05	1.867725E+01
Destroyed	5.145711E+01	0.000000E+00
Net	7.600860E+05	1.867725E+01

Warning-- these volume totals may be incomplete because
of missing partial molar volume data in the data base

--- Summary of Pure Mineral Saturation States ---

Mineral	Log Q/K	Aff, kcal	State
Albite	-6.600	-9.004	
Albite_low	-6.600	-9.004	
Analcime	-6.462	-8.816	
Anglesite	-5.461	-7.451	
Anhydrite	-4.040	-5.512	
Aragonite	-6.130	-8.364	
BaCrO4	-4.325	-5.900	
BaHPO4	-7.166	-9.776	
BaZrO3	77.926	106.313	ssatd
Barite	-3.326	-4.537	
Bassanite	-4.685	-6.392	
Berlinite	-4.863	-6.635	
Boehmite	-2.844	-3.880	
Boric_acid	-4.749	-6.479	
Bunsenite	-3.491	-4.763	
CaSO4:0.5H2O(beta)	-4.853	-6.621	
CaZrO3	136.906	186.779	ssatd
Calcite	-5.986	-8.167	

Cerussite	-5.896	-8.044	
Chalcedony	-0.271	-0.370	
Coesite	-0.810	-1.105	
CrO2	-6.380	-8.705	
Cristobalite(alpha)	-0.551	-0.751	
Cristobalite(beta)	-0.994	-1.356	
Crocoite	-1.557	-2.124	
Diaspore	-2.440	-3.329	
Enstatite	-7.240	-9.878	
Epsomite	-5.475	-7.469	
Fe(OH)3	-5.601	-7.642	
Fluorapatite	0.000	0.000	satd
Fluorite	-3.787	-5.166	
GdPO4:H2O	-2.154	-2.939	
Gibbsite	-3.036	-4.142	
Goethite	-0.480	-0.655	
Gypsum	-3.864	-5.272	
Hematite	0.000	0.000	satd
Hexahydrite	-5.710	-7.790	
Ice	-0.139	-0.189	
K-Feldspar	-4.750	-6.481	
Kaolinite	-5.369	-7.325	
Kieserite	-7.170	-9.782	
LaPO4:H2O	-0.977	-1.332	
Magnesite	-5.521	-7.533	
Manganite	-4.459	-6.084	
Maximum_Microcline	-4.750	-6.481	
MnHPO4	-3.493	-4.766	
MnO2(gamma)	-1.518	-2.071	
Monohydrocalcite	-6.820	-9.304	
Montmor-Ca	-6.758	-9.219	
Montmor-K	-6.846	-9.339	
Montmor-Mg	-6.500	-8.868	
Montmor-Na	-6.795	-9.270	
Mordenite	-7.283	-9.936	
Morenosite	-4.528	-6.178	
NdPO4:H2O	-1.617	-2.206	
Ni(OH)2	-3.768	-5.140	
Ni2P2O7	-6.723	-9.172	
Ni2SiO4	-0.379	-0.517	
Ni3(PO4)2	0.000	0.000	ssatd
NiCO3	-5.845	-7.974	
NiSO4:6H2O(alpha)	-4.535	-6.187	
Nontronite-Ca	-0.245	-0.334	
Nontronite-H	-0.471	-0.643	
Nontronite-K	-0.403	-0.550	
Nontronite-Mg	-0.057	-0.078	
Nontronite-Na	-0.349	-0.476	
Parsonsite	-7.261	-9.906	
Pb3(PO4)2	-6.984	-9.528	
PbHPO4	-3.017	-4.115	
Pentahydrite	-6.050	-8.253	
Plattnerite	-5.799	-7.912	
Pyrolusite	0.000	0.000	satd
Pyromorphite	-1.347	-1.838	
Pyrophyllite	-6.997	-9.546	
Quartz	0.000	0.000	satd
Rutile	-0.355	-0.484	
Sanidine_high	-5.949	-8.117	
Sellaite	-3.530	-4.815	
SiO2(am)	-1.286	-1.754	
SmPO4:H2O	-1.854	-2.529	
SrZrO3	114.878	156.726	ssatd

Starkeyite	-6.437	-8.782	
Strengite	-5.395	-7.360	
Trevorite	-0.698	-0.953	
Tridymite	-0.172	-0.234	
Witherite	-6.091	-8.310	
fix CO2(g)	0.000	0.000	satd
fix O2(g)	0.000	0.000	satd

--- Summary of Solid Solutions ---

--- Carbonate-Calcite ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Calcite	2.5524E-01	-0.5931	0.0000	-0.5931
Magnesite	7.4431E-01	-0.1282	0.0000	-0.1282
Rhodochrosite	4.2037E-06	-5.3764	0.0000	-5.3764
Siderite	5.3677E-14	-13.2702	0.0000	-13.2702
Smithsonite	6.6370E-05	-4.1780	0.0000	-4.1780
Strontianite	3.7679E-04	-3.4239	0.0000	-3.4239

Mineral	Log Q/K	Aff, kcal	State
Carbonate-Calcite	-5.393	-7.358	
Calcite	-5.393	-7.358	
Magnesite	-5.393	-7.358	
Rhodochrosite	-5.393	-7.358	
Siderite	-5.393	-7.358	
Smithsonite	-5.393	-7.358	
Strontianite	-5.393	-7.358	

--- Clinoptilolite-hy-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-hy-Ca	6.1530E-01	-0.2109	0.0000	-0.2109
Clinoptilolite-hy-Cs	1.0796E-20	-19.9667	0.0000	-19.9667
Clinoptilolite-hy-K	1.2594E-01	-0.8998	0.0000	-0.8998
Clinoptilolite-hy-Na	2.5876E-01	-0.5871	0.0000	-0.5871
Clinoptilolite-hy-Sr	1.8716E-09	-8.7278	0.0000	-8.7278

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-hy-ss	-22.176	-30.254	
Clinoptilolite-hy-Ca	-22.176	-30.254	
Clinoptilolite-hy-Cs	-22.176	-30.254	
Clinoptilolite-hy-K	-22.176	-30.254	
Clinoptilolite-hy-Na	-22.176	-30.254	
Clinoptilolite-hy-Sr	-22.176	-30.254	

--- Clinoptilolite-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-Ca	4.1448E-01	-0.3825	-0.9409	-1.3234
Clinoptilolite-Cs	8.0686E-07	-6.0932	-14.9893	-21.0825
Clinoptilolite-K	2.6159E-01	-0.5824	-1.4327	-2.0150
Clinoptilolite-NH4	1.3560E-59	-58.8678	-144.8147	-203.6824
Clinoptilolite-Na	3.2250E-01	-0.4915	-1.2090	-1.7005
Clinoptilolite-Sr	1.4328E-03	-2.8438	-6.9958	-9.8396

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-ss	-21.065	-28.738	
Clinoptilolite-Ca	-21.065	-28.738	
Clinoptilolite-Cs	-21.065	-28.738	
Clinoptilolite-K	-21.065	-28.738	
Clinoptilolite-NH4	-21.065	-28.738	
Clinoptilolite-Na	-21.065	-28.738	
Clinoptilolite-Sr	-21.065	-28.738	

--- Saponite-tri ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Saponite-Ca	1.7452E-01	-0.7582	0.5080	-0.2502
Saponite-H	3.6012E-02	-1.4435	0.9672	-0.4764
Saponite-K	5.7848E-02	-1.2377	0.8293	-0.4084
Saponite-Mg	6.4706E-01	-0.1891	0.1267	-0.0624
Saponite-Na	8.4554E-02	-1.0729	0.7188	-0.3540

Mineral	Log Q/K	Aff, kcal	State
Saponite-tri	-13.718	-18.715	
Saponite-Ca	-13.718	-18.715	
Saponite-H	-13.718	-18.715	
Saponite-K	-13.718	-18.715	
Saponite-Mg	-13.718	-18.715	
Saponite-Na	-13.718	-18.715	

--- Smectite-di ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Beidellite-Ca	3.1127E-25	-24.5069	16.4196	-8.0873
Beidellite-K	1.0325E-25	-24.9861	16.7407	-8.2454
Beidellite-Mg	1.1541E-24	-23.9378	16.0383	-7.8995
Beidellite-Na	1.5081E-25	-24.8216	16.6305	-8.1911
Montmor-Ca	3.3284E-21	-20.4778	13.7201	-6.7577
Montmor-K	1.8031E-21	-20.7440	13.8985	-6.8455
Montmor-Mg	2.0056E-20	-19.6978	13.1975	-6.5003
Montmor-Na	2.5683E-21	-20.5904	13.7955	-6.7948
Nontronite-Ca	1.8095E-01	-0.7424	0.4974	-0.2450

Nontronite-K	6.0020E-02	-1.2217	0.8185	-0.4032
Nontronite-Mg	6.7136E-01	-0.1730	0.1159	-0.0571
Nontronite-Na	8.7668E-02	-1.0572	0.7083	-0.3489

Mineral	Log Q/K	Aff, kcal	State
Smectite-di	0.000	0.000	satd
Beidellite-Ca	0.000	0.000	satd
Beidellite-K	0.000	0.000	satd
Beidellite-Mg	0.000	0.000	satd
Beidellite-Na	0.000	0.000	satd
Montmor-Ca	0.000	0.000	satd
Montmor-K	0.000	0.000	satd
Montmor-Mg	0.000	0.000	satd
Montmor-Na	0.000	0.000	satd
Nontronite-Ca	0.000	0.000	satd
Nontronite-K	0.000	0.000	satd
Nontronite-Mg	0.000	0.000	satd
Nontronite-Na	0.000	0.000	satd

--- Lanthanide hydroxide ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
La(OH)3	4.7249E-05	-4.3256	0.0000	-4.3256
Ce(OH)3	8.1746E-15	-14.0875	0.0000	-14.0875
Nd(OH)3(c)	5.4225E-01	-0.2658	0.0000	-0.2658
Gd(OH)3	3.9501E-01	-0.4034	0.0000	-0.4034
Sm(OH)3	6.2689E-02	-1.2028	0.0000	-1.2028

Mineral	Log Q/K	Aff, kcal	State
Lanthanide hydroxide	-12.539	-17.106	
La(OH)3	-12.539	-17.106	
Ce(OH)3	-12.539	-17.106	
Nd(OH)3(c)	-12.539	-17.106	
Gd(OH)3	-12.539	-17.106	
Sm(OH)3	-12.539	-17.106	

--- Rhabdophane-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaPO4:H2O	7.0025E-01	-0.1547	0.0000	-0.1547
CePO4:H2O	3.8311E-11	-10.4167	0.0000	-10.4167
NdPO4:H2O	1.6035E-01	-0.7949	0.0000	-0.7949
GdPO4:H2O	4.6501E-02	-1.3325	0.0000	-1.3325
SmPO4:H2O	9.2906E-02	-1.0320	0.0000	-1.0320

Mineral	Log Q/K	Aff, kcal	State
Rhabdophane-ss	-0.822	-1.121	

LaPO4:H2O	-0.822	-1.121
CePO4:H2O	-0.822	-1.121
NdPO4:H2O	-0.822	-1.121
GdPO4:H2O	-0.822	-1.121
SmPO4:H2O	-0.822	-1.121

--- Lanthanide fluoride ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaF3:0.5H2O	7.6676E-01	-0.1153	0.0000	-0.1153
CeF3:0.5H2O	6.6486E-11	-10.1773	0.0000	-10.1773
NdF3:0.5H2O	2.2104E-01	-0.6555	0.0000	-0.6555
GdF3:0.5H2O	2.0271E-03	-2.6931	0.0000	-2.6931
SmF3:0.5H2O	1.0173E-02	-1.9925	0.0000	-1.9925

Mineral	Log Q/K	Aff, kcal	State
Lanthanide fluoride	-9.219	-12.578	
LaF3:0.5H2O	-9.219	-12.578	
CeF3:0.5H2O	-9.219	-12.578	
NdF3:0.5H2O	-9.219	-12.578	
GdF3:0.5H2O	-9.219	-12.578	
SmF3:0.5H2O	-9.219	-12.578	

--- Summary of Gases ---

Gas	Fugacity	Log fugacity
Al(g)	5.9734-194	-193.2238
B(g)	8.5468-204	-203.0682
BF3(g)	3.6257E-34	-33.4406
C(g)	3.0917-190	-189.5098
CH4(g)	3.5287-146	-145.4524
CO(g)	6.0395E-49	-48.2190
CO2(g)	3.1623E-04	-3.5000
Ca(g)	7.6986-157	-156.1136
Chlorine	2.4674E-25	-24.6078
Cs(g)	5.7260E-85	-84.2422
Cu(g)	1.5351E-84	-83.8139
Fluorine	3.1076E-79	-78.5076
H2(g)	6.1145E-42	-41.2136
H2O(g)	2.5975E-02	-1.5854
H2S(g)	1.9434-139	-138.7114
HCl(g)	6.0932E-17	-16.2152
HF(g)	2.4406E-12	-11.6125
K(g)	3.6731E-79	-78.4350
Li(g)	1.2502E-98	-97.9030
Mg(g)	4.2123-133	-132.3755
Nitrogen	1.8364E-16	-15.7360
NH3(g)	1.5622E-67	-66.8063
NO(g)	4.2671E-24	-23.3699
NO2(g)	2.9177E-18	-17.5350
Na(g)	2.9705E-77	-76.5272
O2(g)	2.0999E-01	-0.6778

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Pb(g)                        2.4408E-72    -71.6125
S2(g)                        2.2524-221   -220.6474
SO2(g)                       3.4411E-52    -51.4633
Si(g)                        4.2257-221   -220.3741
SiF4(g)                      1.5641E-31    -30.8057
Ti(g)                        1.6799-231   -230.7747
TiCl4(g)                     2.0405E-78    -77.6903
U(g)                         1.3637-299   -298.8653
U2Cl10(g)                    1.3339-232   -231.8749
U2Cl8(g)                     1.6760-238   -237.7757
U2F10(g)                     1.8771-143   -142.7265
UCl(g)                       7.4053-254   -253.1305
UCl2(g)                      1.2030-206   -205.9197
UCl3(g)                      4.2803-157   -156.3685
UCl4(g)                      8.2469-125   -124.0837
UCl5(g)                      8.1753-130   -129.0875
UCl6(g)                      1.5056-129   -128.8223
UF(g)                        6.3036-239   -238.2004
UF2(g)                       2.1610-196   -195.6653
UF3(g)                       1.8231-147   -146.7392
UF4(g)                       2.2703E-95    -94.6439
UF5(g)                       1.2949E-84    -83.8878
UF6(g)                       7.2730E-88    -87.1383
UO(g)                        1.0770-214   -213.9678
UO2(g)                       1.9954-130   -129.7000
UO2Cl2(g)                    2.1496E-74    -73.6676
UO2F2(g)                     2.8013E-62    -61.5526
UO3(g)                       1.4677E-77    -76.8334
UOF4(g)                      6.7652E-73    -72.1697
Zn(g)                        3.8013E-82    -81.4201



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Stepping to zi=  9.4066E-01, delzi=  1.0000E-09, nord= 0
  time =  1.0875E+04 d, dltime =  1.1561E-05 d
Steps completed =   233, iter =  1, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-Ca           ) =    -29.8545

Stepping to zi=  9.4066E-01, delzi=  1.0000E-09, nord= 0
  time =  1.0875E+04 d, dltime =  1.1561E-05 d
Steps completed =   234, iter =  1, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-Ca           ) =    -29.8545

Stepping to zi=  9.4066E-01, delzi=  1.0000E-09, nord= 0
  time =  1.0875E+04 d, dltime =  1.1561E-05 d
Steps completed =   235, iter =  1, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-Ca           ) =    -29.8545

Stepping to zi=  9.4066E-01, delzi=  1.0000E-08, nord= 1
  time =  1.0875E+04 d, dltime =  1.1561E-04 d
Steps completed =   236, iter =  1, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-Ca           ) =    -29.8545

Stepping to zi=  9.4066E-01, delzi=  1.0000E-07, nord= 1
  time =  1.0875E+04 d, dltime =  1.1561E-03 d
Steps completed =   237, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-Ca           ) =    -29.8545

Stepping to zi=  9.4066E-01, delzi=  1.0000E-06, nord= 1
```

```
  time =  1.0875E+04 d, dltime =  1.1561E-02 d
Steps completed =   238, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-Ca           ) =    -29.8544

Stepping to zi=  9.4067E-01, delzi=  1.0000E-05, nord= 2
  time =  1.0875E+04 d, dltime =  1.1561E-01 d
Steps completed =   239, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-Ca           ) =    -29.8541

Stepping to zi=  9.4077E-01, delzi=  1.0000E-04, nord= 2
  time =  1.0876E+04 d, dltime =  1.1561E+00 d
Steps completed =   240, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-Ca           ) =    -29.8505

Stepping to zi=  9.4177E-01, delzi=  1.0000E-03, nord= 3
  time =  1.0888E+04 d, dltime =  1.1561E+01 d
Steps completed =   241, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-Ca           ) =    -29.8147

Stepping to zi=  9.4327E-01, delzi=  1.5005E-03, nord= 3
  time =  1.0905E+04 d, dltime =  1.7347E+01 d
Steps completed =   242, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-Ca           ) =    -29.7608

Stepping to zi=  9.4689E-01, delzi=  3.6246E-03, nord= 4
  time =  1.0947E+04 d, dltime =  4.1904E+01 d
Steps completed =   243, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-Ca           ) =    -29.6299

Stepping to zi=  9.5261E-01, delzi=  5.7175E-03, nord= 5
  time =  1.1013E+04 d, dltime =  6.6101E+01 d
Steps completed =   244, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-Ca           ) =    -29.4214

Stepping to zi=  9.6008E-01, delzi=  7.4716E-03, nord= 5
  time =  1.1099E+04 d, dltime =  8.6379E+01 d
Steps completed =   245, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-Ca           ) =    -29.1449

Stepping to zi=  9.7203E-01, delzi=  1.1953E-02, nord= 6
  time =  1.1238E+04 d, dltime =  1.3818E+02 d
Steps completed =   246, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-Ca           ) =    -28.6934

Stepping to zi=  9.8469E-01, delzi=  1.2652E-02, nord= 6
  time =  1.1384E+04 d, dltime =  1.4627E+02 d
Steps completed =   247, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-Ca           ) =    -28.2048

Stepping to zi=  9.9810E-01, delzi=  1.3412E-02, nord= 6
  time =  1.1539E+04 d, dltime =  1.5506E+02 d
Steps completed =   248, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-Ca           ) =    -27.6802

Stepping to zi=  1.0123E+00, delzi=  1.4223E-02, nord= 6
  time =  1.1703E+04 d, dltime =  1.6443E+02 d
Steps completed =   249, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-Ca           ) =    -27.1288

Stepping to zi=  1.0276E+00, delzi=  1.5273E-02, nord= 6
  time =  1.1880E+04 d, dltime =  1.7657E+02 d
Steps completed =   250, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-Ca           ) =    -26.5646
```

```
Stepping to zi=  1.0447E+00, delzi=  1.7064E-02, nord= 6
  time =  1.2077E+04 d, dltime =  1.9728E+02 d
Steps completed =   251, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-Ca           ) =    -26.0070

Stepping to zi=  1.0664E+00, delzi=  2.1774E-02, nord= 6
  time =  1.2329E+04 d, dltime =  2.5173E+02 d
Steps completed =   252, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Beidellite-Ca           ) =    -25.5042

Stepping to zi=  1.0873E+00, delzi=  2.0860E-02, nord= 6
  time =  1.2570E+04 d, dltime =  2.4117E+02 d
Steps completed =   253, iter =  9, ncorr = 0
Most rapidly changing is zvclg1(Nontronite-Na           ) =     -7.5749

Stepping to zi=  1.0887E+00, delzi=  1.4062E-03, nord= 6
  time =  1.2586E+04 d, dltime =  1.6258E+01 d
Steps completed =   254, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Nontronite-Na           ) =     -7.9087

Stepping to zi=  1.0894E+00, delzi=  7.0312E-04, nord= 3
  time =  1.2595E+04 d, dltime =  8.1288E+00 d
Steps completed =   255, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Nontronite-Na           ) =     -8.2972

Stepping to zi=  1.0898E+00, delzi=  3.5156E-04, nord= 3
  time =  1.2599E+04 d, dltime =  4.0644E+00 d
Steps completed =   256, iter =  6, ncorr = 0
Most rapidly changing is zvclg1(Nontronite-Na           ) =     -8.8672

Stepping to zi=  1.0898E+00, delzi=  4.3945E-05, nord= 3
  time =  1.2599E+04 d, dltime =  5.0805E-01 d
Steps completed =   257, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Nontronite-Na           ) =     -9.0481

Stepping to zi=  1.0898E+00, delzi=  2.1973E-05, nord= 2
  time =  1.2599E+04 d, dltime =  2.5402E-01 d
Steps completed =   258, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Nontronite-Na           ) =     -9.1780

Stepping to zi=  1.0899E+00, delzi=  4.3945E-05, nord= 2
  time =  1.2600E+04 d, dltime =  5.0805E-01 d
Steps completed =   259, iter =  6, ncorr = 0
Most rapidly changing is zvclg1(Nontronite-Na           ) =     -9.6979

Stepping to zi=  1.0899E+00, delzi=  5.4931E-06, nord= 2
  time =  1.2600E+04 d, dltime =  6.3506E-02 d
Steps completed =   260, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Nontronite-Na           ) =     -9.8460

Stepping to zi=  1.0899E+00, delzi=  1.0986E-05, nord= 2
  time =  1.2600E+04 d, dltime =  1.2701E-01 d
Steps completed =   261, iter =  6, ncorr = 0
Most rapidly changing is zvclg1(Nontronite-Na           ) =    -10.5736

Stepping to zi=  1.0899E+00, delzi=  1.3733E-06, nord= 2
  time =  1.2600E+04 d, dltime =  1.5877E-02 d
Steps completed =   262, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Nontronite-Na           ) =    -10.9135

Stepping to zi=  1.0899E+00, delzi=  6.8664E-07, nord= 1
  time =  1.2600E+04 d, dltime =  7.9383E-03 d
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```
Steps completed =   263, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Nontronite-Na           ) =    -11.3045

Stepping to zi=  1.0899E+00, delzi=  3.4332E-07, nord= 1
  time =  1.2600E+04 d, dltime =  3.9691E-03 d
Steps completed =   264, iter =  6, ncorr = 0
Most rapidly changing is zvclg1(Nontronite-Na           ) =    -11.8733

Stepping to zi=  1.0899E+00, delzi=  4.2915E-08, nord= 1
  time =  1.2600E+04 d, dltime =  4.9614E-04 d
Steps completed =   265, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Nontronite-Na           ) =    -12.0526

Stepping to zi=  1.0899E+00, delzi=  2.1458E-08, nord= 1
  time =  1.2600E+04 d, dltime =  2.4807E-04 d
Steps completed =   266, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Nontronite-Na           ) =    -12.1807

Stepping to zi=  1.0899E+00, delzi=  4.2915E-08, nord= 1
  time =  1.2600E+04 d, dltime =  4.9614E-04 d
Steps completed =   267, iter =  6, ncorr = 0
Most rapidly changing is zvclg1(Nontronite-Na           ) =    -12.6843

Stepping to zi=  1.0899E+00, delzi=  5.3644E-09, nord= 1
  time =  1.2600E+04 d, dltime =  6.2018E-05 d
Steps completed =   268, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Nontronite-Na           ) =    -12.8231

Stepping to zi=  1.0899E+00, delzi=  1.0729E-08, nord= 1
  time =  1.2600E+04 d, dltime =  1.2404E-04 d
Steps completed =   269, iter =  6, ncorr = 0
Most rapidly changing is zvclg1(Nontronite-Na           ) =    -13.4308

Stepping to zi=  1.0899E+00, delzi=  1.3411E-09, nord= 1
  time =  1.2600E+04 d, dltime =  1.5504E-05 d
Steps completed =   270, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Nontronite-Na           ) =    -13.6395

Stepping to zi=  1.0899E+00, delzi=  6.7055E-10, nord= 1
  time =  1.2600E+04 d, dltime =  7.7522E-06 d
Steps completed =   271, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Nontronite-Na           ) =    -13.7997

Stepping to zi=  1.0899E+00, delzi=  1.3411E-09, nord= 1
  time =  1.2600E+04 d, dltime =  1.5504E-05 d
Steps completed =   272, iter =  7, ncorr = 0
Most rapidly changing is zvclg1(Nontronite-Na           ) =    -14.7661

Stepping to zi=  1.0899E+00, delzi=  1.0000E-10, nord= 0
  time =  1.2600E+04 d, dltime =  1.1561E-06 d
Steps completed =   273, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Nontronite-Na           ) =    -15.1813

Stepping to zi=  1.0899E+00, delzi=  1.0000E-09, nord= 0
  time =  1.2600E+04 d, dltime =  1.1561E-05 d
--- the maximum number of iterations have been done ---
--- Iteration has gone sour (iter=  90) ---
     The phase to be dropped is Smectite-di               (51200)


  Attempted species assemblage no.   2

            1      1  H2O
```

```
  2      3  Al+++
  3      7  B(OH)3(aq)
  4      8  Ba++
  5     11  Ca++
  6     13  Ce+++
  7     14  Cl-
  8     16  CrO4--
  9     17  Cs+
 10     18  Cu++
 11     22  F-
 12     23  Fe++
 13     25  Gd+++
 14     26  H+
 15     28  HCO3-
 16     29  HPO4--
 17     35  K+
 18     37  La+++
 19     38  Li+
 20     40  Mg++
 21     41  Mn++
 22     42  MoO4--
 23     43  NO3-
 24     44  Na+
 25     45  Nd+++
 26     47  Ni++
 27     49  Pb++
 28     52  Pu++++
 29     58  SO4--
 30     62  SiO2(aq)
 31     63  Sm+++
 32     65  Sr++
 33     69  Ti(OH)4(aq)
 34     72  UO2++
 35     73  VO++
 36     78  Zn++
 37     79  Zr(OH)2++
 38     80  O2(g)
 39    222  Fluorapatite
 40    252  Hematite
 41    470  Pyrolusite
 42    475  Quartz
 43    689  fix     CO2(g)
 44    690  fix     O2(g)

Steps completed =   274, iter =  1, ncorr = 0

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                    Reaction progress        =  1.08988212155213E+00
                    Log of reaction progress =       0.0373795



                    Time =  1.089E+09 sec
                         =  1.260E+04 days
                         =  3.450E+01 years

                    Log sec =        9.037
                    Log days =       4.100
                    Log years =      1.538

                    Temperature    =     25.000 degrees C
```

total pressure = 1.013 bars

Change in the product phase assemblage

--- Reactant Summary ---

Reactant	Moles	Delta moles	Mass, g	Delta Mass, g
carbon steel	1.8911E+01	1.0887E+00	1.0344E+03	5.9547E+01
Alloy-22	1.9999E+01	1.2302E-03	1.1977E+03	7.3672E-02

Current total mass = 2.23209E+03 grams
Delta total mass = 5.96204E+01 grams
Delta total volume = 0.00000 cc

Reactant	Rel. Rate mol/mol	Rate mol/s	Rate mol/s/cm2
carbon steel	9.9887E-01	1.0000E-09	1.0000E-11
Alloy-22	1.1287E-03	1.1300E-12	1.1300E-14

Reactant	Affinity kcal/mol	Surface Area mol/s/cm2
carbon steel	999.00000	1.0000E+02
Alloy-22	999.00000	1.0000E+02

Reactant	Rate Constants, mol/s/cm2	
carbon steel		
	Forward	1.0000E-11
Alloy-22		
	Forward	1.1300E-14

Affinity of the overall irreversible reaction= 0.000 kcal
Contributions from irreversible reactions
with no thermodynamic data are not included

--- Element Totals for the Aqueous Solution ---

Element	mg/kg soln.	Molality	Moles
O	8.879448E+05	5.551844E+01	5.551864E+01
Al	3.998572E-02	1.482495E-06	1.482500E-06
B	1.338784E-01	1.238795E-05	1.238800E-05
Ba	1.372775E-05	9.999963E-11	1.000000E-10
Ca	3.779471E+00	9.433653E-05	9.433688E-05
Ce	1.400645E-19	9.999963E-25	1.000000E-24
Cl	7.137600E+00	2.013993E-04	2.014000E-04
Cr	1.639368E+01	3.153993E-04	3.154005E-04
Cs	1.328575E-05	9.999963E-11	1.000000E-10
Cu	6.669925E-10	1.049996E-14	1.050000E-14

F	1.305543E+00	6.874312E-05	6.874338E-05
Fe	2.044242E-06	3.661740E-11	3.661753E-11
Gd	1.571933E-09	9.999963E-15	1.000000E-14
H	1.118600E+05	1.110185E+02	1.110189E+02
C	1.402072E-01	1.167740E-05	1.167744E-05
P	1.956339E+01	6.318372E-04	6.318395E-04
K	5.038345E+00	1.289095E-04	1.289100E-04
La	1.388554E-09	9.999963E-15	1.000000E-14
Li	6.938498E-07	9.999963E-11	1.000000E-10
Mg	2.009275E+00	8.269870E-05	8.269900E-05
Mn	6.009373E-06	1.094236E-10	1.094240E-10
Mo	1.191157E+01	1.242007E-04	1.242012E-04
N	1.988240E+00	1.419995E-04	1.420000E-04
Na	4.578371E+01	1.992193E-03	1.992200E-03
Nd	1.441880E-09	9.999963E-15	1.000000E-14
Ni	4.100310E+01	6.988880E-04	6.988905E-04
Pb	2.071253E-05	9.999963E-11	1.000000E-10
Pu	2.439121E-09	9.999963E-15	1.000000E-14
S	3.590611E+01	1.120156E-03	1.120160E-03
Si	2.812143E+00	1.001637E-04	1.001640E-04
Sm	1.503058E-09	9.999963E-15	1.000000E-14
Sr	8.758842E-06	9.999963E-11	1.000000E-10
Ti	4.786274E-06	9.999963E-11	1.000000E-10
U	2.379431E-09	9.999963E-15	1.000000E-14
V	2.606122E-01	5.117736E-06	5.117755E-06
Zn	6.536643E-06	9.999963E-11	1.000000E-10
Zr	9.119112E-16	9.999963E-21	1.000000E-20

Single ion activities and activity coefficients are here defined
with respect to the modified NBS pH scale

	pH	Eh	pe
modified NBS pH scale	5.2558	0.9081	1.5351E+01
rational pH scale	5.2233	0.9100	1.5383E+01

pHCl = 8.9867

Oxygen fugacity = 2.09991E-01
Log oxygen fugacity = -0.67780

Activity of water = 0.99990
Log activity of water = -0.00004

Ionic strength = 5.750363E-03 molal
Sum of molalities = 0.0059192833946
Osmotic coefficient = 0.95042

Mass of solution = 1.000361 kg
Mass of solutes = 0.000357 kg
Conc. of solutes = 0.035677 per cent (w/w)

Moles of solvent H2O = 5.55086E+01
Mass of solvent H2O = 1.00000E+00 kg

Species	Molality	Log molality	Log gamma	Log activity
Na+	1.9821E-03	-2.7029	-0.0361	-2.7389
SO4--	1.0443E-03	-2.9812	-0.1388	-3.1199
Ni++	6.5059E-04	-3.1867	-0.1368	-3.3234
H2PO4-	6.2179E-04	-3.2064	-0.0340	-3.2404
HCrO4-	2.8766E-04	-3.5411	-0.0340	-3.5751
O2(aq)	2.6503E-04	-3.5767	0.0006	-3.5761
Cl-	2.0132E-04	-3.6961	-0.0348	-3.7309
NO3-	1.4178E-04	-3.8484	-0.0348	-3.8832
K+	1.2817E-04	-3.8922	-0.0369	-3.9291
MoO4--	1.2420E-04	-3.9059	-0.1372	-4.0431
SiO2(aq)	1.0016E-04	-3.9993	0.0000	-3.9993
Ca++	8.7764E-05	-4.0567	-0.1368	-4.1934
Mg++	7.1923E-05	-4.1431	-0.1311	-4.2743
F-	6.4599E-05	-4.1898	-0.0344	-4.2242
NiSO4(aq)	4.8119E-05	-4.3177	0.0000	-4.3177
CrO4--	2.1135E-05	-4.6750	-0.1388	-4.8138
B(OH)3(aq)	1.2387E-05	-4.9070	0.0000	-4.9070
CO2(aq)	1.0727E-05	-4.9695	0.0006	-4.9689
MgSO4(aq)	1.0411E-05	-4.9825	0.0000	-4.9825
NaSO4-	9.8887E-06	-5.0049	-0.0340	-5.0389
HPO4--	8.8875E-06	-5.0512	-0.1388	-5.1900
CaSO4(aq)	6.2766E-06	-5.2023	0.0000	-5.2023
H+	5.9799E-06	-5.2233	-0.0325	-5.2558
Cr2O7--	3.3034E-06	-5.4810	-0.1388	-5.6198
H2VO4-	3.0571E-06	-5.5147	-0.0340	-5.5487
VO2(OH)2-	1.8946E-06	-5.7225	-0.0340	-5.7565
HCO3-	9.4652E-07	-6.0239	-0.0340	-6.0579
AlF2+	8.3843E-07	-6.0765	-0.0361	-6.1126
KSO4-	7.3212E-07	-6.1354	-0.0340	-6.1694
AlF3(aq)	5.7974E-07	-6.2368	0.0000	-6.2368
HF(aq)	4.8770E-07	-6.3119	0.0000	-6.3119
H3PO4(aq)	4.7160E-07	-6.3264	0.0000	-6.3264
HSO4-	4.3390E-07	-6.3626	-0.0340	-6.3966
MgHPO4(aq)	2.7909E-07	-6.5543	0.0000	-6.5543
CaHPO4(aq)	2.2729E-07	-6.6434	0.0000	-6.6434
NiNO3+	1.6960E-07	-6.7706	-0.0361	-6.8066
NaHPO4-	1.0595E-07	-6.9749	-0.0340	-7.0089
VO(OH)3(aq)	9.7216E-08	-7.0123	0.0000	-7.0123
MgF+	7.7624E-08	-7.1100	-0.0361	-7.1461
NaCl(aq)	5.6643E-08	-7.2469	0.0000	-7.2469
VO3OH--	5.6305E-08	-7.2495	-0.1388	-7.3882
PO3F--	4.6577E-08	-7.3318	-0.1388	-7.4706
CaNO3+	4.5648E-08	-7.3406	-0.0361	-7.3766
AlF++	4.4966E-08	-7.3471	-0.1413	-7.4884
CaF+	1.9959E-08	-7.6999	-0.0361	-7.7359
NaF(aq)	1.0947E-08	-7.9607	0.0000	-7.9607
NiCl+	9.6712E-09	-8.0145	-0.0361	-8.0506
AlHPO4+	9.5906E-09	-8.0182	-0.0361	-8.0542
AlF4-	9.3985E-09	-8.0269	-0.0340	-8.0609
MgCl+	7.8695E-09	-8.1041	-0.0361	-8.1401
HVO4--	6.0652E-09	-8.2172	-0.1388	-8.3559
VO2HPO4-	5.0824E-09	-8.2939	-0.0340	-8.3279
KHPO4-	4.9538E-09	-8.3051	-0.0340	-8.3391
CaCl+	2.6067E-09	-8.5839	-0.0361	-8.6200
HPO3F-	2.5535E-09	-8.5929	-0.0340	-8.6269
NaHCO3(aq)	2.2767E-09	-8.6427	0.0000	-8.6427
HSiO3-	2.1774E-09	-8.6621	-0.0340	-8.6961
H2P2O7--	2.0806E-09	-8.6818	-0.1388	-8.8206
OH-	1.9726E-09	-8.7050	-0.0344	-8.7394
BO2-	1.3736E-09	-8.8621	-0.0340	-8.8961
VO2+	1.1698E-09	-8.9319	-0.0361	-8.9679

KCl(aq)	7.0047E-10	-9.1546	0.0000	-9.1546
CaHCO3+	6.7834E-10	-9.1686	-0.0361	-9.2046
MgHCO3+	5.4904E-10	-9.2604	-0.0361	-9.2964
HCl(aq)	2.2044E-10	-9.6567	0.0000	-9.6567
NaHSiO3(aq)	1.6350E-10	-9.7865	0.0000	-9.7865
AlOH++	1.4986E-10	-9.8243	-0.1413	-9.9656
VO2F(aq)	1.4384E-10	-9.8421	0.0000	-9.8421
HP2O7---	1.3433E-10	-9.8718	-0.3141	-10.1859
MgPO4-	1.2380E-10	-9.9073	-0.0340	-9.9413
CaPO4-	1.1080E-10	-9.9554	-0.0340	-9.9894
Al+++	1.0560E-10	-9.9763	-0.2879	-10.2642

--- Summary of Solid Product Phases---

Product	Log moles	Moles	Mass, g	Volume, cc
Fluorapatite	-4.3372	4.6007E-05	2.3201E-02	2.3003E-02
Hematite	-0.2814	5.2313E-01	8.3540E+01	1.5837E+01
Pyrolusite	-1.9500	1.1220E-02	9.7542E-01	5.6099E+00
Quartz	-2.1706	6.7519E-03	4.0568E-01	1.5319E-01
fix CO2(g)	4.0000	1.0000E+04	4.4010E+05	0.0000E+00
fix O2(g)	4.0000	9.9992E+03	3.1996E+05	0.0000E+00

	Mass, grams	Volume, cc
Created	7.601456E+05	2.162339E+01
Destroyed	5.962035E+01	0.000000E+00
Net	7.600859E+05	2.162339E+01

Warning-- these volume totals may be incomplete because of missing partial molar volume data in the data base

--- Summary of Pure Mineral Saturation States ---

Mineral	Log Q/K	Aff, kcal	State
AlF3	-5.728	-7.814	
Albite	-6.743	-9.199	
Albite_low	-6.743	-9.199	
Analcime	-6.599	-9.003	
Anglesite	-5.413	-7.385	
Anhydrite	-3.007	-4.102	
Aragonite	-6.989	-9.534	
BaCrO4	-5.022	-6.851	
BaZrO3	76.071	103.783	ssatd
Barite	-3.289	-4.487	
Bassanite	-3.652	-4.982	
Beidellite-Ca	-6.404	-8.737	
Beidellite-H	-6.489	-8.853	
Beidellite-K	-6.726	-9.177	
Beidellite-Mg	-6.380	-8.704	
Beidellite-Na	-6.672	-9.103	
Berlinite	-2.990	-4.079	
Boehmite	-2.061	-2.812	
Boric_acid	-4.749	-6.479	
Bunsenite	-5.284	-7.209	
CaSO4:0.5H2O(beta)	-3.820	-5.212	

CaV2O6	-6.640	-9.058	
CaZrO3	136.048	185.608	ssatd
Calcite	-6.844	-9.337	
Chalcedony	-0.271	-0.370	
Coesite	-0.810	-1.105	
Corundum	-7.306	-9.968	
CrO2	-5.223	-7.125	
Cristobalite(alpha)	-0.551	-0.751	
Cristobalite(beta)	-0.994	-1.356	
Crocoite	-2.242	-3.059	
Diaspore	-1.657	-2.261	
Epsomite	-5.432	-7.411	
Fe(OH)3	-5.601	-7.642	
Fluorapatite	0.000	0.000	satd
Fluorite	-2.605	-3.554	
GdPO4:H2O	-2.986	-4.074	
Gibbsite	-2.253	-3.074	
Goethite	-0.480	-0.655	
Gypsum	-2.831	-3.863	
Hematite	0.000	0.000	satd
Hexahydrite	-5.668	-7.732	
Ice	-0.139	-0.189	
K-Feldspar	-4.893	-6.675	
Kaolinite	-3.803	-5.188	
Kieserite	-7.127	-9.724	
LaPO4:H2O	-2.325	-3.172	
Manganite	-4.459	-6.084	
Maximum_Microcline	-4.893	-6.675	
MnHPO4	-2.403	-3.278	
MnO2(gamma)	-1.518	-2.071	
Montmor-Ca	-6.202	-8.461	
Montmor-K	-6.453	-8.804	
Montmor-Mg	-6.108	-8.333	
Montmor-Na	-6.403	-8.735	
Mordenite	-7.129	-9.726	
Morenosite	-4.430	-6.043	
NdPO4:H2O	-2.668	-3.639	
Ni(OH)2	-5.560	-7.586	
Ni2SiO4	-3.965	-5.409	
Ni3(PO4)2	-3.197	-4.362	
NiSO4:6H2O(alpha)	-4.436	-6.053	
Nontronite-Ca	-0.128	-0.175	
Nontronite-H	-0.213	-0.290	
Nontronite-K	-0.450	-0.614	
Nontronite-Mg	-0.104	-0.142	
Nontronite-Na	-0.396	-0.540	
PbHPO4	-3.769	-5.142	
Pentahydrite	-6.007	-8.196	
Plumbogummite	-6.382	-8.707	
Pyrolusite	0.000	0.000	satd
Pyromorphite	-6.367	-8.686	
Pyrophyllite	-5.431	-7.409	
Quartz	0.000	0.000	satd
Rutile	-0.355	-0.484	
Sanidine_high	-6.092	-8.311	
Sellaite	-3.338	-4.554	
Shcherbinaite	-5.972	-8.148	
SiO2(am)	-1.286	-1.754	
SmPO4:H2O	-2.742	-3.741	
SrZrO3	113.021	154.192	ssatd
Starkeyite	-6.394	-8.724	
Strengite	-4.304	-5.872	
Trevorite	-2.491	-3.398	

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Tridymite                       -0.172      -0.234
fix     CO2(g)                   0.000       0.000   satd
fix     O2(g)                    0.000       0.000   satd


                    --- Summary of Solid Solutions  ---

               --- Carbonate-Calcite        ---

  Ideal solution

   Component                     x           Log x   Log lambda  Log activity

Calcite                     7.7022E-01     -0.1134      0.0000     -0.1134
Magnesite                   2.2955E-01     -0.6391      0.0000     -0.6391
Rhodochrosite               9.1507E-05     -4.0385      0.0000     -4.0385
Siderite                    1.1684E-12    -11.9324      0.0000    -11.9324
Smithsonite                 2.1100E-05     -4.6757      0.0000     -4.6757
Strontianite                1.1402E-04     -3.9430      0.0000     -3.9430


   Mineral                      Log Q/K     Aff, kcal  State

Carbonate-Calcite               -6.731      -9.183
  Calcite                       -6.731      -9.183
  Magnesite                     -6.731      -9.183
  Rhodochrosite                 -6.731      -9.183
  Siderite                      -6.731      -9.183
  Smithsonite                   -6.731      -9.183
  Strontianite                  -6.731      -9.183


               --- Clinoptilolite-hy-ss     ---

  Ideal solution

   Component                     x           Log x   Log lambda  Log activity

Clinoptilolite-hy-Ca        9.8829E-01     -0.0051      0.0000     -0.0051
Clinoptilolite-hy-Cs        3.2829E-22    -21.4837      0.0000    -21.4837
Clinoptilolite-hy-K         3.8351E-03     -2.4162      0.0000     -2.4162
Clinoptilolite-hy-Na        7.8704E-03     -2.1040      0.0000     -2.1040
Clinoptilolite-hy-Sr        5.5792E-11    -10.2534      0.0000    -10.2534


   Mineral                      Log Q/K     Aff, kcal  State

Clinoptilolite-hy-ss           -21.168     -28.879
  Clinoptilolite-hy-Ca         -21.168     -28.879
  Clinoptilolite-hy-Cs         -21.168     -28.879
  Clinoptilolite-hy-K          -21.168     -28.879
  Clinoptilolite-hy-Na         -21.168     -28.879
  Clinoptilolite-hy-Sr         -21.168     -28.879


               --- Clinoptilolite-ss        ---

  Ideal solution

   Component                     x           Log x   Log lambda  Log activity
```

Clinoptilolite-Ca	6.9015E-01	-0.1611	-0.3962	-0.5573
Clinoptilolite-Cs	4.2688E-07	-6.3697	-15.6694	-22.0391
Clinoptilolite-K	1.3846E-01	-0.8587	-2.1124	-2.9711
Clinoptilolite-NH4	5.1082E-58	-57.2917	-140.9377	-198.2294
Clinoptilolite-Na	1.7064E-01	-0.7679	-1.8891	-2.6570
Clinoptilolite-Sr	7.5371E-04	-3.1228	-7.6821	-10.8049

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-ss	-20.617	-28.127	
Clinoptilolite-Ca	-20.617	-28.127	
Clinoptilolite-Cs	-20.617	-28.127	
Clinoptilolite-K	-20.617	-28.127	
Clinoptilolite-NH4	-20.617	-28.127	
Clinoptilolite-Na	-20.617	-28.127	
Clinoptilolite-Sr	-20.617	-28.127	

--- Saponite-tri ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Saponite-Ca	3.3340E-01	-0.4770	0.3196	-0.1574
Saponite-H	1.8477E-01	-0.7334	0.4914	-0.2420
Saponite-K	3.5210E-02	-1.4533	0.9737	-0.4796
Saponite-Mg	3.9517E-01	-0.4032	0.2702	-0.1331
Saponite-Na	5.1448E-02	-1.2886	0.8634	-0.4252

Mineral	Log Q/K	Aff, kcal	State
Saponite-tri	-19.240	-26.249	
Saponite-Ca	-19.240	-26.249	
Saponite-H	-19.240	-26.249	
Saponite-K	-19.240	-26.249	
Saponite-Mg	-19.240	-26.249	
Saponite-Na	-19.240	-26.249	

--- Smectite-di ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Beidellite-Ca	3.9163E-20	-19.4071	13.0028	-6.4043
Beidellite-K	4.1389E-21	-20.3831	13.6567	-6.7264
Beidellite-Mg	4.6420E-20	-19.3333	12.9533	-6.3800
Beidellite-Na	6.0434E-21	-20.2187	13.5465	-6.6722
Montmor-Ca	1.6113E-19	-18.7928	12.5912	-6.2016
Montmor-K	2.7811E-20	-19.5558	13.1024	-6.4534
Montmor-Mg	3.1039E-19	-18.5081	12.4004	-6.1077
Montmor-Na	3.9601E-20	-19.4023	12.9995	-6.4028
Nontronite-Ca	4.0881E-01	-0.3885	0.2603	-0.1282
Nontronite-K	4.3204E-02	-1.3645	0.9142	-0.4503
Nontronite-Mg	4.8490E-01	-0.3143	0.2106	-0.1037
Nontronite-Na	6.3085E-02	-1.2001	0.8040	-0.3960

Mineral	Log Q/K	Aff, kcal	State
Smectite-di	0.000	0.000	satd
Beidellite-Ca	0.000	0.000	satd
Beidellite-K	0.000	0.000	satd
Beidellite-Mg	0.000	0.000	satd
Beidellite-Na	0.000	0.000	satd
Montmor-Ca	0.000	0.000	satd
Montmor-K	0.000	0.000	satd
Montmor-Mg	0.000	0.000	satd
Montmor-Na	0.000	0.000	satd
Nontronite-Ca	0.000	0.000	satd
Nontronite-K	0.000	0.000	satd
Nontronite-Mg	0.000	0.000	satd
Nontronite-Na	0.000	0.000	satd

--- Lanthanide hydroxide ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
La(OH)3	1.8490E-05	-4.7331	0.0000	-4.7331
Ce(OH)3	4.3348E-15	-14.3630	0.0000	-14.3630
Nd(OH)3(c)	4.2111E-01	-0.3756	0.0000	-0.3756
Gd(OH)3	5.0816E-01	-0.2940	0.0000	-0.2940
Sm(OH)3	7.0705E-02	-1.1505	0.0000	-1.1505

Mineral	Log Q/K	Aff, kcal	State
Lanthanide hydroxide	-14.570	-19.878	
La(OH)3	-14.570	-19.878	
Ce(OH)3	-14.570	-19.878	
Nd(OH)3(c)	-14.570	-19.878	
Gd(OH)3	-14.570	-19.878	
Sm(OH)3	-14.570	-19.878	

--- Rhabdophane-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaPO4:H2O	4.8659E-01	-0.3128	0.0000	-0.3128
CePO4:H2O	3.6074E-11	-10.4428	0.0000	-10.4428
NdPO4:H2O	2.2112E-01	-0.6554	0.0000	-0.6554
GdPO4:H2O	1.0622E-01	-0.9738	0.0000	-0.9738
SmPO4:H2O	1.8607E-01	-0.7303	0.0000	-0.7303

Mineral	Log Q/K	Aff, kcal	State
Rhabdophane-ss	-2.012	-2.745	
LaPO4:H2O	-2.012	-2.745	
CePO4:H2O	-2.012	-2.745	
NdPO4:H2O	-2.012	-2.745	
GdPO4:H2O	-2.012	-2.745	

SmPO4:H2O	-2.012	-2.745

--- Lanthanide fluoride ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaF3:0.5H2O	6.1766E-01	-0.2093	0.0000	-0.2093
CeF3:0.5H2O	7.2574E-11	-10.1392	0.0000	-10.1392
NdF3:0.5H2O	3.5335E-01	-0.4518	0.0000	-0.4518
GdF3:0.5H2O	5.3680E-03	-2.2702	0.0000	-2.2702
SmF3:0.5H2O	2.3619E-02	-1.6267	0.0000	-1.6267

Mineral	Log Q/K	Aff, kcal	State
Lanthanide fluoride	-8.504	-11.602	
LaF3:0.5H2O	-8.504	-11.602	
CeF3:0.5H2O	-8.504	-11.602	
NdF3:0.5H2O	-8.504	-11.602	
GdF3:0.5H2O	-8.504	-11.602	
SmF3:0.5H2O	-8.504	-11.602	

--- Summary of Gases ---

Gas	Fugacity	Log fugacity
Al(g)	3.6247-193	-192.4407
B(g)	8.5540-204	-203.0678
BF3(g)	4.1651E-31	-30.3804
C(g)	3.0917-190	-189.5098
CH4(g)	3.5287-146	-145.4524
CO(g)	6.0395E-49	-48.2190
CO2(g)	3.1623E-04	-3.5000
Ca(g)	1.0672-157	-156.9717
Chlorine	1.7304E-23	-22.7619
Cs(g)	6.7897E-86	-85.1682
Cu(g)	3.0479E-86	-85.5160
Fluorine	3.4068E-77	-76.4677
H2(g)	6.1144E-42	-41.2136
H2O(g)	2.5975E-02	-1.5854
H2S(g)	1.5126-137	-136.8203
HCl(g)	5.1027E-16	-15.2922
HF(g)	2.5553E-11	-10.5926
K(g)	4.3573E-80	-79.3608
Li(g)	1.4826E-99	-98.8290
Mg(g)	5.9679-135	-134.2242
Nitrogen	1.2868E-14	-13.8905
NH3(g)	1.3077E-66	-65.8835
NO(g)	3.5720E-23	-22.4471
NO2(g)	2.4424E-17	-16.6122
Na(g)	3.5227E-78	-77.4531
O2(g)	2.0999E-01	-0.6778
Pb(g)	3.5068E-74	-73.4551
S2(g)	1.3645-217	-216.8650
SO2(g)	2.6783E-50	-49.5721
Si(g)	4.2257-221	-220.3741

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SiF4(g)                     1.8797E-27    -26.7259
Ti(g)                       1.6799-231   -230.7747
TiCl4(g)                    1.0036E-74    -73.9984
U(g)                        1.7283-300   -299.7624
U2Cl10(g)                   3.6346-225   -224.4395
U2Cl8(g)                    6.5120-233   -232.1863
U2F10(g)                    4.7736-135   -134.3212
UCl(g)                      7.8595-254   -253.1046
UCl2(g)                     1.0692-205   -204.9709
UCl3(g)                     3.1859-155   -154.4968
UCl4(g)                     5.1405-122   -121.2890
UCl5(g)                     4.2676-126   -125.3698
UCl6(g)                     6.5819-125   -124.1816
UF(g)                       8.3645-239   -238.0776
UF2(g)                      3.0024-195   -194.5225
UF3(g)                      2.6521-145   -144.5764
UF4(g)                      3.4578E-92    -91.4612
UF5(g)                      2.0650E-80    -79.6851
UF6(g)                      1.2144E-82    -81.9157
UO(g)                       1.3650-215   -214.8649
UO2(g)                      2.5288-131   -130.5971
UO2Cl2(g)                   1.9106E-73    -72.7188
UO2F2(g)                    3.8919E-61    -60.4098
UO3(g)                      1.8600E-78    -77.7305
UOF4(g)                     1.0304E-69    -68.9870
Zn(g)                       5.5518E-84    -83.2556



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Stepping to zi=  1.0899E+00, delzi=  1.0000E-09, nord= 0
  time =  1.2600E+04 d, dltime =  1.1561E-05 d
Steps completed =   275, iter =  1, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -38.9133

Stepping to zi=  1.0899E+00, delzi=  1.0000E-09, nord= 0
  time =  1.2600E+04 d, dltime =  1.1561E-05 d
Steps completed =   276, iter =  1, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -38.9133

Stepping to zi=  1.0899E+00, delzi=  1.0000E-09, nord= 0
  time =  1.2600E+04 d, dltime =  1.1561E-05 d
Steps completed =   277, iter =  1, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -38.9133

Stepping to zi=  1.0899E+00, delzi=  1.0000E-08, nord= 1
  time =  1.2600E+04 d, dltime =  1.1561E-04 d
Steps completed =   278, iter =  1, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -38.9133

Stepping to zi=  1.0899E+00, delzi=  1.0000E-07, nord= 1
  time =  1.2600E+04 d, dltime =  1.1561E-03 d
Steps completed =   279, iter =  1, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -38.9133

Stepping to zi=  1.0899E+00, delzi=  1.0000E-06, nord= 1
  time =  1.2600E+04 d, dltime =  1.1561E-02 d
Steps completed =   280, iter =  1, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -38.9133
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```
Stepping to zi=  1.0899E+00, delzi=  1.0000E-05, nord= 2
  time =  1.2600E+04 d, dltime =  1.1561E-01 d
Steps completed =   281, iter =  7, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -38.9131

Stepping to zi=  1.0900E+00, delzi=  6.3865E-05, nord= 2
  time =  1.2601E+04 d, dltime =  7.3834E-01 d
Steps completed =   282, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -38.9122

Stepping to zi=  1.0903E+00, delzi=  3.6775E-04, nord= 2
  time =  1.2605E+04 d, dltime =  4.2515E+00 d
Steps completed =   283, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -38.9066

Stepping to zi=  1.0908E+00, delzi=  4.9427E-04, nord= 3
  time =  1.2611E+04 d, dltime =  5.7143E+00 d
Steps completed =   284, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -38.8991

Stepping to zi=  1.0942E+00, delzi=  3.3577E-03, nord= 3
  time =  1.2650E+04 d, dltime =  3.8818E+01 d
Steps completed =   285, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -38.8492

Stepping to zi=  1.1017E+00, delzi=  7.5495E-03, nord= 4
  time =  1.2737E+04 d, dltime =  8.7280E+01 d
Steps completed =   286, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -38.7421

Stepping to zi=  1.1136E+00, delzi=  1.1871E-02, nord= 4
  time =  1.2874E+04 d, dltime =  1.3724E+02 d
Steps completed =   287, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -38.5866

Stepping to zi=  1.1327E+00, delzi=  1.9058E-02, nord= 5
  time =  1.3095E+04 d, dltime =  2.2032E+02 d
Steps completed =   288, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(VO++                    ) =    -17.2209

Stepping to zi=  1.1540E+00, delzi=  2.1305E-02, nord= 5
  time =  1.3341E+04 d, dltime =  2.4631E+02 d
Steps completed =   289, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(VO++                    ) =    -16.9991

Stepping to zi=  1.1879E+00, delzi=  3.3912E-02, nord= 6
  time =  1.3733E+04 d, dltime =  3.9206E+02 d
Steps completed =   290, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(VO++                    ) =    -16.6946

Stepping to zi=  1.2202E+00, delzi=  3.2352E-02, nord= 6
  time =  1.4107E+04 d, dltime =  3.7402E+02 d
Steps completed =   291, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(VO++                    ) =    -16.4463

Stepping to zi=  1.2532E+00, delzi=  3.3013E-02, nord= 6
  time =  1.4489E+04 d, dltime =  3.8166E+02 d
Steps completed =   292, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Fluorapatite            ) =     -5.1438

Stepping to zi=  1.2823E+00, delzi=  2.9055E-02, nord= 6
  time =  1.4825E+04 d, dltime =  3.3590E+02 d
     The phase to be dropped is Fluorapatite              (  222)
```

```
  Attempted species assemblage no.   2

            1      1  H2O
            2      3  Al+++
            3      7  B(OH)3(aq)
            4      8  Ba++
            5     11  Ca++
            6     13  Ce+++
            7     14  Cl-
            8     16  CrO4--
            9     17  Cs+
           10     18  Cu++
           11     22  F-
           12     23  Fe++
           13     25  Gd+++
           14     26  H+
           15     28  HCO3-
           16     29  HPO4--
           17     35  K+
           18     37  La+++
           19     38  Li+
           20     40  Mg++
           21     41  Mn++
           22     42  MoO4--
           23     43  NO3-
           24     44  Na+
           25     45  Nd+++
           26     47  Ni++
           27     49  Pb++
           28     52  Pu++++
           29     58  SO4--
           30     62  SiO2(aq)
           31     63  Sm+++
           32     65  Sr++
           33     69  Ti(OH)4(aq)
           34     72  UO2++
           35     73  VO++
           36     78  Zn++
           37     79  Zr(OH)2++
           38     80  O2(g)
           39    252  Hematite
           40    470  Pyrolusite
           41    475  Quartz
           42    689  fix     CO2(g)
           43    690  fix     O2(g)

iter =    8
      1 supersaturated pure minerals
      0 supersaturated solid solutions

               The most supersaturated phases           Affinity, kcal

                 1     222   Fluorapatite                  0.00743605


  Attempted species assemblage no.   3

            1      1  H2O
            2      3  Al+++
            3      7  B(OH)3(aq)
            4      8  Ba++
```

```
     5     11  Ca++
     6     13  Ce+++
     7     14  Cl-
     8     16  CrO4--
     9     17  Cs+
    10     18  Cu++
    11     22  F-
    12     23  Fe++
    13     25  Gd+++
    14     26  H+
    15     28  HCO3-
    16     29  HPO4--
    17     35  K+
    18     37  La+++
    19     38  Li+
    20     40  Mg++
    21     41  Mn++
    22     42  MoO4--
    23     43  NO3-
    24     44  Na+
    25     45  Nd+++
    26     47  Ni++
    27     49  Pb++
    28     52  Pu++++
    29     58  SO4--
    30     62  SiO2(aq)
    31     63  Sm+++
    32     65  Sr++
    33     69  Ti(OH)4(aq)
    34     72  UO2++
    35     73  VO++
    36     78  Zn++
    37     79  Zr(OH)2++
    38     80  O2(g)
    39    222  Fluorapatite
    40    252  Hematite
    41    470  Pyrolusite
    42    475  Quartz
    43    689  fix     CO2(g)
    44    690  fix     O2(g)

Steps completed =   293, iter = 17, ncorr = 0
Most rapidly changing is zvclg1(Fluorapatite            ) =     -7.8956

Stepping to zi=  1.2823E+00, delzi=  5.1496E-05, nord= 6
  time =  1.4825E+04 d, dltime =  5.9535E-01 d
Steps completed =   294, iter = 13, ncorr = 0
Most rapidly changing is zvclg1(Fluorapatite            ) =    -11.6383

Stepping to zi=  1.2823E+00, delzi=  9.3139E-09, nord= 2
  time =  1.4825E+04 d, dltime =  1.0768E-04 d
Steps completed =   295, iter =  7, ncorr = 0
Most rapidly changing is zvclg1(Fluorapatite            ) =    -14.6781

Stepping to zi=  1.2823E+00, delzi=  1.0000E-10, nord= 0
  time =  1.4825E+04 d, dltime =  1.1561E-06 d
Steps completed =   296, iter =  7, ncorr = 0
Most rapidly changing is zvclg1(Fluorapatite            ) =    -42.6781

Stepping to zi=  1.2823E+00, delzi=  1.0000E-09, nord= 1
  time =  1.4825E+04 d, dltime =  1.1561E-05 d
Steps completed =   297, iter =  7, ncorr = 0
Most rapidly changing is zvclg1(Fluorapatite            ) =    -70.6781
```

```
Stepping to zi=  1.2823E+00, delzi=  1.0000E-08, nord= 1
  time =  1.4825E+04 d, dltime =  1.1561E-04 d
Steps completed =   298, iter =  7, ncorr = 0
Most rapidly changing is zvclg1(Fluorapatite            ) =    -98.6781

Stepping to zi=  1.2823E+00, delzi=  1.0000E-07, nord= 1
  time =  1.4825E+04 d, dltime =  1.1561E-03 d
Steps completed =   299, iter =  7, ncorr = 0
Most rapidly changing is zvclg1(Fluorapatite            ) =   -126.6781

Stepping to zi=  1.2823E+00, delzi=  1.0000E-06, nord= 1
  time =  1.4825E+04 d, dltime =  1.1561E-02 d
--- Iteration has gone sour (iter=  16) ---
     The phase to be dropped is Fluorapatite              (  222)


  Attempted species assemblage no.   2

            1      1  H2O
            2      3  Al+++
            3      7  B(OH)3(aq)
            4      8  Ba++
            5     11  Ca++
            6     13  Ce+++
            7     14  Cl-
            8     16  CrO4--
            9     17  Cs+
           10     18  Cu++
           11     22  F-
           12     23  Fe++
           13     25  Gd+++
           14     26  H+
           15     28  HCO3-
           16     29  HPO4--
           17     35  K+
           18     37  La+++
           19     38  Li+
           20     40  Mg++
           21     41  Mn++
           22     42  MoO4--
           23     43  NO3-
           24     44  Na+
           25     45  Nd+++
           26     47  Ni++
           27     49  Pb++
           28     52  Pu++++
           29     58  SO4--
           30     62  SiO2(aq)
           31     63  Sm+++
           32     65  Sr++
           33     69  Ti(OH)4(aq)
           34     72  UO2++
           35     73  VO++
           36     78  Zn++
           37     79  Zr(OH)2++
           38     80  O2(g)
           39    252  Hematite
           40    470  Pyrolusite
           41    475  Quartz
           42    689  fix     CO2(g)
           43    690  fix     O2(g)
```

```
Steps completed =   300, iter =  2, ncorr = 0

- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -


                    Reaction progress        =  1.28234438829183E+00
                    Log of reaction progress =       0.1080047



                    Time =  1.281E+09 sec
                         =  1.483E+04 days
                         =  4.059E+01 years

                    Log sec =        9.108
                    Log days =       4.171
                    Log years =      1.608

                    Temperature    =     25.000 degrees C
                    total pressure =      1.013 bars


Change in the product phase assemblage


                              --- Reactant Summary ---


   Reactant                   Moles     Delta moles    Mass, g    Delta Mass, g

 carbon steel               1.8719E+01   1.2809E+00   1.0239E+03   7.0062E+01
 Alloy-22                   1.9999E+01   1.4474E-03   1.1977E+03   8.6682E-02


               Current total mass =  2.22156E+03 grams
               Delta total mass   =  7.01487E+01 grams
               Delta total volume =      0.00000 cc


   Reactant                Rel. Rate      Rate         Rate
                            mol/mol       mol/s      mol/s/cm2

 carbon steel              9.9887E-01   1.0000E-09   1.0000E-11
 Alloy-22                  1.1287E-03   1.1300E-12   1.1300E-14


   Reactant                  Affinity   Surface Area
                             kcal/mol     mol/s/cm2

 carbon steel                999.00000   1.0000E+02
 Alloy-22                    999.00000   1.0000E+02


   Reactant                Rate Constants, mol/s/cm2

 carbon steel
                   Forward    1.0000E-11
 Alloy-22
                   Forward    1.1300E-14


         Affinity of the overall irreversible reaction=     0.000 kcal
```

Contributions from irreversible reactions
with no thermodynamic data are not included

--- Element Totals for the Aqueous Solution ---

Element	mg/kg soln.	Molality	Moles
O	8.879158E+05	5.552050E+01	5.552038E+01
Al	3.998316E-02	1.482503E-06	1.482500E-06
B	1.338698E-01	1.238803E-05	1.238800E-05
Ba	1.372687E-05	1.000002E-10	1.000000E-10
Ca	1.299458E+01	3.243707E-04	3.243700E-04
Ce	1.400555E-19	1.000002E-24	1.000000E-24
Cl	7.137144E+00	2.014004E-04	2.014000E-04
Cr	1.928425E+01	3.710369E-04	3.710362E-04
Cs	1.328490E-05	1.000002E-10	1.000000E-10
Cu	6.669499E-10	1.050002E-14	1.050000E-14
F	2.179141E+00	1.147502E-04	1.147500E-04
Fe	2.429642E-05	4.352389E-10	4.352379E-10
Gd	1.571833E-09	1.000002E-14	1.000000E-14
H	1.118529E+05	1.110191E+02	1.110189E+02
C	1.319836E-01	1.099325E-05	1.099322E-05
P	2.803745E+01	9.055863E-04	9.055844E-04
K	5.038023E+00	1.289103E-04	1.289100E-04
La	1.388466E-09	1.000002E-14	1.000000E-14
Li	6.938055E-07	1.000002E-10	1.000000E-10
Mg	2.009146E+00	8.269917E-05	8.269900E-05
Mn	7.842178E-05	1.428067E-09	1.428064E-09
Mo	1.401413E+01	1.461342E-04	1.461339E-04
N	1.988113E+00	1.420003E-04	1.420000E-04
Na	4.578079E+01	1.992204E-03	1.992200E-03
Nd	1.441788E-09	1.000002E-14	1.000000E-14
Ni	4.824075E+01	8.223093E-04	8.223076E-04
Pb	2.071121E-05	1.000002E-10	1.000000E-10
Pu	2.438965E-09	1.000002E-14	1.000000E-14
S	4.115992E+01	1.284148E-03	1.284145E-03
Si	2.811899E+00	1.001620E-04	1.001618E-04
Sm	1.502962E-09	1.000002E-14	1.000000E-14
Sr	8.758282E-06	1.000002E-10	1.000000E-10
Ti	4.785968E-06	1.000002E-10	1.000000E-10
U	2.379279E-09	1.000002E-14	1.000000E-14
V	3.066121E-01	6.021473E-06	6.021460E-06
Zn	6.536225E-06	1.000002E-10	1.000000E-10
Zr	9.118529E-16	1.000002E-20	1.000000E-20

Single ion activities and activity coefficients are here defined
with respect to the modified NBS pH scale

	pH	Eh	pe
modified NBS pH scale	4.7040	0.9408	1.5903E+01
rational pH scale	4.6691	0.9428	1.5938E+01

pHCl = 8.4379

Oxygen fugacity = 2.09991E-01

Log oxygen fugacity = -0.67780

Activity of water = 0.99988
Log activity of water = -0.00005

Ionic strength = 6.873102E-03 molal
Sum of molalities = 0.0068168768031
Osmotic coefficient = 0.94452

Mass of solution = 1.000425 kg
Mass of solutes = 0.000427 kg
Conc. of solutes = 0.042645 per cent (w/w)

Moles of solvent H2O = 5.55083E+01
Mass of solvent H2O = 9.99998E-01 kg

Species	Molality	Log molality	Log gamma	Log activity
Na+	1.9813E-03	-2.7031	-0.0391	-2.7422
SO4--	1.1765E-03	-2.9294	-0.1502	-3.0797
H2PO4-	8.9886E-04	-3.0463	-0.0367	-3.0831
Ni++	7.6184E-04	-3.1181	-0.1479	-3.2660
HCrO4-	3.5348E-04	-3.4516	-0.0367	-3.4884
Ca++	3.0079E-04	-3.5217	-0.1479	-3.6696
O2(aq)	2.6496E-04	-3.5768	0.0007	-3.5761
Cl-	2.0132E-04	-3.6961	-0.0377	-3.7338
MoO4--	1.4613E-04	-3.8352	-0.1484	-3.9836
NO3-	1.4165E-04	-3.8488	-0.0377	-3.8865
K+	1.2811E-04	-3.8924	-0.0401	-3.9325
F-	1.0773E-04	-3.9677	-0.0372	-4.0049
SiO2(aq)	1.0016E-04	-3.9993	0.0000	-3.9993
Mg++	7.1383E-05	-4.1464	-0.1414	-4.2878
NiSO4(aq)	6.0262E-05	-4.2200	0.0000	-4.2200
CaSO4(aq)	2.3006E-05	-4.6382	0.0000	-4.6382
H+	2.1425E-05	-4.6691	-0.0350	-4.7040
B(OH)3(aq)	1.2388E-05	-4.9070	0.0000	-4.9070
MgSO4(aq)	1.1074E-05	-4.9557	0.0000	-4.9557
NaSO4-	1.0836E-05	-4.9651	-0.0367	-5.0019
CO2(aq)	1.0724E-05	-4.9696	0.0007	-4.9689
CrO4--	7.4385E-06	-5.1285	-0.1502	-5.2787
Cr2O7--	5.0574E-06	-5.2961	-0.1502	-5.4463
HPO4--	3.6797E-06	-5.4342	-0.1502	-5.5844
H2VO4-	3.4355E-06	-5.4640	-0.0367	-5.5007
HF(aq)	2.8786E-06	-5.5408	0.0000	-5.5408
H3PO4(aq)	2.4133E-06	-5.6174	0.0000	-5.6174
VO2(OH)2-	2.1291E-06	-5.6718	-0.0367	-5.7085
HSO4-	1.7067E-06	-5.7678	-0.0367	-5.8046
KSO4-	8.0195E-07	-6.0959	-0.0367	-6.1326
AlF3(aq)	7.6547E-07	-6.1161	0.0000	-6.1161
AlF2+	6.7292E-07	-6.1720	-0.0391	-6.2112
VO(OH)3(aq)	3.8674E-07	-6.4126	0.0000	-6.4126
CaHPO4(aq)	3.0617E-07	-6.5140	0.0000	-6.5140
HCO3-	2.6738E-07	-6.5729	-0.0367	-6.6096
NiNO3+	1.9349E-07	-6.7133	-0.0391	-6.7525
CaNO3+	1.5242E-07	-6.8169	-0.0391	-6.8561
MgF+	1.2558E-07	-6.9011	-0.0391	-6.9402
PO3F--	1.1383E-07	-6.9438	-0.1502	-7.0940
CaF+	1.1126E-07	-6.9536	-0.0391	-6.9928
MgHPO4(aq)	1.0910E-07	-6.9622	0.0000	-6.9622
NaCl(aq)	5.5842E-08	-7.2530	0.0000	-7.2530

NaHPO4-	4.2669E-08	-7.3699	-0.0367	-7.4066
VO2HPO4-	2.9229E-08	-7.5342	-0.0367	-7.5709
AlF++	2.2227E-08	-7.6531	-0.1532	-7.8063
HPO3F-	2.1788E-08	-7.6618	-0.0367	-7.6985
AlF4-	2.0692E-08	-7.6842	-0.0367	-7.7210
VO3OH--	1.8122E-08	-7.7418	-0.1502	-7.8920
NaF(aq)	1.8001E-08	-7.7447	0.0000	-7.7447
VO2+	1.6697E-08	-7.7774	-0.0391	-7.8165
NiCl+	1.1044E-08	-7.9569	-0.0391	-7.9960
CaCl+	8.7117E-09	-8.0599	-0.0391	-8.0990
MgCl+	7.6324E-09	-8.1173	-0.0391	-8.1565
H2P2O7--	4.4083E-09	-8.3557	-0.1502	-8.5060
VO2F(aq)	3.3775E-09	-8.4714	0.0000	-8.4714
KHPO4-	1.9943E-09	-8.7002	-0.0367	-8.7370
HVO4--	1.9522E-09	-8.7095	-0.1502	-8.8597
Mn++	1.2338E-09	-8.9087	-0.1479	-9.0566
AlHPO4+	1.1306E-09	-8.9467	-0.0391	-8.9858
HCl(aq)	7.8007E-10	-9.1079	0.0000	-9.1079
KCl(aq)	6.9028E-10	-9.1610	0.0000	-9.1610
CaHCO3+	6.4065E-10	-9.1934	-0.0391	-9.2325
NaHCO3(aq)	6.3427E-10	-9.1977	0.0000	-9.1977
HSiO3-	6.1508E-10	-9.2111	-0.0367	-9.2478
OH-	5.5732E-10	-9.2539	-0.0372	-9.2911
VO2SO4-	5.2550E-10	-9.2794	-0.0367	-9.3162
BO2-	3.8808E-10	-9.4111	-0.0367	-9.4478
FeHPO4+	3.7757E-10	-9.4230	-0.0391	-9.4621
H2CrO4(aq)	3.0774E-10	-9.5118	0.0000	-9.5118
MnSO4(aq)	1.6468E-10	-9.7834	0.0000	-9.7834
MgHCO3+	1.5048E-10	-9.8225	-0.0391	-9.8617
HNO3(aq)	1.2793E-10	-9.8930	0.0000	-9.8930
VO2F2-	1.0482E-10	-9.9795	-0.0367	-10.0163
Ti(OH)4(aq)	1.0000E-10	-10.0000	0.0000	-10.0000

--- Summary of Solid Product Phases---

Product	Log moles	Moles	Mass, g	Volume, cc
Hematite	-0.2108	6.1551E-01	9.8292E+01	1.8634E+01
Pyrolusite	-1.8794	1.3201E-02	1.1477E+00	6.6006E+00
Quartz	-2.1089	7.7823E-03	4.6760E-01	1.7657E-01
fix CO2(g)	4.0000	1.0000E+04	4.4010E+05	0.0000E+00
fix O2(g)	4.0000	9.9990E+03	3.1996E+05	0.0000E+00

	Mass, grams	Volume, cc
Created	7.601560E+05	2.541113E+01
Destroyed	7.014871E+01	0.000000E+00
Net	7.600859E+05	2.541113E+01

Warning-- these volume totals may be incomplete because
of missing partial molar volume data in the data base

--- Summary of Pure Mineral Saturation States ---

Mineral	Log Q/K	Aff, kcal	State
AlF3	-5.607	-7.650	

Anglesite	-5.383	-7.344	
Anhydrite	-2.443	-3.333	
BaCrO4	-5.498	-7.501	
BaZrO3	74.956	102.261	ssatd
Barite	-3.260	-4.448	
Bassanite	-3.088	-4.213	
Berlinite	-4.473	-6.103	
Boehmite	-4.254	-5.803	
Boric_acid	-4.749	-6.479	
Bunsenite	-6.330	-8.636	
CaSO4:0.5H2O(beta)	-3.256	-4.442	
CaV2O6	-6.020	-8.213	
CaZrO3	135.468	184.817	ssatd
Chalcedony	-0.271	-0.370	
Coesite	-0.810	-1.105	
CrO2	-4.584	-6.254	
Cristobalite(alpha)	-0.551	-0.751	
Cristobalite(beta)	-0.994	-1.356	
Crocoite	-2.717	-3.707	
Diaspore	-3.850	-5.252	
Epsomite	-5.405	-7.375	
Fe(OH)3	-5.601	-7.642	
FeF3	-6.834	-9.323	
Fluorapatite	0.000	0.000	
Fluorite	-1.642	-2.241	
GdPO4:H2O	-3.854	-5.258	
Gibbsite	-4.445	-6.065	
Goethite	-0.480	-0.655	
Gypsum	-2.267	-3.093	
Hematite	0.000	0.000	satd
Hexahydrite	-5.641	-7.696	
Ice	-0.139	-0.189	
Kieserite	-7.100	-9.687	
LaPO4:H2O	-3.275	-4.468	
Manganite	-4.459	-6.084	
MnHPO4	-1.694	-2.311	
MnO2(gamma)	-1.518	-2.071	
Morenosite	-4.332	-5.910	
NdPO4:H2O	-3.598	-4.908	
Ni(OH)2	-6.607	-9.013	
Ni2SiO4	-6.057	-8.263	
Ni3(PO4)2	-4.917	-6.709	
NiF2:4H2O	-7.217	-9.846	
NiSO4:6H2O(alpha)	-4.339	-5.919	
Nontronite-Ca	-0.947	-1.292	
Nontronite-H	-0.936	-1.277	
Nontronite-K	-1.357	-1.851	
Nontronite-Mg	-1.012	-1.380	
Nontronite-Na	-1.303	-1.777	
PbHPO4	-4.174	-5.694	
Pentahydrite	-5.980	-8.159	
Pyrolusite	0.000	0.000	satd
Quartz	0.000	0.000	satd
Rutile	-0.355	-0.484	
Sellaite	-2.913	-3.974	
Shcherbinaite	-4.773	-6.512	
SiO2(am)	-1.286	-1.754	
SmPO4:H2O	-3.628	-4.950	
SrZrO3	111.903	152.667	ssatd
Starkeyite	-6.368	-8.687	
Strengite	-3.595	-4.905	
Trevorite	-3.537	-4.825	
Tridymite	-0.172	-0.234	

```
fix     CO2(g)                    0.000       0.000   satd
fix     O2(g)                     0.000       0.000   satd
```

--- Summary of Solid Solutions ---

--- Carbonate-Calcite ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Calcite	9.1997E-01	-0.0362	0.0000	-0.0362
Magnesite	7.9567E-02	-1.0993	0.0000	-1.0993
Rhodochrosite	4.1521E-04	-3.3817	0.0000	-3.3817
Siderite	5.3018E-12	-11.2756	0.0000	-11.2756
Smithsonite	7.3896E-06	-5.1314	0.0000	-5.1314
Strontianite	3.9435E-05	-4.4041	0.0000	-4.4041

Mineral	Log Q/K	Aff, kcal	State
Carbonate-Calcite	-7.388	-10.079	
Calcite	-7.388	-10.079	
Magnesite	-7.388	-10.079	
Rhodochrosite	-7.388	-10.079	
Siderite	-7.388	-10.079	
Smithsonite	-7.388	-10.079	
Strontianite	-7.388	-10.079	

--- Clinoptilolite-hy-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-hy-Ca	9.9858E-01	-0.0006	0.0000	-0.0006
Clinoptilolite-hy-Cs	3.9925E-23	-22.3988	0.0000	-22.3988
Clinoptilolite-hy-K	4.6584E-04	-3.3318	0.0000	-3.3318
Clinoptilolite-hy-Na	9.5732E-04	-3.0189	0.0000	-3.0189
Clinoptilolite-hy-Sr	6.5768E-12	-11.1820	0.0000	-11.1820

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-hy-ss	-29.741	-40.575	
Clinoptilolite-hy-Ca	-29.741	-40.575	
Clinoptilolite-hy-Cs	-29.741	-40.575	
Clinoptilolite-hy-K	-29.741	-40.575	
Clinoptilolite-hy-Na	-29.741	-40.575	
Clinoptilolite-hy-Sr	-29.741	-40.575	

--- Clinoptilolite-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-Ca	8.0422E-01	-0.0946	-0.2328	-0.3274

Clinoptilolite-Cs	2.6976E-07	-6.5690	-16.1598	-22.7288
Clinoptilolite-K	8.7465E-02	-1.0582	-2.6031	-3.6613
Clinoptilolite-NH4	4.1178E-57	-56.3853	-138.7079	-195.0933
Clinoptilolite-Na	1.0784E-01	-0.9672	-2.3793	-3.3466
Clinoptilolite-Sr	4.7203E-04	-3.3260	-8.1820	-11.5081

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-ss	-29.415	-40.131	
Clinoptilolite-Ca	-29.415	-40.131	
Clinoptilolite-Cs	-29.415	-40.131	
Clinoptilolite-K	-29.415	-40.131	
Clinoptilolite-NH4	-29.415	-40.131	
Clinoptilolite-Na	-29.415	-40.131	
Clinoptilolite-Sr	-29.415	-40.131	

--- Saponite-tri ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Saponite-Ca	3.4967E-01	-0.4563	0.3057	-0.1506
Saponite-H	3.7771E-01	-0.4228	0.2833	-0.1395
Saponite-K	2.0044E-02	-1.6980	1.1377	-0.5603
Saponite-Mg	2.2327E-01	-0.6512	0.4363	-0.2149
Saponite-Na	2.9300E-02	-1.5331	1.0272	-0.5059

Mineral	Log Q/K	Aff, kcal	State
Saponite-tri	-23.417	-31.947	
Saponite-Ca	-23.417	-31.947	
Saponite-H	-23.417	-31.947	
Saponite-K	-23.417	-31.947	
Saponite-Mg	-23.417	-31.947	
Saponite-Na	-23.417	-31.947	

--- Smectite-di ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Beidellite-Ca	2.7768E-33	-32.5565	21.8128	-10.7436
Beidellite-K	1.5928E-34	-33.7978	22.6445	-11.1533
Beidellite-Mg	1.7730E-33	-32.7513	21.9434	-10.8079
Beidellite-Na	2.3267E-34	-33.6333	22.5343	-11.0990
Montmor-Ca	2.1170E-29	-28.6743	19.2118	-9.4625
Montmor-K	1.9832E-30	-29.7026	19.9008	-9.8019
Montmor-Mg	2.1968E-29	-28.6582	19.2010	-9.4572
Montmor-Na	2.8251E-30	-29.5490	19.7978	-9.7512
Nontronite-Ca	5.6176E-01	-0.2504	0.1678	-0.0826
Nontronite-K	3.2224E-02	-1.4918	0.9995	-0.4923
Nontronite-Mg	3.5894E-01	-0.4450	0.2981	-0.1468
Nontronite-Na	4.7071E-02	-1.3272	0.8893	-0.4380

Mineral	Log Q/K	Aff, kcal	State
Smectite-di	-0.865	-1.180	
Beidellite-Ca	-0.865	-1.180	
Beidellite-K	-0.865	-1.180	
Beidellite-Mg	-0.865	-1.180	
Beidellite-Na	-0.865	-1.180	
Montmor-Ca	-0.865	-1.180	
Montmor-K	-0.865	-1.180	
Montmor-Mg	-0.865	-1.180	
Montmor-Na	-0.865	-1.180	
Nontronite-Ca	-0.865	-1.180	
Nontronite-K	-0.865	-1.180	
Nontronite-Mg	-0.865	-1.180	
Nontronite-Na	-0.865	-1.180	

--- Lanthanide hydroxide ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
La(OH)3	1.6273E-05	-4.7885	0.0000	-4.7885
Ce(OH)3	3.9291E-15	-14.4057	0.0000	-14.4057
Nd(OH)3(c)	3.8786E-01	-0.4113	0.0000	-0.4113
Gd(OH)3	5.3995E-01	-0.2676	0.0000	-0.2676
Sm(OH)3	7.2175E-02	-1.1416	0.0000	-1.1416

Mineral	Log Q/K	Aff, kcal	State
Lanthanide hydroxide	-16.173	-22.065	
La(OH)3	-16.173	-22.065	
Ce(OH)3	-16.173	-22.065	
Nd(OH)3(c)	-16.173	-22.065	
Gd(OH)3	-16.173	-22.065	
Sm(OH)3	-16.173	-22.065	

--- Rhabdophane-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaPO4:H2O	4.5816E-01	-0.3390	0.0000	-0.3390
CePO4:H2O	3.4982E-11	-10.4562	0.0000	-10.4562
NdPO4:H2O	2.1788E-01	-0.6618	0.0000	-0.6618
GdPO4:H2O	1.2075E-01	-0.9181	0.0000	-0.9181
SmPO4:H2O	2.0320E-01	-0.6921	0.0000	-0.6921

Mineral	Log Q/K	Aff, kcal	State
Rhabdophane-ss	-2.936	-4.005	
LaPO4:H2O	-2.936	-4.005	
CePO4:H2O	-2.936	-4.005	
NdPO4:H2O	-2.936	-4.005	
GdPO4:H2O	-2.936	-4.005	
SmPO4:H2O	-2.936	-4.005	

--- Lanthanide fluoride ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaF3:0.5H2O	6.0476E-01	-0.2184	0.0000	-0.2184
CeF3:0.5H2O	7.3184E-11	-10.1356	0.0000	-10.1356
NdF3:0.5H2O	3.6207E-01	-0.4412	0.0000	-0.4412
GdF3:0.5H2O	6.3455E-03	-2.1975	0.0000	-2.1975
SmF3:0.5H2O	2.6823E-02	-1.5715	0.0000	-1.5715

Mineral	Log Q/K	Aff, kcal	State
Lanthanide fluoride	-7.841	-10.697	
LaF3:0.5H2O	-7.841	-10.697	
CeF3:0.5H2O	-7.841	-10.697	
NdF3:0.5H2O	-7.841	-10.697	
GdF3:0.5H2O	-7.841	-10.697	
SmF3:0.5H2O	-7.841	-10.697	

--- Summary of Gases ---

Gas	Fugacity	Log fugacity
Al(g)	2.3273-195	-194.6331
B(g)	8.5549-204	-203.0678
BF3(g)	8.5662E-29	-28.0672
C(g)	3.0917-190	-189.5098
CH4(g)	3.5286-146	-145.4524
CO(g)	6.0395E-49	-48.2190
CO2(g)	3.1623E-04	-3.5000
Ca(g)	2.8093-158	-157.5514
Chlorine	2.1668E-22	-21.6642
Cs(g)	1.8914E-86	-85.7232
Cu(g)	2.4066E-87	-86.6186
Fluorine	1.1869E-75	-74.9256
H2(g)	6.1143E-42	-41.2137
H2O(g)	2.5975E-02	-1.5855
H2S(g)	2.1061-136	-135.6765
HCl(g)	1.8057E-15	-14.7434
HF(g)	1.5083E-10	-9.8215
K(g)	1.2134E-80	-79.9160
Li(g)	4.1331-100	-99.3837
Mg(g)	4.5589-136	-135.3411
Nitrogen	1.6085E-13	-12.7936
NH3(g)	4.6231E-66	-65.3351
NO(g)	1.2629E-22	-21.8986
NO2(g)	8.6350E-17	-16.0637
Na(g)	9.8141E-79	-78.0082
O2(g)	2.0999E-01	-0.6778
Pb(g)	2.6980E-75	-74.5690
S2(g)	2.6455-215	-214.5775
SO2(g)	3.7293E-49	-48.4284
Si(g)	4.2257-221	-220.3741
SiF4(g)	2.2815E-24	-23.6418

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Ti(g)                        1.6800-231   -230.7747
TiCl4(g)                     1.5738E-72    -71.8031
U(g)                         3.3768-301   -300.4715
U2Cl10(g)                    4.2718-221   -220.3694
U2Cl8(g)                     6.1121-230   -229.2138
U2F10(g)                     9.3536-129   -128.0290
UCl(g)                       5.4339-254   -253.2649
UCl2(g)                      2.6159-205   -204.5824
UCl3(g)                      2.7582-154   -153.5594
UCl4(g)                      1.5749-120   -119.8028
UCl5(g)                      4.6265-124   -123.3347
UCl6(g)                      2.5250-122   -121.5977
UF(g)                        9.6463-239   -238.0156
UF2(g)                       2.0437-194   -193.6896
UF3(g)                       1.0656-143   -142.9724
UF4(g)                       8.2004E-90    -89.0862
UF5(g)                       2.8906E-77    -76.5390
UF6(g)                       1.0033E-78    -77.9986
UO(g)                        2.6669-216   -215.5740
UO2(g)                       4.9409-132   -131.3062
UO2Cl2(g)                    4.6744E-73    -72.3303
UO2F2(g)                     2.6492E-60    -59.5769
UO3(g)                       3.6342E-79    -78.4396
UOF4(g)                      2.4436E-67    -66.6120
Zn(g)                        4.2850E-85    -84.3680



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Stepping to zi=  1.2823E+00, delzi=  1.0000E-09, nord= 0
  time =  1.4825E+04 d, dltime =  1.1561E-05 d
Steps completed =   301, iter =  1, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -37.3313

Stepping to zi=  1.2823E+00, delzi=  1.0000E-09, nord= 0
  time =  1.4825E+04 d, dltime =  1.1561E-05 d
Steps completed =   302, iter =  1, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -37.3313

Stepping to zi=  1.2823E+00, delzi=  1.0000E-09, nord= 0
  time =  1.4825E+04 d, dltime =  1.1561E-05 d
Steps completed =   303, iter =  1, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -37.3313

Stepping to zi=  1.2823E+00, delzi=  1.0000E-08, nord= 1
  time =  1.4825E+04 d, dltime =  1.1561E-04 d
Steps completed =   304, iter =  1, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -37.3313

Stepping to zi=  1.2823E+00, delzi=  1.0000E-07, nord= 1
  time =  1.4825E+04 d, dltime =  1.1561E-03 d
Steps completed =   305, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -37.3313

Stepping to zi=  1.2823E+00, delzi=  1.0000E-06, nord= 2
  time =  1.4825E+04 d, dltime =  1.1561E-02 d
Steps completed =   306, iter =  1, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -37.3312

Stepping to zi=  1.2824E+00, delzi=  1.0000E-05, nord= 2
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```
  time =  1.4825E+04 d, dltime =  1.1561E-01 d
Steps completed =   307, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -37.3305

Stepping to zi=  1.2825E+00, delzi=  1.0000E-04, nord= 2
  time =  1.4826E+04 d, dltime =  1.1561E+00 d
Steps completed =   308, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -37.3235

Stepping to zi=  1.2826E+00, delzi=  1.3210E-04, nord= 3
  time =  1.4828E+04 d, dltime =  1.5272E+00 d
Steps completed =   309, iter = 11, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -37.3144

Stepping to zi=  1.2833E+00, delzi=  6.6710E-04, nord= 3
  time =  1.4836E+04 d, dltime =  7.7124E+00 d
Steps completed =   310, iter = 18, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -37.2685

Stepping to zi=  1.2841E+00, delzi=  8.7435E-04, nord= 4
  time =  1.4846E+04 d, dltime =  1.0108E+01 d
Steps completed =   311, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -37.2092

Stepping to zi=  1.2861E+00, delzi=  1.9659E-03, nord= 4
  time =  1.4869E+04 d, dltime =  2.2728E+01 d
Steps completed =   312, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -37.0795

Stepping to zi=  1.2893E+00, delzi=  3.1570E-03, nord= 5
  time =  1.4905E+04 d, dltime =  3.6498E+01 d
Steps completed =   313, iter =  6, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -36.8824

Stepping to zi=  1.2952E+00, delzi=  5.9759E-03, nord= 5
  time =  1.4974E+04 d, dltime =  6.9087E+01 d
Steps completed =   314, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -36.5453

Stepping to zi=  1.3027E+00, delzi=  7.4367E-03, nord= 6
  time =  1.5060E+04 d, dltime =  8.5976E+01 d
Steps completed =   315, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -36.1851

Stepping to zi=  1.3107E+00, delzi=  8.0561E-03, nord= 6
  time =  1.5153E+04 d, dltime =  9.3136E+01 d
Steps completed =   316, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -35.8551

Stepping to zi=  1.3196E+00, delzi=  8.8413E-03, nord= 6
  time =  1.5255E+04 d, dltime =  1.0221E+02 d
Steps completed =   317, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -35.5487

Stepping to zi=  1.3306E+00, delzi=  1.1041E-02, nord= 6
  time =  1.5383E+04 d, dltime =  1.2765E+02 d
Steps completed =   318, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -35.2273

Stepping to zi=  1.3421E+00, delzi=  1.1482E-02, nord= 6
  time =  1.5516E+04 d, dltime =  1.3274E+02 d
Steps completed =   319, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -34.9463
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Stepping to zi=  1.3533E+00, delzi=  1.1197E-02, nord= 6
  time =  1.5645E+04 d, dltime =  1.2945E+02 d
Steps completed =   320, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -34.7112

Stepping to zi=  1.3654E+00, delzi=  1.2104E-02, nord= 6
  time =  1.5785E+04 d, dltime =  1.3993E+02 d
Steps completed =   321, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -34.4902

Stepping to zi=  1.3789E+00, delzi=  1.3564E-02, nord= 6
  time =  1.5942E+04 d, dltime =  1.5682E+02 d
Steps completed =   322, iter = 17, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -34.2740

Stepping to zi=  1.3943E+00, delzi=  1.5388E-02, nord= 6
  time =  1.6120E+04 d, dltime =  1.7790E+02 d
Steps completed =   323, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -34.0601

Stepping to zi=  1.4119E+00, delzi=  1.7526E-02, nord= 6
  time =  1.6323E+04 d, dltime =  2.0262E+02 d
Steps completed =   324, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -33.8480

Stepping to zi=  1.4318E+00, delzi=  1.9972E-02, nord= 6
  time =  1.6553E+04 d, dltime =  2.3089E+02 d
Steps completed =   325, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -33.6379

Stepping to zi=  1.4545E+00, delzi=  2.2670E-02, nord= 6
  time =  1.6816E+04 d, dltime =  2.6209E+02 d
Steps completed =   326, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -33.4309

Stepping to zi=  1.4802E+00, delzi=  2.5673E-02, nord= 6
  time =  1.7112E+04 d, dltime =  2.9681E+02 d
Steps completed =   327, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -33.2277

Stepping to zi=  1.5093E+00, delzi=  2.9093E-02, nord= 6
  time =  1.7449E+04 d, dltime =  3.3635E+02 d
Steps completed =   328, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -33.0283

Stepping to zi=  1.5423E+00, delzi=  3.3007E-02, nord= 6
  time =  1.7830E+04 d, dltime =  3.8159E+02 d
Steps completed =   329, iter =  7, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -32.8326

Stepping to zi=  1.5798E+00, delzi=  3.7483E-02, nord= 6
  time =  1.8264E+04 d, dltime =  4.3334E+02 d
Steps completed =   330, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -32.6408

Stepping to zi=  1.6224E+00, delzi=  4.2595E-02, nord= 6
  time =  1.8756E+04 d, dltime =  4.9244E+02 d
Steps completed =   331, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -32.4531

Stepping to zi=  1.6708E+00, delzi=  4.8424E-02, nord= 6
  time =  1.9316E+04 d, dltime =  5.5982E+02 d
```

```
Steps completed =   332, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -32.2696

Stepping to zi=  1.7258E+00, delzi=  5.5061E-02, nord= 6
  time =  1.9952E+04 d, dltime =  6.3657E+02 d
Steps completed =   333, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -32.0907

Stepping to zi=  1.7885E+00, delzi=  6.2619E-02, nord= 6
  time =  2.0676E+04 d, dltime =  7.2393E+02 d
Steps completed =   334, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -31.9167

Stepping to zi=  1.8597E+00, delzi=  7.1225E-02, nord= 6
  time =  2.1500E+04 d, dltime =  8.2343E+02 d
Steps completed =   335, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -31.7479

Stepping to zi=  1.9152E+00, delzi=  5.5485E-02, nord= 6
  time =  2.2141E+04 d, dltime =  6.4146E+02 d
Steps completed =   336, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -31.6333

Stepping to zi=  1.9226E+00, delzi=  7.3972E-03, nord= 6
  time =  2.2227E+04 d, dltime =  8.5519E+01 d
iter =    3
      1 supersaturated pure minerals
      0 supersaturated solid solutions

               The most supersaturated phases           Affinity, kcal

                 1     352   MnHPO4                        0.00700944


  Attempted species assemblage no.   2

            1      1  H2O
            2      3  Al+++
            3      7  B(OH)3(aq)
            4      8  Ba++
            5     11  Ca++
            6     13  Ce+++
            7     14  Cl-
            8     16  CrO4--
            9     17  Cs+
           10     18  Cu++
           11     22  F-
           12     23  Fe++
           13     25  Gd+++
           14     26  H+
           15     28  HCO3-
           16     29  HPO4--
           17     35  K+
           18     37  La+++
           19     38  Li+
           20     40  Mg++
           21     41  Mn++
           22     42  MoO4--
           23     43  NO3-
           24     44  Na+
           25     45  Nd+++
           26     47  Ni++
           27     49  Pb++
```

```
            28     52  Pu++++
            29     58  SO4--
            30     62  SiO2(aq)
            31     63  Sm+++
            32     65  Sr++
            33     69  Ti(OH)4(aq)
            34     72  UO2++
            35     73  VO++
            36     78  Zn++
            37     79  Zr(OH)2++
            38     80  O2(g)
            39    252  Hematite
            40    352  MnHPO4
            41    470  Pyrolusite
            42    475  Quartz
            43    689  fix     CO2(g)
            44    690  fix     O2(g)

Steps completed =   337, iter =  8, ncorr = 0

- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -


                    Reaction progress        =  1.92256738416948E+00
                    Log of reaction progress =       0.2838816



                    Time =  1.920E+09 sec
                         =  2.223E+04 days
                         =  6.085E+01 years

                    Log sec =        9.283
                    Log days =       4.347
                    Log years =      1.784

                    Temperature    =     25.000 degrees C
                    total pressure =      1.013 bars


Change in the product phase assemblage


                              --- Reactant Summary ---


    Reactant                   Moles     Delta moles    Mass, g    Delta Mass, g

 carbon steel               1.8080E+01   1.9204E+00   9.8891E+02   1.0504E+02
 Alloy-22                   1.9998E+01   2.1700E-03   1.1976E+03   1.2996E-01


               Current total mass =  2.18653E+03 grams
               Delta total mass   =  1.05171E+02 grams
               Delta total volume =      0.00000 cc


    Reactant                Rel. Rate      Rate         Rate
                             mol/mol       mol/s      mol/s/cm2

 carbon steel               9.9887E-01   1.0000E-09   1.0000E-11
 Alloy-22                   1.1287E-03   1.1300E-12   1.1300E-14
```

Reactant	Affinity kcal/mol	Surface Area mol/s/cm2
carbon steel	999.00000	1.0000E+02
Alloy-22	999.00000	1.0000E+02

Reactant	Rate Constants, mol/s/cm2	
carbon steel		
	Forward	1.0000E-11
Alloy-22		
	Forward	1.1300E-14

Affinity of the overall irreversible reaction= 0.000 kcal
Contributions from irreversible reactions
with no thermodynamic data are not included

--- Element Totals for the Aqueous Solution ---

Element	mg/kg soln.	Molality	Moles
O	8.878588E+05	5.552548E+01	5.552432E+01
Al	3.997776E-02	1.482531E-06	1.482500E-06
B	1.338517E-01	1.238826E-05	1.238800E-05
Ba	1.372502E-05	1.000021E-10	1.000000E-10
Ca	1.299283E+01	3.243768E-04	3.243700E-04
Ce	1.400366E-19	1.000021E-24	1.000000E-24
Cl	7.136179E+00	2.014042E-04	2.014000E-04
Cr	2.889924E+01	5.561191E-04	5.561074E-04
Cs	1.328311E-05	1.000021E-10	1.000000E-10
Cu	6.668597E-10	1.050022E-14	1.050000E-14
F	2.178847E+00	1.147524E-04	1.147500E-04
Fe	3.912762E-02	7.010285E-07	7.010138E-07
Gd	1.571620E-09	1.000021E-14	1.000000E-14
H	1.118378E+05	1.110212E+02	1.110189E+02
C	1.287532E-01	1.072584E-05	1.072561E-05
P	4.177286E+01	1.349436E-03	1.349408E-03
K	5.037342E+00	1.289127E-04	1.289100E-04
La	1.388278E-09	1.000021E-14	1.000000E-14
Li	6.937117E-07	1.000021E-10	1.000000E-10
Mg	2.008875E+00	8.270073E-05	8.269900E-05
Mn	1.123720E-01	2.046619E-06	2.046576E-06
Mo	2.100798E+01	2.190972E-04	2.190926E-04
N	1.987844E+00	1.420030E-04	1.420000E-04
Na	4.577460E+01	1.992242E-03	1.992200E-03
Nd	1.441593E-09	1.000021E-14	1.000000E-14
Ni	7.231564E+01	1.232879E-03	1.232853E-03
Pb	2.070841E-05	1.000021E-10	1.000000E-10
Pu	2.438635E-09	1.000021E-14	1.000000E-14
S	5.863638E+01	1.829677E-03	1.829639E-03
Si	2.811448E+00	1.001613E-04	1.001592E-04
Sm	1.502759E-09	1.000021E-14	1.000000E-14
Sr	8.757098E-06	1.000021E-10	1.000000E-10
Ti	4.785321E-06	1.000021E-10	1.000000E-10
U	2.378957E-09	1.000021E-14	1.000000E-14
V	4.596234E-01	9.027813E-06	9.027624E-06
Zn	6.535342E-06	1.000021E-10	1.000000E-10

Zr	9.117297E-16	1.000021E-20	1.000000E-20

Single ion activities and activity coefficients are here defined
with respect to the modified NBS pH scale

	pH	Eh	pe
modified NBS pH scale	3.1408	1.0332	1.7466E+01
rational pH scale	3.1014	1.0356	1.7505E+01

pHCl = 6.8798

Oxygen fugacity = 2.09991E-01
Log oxygen fugacity = -0.67780

Activity of water = 0.99984
Log activity of water = -0.00007

Ionic strength = 9.192390E-03 molal
Sum of molalities = 0.0091833316535
Osmotic coefficient = 0.93789

Mass of solution = 1.000560 kg
Mass of solutes = 0.000581 kg
Conc. of solutes = 0.058038 per cent (w/w)

Moles of solvent H2O = 5.55073E+01
Mass of solvent H2O = 9.99979E-01 kg

Species	Molality	Log molality	Log gamma	Log activity
Na+	1.9783E-03	-2.7037	-0.0447	-2.7484
SO4--	1.5832E-03	-2.8005	-0.1707	-2.9712
H2PO4-	1.2283E-03	-2.9107	-0.0416	-2.9523
Ni++	1.1236E-03	-2.9494	-0.1677	-3.1171
H+	7.9178E-04	-3.1014	-0.0394	-3.1408
HCrO4-	5.3228E-04	-3.2739	-0.0416	-3.3155
Ca++	2.9636E-04	-3.5282	-0.1677	-3.6958
O2(aq)	2.6481E-04	-3.5771	0.0010	-3.5761
MoO4--	2.1910E-04	-3.6594	-0.1683	-3.8276
Cl-	2.0129E-04	-3.6962	-0.0429	-3.7390
NO3-	1.4158E-04	-3.8490	-0.0429	-3.8919
K+	1.2789E-04	-3.8932	-0.0460	-3.9391
H3PO4(aq)	1.1930E-04	-3.9234	0.0000	-3.9234
NiSO4(aq)	1.0902E-04	-3.9625	0.0000	-3.9625
SiO2(aq)	1.0016E-04	-3.9993	0.0000	-3.9993
HSO4-	8.1058E-05	-4.0912	-0.0416	-4.1328
Mg++	6.9374E-05	-4.1588	-0.1594	-4.3182
F-	5.5979E-05	-4.2520	-0.0422	-4.2942
HF(aq)	5.4091E-05	-4.2669	0.0000	-4.2669
CaSO4(aq)	2.7804E-05	-4.5559	0.0000	-4.5559
NaSO4-	1.3869E-05	-4.8580	-0.0416	-4.8996
MgSO4(aq)	1.3255E-05	-4.8776	0.0000	-4.8776
B(OH)3(aq)	1.2388E-05	-4.9070	0.0000	-4.9070
Cr2O7--	1.1754E-05	-4.9298	-0.1707	-5.1005

CO2(aq)	1.0718E-05	-4.9699	0.0010	-4.9689
VO2+	4.3344E-06	-5.3631	-0.0447	-5.4078
VO(OH)3(aq)	2.7092E-06	-5.5672	0.0000	-5.5672
Mn++	1.7282E-06	-5.7624	-0.1677	-5.9301
KSO4-	1.0254E-06	-5.9891	-0.0416	-6.0307
AlF2+	8.9732E-07	-6.0471	-0.0447	-6.0918
FeHPO4+	6.9165E-07	-6.1601	-0.0447	-6.2048
H2VO4-	6.6530E-07	-6.1770	-0.0416	-6.2186
HPO3F-	5.5951E-07	-6.2522	-0.0416	-6.2938
AlF3(aq)	5.1763E-07	-6.2860	0.0000	-6.2860
VO2F(aq)	4.4463E-07	-6.3520	0.0000	-6.3520
VO2(OH)2-	4.1231E-07	-6.3848	-0.0416	-6.4264
CrO4--	3.1738E-07	-6.4984	-0.1707	-6.6691
MnSO4(aq)	2.8293E-07	-6.5483	0.0000	-6.5483
VO2HPO4-	2.7982E-07	-6.5531	-0.0416	-6.5947
NiNO3+	2.7277E-07	-6.5642	-0.0447	-6.6089
VO2SO4-	1.7485E-07	-6.7573	-0.0416	-6.7989
CaNO3+	1.4355E-07	-6.8430	-0.0447	-6.8877
HPO4--	1.4248E-07	-6.8463	-0.1707	-7.0169
PO3F--	8.2821E-08	-7.0819	-0.1707	-7.2525
MgF+	6.0919E-08	-7.2152	-0.0447	-7.2600
AlF++	5.9831E-08	-7.2231	-0.1745	-7.3976
CaF+	5.4496E-08	-7.2636	-0.0447	-7.3084
NaCl(aq)	5.4392E-08	-7.2645	0.0000	-7.2645
MnH2PO4+	3.2535E-08	-7.4876	-0.0447	-7.5324
HCl(aq)	2.8196E-08	-7.5498	0.0000	-7.5498
H2CrO4(aq)	1.6763E-08	-7.7756	0.0000	-7.7756
NiCl+	1.5574E-08	-7.8076	-0.0447	-7.8523
CaHPO4(aq)	1.0647E-08	-7.9728	0.0000	-7.9728
NaF(aq)	9.1153E-09	-8.0402	0.0000	-8.0402
H2P2O7--	8.4381E-09	-8.0738	-0.1707	-8.2444
CaCl+	8.2078E-09	-8.0858	-0.0447	-8.1305
H2F2(aq)	7.9078E-09	-8.1019	0.0000	-8.1019
HCO3-	7.3911E-09	-8.1313	-0.0416	-8.1729
AlF4-	7.2682E-09	-8.1386	-0.0416	-8.1802
VO2F2-	7.1682E-09	-8.1446	-0.0416	-8.1862
MgCl+	7.1221E-09	-8.1474	-0.0447	-8.1921
FeOH++	5.7186E-09	-8.2427	-0.1745	-8.4172
HNO3(aq)	4.6225E-09	-8.3351	0.0000	-8.3351
MgHPO4(aq)	3.7575E-09	-8.4251	0.0000	-8.4251
Fe(OH)2+	1.9419E-09	-8.7118	-0.0447	-8.7565
MnF+	1.7801E-09	-8.7496	-0.0447	-8.7943
NaHPO4-	1.5713E-09	-8.8037	-0.0416	-8.8454
Fe+++	9.5530E-10	-9.0199	-0.3480	-9.3679
CrO3Cl-	7.5682E-10	-9.1210	-0.0416	-9.1626
HF2-	7.3002E-10	-9.1367	-0.0416	-9.1783
KCl(aq)	6.7175E-10	-9.1728	0.0000	-9.1728
KHSO4(aq)	5.7881E-10	-9.2375	0.0000	-9.2375
MnCl+	4.7523E-10	-9.3231	-0.0447	-9.3678
FeF++	4.4554E-10	-9.3511	-0.1745	-9.5256
MnHPO4(aq)	4.2954E-10	-9.3670	0.0000	-9.3670
FeF2+	2.7429E-10	-9.5618	-0.0447	-9.6065
MnNO3+	2.6472E-10	-9.5772	-0.0447	-9.6219
AlHPO4+	2.1107E-10	-9.6756	-0.0447	-9.7203
Al+++	1.7566E-10	-9.7553	-0.3480	-10.1034
Ti(OH)4(aq)	1.0000E-10	-10.0000	0.0000	-10.0000

--- Summary of Solid Product Phases---

Product	Log moles	Moles	Mass, g	Volume, cc

Hematite		-0.0349	9.2281E-01	1.4737E+02	2.7937E+01
MnHPO4		-5.1156	7.6635E-06	1.1566E-03	0.0000E+00
Pyrolusite		-1.7037	1.9782E-02	1.7198E+00	9.8912E+00
Quartz		-1.9504	1.1210E-02	6.7355E-01	2.5433E-01
fix	CO2(g)	4.0000	1.0000E+04	4.4010E+05	0.0000E+00
fix	O2(g)	3.9999	9.9985E+03	3.1994E+05	0.0000E+00

	Mass, grams	Volume, cc
Created	7.601909E+05	3.808264E+01
Destroyed	1.051711E+02	0.000000E+00
Net	7.600857E+05	3.808264E+01

Warning-- these volume totals may be incomplete because
of missing partial molar volume data in the data base

--- Summary of Pure Mineral Saturation States ---

Mineral	Log Q/K	Aff, kcal	State
AlF3	-5.777	-7.882	
Anglesite	-5.295	-7.223	
Anhydrite	-2.361	-3.221	
BaCrO4	-6.909	-9.426	
BaZrO3	71.800	97.956	ssatd
Barite	-3.173	-4.328	
Bassanite	-3.006	-4.100	
Berlinite	-6.771	-9.237	
Boric_acid	-4.749	-6.479	
CaSO4:0.5H2O(beta)	-3.174	-4.330	
CaZrO3	132.307	180.504	ssatd
Chalcedony	-0.271	-0.370	
Coesite	-0.810	-1.105	
CrO2	-2.848	-3.885	
Cristobalite(alpha)	-0.551	-0.751	
Cristobalite(beta)	-0.994	-1.356	
Crocoite	-4.128	-5.631	
Epsomite	-5.327	-7.268	
Fe(OH)3	-5.601	-7.642	
FeF3	-3.012	-4.109	
Fluorite	-2.247	-3.066	
GdPO4:H2O	-6.774	-9.242	
Goethite	-0.480	-0.655	
Gypsum	-2.185	-2.981	
Hematite	0.000	0.000	satd
Hexahydrite	-5.563	-7.589	
Ice	-0.139	-0.189	
Kieserite	-7.022	-9.581	
LaPO4:H2O	-6.312	-8.611	
Manganite	-4.459	-6.084	
Mirabilite	-7.329	-9.999	
MnHPO4	0.000	0.000	satd
MnO2(gamma)	-1.518	-2.071	
Morenosite	-4.075	-5.559	
NdPO4:H2O	-6.582	-8.979	
NiSO4:6H2O(alpha)	-4.081	-5.568	
Nontronite-Ca	-2.785	-3.799	
Nontronite-H	-2.254	-3.075	
Nontronite-K	-3.192	-4.355	

Nontronite-Mg	-2.850	-3.888	
Nontronite-Na	-3.138	-4.281	
PbHPO4	-5.626	-7.676	
Pentahydrite	-5.902	-8.053	
Pyrolusite	0.000	0.000	satd
Quartz	0.000	0.000	satd
Rutile	-0.355	-0.484	
Sellaite	-3.522	-4.805	
Shcherbinaite	-3.082	-4.205	
SiO2(am)	-1.286	-1.754	
SmPO4:H2O	-6.583	-8.982	
SrZrO3	108.737	148.348	ssatd
Starkeyite	-6.290	-8.581	
Strengite	-1.901	-2.594	
Trevorite	-6.515	-8.888	
Tridymite	-0.171	-0.234	
fix CO2(g)	0.000	0.000	satd
fix O2(g)	0.000	0.000	satd

--- Summary of Solid Solutions ---

--- Carbonate-Calcite ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Calcite	5.7893E-01	-0.2374	0.0000	-0.2374
Magnesite	4.9592E-02	-1.3046	0.0000	-1.3046
Rhodochrosite	3.7145E-01	-0.4301	0.0000	-0.4301
Siderite	4.7430E-09	-8.3239	0.0000	-8.3239
Smithsonite	4.7374E-06	-5.3245	0.0000	-5.3245
Strontianite	2.4560E-05	-4.6098	0.0000	-4.6098

Mineral	Log Q/K	Aff, kcal	State
Carbonate-Calcite	-10.339	-14.106	
Calcite	-10.339	-14.106	
Magnesite	-10.339	-14.106	
Rhodochrosite	-10.339	-14.106	
Siderite	-10.339	-14.106	
Smithsonite	-10.339	-14.106	
Strontianite	-10.339	-14.106	

--- Clinoptilolite-hy-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-hy-Ca	9.9850E-01	-0.0007	0.0000	-0.0007
Clinoptilolite-hy-Cs	4.2263E-23	-22.3740	0.0000	-22.3740
Clinoptilolite-hy-K	4.9074E-04	-3.3092	0.0000	-3.3092
Clinoptilolite-hy-Na	1.0115E-03	-2.9950	0.0000	-2.9950
Clinoptilolite-hy-Sr	6.4585E-12	-11.1899	0.0000	-11.1899

Mineral	Log Q/K	Aff, kcal	State

Clinoptilolite-hy-ss	-48.978	-66.820
Clinoptilolite-hy-Ca	-48.978	-66.820
Clinoptilolite-hy-Cs	-48.978	-66.820
Clinoptilolite-hy-K	-48.978	-66.820
Clinoptilolite-hy-Na	-48.978	-66.820
Clinoptilolite-hy-Sr	-48.978	-66.820

--- Clinoptilolite-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-Ca	8.0177E-01	-0.0959	-0.2360	-0.3320
Clinoptilolite-Cs	2.7339E-07	-6.5632	-16.1455	-22.7087
Clinoptilolite-K	8.8519E-02	-1.0530	-2.5903	-3.6433
Clinoptilolite-NH4	5.6746E-54	-53.2461	-130.9853	-184.2314
Clinoptilolite-Na	1.0924E-01	-0.9616	-2.3656	-3.3272
Clinoptilolite-Sr	4.6816E-04	-3.3296	-8.1908	-11.5204

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-ss	-48.648	-66.370	
Clinoptilolite-Ca	-48.648	-66.370	
Clinoptilolite-Cs	-48.648	-66.370	
Clinoptilolite-K	-48.648	-66.370	
Clinoptilolite-NH4	-48.648	-66.370	
Clinoptilolite-Na	-48.648	-66.370	
Clinoptilolite-Sr	-48.648	-66.370	

--- Saponite-tri ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Saponite-Ca	2.3526E-02	-1.6284	1.0911	-0.5374
Saponite-H	9.5815E-01	-0.0186	0.0124	-0.0061
Saponite-K	1.3689E-03	-2.8636	1.9186	-0.9450
Saponite-Mg	1.4950E-02	-1.8254	1.2230	-0.6024
Saponite-Na	2.0029E-03	-2.6983	1.8079	-0.8905

Mineral	Log Q/K	Aff, kcal	State
Saponite-tri	-34.338	-46.847	
Saponite-Ca	-34.338	-46.847	
Saponite-H	-34.338	-46.847	
Saponite-K	-34.338	-46.847	
Saponite-Mg	-34.338	-46.847	
Saponite-Na	-34.338	-46.847	

--- Smectite-di ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Beidellite-Ca	1.7832E-57	-56.7488	38.0217	-18.7271
Beidellite-K	1.0383E-58	-57.9837	38.8491	-19.1346
Beidellite-Mg	1.1331E-57	-56.9457	38.1536	-18.7921
Beidellite-Na	1.5181E-58	-57.8187	38.7385	-19.0802
Montmor-Ca	9.1192E-49	-48.0400	32.1868	-15.8532
Montmor-K	8.6721E-50	-49.0619	32.8715	-16.1904
Montmor-Mg	9.4178E-49	-48.0261	32.1775	-15.8486
Montmor-Na	1.2365E-49	-48.9078	32.7682	-16.1396
Nontronite-Ca	5.6203E-01	-0.2502	0.1677	-0.0826
Nontronite-K	3.2726E-02	-1.4851	0.9950	-0.4901
Nontronite-Mg	3.5739E-01	-0.4469	0.2994	-0.1475
Nontronite-Na	4.7848E-02	-1.3201	0.8845	-0.4356

Mineral	Log Q/K	Aff, kcal	State
Smectite-di	-2.702	-3.687	
Beidellite-Ca	-2.702	-3.687	
Beidellite-K	-2.702	-3.687	
Beidellite-Mg	-2.702	-3.687	
Beidellite-Na	-2.702	-3.687	
Montmor-Ca	-2.702	-3.687	
Montmor-K	-2.702	-3.687	
Montmor-Mg	-2.702	-3.687	
Montmor-Na	-2.702	-3.687	
Nontronite-Ca	-2.702	-3.687	
Nontronite-K	-2.702	-3.687	
Nontronite-Mg	-2.702	-3.687	
Nontronite-Na	-2.702	-3.687	

--- Lanthanide hydroxide ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
La(OH)3	1.3204E-05	-4.8793	0.0000	-4.8793
Ce(OH)3	3.3395E-15	-14.4763	0.0000	-14.4763
Nd(OH)3(c)	3.5568E-01	-0.4489	0.0000	-0.4489
Gd(OH)3	5.7363E-01	-0.2414	0.0000	-0.2414
Sm(OH)3	7.0672E-02	-1.1508	0.0000	-1.1508

Mineral	Log Q/K	Aff, kcal	State
Lanthanide hydroxide	-20.814	-28.396	
La(OH)3	-20.814	-28.396	
Ce(OH)3	-20.814	-28.396	
Nd(OH)3(c)	-20.814	-28.396	
Gd(OH)3	-20.814	-28.396	
Sm(OH)3	-20.814	-28.396	

--- Rhabdophane-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity

LaPO4:H2O	4.1360E-01	-0.3834	0.0000	-0.3834
CePO4:H2O	3.3079E-11	-10.4805	0.0000	-10.4805
NdPO4:H2O	2.2230E-01	-0.6531	0.0000	-0.6531
GdPO4:H2O	1.4273E-01	-0.8455	0.0000	-0.8455
SmPO4:H2O	2.2137E-01	-0.6549	0.0000	-0.6549

Mineral	Log Q/K	Aff, kcal	State
Rhabdophane-ss	-5.929	-8.088	
LaPO4:H2O	-5.929	-8.088	
CePO4:H2O	-5.929	-8.088	
NdPO4:H2O	-5.929	-8.088	
GdPO4:H2O	-5.929	-8.088	
SmPO4:H2O	-5.929	-8.088	

--- Lanthanide fluoride ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaF3:0.5H2O	5.7343E-01	-0.2415	0.0000	-0.2415
CeF3:0.5H2O	7.2685E-11	-10.1386	0.0000	-10.1386
NdF3:0.5H2O	3.8800E-01	-0.4112	0.0000	-0.4112
GdF3:0.5H2O	7.8777E-03	-2.1036	0.0000	-2.1036
SmF3:0.5H2O	3.0691E-02	-1.5130	0.0000	-1.5130

Mineral	Log Q/K	Aff, kcal	State
Lanthanide fluoride	-8.727	-11.906	
LaF3:0.5H2O	-8.727	-11.906	
CeF3:0.5H2O	-8.727	-11.906	
NdF3:0.5H2O	-8.727	-11.906	
GdF3:0.5H2O	-8.727	-11.906	
SmF3:0.5H2O	-8.727	-11.906	

--- Summary of Gases ---

Gas	Fugacity	Log fugacity
Al(g)	2.3719-199	-198.6249
B(g)	8.5558-204	-203.0677
BF3(g)	5.6845E-25	-24.2453
C(g)	3.0917-190	-189.5098
CH4(g)	3.5283-146	-145.4524
CO(g)	6.0395E-49	-48.2190
CO2(g)	3.1623E-04	-3.5000
Ca(g)	1.9761-161	-160.7042
Chlorine	2.8310E-19	-18.5481
Cs(g)	5.0993E-88	-87.2925
Cu(g)	1.7380E-90	-89.7600
Fluorine	4.1910E-73	-72.3777
H2(g)	6.1141E-42	-41.2137
H2O(g)	2.5974E-02	-1.5855
H2S(g)	3.6184-133	-132.4415

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HCl(g)                      6.5266E-14    -13.1853
HF(g)                       2.8342E-09     -8.5476
K(g)                        3.2669E-82    -81.4859
Li(g)                       1.1152-101   -100.9526
Mg(g)                       3.1762-139   -138.4981
Nitrogen                    2.1000E-10     -9.6778
NH3(g)                      1.6704E-64    -63.7772
NO(g)                       4.5631E-21    -20.3407
NO2(g)                      3.1200E-15    -14.5058
Na(g)                       2.6446E-80    -79.5776
O2(g)                       2.0999E-01     -0.6778
Pb(g)                       1.9246E-78    -77.7157
S2(g)                       7.8095-209   -208.1074
SO2(g)                      6.4075E-46    -45.1933
Si(g)                       4.2257-221   -220.3741
SiF4(g)                     2.8448E-19    -18.5460
Ti(g)                       1.6801-231   -230.7747
TiCl4(g)                    2.6868E-66    -65.5708
U(g)                        2.0074-303   -302.6974
U2Cl10(g)                   5.7474-210   -209.2405
U2Cl8(g)                    6.2940-222   -221.2011
U2F10(g)                    1.8145-120   -119.7412
UCl(g)                      1.1676-254   -253.9327
UCl2(g)                     2.0317-204   -203.6921
UCl3(g)                     7.7436-152   -151.1111
UCl4(g)                     1.5981-116   -115.7964
UCl5(g)                     1.6970-118   -117.7703
UCl6(g)                     3.3478-115   -114.4752
UF(g)                       1.0776-239   -238.9676
UF2(g)                      4.2899-194   -193.3676
UF3(g)                      4.2030-142   -141.3764
UF4(g)                      6.0782E-87    -86.2162
UF5(g)                      4.0261E-73    -72.3951
UF6(g)                      2.6260E-73    -72.5807
UO(g)                       1.5854-218   -217.7999
UO2(g)                      2.9372-134   -133.5321
UO2Cl2(g)                   3.6305E-72    -71.4400
UO2F2(g)                    5.5609E-60    -59.2549
UO3(g)                      2.1604E-81    -80.6655
UOF4(g)                     1.8112E-64    -63.7420
Zn(g)                       3.0707E-88    -87.5128



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Stepping to zi=  1.9226E+00, delzi=  1.0000E-09, nord= 0
  time =  2.2227E+04 d, dltime =  1.1561E-05 d
Steps completed =   338, iter =  1, ncorr = 0
Most rapidly changing is zvclg1(MnHPO4                  ) =     -5.1156

Stepping to zi=  1.9226E+00, delzi=  1.0000E-09, nord= 0
  time =  2.2227E+04 d, dltime =  1.1561E-05 d
Steps completed =   339, iter =  1, ncorr = 0
Most rapidly changing is zvclg1(MnHPO4                  ) =     -5.1156

Stepping to zi=  1.9226E+00, delzi=  1.0000E-09, nord= 0
  time =  2.2227E+04 d, dltime =  1.1561E-05 d
Steps completed =   340, iter =  1, ncorr = 0
Most rapidly changing is zvclg1(MnHPO4                  ) =     -5.1156
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Stepping to zi=  1.9226E+00, delzi=  1.0000E-08, nord= 1
  time =  2.2227E+04 d, dltime =  1.1561E-04 d
Steps completed =   341, iter =  1, ncorr = 0
Most rapidly changing is zvclg1(MnHPO4                  ) =     -5.1156

Stepping to zi=  1.9226E+00, delzi=  1.0000E-07, nord= 1
  time =  2.2227E+04 d, dltime =  1.1561E-03 d
Steps completed =   342, iter =  1, ncorr = 0
Most rapidly changing is zvclg1(MnHPO4                  ) =     -5.1156

Stepping to zi=  1.9226E+00, delzi=  1.0000E-06, nord= 2
  time =  2.2227E+04 d, dltime =  1.1561E-02 d
Steps completed =   343, iter =  1, ncorr = 0
Most rapidly changing is zvclg1(MnHPO4                  ) =     -5.1155

Stepping to zi=  1.9226E+00, delzi=  1.0000E-05, nord= 2
  time =  2.2227E+04 d, dltime =  1.1561E-01 d
Steps completed =   344, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(MnHPO4                  ) =     -5.1148

Stepping to zi=  1.9226E+00, delzi=  2.9152E-05, nord= 2
  time =  2.2227E+04 d, dltime =  3.3703E-01 d
Steps completed =   345, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(MnHPO4                  ) =     -5.1128

Stepping to zi=  1.9228E+00, delzi=  1.7538E-04, nord= 2
  time =  2.2229E+04 d, dltime =  2.0275E+00 d
Steps completed =   346, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(MnHPO4                  ) =     -5.1010

Stepping to zi=  1.9245E+00, delzi=  1.7538E-03, nord= 2
  time =  2.2250E+04 d, dltime =  2.0275E+01 d
Steps completed =   347, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(MnHPO4                  ) =     -4.9978

Stepping to zi=  1.9291E+00, delzi=  4.6128E-03, nord= 3
  time =  2.2303E+04 d, dltime =  5.3329E+01 d
Steps completed =   348, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(MnHPO4                  ) =     -4.8057

Stepping to zi=  1.9542E+00, delzi=  2.5058E-02, nord= 3
  time =  2.2593E+04 d, dltime =  2.8969E+02 d
Steps completed =   349, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(MnHPO4                  ) =     -4.3379

Stepping to zi=  1.9886E+00, delzi=  3.4393E-02, nord= 4
  time =  2.2990E+04 d, dltime =  3.9762E+02 d
Steps completed =   350, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(MnHPO4                  ) =     -4.0590

Stepping to zi=  2.0582E+00, delzi=  6.9575E-02, nord= 4
  time =  2.3795E+04 d, dltime =  8.0435E+02 d
Steps completed =   351, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(MnHPO4                  ) =     -3.7689

Stepping to zi=  2.1924E+00, delzi=  1.3419E-01, nord= 5
  time =  2.5346E+04 d, dltime =  1.5514E+03 d
Steps completed =   352, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(MnHPO4                  ) =     -3.4847

Stepping to zi=  2.3805E+00, delzi=  1.8815E-01, nord= 6
  time =  2.7521E+04 d, dltime =  2.1752E+03 d
Steps completed =   353, iter =  3, ncorr = 0
```

```
Most rapidly changing is zvclg1(Pu++++                  ) =    -30.9574

Stepping to zi=  2.6299E+00, delzi=  2.4940E-01, nord= 6
  time =  3.0404E+04 d, dltime =  2.8833E+03 d
Steps completed =   354, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -30.6036

Stepping to zi=  2.9057E+00, delzi=  2.7576E-01, nord= 6
  time =  3.3593E+04 d, dltime =  3.1881E+03 d
Steps completed =   355, iter = 12, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -30.2249

Stepping to zi=  3.2111E+00, delzi=  3.0541E-01, nord= 6
  time =  3.7123E+04 d, dltime =  3.5308E+03 d
Steps completed =   356, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -29.8251

Stepping to zi=  3.5509E+00, delzi=  3.3977E-01, nord= 6
  time =  4.1051E+04 d, dltime =  3.9281E+03 d
Steps completed =   357, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -29.4085

Stepping to zi=  3.9320E+00, delzi=  3.8117E-01, nord= 6
  time =  4.5458E+04 d, dltime =  4.4067E+03 d
Steps completed =   358, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -28.9787

Stepping to zi=  4.3656E+00, delzi=  4.3360E-01, nord= 6
  time =  5.0471E+04 d, dltime =  5.0128E+03 d
Steps completed =   359, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -28.5372

Stepping to zi=  4.8694E+00, delzi=  5.0383E-01, nord= 6
  time =  5.6296E+04 d, dltime =  5.8247E+03 d
Steps completed =   360, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -28.0829

Stepping to zi=  5.4742E+00, delzi=  6.0471E-01, nord= 6
  time =  6.3287E+04 d, dltime =  6.9911E+03 d
Steps completed =   361, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -27.6104

Stepping to zi=  6.2472E+00, delzi=  7.7305E-01, nord= 6
  time =  7.2224E+04 d, dltime =  8.9372E+03 d
Steps completed =   362, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -27.1021

Stepping to zi=  6.9454E+00, delzi=  6.9818E-01, nord= 6
  time =  8.0296E+04 d, dltime =  8.0717E+03 d
Steps completed =   363, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -26.7177

Stepping to zi=  7.6327E+00, delzi=  6.8732E-01, nord= 6
  time =  8.8242E+04 d, dltime =  7.9461E+03 d
Steps completed =   364, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -26.3953

Stepping to zi=  8.3547E+00, delzi=  7.2200E-01, nord= 6
  time =  9.6589E+04 d, dltime =  8.3471E+03 d
Steps completed =   365, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -26.1060

Stepping to zi=  9.1379E+00, delzi=  7.8318E-01, nord= 6
```

```
  time =  1.0564E+05 d, dltime =  9.0543E+03 d
Steps completed =   366, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -25.8394

Stepping to zi=  1.0000E+01, delzi=  8.6211E-01, nord= 6
  time =  1.1561E+05 d, dltime =  9.9669E+03 d
Steps completed =   367, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -25.5926

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                    Reaction progress        =  1.00000000000000E+01
                    Log of reaction progress =       1.0000000



                    Time =  9.989E+09 sec
                         =  1.156E+05 days
                         =  3.165E+02 years

                    Log sec =       10.000
                    Log days =       5.063
                    Log years =      2.500

                    Temperature    =     25.000 degrees C
                    total pressure =      1.013 bars


Step size is limited by the print requirement


                              --- Reactant Summary ---


    Reactant                  Moles     Delta moles    Mass, g    Delta Mass, g

 carbon steel               1.0011E+01   9.9887E+00   5.4759E+02   5.4636E+02
 Alloy-22                   1.9989E+01   1.1287E-02   1.1971E+03   6.7597E-01


               Current total mass =  1.74467E+03 grams
               Delta total mass   =  5.47035E+02 grams
               Delta total volume =      0.00000 cc


    Reactant                Rel. Rate      Rate         Rate
                             mol/mol       mol/s      mol/s/cm2

 carbon steel               9.9887E-01   1.0000E-09   1.0000E-11
 Alloy-22                   1.1287E-03   1.1300E-12   1.1300E-14


    Reactant                  Affinity   Surface Area
                              kcal/mol     mol/s/cm2

 carbon steel                999.00000   1.0000E+02
 Alloy-22                    999.00000   1.0000E+02


    Reactant                Rate Constants, mol/s/cm2
```

```
carbon steel
                    Forward    1.0000E-11
Alloy-22
                    Forward    1.1300E-14

        Affinity of the overall irreversible reaction=     0.000 kcal
        Contributions from irreversible reactions
        with no thermodynamic data are not included


    --- Element Totals for the Aqueous Solution ---
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Element	mg/kg soln.	Molality	Moles
O	8.872873E+05	5.556175E+01	5.555421E+01
Al	3.993053E-02	1.482701E-06	1.482500E-06
B	1.336936E-01	1.238968E-05	1.238800E-05
Ba	1.370880E-05	1.000136E-10	1.000000E-10
Ca	1.297748E+01	3.244140E-04	3.243700E-04
Ce	1.398712E-19	1.000136E-24	1.000000E-24
Cl	7.127749E+00	2.014273E-04	2.014000E-04
Cr	1.500631E+02	2.891469E-03	2.891076E-03
Cs	1.326742E-05	1.000136E-10	1.000000E-10
Cu	6.660719E-10	1.050143E-14	1.050000E-14
F	2.176273E+00	1.147656E-04	1.147500E-04
Fe	3.204791E-01	5.749303E-06	5.748523E-06
Gd	1.569764E-09	1.000136E-14	1.000000E-14
H	1.116989E+05	1.110272E+02	1.110121E+02
C	1.278053E-01	1.066068E-05	1.065924E-05
P	1.000649E+01	3.236707E-04	3.236267E-04
K	5.031391E+00	1.289275E-04	1.289100E-04
La	1.386638E-09	1.000136E-14	1.000000E-14
Li	6.928922E-07	1.000136E-10	1.000000E-10
Mg	2.006502E+00	8.271023E-05	8.269900E-05
Mn	7.160695E+00	1.305862E-04	1.305685E-04
Mo	1.091413E+02	1.139738E-03	1.139583E-03
N	1.985496E+00	1.420193E-04	1.420000E-04
Na	4.572052E+01	1.992470E-03	1.992200E-03
Nd	1.439890E-09	1.000136E-14	1.000000E-14
Ni	3.756966E+02	6.413403E-03	6.412533E-03
Pb	2.068394E-05	1.000136E-10	1.000000E-10
Pu	2.435754E-09	1.000136E-14	1.000000E-14
S	2.788701E+02	8.713095E-03	8.711912E-03
Si	2.807804E+00	1.001613E-04	1.001477E-04
Sm	1.500984E-09	1.000136E-14	1.000000E-14
Sr	8.746753E-06	1.000136E-10	1.000000E-10
Ti	4.779668E-06	1.000136E-10	1.000000E-10
U	2.376147E-09	1.000136E-14	1.000000E-14
V	2.387804E+00	4.696154E-05	4.695516E-05
Zn	6.527621E-06	1.000136E-10	1.000000E-10
Zr	9.106526E-16	1.000136E-20	1.000000E-20

Single ion activities and activity coefficients are here defined
with respect to the modified NBS pH scale

	pH	Eh	pe
modified NBS pH scale	2.3238	1.0816	1.8283E+01

rational pH scale 2.2609 1.0853 1.8346E+01

pHCl = 6.0925

Oxygen fugacity = 2.09991E-01
Log oxygen fugacity = -0.67780

Activity of water = 0.99957
Log activity of water = -0.00019

Ionic strength = 3.198545E-02 molal
Sum of molalities = 0.0269621866247
Osmotic coefficient = 0.88266

Mass of solution = 1.001743 kg
Mass of solutes = 0.001879 kg
Conc. of solutes = 0.187564 per cent (w/w)

Moles of solvent H2O = 5.55009E+01
Mass of solvent H2O = 9.99864E-01 kg

Species	Molality	Log molality	Log gamma	Log activity
SO4--	5.8319E-03	-2.2342	-0.2862	-2.5204
H+	5.4835E-03	-2.2609	-0.0628	-2.3238
Ni++	5.2882E-03	-2.2767	-0.2778	-2.5545
HCrO4-	2.3582E-03	-2.6274	-0.0684	-2.6958
Na+	1.9542E-03	-2.7090	-0.0771	-2.7861
HSO4-	1.5971E-03	-2.7967	-0.0684	-2.8651
MoO4--	1.1397E-03	-2.9432	-0.2793	-3.2225
NiSO4(aq)	1.1242E-03	-2.9492	0.0000	-2.9492
Ca++	2.6900E-04	-3.5702	-0.2778	-3.8480
Cr2O7--	2.6617E-04	-3.5748	-0.2862	-3.8611
O2(aq)	2.6335E-04	-3.5795	0.0034	-3.5761
Cl-	2.0110E-04	-3.6966	-0.0721	-3.7687
H2PO4-	1.9906E-04	-3.7010	-0.0684	-3.7694
NO3-	1.4088E-04	-3.8512	-0.0721	-3.9233
K+	1.2611E-04	-3.8992	-0.0808	-3.9800
H3PO4(aq)	1.1927E-04	-3.9235	0.0000	-3.9235
SiO2(aq)	1.0016E-04	-3.9993	0.0000	-3.9993
Mn++	9.5902E-05	-4.0182	-0.2778	-4.2959
HF(aq)	9.4751E-05	-4.0234	0.0000	-4.0234
Mg++	5.7760E-05	-4.2384	-0.2561	-4.4945
CaSO4(aq)	5.5294E-05	-4.2573	0.0000	-4.2573
NaSO4-	3.8187E-05	-4.4181	-0.0684	-4.4865
VO2+	3.8071E-05	-4.4194	-0.0771	-4.4965
MnSO4(aq)	3.4399E-05	-4.4634	0.0000	-4.4634
MgSO4(aq)	2.4933E-05	-4.6032	0.0000	-4.6032
F-	1.5939E-05	-4.7975	-0.0702	-4.8678
B(OH)3(aq)	1.2390E-05	-4.9069	0.0000	-4.9069
CO2(aq)	1.0659E-05	-4.9723	0.0034	-4.9689
FeHPO4+	4.8898E-06	-5.3107	-0.0771	-5.3878
VO2SO4-	4.2808E-06	-5.3685	-0.0684	-5.4369
VO(OH)3(aq)	3.3645E-06	-5.4731	0.0000	-5.4731
KSO4-	2.8029E-06	-5.5524	-0.0684	-5.6208
AlF2+	1.0162E-06	-5.9930	-0.0771	-6.0701
NiNO3+	9.9847E-07	-6.0007	-0.0771	-6.0777
VO2F(aq)	9.6779E-07	-6.0142	0.0000	-6.0142

H2CrO4(aq)	4.5816E-07	-6.3390	0.0000	-6.3390
Fe+++	4.2976E-07	-6.3668	-0.5499	-6.9167
FeOH++	3.2621E-07	-6.4865	-0.2966	-6.7831
AlF++	3.1212E-07	-6.5057	-0.2966	-6.8023
CrO4--	2.6288E-07	-6.5802	-0.2862	-6.8665
MnH2PO4+	2.2998E-07	-6.6383	-0.0771	-6.7154
HCl(aq)	1.7280E-07	-6.7625	0.0000	-6.7625
HPO3F-	1.5888E-07	-6.7989	-0.0684	-6.8674
AlF3(aq)	1.4527E-07	-6.8378	0.0000	-6.8378
Cr+++	1.3533E-07	-6.8686	-0.5499	-7.4185
H2VO4-	1.3393E-07	-6.8731	-0.0684	-6.9415
CaNO3+	1.0134E-07	-6.9942	-0.0771	-7.0713
VO2(OH)2-	8.3003E-08	-7.0809	-0.0684	-7.1493
NiCl+	5.7239E-08	-7.2423	-0.0771	-7.3194
VO2HPO4-	5.6348E-08	-7.2491	-0.0684	-7.3175
NaCl(aq)	4.6582E-08	-7.3318	0.0000	-7.3318
FeF++	4.4532E-08	-7.3513	-0.2966	-7.6480
FeSO4+	3.6944E-08	-7.4325	-0.0771	-7.5095
HNO3(aq)	2.8215E-08	-7.5495	0.0000	-7.5495
H2F2(aq)	2.4264E-08	-7.6150	0.0000	-7.6150
MnF+	2.2048E-08	-7.6566	-0.0771	-7.7337
MnCl+	2.0593E-08	-7.6863	-0.0771	-7.7633
CrO3Cl-	2.0555E-08	-7.6871	-0.0684	-7.7555
Fe(OH)2+	1.3725E-08	-7.8625	-0.0771	-7.9396
MgF+	1.1673E-08	-7.9328	-0.0771	-8.0099
MnNO3+	1.1425E-08	-7.9421	-0.0771	-8.0192
CaF+	1.1041E-08	-7.9570	-0.0771	-8.0341
KHSO4(aq)	9.7596E-09	-8.0106	0.0000	-8.0106
H2SO4(aq)	6.4739E-09	-8.1888	0.0000	-8.1888
FeF2+	5.9517E-09	-8.2254	-0.0771	-8.3024
CaCl+	5.8176E-09	-8.2353	-0.0771	-8.3123
MgCl+	4.7747E-09	-8.3211	-0.0771	-8.3981
VO2F2-	4.4303E-09	-8.3536	-0.0684	-8.4220
PO3F--	4.3967E-09	-8.3569	-0.2862	-8.6431
HPO4--	4.3168E-09	-8.3648	-0.2862	-8.6511
AlSO4+	4.2864E-09	-8.3679	-0.0771	-8.4450
Al+++	4.1246E-09	-8.3846	-0.5499	-8.9345
NaF(aq)	2.2313E-09	-8.6514	0.0000	-8.6514
Fe(SO4)2-	2.1114E-09	-8.6754	-0.0684	-8.7438
CrOH++	1.5909E-09	-8.7983	-0.2966	-9.0950
HCO3-	1.1978E-09	-8.9216	-0.0684	-8.9900
AlF4-	5.7922E-10	-9.2372	-0.0684	-9.3056
KCl(aq)	5.7109E-10	-9.2433	0.0000	-9.2433
MnHPO4(aq)	4.2954E-10	-9.3670	0.0000	-9.3670
HF2-	3.6311E-10	-9.4400	-0.0684	-9.5084
FeNO3++	2.8619E-10	-9.5433	-0.2966	-9.8400
H2P2O7--	2.5566E-10	-9.5923	-0.2862	-9.8786
CaHPO4(aq)	1.7415E-10	-9.7591	0.0000	-9.7591
Ti(OH)4(aq)	1.0001E-10	-9.9999	0.0000	-9.9999
Cs+	1.0000E-10	-10.0000	-0.0827	-10.0827

--- Summary of Solid Product Phases---

Product	Log moles	Moles	Mass, g	Volume, cc
Hematite	0.6812	4.7999E+00	7.6650E+02	1.4531E+02
MnHPO4	-2.1720	6.7297E-03	1.0156E+00	0.0000E+00
Pyrolusite	-1.0173	9.6086E-02	8.3534E+00	4.8043E+01
Quartz	-1.2640	5.4456E-02	3.2720E+00	1.2355E+00
fix CO2(g)	4.0000	1.0000E+04	4.4011E+05	0.0000E+00
fix O2(g)	3.9997	9.9924E+03	3.1974E+05	0.0000E+00

	Mass, grams	Volume, cc
Created	7.606316E+05	1.945899E+02
Destroyed	5.470349E+02	0.000000E+00
Net	7.600846E+05	1.945899E+02

Warning-- these volume totals may be incomplete because of missing partial molar volume data in the data base

--- Summary of Pure Mineral Saturation States ---

Mineral	Log Q/K	Aff, kcal	State
AlF3	-6.329	-8.634	
Anglesite	-4.966	-6.774	
Anhydrite	-2.062	-2.813	
BaCrO4	-7.225	-9.856	
BaZrO3	69.974	95.464	ssatd
Barite	-2.840	-3.874	
Bassanite	-2.707	-3.693	
Boric_acid	-4.749	-6.478	
CaSO4:0.5H2O(beta)	-2.875	-3.922	
CaZrO3	130.446	177.965	ssatd
Celestite	-7.250	-9.892	
Chalcedony	-0.271	-0.370	
Coesite	-0.810	-1.105	
CrO2	-1.411	-1.925	
Cristobalite(alpha)	-0.551	-0.751	
Cristobalite(beta)	-0.994	-1.356	
Crocoite	-4.447	-6.067	
Epsomite	-5.054	-6.895	
Fe(OH)3	-5.602	-7.642	
FeF3	-2.281	-3.112	
Fluorite	-3.547	-4.838	
Goethite	-0.480	-0.655	
Gypsum	-1.886	-2.574	
Hematite	0.000	0.000	satd
Hexahydrite	-5.289	-7.216	
Ice	-0.139	-0.189	
Jarosite	-6.459	-8.812	
Kieserite	-6.748	-9.206	
Manganite	-4.459	-6.084	
Mirabilite	-6.955	-9.488	
MnHPO4	0.000	0.000	satd
MnO2(gamma)	-1.518	-2.071	
Morenosite	-3.062	-4.178	
NiSO4:6H2O(alpha)	-3.069	-4.187	
Nontronite-Ca	-3.503	-4.779	
Nontronite-H	-2.677	-3.652	
Nontronite-K	-3.899	-5.319	
Nontronite-Mg	-3.572	-4.873	
Nontronite-Na	-3.843	-5.243	
Pentahydrite	-5.629	-7.679	
Pyrolusite	0.000	0.000	satd
Quartz	0.000	0.000	satd
Rutile	-0.354	-0.483	
Sellaite	-4.846	-6.611	
Shcherbinaite	-2.894	-3.948	

SiO2(am)	-1.286	-1.754	
SrZrO3	106.852	145.776	ssatd
Starkeyite	-6.016	-8.207	
Strengite	-1.901	-2.594	
Tridymite	-0.172	-0.234	
fix CO2(g)	0.000	0.000	satd
fix O2(g)	0.000	0.000	satd

--- Summary of Solid Solutions ---

--- Carbonate-Calcite ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Calcite	2.4810E-02	-1.6054	0.0000	-1.6054
Magnesite	2.0101E-03	-2.6968	0.0000	-2.6968
Rhodochrosite	9.7318E-01	-0.0118	0.0000	-0.0118
Siderite	1.2426E-08	-7.9057	0.0000	-7.9057
Smithsonite	2.2364E-07	-6.6505	0.0000	-6.6505
Strontianite	9.9545E-07	-6.0020	0.0000	-6.0020

Mineral	Log Q/K	Aff, kcal	State
Carbonate-Calcite	-10.758	-14.676	
Calcite	-10.758	-14.676	
Magnesite	-10.758	-14.676	
Rhodochrosite	-10.758	-14.676	
Siderite	-10.758	-14.676	
Smithsonite	-10.758	-14.676	
Strontianite	-10.758	-14.676	

--- Clinoptilolite-hy-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-hy-Ca	9.9798E-01	-0.0009	0.0000	-0.0009
Clinoptilolite-hy-Cs	5.8225E-23	-22.2349	0.0000	-22.2349
Clinoptilolite-hy-K	6.5055E-04	-3.1867	0.0000	-3.1867
Clinoptilolite-hy-Na	1.3742E-03	-2.8620	0.0000	-2.8620
Clinoptilolite-hy-Sr	5.8570E-12	-11.2323	0.0000	-11.2323

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-hy-ss	-56.500	-77.082	
Clinoptilolite-hy-Ca	-56.500	-77.082	
Clinoptilolite-hy-Cs	-56.500	-77.082	
Clinoptilolite-hy-K	-56.500	-77.082	
Clinoptilolite-hy-Na	-56.500	-77.082	
Clinoptilolite-hy-Sr	-56.500	-77.082	

--- Clinoptilolite-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-Ca	7.8790E-01	-0.1035	-0.2547	-0.3582
Clinoptilolite-Cs	2.9464E-07	-6.5307	-16.0655	-22.5962
Clinoptilolite-K	9.4354E-02	-1.0252	-2.5221	-3.5473
Clinoptilolite-NH4	2.6811E-52	-51.5717	-126.8663	-178.4380
Clinoptilolite-Na	1.1730E-01	-0.9307	-2.2895	-3.2202
Clinoptilolite-Sr	4.4739E-04	-3.3493	-8.2393	-11.5886

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-ss	-56.144	-76.596	
Clinoptilolite-Ca	-56.144	-76.596	
Clinoptilolite-Cs	-56.144	-76.596	
Clinoptilolite-K	-56.144	-76.596	
Clinoptilolite-NH4	-56.144	-76.596	
Clinoptilolite-Na	-56.144	-76.596	
Clinoptilolite-Sr	-56.144	-76.596	

--- Saponite-tri ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Saponite-Ca	3.1233E-03	-2.5054	1.6786	-0.8268
Saponite-H	9.9446E-01	-0.0024	0.0016	-0.0008
Saponite-K	1.9710E-04	-3.7053	2.4826	-1.2228
Saponite-Mg	1.9302E-03	-2.7144	1.8186	-0.8957
Saponite-Na	2.9050E-04	-3.5369	2.3697	-1.1672

Mineral	Log Q/K	Aff, kcal	State
Saponite-tri	-40.198	-54.842	
Saponite-Ca	-40.198	-54.842	
Saponite-H	-40.198	-54.842	
Saponite-K	-40.198	-54.842	
Saponite-Mg	-40.198	-54.842	
Saponite-Na	-40.198	-54.842	

--- Smectite-di ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Beidellite-Ca	3.0220E-65	-64.5197	43.2282	-21.2915
Beidellite-K	1.9084E-66	-65.7193	44.0320	-21.6874
Beidellite-Mg	1.8676E-65	-64.7287	43.3682	-21.3605
Beidellite-Na	2.8108E-66	-65.5512	43.9193	-21.6319
Montmor-Ca	8.7771E-56	-55.0567	36.8880	-18.1687
Montmor-K	9.0522E-57	-56.0432	37.5490	-18.4943
Montmor-Mg	8.8156E-56	-55.0547	36.8867	-18.1681
Montmor-Na	1.3002E-56	-55.8860	37.4436	-18.4424
Nontronite-Ca	5.6351E-01	-0.2491	0.1669	-0.0822

Nontronite-K	3.5586E-02	-1.4487	0.9706	-0.4781
Nontronite-Mg	3.4850E-01	-0.4578	0.3067	-0.1511
Nontronite-Na	5.2412E-02	-1.2806	0.8580	-0.4226

Mineral	Log Q/K	Aff, kcal	State
Smectite-di	-3.421	-4.667	
Beidellite-Ca	-3.421	-4.667	
Beidellite-K	-3.421	-4.667	
Beidellite-Mg	-3.421	-4.667	
Beidellite-Na	-3.421	-4.667	
Montmor-Ca	-3.421	-4.667	
Montmor-K	-3.421	-4.667	
Montmor-Mg	-3.421	-4.667	
Montmor-Na	-3.421	-4.667	
Nontronite-Ca	-3.421	-4.667	
Nontronite-K	-3.421	-4.667	
Nontronite-Mg	-3.421	-4.667	
Nontronite-Na	-3.421	-4.667	

--- Lanthanide hydroxide ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
La(OH)3	1.2723E-05	-4.8954	0.0000	-4.8954
Ce(OH)3	3.5204E-15	-14.4534	0.0000	-14.4534
Nd(OH)3(c)	3.4321E-01	-0.4644	0.0000	-0.4644
Gd(OH)3	5.8967E-01	-0.2294	0.0000	-0.2294
Sm(OH)3	6.7103E-02	-1.1733	0.0000	-1.1733

Mineral	Log Q/K	Aff, kcal	State
Lanthanide hydroxide	-23.613	-32.215	
La(OH)3	-23.613	-32.215	
Ce(OH)3	-23.613	-32.215	
Nd(OH)3(c)	-23.613	-32.215	
Gd(OH)3	-23.613	-32.215	
Sm(OH)3	-23.613	-32.215	

--- Rhabdophane-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaPO4:H2O	4.1088E-01	-0.3863	0.0000	-0.3863
CePO4:H2O	3.5951E-11	-10.4443	0.0000	-10.4443
NdPO4:H2O	2.2115E-01	-0.6553	0.0000	-0.6553
GdPO4:H2O	1.5126E-01	-0.8203	0.0000	-0.8203
SmPO4:H2O	2.1670E-01	-0.6641	0.0000	-0.6641

Mineral	Log Q/K	Aff, kcal	State
Rhabdophane-ss	-8.741	-11.925	

LaPO4:H2O	-8.741	-11.925
CePO4:H2O	-8.741	-11.925
NdPO4:H2O	-8.741	-11.925
GdPO4:H2O	-8.741	-11.925
SmPO4:H2O	-8.741	-11.925

--- Lanthanide fluoride ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaF3:0.5H2O	5.7307E-01	-0.2418	0.0000	-0.2418
CeF3:0.5H2O	7.9470E-11	-10.0998	0.0000	-10.0998
NdF3:0.5H2O	3.8831E-01	-0.4108	0.0000	-0.4108
GdF3:0.5H2O	8.3990E-03	-2.0758	0.0000	-2.0758
SmF3:0.5H2O	3.0224E-02	-1.5196	0.0000	-1.5196

Mineral	Log Q/K	Aff, kcal	State
Lanthanide fluoride	-10.811	-14.750	
LaF3:0.5H2O	-10.811	-14.750	
CeF3:0.5H2O	-10.811	-14.750	
NdF3:0.5H2O	-10.811	-14.750	
GdF3:0.5H2O	-10.811	-14.750	
SmF3:0.5H2O	-10.811	-14.750	

--- Summary of Gases ---

Gas	Fugacity	Log fugacity
Al(g)	1.2379-200	-199.9073
B(g)	8.5603-204	-203.0675
BF3(g)	3.0583E-24	-23.5145
C(g)	3.0917-190	-189.5098
CH4(g)	3.5264-146	-145.4527
CO(g)	6.0395E-49	-48.2190
CO2(g)	3.1623E-04	-3.5000
Ca(g)	3.2324-163	-162.4905
Chlorine	1.0636E-17	-16.9732
Cs(g)	7.1513E-89	-88.1456
Cu(g)	3.2678E-92	-91.4857
Fluorine	1.2863E-72	-71.8906
H2(g)	6.1124E-42	-41.2138
H2O(g)	2.5967E-02	-1.5856
H2S(g)	4.3981-131	-130.3567
HCl(g)	3.9998E-13	-12.3980
HF(g)	4.9646E-09	-8.3041
K(g)	4.5313E-83	-82.3438
Li(g)	1.5749-102	-101.8028
Mg(g)	4.9139-141	-140.3086
Nitrogen	7.8259E-09	-8.1065
NH3(g)	1.0193E-63	-62.9917
NO(g)	2.7856E-20	-19.5551
NO2(g)	1.9047E-14	-13.7202
Na(g)	3.6952E-81	-80.4324
O2(g)	2.0999E-01	-0.6778

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Pb(g)                        3.3777E-80    -79.4714
S2(g)                        1.1544-204   -203.9376
SO2(g)                       7.7902E-44    -43.1084
Si(g)                        4.2257-221   -220.3741
SiF4(g)                      2.6799E-18    -17.5719
Ti(g)                        1.6812-231   -230.7744
TiCl4(g)                     3.7944E-63    -62.4209
U(g)                         3.1385-304   -303.5033
U2Cl10(g)                    1.0513-203   -202.9783
U2Cl8(g)                     3.0646-217   -216.5136
U2F10(g)                     1.2082-119   -118.9179
UCl(g)                       1.1189-254   -253.9512
UCl2(g)                      1.1934-203   -202.9232
UCl3(g)                      2.7878-150   -149.5547
UCl4(g)                      3.5265-114   -113.4527
UCl5(g)                      2.2952-115   -114.6392
UCl6(g)                      2.7752-111   -110.5567
UF(g)                        2.9515-240   -239.5300
UF2(g)                       2.0586-194   -193.6864
UF3(g)                       3.5335-142   -141.4518
UF4(g)                       8.9523E-87    -86.0481
UF5(g)                       1.0389E-72    -71.9834
UF6(g)                       1.1871E-72    -71.9255
UO(g)                        2.4787-219   -218.6058
UO2(g)                       4.5922-135   -134.3380
UO2Cl2(g)                    2.1325E-71    -70.6711
UO2F2(g)                     2.6686E-60    -59.5737
UO3(g)                       3.3777E-82    -81.4714
UOF4(g)                      2.6677E-64    -63.5739
Zn(g)                        5.5329E-90    -89.2570



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Stepping to zi=  1.0964E+01, delzi=  9.6387E-01, nord= 6
  time =  1.2675E+05 d, dltime =  1.1143E+04 d
Steps completed =   368, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -25.3632

Stepping to zi=  1.2041E+01, delzi=  1.0770E+00, nord= 6
  time =  1.3920E+05 d, dltime =  1.2451E+04 d
Steps completed =   369, iter =  7, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -25.1524

Stepping to zi=  1.3239E+01, delzi=  1.1985E+00, nord= 6
  time =  1.5306E+05 d, dltime =  1.3856E+04 d
Steps completed =   370, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -24.9606

Stepping to zi=  1.4573E+01, delzi=  1.3338E+00, nord= 6
  time =  1.6848E+05 d, dltime =  1.5420E+04 d
Steps completed =   371, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -24.7862

Stepping to zi=  1.6060E+01, delzi=  1.4868E+00, nord= 6
  time =  1.8567E+05 d, dltime =  1.7189E+04 d
Steps completed =   372, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -24.6268

Stepping to zi=  1.7721E+01, delzi=  1.6609E+00, nord= 6
```

```
  time =  2.0487E+05 d, dltime =  1.9202E+04 d
Steps completed =   373, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -24.4795

Stepping to zi=  1.9580E+01, delzi=  1.8592E+00, nord= 6
  time =  2.2637E+05 d, dltime =  2.1495E+04 d
Steps completed =   374, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -24.3417

Stepping to zi=  2.0000E+01, delzi=  4.1986E-01, nord= 6
  time =  2.3122E+05 d, dltime =  4.8540E+03 d
Steps completed =   375, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -24.3136

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                    Reaction progress        =  2.00000000000000E+01
                    Log of reaction progress =       1.3010300



                    Time =  1.998E+10 sec
                         =  2.312E+05 days
                         =  6.330E+02 years

                    Log sec =       10.301
                    Log days =       5.364
                    Log years =      2.801

                    Temperature    =     25.000 degrees C
                    total pressure =      1.013 bars


Step size is limited by the print requirement


                              --- Reactant Summary ---


    Reactant                  Moles     Delta moles    Mass, g    Delta Mass, g

 carbon steel               2.2574E-02   1.9977E+01   1.2348E+00   1.0927E+03
 Alloy-22                   1.9977E+01   2.2574E-02   1.1964E+03   1.3519E+00


                Current total mass =  1.19764E+03 grams
                Delta total mass   =  1.09407E+03 grams
                Delta total volume =      0.00000 cc


    Reactant                Rel. Rate      Rate         Rate
                             mol/mol       mol/s      mol/s/cm2

 carbon steel               9.9887E-01   1.0000E-09   1.0000E-11
 Alloy-22                   1.1287E-03   1.1300E-12   1.1300E-14


    Reactant                  Affinity   Surface Area
                              kcal/mol     mol/s/cm2

 carbon steel                999.00000   1.0000E+02
```

```
Alloy-22                    999.00000   1.0000E+02


   Reactant                Rate Constants, mol/s/cm2

carbon steel
                  Forward    1.0000E-11
Alloy-22
                  Forward    1.1300E-14


        Affinity of the overall irreversible reaction=     0.000 kcal
        Contributions from irreversible reactions
        with no thermodynamic data are not included


    --- Element Totals for the Aqueous Solution ---

 Element        mg/kg soln.          Molality             Moles

    O          8.865404E+05        5.561111E+01        5.559508E+01
    Al         3.986758E-02        1.482928E-06        1.482500E-06
    B          1.334829E-01        1.239157E-05        1.238800E-05
    Ba         1.368719E-05        1.000288E-10        1.000000E-10
    Ca         1.295702E+01        3.244636E-04        3.243700E-04
    Ce         1.396507E-19        1.000288E-24        1.000000E-24
    Cl         7.116513E+00        2.014581E-04        2.014000E-04
    Cr         2.996352E+02        5.783475E-03        5.781807E-03
    Cs         1.324650E-05        1.000288E-10        1.000000E-10
    Cu         6.650220E-10        1.050303E-14        1.050000E-14
    F          2.172842E+00        1.147831E-04        1.147500E-04
    Fe         8.881070E-01        1.595998E-05        1.595537E-05
    Gd         1.567289E-09        1.000288E-14        1.000000E-14
    H          1.115156E+05        1.110370E+02        1.110050E+02
    C          1.267583E-01        1.059166E-05        1.058861E-05
    P          7.325643E+00        2.373660E-04        2.372976E-04
    K          5.023460E+00        1.289472E-04        1.289100E-04
    La         1.384452E-09        1.000288E-14        1.000000E-14
    Li         6.917999E-07        1.000288E-10        1.000000E-10
    Mg         2.003339E+00        8.272285E-05        8.269900E-05
    Mn         3.250700E+01        5.938413E-04        5.936700E-04
    Mo         2.179386E+02        2.279823E-03        2.279166E-03
    N          1.982366E+00        1.420410E-04        1.420000E-04
    Na         4.564845E+01        1.992775E-03        1.992200E-03
    Nd         1.437620E-09        1.000288E-14        1.000000E-14
    Ni         7.502088E+02        1.282876E-02        1.282507E-02
    Pb         2.065134E-05        1.000288E-10        1.000000E-10
    Pu         2.431915E-09        1.000288E-14        1.000000E-14
    S          5.507394E+02        1.723725E-02        1.723228E-02
    Si         2.802950E+00        1.001613E-04        1.001324E-04
    Sm         1.498618E-09        1.000288E-14        1.000000E-14
    Sr         8.732965E-06        1.000288E-10        1.000000E-10
    Ti         4.772134E-06        1.000288E-10        1.000000E-10
    U          2.372401E-09        1.000288E-14        1.000000E-14
    V          4.768069E+00        9.393719E-05        9.391010E-05
    Zn         6.517332E-06        1.000288E-10        1.000000E-10
    Zr         9.092171E-16        1.000288E-20        1.000000E-20

 Single ion activities and activity coefficients are here defined
 with respect to the modified NBS pH scale
```

	pH	Eh	pe
modified NBS pH scale	2.0406	1.0983	1.8566E+01
rational pH scale	1.9641	1.1028	1.8643E+01

pHCl = 5.8287

Oxygen fugacity = 2.09991E-01
Log oxygen fugacity = -0.67780

Activity of water = 0.99924
Log activity of water = -0.00033

Ionic strength = 5.880049E-02 molal
Sum of molalities = 0.0494650125824
Osmotic coefficient = 0.85806

Mass of solution = 1.003325 kg
Mass of solutes = 0.003613 kg
Conc. of solutes = 0.360110 per cent (w/w)

Moles of solvent H2O = 5.54924E+01
Mass of solvent H2O = 9.99712E-01 kg

Species	Molality	Log molality	Log gamma	Log activity
H+	1.0861E-02	-1.9641	-0.0765	-2.0406
Ni++	1.0209E-02	-1.9910	-0.3466	-2.3376
SO4--	9.7761E-03	-2.0098	-0.3602	-2.3701
HSO4-	4.5008E-03	-2.3467	-0.0849	-2.4316
HCrO4-	4.0507E-03	-2.3925	-0.0849	-2.4774
NiSO4(aq)	2.6184E-03	-2.5820	0.0000	-2.5820
MoO4--	2.2798E-03	-2.6421	-0.3492	-2.9913
Na+	1.9397E-03	-2.7123	-0.0983	-2.8106
Cr2O7--	8.6348E-04	-3.0637	-0.3602	-3.4240
Mn++	4.1403E-04	-3.3830	-0.3466	-3.7295
O2(aq)	2.6166E-04	-3.5823	0.0062	-3.5761
Ca++	2.5991E-04	-3.5852	-0.3466	-3.9317
Cl-	2.0085E-04	-3.6971	-0.0909	-3.7881
MnSO4(aq)	1.7918E-04	-3.7467	0.0000	-3.7467
NO3-	1.4021E-04	-3.8532	-0.0909	-3.9441
K+	1.2506E-04	-3.9029	-0.1044	-4.0073
H3PO4(aq)	1.1923E-04	-3.9236	0.0000	-3.9236
H2PO4-	1.0769E-04	-3.9678	-0.0849	-4.0527
HF(aq)	1.0158E-04	-3.9932	0.0000	-3.9932
SiO2(aq)	1.0016E-04	-3.9993	0.0000	-3.9993
VO2+	7.7218E-05	-4.1123	-0.0983	-4.2106
CaSO4(aq)	6.4460E-05	-4.1907	0.0000	-4.1907
Mg++	5.3912E-05	-4.2683	-0.3139	-4.5822
NaSO4-	5.2994E-05	-4.2758	-0.0849	-4.3607
MgSO4(aq)	2.8802E-05	-4.5406	0.0000	-4.5406
B(OH)3(aq)	1.2392E-05	-4.9069	0.0000	-4.9069
VO2SO4-	1.2140E-05	-4.9158	-0.0849	-5.0007
CO2(aq)	1.0591E-05	-4.9751	0.0062	-4.9689
FeHPO4+	9.8576E-06	-5.0062	-0.0983	-5.1046
F-	9.2716E-06	-5.0328	-0.0878	-5.1207

Fe+++	3.9853E-06	-5.3995	-0.6676	-6.0671
Cr+++	3.9843E-06	-5.3996	-0.6676	-6.0672
KSO4-	3.8649E-06	-5.4129	-0.0849	-5.4977
VO(OH)3(aq)	3.3834E-06	-5.4706	0.0000	-5.4706
NiNO3+	1.6466E-06	-5.7834	-0.0983	-5.8817
H2CrO4(aq)	1.4542E-06	-5.8374	0.0000	-5.8374
FeOH++	1.4431E-06	-5.8407	-0.3761	-6.2168
VO2F(aq)	1.0440E-06	-5.9813	0.0000	-5.9813
AlF2+	8.5211E-07	-6.0695	-0.0983	-6.1678
AlF++	5.3570E-07	-6.2711	-0.3761	-6.6472
MnH2PO4+	4.6356E-07	-6.3339	-0.0983	-6.4322
FeSO4+	3.8794E-07	-6.4112	-0.0983	-6.5096
HCl(aq)	3.1718E-07	-6.4987	0.0000	-6.4987
CrO4--	2.6860E-07	-6.5709	-0.3602	-6.9311
FeF++	2.1127E-07	-6.6752	-0.3761	-7.0513
NiCl+	9.4729E-08	-7.0235	-0.0983	-7.1219
HPO3F-	9.2177E-08	-7.0354	-0.0849	-7.1203
CaNO3+	8.3647E-08	-7.0775	-0.0983	-7.1759
MnCl+	7.6216E-08	-7.1180	-0.0983	-7.2163
H2VO4-	7.2891E-08	-7.1373	-0.0849	-7.2222
CrO3Cl-	6.4830E-08	-7.1882	-0.0849	-7.2731
AlF3(aq)	6.4788E-08	-7.1885	0.0000	-7.1885
HNO3(aq)	5.1609E-08	-7.2873	0.0000	-7.2873
MnF+	4.7658E-08	-7.3219	-0.0983	-7.4202
VO2(OH)2-	4.5172E-08	-7.3451	-0.0849	-7.4300
MnNO3+	4.2136E-08	-7.3753	-0.0983	-7.4737
NaCl(aq)	4.2106E-08	-7.3757	0.0000	-7.3757
H2SO4(aq)	3.3711E-08	-7.4722	0.0000	-7.4722
Fe(SO4)2-	3.0999E-08	-7.5086	-0.0849	-7.5935
VO2HPO4-	3.0676E-08	-7.5132	-0.0849	-7.5981
H2F2(aq)	2.7887E-08	-7.5546	0.0000	-7.5546
Fe(OH)2+	2.7659E-08	-7.5582	-0.0983	-7.6565
KHSO4(aq)	2.4867E-08	-7.6044	0.0000	-7.6044
CrOH++	2.2345E-08	-7.6508	-0.3761	-8.0269
AlSO4+	1.6284E-08	-7.7882	-0.0983	-7.8866
Al+++	1.3837E-08	-7.8590	-0.6676	-8.5265
FeF2+	1.3794E-08	-7.8603	-0.0983	-7.9586
MgF+	5.5957E-09	-8.2521	-0.0983	-8.3505
CaF+	5.3411E-09	-8.2724	-0.0983	-8.3707
CaCl+	4.8188E-09	-8.3171	-0.0983	-8.4154
MgCl+	3.9189E-09	-8.4068	-0.0983	-8.5052
VO2F2-	2.7729E-09	-8.5571	-0.0849	-8.6419
FeNO3++	2.3166E-09	-8.6352	-0.3761	-9.0113
PO3F--	1.5174E-09	-8.8189	-0.3602	-9.1791
HPO4--	1.3892E-09	-8.8572	-0.3602	-9.2175
NaF(aq)	1.1780E-09	-8.9289	0.0000	-8.9289
HCO3-	6.4802E-10	-9.1884	-0.0849	-9.2733
KCl(aq)	5.1294E-10	-9.2899	0.0000	-9.2899
MnHPO4(aq)	4.2954E-10	-9.3670	0.0000	-9.3670
VO++	2.7648E-10	-9.5583	-0.3761	-9.9344
CrCl++	2.3541E-10	-9.6282	-0.3761	-10.0043
HF2-	2.2585E-10	-9.6462	-0.0849	-9.7311
AlF4-	1.4987E-10	-9.8243	-0.0849	-9.9092
VOSO4(aq)	1.4980E-10	-9.8245	0.0000	-9.8245
Mn+++	1.1765E-10	-9.9294	-0.8157	-10.7452
Ti(OH)4(aq)	1.0003E-10	-9.9999	0.0000	-9.9999
Cs+	1.0002E-10	-9.9999	-0.1077	-10.1076

--- Summary of Solid Product Phases---

Product	Log moles	Moles	Mass, g	Volume, cc

Hematite	0.9823	9.5998E+00	1.5330E+03	2.9062E+02
MnHPO4	-1.8580	1.3868E-02	2.0929E+00	0.0000E+00
Pyrolusite	-0.7180	1.9143E-01	1.6642E+01	9.5715E+01
Quartz	-0.9666	1.0800E-01	6.4889E+00	2.4502E+00
fix CO2(g)	4.0000	1.0000E+04	4.4012E+05	0.0000E+00
fix O2(g)	3.9993	9.9848E+03	3.1950E+05	0.0000E+00

	Mass, grams	Volume, cc
Created	7.611770E+05	3.887883E+02
Destroyed	1.094070E+03	0.000000E+00
Net	7.600830E+05	3.887883E+02

Warning-- these volume totals may be incomplete because
of missing partial molar volume data in the data base

--- Summary of Pure Mineral Saturation States ---

Mineral	Log Q/K	Aff, kcal	State
AlF3	-6.680	-9.113	
Anglesite	-4.894	-6.677	
Anhydrite	-1.995	-2.722	
BaZrO3	69.237	94.458	ssatd
Barite	-2.765	-3.772	
Bassanite	-2.640	-3.602	
Boric_acid	-4.749	-6.478	
CaSO4:0.5H2O(beta)	-2.809	-3.832	
CaZrO3	129.700	176.948	ssatd
Celestite	-7.194	-9.815	
Chalcedony	-0.271	-0.370	
Coesite	-0.810	-1.105	
CrO2	-0.909	-1.241	
Cristobalite(alpha)	-0.551	-0.751	
Cristobalite(beta)	-0.994	-1.356	
Crocoite	-4.591	-6.263	
Epsomite	-4.992	-6.811	
Fe(OH)3	-5.602	-7.642	
FeF3	-2.190	-2.988	
Fluorite	-4.136	-5.643	
Goethite	-0.480	-0.655	
Gypsum	-1.820	-2.483	
Hematite	0.000	0.000	satd
Hexahydrite	-5.227	-7.132	
Ice	-0.139	-0.190	
Jarosite	-5.336	-7.280	
Kieserite	-6.686	-9.121	
Manganite	-4.459	-6.084	
Mercallite	-6.979	-9.521	
Mirabilite	-6.855	-9.352	
MnHPO4	0.000	0.000	satd
MnO2(gamma)	-1.518	-2.071	
Morenosite	-2.696	-3.678	
NiSO4:6H2O(alpha)	-2.702	-3.687	
Nontronite-Ca	-3.756	-5.124	
Nontronite-H	-2.823	-3.851	
Nontronite-K	-4.147	-5.658	
Nontronite-Mg	-3.826	-5.219	

Nontronite-Na	-4.091	-5.581	
Pentahydrite	-5.567	-7.595	
Pyrolusite	0.000	0.000	satd
Quartz	0.000	0.000	satd
Rutile	-0.354	-0.483	
Sellaite	-5.439	-7.421	
Shcherbinaite	-2.888	-3.940	
SiO2(am)	-1.286	-1.754	
SrZrO3	106.096	144.745	ssatd
Starkeyite	-5.954	-8.123	
Strengite	-1.902	-2.594	
Tridymite	-0.171	-0.234	
fix CO2(g)	0.000	0.000	satd
fix O2(g)	0.000	0.000	satd

--- Summary of Solid Solutions ---

--- Carbonate-Calcite ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Calcite	5.6705E-03	-2.2464	0.0000	-2.2464
Magnesite	4.5525E-04	-3.3417	0.0000	-3.3417
Rhodochrosite	9.9387E-01	-0.0027	0.0000	-0.0027
Siderite	1.2691E-08	-7.8965	0.0000	-7.8965
Smithsonite	5.2900E-08	-7.2765	0.0000	-7.2765
Strontianite	2.2203E-07	-6.6536	0.0000	-6.6536

Mineral	Log Q/K	Aff, kcal	State
Carbonate-Calcite	-10.767	-14.689	
Calcite	-10.767	-14.689	
Magnesite	-10.767	-14.689	
Rhodochrosite	-10.767	-14.689	
Siderite	-10.767	-14.689	
Smithsonite	-10.767	-14.689	
Strontianite	-10.767	-14.689	

--- Clinoptilolite-hy-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-hy-Ca	9.9769E-01	-0.0010	0.0000	-0.0010
Clinoptilolite-hy-Cs	6.6777E-23	-22.1754	0.0000	-22.1754
Clinoptilolite-hy-K	7.3166E-04	-3.1357	0.0000	-3.1357
Clinoptilolite-hy-Na	1.5783E-03	-2.8018	0.0000	-2.8018
Clinoptilolite-hy-Sr	5.6081E-12	-11.2512	0.0000	-11.2512

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-hy-ss	-59.152	-80.700	
Clinoptilolite-hy-Ca	-59.152	-80.700	
Clinoptilolite-hy-Cs	-59.152	-80.700	
Clinoptilolite-hy-K	-59.152	-80.700	

```
  Clinoptilolite-hy-Na         -59.152     -80.700
  Clinoptilolite-hy-Sr         -59.152     -80.700


              --- Clinoptilolite-ss        ---

  Ideal solution

   Component                     x           Log x   Log lambda  Log activity

Clinoptilolite-Ca           7.8163E-01     -0.1070     -0.2632     -0.3702
Clinoptilolite-Cs           3.0398E-07     -6.5172    -16.0322    -22.5494
Clinoptilolite-K            9.6807E-02     -1.0141     -2.4947     -3.5088
Clinoptilolite-NH4          1.0307E-51    -50.9869   -125.4277   -176.4146
Clinoptilolite-Na           1.2112E-01     -0.9168     -2.2553     -3.1721
Clinoptilolite-Sr           4.3842E-04     -3.3581     -8.2609    -11.6190


   Mineral                      Log Q/K     Aff, kcal  State

Clinoptilolite-ss               -58.784     -80.198
  Clinoptilolite-Ca             -58.784     -80.198
  Clinoptilolite-Cs             -58.784     -80.198
  Clinoptilolite-K              -58.784     -80.198
  Clinoptilolite-NH4            -58.784     -80.198
  Clinoptilolite-Na             -58.784     -80.198
  Clinoptilolite-Sr             -58.784     -80.198


              --- Saponite-tri             ---

  Ideal solution

   Component                     x           Log x   Log lambda  Log activity

Saponite-Ca                 1.4821E-03     -2.8291      1.8955     -0.9336
Saponite-H                  9.9737E-01     -0.0011      0.0008     -0.0004
Saponite-K                  9.6726E-05     -4.0145      2.6897     -1.3248
Saponite-Mg                 9.1179E-04     -3.0401      2.0369     -1.0032
Saponite-Na                 1.4347E-04     -3.8432      2.5750     -1.2683


   Mineral                      Log Q/K     Aff, kcal  State

Saponite-tri                    -42.307     -57.719
  Saponite-Ca                   -42.307     -57.719
  Saponite-H                    -42.307     -57.719
  Saponite-K                    -42.307     -57.719
  Saponite-Mg                   -42.307     -57.719
  Saponite-Na                   -42.307     -57.719


              --- Smectite-di              ---

  Ideal solution

   Component                     x           Log x   Log lambda  Log activity

Beidellite-Ca               6.3593E-68    -67.1966     45.0217    -22.1749
Beidellite-K                4.1530E-69    -68.3816     45.8157    -22.5659
```

Beidellite-Mg	3.9121E-68	-67.4076	45.1631	-22.2445
Beidellite-Na	6.1559E-69	-68.2107	45.7012	-22.5095
Montmor-Ca	3.1295E-58	-57.5045	38.5280	-18.9765
Montmor-K	3.3378E-59	-58.4765	39.1793	-19.2973
Montmor-Mg	3.1289E-58	-57.5046	38.5281	-18.9765
Montmor-Na	4.8248E-59	-58.3165	39.0721	-19.2445
Nontronite-Ca	5.6252E-01	-0.2499	0.1674	-0.0825
Nontronite-K	3.6736E-02	-1.4349	0.9614	-0.4735
Nontronite-Mg	3.4629E-01	-0.4606	0.3086	-0.1520
Nontronite-Na	5.4453E-02	-1.2640	0.8469	-0.4171

Mineral	Log Q/K	Aff, kcal	State
Smectite-di	-3.674	-5.012	
Beidellite-Ca	-3.674	-5.012	
Beidellite-K	-3.674	-5.012	
Beidellite-Mg	-3.674	-5.012	
Beidellite-Na	-3.674	-5.012	
Montmor-Ca	-3.674	-5.012	
Montmor-K	-3.674	-5.012	
Montmor-Mg	-3.674	-5.012	
Montmor-Na	-3.674	-5.012	
Nontronite-Ca	-3.674	-5.012	
Nontronite-K	-3.674	-5.012	
Nontronite-Mg	-3.674	-5.012	
Nontronite-Na	-3.674	-5.012	

--- Lanthanide hydroxide ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
La(OH)3	1.2829E-05	-4.8918	0.0000	-4.8918
Ce(OH)3	3.7099E-15	-14.4306	0.0000	-14.4306
Nd(OH)3(c)	3.4718E-01	-0.4594	0.0000	-0.4594
Gd(OH)3	5.8550E-01	-0.2325	0.0000	-0.2325
Sm(OH)3	6.7308E-02	-1.1719	0.0000	-1.1719

Mineral	Log Q/K	Aff, kcal	State
Lanthanide hydroxide	-24.639	-33.614	
La(OH)3	-24.639	-33.614	
Ce(OH)3	-24.639	-33.614	
Nd(OH)3(c)	-24.639	-33.614	
Gd(OH)3	-24.639	-33.614	
Sm(OH)3	-24.639	-33.614	

--- Rhabdophane-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaPO4:H2O	4.1201E-01	-0.3851	0.0000	-0.3851
CePO4:H2O	3.7677E-11	-10.4239	0.0000	-10.4239
NdPO4:H2O	2.2247E-01	-0.6527	0.0000	-0.6527

GdPO4:H2O	1.4936E-01	-0.8258	0.0000	-0.8258
SmPO4:H2O	2.1616E-01	-0.6652	0.0000	-0.6652

Mineral	Log Q/K	Aff, kcal	State
Rhabdophane-ss	-9.764	-13.321	
LaPO4:H2O	-9.764	-13.321	
CePO4:H2O	-9.764	-13.321	
NdPO4:H2O	-9.764	-13.321	
GdPO4:H2O	-9.764	-13.321	
SmPO4:H2O	-9.764	-13.321	

--- Lanthanide fluoride ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaF3:0.5H2O	5.7252E-01	-0.2422	0.0000	-0.2422
CeF3:0.5H2O	8.2978E-11	-10.0810	0.0000	-10.0810
NdF3:0.5H2O	3.8918E-01	-0.4099	0.0000	-0.4099
GdF3:0.5H2O	8.2628E-03	-2.0829	0.0000	-2.0829
SmF3:0.5H2O	3.0037E-02	-1.5223	0.0000	-1.5223

Mineral	Log Q/K	Aff, kcal	State
Lanthanide fluoride	-11.742	-16.019	
LaF3:0.5H2O	-11.742	-16.019	
CeF3:0.5H2O	-11.742	-16.019	
NdF3:0.5H2O	-11.742	-16.019	
GdF3:0.5H2O	-11.742	-16.019	
SmF3:0.5H2O	-11.742	-16.019	

--- Summary of Gases ---

Gas	Fugacity	Log fugacity
Al(g)	4.4786-201	-200.3489
B(g)	8.5659-204	-203.0672
BF3(g)	3.7725E-24	-23.4234
C(g)	3.0917-190	-189.5098
CH4(g)	3.5240-146	-145.4530
CO(g)	6.0395E-49	-48.2190
CO2(g)	3.1623E-04	-3.5000
Ca(g)	7.2342-164	-163.1406
Chlorine	3.5847E-17	-16.4455
Cs(g)	3.5180E-89	-88.4537
Cu(g)	7.5962E-93	-92.1194
Fluorine	1.4789E-72	-71.8301
H2(g)	6.1104E-42	-41.2139
H2O(g)	2.5958E-02	-1.5857
H2S(g)	2.2902-130	-129.6401
HCl(g)	7.3419E-13	-12.1342
HF(g)	5.3223E-09	-8.2739
K(g)	2.2169E-83	-82.6543
Li(g)	7.8245-103	-102.1065

Mg(g)	1.0897-141	-140.9627
Nitrogen	2.6192E-08	-7.5818
NH3(g)	1.8638E-63	-62.7296
NO(g)	5.0961E-20	-19.2928
NO2(g)	3.4845E-14	-13.4579
Na(g)	1.8194E-81	-80.7401
O2(g)	2.0999E-01	-0.6778
Pb(g)	7.6389E-81	-80.1170
S2(g)	3.1322-203	-202.5042
SO2(g)	4.0579E-43	-42.3917
Si(g)	4.2257-221	-220.3741
SiF4(g)	3.5422E-18	-17.4507
Ti(g)	1.6826-231	-230.7740
TiCl4(g)	4.3141E-62	-61.3651
U(g)	1.0090-304	-303.9961
U2Cl10(g)	4.7266-202	-201.3255
U2Cl8(g)	4.0878-216	-215.3885
U2F10(g)	2.5083-120	-119.6006
UCl(g)	6.6042-255	-254.1802
UCl2(g)	1.2931-203	-202.8884
UCl3(g)	5.5459-150	-149.2560
UCl4(g)	1.2879-113	-112.8901
UCl5(g)	1.5389-114	-113.8128
UCl6(g)	3.4162-110	-109.4665
UF(g)	1.0175-240	-239.9925
UF2(g)	7.6091-195	-194.1187
UF3(g)	1.4004-142	-141.8538
UF4(g)	3.8042E-87	-86.4197
UF5(g)	4.7335E-73	-72.3248
UF6(g)	5.7997E-73	-72.2366
UO(g)	7.9689-220	-219.0986
UO2(g)	1.4764-135	-134.8308
UO2Cl2(g)	2.3107E-71	-70.6363
UO2F2(g)	9.8635E-61	-60.0060
UO3(g)	1.0859E-82	-81.9642
UOF4(g)	1.1336E-64	-63.9455
Zn(g)	1.2815E-90	-89.8923

- -

```
Stepping to zi=  2.0023E+01, delzi=  2.2600E-02, nord= 6
  time =  2.3148E+05 d, dltime =  2.6128E+02 d
Steps completed =   376, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -24.3122

Stepping to zi=  2.0023E+01, delzi=  1.0000E-10, nord= 0
  time =  2.3148E+05 d, dltime =  1.1561E-06 d
Steps completed =   377, iter =  1, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -24.3122
```

- -

```
                    Reaction progress        =  2.00226000001001E+01
                    Log of reaction progress =       1.3015205


                    Time =  2.000E+10 sec
```

```
                    =  2.315E+05 days
                    =  6.338E+02 years

                Log sec =       10.301
                Log days =       5.365
                Log years =      2.802

                Temperature    =     25.000 degrees C
                total pressure =      1.013 bars
```

Step size is limited by exhaustion of the following reactant(s):

carbon steel

--- Reactant Summary ---

Reactant	Moles	Delta moles	Mass, g	Delta Mass, g
carbon steel	0.0000E+00	2.0000E+01	0.0000E+00	1.0940E+03
Alloy-22	1.9977E+01	2.2600E-02	1.1964E+03	1.3535E+00

```
Current total mass =  1.19640E+03 grams
Delta total mass   =  1.09531E+03 grams
Delta total volume =      0.00000 cc
```

Reactant	Rel. Rate mol/mol	Rate mol/s	Rate mol/s/cm2
carbon steel	9.9887E-01	1.0000E-09	1.0000E-11
Alloy-22	1.1287E-03	1.1300E-12	1.1300E-14

Reactant	Affinity kcal/mol	Surface Area mol/s/cm2
carbon steel	999.00000	1.0000E+02
Alloy-22	999.00000	1.0000E+02

Reactant		Rate Constants, mol/s/cm2
carbon steel	Forward	1.0000E-11
Alloy-22	Forward	1.1300E-14

```
Affinity of the overall irreversible reaction=     0.000 kcal
Contributions from irreversible reactions
with no thermodynamic data are not included
```

--- Element Totals for the Aqueous Solution ---

Element	mg/kg soln.	Molality	Moles

O	8.865387E+05	5.561122E+01	5.559517E+01
Al	3.986744E-02	1.482928E-06	1.482500E-06
B	1.334824E-01	1.239158E-05	1.238800E-05
Ba	1.368714E-05	1.000289E-10	1.000000E-10
Ca	1.295698E+01	3.244637E-04	3.243700E-04
Ce	1.396502E-19	1.000289E-24	1.000000E-24
Cl	7.116488E+00	2.014582E-04	2.014000E-04
Cr	2.999727E+02	5.790012E-03	5.788340E-03
Cs	1.324645E-05	1.000289E-10	1.000000E-10
Cu	6.650196E-10	1.050303E-14	1.050000E-14
F	2.172834E+00	1.147831E-04	1.147500E-04
Fe	8.897253E-01	1.598912E-05	1.598451E-05
Gd	1.567284E-09	1.000289E-14	1.000000E-14
H	1.115152E+05	1.110370E+02	1.110050E+02
C	1.267560E-01	1.059151E-05	1.058845E-05
P	7.322953E+00	2.372798E-04	2.372113E-04
K	5.023442E+00	1.289472E-04	1.289100E-04
La	1.384447E-09	1.000289E-14	1.000000E-14
Li	6.917975E-07	1.000289E-10	1.000000E-10
Mg	2.003331E+00	8.272288E-05	8.269900E-05
Mn	3.258135E+01	5.952018E-04	5.950300E-04
Mo	2.181841E+02	2.282400E-03	2.281741E-03
N	1.982359E+00	1.420410E-04	1.420000E-04
Na	4.564829E+01	1.992775E-03	1.992200E-03
Nd	1.437615E-09	1.000289E-14	1.000000E-14
Ni	7.510538E+02	1.284326E-02	1.283956E-02
Pb	2.065127E-05	1.000289E-10	1.000000E-10
Pu	2.431906E-09	1.000289E-14	1.000000E-14
S	5.513528E+02	1.725652E-02	1.725154E-02
Si	2.802939E+00	1.001613E-04	1.001324E-04
Sm	1.498612E-09	1.000289E-14	1.000000E-14
Sr	8.732934E-06	1.000289E-10	1.000000E-10
Ti	4.772117E-06	1.000289E-10	1.000000E-10
U	2.372393E-09	1.000289E-14	1.000000E-14
V	4.773440E+00	9.404337E-05	9.401622E-05
Zn	6.517308E-06	1.000289E-10	1.000000E-10
Zr	9.092138E-16	1.000289E-20	1.000000E-20

Single ion activities and activity coefficients are here defined
with respect to the modified NBS pH scale

	pH	Eh	pe
modified NBS pH scale	2.0402	1.0983	1.8567E+01
rational pH scale	1.9637	1.1029	1.8643E+01

pHCl = 5.8283

Oxygen fugacity = 2.09991E-01
Log oxygen fugacity = -0.67780

Activity of water = 0.99923
Log activity of water = -0.00033

Ionic strength = 5.885995E-02 molal
Sum of molalities = 0.0495147922097

Osmotic coefficient = 0.85802

Mass of solution = 1.003328 kg
Mass of solutes = 0.003617 kg
Conc. of solutes = 0.360502 per cent (w/w)

Moles of solvent H2O = 5.54924E+01
Mass of solvent H2O = 9.99711E-01 kg

Species	Molality	Log molality	Log gamma	Log activity
H+	1.0872E-02	-1.9637	-0.0765	-2.0402
Ni++	1.0220E-02	-1.9906	-0.3467	-2.3373
SO4--	9.7843E-03	-2.0095	-0.3604	-2.3698
HSO4-	4.5078E-03	-2.3460	-0.0849	-2.4309
HCrO4-	4.0541E-03	-2.3921	-0.0849	-2.4770
NiSO4(aq)	2.6219E-03	-2.5814	0.0000	-2.5814
MoO4--	2.2824E-03	-2.6416	-0.3493	-2.9909
Na+	1.9397E-03	-2.7123	-0.0984	-2.8106
Cr2O7--	8.6506E-04	-3.0630	-0.3604	-3.4233
Mn++	4.1494E-04	-3.3820	-0.3467	-3.7287
O2(aq)	2.6166E-04	-3.5823	0.0062	-3.5761
Ca++	2.5990E-04	-3.5852	-0.3467	-3.9319
Cl-	2.0085E-04	-3.6971	-0.0910	-3.7881
MnSO4(aq)	1.7963E-04	-3.7456	0.0000	-3.7456
NO3-	1.4021E-04	-3.8532	-0.0910	-3.9442
K+	1.2505E-04	-3.9029	-0.1044	-4.0073
H3PO4(aq)	1.1923E-04	-3.9236	0.0000	-3.9236
H2PO4-	1.0760E-04	-3.9682	-0.0849	-4.0531
HF(aq)	1.0159E-04	-3.9932	0.0000	-3.9932
SiO2(aq)	1.0016E-04	-3.9993	0.0000	-3.9993
VO2+	7.7304E-05	-4.1118	-0.0984	-4.2102
CaSO4(aq)	6.4474E-05	-4.1906	0.0000	-4.1906
Mg++	5.3906E-05	-4.2684	-0.3140	-4.5824
NaSO4-	5.3021E-05	-4.2756	-0.0849	-4.3605
MgSO4(aq)	2.8807E-05	-4.5405	0.0000	-4.5405
B(OH)3(aq)	1.2392E-05	-4.9069	0.0000	-4.9069
VO2SO4-	1.2159E-05	-4.9151	-0.0849	-5.0000
CO2(aq)	1.0591E-05	-4.9751	0.0062	-4.9689
FeHPO4+	9.8680E-06	-5.0058	-0.0984	-5.1042
F-	9.2640E-06	-5.0332	-0.0878	-5.1210
Cr+++	4.0047E-06	-5.3974	-0.6678	-6.0652
Fe+++	3.9987E-06	-5.3981	-0.6678	-6.0659
KSO4-	3.8668E-06	-5.4126	-0.0849	-5.4976
VO(OH)3(aq)	3.3836E-06	-5.4706	0.0000	-5.4706
NiNO3+	1.6479E-06	-5.7831	-0.0984	-5.8814
H2CrO4(aq)	1.4567E-06	-5.8366	0.0000	-5.8366
FeOH++	1.4464E-06	-5.8397	-0.3762	-6.2160
VO2F(aq)	1.0442E-06	-5.9812	0.0000	-5.9812
AlF2+	8.5176E-07	-6.0697	-0.0984	-6.1681
AlF++	5.3608E-07	-6.2708	-0.3762	-6.6470
MnH2PO4+	4.6405E-07	-6.3334	-0.0984	-6.4318
FeSO4+	3.8931E-07	-6.4097	-0.0984	-6.5081
HCl(aq)	3.1746E-07	-6.4983	0.0000	-6.4983
CrO4--	2.6863E-07	-6.5708	-0.3604	-6.9312
FeF++	2.1176E-07	-6.6742	-0.3762	-7.0504
NiCl+	9.4805E-08	-7.0232	-0.0984	-7.1215
HPO3F-	9.2101E-08	-7.0357	-0.0849	-7.1206
CaNO3+	8.3620E-08	-7.0777	-0.0984	-7.1761
MnCl+	7.6364E-08	-7.1171	-0.0984	-7.2155
H2VO4-	7.2830E-08	-7.1377	-0.0849	-7.2226
CrO3Cl-	6.4941E-08	-7.1875	-0.0849	-7.2724

AlF3(aq)	6.4698E-08	-7.1891	0.0000	-7.1891
HNO3(aq)	5.1654E-08	-7.2869	0.0000	-7.2869
MnF+	4.7712E-08	-7.3214	-0.0984	-7.4198
VO2(OH)2-	4.5134E-08	-7.3455	-0.0849	-7.4304
MnNO3+	4.2218E-08	-7.3745	-0.0984	-7.4729
NaCl(aq)	4.2099E-08	-7.3757	0.0000	-7.3757
H2SO4(aq)	3.3794E-08	-7.4712	0.0000	-7.4712
Fe(SO4)2-	3.1125E-08	-7.5069	-0.0849	-7.5918
VO2HPO4-	3.0651E-08	-7.5136	-0.0849	-7.5985
H2F2(aq)	2.7891E-08	-7.5545	0.0000	-7.5545
Fe(OH)2+	2.7688E-08	-7.5577	-0.0984	-7.6561
KHSO4(aq)	2.4901E-08	-7.6038	0.0000	-7.6038
CrOH++	2.2435E-08	-7.6491	-0.3762	-8.0253
AlSO4+	1.6315E-08	-7.7874	-0.0984	-7.8858
Al+++	1.3861E-08	-7.8582	-0.6678	-8.5260
FeF2+	1.3811E-08	-7.8598	-0.0984	-7.9582
MgF+	5.5894E-09	-8.2526	-0.0984	-8.3510
CaF+	5.3350E-09	-8.2729	-0.0984	-8.3712
CaCl+	4.8172E-09	-8.3172	-0.0984	-8.4156
MgCl+	3.9176E-09	-8.4070	-0.0984	-8.5054
VO2F2-	2.7710E-09	-8.5574	-0.0849	-8.6423
FeNO3++	2.3239E-09	-8.6338	-0.3762	-9.0100
PO3F--	1.5150E-09	-8.8196	-0.3604	-9.1799
HPO4--	1.3869E-09	-8.8579	-0.3604	-9.2183
NaF(aq)	1.1768E-09	-8.9293	0.0000	-8.9293
HCO3-	6.4744E-10	-9.1888	-0.0849	-9.2737
KCl(aq)	5.1284E-10	-9.2900	0.0000	-9.2900
MnHPO4(aq)	4.2954E-10	-9.3670	0.0000	-9.3670
VO++	2.7712E-10	-9.5573	-0.3762	-9.9336
CrCl++	2.3656E-10	-9.6261	-0.3762	-10.0023
HF2-	2.2568E-10	-9.6465	-0.0849	-9.7314
VOSO4(aq)	1.5018E-10	-9.8234	0.0000	-9.8234
AlF4-	1.4954E-10	-9.8252	-0.0849	-9.9102
Mn+++	1.1807E-10	-9.9279	-0.8160	-10.7439
Ti(OH)4(aq)	1.0003E-10	-9.9999	0.0000	-9.9999
Cs+	1.0002E-10	-9.9999	-0.1078	-10.1077

--- Summary of Solid Product Phases---

Product	Log moles	Moles	Mass, g	Volume, cc
Hematite	0.9828	9.6106E+00	1.5347E+03	2.9095E+02
MnHPO4	-1.8575	1.3884E-02	2.0953E+00	0.0000E+00
Pyrolusite	-0.7175	1.9165E-01	1.6661E+01	9.5823E+01
Quartz	-0.9661	1.0812E-01	6.4961E+00	2.4530E+00
fix CO2(g)	4.0000	1.0000E+04	4.4012E+05	0.0000E+00
fix O2(g)	3.9993	9.9848E+03	3.1950E+05	0.0000E+00

	Mass, grams	Volume, cc
Created	7.611783E+05	3.892271E+02
Destroyed	1.095306E+03	0.000000E+00
Net	7.600830E+05	3.892271E+02

Warning-- these volume totals may be incomplete because
of missing partial molar volume data in the data base

--- Summary of Pure Mineral Saturation States ---

Mineral	Log Q/K	Aff, kcal	State
AlF3	-6.680	-9.114	
Anglesite	-4.894	-6.677	
Anhydrite	-1.995	-2.722	
BaZrO3	69.235	94.457	ssatd
Barite	-2.765	-3.772	
Bassanite	-2.640	-3.602	
Boric_acid	-4.749	-6.478	
CaSO4:0.5H2O(beta)	-2.808	-3.832	
CaZrO3	129.699	176.947	ssatd
Celestite	-7.194	-9.815	
Chalcedony	-0.271	-0.370	
Coesite	-0.810	-1.105	
CrO2	-0.909	-1.240	
Cristobalite(alpha)	-0.551	-0.751	
Cristobalite(beta)	-0.994	-1.356	
Crocoite	-4.591	-6.263	
Epsomite	-4.992	-6.811	
Fe(OH)3	-5.602	-7.642	
FeF3	-2.190	-2.988	
Fluorite	-4.137	-5.644	
Goethite	-0.480	-0.655	
Gypsum	-1.820	-2.483	
Hematite	0.000	0.000	satd
Hexahydrite	-5.227	-7.132	
Ice	-0.139	-0.190	
Jarosite	-5.335	-7.278	
Kieserite	-6.686	-9.121	
Manganite	-4.459	-6.084	
Mercallite	-6.978	-9.521	
Mirabilite	-6.855	-9.352	
MnHPO4	0.000	0.000	satd
MnO2(gamma)	-1.518	-2.071	
Morenosite	-2.695	-3.677	
NiSO4:6H2O(alpha)	-2.702	-3.686	
Nontronite-Ca	-3.756	-5.125	
Nontronite-H	-2.823	-3.851	
Nontronite-K	-4.147	-5.658	
Nontronite-Mg	-3.826	-5.220	
Nontronite-Na	-4.091	-5.581	
Pentahydrite	-5.567	-7.595	
Pyrolusite	0.000	0.000	satd
Quartz	0.000	0.000	satd
Rutile	-0.354	-0.483	
Sellaite	-5.440	-7.422	
Shcherbinaite	-2.888	-3.940	
SiO2(am)	-1.286	-1.754	
SrZrO3	106.095	144.743	ssatd
Starkeyite	-5.954	-8.122	
Strengite	-1.902	-2.594	
Tridymite	-0.171	-0.234	
fix CO2(g)	0.000	0.000	satd
fix O2(g)	0.000	0.000	satd

--- Summary of Solid Solutions ---

--- Carbonate-Calcite ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Calcite	5.6578E-03	-2.2474	0.0000	-2.2474
Magnesite	4.5423E-04	-3.3427	0.0000	-3.3427
Rhodochrosite	9.9389E-01	-0.0027	0.0000	-0.0027
Siderite	1.2691E-08	-7.8965	0.0000	-7.8965
Smithsonite	5.2783E-08	-7.2775	0.0000	-7.2775
Strontianite	2.2152E-07	-6.6546	0.0000	-6.6546

Mineral	Log Q/K	Aff, kcal	State
Carbonate-Calcite	-10.767	-14.689	
Calcite	-10.767	-14.689	
Magnesite	-10.767	-14.689	
Rhodochrosite	-10.767	-14.689	
Siderite	-10.767	-14.689	
Smithsonite	-10.767	-14.689	
Strontianite	-10.767	-14.689	

--- Clinoptilolite-hy-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-hy-Ca	9.9769E-01	-0.0010	0.0000	-0.0010
Clinoptilolite-hy-Cs	6.6791E-23	-22.1753	0.0000	-22.1753
Clinoptilolite-hy-K	7.3180E-04	-3.1356	0.0000	-3.1356
Clinoptilolite-hy-Na	1.5787E-03	-2.8017	0.0000	-2.8017
Clinoptilolite-hy-Sr	5.6077E-12	-11.2512	0.0000	-11.2512

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-hy-ss	-59.156	-80.706	
Clinoptilolite-hy-Ca	-59.156	-80.706	
Clinoptilolite-hy-Cs	-59.156	-80.706	
Clinoptilolite-hy-K	-59.156	-80.706	
Clinoptilolite-hy-Na	-59.156	-80.706	
Clinoptilolite-hy-Sr	-59.156	-80.706	

--- Clinoptilolite-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-Ca	7.8162E-01	-0.1070	-0.2632	-0.3702
Clinoptilolite-Cs	3.0399E-07	-6.5171	-16.0322	-22.5493
Clinoptilolite-K	9.6810E-02	-1.0141	-2.4946	-3.5087
Clinoptilolite-NH4	1.0328E-51	-50.9860	-125.4256	-176.4115
Clinoptilolite-Na	1.2113E-01	-0.9168	-2.2552	-3.1720
Clinoptilolite-Sr	4.3841E-04	-3.3581	-8.2610	-11.6191

Mineral	Log Q/K	Aff, kcal	State

Clinoptilolite-ss	-58.788	-80.204
Clinoptilolite-Ca	-58.788	-80.204
Clinoptilolite-Cs	-58.788	-80.204
Clinoptilolite-K	-58.788	-80.204
Clinoptilolite-NH4	-58.788	-80.204
Clinoptilolite-Na	-58.788	-80.204
Clinoptilolite-Sr	-58.788	-80.204

--- Saponite-tri ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Saponite-Ca	1.4805E-03	-2.8296	1.8958	-0.9338
Saponite-H	9.9737E-01	-0.0011	0.0008	-0.0004
Saponite-K	9.6622E-05	-4.0149	2.6900	-1.3249
Saponite-Mg	9.1076E-04	-3.0406	2.0372	-1.0034
Saponite-Na	1.4332E-04	-3.8437	2.5753	-1.2684

Mineral	Log Q/K	Aff, kcal	State
Saponite-tri	-42.310	-57.723	
Saponite-Ca	-42.310	-57.723	
Saponite-H	-42.310	-57.723	
Saponite-K	-42.310	-57.723	
Saponite-Mg	-42.310	-57.723	
Saponite-Na	-42.310	-57.723	

--- Smectite-di ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Beidellite-Ca	6.2973E-68	-67.2008	45.0246	-22.1763
Beidellite-K	4.1127E-69	-68.3859	45.8185	-22.5673
Beidellite-Mg	3.8740E-68	-67.4118	45.1659	-22.2459
Beidellite-Na	6.0963E-69	-68.2149	45.7040	-22.5109
Montmor-Ca	3.1020E-58	-57.5084	38.5306	-18.9778
Montmor-K	3.3086E-59	-58.4804	39.1818	-19.2985
Montmor-Mg	3.1013E-58	-57.5085	38.5307	-18.9778
Montmor-Na	4.7826E-59	-58.3203	39.0746	-19.2457
Nontronite-Ca	5.6252E-01	-0.2499	0.1674	-0.0825
Nontronite-K	3.6738E-02	-1.4349	0.9614	-0.4735
Nontronite-Mg	3.4629E-01	-0.4606	0.3086	-0.1520
Nontronite-Na	5.4456E-02	-1.2640	0.8468	-0.4171

Mineral	Log Q/K	Aff, kcal	State
Smectite-di	-3.674	-5.012	
Beidellite-Ca	-3.674	-5.012	
Beidellite-K	-3.674	-5.012	
Beidellite-Mg	-3.674	-5.012	
Beidellite-Na	-3.674	-5.012	
Montmor-Ca	-3.674	-5.012	
Montmor-K	-3.674	-5.012	

Montmor-Mg	-3.674	-5.012
Montmor-Na	-3.674	-5.012
Nontronite-Ca	-3.674	-5.012
Nontronite-K	-3.674	-5.012
Nontronite-Mg	-3.674	-5.012
Nontronite-Na	-3.674	-5.012

--- Lanthanide hydroxide ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
La(OH)3	1.2829E-05	-4.8918	0.0000	-4.8918
Ce(OH)3	3.7103E-15	-14.4306	0.0000	-14.4306
Nd(OH)3(c)	3.4719E-01	-0.4594	0.0000	-0.4594
Gd(OH)3	5.8549E-01	-0.2325	0.0000	-0.2325
Sm(OH)3	6.7308E-02	-1.1719	0.0000	-1.1719

Mineral	Log Q/K	Aff, kcal	State
Lanthanide hydroxide	-24.640	-33.616	
La(OH)3	-24.640	-33.616	
Ce(OH)3	-24.640	-33.616	
Nd(OH)3(c)	-24.640	-33.616	
Gd(OH)3	-24.640	-33.616	
Sm(OH)3	-24.640	-33.616	

--- Rhabdophane-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaPO4:H2O	4.1201E-01	-0.3851	0.0000	-0.3851
CePO4:H2O	3.7680E-11	-10.4239	0.0000	-10.4239
NdPO4:H2O	2.2247E-01	-0.6527	0.0000	-0.6527
GdPO4:H2O	1.4936E-01	-0.8258	0.0000	-0.8258
SmPO4:H2O	2.1616E-01	-0.6652	0.0000	-0.6652

Mineral	Log Q/K	Aff, kcal	State
Rhabdophane-ss	-9.765	-13.323	
LaPO4:H2O	-9.765	-13.323	
CePO4:H2O	-9.765	-13.323	
NdPO4:H2O	-9.765	-13.323	
GdPO4:H2O	-9.765	-13.323	
SmPO4:H2O	-9.765	-13.323	

--- Lanthanide fluoride ---

Ideal solution

Component	x	Log x	Log lambda	Log activity

LaF3:0.5H2O	5.7252E-01	-0.2422	0.0000	-0.2422
CeF3:0.5H2O	8.2985E-11	-10.0810	0.0000	-10.0810
NdF3:0.5H2O	3.8918E-01	-0.4098	0.0000	-0.4098
GdF3:0.5H2O	8.2625E-03	-2.0829	0.0000	-2.0829
SmF3:0.5H2O	3.0037E-02	-1.5223	0.0000	-1.5223

Mineral	Log Q/K	Aff, kcal	State
Lanthanide fluoride	-11.743	-16.021	
LaF3:0.5H2O	-11.743	-16.021	
CeF3:0.5H2O	-11.743	-16.021	
NdF3:0.5H2O	-11.743	-16.021	
GdF3:0.5H2O	-11.743	-16.021	
SmF3:0.5H2O	-11.743	-16.021	

--- Summary of Gases ---

Gas	Fugacity	Log fugacity
Al(g)	4.4713-201	-200.3496
B(g)	8.5659-204	-203.0672
BF3(g)	3.7733E-24	-23.4233
C(g)	3.0917-190	-189.5098
CH4(g)	3.5240-146	-145.4530
CO(g)	6.0395E-49	-48.2190
CO2(g)	3.1623E-04	-3.5000
Ca(g)	7.2179-164	-163.1416
Chlorine	3.5910E-17	-16.4448
Cs(g)	3.5142E-89	-88.4542
Cu(g)	7.5794E-93	-92.1204
Fluorine	1.4791E-72	-71.8300
H2(g)	6.1104E-42	-41.2139
H2O(g)	2.5958E-02	-1.5857
H2S(g)	2.2958-130	-129.6391
HCl(g)	7.3484E-13	-12.1338
HF(g)	5.3227E-09	-8.2739
K(g)	2.2145E-83	-82.6547
Li(g)	7.8162-103	-102.1070
Mg(g)	1.0873-141	-140.9637
Nitrogen	2.6239E-08	-7.5811
NH3(g)	1.8654E-63	-62.7292
NO(g)	5.1006E-20	-19.2924
NO2(g)	3.4875E-14	-13.4575
Na(g)	1.8174E-81	-80.7405
O2(g)	2.0999E-01	-0.6778
Pb(g)	7.6217E-81	-80.1179
S2(g)	3.1477-203	-202.5020
SO2(g)	4.0679E-43	-42.3906
Si(g)	4.2257-221	-220.3741
SiF4(g)	3.5433E-18	-17.4506
Ti(g)	1.6826-231	-230.7740
TiCl4(g)	4.3294E-62	-61.3636
U(g)	1.0071-304	-303.9969
U2Cl10(g)	4.7505-202	-201.3233
U2Cl8(g)	4.1013-216	-215.3871
U2F10(g)	2.5006-120	-119.6020
UCl(g)	6.5975-255	-254.1806
UCl2(g)	1.2930-203	-202.8884
UCl3(g)	5.5501-150	-149.2557

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UCl4(g)                     1.2901-113   -112.8894
UCl5(g)                     1.5428-114   -113.8117
UCl6(g)                     3.4279-110   -109.4650
UF(g)                       1.0156-240   -239.9933
UF2(g)                      7.5958-195   -194.1194
UF3(g)                      1.3980-142   -141.8545
UF4(g)                      3.7982E-87    -86.4204
UF5(g)                      4.7263E-73    -72.3255
UF6(g)                      5.7913E-73    -72.2372
UO(g)                       7.9537-220   -219.0994
UO2(g)                      1.4736-135   -134.8316
UO2Cl2(g)                   2.3104E-71    -70.6363
UO2F2(g)                    9.8463E-61    -60.0067
UO3(g)                      1.0839E-82    -81.9650
UOF4(g)                     1.1318E-64    -63.9462
Zn(g)                       1.2787E-90    -89.8932



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Stepping to zi=  2.0023E+01, delzi=  1.0000E-09, nord= 0
  time =  2.3148E+05 d, dltime =  1.1561E-05 d
Steps completed =   378, iter =  1, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -24.3122

Stepping to zi=  2.0023E+01, delzi=  1.0000E-09, nord= 0
  time =  2.3148E+05 d, dltime =  1.0243E-02 d
Steps completed =   379, iter =  6, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -24.3122

Stepping to zi=  2.0023E+01, delzi=  1.0000E-09, nord= 0
  time =  2.3148E+05 d, dltime =  1.0243E-02 d
Steps completed =   380, iter =  1, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -24.3122

Stepping to zi=  2.0023E+01, delzi=  1.0000E-08, nord= 1
  time =  2.3148E+05 d, dltime =  1.0243E-01 d
Steps completed =   381, iter =  1, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -24.3122

Stepping to zi=  2.0023E+01, delzi=  1.0000E-07, nord= 1
  time =  2.3148E+05 d, dltime =  1.0243E+00 d
Steps completed =   382, iter =  2, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -24.3122

Stepping to zi=  2.0023E+01, delzi=  1.0000E-06, nord= 1
  time =  2.3149E+05 d, dltime =  1.0243E+01 d
Steps completed =   383, iter =  1, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -24.3122

Stepping to zi=  2.0023E+01, delzi=  1.0000E-05, nord= 2
  time =  2.3160E+05 d, dltime =  1.0243E+02 d
Steps completed =   384, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -24.3126

Stepping to zi=  2.0023E+01, delzi=  3.5057E-05, nord= 2
  time =  2.3195E+05 d, dltime =  3.5907E+02 d
Steps completed =   385, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -24.3140
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Stepping to zi=  2.0023E+01, delzi=  1.3394E-04, nord= 2
  time =  2.3333E+05 d, dltime =  1.3719E+03 d
Steps completed =   386, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -24.3194

Stepping to zi=  2.0023E+01, delzi=  2.4342E-04, nord= 3
  time =  2.3582E+05 d, dltime =  2.4933E+03 d
Steps completed =   387, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -24.3294

Stepping to zi=  2.0024E+01, delzi=  7.1545E-04, nord= 3
  time =  2.4315E+05 d, dltime =  7.3280E+03 d
Steps completed =   388, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -24.3602

Stepping to zi=  2.0025E+01, delzi=  1.4788E-03, nord= 4
  time =  2.5829E+05 d, dltime =  1.5147E+04 d
Steps completed =   389, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -24.4313

Stepping to zi=  2.0027E+01, delzi=  1.6675E-03, nord= 5
  time =  2.7537E+05 d, dltime =  1.7080E+04 d
Steps completed =   390, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -24.5271

Stepping to zi=  2.0030E+01, delzi=  2.7053E-03, nord= 5
  time =  3.0308E+05 d, dltime =  2.7709E+04 d
Steps completed =   391, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -24.7336

Stepping to zi=  2.0033E+01, delzi=  3.4813E-03, nord= 6
  time =  3.3874E+05 d, dltime =  3.5657E+04 d
Steps completed =   392, iter =  5, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -25.1553

Stepping to zi=  2.0036E+01, delzi=  3.1837E-03, nord= 6
  time =  3.7135E+05 d, dltime =  3.2609E+04 d
Steps completed =   393, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -25.7966

Stepping to zi=  2.0038E+01, delzi=  1.8399E-03, nord= 6
  time =  3.9019E+05 d, dltime =  1.8845E+04 d
Steps completed =   394, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -26.3219

Stepping to zi=  2.0038E+01, delzi=  3.8096E-04, nord= 6
  time =  3.9410E+05 d, dltime =  3.9020E+03 d
Steps completed =   395, iter =  3, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -26.4474

Stepping to zi=  2.0039E+01, delzi=  7.6191E-04, nord= 5
  time =  4.0190E+05 d, dltime =  7.8039E+03 d
Steps completed =   396, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -26.7177

Stepping to zi=  2.0040E+01, delzi=  1.0747E-03, nord= 6
  time =  4.1291E+05 d, dltime =  1.1007E+04 d
Steps completed =   397, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -27.1464

Stepping to zi=  2.0041E+01, delzi=  4.4209E-04, nord= 6
  time =  4.1744E+05 d, dltime =  4.5281E+03 d
Steps completed =   398, iter =  4, ncorr = 0
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Most rapidly changing is zvclg1(Pu++++                  ) =    -27.3406

Stepping to zi=  2.0042E+01, delzi=  8.3885E-04, nord= 6
  time =  4.2603E+05 d, dltime =  8.5920E+03 d
Steps completed =   399, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -27.7409

Stepping to zi=  2.0042E+01, delzi=  7.3483E-04, nord= 6
  time =  4.3355E+05 d, dltime =  7.5265E+03 d
Steps completed =   400, iter =  4, ncorr = 0
Most rapidly changing is zvclg1(Pu++++                  ) =    -28.1292

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                    Reaction progress        =  2.00423287867624E+01
                    Log of reaction progress =       1.3019482



                    Time =  3.746E+10 sec
                         =  4.336E+05 days
                         =  1.187E+03 years

                    Log sec =       10.574
                    Log days =       5.637
                    Log years =      3.074

                    Temperature    =     25.000 degrees C
                    total pressure =      1.013 bars


Maximum number of steps


                              --- Reactant Summary ---


    Reactant                  Moles     Delta moles    Mass, g    Delta Mass, g

 carbon steel               0.0000E+00   2.0000E+01   0.0000E+00   1.0940E+03
 Alloy-22                   1.9958E+01   4.2329E-02   1.1952E+03   2.5350E+00


               Current total mass =  1.19522E+03 grams
               Delta total mass   =  1.09649E+03 grams
               Delta total volume =      0.00000 cc


    Reactant                Rel. Rate      Rate         Rate
                             mol/mol       mol/s      mol/s/cm2

 carbon steel               0.0000E+00   0.0000E+00   0.0000E+00
 Alloy-22                   1.0000E+00   1.1300E-12   1.1300E-14


    Reactant                  Affinity   Surface Area
                              kcal/mol     mol/s/cm2

 carbon steel                999.00000   1.0000E+02
 Alloy-22                    999.00000   1.0000E+02
```

Reactant		Rate Constants, mol/s/cm2
carbon steel		
	Forward	1.0000E-11
Alloy-22		
	Forward	1.1300E-14

Affinity of the overall irreversible reaction= 0.000 kcal
Contributions from irreversible reactions
with no thermodynamic data are not included

--- Element Totals for the Aqueous Solution ---

Element	mg/kg soln.	Molality	Moles
O	8.856314E+05	5.563976E+01	5.562828E+01
Al	3.980294E-02	1.482806E-06	1.482500E-06
B	1.332664E-01	1.239056E-05	1.238800E-05
Ba	1.366500E-05	1.000206E-10	1.000000E-10
Ca	1.293601E+01	3.244370E-04	3.243700E-04
Ce	1.394243E-19	1.000207E-24	1.000000E-24
Cl	7.104973E+00	2.014416E-04	2.014000E-04
Cr	5.609109E+02	1.084324E-02	1.084100E-02
Cs	1.322502E-05	1.000206E-10	1.000000E-10
Cu	6.639436E-10	1.050217E-14	1.050000E-14
F	2.169319E+00	1.147737E-04	1.147500E-04
Fe	1.339592E-01	2.411065E-06	2.410567E-06
Gd	1.564748E-09	1.000207E-14	1.000000E-14
H	1.113352E+05	1.110283E+02	1.110054E+02
C	1.259069E-01	1.053674E-05	1.053456E-05
P	1.903703E+01	6.177906E-04	6.176631E-04
K	5.015314E+00	1.289366E-04	1.289100E-04
La	1.382207E-09	1.000207E-14	1.000000E-14
Li	6.906781E-07	1.000206E-10	1.000000E-10
Mg	2.000090E+00	8.271608E-05	8.269900E-05
Mn	1.741250E+00	3.185840E-05	3.185183E-05
Mo	4.079878E+02	4.274481E-03	4.273599E-03
N	1.979152E+00	1.420293E-04	1.420000E-04
Na	4.557443E+01	1.992611E-03	1.992200E-03
Nd	1.435289E-09	1.000207E-14	1.000000E-14
Ni	1.404414E+03	2.405288E-02	2.404792E-02
Pb	2.061785E-05	1.000206E-10	1.000000E-10
Pu	2.427972E-09	1.000207E-14	1.000000E-14
S	5.504607E+02	1.725510E-02	1.725154E-02
Si	2.798635E+00	1.001613E-04	1.001406E-04
Sm	1.496188E-09	1.000207E-14	1.000000E-14
Sr	8.718804E-06	1.000206E-10	1.000000E-10
Ti	4.764396E-06	1.000206E-10	1.000000E-10
U	2.368555E-09	1.000207E-14	1.000000E-14
V	8.925964E+00	1.761243E-04	1.760880E-04
Zn	6.506763E-06	1.000206E-10	1.000000E-10
Zr	9.077428E-16	1.000207E-20	1.000000E-20

Single ion activities and activity coefficients are here defined
with respect to the modified NBS pH scale

	pH	Eh	pe
modified NBS pH scale	2.6934	1.0597	1.7914E+01
rational pH scale	2.6092	1.0647	1.7998E+01

pHCl = 6.4921

Oxygen fugacity = 2.09991E-01
Log oxygen fugacity = -0.67780

Activity of water = 0.99918
Log activity of water = -0.00035

Ionic strength = 8.149356E-02 molal
Sum of molalities = 0.0559297790058
Osmotic coefficient = 0.81032

Mass of solution = 1.004954 kg
Mass of solutes = 0.005161 kg
Conc. of solutes = 0.513530 per cent (w/w)

Moles of solvent H2O = 5.54970E+01
Mass of solvent H2O = 9.99794E-01 kg

Species	Molality	Log molality	Log gamma	Log activity
Ni++	1.9335E-02	-1.7137	-0.3869	-2.1006
SO4--	1.1294E-02	-1.9471	-0.4045	-2.3516
HCrO4-	6.3472E-03	-2.1974	-0.0944	-2.2919
NiSO4(aq)	4.7148E-03	-2.3265	0.0000	-2.3265
MoO4--	4.2745E-03	-2.3691	-0.3905	-2.7596
H+	2.4590E-03	-2.6092	-0.0841	-2.6934
Cr2O7--	2.2467E-03	-2.6485	-0.4045	-3.0530
Na+	1.9377E-03	-2.7127	-0.1112	-2.8239
HSO4-	1.0678E-03	-2.9715	-0.0944	-3.0659
H2PO4-	4.9486E-04	-3.3055	-0.0944	-3.4000
Ca++	2.6246E-04	-3.5809	-0.3869	-3.9679
O2(aq)	2.6025E-04	-3.5846	0.0085	-3.5761
Cl-	2.0113E-04	-3.6965	-0.1022	-3.7987
NO3-	1.3911E-04	-3.8566	-0.1022	-3.9589
K+	1.2495E-04	-3.9033	-0.1189	-4.0222
VO2+	1.2262E-04	-3.9114	-0.1112	-4.0226
H3PO4(aq)	1.1922E-04	-3.9237	0.0000	-3.9237
SiO2(aq)	1.0016E-04	-3.9993	0.0000	-3.9993
HF(aq)	7.4593E-05	-4.1273	0.0000	-4.1273
CaSO4(aq)	6.1883E-05	-4.2084	0.0000	-4.2084
NaSO4-	5.4821E-05	-4.2611	-0.0944	-4.3555
Mg++	5.4526E-05	-4.2634	-0.3469	-4.6103
F-	3.1346E-05	-4.5038	-0.0982	-4.6020
MgSO4(aq)	2.8169E-05	-4.5502	0.0000	-4.5502
VO(OH)3(aq)	2.3447E-05	-4.6299	0.0000	-4.6299
Mn++	2.2486E-05	-4.6481	-0.3869	-5.0350
VO2SO4-	1.9962E-05	-4.6998	-0.0944	-4.7942
B(OH)3(aq)	1.2391E-05	-4.9069	0.0000	-4.9069
CO2(aq)	1.0534E-05	-4.9774	0.0085	-4.9689
MnSO4(aq)	9.2518E-06	-5.0338	0.0000	-5.0338
VO2F(aq)	5.3136E-06	-5.2746	0.0000	-5.2746
KSO4-	3.9829E-06	-5.3998	-0.0944	-5.4942

NiNO3+	2.8294E-06	-5.5483	-0.1112	-5.6595
H2VO4-	2.3212E-06	-5.6343	-0.0944	-5.7287
FeHPO4+	2.2586E-06	-5.6462	-0.1112	-5.7573
CrO4--	2.0495E-06	-5.6884	-0.4045	-6.0929
VO2(OH)2-	1.4385E-06	-5.8421	-0.0944	-5.9365
AlF2+	1.0186E-06	-5.9920	-0.1112	-6.1031
VO2HPO4-	9.7695E-07	-6.0101	-0.0944	-6.1046
H2CrO4(aq)	4.9585E-07	-6.3046	0.0000	-6.3046
HPO3F-	3.1105E-07	-6.5072	-0.0944	-6.6016
AlF3(aq)	2.4823E-07	-6.6051	0.0000	-6.6051
AlF++	2.1028E-07	-6.6772	-0.4239	-7.1011
NiCl+	1.6430E-07	-6.7844	-0.1112	-6.8955
MnH2PO4+	1.0621E-07	-6.9738	-0.1112	-7.0850
FeOH++	7.9728E-08	-7.0984	-0.4239	-7.5223
CaNO3+	7.6632E-08	-7.1156	-0.1112	-7.2267
HCl(aq)	6.8846E-08	-7.1621	0.0000	-7.1621
Fe+++	5.1123E-08	-7.2914	-0.7340	-8.0253
VO2F2-	4.7624E-08	-7.3222	-0.0944	-7.4166
NaCl(aq)	3.9849E-08	-7.3996	0.0000	-7.3996
HPO4--	3.1084E-08	-7.5075	-0.4045	-7.9120
PO3F--	2.4934E-08	-7.6032	-0.4045	-8.0077
CrO3Cl-	2.2050E-08	-7.6566	-0.0944	-7.7510
MgF+	1.7834E-08	-7.7487	-0.1112	-7.8599
Cr+++	1.7429E-08	-7.7587	-0.7340	-8.4927
CaF+	1.6709E-08	-7.7770	-0.1112	-7.8882
H2F2(aq)	1.5038E-08	-7.8228	0.0000	-7.8228
HNO3(aq)	1.1098E-08	-7.9548	0.0000	-7.9548
FeF++	8.5717E-09	-8.0669	-0.4239	-8.4908
MnF+	8.0189E-09	-8.0959	-0.1112	-8.2070
Fe(OH)2+	6.3370E-09	-8.1981	-0.1112	-8.3093
KHSO4(aq)	5.5766E-09	-8.2536	0.0000	-8.2536
FeSO4+	4.5895E-09	-8.3382	-0.1112	-8.4494
CaCl+	4.4559E-09	-8.3511	-0.1112	-8.4622
MnCl+	3.7905E-09	-8.4213	-0.1112	-8.5325
NaF(aq)	3.7717E-09	-8.4235	0.0000	-8.4235
MgCl+	3.6918E-09	-8.4328	-0.1112	-8.5439
HCO3-	2.9777E-09	-8.5261	-0.0944	-8.6206
MnNO3+	2.0762E-09	-8.6827	-0.1112	-8.7939
AlF4-	1.9377E-09	-8.7127	-0.0944	-8.8072
AlSO4+	1.8638E-09	-8.7296	-0.1112	-8.8408
H2P2O7--	1.8409E-09	-8.7350	-0.4045	-9.1395
H2SO4(aq)	1.7405E-09	-8.7593	0.0000	-8.7593
Al+++	1.7173E-09	-8.7652	-0.7340	-9.4991
FeF2+	1.7045E-09	-8.7684	-0.1112	-8.8796
CaHPO4(aq)	7.2467E-10	-9.1399	0.0000	-9.1399
HF2-	5.5967E-10	-9.2521	-0.0944	-9.3465
KCl(aq)	4.8358E-10	-9.3155	0.0000	-9.3155
MnHPO4(aq)	4.2954E-10	-9.3670	0.0000	-9.3670
CrOH++	4.2099E-10	-9.3757	-0.4239	-9.7996
Fe(SO4)2-	3.7976E-10	-9.4205	-0.0944	-9.5149
MgHPO4(aq)	2.4420E-10	-9.6123	0.0000	-9.6123
NaHPO4-	1.8994E-10	-9.7214	-0.0944	-9.8158
VO3OH--	1.8788E-10	-9.7261	-0.4045	-10.1306
Ni(NO3)2(aq)	1.4845E-10	-9.8284	0.0000	-9.8284
AlHPO4+	1.2591E-10	-9.8999	-0.1112	-10.0111
VO++	1.0587E-10	-9.9752	-0.4239	-10.3992
Ti(OH)4(aq)	1.0002E-10	-9.9999	0.0000	-9.9999
Cs+	1.0001E-10	-9.9999	-0.1233	-10.1232

--- Summary of Solid Product Phases---

Product	Log moles	Moles	Mass, g	Volume, cc
Hematite	0.9828	9.6111E+00	1.5348E+03	2.9097E+02
MnHPO4	-1.8696	1.3504E-02	2.0379E+00	0.0000E+00
Pyrolusite	-0.7151	1.9270E-01	1.6753E+01	9.6349E+01
Quartz	-0.9661	1.0812E-01	6.4961E+00	2.4530E+00
fix CO2(g)	4.0000	1.0000E+04	4.4012E+05	0.0000E+00
fix O2(g)	3.9993	9.9848E+03	3.1950E+05	0.0000E+00

	Mass, grams	Volume, cc
Created	7.611778E+05	3.897697E+02
Destroyed	1.096488E+03	0.000000E+00
Net	7.600813E+05	3.897697E+02

Warning-- these volume totals may be incomplete because
of missing partial molar volume data in the data base

--- Summary of Pure Mineral Saturation States ---

Mineral	Log Q/K	Aff, kcal	State
AlF3	-6.096	-8.317	
Anglesite	-4.924	-6.717	
Anhydrite	-2.013	-2.746	
BaCrO4	-6.572	-8.966	
BaZrO3	70.646	96.381	ssatd
Barite	-2.791	-3.808	
Bassanite	-2.658	-3.627	
Boric_acid	-4.749	-6.478	
CaSO4:0.5H2O(beta)	-2.826	-3.856	
CaV2O6	-6.774	-9.241	
CaZrO3	131.119	178.883	ssatd
Celestite	-7.214	-9.842	
Chalcedony	-0.271	-0.370	
Coesite	-0.810	-1.105	
CrO2	-1.377	-1.878	
Cristobalite(alpha)	-0.551	-0.751	
Cristobalite(beta)	-0.994	-1.356	
Crocoite	-3.800	-5.184	
Epsomite	-5.002	-6.824	
Fe(OH)3	-5.602	-7.642	
FeF3	-2.593	-3.537	
Fluorite	-3.135	-4.277	
Goethite	-0.480	-0.655	
Gypsum	-1.838	-2.507	
Hematite	0.000	0.000	satd
Hexahydrite	-5.237	-7.145	
Ice	-0.139	-0.190	
Jarosite	-7.273	-9.922	
Kieserite	-6.695	-9.134	
Manganite	-4.459	-6.084	
Mirabilite	-6.863	-9.363	
MnHPO4	0.000	0.000	satd
MnO2(gamma)	-1.518	-2.071	
MnV2O6	-7.127	-9.724	
Morenosite	-2.441	-3.330	
NiF2:4H2O	-7.247	-9.887	
NiSO4:6H2O(alpha)	-2.447	-3.339	

Nontronite-Ca	-3.221	-4.395	
Nontronite-H	-2.498	-3.407	
Nontronite-K	-3.611	-4.927	
Nontronite-Mg	-3.290	-4.488	
Nontronite-Na	-3.554	-4.849	
PbHPO4	-6.770	-9.236	
Pentahydrite	-5.577	-7.608	
Pyrolusite	0.000	0.000	satd
Quartz	0.000	0.000	satd
Rutile	-0.354	-0.483	
Sellaite	-4.430	-6.044	
Shcherbinaite	-1.207	-1.646	
SiO2(am)	-1.286	-1.754	
SrZrO3	107.512	146.677	ssatd
Starkeyite	-5.963	-8.136	
Strengite	-1.902	-2.595	
Trevorite	-6.393	-8.722	
Tridymite	-0.171	-0.234	
fix CO2(g)	0.000	0.000	satd
fix O2(g)	0.000	0.000	satd

--- Summary of Solid Solutions ---

--- Carbonate-Calcite ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Calcite	9.5161E-02	-1.0215	0.0000	-1.0215
Magnesite	7.7832E-03	-2.1088	0.0000	-2.1088
Rhodochrosite	8.9705E-01	-0.0472	0.0000	-0.0472
Siderite	1.1454E-08	-7.9410	0.0000	-7.9410
Smithsonite	8.7903E-07	-6.0560	0.0000	-6.0560
Strontianite	3.7089E-06	-5.4308	0.0000	-5.4308

Mineral	Log Q/K	Aff, kcal	State
Carbonate-Calcite	-10.722	-14.628	
Calcite	-10.722	-14.628	
Magnesite	-10.722	-14.628	
Rhodochrosite	-10.722	-14.628	
Siderite	-10.722	-14.628	
Smithsonite	-10.722	-14.628	
Strontianite	-10.722	-14.628	

--- Clinoptilolite-hy-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-hy-Ca	9.9761E-01	-0.0010	0.0000	-0.0010
Clinoptilolite-hy-Cs	6.8133E-23	-22.1666	0.0000	-22.1666
Clinoptilolite-hy-K	7.5041E-04	-3.1247	0.0000	-3.1247
Clinoptilolite-hy-Na	1.6400E-03	-2.7851	0.0000	-2.7851
Clinoptilolite-hy-Sr	5.5624E-12	-11.2547	0.0000	-11.2547

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-hy-ss	-53.551	-73.059	
Clinoptilolite-hy-Ca	-53.551	-73.059	
Clinoptilolite-hy-Cs	-53.551	-73.059	
Clinoptilolite-hy-K	-53.551	-73.059	
Clinoptilolite-hy-Na	-53.551	-73.059	
Clinoptilolite-hy-Sr	-53.551	-73.059	

--- Clinoptilolite-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-Ca	7.8003E-01	-0.1079	-0.2654	-0.3733
Clinoptilolite-Cs	3.0510E-07	-6.5156	-16.0283	-22.5438
Clinoptilolite-K	9.7313E-02	-1.0118	-2.4891	-3.5009
Clinoptilolite-NH4	5.0983E-53	-52.2926	-128.6397	-180.9323
Clinoptilolite-Na	1.2222E-01	-0.9129	-2.2456	-3.1585
Clinoptilolite-Sr	4.3652E-04	-3.3600	-8.2656	-11.6256

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-ss	-53.180	-72.553	
Clinoptilolite-Ca	-53.180	-72.553	
Clinoptilolite-Cs	-53.180	-72.553	
Clinoptilolite-K	-53.180	-72.553	
Clinoptilolite-NH4	-53.180	-72.553	
Clinoptilolite-Na	-53.180	-72.553	
Clinoptilolite-Sr	-53.180	-72.553	

--- Saponite-tri ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Saponite-Ca	6.3355E-03	-2.1982	1.4728	-0.7254
Saponite-H	9.8869E-01	-0.0049	0.0033	-0.0016
Saponite-K	4.1647E-04	-3.3804	2.2649	-1.1155
Saponite-Mg	3.9339E-03	-2.4052	1.6115	-0.7937
Saponite-Na	6.2012E-04	-3.2075	2.1490	-1.0585

Mineral	Log Q/K	Aff, kcal	State
Saponite-tri	-38.148	-52.045	
Saponite-Ca	-38.148	-52.045	
Saponite-H	-38.148	-52.045	
Saponite-K	-38.148	-52.045	
Saponite-Mg	-38.148	-52.045	
Saponite-Na	-38.148	-52.045	

--- Smectite-di ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Beidellite-Ca	5.9594E-62	-61.2248	41.0206	-20.2042
Beidellite-K	3.9202E-63	-62.4067	41.8125	-20.5942
Beidellite-Mg	3.7004E-62	-61.4318	41.1593	-20.2725
Beidellite-Na	5.8331E-63	-62.2341	41.6968	-20.5373
Montmor-Ca	5.9348E-53	-52.2266	34.9918	-17.2348
Montmor-K	6.3760E-54	-53.1955	35.6410	-17.5545
Montmor-Mg	5.9891E-53	-52.2226	34.9892	-17.2335
Montmor-Na	9.2517E-54	-53.0338	35.5326	-17.5011
Nontronite-Ca	5.6022E-01	-0.2516	0.1686	-0.0830
Nontronite-K	3.6852E-02	-1.4335	0.9605	-0.4731
Nontronite-Mg	3.4810E-01	-0.4583	0.3071	-0.1512
Nontronite-Na	5.4834E-02	-1.2610	0.8448	-0.4161

Mineral	Log Q/K	Aff, kcal	State
Smectite-di	-3.138	-4.282	
Beidellite-Ca	-3.138	-4.282	
Beidellite-K	-3.138	-4.282	
Beidellite-Mg	-3.138	-4.282	
Beidellite-Na	-3.138	-4.282	
Montmor-Ca	-3.138	-4.282	
Montmor-K	-3.138	-4.282	
Montmor-Mg	-3.138	-4.282	
Montmor-Na	-3.138	-4.282	
Nontronite-Ca	-3.138	-4.282	
Nontronite-K	-3.138	-4.282	
Nontronite-Mg	-3.138	-4.282	
Nontronite-Na	-3.138	-4.282	

--- Lanthanide hydroxide ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
La(OH)3	1.3153E-05	-4.8810	0.0000	-4.8810
Ce(OH)3	3.7879E-15	-14.4216	0.0000	-14.4216
Nd(OH)3(c)	3.5597E-01	-0.4486	0.0000	-0.4486
Gd(OH)3	5.7496E-01	-0.2404	0.0000	-0.2404
Sm(OH)3	6.9059E-02	-1.1608	0.0000	-1.1608

Mineral	Log Q/K	Aff, kcal	State
Lanthanide hydroxide	-22.740	-31.023	
La(OH)3	-22.740	-31.023	
Ce(OH)3	-22.740	-31.023	
Nd(OH)3(c)	-22.740	-31.023	
Gd(OH)3	-22.740	-31.023	
Sm(OH)3	-22.740	-31.023	

--- Rhabdophane-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaPO4:H2O	4.1454E-01	-0.3824	0.0000	-0.3824
CePO4:H2O	3.7753E-11	-10.4230	0.0000	-10.4230
NdPO4:H2O	2.2386E-01	-0.6500	0.0000	-0.6500
GdPO4:H2O	1.4394E-01	-0.8418	0.0000	-0.8418
SmPO4:H2O	2.1766E-01	-0.6622	0.0000	-0.6622

Mineral	Log Q/K	Aff, kcal	State
Rhabdophane-ss	-7.857	-10.719	
LaPO4:H2O	-7.857	-10.719	
CePO4:H2O	-7.857	-10.719	
NdPO4:H2O	-7.857	-10.719	
GdPO4:H2O	-7.857	-10.719	
SmPO4:H2O	-7.857	-10.719	

--- Lanthanide fluoride ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaF3:0.5H2O	5.7268E-01	-0.2421	0.0000	-0.2421
CeF3:0.5H2O	8.2661E-11	-10.0827	0.0000	-10.0827
NdF3:0.5H2O	3.8933E-01	-0.4097	0.0000	-0.4097
GdF3:0.5H2O	7.9167E-03	-2.1015	0.0000	-2.1015
SmF3:0.5H2O	3.0070E-02	-1.5219	0.0000	-1.5219

Mineral	Log Q/K	Aff, kcal	State
Lanthanide fluoride	-10.234	-13.963	
LaF3:0.5H2O	-10.234	-13.963	
CeF3:0.5H2O	-10.234	-13.963	
NdF3:0.5H2O	-10.234	-13.963	
GdF3:0.5H2O	-10.234	-13.963	
SmF3:0.5H2O	-10.234	-13.963	

--- Summary of Gases ---

Gas	Fugacity	Log fugacity
Al(g)	4.3329-200	-199.3632
B(g)	8.5659-204	-203.0672
BF3(g)	1.4940E-24	-23.8256
C(g)	3.0917-190	-189.5098
CH4(g)	3.5236-146	-145.4530
CO(g)	6.0395E-49	-48.2190
CO2(g)	3.1623E-04	-3.5000
Ca(g)	1.3451-162	-161.8713
Chlorine	1.6889E-18	-17.7724
Cs(g)	1.5257E-88	-87.8165
Cu(g)	1.3855E-91	-90.8584
Fluorine	7.9754E-73	-72.0982
H2(g)	6.1101E-42	-41.2140

H2O(g)	2.5956E-02	-1.5858
H2S(g)	1.1824-131	-130.9272
HCl(g)	1.5936E-13	-12.7976
HF(g)	3.9084E-09	-8.4080
K(g)	9.6286E-83	-82.0164
Li(g)	3.4317-102	-101.4645
Mg(g)	2.0641-140	-139.6853
Nitrogen	1.2113E-09	-8.9167
NH3(g)	4.0077E-64	-63.3971
NO(g)	1.0959E-20	-19.9602
NO2(g)	7.4934E-15	-14.1253
Na(g)	7.9325E-81	-80.1006
O2(g)	2.0999E-01	-0.6778
Pb(g)	1.3827E-79	-78.8593
S2(g)	8.3504-206	-205.0783
SO2(g)	2.0952E-44	-43.6788
Si(g)	4.2257-221	-220.3741
SiF4(g)	1.0302E-18	-17.9871
Ti(g)	1.6827-231	-230.7740
TiCl4(g)	9.5768E-65	-64.0188
U(g)	7.4634-304	-303.1271
U2Cl10(g)	6.0038-207	-206.2216
U2Cl8(g)	1.1021-219	-218.9578
U2F10(g)	6.2595-120	-119.2035
UCl(g)	1.0603-254	-253.9746
UCl2(g)	4.5066-204	-203.3462
UCl3(g)	4.1952-151	-150.3772
UCl4(g)	2.1147-115	-114.6747
UCl5(g)	5.4848-117	-116.2608
UCl6(g)	2.6428-113	-112.5779
UF(g)	5.5267-240	-239.2575
UF2(g)	3.0352-194	-193.5178
UF3(g)	4.1022-142	-141.3870
UF4(g)	8.1836E-87	-86.0871
UF5(g)	7.4778E-73	-72.1262
UF6(g)	6.7282E-73	-72.1721
UO(g)	5.8944-219	-218.2296
UO2(g)	1.0920-134	-133.9618
UO2Cl2(g)	8.0528E-72	-71.0941
UO2F2(g)	3.9345E-60	-59.4051
UO3(g)	8.0323E-82	-81.0952
UOF4(g)	2.4386E-64	-63.6129
Zn(g)	2.3593E-89	-88.6272

- -

--- Maximum number of steps ---

--- The reaction path has terminated normally ---

400 steps were taken
zi increased from
0.00000E+00 to 2.00423E+01
The average value of delzi was 5.01058E-02
The average matrix dimension was 54

Time increased from
0.00000E+00 to 3.74591E+10 seconds

```
     0.00000E+00 to  4.33554E+05 days
     0.00000E+00 to  1.18701E+03 years


  Start time = 10:37:35  01/19/99
    End time = 10:44:39  01/19/99

   Run time =   424.     seconds
  User time =   424.     seconds
   Cpu time =   424.     seconds

Normal exit
```

```
|-----------------------------------------------------------------------|
|EQ6 input file name= j13_All-22.6i.txt                                 |
|Description= React J-13 water with Carbon Steel and Alloy-22.          |
|Equilibrium with atmospheric gases.                                    |
|Version level= 7.2                                                     |
|Created 01/19/99    Creator= D.H. Lester                               |
|Revised             Revisor=                                           |
|                                                                       |
|Water from well J-13 at the Nevada Test site                           |
|                                                                       |
|Purpose: To model reaction with carbon steel (iron) and alloy C-22     |
|simultaneously to determine an expected Cr concentration in the water |
|corroding the C-22 after breaching the CAM.                            |
|                                                                       |
|It is assumed that a significant amount of carbon steel is still       |
|present. The rate constant for the steel was assumed to be 1.0E-11     |
|which is the higher value suggested in simulation studies at LLNL.     |
|Reference: Eng. Barrier System & Near Field Envir. Perf. Assess.,      |
|FY-96 Activities: End-of-Year Summary, Sept 1996, Wm.G.Halsey, "Report|
|on Initial Simulation of Water Interaction With Mild Steel Containers |
|Rate for C-22 is the median value for dripping at high temp. in the    |
|TSPA simulations for the VA document.                                  |
|The data base was modified to add the solid KFe(CrO4)2:2H2O            |
|Total amount of Steel and C-22 reduced to 20 moles each for a more     |
|realistic proportion of materials contacting 1L of water               |
|-----------------------------------------------------------------------|
| calculational mode   |*normal     | economy           | super economy|
|-----------------------------------------------------------------------|
| model type           |*titration  | closed            | open         |
|-----------------------------------------------------------------------|
| temperature model    |*power      | fluid mixing                     |
|-----------------------------------------------------------------------|
c power model  -->   temp = tstart + tk1*zi + tk2*zi**2 + tk3*zi**3    |
c mixing model -->   temp = (tstart * tk1 + zi*tk2) / (zi + tk1)        |
c-----------------------------------------------------------------------|
| tstart(c)|  25.00    |tk1| 0.0000    |tk2| 0.0000    |tk3| 0.0000    |
|-----------------------------------------------------------------------|
| starting value of zi | 0.00000    |max. value of zi    | 1.00000E+38 |
|-----------------------------------------------------------------------|
| starting time (sec)  | 0.00000    |max. time (sec)     | 1.00000E+38 |
|-----------------------------------------------------------------------|
| max. steps           |       400  |max. steps w/o print|       150   |
|-----------------------------------------------------------------------|
| linear print interval|  10.000    |log print interval  | 1.00000E+38 |
|-----------------------------------------------------------------------|
| suppress mineral phases                                               |
|-----------------------------------------------------------------------|
| phases w/ elements|                          |                          |n
| phases except     |                          |                          |n
|-----------------------------------------------------------------------|
| fixed fugacity phases- species, moles(per kg h2o), log fugacity(bars)|
|-----------------------------------------------------------------------|
| CO2(g)                              | 0.00000        | -3.5000        |n
| O2(g)                               | 0.00000        |-0.67780        |n
|-----------------------------------------------------------------------|
c                  R A T E     L A W S
c 1 = relative                  rate = rk1 + rk2*zi + (1/2)rk3*zi*zi
c 2 = transition state theory   rate = CHECK DOCUMENTATION
c 3 = specified rate            rate = CHECK DOCUMENTATION
c 4 = activity term rate        rate = CHECK DOCUMENTATION
c
c                  R E A C T A N T     T Y P E S
c mineral     solid solution     special    aqueous    gas
```

```
c
c                  S U R F A C E    T Y P E
c 0 = fixed surface area     1 = fixed specific surface area
c
c                  N O T E S
c status and jreac are normally not set by the user
|-----------------------------------------------------------------------|
| reactants   (ss) solid solution only     (sp) special reactant only   |
|-----------------------------------------------------------------------|
| REACTANT          | carbon steel              |status    | 0            |
| moles remaining   |  20.000                   |destroyed| 0.00000       |
| reactant type     |  special                  |sk        |  100.00      |
| surface type      |   0                       |fk        |  1.0000      |
| end-member        |                           |mole fr   |              |ss,n
| volume            | 0.00000                   |          |              |sp
| element           | C            |moles       |  2.190000000000000E-02 |sp,n
| element           | Mn           |moles       |  1.030000000000000E-02 |sp,n
| element           | S            |moles       |  8.530000000000000E-04 |sp,n
| element           | Si           |moles       |  5.360000000000000E-03 |sp,n
| element           | P            |moles       |  7.060000000000000E-04 |sp,n
| element           | Fe           |moles       |  9.610000000000000E-01 |sp,n
| DISSOLUTION LAW   |    3                      |          |              |
| rate constant rk1| 1.00000E-11                |csigma1   |              |
| temperature (c)   |   25.000                  |          |              |234
| PRECIPITATION LAW|    0                       |          |              |
c-----------------------------------------------------------------------|
| REACTANT          | Alloy-22                  |status    | 0            |
| moles remaining   |  20.000                   |destroyed| 0.00000       |
| reactant type     |  special                  |sk        |  100.00      |
| surface type      |   0                       |fk        |  1.0000      |
| end-member        |                           |mole fr   |              |ss,n
| volume            | 0.00000                   |          |              |sp
| element           | Cr           |moles       |  2.561060000000000E-01 |sp,n
| element           | Fe           |moles       |  5.420400000000000E-02 |sp,n
| element           | Ni           |moles       |  5.681220000000000E-01 |sp,n
| element           | Mo           |moles       |  1.009620000000000E-01 |sp,n
| element           | V            |moles       |  4.160000000000000E-03 |sp,n
| element           | Mn           |moles       |  5.510000000000000E-03 |sp,n
| DISSOLUTION LAW   |    3                      |          |              |
| rate constant rk1| 1.13000E-14                |csigma1   |              |
| temperature (c)   |   25.000                  |          |              |234
| PRECIPITATION LAW|    0                       |          |              |
|-----------------------------------------------------------------------|
| options                                                               |
|-----------------------------------------------------------------------|
| - SOLID SOLUTIONS -                                                   |
|     ignore solid solutions                                            |
|   * process solid solutions                                           |
| - LOADING OF SPECIES INTO MEMORY -                                    |
|   * don't print                                                       |
|     lists species loaded into memory                                  |
| - LIST DERIVATIVES OF BASIS ELEMENTS AT EACH PRINT POINT -            |
|   * don't print                                                       |
|     print                                                             |
| - LIST ALL SPECIES LOADED INTO MEMORY AND THEIR LOG K VALUES -        |
|   * don't print                                                       |
|     print                                                             |
| - LIST DISTRIBUTION OF AQUEOUS SPECIES AT EACH PRINT POINT -          |
|   * only species > 10**-12 molal                                      |
|     all species                                                       |
|     don't print                                                       |
| - LIST CATION/H+ ACTIVITY RATIOS AT EACH PRINT POINT -                |
|   * don't print                                                       |
```

```
|     print                                                          |
| - LIST BULK ELEMENT AND OXIDE COMPOSITION AT EACH PRINT POINT -    |
|   * don't print                                                    |
|     print                                                          |
| - MINERAL SATURATION STATES -                                      |
|   * print if affinity > -10 kcals                                  |
|     print all                                                      |
|     don't print                                                    |
| - LIST GAS SPECIES SUMMARY AT EACH PRINT POINT -                   |
|     don't print                                                    |
|   * print                                                          |
| - PRINT AQUEOUS MASS AND CONCENTRATION TOTALS -                    |
|   * don't print                                                    |
|     print                                                          |
| - TAB FILES -                                                      |
|   * write                                                          |
|     append to previous tabx file                                   |
|     don't write                                                    |
| - WRITE PICKUP FILE -                                              |
|     write pickup file at end of run                                |
|     don't write pickup file                                        |
|   * write pickup file for each print point                         |
| - PHYSICALLY REMOVED SUBSYSTEM -                                   |
|   * does nothing                                                   |
|     transfer minerals but leave trivial mass in the system         |
|     transfer minerals                                              |
| - CLEAR INITIAL PHYSICALLY REMOVED SUBSYSTEM -                     |
|   * does nothing                                                   |
|     clear p.r.s. before first reaction progress advance            |
| - PHASE BOUNDARY SEARCH -                                          |
|   * step size constrained by predicted phase boundaries            |
|     phase boundaries estimated from Taylor's series and printed    |
|     locations of phase boundaries ignored                          |
| - AUTO BASIS SWITCHING -                                           |
|   * off                                                            |
|     on                                                             |
| - SUPPRESS REDOX REACTIONS -                                       |
|   * does nothing                                                   |
|     suppress all redox reactions                                   |
| - LINEAR OR LOGARITHMIC TAYLOR'S SERIES -                          |
|   * linear for kcol = 1,kdim, logarithmic for kcol = 1,kbt         |
|     logarithmic for kcol = 1,kbt                                   |
|     linear for kcol = 1,kdim                                       |
| - AZERO AND HYDRATION NUMBERS -                                    |
|   * no change                                                      |
|     read in new azero and hydration numbers                        |
| - PRINT MEAN MOLAL ACTIVITY COEFFICIENTS FOR DISSOLVED SPECIES -   |
|   * does nothing                                                   |
|     print                                                          |
| - PITZER DATABASE INFORMATION -                                    |
|   * print only warnings                                            |
|     print species in model and number of Pitzer coefficients       |
|     print species in model and names of Pitzer coefficients        |
| - PRINT DIAGNOSTIC MESSAGES -                                      |
|   * don't print                                                    |
|     print level 1 messages                                         |
|     print level 2 messages                                         |
| - PRINT PRE-NEWTON-RAPHSON OPTIMIZATION -                          |
|   * don't print                                                    |
|     print summary information                                      |
|     print detailed information                                     |
| - PRINT STEP SIZE AND ORDER -                                      |
|   * don't print                                                    |
```

```
|     print scale factor                                                |
|     print orders and step size scaling factors                        |
| - CONTROL STEP SIZE AND ORDER PRINT -                                 |
|   * does nothing                                                      |
|     print step size and order when delzi .le. dlzmx1                  |
| - NEWTON ITERATIONS -                                                 |
|   * don't print                                                       |
|     print summary of newton iterations                                |
|     print summary, residual functions and correction terms            |
|     print summary, residual functions, correction terms and matrix    |
| - PRINT SEARCH ITERATIONS -                                           |
|   * don't print                                                       |
|     print                                                             |
| - PRINT HPSAT ITERATIONS -                                            |
|   * don't print                                                       |
|     print                                                             |
| - PRINT FINITE DIFFERENCE AND DERIVATIVE DATA -                       |
|   * don't print                                                       |
|     print computations from RDERIV, and RTAYLR                        |
|     print computations from RDERIV, RTAYLR, DERIV and TAYLOR          |
| - PRINT KINETICS DIAGNOSTIC MESSAGES -                                |
|   * don't print                                                       |
|     print level 1 diagnostics                                         |
|     print level 1 and level 2 diagnostics                             |
| - PRINT AKMATR -                                                      |
|   * don't print                                                       |
|     print level 1 diagnostics                                         |
| - KILL ITERATION VARIABLES -                                          |
|   * does nothing                                                      |
|     allow selection of variables to remove                            |
|-----------------------------------------------------------------------|
| development options  (used for code development)                      |
|-----------------------------------------------------------------------|
|    0 check finite difference and Taylor series expression             |
|    0 check reaction rate finite difference and Taylor series          |
|-----------------------------------------------------------------------|
| tolerances                       desired values - defaults info-only  |
|-----------------------------------------------------------------------|
| number of N-R iterations        |        90        |  90      itermx |
| p.r.s. transfer interval        | 1.00000E+38      |  varies  dlzidp |
| residual magnitude              | 1.00000E-06      |  1.0e-06 tolbt  |
| correction magnitude            | 1.00000E-06      |  1.0e-06 toldl  |
| search/find tolerance           | 1.00000E-06      |  varies  tolx   |
| supersaturation                 | 5.00000E-03      |  varies  tolsat |
| supersaturation set size        | 1.00000E-02      |  varies  tolsst |
| max. size Taylor's series term  | 1.00000E-04      |  1.0e-04 screw1 |
| max. initial value betamx       |                  |  n/a     screw2 |
| max. Taylor's series term (kin.)| 1.00000E-04      |  1.0e-04 screw3 |
| corrector iteration             | 1.00000E-04      |  1.0e-04 screw4 |
| max. size of N-R correction term|  4.0000          |  4.0     screw5 |
| step size (economy mode)        |  4.0000          |  4.0     screw6 |
| log mass of phases              | -6.0000          |  varies  zklogu |
| decrement mass (p.r.s.)         |  2.0000          |  2.0     zklogl |
| min. left after p.r.s.          | 0.80000          |  .98     zkfac  |
| initial step size               | 1.00000E-09      |  varies  dlzmx1 |
| upper limit step size           | 1.00000E+38      |  varies  dlzmx2 |
| maximum order                   |         6        |  6       nordlm |
| num. attempted assemblages      |        25        |  25      ntrymx |
| slide -> over phase bound.      |        12        |  8       npslmx |
| slide -> over redox insta.      |         8        |  3       nsslmx |
| fo2 scan control                |                  |  none    ioscan |
|-----------------------------------------------------------------------|
c pickup file written by eq6.7.2bR137                                   |
```

```
c supported by eqlib.7.2bR168                                          |
|EQ6 input file name= j13_All-22.6i.txt                                |
|Description= React J-13 water with Carbon Steel and Alloy-22.         |
|Equilibrium with atmospheric gases.                                   |
|Version level= 7.2                                                    |
|Created 01/19/99    Creator= D.H. Lester                              |
|Revised             Revisor=                                          |
|                                                                      |
|Water from well J-13 at the Nevada Test site                          |
|                                                                      |
|Purpose: To model reaction with carbon steel (iron) and alloy C-22    |
|simultaneously to determine an expected Cr concentration in the water |
|corroding the C-22 after breaching the CAM.                           |
|                                                                      |
|It is assumed that a significant amount of carbon steel is still      |
|present. The rate constant for the steel was assumed to be 1.0E-11    |
|which is the higher value suggested in simulation studies at LLNL.    |
|Reference: Eng. Barrier System & Near Field Envir. Perf. Assess.,     |
|FY-96 Activities: End-of-Year Summary, Sept 1996, Wm.G.Halsey, "Report|
|on Initial Simulation of Water Interaction With Mild Steel Containers |
|Rate for C-22 is the median value for dripping at high temp. in the   |
|TSPA simulations for the VA document.                                 |
|The data base was modified to add the solid KFe(CrO4)2:2H2O           |
|Total amount of Steel and C-22 reduced to 20 moles each for a more    |
|realistic proportion of materials contacting 1L of water              |
|----------------------------------------------------------------------|
| temperature (C)                    |     25.000                      |
|----------------------------------------------------------------------|
| electrical imbalance               |   5.752163835343278E-14         |
|----------------------------------------------------------------------|
| number of aqueous master species   |     38                          |
|----------------------------------------------------------------------|
| position of last pure mineral      |     44                          |
|----------------------------------------------------------------------|
| position of last solid solution    |     50                          |
|----------------------------------------------------------------------|
| suppressed species     (suppress,replace,augmentk,augmentg)  value   |
|----------------------------------------------------------------------|
| Phlogopite               | mineral        | suppress |  0.00000      |
| Annite                   | mineral        | suppress |  0.00000      |
| Clinochlore-14A          | mineral        | suppress |  0.00000      |
| Daphnite-14A             | mineral        | suppress |  0.00000      |
| Clinozoisite             | mineral        | suppress |  0.00000      |
| Epidote                  | mineral        | suppress |  0.00000      |
| Epidote-ord              | mineral        | suppress |  0.00000      |
| Andradite                | mineral        | suppress |  0.00000      |
| Grossular                | mineral        | suppress |  0.00000      |
| Enstatite                | mineral        | suppress |  0.00000      |
| Ferrosilite              | mineral        | suppress |  0.00000      |
| Pyrite                   | mineral        | suppress |  0.00000      |
| Pyrrhotite               | mineral        | suppress |  0.00000      |
| Troilite                 | mineral        | suppress |  0.00000      |
| Alabandite               | mineral        | suppress |  0.00000      |
| Brezinaite               | mineral        | suppress |  0.00000      |
| Chalcocite               | mineral        | suppress |  0.00000      |
| Covellite                | mineral        | suppress |  0.00000      |
| Millerite                | mineral        | suppress |  0.00000      |
| Polydymite               | mineral        | suppress |  0.00000      |
| Vaesite                  | mineral        | suppress |  0.00000      |
| Heazlewoodite            | mineral        | suppress |  0.00000      |
| Galena                   | mineral        | suppress |  0.00000      |
| Sulfur                   | mineral        | suppress |  0.00000      |
| CaZrO3                   | mineral        | suppress |  0.00000      |
```

```
| BaZrO3                    | mineral         | suppress |  0.00000      |
| SrZrO3                    | mineral         | suppress |  0.00000      |
| U2S3                      | mineral         | suppress |  0.00000      |
| U3S5                      | mineral         | suppress |  0.00000      |
| US2                       | mineral         | suppress |  0.00000      |
| US3                       | mineral         | suppress |  0.00000      |
| US                        | mineral         | suppress |  0.00000      |
| US1.9                     | mineral         | suppress |  0.00000      |
| U3P4                      | mineral         | suppress |  0.00000      |
| UP                        | mineral         | suppress |  0.00000      |
| UP2                       | mineral         | suppress |  0.00000      |
| HS-                       | aqueous         | suppress |  0.00000      |
| H2S(aq)                   | aqueous         | suppress |  0.00000      |
| S--                       | aqueous         | suppress |  0.00000      |
|-------------------------------------------------------------------------|
| iopg options                                                            |
|-------------------------------------------------------------------------|
| - pH SCALE CONVENTION -                                                 |
|    * modified NBS                                                       |
|      internal                                                           |
|      rational                                                           |
| - ACTIVITY COEFFICIENT OPTIONS -                                        |
|    * use B-dot equation                                                 |
|      Davies' equation                                                   |
|      Pitzer's equations                                                 |
|-------------------------------------------------------------------------|
| elements, moles and moles aqueous                                       |
|-------------------------------------------------------------------------|
| O                         |  4.005551824589011E+04 |  5.551555645693002E+01 |
| Al                        |  1.482500000694482E-06 |  1.307448479371984E-08 |
| B                         |  1.238799999942330E-05 |  1.238799999942425E-05 |
| Ba                        |  1.000000000006594E-10 |  1.000000000006585E-10 |
| Ca                        |  3.243700000162714E-04 |  1.952727302491552E-04 |
| Ce                        |  1.000000000975802E-24 |  1.000000000973988E-24 |
| Cl                        |  2.014000000000269E-04 |  2.014000000000268E-04 |
| Cr                        |  3.448500000013120E-07 |  3.448500000013086E-07 |
| Cs                        |  1.000000000000039E-10 |  1.000000000000040E-10 |
| Cu                        |  1.050000000528221E-14 |  1.050000000527226E-14 |
| F                         |  1.147500000001528E-04 |  1.143266907090348E-04 |
| Fe                        |  1.000000000271118E-18 |  1.000000000260110E-18 |
| Gd                        |  1.000000001150365E-14 |  1.000000001148251E-14 |
| H                         |  1.110188738405208E+02 |  1.110188639589712E+02 |
| C                         |  1.000000199030279E+04 |  1.662645476950908E-03 |
| P                         |  1.271100000277239E-06 |  1.172126923000055E-09 |
| K                         |  1.289100000000803E-04 |  1.289059557096696E-04 |
| La                        |  1.000000000980088E-14 |  1.000000000978258E-14 |
| Li                        |  1.000000000000469E-10 |  1.000000000000469E-10 |
| Mg                        |  8.269900000408464E-05 |  1.327426368590477E-05 |
| Mn                        |  7.280900000563010E-18 |  1.069858435216145E-18 |
| Mo                        |  1.000000000000003E-10 |  1.000000000000003E-10 |
| N                         |  1.420000000000891E-04 |  1.420000000000891E-04 |
| Na                        |  1.992200000002518E-03 |  1.992108329419870E-03 |
| Nd                        |  1.000000000990082E-14 |  1.000000000988240E-14 |
| Ni                        |  1.000000000016510E-10 |  1.000000000016474E-10 |
| Pb                        |  1.000000000003566E-10 |  1.000000000003560E-10 |
| Pu                        |  1.000000001138469E-14 |  1.000000001136051E-14 |
| S                         |  1.915400000082276E-04 |  1.915400000082188E-04 |
| Si                        |  1.016899999988949E-03 |  1.041555553365319E-04 |
| Sm                        |  1.000000000991962E-14 |  1.000000000990126E-14 |
| Sr                        |  1.000000000034016E-10 |  2.196422055125072E-12 |
| Ti                        |  1.000000000000003E-10 |  1.000000000000003E-10 |
| U                         |  9.999999988006304E-15 |  9.999999988025702E-15 |
| V                         |  2.199999998976165E-10 |  2.199999998978065E-10 |
```

```
| Zn                        |  1.000000000089305E-10 |  1.460228780814469E-11 |
| Zr                        |  1.000000000323548E-20 |  1.000000000322945E-20 |
|-----------------------------------------------------------------------------|
| master species and logarithmic basis variables                              |
|-----------------------------------------------------------------------------|
| H2O                       | H2O                    |  1.744360308129841E+00 |
| Al+++                     | Al+++                  | -1.879432337601662E+01 |
| B(OH)3(aq)                | B(OH)3(aq)             | -4.982978343593696E+00 |
| Ba++                      | Ba++                   | -1.000380128750537E+01 |
| Ca++                      | Ca++                   | -3.737944047222880E+00 |
| Ce+++                     | Ce+++                  | -2.717581362768115E+01 |
| Cl-                       | Cl-                    | -3.696085895341099E+00 |
| CrO4--                    | CrO4--                 | -6.465986184282300E+00 |
| Cs+                       | Cs+                    | -1.000005632859094E+01 |
| Cu++                      | Cu++                   | -1.623829277540390E+01 |
| F-                        | F-                     | -3.942331758978973E+00 |
| Fe++                      | Fe++                   | -3.052317509983159E+01 |
| Gd+++                     | Gd+++                  | -1.767778736242156E+01 |
| H+                        | H+                     | -8.471017216560806E+00 |
| HCO3-                     | HCO3-                  | -2.793246287094817E+00 |
| HPO4--                    | HPO4--                 | -9.004111193453594E+00 |
| K+                        | K+                     | -3.890212932413456E+00 |
| La+++                     | La+++                  | -1.668920440115190E+01 |
| Li+                       | Li+                    | -1.000038173025562E+01 |
| Mg++                      | Mg++                   | -4.903769186544622E+00 |
| Mn++                      | Mn++                   | -1.875200998337478E+01 |
| MoO4--                    | MoO4--                 | -9.999999999999998E+00 |
| NO3-                      | NH3(aq)                | -3.848027523569654E+00 |
| Na+                       | Na+                    | -2.702106331592696E+00 |
| Nd+++                     | Nd+++                  | -1.726486770273168E+01 |
| Ni++                      | Ni++                   | -1.000719172996210E+01 |
| Pb++                      | Pb++                   | -1.000215028562189E+01 |
| Pu++++                    | Pu++++                 | -4.259723887888831E+01 |
| SO4--                     | SO4--                  | -3.729714051620178E+00 |
| SiO2(aq)                  | SiO2(aq)               | -3.999298675397143E+00 |
| Sm+++                     | Sm+++                  | -1.746480121498503E+01 |
| Sr++                      | Sr++                   | -1.167409065089902E+01 |
| Ti(OH)4(aq)               | Ti(OH)4(aq)            | -9.999999999999998E+00 |
| UO2++                     | UO2++                  | -2.210216235765707E+01 |
| VO++                      | VO++                   | -3.319816315311469E+01 |
| Zn++                      | Zn++                   | -1.095762818287899E+01 |
| Zr(OH)2++                 | Zr(OH)2++              | -3.565905298811686E+01 |
| O2(g)                     | O2(g)                  | -6.778000000000000E-01 |
|                           | Dolomite-ord           | -4.167583263058379E+00 |
|                           | Fluorapatite           | -6.373342199191876E+00 |
|                           | Quartz                 | -3.041843639568492E+00 |
|                           | Stilbite               | -6.171308916706098E+00 |
|                           | fix     CO2(g)         |  4.000000005730017E+00 |
|                           | fix     O2(g)          |  3.999999999998948E+00 |
| Carbonate-Calcite         | Calcite                | -4.234269628220274E+00 |
| Carbonate-Calcite         | Magnesite              | -5.841888723541496E+00 |
| Carbonate-Calcite         | Rhodochrosite          | -1.720683556437217E+01 |
| Carbonate-Calcite         | Siderite               | -2.897880068082898E+01 |
| Carbonate-Calcite         | Smithsonite            | -1.006855376387638E+01 |
| Carbonate-Calcite         | Strontianite           | -1.000964525712682E+01 |
|-----------------------------------------------------------------------------|
| physically removed subsystem  (solid solution, mineral, moles)              |
|-----------------------------------------------------------------------------|
| none                      |                        |                        |
|-----------------------------------------------------------------------------|
|-----------------------------------------------------------------------------|
|EQ6 input file name= j13_All-22.6i.txt                                       |
|Description= React J-13 water with Carbon Steel and Alloy-22.                |
```

```
|Equilibrium with atmospheric gases.                                    |
|Version level= 7.2                                                     |
|Created 01/19/99    Creator= D.H. Lester                               |
|Revised             Revisor=                                           |
|                                                                       |
|Water from well J-13 at the Nevada Test site                           |
|                                                                       |
|Purpose: To model reaction with carbon steel (iron) and alloy C-22     |
|simultaneously to determine an expected Cr concentration in the water |
|corroding the C-22 after breaching the CAM.                            |
|                                                                       |
|It is assumed that a significant amount of carbon steel is still       |
|present. The rate constant for the steel was assumed to be 1.0E-11     |
|which is the higher value suggested in simulation studies at LLNL.     |
|Reference: Eng. Barrier System & Near Field Envir. Perf. Assess.,      |
|FY-96 Activities: End-of-Year Summary, Sept 1996, Wm.G.Halsey, "Report|
|on Initial Simulation of Water Interaction With Mild Steel Containers |
|Rate for C-22 is the median value for dripping at high temp. in the    |
|TSPA simulations for the VA document.                                  |
|The data base was modified to add the solid KFe(CrO4)2:2H2O            |
|Total amount of Steel and C-22 reduced to 20 moles each for a more     |
|realistic proportion of materials contacting 1L of water               |
|-----------------------------------------------------------------------|
| calculational mode   |*normal     | economy           | super economy|
|-----------------------------------------------------------------------|
| model type           |*titration  | closed            | open         |
|-----------------------------------------------------------------------|
| temperature model    |*power      | fluid mixing                     |
|-----------------------------------------------------------------------|
c power model  -->   temp = tstart + tk1*zi + tk2*zi**2 + tk3*zi**3    |
c mixing model -->   temp = (tstart * tk1 + zi*tk2) / (zi + tk1)        |
c----------------------------------------------------------------------|
| tstart(c)|  25.00    |tk1| 0.0000    |tk2| 0.0000    |tk3| 0.0000    |
|-----------------------------------------------------------------------|
| starting value of zi | 1.00000E-10|max. value of zi    | 1.00000E+38 |
|-----------------------------------------------------------------------|
| starting time (sec)  | 9.98871E-02|max. time (sec)     | 1.00000E+38 |
|-----------------------------------------------------------------------|
| max. steps           |       400  |max. steps w/o print|       150   |
|-----------------------------------------------------------------------|
| linear print interval|  10.000    |log print interval  | 1.00000E+38 |
|-----------------------------------------------------------------------|
| suppress mineral phases                                               |
|-----------------------------------------------------------------------|
| phases w/ elements|                          |                          |n
| phases except     |                          |                          |n
|-----------------------------------------------------------------------|
| fixed fugacity phases- species, moles(per kg h2o), log fugacity(bars)|
|-----------------------------------------------------------------------|
| CO2(g)                              | 0.00000        | -3.5000        |n
| O2(g)                               | 0.00000        |-0.67780        |n
|-----------------------------------------------------------------------|
c                  R A T E     L A W S
c 1 = relative                  rate = rk1 + rk2*zi + (1/2)rk3*zi*zi
c 2 = transition state theory   rate = CHECK DOCUMENTATION
c 3 = specified rate            rate = CHECK DOCUMENTATION
c 4 = activity term rate        rate = CHECK DOCUMENTATION
c
c                  R E A C T A N T     T Y P E S
c mineral     solid solution     special    aqueous    gas
c
c                  S U R F A C E    T Y P E
c 0 = fixed surface area     1 = fixed specific surface area
```

```
c
c                  N O T E S
c status and jreac are normally not set by the user
|-----------------------------------------------------------------------|
| reactants   (ss) solid solution only     (sp) special reactant only   |
|-----------------------------------------------------------------------|
| REACTANT          | carbon steel              |status    | 0           |
| moles remaining   |  20.000                   |destroyed| 9.98871E-11  |
| reactant type     |  special                  |sk        |  100.00     |
| surface type      |   0                       |fk        |  1.0000     |
| end-member        |                           |mole fr   |             |ss,n
| volume            | 0.00000                   |          |             |sp
| element           | C            |moles       |  2.190000000000000E-02 |sp,n
| element           | Mn           |moles       |  1.030000000000000E-02 |sp,n
| element           | S            |moles       |  8.530000000000000E-04 |sp,n
| element           | Si           |moles       |  5.360000000000000E-03 |sp,n
| element           | P            |moles       |  7.060000000000000E-04 |sp,n
| element           | Fe           |moles       |  9.610000000000000E-01 |sp,n
| DISSOLUTION LAW   |    3                      |          |             |
| rate constant rk1| 1.00000E-11                |csigma1   |             |
| temperature (c)   |   25.000                  |          |             |234
| PRECIPITATION LAW|    0                       |          |             |
c-----------------------------------------------------------------------|
| REACTANT          | Alloy-22                  |status    | 0           |
| moles remaining   |  20.000                   |destroyed| 1.12872E-13  |
| reactant type     |  special                  |sk        |  100.00     |
| surface type      |   0                       |fk        |  1.0000     |
| end-member        |                           |mole fr   |             |ss,n
| volume            | 0.00000                   |          |             |sp
| element           | Cr           |moles       |  2.561060000000000E-01 |sp,n
| element           | Fe           |moles       |  5.420400000000000E-02 |sp,n
| element           | Ni           |moles       |  5.681220000000000E-01 |sp,n
| element           | Mo           |moles       |  1.009620000000000E-01 |sp,n
| element           | V            |moles       |  4.160000000000000E-03 |sp,n
| element           | Mn           |moles       |  5.510000000000000E-03 |sp,n
| DISSOLUTION LAW   |    3                      |          |             |
| rate constant rk1| 1.13000E-14                |csigma1   |             |
| temperature (c)   |   25.000                  |          |             |234
| PRECIPITATION LAW|    0                       |          |             |
|-----------------------------------------------------------------------|
| options                                                               |
|-----------------------------------------------------------------------|
| - SOLID SOLUTIONS -                                                   |
|     ignore solid solutions                                            |
|   * process solid solutions                                           |
| - LOADING OF SPECIES INTO MEMORY -                                    |
|   * don't print                                                       |
|     lists species loaded into memory                                  |
| - LIST DERIVATIVES OF BASIS ELEMENTS AT EACH PRINT POINT -            |
|   * don't print                                                       |
|     print                                                             |
| - LIST ALL SPECIES LOADED INTO MEMORY AND THEIR LOG K VALUES -        |
|   * don't print                                                       |
|     print                                                             |
| - LIST DISTRIBUTION OF AQUEOUS SPECIES AT EACH PRINT POINT -          |
|   * only species > 10**-12 molal                                      |
|     all species                                                       |
|     don't print                                                       |
| - LIST CATION/H+ ACTIVITY RATIOS AT EACH PRINT POINT -                |
|   * don't print                                                       |
|     print                                                             |
| - LIST BULK ELEMENT AND OXIDE COMPOSITION AT EACH PRINT POINT -       |
|   * don't print                                                       |
```

```
|     print                                                          |
| - MINERAL SATURATION STATES -                                      |
|   * print if affinity > -10 kcals                                  |
|     print all                                                      |
|     don't print                                                    |
| - LIST GAS SPECIES SUMMARY AT EACH PRINT POINT -                   |
|     don't print                                                    |
|   * print                                                          |
| - PRINT AQUEOUS MASS AND CONCENTRATION TOTALS -                    |
|   * don't print                                                    |
|     print                                                          |
| - TAB FILES -                                                      |
|   * write                                                          |
|     append to previous tabx file                                   |
|     don't write                                                    |
| - WRITE PICKUP FILE -                                              |
|     write pickup file at end of run                                |
|     don't write pickup file                                        |
|   * write pickup file for each print point                         |
| - PHYSICALLY REMOVED SUBSYSTEM -                                   |
|   * does nothing                                                   |
|     transfer minerals but leave trivial mass in the system         |
|     transfer minerals                                              |
| - CLEAR INITIAL PHYSICALLY REMOVED SUBSYSTEM -                     |
|   * does nothing                                                   |
|     clear p.r.s. before first reaction progress advance            |
| - PHASE BOUNDARY SEARCH -                                          |
|   * step size constrained by predicted phase boundaries            |
|     phase boundaries estimated from Taylor's series and printed    |
|     locations of phase boundaries ignored                          |
| - AUTO BASIS SWITCHING -                                           |
|   * off                                                            |
|     on                                                             |
| - SUPPRESS REDOX REACTIONS -                                       |
|   * does nothing                                                   |
|     suppress all redox reactions                                   |
| - LINEAR OR LOGARITHMIC TAYLOR'S SERIES -                          |
|   * linear for kcol = 1,kdim, logarithmic for kcol = 1,kbt         |
|     logarithmic for kcol = 1,kbt                                   |
|     linear for kcol = 1,kdim                                       |
| - AZERO AND HYDRATION NUMBERS -                                    |
|   * no change                                                      |
|     read in new azero and hydration numbers                        |
| - PRINT MEAN MOLAL ACTIVITY COEFFICIENTS FOR DISSOLVED SPECIES -   |
|   * does nothing                                                   |
|     print                                                          |
| - PITZER DATABASE INFORMATION -                                    |
|   * print only warnings                                            |
|     print species in model and number of Pitzer coefficients       |
|     print species in model and names of Pitzer coefficients        |
| - PRINT DIAGNOSTIC MESSAGES -                                      |
|   * don't print                                                    |
|     print level 1 messages                                         |
|     print level 2 messages                                         |
| - PRINT PRE-NEWTON-RAPHSON OPTIMIZATION -                          |
|   * don't print                                                    |
|     print summary information                                      |
|     print detailed information                                     |
| - PRINT STEP SIZE AND ORDER -                                      |
|   * don't print                                                    |
|     print scale factor                                             |
|     print orders and step size scaling factors                     |
| - CONTROL STEP SIZE AND ORDER PRINT -                              |
```

```
|   * does nothing                                                        |
|     print step size and order when delzi .le. dlzmx1                    |
| - NEWTON ITERATIONS -                                                   |
|   * don't print                                                         |
|     print summary of newton iterations                                  |
|     print summary, residual functions and correction terms              |
|     print summary, residual functions, correction terms and matrix      |
| - PRINT SEARCH ITERATIONS -                                             |
|   * don't print                                                         |
|     print                                                               |
| - PRINT HPSAT ITERATIONS -                                              |
|   * don't print                                                         |
|     print                                                               |
| - PRINT FINITE DIFFERENCE AND DERIVATIVE DATA -                         |
|   * don't print                                                         |
|     print computations from RDERIV, and RTAYLR                          |
|     print computations from RDERIV, RTAYLR, DERIV and TAYLOR            |
| - PRINT KINETICS DIAGNOSTIC MESSAGES -                                  |
|   * don't print                                                         |
|     print level 1 diagnostics                                           |
|     print level 1 and level 2 diagnostics                               |
| - PRINT AKMATR -                                                        |
|   * don't print                                                         |
|     print level 1 diagnostics                                           |
| - KILL ITERATION VARIABLES -                                            |
|   * does nothing                                                        |
|     allow selection of variables to remove                              |
|-------------------------------------------------------------------------|
| development options  (used for code development)                        |
|-------------------------------------------------------------------------|
|    0 check finite difference and Taylor series expression               |
|    0 check reaction rate finite difference and Taylor series            |
|-------------------------------------------------------------------------|
| tolerances                        desired values - defaults info-only   |
|-------------------------------------------------------------------------|
| number of N-R iterations        |        90        |  90      itermx   |
| p.r.s. transfer interval        | 1.00000E+38      |  varies  dlzidp   |
| residual magnitude              | 1.00000E-06      |  1.0e-06 tolbt    |
| correction magnitude            | 1.00000E-06      |  1.0e-06 toldl    |
| search/find tolerance           | 1.00000E-06      |  varies  tolx     |
| supersaturation                 | 5.00000E-03      |  varies  tolsat   |
| supersaturation set size        | 1.00000E-02      |  varies  tolsst   |
| max. size Taylor's series term  | 1.00000E-04      |  1.0e-04 screw1   |
| max. initial value betamx       |                  |  n/a     screw2   |
| max. Taylor's series term (kin.)| 1.00000E-04      |  1.0e-04 screw3   |
| corrector iteration             | 1.00000E-04      |  1.0e-04 screw4   |
| max. size of N-R correction term|  4.0000          |  4.0     screw5   |
| step size (economy mode)        |  4.0000          |  4.0     screw6   |
| log mass of phases              | -6.0000          |  varies  zklogu   |
| decrement mass (p.r.s.)         |  2.0000          |  2.0     zklogl   |
| min. left after p.r.s.          | 0.80000          |  .98     zkfac    |
| initial step size               | 1.00000E-09      |  varies  dlzmx1   |
| upper limit step size           | 1.00000E+38      |  varies  dlzmx2   |
| maximum order                   |         6        |  6       nordlm   |
| num. attempted assemblages      |        25        |  25      ntrymx   |
| slide -> over phase bound.      |        12        |  8       npslmx   |
| slide -> over redox insta.      |         8        |  3       nsslmx   |
| fo2 scan control                |                  |  none    ioscan   |
|-------------------------------------------------------------------------|
c pickup file written by eq6.7.2bR137                                     |
c supported by eqlib.7.2bR168                                             |
|EQ6 input file name= j13_All-22.6i.txt                                   |
|Description= React J-13 water with Carbon Steel and Alloy-22.            |
```

```
|Equilibrium with atmospheric gases.                                    |
|Version level= 7.2                                                     |
|Created 01/19/99    Creator= D.H. Lester                               |
|Revised             Revisor=                                           |
|                                                                       |
|Water from well J-13 at the Nevada Test site                           |
|                                                                       |
|Purpose: To model reaction with carbon steel (iron) and alloy C-22     |
|simultaneously to determine an expected Cr concentration in the water  |
|corroding the C-22 after breaching the CAM.                            |
|                                                                       |
|It is assumed that a significant amount of carbon steel is still       |
|present. The rate constant for the steel was assumed to be 1.0E-11     |
|which is the higher value suggested in simulation studies at LLNL.     |
|Reference: Eng. Barrier System & Near Field Envir. Perf. Assess.,      |
|FY-96 Activities: End-of-Year Summary, Sept 1996, Wm.G.Halsey, "Report|
|on Initial Simulation of Water Interaction With Mild Steel Containers  |
|Rate for C-22 is the median value for dripping at high temp. in the    |
|TSPA simulations for the VA document.                                  |
|The data base was modified to add the solid KFe(CrO4)2:2H2O            |
|Total amount of Steel and C-22 reduced to 20 moles each for a more     |
|realistic proportion of materials contacting 1L of water               |
|-----------------------------------------------------------------------|
| temperature (C)                    |     25.000                       |
|-----------------------------------------------------------------------|
| electrical imbalance               |   5.752163835343278E-14          |
|-----------------------------------------------------------------------|
| number of aqueous master species   |     38                           |
|-----------------------------------------------------------------------|
| position of last pure mineral      |     45                           |
|-----------------------------------------------------------------------|
| position of last solid solution    |     63                           |
|-----------------------------------------------------------------------|
| suppressed species     (suppress,replace,augmentk,augmentg)  value    |
|-----------------------------------------------------------------------|
| Phlogopite               | mineral        | suppress |  0.00000       |
| Annite                   | mineral        | suppress |  0.00000       |
| Clinochlore-14A          | mineral        | suppress |  0.00000       |
| Daphnite-14A             | mineral        | suppress |  0.00000       |
| Clinozoisite             | mineral        | suppress |  0.00000       |
| Epidote                  | mineral        | suppress |  0.00000       |
| Epidote-ord              | mineral        | suppress |  0.00000       |
| Andradite                | mineral        | suppress |  0.00000       |
| Grossular                | mineral        | suppress |  0.00000       |
| Enstatite                | mineral        | suppress |  0.00000       |
| Ferrosilite              | mineral        | suppress |  0.00000       |
| Pyrite                   | mineral        | suppress |  0.00000       |
| Pyrrhotite               | mineral        | suppress |  0.00000       |
| Troilite                 | mineral        | suppress |  0.00000       |
| Alabandite               | mineral        | suppress |  0.00000       |
| Brezinaite               | mineral        | suppress |  0.00000       |
| Chalcocite               | mineral        | suppress |  0.00000       |
| Covellite                | mineral        | suppress |  0.00000       |
| Millerite                | mineral        | suppress |  0.00000       |
| Polydymite               | mineral        | suppress |  0.00000       |
| Vaesite                  | mineral        | suppress |  0.00000       |
| Heazlewoodite            | mineral        | suppress |  0.00000       |
| Galena                   | mineral        | suppress |  0.00000       |
| Sulfur                   | mineral        | suppress |  0.00000       |
| CaZrO3                   | mineral        | suppress |  0.00000       |
| BaZrO3                   | mineral        | suppress |  0.00000       |
| SrZrO3                   | mineral        | suppress |  0.00000       |
| U2S3                     | mineral        | suppress |  0.00000       |
```

```
| U3S5                      | mineral         | suppress |  0.00000      |
| US2                       | mineral         | suppress |  0.00000      |
| US3                       | mineral         | suppress |  0.00000      |
| US                        | mineral         | suppress |  0.00000      |
| US1.9                     | mineral         | suppress |  0.00000      |
| U3P4                      | mineral         | suppress |  0.00000      |
| UP                        | mineral         | suppress |  0.00000      |
| UP2                       | mineral         | suppress |  0.00000      |
| HS-                       | aqueous         | suppress |  0.00000      |
| H2S(aq)                   | aqueous         | suppress |  0.00000      |
| S--                       | aqueous         | suppress |  0.00000      |
|-------------------------------------------------------------------------|
| iopg options                                                            |
|-------------------------------------------------------------------------|
| - pH SCALE CONVENTION -                                                 |
|    * modified NBS                                                       |
|      internal                                                           |
|      rational                                                           |
| - ACTIVITY COEFFICIENT OPTIONS -                                        |
|    * use B-dot equation                                                 |
|      Davies' equation                                                   |
|      Pitzer's equations                                                 |
|-------------------------------------------------------------------------|
| elements, moles and moles aqueous                                       |
|-------------------------------------------------------------------------|
| O                         |  4.005551824589011E+04 |  5.551555645693462E+01 |
| Al                        |  1.482500000694482E-06 |  1.307448478959311E-08 |
| B                         |  1.238799999942330E-05 |  1.238799999942330E-05 |
| Ba                        |  1.000000000006594E-10 |  1.000000000006592E-10 |
| Ca                        |  3.243700000162714E-04 |  1.952727303848324E-04 |
| Ce                        |  1.000000000975802E-24 |  1.000000000975800E-24 |
| Cl                        |  2.014000000000269E-04 |  2.014000000000272E-04 |
| Cr                        |  3.448500289086251E-07 |  3.448500289086253E-07 |
| Cs                        |  1.000000000000039E-10 |  1.000000000000040E-10 |
| Cu                        |  1.050000000528221E-14 |  1.050000000528217E-14 |
| F                         |  1.147500000001528E-04 |  1.143266906855276E-04 |
| Fe                        |  9.599764999179364E-11 |  2.522217089385193E-13 |
| Gd                        |  1.000000001150365E-14 |  1.000000001150360E-14 |
| H                         |  1.110188738405208E+02 |  1.110188639589818E+02 |
| C                         |  1.000000199030279E+04 |  1.662645476332997E-03 |
| P                         |  1.271100070797552E-06 |  1.172126922182866E-09 |
| K                         |  1.289100000000803E-04 |  1.289059550014803E-04 |
| La                        |  1.000000000980088E-14 |  1.000000000980089E-14 |
| Li                        |  1.000000000000469E-10 |  1.000000000000468E-10 |
| Mg                        |  8.269900000408464E-05 |  1.327426369586454E-05 |
| Mn                        |  1.029466635589489E-12 |  1.750179947364309E-16 |
| Mo                        |  1.000113958288660E-10 |  1.000113958288655E-10 |
| N                         |  1.420000000000891E-04 |  1.420000000000890E-04 |
| Na                        |  1.992200000002518E-03 |  1.992108329312126E-03 |
| Nd                        |  1.000000000990082E-14 |  1.000000000990078E-14 |
| Ni                        |  1.000641253268906E-10 |  1.000641253268907E-10 |
| Pb                        |  1.000000000003566E-10 |  1.000000000003567E-10 |
| Pu                        |  1.000000001138469E-14 |  1.000000001138471E-14 |
| S                         |  1.915400000934313E-04 |  1.915400000934312E-04 |
| Si                        |  1.016900000524344E-03 |  1.041555553350453E-04 |
| Sm                        |  1.000000000991962E-14 |  1.000000000991961E-14 |
| Sr                        |  1.000000000034016E-10 |  2.196421916251091E-12 |
| Ti                        |  1.000000000000003E-10 |  1.000000000000003E-10 |
| U                         |  9.999999988006304E-15 |  9.999999988006288E-15 |
| V                         |  2.200004694470320E-10 |  2.200004694470307E-10 |
| Zn                        |  1.000000000089305E-10 |  1.460228700086350E-11 |
| Zr                        |  1.000000000323548E-20 |  1.000000000323542E-20 |
|-------------------------------------------------------------------------|
```

master species and logarithmic basis variables

H2O	H2O	1.744360308129882E+00
Al+++	Al+++	-1.879432337551510E+01
B(OH)3(aq)	B(OH)3(aq)	-4.982978343568386E+00
Ba++	Ba++	-1.000380128750290E+01
Ca++	Ca++	-3.737944046910416E+00
Ce+++	Ce+++	-2.717581362715138E+01
Cl-	Cl-	-3.696085895341097E+00
CrO4--	CrO4--	-6.465986147878574E+00
Cs+	Cs+	-1.000005632859094E+01
Cu++	Cu++	-1.623829277508387E+01
F-	F-	-3.942331759068559E+00
Fe++	Fe++	-2.512139263566966E+01
Gd+++	Gd+++	-1.767778736184161E+01
H+	H+	-8.471017216400434E+00
HCO3-	HCO3-	-2.793246287255637E+00
HPO4--	HPO4--	-9.004111193786902E+00
K+	K+	-3.890212934799613E+00
La+++	La+++	-1.668920440070237E+01
Li+	Li+	-1.000038173025578E+01
Mg++	Mg++	-4.903769186216834E+00
Mn++	Mn++	-1.653825359456340E+01
MoO4--	MoO4--	-9.999950511363834E+00
NO3-	NH3(aq)	-3.848027523569937E+00
Na+	Na+	-2.702106331615995E+00
Nd+++	Nd+++	-1.726486770219238E+01
Ni++	Ni++	-1.000691332646978E+01
Pb++	Pb++	-1.000215028562184E+01
Pu++++	Pu++++	-4.259723887803949E+01
SO4--	SO4--	-3.729714051432399E+00
SiO2(aq)	SiO2(aq)	-3.999298675397102E+00
Sm+++	Sm+++	-1.746480121444556E+01
Sr++	Sr++	-1.167409067835860E+01
Ti(OH)4(aq)	Ti(OH)4(aq)	-9.999999999999998E+00
UO2++	UO2++	-2.210216235681904E+01
VO++	VO++	-3.319816222555942E+01
Zn++	Zn++	-1.095762820684973E+01
Zr(OH)2++	Zr(OH)2++	-3.565905298779686E+01
O2(g)	O2(g)	-6.778000000000000E-01
	Dolomite-ord	-4.167583275068468E+00
	Fluorapatite	-6.373342175074808E+00
	Pyrolusite	-1.198789048885755E+01
	Quartz	-3.041843699695494E+00
	Stilbite	-6.171313586751582E+00
	fix CO2(g)	4.000000005730017E+00
	fix O2(g)	3.999999999998945E+00
Carbonate-Calcite	Calcite	-4.234269599831593E+00
Carbonate-Calcite	Magnesite	-5.841888695137560E+00
Carbonate-Calcite	Rhodochrosite	-1.499307914748458E+01
Carbonate-Calcite	Siderite	-2.357701818859083E+01
Carbonate-Calcite	Smithsonite	-1.006855375977090E+01
Carbonate-Calcite	Strontianite	-1.000964525651015E+01
Smectite-di	Beidellite-Ca	-1.944372851096130E+01
Smectite-di	Beidellite-K	-2.058484442510356E+01
Smectite-di	Beidellite-Mg	-1.991084563437187E+01
Smectite-di	Beidellite-Na	-2.042206044309129E+01
Smectite-di	Montmor-Ca	-1.502266320640713E+01
Smectite-di	Montmor-K	-1.595074881751909E+01
Smectite-di	Montmor-Mg	-1.527887123890860E+01
Smectite-di	Montmor-Na	-1.579887392641591E+01
Smectite-di	Nontronite-Ca	-1.050138751832373E+01
Smectite-di	Nontronite-K	-1.164250343246598E+01

```
| Smectite-di              | Nontronite-Mg            | -1.096820161143126E+01 |
| Smectite-di              | Nontronite-Na            | -1.147971945045372E+01 |
|-------------------------------------------------------------------------|
| physically removed subsystem  (solid solution, mineral, moles)          |
|-------------------------------------------------------------------------|
| none                     |                          |                        |
|-------------------------------------------------------------------------|
|-------------------------------------------------------------------------|
|EQ6 input file name= j13_All-22.6i.txt                                   |
|Description= React J-13 water with Carbon Steel and Alloy-22.            |
|Equilibrium with atmospheric gases.                                      |
|Version level= 7.2                                                       |
|Created 01/19/99    Creator= D.H. Lester                                 |
|Revised             Revisor=                                             |
|                                                                         |
|Water from well J-13 at the Nevada Test site                             |
|                                                                         |
|Purpose: To model reaction with carbon steel (iron) and alloy C-22       |
|simultaneously to determine an expected Cr concentration in the water    |
|corroding the C-22 after breaching the CAM.                              |
|                                                                         |
|It is assumed that a significant amount of carbon steel is still         |
|present. The rate constant for the steel was assumed to be 1.0E-11       |
|which is the higher value suggested in simulation studies at LLNL.       |
|Reference: Eng. Barrier System & Near Field Envir. Perf. Assess.,        |
|FY-96 Activities: End-of-Year Summary, Sept 1996, Wm.G.Halsey, "Report|
|on Initial Simulation of Water Interaction With Mild Steel Containers |
|Rate for C-22 is the median value for dripping at high temp. in the      |
|TSPA simulations for the VA document.                                    |
|The data base was modified to add the solid KFe(CrO4)2:2H2O              |
|Total amount of Steel and C-22 reduced to 20 moles each for a more       |
|realistic proportion of materials contacting 1L of water                 |
|-------------------------------------------------------------------------|
| calculational mode   |*normal     | economy           | super economy|
|-------------------------------------------------------------------------|
| model type           |*titration  | closed            | open         |
|-------------------------------------------------------------------------|
| temperature model    |*power      | fluid mixing                         |
|-------------------------------------------------------------------------|
c power model  -->   temp = tstart + tk1*zi + tk2*zi**2 + tk3*zi**3      |
c mixing model -->   temp = (tstart * tk1 + zi*tk2) / (zi + tk1)         |
c-------------------------------------------------------------------------|
| tstart(c)|  25.00    |tk1| 0.0000    |tk2| 0.0000    |tk3| 0.0000      |
|-------------------------------------------------------------------------|
| starting value of zi | 9.27519E-06|max. value of zi    | 1.00000E+38 |
|-------------------------------------------------------------------------|
| starting time (sec)  |  9264.7    |max. time (sec)     | 1.00000E+38 |
|-------------------------------------------------------------------------|
| max. steps           |       400  |max. steps w/o print|       150   |
|-------------------------------------------------------------------------|
| linear print interval|  10.000    |log print interval  | 1.00000E+38 |
|-------------------------------------------------------------------------|
| suppress mineral phases                                                 |
|-------------------------------------------------------------------------|
| phases w/ elements|                          |                          |n
| phases except     |                          |                          |n
|-------------------------------------------------------------------------|
| fixed fugacity phases- species, moles(per kg h2o), log fugacity(bars)|
|-------------------------------------------------------------------------|
| CO2(g)                              | 0.00000        | -3.5000        |n
| O2(g)                               | 0.00000        |-0.67780        |n
|-------------------------------------------------------------------------|
c                  R A T E     L A W S
```

```
c 1 = relative                  rate = rk1 + rk2*zi + (1/2)rk3*zi*zi
c 2 = transition state theory   rate = CHECK DOCUMENTATION
c 3 = specified rate            rate = CHECK DOCUMENTATION
c 4 = activity term rate        rate = CHECK DOCUMENTATION
c
c                 R E A C T A N T     T Y P E S
c mineral     solid solution     special    aqueous    gas
c
c                 S U R F A C E    T Y P E
c 0 = fixed surface area     1 = fixed specific surface area
c
c                 N O T E S
c status and jreac are normally not set by the user
|-----------------------------------------------------------------------|
| reactants   (ss) solid solution only     (sp) special reactant only   |
|-----------------------------------------------------------------------|
| REACTANT          | carbon steel              |status    | 0            |
| moles remaining   |  20.000                   |destroyed| 9.26472E-06   |
| reactant type     |  special                  |sk        |  100.00      |
| surface type      |   0                       |fk        |  1.0000      |
| end-member        |                           |mole fr   |              |ss,n
| volume            | 0.00000                   |          |              |sp
| element           | C            |moles       |  2.190000000000000E-02 |sp,n
| element           | Mn           |moles       |  1.030000000000000E-02 |sp,n
| element           | S            |moles       |  8.530000000000000E-04 |sp,n
| element           | Si           |moles       |  5.360000000000000E-03 |sp,n
| element           | P            |moles       |  7.060000000000000E-04 |sp,n
| element           | Fe           |moles       |  9.610000000000000E-01 |sp,n
| DISSOLUTION LAW   |    3                      |          |              |
| rate constant rk1| 1.00000E-11                |csigma1   |              |
| temperature (c)   |   25.000                  |          |              |234
| PRECIPITATION LAW|    0                       |          |              |
c-----------------------------------------------------------------------|
| REACTANT          | Alloy-22                  |status    | 0            |
| moles remaining   |  20.000                   |destroyed| 1.04691E-08   |
| reactant type     |  special                  |sk        |  100.00      |
| surface type      |   0                       |fk        |  1.0000      |
| end-member        |                           |mole fr   |              |ss,n
| volume            | 0.00000                   |          |              |sp
| element           | Cr           |moles       |  2.561060000000000E-01 |sp,n
| element           | Fe           |moles       |  5.420400000000000E-02 |sp,n
| element           | Ni           |moles       |  5.681220000000000E-01 |sp,n
| element           | Mo           |moles       |  1.009620000000000E-01 |sp,n
| element           | V            |moles       |  4.160000000000000E-03 |sp,n
| element           | Mn           |moles       |  5.510000000000000E-03 |sp,n
| DISSOLUTION LAW   |    3                      |          |              |
| rate constant rk1| 1.13000E-14                |csigma1   |              |
| temperature (c)   |   25.000                  |          |              |234
| PRECIPITATION LAW|    0                       |          |              |
|-----------------------------------------------------------------------|
| options                                                               |
|-----------------------------------------------------------------------|
| - SOLID SOLUTIONS -                                                   |
|     ignore solid solutions                                            |
|   * process solid solutions                                           |
| - LOADING OF SPECIES INTO MEMORY -                                    |
|   * don't print                                                       |
|     lists species loaded into memory                                  |
| - LIST DERIVATIVES OF BASIS ELEMENTS AT EACH PRINT POINT -            |
|   * don't print                                                       |
|     print                                                             |
| - LIST ALL SPECIES LOADED INTO MEMORY AND THEIR LOG K VALUES -        |
|   * don't print                                                       |
```

```
|     print                                                          |
| - LIST DISTRIBUTION OF AQUEOUS SPECIES AT EACH PRINT POINT -       |
|   * only species > 10**-12 molal                                   |
|     all species                                                    |
|     don't print                                                    |
| - LIST CATION/H+ ACTIVITY RATIOS AT EACH PRINT POINT -             |
|   * don't print                                                    |
|     print                                                          |
| - LIST BULK ELEMENT AND OXIDE COMPOSITION AT EACH PRINT POINT -    |
|   * don't print                                                    |
|     print                                                          |
| - MINERAL SATURATION STATES -                                      |
|   * print if affinity > -10 kcals                                  |
|     print all                                                      |
|     don't print                                                    |
| - LIST GAS SPECIES SUMMARY AT EACH PRINT POINT -                   |
|     don't print                                                    |
|   * print                                                          |
| - PRINT AQUEOUS MASS AND CONCENTRATION TOTALS -                    |
|   * don't print                                                    |
|     print                                                          |
| - TAB FILES -                                                      |
|   * write                                                          |
|     append to previous tabx file                                   |
|     don't write                                                    |
| - WRITE PICKUP FILE -                                              |
|     write pickup file at end of run                                |
|     don't write pickup file                                        |
|   * write pickup file for each print point                         |
| - PHYSICALLY REMOVED SUBSYSTEM -                                   |
|   * does nothing                                                   |
|     transfer minerals but leave trivial mass in the system         |
|     transfer minerals                                              |
| - CLEAR INITIAL PHYSICALLY REMOVED SUBSYSTEM -                     |
|   * does nothing                                                   |
|     clear p.r.s. before first reaction progress advance            |
| - PHASE BOUNDARY SEARCH -                                          |
|   * step size constrained by predicted phase boundaries            |
|     phase boundaries estimated from Taylor's series and printed    |
|     locations of phase boundaries ignored                          |
| - AUTO BASIS SWITCHING -                                           |
|   * off                                                            |
|     on                                                             |
| - SUPPRESS REDOX REACTIONS -                                       |
|   * does nothing                                                   |
|     suppress all redox reactions                                   |
| - LINEAR OR LOGARITHMIC TAYLOR'S SERIES -                          |
|   * linear for kcol = 1,kdim, logarithmic for kcol = 1,kbt         |
|     logarithmic for kcol = 1,kbt                                   |
|     linear for kcol = 1,kdim                                       |
| - AZERO AND HYDRATION NUMBERS -                                    |
|   * no change                                                      |
|     read in new azero and hydration numbers                        |
| - PRINT MEAN MOLAL ACTIVITY COEFFICIENTS FOR DISSOLVED SPECIES -   |
|   * does nothing                                                   |
|     print                                                          |
| - PITZER DATABASE INFORMATION -                                    |
|   * print only warnings                                            |
|     print species in model and number of Pitzer coefficients       |
|     print species in model and names of Pitzer coefficients        |
| - PRINT DIAGNOSTIC MESSAGES -                                      |
|   * don't print                                                    |
|     print level 1 messages                                         |
```

```
|     print level 2 messages                                          |
| - PRINT PRE-NEWTON-RAPHSON OPTIMIZATION -                           |
|   * don't print                                                     |
|     print summary information                                       |
|     print detailed information                                      |
| - PRINT STEP SIZE AND ORDER -                                       |
|   * don't print                                                     |
|     print scale factor                                              |
|     print orders and step size scaling factors                      |
| - CONTROL STEP SIZE AND ORDER PRINT -                               |
|   * does nothing                                                    |
|     print step size and order when delzi .le. dlzmx1                |
| - NEWTON ITERATIONS -                                               |
|   * don't print                                                     |
|     print summary of newton iterations                              |
|     print summary, residual functions and correction terms          |
|     print summary, residual functions, correction terms and matrix  |
| - PRINT SEARCH ITERATIONS -                                         |
|   * don't print                                                     |
|     print                                                           |
| - PRINT HPSAT ITERATIONS -                                          |
|   * don't print                                                     |
|     print                                                           |
| - PRINT FINITE DIFFERENCE AND DERIVATIVE DATA -                     |
|   * don't print                                                     |
|     print computations from RDERIV, and RTAYLR                      |
|     print computations from RDERIV, RTAYLR, DERIV and TAYLOR        |
| - PRINT KINETICS DIAGNOSTIC MESSAGES -                              |
|   * don't print                                                     |
|     print level 1 diagnostics                                       |
|     print level 1 and level 2 diagnostics                           |
| - PRINT AKMATR -                                                    |
|   * don't print                                                     |
|     print level 1 diagnostics                                       |
| - KILL ITERATION VARIABLES -                                        |
|   * does nothing                                                    |
|     allow selection of variables to remove                          |
|---------------------------------------------------------------------|
| development options  (used for code development)                    |
|---------------------------------------------------------------------|
|    0 check finite difference and Taylor series expression           |
|    0 check reaction rate finite difference and Taylor series        |
|---------------------------------------------------------------------|
| tolerances                        desired values - defaults info-only |
|---------------------------------------------------------------------|
| number of N-R iterations        |        90        |  90      itermx |
| p.r.s. transfer interval        | 1.00000E+38      |  varies  dlzidp |
| residual magnitude              | 1.00000E-06      |  1.0e-06 tolbt  |
| correction magnitude            | 1.00000E-06      |  1.0e-06 toldl  |
| search/find tolerance           | 1.00000E-06      |  varies  tolx   |
| supersaturation                 | 5.00000E-03      |  varies  tolsat |
| supersaturation set size        | 1.00000E-02      |  varies  tolsst |
| max. size Taylor's series term  | 1.00000E-04      |  1.0e-04 screw1 |
| max. initial value betamx       |                  |  n/a     screw2 |
| max. Taylor's series term (kin.)| 1.00000E-04      |  1.0e-04 screw3 |
| corrector iteration             | 1.00000E-04      |  1.0e-04 screw4 |
| max. size of N-R correction term|  4.0000          |  4.0     screw5 |
| step size (economy mode)        |  4.0000          |  4.0     screw6 |
| log mass of phases              | -6.0000          |  varies  zklogu |
| decrement mass (p.r.s.)         |  2.0000          |  2.0     zklogl |
| min. left after p.r.s.          | 0.80000          |  .98     zkfac  |
| initial step size               | 1.00000E-09      |  varies  dlzmx1 |
| upper limit step size           | 1.00000E+38      |  varies  dlzmx2 |
```

```
| maximum order                    |         6         |  6       nordlm |
| num. attempted assemblages       |        25         |  25      ntrymx |
| slide -> over phase bound.       |        12         |  8       npslmx |
| slide -> over redox insta.       |         8         |  3       nsslmx |
| fo2 scan control                 |                   |  none    ioscan |
|-----------------------------------------------------------------------|
c pickup file written by eq6.7.2bR137                                   |
c supported by eqlib.7.2bR168                                           |
|EQ6 input file name= j13_All-22.6i.txt                                 |
|Description= React J-13 water with Carbon Steel and Alloy-22.          |
|Equilibrium with atmospheric gases.                                    |
|Version level= 7.2                                                     |
|Created 01/19/99    Creator= D.H. Lester                               |
|Revised             Revisor=                                           |
|                                                                       |
|Water from well J-13 at the Nevada Test site                           |
|                                                                       |
|Purpose: To model reaction with carbon steel (iron) and alloy C-22     |
|simultaneously to determine an expected Cr concentration in the water |
|corroding the C-22 after breaching the CAM.                            |
|                                                                       |
|It is assumed that a significant amount of carbon steel is still       |
|present. The rate constant for the steel was assumed to be 1.0E-11     |
|which is the higher value suggested in simulation studies at LLNL.     |
|Reference: Eng. Barrier System & Near Field Envir. Perf. Assess.,      |
|FY-96 Activities: End-of-Year Summary, Sept 1996, Wm.G.Halsey, "Report|
|on Initial Simulation of Water Interaction With Mild Steel Containers |
|Rate for C-22 is the median value for dripping at high temp. in the    |
|TSPA simulations for the VA document.                                  |
|The data base was modified to add the solid KFe(CrO4)2:2H2O            |
|Total amount of Steel and C-22 reduced to 20 moles each for a more     |
|realistic proportion of materials contacting 1L of water               |
|-----------------------------------------------------------------------|
| temperature (C)                    |     25.000                       |
|-----------------------------------------------------------------------|
| electrical imbalance               |   5.752163835343278E-14          |
|-----------------------------------------------------------------------|
| number of aqueous master species   |     38                           |
|-----------------------------------------------------------------------|
| position of last pure mineral      |     44                           |
|-----------------------------------------------------------------------|
| position of last solid solution    |     62                           |
|-----------------------------------------------------------------------|
| suppressed species     (suppress,replace,augmentk,augmentg)  value    |
|-----------------------------------------------------------------------|
| Phlogopite                | mineral        | suppress |  0.00000      |
| Annite                    | mineral        | suppress |  0.00000      |
| Clinochlore-14A           | mineral        | suppress |  0.00000      |
| Daphnite-14A              | mineral        | suppress |  0.00000      |
| Clinozoisite              | mineral        | suppress |  0.00000      |
| Epidote                   | mineral        | suppress |  0.00000      |
| Epidote-ord               | mineral        | suppress |  0.00000      |
| Andradite                 | mineral        | suppress |  0.00000      |
| Grossular                 | mineral        | suppress |  0.00000      |
| Enstatite                 | mineral        | suppress |  0.00000      |
| Ferrosilite               | mineral        | suppress |  0.00000      |
| Pyrite                    | mineral        | suppress |  0.00000      |
| Pyrrhotite                | mineral        | suppress |  0.00000      |
| Troilite                  | mineral        | suppress |  0.00000      |
| Alabandite                | mineral        | suppress |  0.00000      |
| Brezinaite                | mineral        | suppress |  0.00000      |
| Chalcocite                | mineral        | suppress |  0.00000      |
| Covellite                 | mineral        | suppress |  0.00000      |
```

Millerite	mineral	suppress	0.00000
Polydymite	mineral	suppress	0.00000
Vaesite	mineral	suppress	0.00000
Heazlewoodite	mineral	suppress	0.00000
Galena	mineral	suppress	0.00000
Sulfur	mineral	suppress	0.00000
CaZrO3	mineral	suppress	0.00000
BaZrO3	mineral	suppress	0.00000
SrZrO3	mineral	suppress	0.00000
U2S3	mineral	suppress	0.00000
U3S5	mineral	suppress	0.00000
US2	mineral	suppress	0.00000
US3	mineral	suppress	0.00000
US	mineral	suppress	0.00000
US1.9	mineral	suppress	0.00000
U3P4	mineral	suppress	0.00000
UP	mineral	suppress	0.00000
UP2	mineral	suppress	0.00000
HS-	aqueous	suppress	0.00000
H2S(aq)	aqueous	suppress	0.00000
S--	aqueous	suppress	0.00000

```
| iopg options                                                          |
|-----------------------------------------------------------------------|
| - pH SCALE CONVENTION -                                               |
|    * modified NBS                                                     |
|      internal                                                         |
|      rational                                                         |
| - ACTIVITY COEFFICIENT OPTIONS -                                      |
|    * use B-dot equation                                               |
|      Davies' equation                                                 |
|      Pitzer's equations                                               |
|-----------------------------------------------------------------------|
| elements, moles and moles aqueous                                     |
|-----------------------------------------------------------------------|
```

O	4.005551824589011E+04	5.551555685102920E+01
Al	1.482500000694482E-06	1.307410163416264E-08
B	1.238799999942330E-05	1.238799989831878E-05
Ba	1.000000000006594E-10	1.000000000996173E-10
Ca	3.243700000162714E-04	1.952853347598484E-04
Ce	1.000000000975802E-24	1.000000194734613E-24
Cl	2.014000000000269E-04	2.014000000042473E-04
Cr	3.475312093524773E-07	3.475312096674586E-07
Cs	1.000000000000039E-10	1.000000000007656E-10
Cu	1.050000000528221E-14	1.050000106539328E-14
F	1.147500000001528E-04	1.143245103970797E-04
Fe	8.903968109226232E-06	2.522221631584790E-13
Gd	1.000000001150365E-14	1.000000227774204E-14
H	1.110188738405208E+02	1.110188649362282E+02
C	1.000000199050568E+04	1.662589527108149E-03
P	1.277640896064799E-06	1.172050094606369E-09
K	1.289100000000803E-04	1.288401327999018E-04
La	1.000000000980088E-14	1.000000196184272E-14
Li	1.000000000000469E-10	1.000000000097545E-10
Mg	8.269900000408464E-05	1.327514471156736E-05
Mn	9.548435155303982E-08	1.750157371395577E-16
Mo	1.156985226868354E-09	1.156985226868354E-09
N	1.420000000000891E-04	1.420000000111636E-04
Na	1.992200000002518E-03	1.992098310850270E-03
Nd	1.000000000990082E-14	1.000000197650324E-14
Ni	6.047748272212016E-09	6.047748293076298E-09
Pb	1.000000000003566E-10	1.000000000559594E-10
Pu	1.000000001138469E-14	1.000000260476641E-14

S	1.915479028185771E-04	1.915479037408871E-04
Si	1.016949658914475E-03	1.041554207084399E-04
Sm	1.000000000991962E-14	1.000000197677313E-14
Sr	1.000000000034016E-10	2.183584024052178E-12
Ti	1.000000000000003E-10	1.000000000000003E-10
U	9.999999988006304E-15	9.999997917864990E-15
V	2.635516187618659E-10	2.635515943394822E-10
Zn	1.000000000089305E-10	1.452760674160140E-11
Zr	1.000000000323548E-20	1.000000063995912E-20

master species and logarithmic basis variables

H2O	H2O	1.744360312164272E+00
Al+++	Al+++	-1.879427827786061E+01
B(OH)3(aq)	B(OH)3(aq)	-4.982976052040306E+00
Ba++	Ba++	-1.000380106344693E+01
Ca++	Ca++	-3.737915051467711E+00
Ce+++	Ce+++	-2.717576565204799E+01
Cl-	Cl-	-3.696085895175067E+00
CrO4--	CrO4--	-6.462622724257426E+00
Cs+	Cs+	-1.000005632859771E+01
Cu++	Cu++	-1.623826379315285E+01
F-	F-	-3.942340067989441E+00
Fe++	Fe++	-2.512136187929224E+01
Gd+++	Gd+++	-1.767773484211708E+01
H+	H+	-8.471002692307928E+00
HCO3-	HCO3-	-2.793260852219557E+00
HPO4--	HPO4--	-9.004142481321124E+00
K+	K+	-3.890434771223083E+00
La+++	La+++	-1.668916369243205E+01
Li+	Li+	-1.000038174533802E+01
Mg++	Mg++	-4.903740200122534E+00
Mn++	Mn++	-1.653822460690923E+01
MoO4--	MoO4--	-8.936672186364166E+00
NO3-	NH3(aq)	-3.848027549787415E+00
Na+	Na+	-2.702108498920268E+00
Nd+++	Nd+++	-1.726481886344958E+01
Ni++	Ni++	-8.225598271690378E+00
Pb++	Pb++	-1.000215028107900E+01
Pu++++	Pu++++	-4.259716201135434E+01
SO4--	SO4--	-3.729696631937907E+00
SiO2(aq)	SiO2(aq)	-3.999298671362712E+00
Sm+++	Sm+++	-1.746475236023609E+01
Sr++	Sr++	-1.167663657437532E+01
Ti(OH)4(aq)	Ti(OH)4(aq)	-9.999999999999998E+00
UO2++	UO2++	-2.210208645540853E+01
VO++	VO++	-3.311966265371651E+01
Zn++	Zn++	-1.095985147676819E+01
Zr(OH)2++	Zr(OH)2++	-3.565902401006471E+01
O2(g)	O2(g)	-6.778000000000000E-01
	Dolomite-ord	-4.168701302589003E+00
	Fluorapatite	-6.371111035011454E+00
	Pyrolusite	-7.020067802354110E+00
	Quartz	-3.047471599447587E+00
	fix CO2(g)	4.000000005740669E+00
	fix O2(g)	3.999999999692567E+00
Carbonate-Calcite	Calcite	-4.231637709037914E+00
Carbonate-Calcite	Magnesite	-5.839256819920950E+00
Carbonate-Calcite	Rhodochrosite	-1.499044726447943E+01
Carbonate-Calcite	Siderite	-2.357438453686244E+01
Carbonate-Calcite	Smithsonite	-1.006817413433840E+01
Carbonate-Calcite	Strontianite	-1.000958825383048E+01
Smectite-di	Beidellite-Ca	-1.447525114762842E+01

```
| Smectite-di              | Beidellite-K             | -1.561660342085702E+01 |
| Smectite-di              | Beidellite-Mg            | -1.494236827882751E+01 |
| Smectite-di              | Beidellite-Na            | -1.545359977064867E+01 |
| Smectite-di              | Montmor-Ca               | -1.005418919898919E+01 |
| Smectite-di              | Montmor-K                | -1.098251116918749E+01 |
| Smectite-di              | Montmor-Mg               | -1.031039723927919E+01 |
| Smectite-di              | Montmor-Na               | -1.083041660988823E+01 |
| Smectite-di              | Nontronite-Ca            | -5.532909581293584E+00 |
| Smectite-di              | Nontronite-K             | -6.674261854522178E+00 |
| Smectite-di              | Nontronite-Mg            | -5.999723682189658E+00 |
| Smectite-di              | Nontronite-Na            | -6.511258204313838E+00 |
|-------------------------------------------------------------------------|
| physically removed subsystem  (solid solution, mineral, moles)          |
|-------------------------------------------------------------------------|
| none                     |                          |                          |
|-------------------------------------------------------------------------|
|-------------------------------------------------------------------------|
|EQ6 input file name= j13_All-22.6i.txt                                   |
|Description= React J-13 water with Carbon Steel and Alloy-22.            |
|Equilibrium with atmospheric gases.                                      |
|Version level= 7.2                                                       |
|Created 01/19/99    Creator= D.H. Lester                                 |
|Revised             Revisor=                                             |
|                                                                         |
|Water from well J-13 at the Nevada Test site                             |
|                                                                         |
|Purpose: To model reaction with carbon steel (iron) and alloy C-22       |
|simultaneously to determine an expected Cr concentration in the water    |
|corroding the C-22 after breaching the CAM.                              |
|                                                                         |
|It is assumed that a significant amount of carbon steel is still         |
|present. The rate constant for the steel was assumed to be 1.0E-11       |
|which is the higher value suggested in simulation studies at LLNL.       |
|Reference: Eng. Barrier System & Near Field Envir. Perf. Assess.,        |
|FY-96 Activities: End-of-Year Summary, Sept 1996, Wm.G.Halsey, "Report|
|on Initial Simulation of Water Interaction With Mild Steel Containers    |
|Rate for C-22 is the median value for dripping at high temp. in the      |
|TSPA simulations for the VA document.                                    |
|The data base was modified to add the solid KFe(CrO4)2:2H2O              |
|Total amount of Steel and C-22 reduced to 20 moles each for a more       |
|realistic proportion of materials contacting 1L of water                 |
|-------------------------------------------------------------------------|
| calculational mode   |*normal     | economy           | super economy|
|-------------------------------------------------------------------------|
| model type           |*titration  | closed            | open         |
|-------------------------------------------------------------------------|
| temperature model    |*power      | fluid mixing                         |
|-------------------------------------------------------------------------|
c power model  -->   temp = tstart + tk1*zi + tk2*zi**2 + tk3*zi**3      |
c mixing model -->   temp = (tstart * tk1 + zi*tk2) / (zi + tk1)         |
c------------------------------------------------------------------------|
| tstart(c)|  25.00    |tk1| 0.0000    |tk2| 0.0000    |tk3| 0.0000     |
|-------------------------------------------------------------------------|
| starting value of zi | 9.35948E-06|max. value of zi    | 1.00000E+38 |
|-------------------------------------------------------------------------|
| starting time (sec)  |  9348.9    |max. time (sec)     | 1.00000E+38 |
|-------------------------------------------------------------------------|
| max. steps           |       400  |max. steps w/o print|       150   |
|-------------------------------------------------------------------------|
| linear print interval|  10.000    |log print interval  | 1.00000E+38 |
|-------------------------------------------------------------------------|
| suppress mineral phases                                                 |
|-------------------------------------------------------------------------|
```

```
| phases w/ elements|                          |                          |n
| phases except     |                          |                          |n
|-----------------------------------------------------------------------|
| fixed fugacity phases- species, moles(per kg h2o), log fugacity(bars)|
|-----------------------------------------------------------------------|
| CO2(g)                              | 0.00000        | -3.5000        |n
| O2(g)                               | 0.00000        |-0.67780        |n
|-----------------------------------------------------------------------|
c                  R A T E     L A W S
c 1 = relative                  rate = rk1 + rk2*zi + (1/2)rk3*zi*zi
c 2 = transition state theory   rate = CHECK DOCUMENTATION
c 3 = specified rate            rate = CHECK DOCUMENTATION
c 4 = activity term rate        rate = CHECK DOCUMENTATION
c
c                  R E A C T A N T     T Y P E S
c mineral     solid solution     special    aqueous    gas
c
c                  S U R F A C E    T Y P E
c 0 = fixed surface area     1 = fixed specific surface area
c
c                  N O T E S
c status and jreac are normally not set by the user
|-----------------------------------------------------------------------|
| reactants   (ss) solid solution only     (sp) special reactant only   |
|-----------------------------------------------------------------------|
| REACTANT          | carbon steel                |status    | 0            |
| moles remaining   |  20.000                     |destroyed| 9.34892E-06   |
| reactant type     |  special                    |sk        |  100.00      |
| surface type      |   0                         |fk        |  1.0000      |
| end-member        |                             |mole fr   |              |ss,n
| volume            | 0.00000                     |          |              |sp
| element           | C            |moles         |  2.190000000000000E-02 |sp,n
| element           | Mn           |moles         |  1.030000000000000E-02 |sp,n
| element           | S            |moles         |  8.530000000000000E-04 |sp,n
| element           | Si           |moles         |  5.360000000000000E-03 |sp,n
| element           | P            |moles         |  7.060000000000000E-04 |sp,n
| element           | Fe           |moles         |  9.610000000000000E-01 |sp,n
| DISSOLUTION LAW   |    3                        |          |              |
| rate constant rk1| 1.00000E-11                  |csigma1   |              |
| temperature (c)   |   25.000                    |          |              |234
| PRECIPITATION LAW|    0                         |          |              |
c-----------------------------------------------------------------------|
| REACTANT          | Alloy-22                    |status    | 0            |
| moles remaining   |  20.000                     |destroyed| 1.05643E-08   |
| reactant type     |  special                    |sk        |  100.00      |
| surface type      |   0                         |fk        |  1.0000      |
| end-member        |                             |mole fr   |              |ss,n
| volume            | 0.00000                     |          |              |sp
| element           | Cr           |moles         |  2.561060000000000E-01 |sp,n
| element           | Fe           |moles         |  5.420400000000000E-02 |sp,n
| element           | Ni           |moles         |  5.681220000000000E-01 |sp,n
| element           | Mo           |moles         |  1.009620000000000E-01 |sp,n
| element           | V            |moles         |  4.160000000000000E-03 |sp,n
| element           | Mn           |moles         |  5.510000000000000E-03 |sp,n
| DISSOLUTION LAW   |    3                        |          |              |
| rate constant rk1| 1.13000E-14                  |csigma1   |              |
| temperature (c)   |   25.000                    |          |              |234
| PRECIPITATION LAW|    0                         |          |              |
|-----------------------------------------------------------------------|
| options                                                               |
|-----------------------------------------------------------------------|
| - SOLID SOLUTIONS -                                                   |
|     ignore solid solutions                                            |
```

```
|   * process solid solutions                                          |
| - LOADING OF SPECIES INTO MEMORY -                                   |
|   * don't print                                                      |
|     lists species loaded into memory                                 |
| - LIST DERIVATIVES OF BASIS ELEMENTS AT EACH PRINT POINT -           |
|   * don't print                                                      |
|     print                                                            |
| - LIST ALL SPECIES LOADED INTO MEMORY AND THEIR LOG K VALUES -       |
|   * don't print                                                      |
|     print                                                            |
| - LIST DISTRIBUTION OF AQUEOUS SPECIES AT EACH PRINT POINT -         |
|   * only species > 10**-12 molal                                     |
|     all species                                                      |
|     don't print                                                      |
| - LIST CATION/H+ ACTIVITY RATIOS AT EACH PRINT POINT -               |
|   * don't print                                                      |
|     print                                                            |
| - LIST BULK ELEMENT AND OXIDE COMPOSITION AT EACH PRINT POINT -      |
|   * don't print                                                      |
|     print                                                            |
| - MINERAL SATURATION STATES -                                        |
|   * print if affinity > -10 kcals                                    |
|     print all                                                        |
|     don't print                                                      |
| - LIST GAS SPECIES SUMMARY AT EACH PRINT POINT -                     |
|     don't print                                                      |
|   * print                                                            |
| - PRINT AQUEOUS MASS AND CONCENTRATION TOTALS -                      |
|   * don't print                                                      |
|     print                                                            |
| - TAB FILES -                                                        |
|   * write                                                            |
|     append to previous tabx file                                     |
|     don't write                                                      |
| - WRITE PICKUP FILE -                                                |
|     write pickup file at end of run                                  |
|     don't write pickup file                                          |
|   * write pickup file for each print point                           |
| - PHYSICALLY REMOVED SUBSYSTEM -                                     |
|   * does nothing                                                     |
|     transfer minerals but leave trivial mass in the system           |
|     transfer minerals                                                |
| - CLEAR INITIAL PHYSICALLY REMOVED SUBSYSTEM -                       |
|   * does nothing                                                     |
|     clear p.r.s. before first reaction progress advance              |
| - PHASE BOUNDARY SEARCH -                                            |
|   * step size constrained by predicted phase boundaries              |
|     phase boundaries estimated from Taylor's series and printed      |
|     locations of phase boundaries ignored                            |
| - AUTO BASIS SWITCHING -                                             |
|   * off                                                              |
|     on                                                               |
| - SUPPRESS REDOX REACTIONS -                                         |
|   * does nothing                                                     |
|     suppress all redox reactions                                     |
| - LINEAR OR LOGARITHMIC TAYLOR'S SERIES -                            |
|   * linear for kcol = 1,kdim, logarithmic for kcol = 1,kbt           |
|     logarithmic for kcol = 1,kbt                                     |
|     linear for kcol = 1,kdim                                         |
| - AZERO AND HYDRATION NUMBERS -                                      |
|   * no change                                                        |
|     read in new azero and hydration numbers                          |
| - PRINT MEAN MOLAL ACTIVITY COEFFICIENTS FOR DISSOLVED SPECIES -     |
```

```
|   * does nothing                                                        |
|     print                                                               |
| - PITZER DATABASE INFORMATION -                                         |
|   * print only warnings                                                 |
|     print species in model and number of Pitzer coefficients            |
|     print species in model and names of Pitzer coefficients             |
| - PRINT DIAGNOSTIC MESSAGES -                                           |
|   * don't print                                                         |
|     print level 1 messages                                              |
|     print level 2 messages                                              |
| - PRINT PRE-NEWTON-RAPHSON OPTIMIZATION -                               |
|   * don't print                                                         |
|     print summary information                                           |
|     print detailed information                                          |
| - PRINT STEP SIZE AND ORDER -                                           |
|   * don't print                                                         |
|     print scale factor                                                  |
|     print orders and step size scaling factors                          |
| - CONTROL STEP SIZE AND ORDER PRINT -                                   |
|   * does nothing                                                        |
|     print step size and order when delzi .le. dlzmx1                    |
| - NEWTON ITERATIONS -                                                   |
|   * don't print                                                         |
|     print summary of newton iterations                                  |
|     print summary, residual functions and correction terms              |
|     print summary, residual functions, correction terms and matrix      |
| - PRINT SEARCH ITERATIONS -                                             |
|   * don't print                                                         |
|     print                                                               |
| - PRINT HPSAT ITERATIONS -                                              |
|   * don't print                                                         |
|     print                                                               |
| - PRINT FINITE DIFFERENCE AND DERIVATIVE DATA -                         |
|   * don't print                                                         |
|     print computations from RDERIV, and RTAYLR                          |
|     print computations from RDERIV, RTAYLR, DERIV and TAYLOR            |
| - PRINT KINETICS DIAGNOSTIC MESSAGES -                                  |
|   * don't print                                                         |
|     print level 1 diagnostics                                           |
|     print level 1 and level 2 diagnostics                               |
| - PRINT AKMATR -                                                        |
|   * don't print                                                         |
|     print level 1 diagnostics                                           |
| - KILL ITERATION VARIABLES -                                            |
|   * does nothing                                                        |
|     allow selection of variables to remove                              |
|-------------------------------------------------------------------------|
| development options  (used for code development)                        |
|-------------------------------------------------------------------------|
|    0 check finite difference and Taylor series expression               |
|    0 check reaction rate finite difference and Taylor series            |
|-------------------------------------------------------------------------|
| tolerances                        desired values - defaults info-only   |
|-------------------------------------------------------------------------|
| number of N-R iterations        |        90        |  90      itermx |
| p.r.s. transfer interval        | 1.00000E+38      |  varies  dlzidp |
| residual magnitude              | 1.00000E-06      |  1.0e-06 tolbt  |
| correction magnitude            | 1.00000E-06      |  1.0e-06 toldl  |
| search/find tolerance           | 1.00000E-06      |  varies  tolx   |
| supersaturation                 | 5.00000E-03      |  varies  tolsat |
| supersaturation set size        | 1.00000E-02      |  varies  tolsst |
| max. size Taylor's series term  | 1.00000E-04      |  1.0e-04 screw1 |
| max. initial value betamx       |                  |  n/a     screw2 |
```

max. Taylor's series term (kin.)	1.00000E-04	1.0e-04	screw3
corrector iteration	1.00000E-04	1.0e-04	screw4
max. size of N-R correction term	4.0000	4.0	screw5
step size (economy mode)	4.0000	4.0	screw6
log mass of phases	-6.0000	varies	zklogu
decrement mass (p.r.s.)	2.0000	2.0	zklogl
min. left after p.r.s.	0.80000	.98	zkfac
initial step size	1.00000E-09	varies	dlzmx1
upper limit step size	1.00000E+38	varies	dlzmx2
maximum order	6	6	nordlm
num. attempted assemblages	25	25	ntrymx
slide -> over phase bound.	12	8	npslmx
slide -> over redox insta.	8	3	nsslmx
fo2 scan control		none	ioscan

```
c pickup file written by eq6.7.2bR137
c supported by eqlib.7.2bR168
EQ6 input file name= j13_All-22.6i.txt
Description= React J-13 water with Carbon Steel and Alloy-22.
Equilibrium with atmospheric gases.
Version level= 7.2
Created 01/19/99    Creator= D.H. Lester
Revised             Revisor=

Water from well J-13 at the Nevada Test site

Purpose: To model reaction with carbon steel (iron) and alloy C-22
simultaneously to determine an expected Cr concentration in the water
corroding the C-22 after breaching the CAM.

It is assumed that a significant amount of carbon steel is still
present. The rate constant for the steel was assumed to be 1.0E-11
which is the higher value suggested in simulation studies at LLNL.
Reference: Eng. Barrier System & Near Field Envir. Perf. Assess.,
FY-96 Activities: End-of-Year Summary, Sept 1996, Wm.G.Halsey, "Report
on Initial Simulation of Water Interaction With Mild Steel Containers
Rate for C-22 is the median value for dripping at high temp. in the
TSPA simulations for the VA document.
The data base was modified to add the solid KFe(CrO4)2:2H2O
Total amount of Steel and C-22 reduced to 20 moles each for a more
realistic proportion of materials contacting 1L of water
```

temperature (C)	25.000
electrical imbalance	5.752163835343278E-14
number of aqueous master species	38
position of last pure mineral	45
position of last solid solution	63

suppressed species	(suppress,replace,augmentk,augmentg)		value
Phlogopite	mineral	suppress	0.00000
Annite	mineral	suppress	0.00000
Clinochlore-14A	mineral	suppress	0.00000
Daphnite-14A	mineral	suppress	0.00000
Clinozoisite	mineral	suppress	0.00000
Epidote	mineral	suppress	0.00000
Epidote-ord	mineral	suppress	0.00000
Andradite	mineral	suppress	0.00000
Grossular	mineral	suppress	0.00000

```
| Enstatite                | mineral        | suppress |  0.00000      |
| Ferrosilite              | mineral        | suppress |  0.00000      |
| Pyrite                   | mineral        | suppress |  0.00000      |
| Pyrrhotite               | mineral        | suppress |  0.00000      |
| Troilite                 | mineral        | suppress |  0.00000      |
| Alabandite               | mineral        | suppress |  0.00000      |
| Brezinaite               | mineral        | suppress |  0.00000      |
| Chalcocite               | mineral        | suppress |  0.00000      |
| Covellite                | mineral        | suppress |  0.00000      |
| Millerite                | mineral        | suppress |  0.00000      |
| Polydymite               | mineral        | suppress |  0.00000      |
| Vaesite                  | mineral        | suppress |  0.00000      |
| Heazlewoodite            | mineral        | suppress |  0.00000      |
| Galena                   | mineral        | suppress |  0.00000      |
| Sulfur                   | mineral        | suppress |  0.00000      |
| CaZrO3                   | mineral        | suppress |  0.00000      |
| BaZrO3                   | mineral        | suppress |  0.00000      |
| SrZrO3                   | mineral        | suppress |  0.00000      |
| U2S3                     | mineral        | suppress |  0.00000      |
| U3S5                     | mineral        | suppress |  0.00000      |
| US2                      | mineral        | suppress |  0.00000      |
| US3                      | mineral        | suppress |  0.00000      |
| US                       | mineral        | suppress |  0.00000      |
| US1.9                    | mineral        | suppress |  0.00000      |
| U3P4                     | mineral        | suppress |  0.00000      |
| UP                       | mineral        | suppress |  0.00000      |
| UP2                      | mineral        | suppress |  0.00000      |
| HS-                      | aqueous        | suppress |  0.00000      |
| H2S(aq)                  | aqueous        | suppress |  0.00000      |
| S--                      | aqueous        | suppress |  0.00000      |
|-------------------------------------------------------------------------|
| iopg options                                                            |
|-------------------------------------------------------------------------|
| - pH SCALE CONVENTION -                                                 |
|    * modified NBS                                                       |
|      internal                                                           |
|      rational                                                           |
| - ACTIVITY COEFFICIENT OPTIONS -                                        |
|    * use B-dot equation                                                 |
|      Davies' equation                                                   |
|      Pitzer's equations                                                 |
|-------------------------------------------------------------------------|
| elements, moles and moles aqueous                                       |
|-------------------------------------------------------------------------|
| O                        |  4.005551824589011E+04 |  5.551555680358288E+01 |
| Al                       |  1.482500000694482E-06 |  8.591763785595530E-13 |
| B                        |  1.238799999942330E-05 |  1.238799999942329E-05 |
| Ba                       |  1.000000000006594E-10 |  1.000000000006593E-10 |
| Ca                       |  3.243700000162714E-04 |  1.952835940871453E-04 |
| Ce                       |  1.000000000975802E-24 |  1.000000000975804E-24 |
| Cl                       |  2.014000000000269E-04 |  2.014000000000267E-04 |
| Cr                       |  3.475555753419189E-07 |  3.475555753419192E-07 |
| Cs                       |  1.000000000000039E-10 |  1.000000000000037E-10 |
| Cu                       |  1.050000000528221E-14 |  1.050000000528226E-14 |
| F                        |  1.147500000001528E-04 |  1.143244905745712E-04 |
| Fe                       |  8.984884578073744E-06 |  1.235579309483064E-12 |
| Gd                       |  1.000000001150365E-14 |  1.000000001150368E-14 |
| H                        |  1.110188738405208E+02 |  1.110188648556775E+02 |
| C                        |  1.000000199050752E+04 |  1.662596854654502E-03 |
| P                        |  1.277700337673725E-06 |  1.172060929201449E-09 |
| K                        |  1.289100000000803E-04 |  1.288395016824764E-04 |
| La                       |  1.000000000980088E-14 |  1.000000000980090E-14 |
| Li                       |  1.000000000000469E-10 |  1.000000000000470E-10 |
```

Mg	8.269900000408464E-05	1.327502448219020E-05
Mn	9.635208338479154E-08	1.750160184552279E-16
Mo	1.166590777015548E-09	1.166590777015550E-09
N	1.420000000000891E-04	1.420000000000892E-04
Na	1.992200000002518E-03	1.992097391269498E-03
Nd	1.000000000990082E-14	1.000000000990081E-14
Ni	6.101799542598132E-09	6.101799542598140E-09
Pb	1.000000000003566E-10	1.000000000003564E-10
Pu	1.000000001138469E-14	1.000000001138479E-14
S	1.915479746368383E-04	1.915479746368379E-04
Si	1.016950110199212E-03	1.041554383003862E-04
Sm	1.000000000991962E-14	1.000000000991964E-14
Sr	1.000000000034016E-10	2.183617448256372E-12
Ti	1.000000000000003E-10	1.000000000000003E-10
U	9.999999988006304E-15	9.999999988006386E-15
V	2.639474022112067E-10	2.639474022112085E-10
Zn	1.000000000089305E-10	1.452781364444587E-11
Zr	1.000000000323548E-20	1.000000000323552E-20

master species and logarithmic basis variables		
H2O	H2O	1.744360311821833E+00
Al+++	Al+++	-2.297661580630379E+01
B(OH)3(aq)	B(OH)3(aq)	-4.982976352084828E+00
Ba++	Ba++	-1.000380109484476E+01
Ca++	Ca++	-3.737919096206060E+00
Ce+++	Ce+++	-2.717577236398138E+01
Cl-	Cl-	-3.696085894990046E+00
CrO4--	CrO4--	-6.462592261031226E+00
Cs+	Cs+	-1.000005632860828E+01
Cu++	Cu++	-1.623826782595589E+01
F-	F-	-3.942340139511984E+00
Fe++	Fe++	-2.443127865161485E+01
Gd+++	Gd+++	-1.767774221049945E+01
H+	H+	-8.471004674601688E+00
HCO3-	HCO3-	-2.793258942360729E+00
HPO4--	HPO4--	-9.004138079763970E+00
K+	K+	-3.890436898971664E+00
La+++	La+++	-1.668916943373455E+01
Li+	Li+	-1.000038174567967E+01
Mg++	Mg++	-4.903744235803600E+00
Mn++	Mn++	-1.653822865161485E+01
MoO4--	MoO4--	-8.933081461393992E+00
NO3-	NH3(aq)	-3.848027547000232E+00
Na+	Na+	-2.702108703388519E+00
Nd+++	Nd+++	-1.726482569395849E+01
Ni++	Ni++	-8.221734053037536E+00
Pb++	Pb++	-1.000215028180763E+01
Pu++++	Pu++++	-4.259717282209618E+01
SO4--	SO4--	-3.729696407744359E+00
SiO2(aq)	SiO2(aq)	-3.999298671705151E+00
Sm+++	Sm+++	-1.746475919293869E+01
Sr++	Sr++	-1.167662998630858E+01
Ti(OH)4(aq)	Ti(OH)4(aq)	-9.999999999999998E+00
UO2++	UO2++	-2.210209630319617E+01
VO++	VO++	-3.311901865789363E+01
Zn++	Zn++	-1.095984578778770E+01
Zr(OH)2++	Zr(OH)2++	-3.565902806182796E+01
O2(g)	O2(g)	-6.778000000000000E-01
	Dolomite-ord	-4.168709512523856E+00
	Fluorapatite	-6.371090815291028E+00
	Hematite	-1.069831290889783E+01
	Pyrolusite	-7.016138895717432E+00

```
|                          | Quartz                   | -3.047542977053183E+00 |
|                          | fix     CO2(g)           |  4.000000005740606E+00 |
|                          | fix     O2(g)            |  3.999999999689783E+00 |
| Carbonate-Calcite        | Calcite                  | -4.231648495135639E+00 |
| Carbonate-Calcite        | Magnesite                | -5.839267605953220E+00 |
| Carbonate-Calcite        | Rhodochrosite            | -1.499045805054443E+01 |
| Carbonate-Calcite        | Siderite                 | -2.288430805054443E+01 |
| Carbonate-Calcite        | Smithsonite              | -1.006817518671728E+01 |
| Carbonate-Calcite        | Strontianite             | -1.000958840229360E+01 |
| Smectite-di              | Beidellite-Ca            | -4.400113436159849E+01 |
| Smectite-di              | Beidellite-K             | -4.514248677312932E+01 |
| Smectite-di              | Beidellite-Mg            | -4.446825149276485E+01 |
| Smectite-di              | Beidellite-Na            | -4.497948120097326E+01 |
| Smectite-di              | Montmor-Ca               | -3.121540965113295E+01 |
| Smectite-di              | Montmor-K                | -3.214373175963348E+01 |
| Smectite-di              | Montmor-Mg               | -3.147161769139022E+01 |
| Smectite-di              | Montmor-Na               | -3.199163527838652E+01 |
| Smectite-di              | Nontronite-Ca            | -5.528982775386098E+00 |
| Smectite-di              | Nontronite-K             | -6.670335186916926E+00 |
| Smectite-di              | Nontronite-Mg            | -5.995796876249442E+00 |
| Smectite-di              | Nontronite-Na            | -6.507329614760884E+00 |
|-------------------------------------------------------------------------|
| physically removed subsystem  (solid solution, mineral, moles)          |
|-------------------------------------------------------------------------|
| none                     |                          |                        |
|-------------------------------------------------------------------------|
|-------------------------------------------------------------------------|
|EQ6 input file name= j13_All-22.6i.txt                                   |
|Description= React J-13 water with Carbon Steel and Alloy-22.            |
|Equilibrium with atmospheric gases.                                      |
|Version level= 7.2                                                       |
|Created 01/19/99    Creator= D.H. Lester                                 |
|Revised             Revisor=                                             |
|                                                                         |
|Water from well J-13 at the Nevada Test site                             |
|                                                                         |
|Purpose: To model reaction with carbon steel (iron) and alloy C-22       |
|simultaneously to determine an expected Cr concentration in the water    |
|corroding the C-22 after breaching the CAM.                              |
|                                                                         |
|It is assumed that a significant amount of carbon steel is still         |
|present. The rate constant for the steel was assumed to be 1.0E-11       |
|which is the higher value suggested in simulation studies at LLNL.       |
|Reference: Eng. Barrier System & Near Field Envir. Perf. Assess.,        |
|FY-96 Activities: End-of-Year Summary, Sept 1996, Wm.G.Halsey, "Report|
|on Initial Simulation of Water Interaction With Mild Steel Containers |
|Rate for C-22 is the median value for dripping at high temp. in the      |
|TSPA simulations for the VA document.                                    |
|The data base was modified to add the solid KFe(CrO4)2:2H2O              |
|Total amount of Steel and C-22 reduced to 20 moles each for a more       |
|realistic proportion of materials contacting 1L of water                 |
|-------------------------------------------------------------------------|
| calculational mode   |*normal     | economy           | super economy|
|-------------------------------------------------------------------------|
| model type           |*titration  | closed            | open         |
|-------------------------------------------------------------------------|
| temperature model    |*power      | fluid mixing                         |
|-------------------------------------------------------------------------|
c power model  -->   temp = tstart + tk1*zi + tk2*zi**2 + tk3*zi**3      |
c mixing model -->   temp = (tstart * tk1 + zi*tk2) / (zi + tk1)         |
c-------------------------------------------------------------------------|
| tstart(c)|  25.00    |tk1| 0.0000    |tk2| 0.0000    |tk3| 0.0000      |
|-------------------------------------------------------------------------|
```

```
| starting value of zi | 3.03170E-05|max. value of zi    | 1.00000E+38 |
|-----------------------------------------------------------------------|
| starting time (sec)  |  30283.    |max. time (sec)     | 1.00000E+38 |
|-----------------------------------------------------------------------|
| max. steps           |       400  |max. steps w/o print|       150   |
|-----------------------------------------------------------------------|
| linear print interval|  10.000    |log print interval  | 1.00000E+38 |
|-----------------------------------------------------------------------|
| suppress mineral phases                                               |
|-----------------------------------------------------------------------|
| phases w/ elements|                          |                          |n
| phases except     |                          |                          |n
|-----------------------------------------------------------------------|
| fixed fugacity phases- species, moles(per kg h2o), log fugacity(bars)|
|-----------------------------------------------------------------------|
| CO2(g)                              | 0.00000        | -3.5000        |n
| O2(g)                               | 0.00000        |-0.67780        |n
|-----------------------------------------------------------------------|
c                  R A T E     L A W S
c 1 = relative                  rate = rk1 + rk2*zi + (1/2)rk3*zi*zi
c 2 = transition state theory   rate = CHECK DOCUMENTATION
c 3 = specified rate            rate = CHECK DOCUMENTATION
c 4 = activity term rate        rate = CHECK DOCUMENTATION
c
c                  R E A C T A N T     T Y P E S
c mineral     solid solution     special    aqueous    gas
c
c                  S U R F A C E    T Y P E
c 0 = fixed surface area     1 = fixed specific surface area
c
c                  N O T E S
c status and jreac are normally not set by the user
|-----------------------------------------------------------------------|
| reactants   (ss) solid solution only     (sp) special reactant only   |
|-----------------------------------------------------------------------|
| REACTANT         | carbon steel             |status   | 0             |
| moles remaining  |  20.000                  |destroyed| 3.02828E-05   |
| reactant type    |  special                 |sk       |  100.00       |
| surface type     |   0                      |fk       |  1.0000       |
| end-member       |                          |mole fr  |               |ss,n
| volume           | 0.00000                  |         |               |sp
| element          | C            |moles      |  2.190000000000000E-02 |sp,n
| element          | Mn           |moles      |  1.030000000000000E-02 |sp,n
| element          | S            |moles      |  8.530000000000000E-04 |sp,n
| element          | Si           |moles      |  5.360000000000000E-03 |sp,n
| element          | P            |moles      |  7.060000000000000E-04 |sp,n
| element          | Fe           |moles      |  9.610000000000000E-01 |sp,n
| DISSOLUTION LAW  |    3                     |         |               |
| rate constant rk1| 1.00000E-11              |csigma1  |               |
| temperature (c)  |   25.000                 |         |               |234
| PRECIPITATION LAW|    0                     |         |               |
c-----------------------------------------------------------------------|
| REACTANT         | Alloy-22                 |status   | 0             |
| moles remaining  |  20.000                  |destroyed| 3.42196E-08   |
| reactant type    |  special                 |sk       |  100.00       |
| surface type     |   0                      |fk       |  1.0000       |
| end-member       |                          |mole fr  |               |ss,n
| volume           | 0.00000                  |         |               |sp
| element          | Cr           |moles      |  2.561060000000000E-01 |sp,n
| element          | Fe           |moles      |  5.420400000000000E-02 |sp,n
| element          | Ni           |moles      |  5.681220000000000E-01 |sp,n
| element          | Mo           |moles      |  1.009620000000000E-01 |sp,n
| element          | V            |moles      |  4.160000000000000E-03 |sp,n
```

```
| element           | Mn           |moles       |  5.510000000000000E-03 |sp,n
| DISSOLUTION LAW   |    3                      |          |              |
| rate constant rk1| 1.13000E-14               |csigma1   |              |
| temperature (c)   |   25.000                  |          |              |234
| PRECIPITATION LAW|    0                       |          |              |
|-----------------------------------------------------------------------|
| options                                                               |
|-----------------------------------------------------------------------|
| - SOLID SOLUTIONS -                                                   |
|     ignore solid solutions                                            |
|   * process solid solutions                                           |
| - LOADING OF SPECIES INTO MEMORY -                                    |
|   * don't print                                                       |
|     lists species loaded into memory                                  |
| - LIST DERIVATIVES OF BASIS ELEMENTS AT EACH PRINT POINT -            |
|   * don't print                                                       |
|     print                                                             |
| - LIST ALL SPECIES LOADED INTO MEMORY AND THEIR LOG K VALUES -        |
|   * don't print                                                       |
|     print                                                             |
| - LIST DISTRIBUTION OF AQUEOUS SPECIES AT EACH PRINT POINT -          |
|   * only species > 10**-12 molal                                      |
|     all species                                                       |
|     don't print                                                       |
| - LIST CATION/H+ ACTIVITY RATIOS AT EACH PRINT POINT -                |
|   * don't print                                                       |
|     print                                                             |
| - LIST BULK ELEMENT AND OXIDE COMPOSITION AT EACH PRINT POINT -       |
|   * don't print                                                       |
|     print                                                             |
| - MINERAL SATURATION STATES -                                         |
|   * print if affinity > -10 kcals                                     |
|     print all                                                         |
|     don't print                                                       |
| - LIST GAS SPECIES SUMMARY AT EACH PRINT POINT -                      |
|     don't print                                                       |
|   * print                                                             |
| - PRINT AQUEOUS MASS AND CONCENTRATION TOTALS -                       |
|   * don't print                                                       |
|     print                                                             |
| - TAB FILES -                                                         |
|   * write                                                             |
|     append to previous tabx file                                      |
|     don't write                                                       |
| - WRITE PICKUP FILE -                                                 |
|     write pickup file at end of run                                   |
|     don't write pickup file                                           |
|   * write pickup file for each print point                            |
| - PHYSICALLY REMOVED SUBSYSTEM -                                      |
|   * does nothing                                                      |
|     transfer minerals but leave trivial mass in the system            |
|     transfer minerals                                                 |
| - CLEAR INITIAL PHYSICALLY REMOVED SUBSYSTEM -                        |
|   * does nothing                                                      |
|     clear p.r.s. before first reaction progress advance               |
| - PHASE BOUNDARY SEARCH -                                             |
|   * step size constrained by predicted phase boundaries               |
|     phase boundaries estimated from Taylor's series and printed       |
|     locations of phase boundaries ignored                             |
| - AUTO BASIS SWITCHING -                                              |
|   * off                                                               |
|     on                                                                |
| - SUPPRESS REDOX REACTIONS -                                          |
```

```
|   * does nothing                                                      |
|     suppress all redox reactions                                      |
| - LINEAR OR LOGARITHMIC TAYLOR'S SERIES -                             |
|   * linear for kcol = 1,kdim, logarithmic for kcol = 1,kbt            |
|     logarithmic for kcol = 1,kbt                                      |
|     linear for kcol = 1,kdim                                          |
| - AZERO AND HYDRATION NUMBERS -                                       |
|   * no change                                                         |
|     read in new azero and hydration numbers                           |
| - PRINT MEAN MOLAL ACTIVITY COEFFICIENTS FOR DISSOLVED SPECIES -      |
|   * does nothing                                                      |
|     print                                                             |
| - PITZER DATABASE INFORMATION -                                       |
|   * print only warnings                                               |
|     print species in model and number of Pitzer coefficients          |
|     print species in model and names of Pitzer coefficients           |
| - PRINT DIAGNOSTIC MESSAGES -                                         |
|   * don't print                                                       |
|     print level 1 messages                                            |
|     print level 2 messages                                            |
| - PRINT PRE-NEWTON-RAPHSON OPTIMIZATION -                             |
|   * don't print                                                       |
|     print summary information                                         |
|     print detailed information                                        |
| - PRINT STEP SIZE AND ORDER -                                         |
|   * don't print                                                       |
|     print scale factor                                                |
|     print orders and step size scaling factors                        |
| - CONTROL STEP SIZE AND ORDER PRINT -                                 |
|   * does nothing                                                      |
|     print step size and order when delzi .le. dlzmx1                  |
| - NEWTON ITERATIONS -                                                 |
|   * don't print                                                       |
|     print summary of newton iterations                                |
|     print summary, residual functions and correction terms            |
|     print summary, residual functions, correction terms and matrix    |
| - PRINT SEARCH ITERATIONS -                                           |
|   * don't print                                                       |
|     print                                                             |
| - PRINT HPSAT ITERATIONS -                                            |
|   * don't print                                                       |
|     print                                                             |
| - PRINT FINITE DIFFERENCE AND DERIVATIVE DATA -                       |
|   * don't print                                                       |
|     print computations from RDERIV, and RTAYLR                        |
|     print computations from RDERIV, RTAYLR, DERIV and TAYLOR          |
| - PRINT KINETICS DIAGNOSTIC MESSAGES -                                |
|   * don't print                                                       |
|     print level 1 diagnostics                                         |
|     print level 1 and level 2 diagnostics                             |
| - PRINT AKMATR -                                                      |
|   * don't print                                                       |
|     print level 1 diagnostics                                         |
| - KILL ITERATION VARIABLES -                                          |
|   * does nothing                                                      |
|     allow selection of variables to remove                            |
|-----------------------------------------------------------------------|
| development options  (used for code development)                      |
|-----------------------------------------------------------------------|
|    0 check finite difference and Taylor series expression             |
|    0 check reaction rate finite difference and Taylor series          |
|-----------------------------------------------------------------------|
| tolerances                       desired values - defaults info-only  |
```

```
|-----------------------------------------------------------------------|
| number of N-R iterations          |        90         |  90      itermx |
| p.r.s. transfer interval          | 1.00000E+38       |  varies  dlzidp |
| residual magnitude                | 1.00000E-06       |  1.0e-06 tolbt  |
| correction magnitude              | 1.00000E-06       |  1.0e-06 toldl  |
| search/find tolerance             | 1.00000E-06       |  varies  tolx   |
| supersaturation                   | 5.00000E-03       |  varies  tolsat |
| supersaturation set size          | 1.00000E-02       |  varies  tolsst |
| max. size Taylor's series term    | 1.00000E-04       |  1.0e-04 screw1 |
| max. initial value betamx         |                   |  n/a     screw2 |
| max. Taylor's series term (kin.)| 1.00000E-04       |  1.0e-04 screw3 |
| corrector iteration               | 1.00000E-04       |  1.0e-04 screw4 |
| max. size of N-R correction term|  4.0000           |  4.0     screw5 |
| step size (economy mode)          |  4.0000           |  4.0     screw6 |
| log mass of phases                | -6.0000           |  varies  zklogu |
| decrement mass (p.r.s.)           |  2.0000           |  2.0     zklogl |
| min. left after p.r.s.            | 0.80000           |  .98     zkfac  |
| initial step size                 | 1.00000E-09       |  varies  dlzmx1 |
| upper limit step size             | 1.00000E+38       |  varies  dlzmx2 |
| maximum order                     |         6         |  6       nordlm |
| num. attempted assemblages        |        25         |  25      ntrymx |
| slide -> over phase bound.        |        12         |  8       npslmx |
| slide -> over redox insta.        |         8         |  3       nsslmx |
| fo2 scan control                  |                   |  none    ioscan |
|-----------------------------------------------------------------------|
c pickup file written by eq6.7.2bR137                                   |
c supported by eqlib.7.2bR168                                           |
|EQ6 input file name= j13_All-22.6i.txt                                 |
|Description= React J-13 water with Carbon Steel and Alloy-22.          |
|Equilibrium with atmospheric gases.                                    |
|Version level= 7.2                                                     |
|Created 01/19/99    Creator= D.H. Lester                               |
|Revised             Revisor=                                           |
|                                                                       |
|Water from well J-13 at the Nevada Test site                           |
|                                                                       |
|Purpose: To model reaction with carbon steel (iron) and alloy C-22     |
|simultaneously to determine an expected Cr concentration in the water |
|corroding the C-22 after breaching the CAM.                            |
|                                                                       |
|It is assumed that a significant amount of carbon steel is still       |
|present. The rate constant for the steel was assumed to be 1.0E-11     |
|which is the higher value suggested in simulation studies at LLNL.     |
|Reference: Eng. Barrier System & Near Field Envir. Perf. Assess.,      |
|FY-96 Activities: End-of-Year Summary, Sept 1996, Wm.G.Halsey, "Report|
|on Initial Simulation of Water Interaction With Mild Steel Containers |
|Rate for C-22 is the median value for dripping at high temp. in the    |
|TSPA simulations for the VA document.                                  |
|The data base was modified to add the solid KFe(CrO4)2:2H2O            |
|Total amount of Steel and C-22 reduced to 20 moles each for a more     |
|realistic proportion of materials contacting 1L of water               |
|-----------------------------------------------------------------------|
| temperature (C)                    |     25.000                       |
|-----------------------------------------------------------------------|
| electrical imbalance               |   5.752163835343278E-14          |
|-----------------------------------------------------------------------|
| number of aqueous master species   |     38                           |
|-----------------------------------------------------------------------|
| position of last pure mineral      |     46                           |
|-----------------------------------------------------------------------|
| position of last solid solution    |     64                           |
|-----------------------------------------------------------------------|
| suppressed species     (suppress,replace,augmentk,augmentg)  value    |
```

Phlogopite	mineral	suppress	0.00000
Annite	mineral	suppress	0.00000
Clinochlore-14A	mineral	suppress	0.00000
Daphnite-14A	mineral	suppress	0.00000
Clinozoisite	mineral	suppress	0.00000
Epidote	mineral	suppress	0.00000
Epidote-ord	mineral	suppress	0.00000
Andradite	mineral	suppress	0.00000
Grossular	mineral	suppress	0.00000
Enstatite	mineral	suppress	0.00000
Ferrosilite	mineral	suppress	0.00000
Pyrite	mineral	suppress	0.00000
Pyrrhotite	mineral	suppress	0.00000
Troilite	mineral	suppress	0.00000
Alabandite	mineral	suppress	0.00000
Brezinaite	mineral	suppress	0.00000
Chalcocite	mineral	suppress	0.00000
Covellite	mineral	suppress	0.00000
Millerite	mineral	suppress	0.00000
Polydymite	mineral	suppress	0.00000
Vaesite	mineral	suppress	0.00000
Heazlewoodite	mineral	suppress	0.00000
Galena	mineral	suppress	0.00000
Sulfur	mineral	suppress	0.00000
CaZrO3	mineral	suppress	0.00000
BaZrO3	mineral	suppress	0.00000
SrZrO3	mineral	suppress	0.00000
U2S3	mineral	suppress	0.00000
U3S5	mineral	suppress	0.00000
US2	mineral	suppress	0.00000
US3	mineral	suppress	0.00000
US	mineral	suppress	0.00000
US1.9	mineral	suppress	0.00000
U3P4	mineral	suppress	0.00000
UP	mineral	suppress	0.00000
UP2	mineral	suppress	0.00000
HS-	aqueous	suppress	0.00000
H2S(aq)	aqueous	suppress	0.00000
S--	aqueous	suppress	0.00000

```
iopg options

- pH SCALE CONVENTION -
    * modified NBS
      internal
      rational
- ACTIVITY COEFFICIENT OPTIONS -
    * use B-dot equation
      Davies' equation
      Pitzer's equations
```

elements, moles and moles aqueous

O	4.005551824589011E+04	5.551555687743266E+01
Al	1.482500000694482E-06	8.591708549775180E-13
B	1.238799999942330E-05	1.238799999942330E-05
Ba	1.000000000006594E-10	1.000000000006594E-10
Ca	3.243700000162714E-04	1.952874216931592E-04
Ce	1.000000000975802E-24	1.000000000975804E-24
Cl	2.014000000000269E-04	2.014000000000269E-04
Cr	3.536138426872698E-07	3.536138426872696E-07
Cs	1.000000000000039E-10	1.000000000000038E-10

Cu	1.050000000528221E-14	1.050000000528219E-14
F	1.147500000001528E-04	1.143195641288522E-04
Fe	2.910364897695218E-05	1.235578670440577E-12
Gd	1.000000001150365E-14	1.000000001150368E-14
H	1.110188738405208E+02	1.110188648556775E+02
C	1.000000199096597E+04	1.662584298031607E-03
P	1.292479674222694E-06	1.172060320971417E-09
K	1.289100000000803E-04	1.288395022490052E-04
La	1.000000000980088E-14	1.000000000980091E-14
Li	1.000000000000469E-10	1.000000000000470E-10
Mg	8.269900000408464E-05	1.327530320869757E-05
Mn	3.121016400951832E-07	1.750156927794232E-16
Mo	3.554878391211625E-09	3.554878391211621E-09
N	1.420000000000891E-04	1.420000000000892E-04
Na	1.992200000002518E-03	1.992097392088475E-03
Nd	1.000000000990082E-14	1.000000000990081E-14
Ni	1.954090272946352E-08	1.940985321089342E-08
Pb	1.000000000003566E-10	1.000000000003565E-10
Pu	1.000000001138469E-14	1.000000001138466E-14
S	1.915658312573429E-04	1.915658312573428E-04
Si	1.017062315927120E-03	1.041554077153081E-04
Sm	1.000000000991962E-14	1.000000000991962E-14
Sr	1.000000000034016E-10	2.184714893253668E-12
Ti	1.000000000000003E-10	1.000000000000003E-10
U	9.999999988006304E-15	9.999999988006314E-15
V	3.623535002981669E-10	3.623535002981686E-10
Zn	1.000000000089305E-10	1.453413967158671E-11
Zr	1.000000000323548E-20	1.000000000323537E-20

master species and logarithmic basis variables		
H2O	H2O	1.744360311868826E+00
Al+++	Al+++	-2.297660218676194E+01
B(OH)3(aq)	B(OH)3(aq)	-4.982975837253234E+00
Ba++	Ba++	-1.000380102783056E+01
Ca++	Ca++	-3.737910752306840E+00
Ce+++	Ce+++	-2.717575842372516E+01
Cl-	Cl-	-3.696085895511514E+00
CrO4--	CrO4--	-6.455087285001086E+00
Cs+	Cs+	-1.000005632852457E+01
Cu++	Cu++	-1.623825956611060E+01
F-	F-	-3.942358860947375E+00
Fe++	Fe++	-2.443127030708636E+01
Gd+++	Gd+++	-1.767772678931565E+01
H+	H+	-8.471000822629568E+00
HCO3-	HCO3-	-2.793262222283644E+00
HPO4--	HPO4--	-9.004138862178990E+00
K+	K+	-3.890436940052784E+00
La+++	La+++	-1.668915727341123E+01
Li+	Li+	-1.000038177918991E+01
Mg++	Mg++	-4.903735962279606E+00
Mn++	Mn++	-1.653822030708636E+01
MoO4--	MoO4--	-8.449175251454354E+00
NO3-	NH3(aq)	-3.848027563542326E+00
Na+	Na+	-2.702108731421170E+00
Nd+++	Nd+++	-1.726481151116952E+01
Ni++	Ni++	-7.719170307086360E+00
Pb++	Pb++	-1.000215026436872E+01
Pu++++	Pu++++	-4.259715006933903E+01
SO4--	SO4--	-3.729656469955913E+00
SiO2(aq)	SiO2(aq)	-3.999298671658159E+00
Sm+++	Sm+++	-1.746474500679829E+01
Sr++	Sr++	-1.167641250457467E+01

Ti(OH)4(aq)	Ti(OH)4(aq)	-9.999999999999998E+00
UO2++	UO2++	-2.210207998675608E+01
VO++	VO++	-3.298138937697552E+01
Zn++	Zn++	-1.095965561645627E+01
Zr(OH)2++	Zr(OH)2++	-3.565901965875145E+01
O2(g)	O2(g)	-6.778000000000000E-01
	Dolomite-ord	-4.168706731190582E+00
	Fluorapatite	-6.366091542967276E+00
	Hematite	-4.997427826044846E+00
	Ni2SiO4	-1.018359456582379E+01
	Pyrolusite	-6.505703950774952E+00
	Quartz	-3.047488629513823E+00
	fix CO2(g)	4.000000005762310E+00
	fix O2(g)	3.999999998997507E+00
Carbonate-Calcite	Calcite	-4.231862467063862E+00
Carbonate-Calcite	Magnesite	-5.839481576622904E+00
Carbonate-Calcite	Rhodochrosite	-1.499067202184338E+01
Carbonate-Calcite	Siderite	-2.288452202184338E+01
Carbonate-Calcite	Smithsonite	-1.006820733121330E+01
Carbonate-Calcite	Strontianite	-1.000959327486165E+01
Smectite-di	Beidellite-Ca	-4.400113111311308E+01
Smectite-di	Beidellite-K	-4.514248747405444E+01
Smectite-di	Beidellite-Mg	-4.446824824365018E+01
Smectite-di	Beidellite-Na	-4.497948187823348E+01
Smectite-di	Montmor-Ca	-3.121540732242258E+01
Smectite-di	Montmor-K	-3.214373338033363E+01
Smectite-di	Montmor-Mg	-3.147161536205059E+01
Smectite-di	Montmor-Na	-3.199163687542177E+01
Smectite-di	Nontronite-Ca	-5.528982316004668E+00
Smectite-di	Nontronite-K	-6.670338676946010E+00
Smectite-di	Nontronite-Mg	-5.995796416238742E+00
Smectite-di	Nontronite-Na	-6.507333081125068E+00

physically removed subsystem (solid solution, mineral, moles)		
none		

```
EQ6 input file name= j13_All-22.6i.txt
Description= React J-13 water with Carbon Steel and Alloy-22.
Equilibrium with atmospheric gases.
Version level= 7.2
Created 01/19/99    Creator= D.H. Lester
Revised             Revisor=

Water from well J-13 at the Nevada Test site

Purpose: To model reaction with carbon steel (iron) and alloy C-22
simultaneously to determine an expected Cr concentration in the water
corroding the C-22 after breaching the CAM.

It is assumed that a significant amount of carbon steel is still
present. The rate constant for the steel was assumed to be 1.0E-11
which is the higher value suggested in simulation studies at LLNL.
Reference: Eng. Barrier System & Near Field Envir. Perf. Assess.,
FY-96 Activities: End-of-Year Summary, Sept 1996, Wm.G.Halsey, "Report
on Initial Simulation of Water Interaction With Mild Steel Containers
Rate for C-22 is the median value for dripping at high temp. in the
TSPA simulations for the VA document.
The data base was modified to add the solid KFe(CrO4)2:2H2O
Total amount of Steel and C-22 reduced to 20 moles each for a more
realistic proportion of materials contacting 1L of water
```

```
| calculational mode   |*normal     | economy           | super economy|
|-----------------------------------------------------------------------|
| model type           |*titration  | closed            | open         |
|-----------------------------------------------------------------------|
| temperature model    |*power      | fluid mixing                     |
|-----------------------------------------------------------------------|
c power model  -->   temp = tstart + tk1*zi + tk2*zi**2 + tk3*zi**3    |
c mixing model -->   temp = (tstart * tk1 + zi*tk2) / (zi + tk1)       |
c----------------------------------------------------------------------|
| tstart(c)|  25.00    |tk1| 0.0000    |tk2| 0.0000    |tk3| 0.0000    |
|-----------------------------------------------------------------------|
| starting value of zi | 3.75728E-02|max. value of zi    | 1.00000E+38 |
|-----------------------------------------------------------------------|
| starting time (sec)  | 3.75304E+07|max. time (sec)     | 1.00000E+38 |
|-----------------------------------------------------------------------|
| max. steps           |       400  |max. steps w/o print|       150   |
|-----------------------------------------------------------------------|
| linear print interval|  10.000    |log print interval  | 1.00000E+38 |
|-----------------------------------------------------------------------|
| suppress mineral phases                                               |
|-----------------------------------------------------------------------|
| phases w/ elements|                          |                         |n
| phases except     |                          |                         |n
|-----------------------------------------------------------------------|
| fixed fugacity phases- species, moles(per kg h2o), log fugacity(bars)|
|-----------------------------------------------------------------------|
| CO2(g)                              | 0.00000        | -3.5000        |n
| O2(g)                               | 0.00000        |-0.67780        |n
|-----------------------------------------------------------------------|
c                  R A T E     L A W S
c 1 = relative                  rate = rk1 + rk2*zi + (1/2)rk3*zi*zi
c 2 = transition state theory   rate = CHECK DOCUMENTATION
c 3 = specified rate            rate = CHECK DOCUMENTATION
c 4 = activity term rate        rate = CHECK DOCUMENTATION
c
c                  R E A C T A N T     T Y P E S
c mineral     solid solution     special    aqueous    gas
c
c                  S U R F A C E    T Y P E
c 0 = fixed surface area     1 = fixed specific surface area
c
c                  N O T E S
c status and jreac are normally not set by the user
|-----------------------------------------------------------------------|
| reactants   (ss) solid solution only     (sp) special reactant only   |
|-----------------------------------------------------------------------|
| REACTANT         | carbon steel             |status   | 0            |
| moles remaining  |  19.962                  |destroyed| 3.75304E-02  |
| reactant type    |  special                 |sk       |  100.00      |
| surface type     |   0                      |fk       |  1.0000      |
| end-member       |                          |mole fr  |              |ss,n
| volume           | 0.00000                  |         |              |sp
| element          | C            |moles      |  2.190000000000000E-02 |sp,n
| element          | Mn           |moles      |  1.030000000000000E-02 |sp,n
| element          | S            |moles      |  8.530000000000000E-04 |sp,n
| element          | Si           |moles      |  5.360000000000000E-03 |sp,n
| element          | P            |moles      |  7.060000000000000E-04 |sp,n
| element          | Fe           |moles      |  9.610000000000000E-01 |sp,n
| DISSOLUTION LAW  |    3                     |         |              |
| rate constant rk1| 1.00000E-11              |csigma1  |              |
| temperature (c)  |   25.000                 |         |              |234
| PRECIPITATION LAW|    0                     |         |              |
c----------------------------------------------------------------------|
```

```
| REACTANT          | Alloy-22                  |status    | 0             |
| moles remaining   |  20.000                   |destroyed| 4.24094E-05    |
| reactant type     |  special                  |sk        |  100.00       |
| surface type      |   0                       |fk        |  1.0000       |
| end-member        |                           |mole fr   |               |ss,n
| volume            | 0.00000                   |          |               |sp
| element           | Cr            |moles      |  2.561060000000000E-01 |sp,n
| element           | Fe            |moles      |  5.420400000000000E-02 |sp,n
| element           | Ni            |moles      |  5.681220000000000E-01 |sp,n
| element           | Mo            |moles      |  1.009620000000000E-01 |sp,n
| element           | V             |moles      |  4.160000000000000E-03 |sp,n
| element           | Mn            |moles      |  5.510000000000000E-03 |sp,n
| DISSOLUTION LAW   |    3                      |          |               |
| rate constant rk1| 1.13000E-14                |csigma1   |               |
| temperature (c)   |   25.000                  |          |               |234
| PRECIPITATION LAW|    0                       |          |               |
|-----------------------------------------------------------------------|
| options                                                               |
|-----------------------------------------------------------------------|
| - SOLID SOLUTIONS -                                                   |
|     ignore solid solutions                                            |
|   * process solid solutions                                           |
| - LOADING OF SPECIES INTO MEMORY -                                    |
|   * don't print                                                       |
|     lists species loaded into memory                                  |
| - LIST DERIVATIVES OF BASIS ELEMENTS AT EACH PRINT POINT -            |
|   * don't print                                                       |
|     print                                                             |
| - LIST ALL SPECIES LOADED INTO MEMORY AND THEIR LOG K VALUES -        |
|   * don't print                                                       |
|     print                                                             |
| - LIST DISTRIBUTION OF AQUEOUS SPECIES AT EACH PRINT POINT -          |
|   * only species > 10**-12 molal                                      |
|     all species                                                       |
|     don't print                                                       |
| - LIST CATION/H+ ACTIVITY RATIOS AT EACH PRINT POINT -                |
|   * don't print                                                       |
|     print                                                             |
| - LIST BULK ELEMENT AND OXIDE COMPOSITION AT EACH PRINT POINT -       |
|   * don't print                                                       |
|     print                                                             |
| - MINERAL SATURATION STATES -                                         |
|   * print if affinity > -10 kcals                                     |
|     print all                                                         |
|     don't print                                                       |
| - LIST GAS SPECIES SUMMARY AT EACH PRINT POINT -                      |
|     don't print                                                       |
|   * print                                                             |
| - PRINT AQUEOUS MASS AND CONCENTRATION TOTALS -                       |
|   * don't print                                                       |
|     print                                                             |
| - TAB FILES -                                                         |
|   * write                                                             |
|     append to previous tabx file                                      |
|     don't write                                                       |
| - WRITE PICKUP FILE -                                                 |
|     write pickup file at end of run                                   |
|     don't write pickup file                                           |
|   * write pickup file for each print point                            |
| - PHYSICALLY REMOVED SUBSYSTEM -                                      |
|   * does nothing                                                      |
|     transfer minerals but leave trivial mass in the system            |
|     transfer minerals                                                 |
```

```
| - CLEAR INITIAL PHYSICALLY REMOVED SUBSYSTEM -                          |
|   * does nothing                                                        |
|     clear p.r.s. before first reaction progress advance                 |
| - PHASE BOUNDARY SEARCH -                                               |
|   * step size constrained by predicted phase boundaries                 |
|     phase boundaries estimated from Taylor's series and printed         |
|     locations of phase boundaries ignored                               |
| - AUTO BASIS SWITCHING -                                                |
|   * off                                                                 |
|     on                                                                  |
| - SUPPRESS REDOX REACTIONS -                                            |
|   * does nothing                                                        |
|     suppress all redox reactions                                        |
| - LINEAR OR LOGARITHMIC TAYLOR'S SERIES -                               |
|   * linear for kcol = 1,kdim, logarithmic for kcol = 1,kbt              |
|     logarithmic for kcol = 1,kbt                                        |
|     linear for kcol = 1,kdim                                            |
| - AZERO AND HYDRATION NUMBERS -                                         |
|   * no change                                                           |
|     read in new azero and hydration numbers                             |
| - PRINT MEAN MOLAL ACTIVITY COEFFICIENTS FOR DISSOLVED SPECIES -        |
|   * does nothing                                                        |
|     print                                                               |
| - PITZER DATABASE INFORMATION -                                         |
|   * print only warnings                                                 |
|     print species in model and number of Pitzer coefficients            |
|     print species in model and names of Pitzer coefficients             |
| - PRINT DIAGNOSTIC MESSAGES -                                           |
|   * don't print                                                         |
|     print level 1 messages                                              |
|     print level 2 messages                                              |
| - PRINT PRE-NEWTON-RAPHSON OPTIMIZATION -                               |
|   * don't print                                                         |
|     print summary information                                           |
|     print detailed information                                          |
| - PRINT STEP SIZE AND ORDER -                                           |
|   * don't print                                                         |
|     print scale factor                                                  |
|     print orders and step size scaling factors                          |
| - CONTROL STEP SIZE AND ORDER PRINT -                                   |
|   * does nothing                                                        |
|     print step size and order when delzi .le. dlzmx1                    |
| - NEWTON ITERATIONS -                                                   |
|   * don't print                                                         |
|     print summary of newton iterations                                  |
|     print summary, residual functions and correction terms              |
|     print summary, residual functions, correction terms and matrix      |
| - PRINT SEARCH ITERATIONS -                                             |
|   * don't print                                                         |
|     print                                                               |
| - PRINT HPSAT ITERATIONS -                                              |
|   * don't print                                                         |
|     print                                                               |
| - PRINT FINITE DIFFERENCE AND DERIVATIVE DATA -                         |
|   * don't print                                                         |
|     print computations from RDERIV, and RTAYLR                          |
|     print computations from RDERIV, RTAYLR, DERIV and TAYLOR            |
| - PRINT KINETICS DIAGNOSTIC MESSAGES -                                  |
|   * don't print                                                         |
|     print level 1 diagnostics                                           |
|     print level 1 and level 2 diagnostics                               |
| - PRINT AKMATR -                                                        |
|   * don't print                                                         |
```

```
|     print level 1 diagnostics                                          |
| - KILL ITERATION VARIABLES -                                           |
|   * does nothing                                                       |
|     allow selection of variables to remove                             |
|------------------------------------------------------------------------|
| development options  (used for code development)                       |
|------------------------------------------------------------------------|
|    0 check finite difference and Taylor series expression              |
|    0 check reaction rate finite difference and Taylor series           |
|------------------------------------------------------------------------|
| tolerances                       desired values - defaults info-only   |
|------------------------------------------------------------------------|
| number of N-R iterations        |        90        |  90      itermx  |
| p.r.s. transfer interval        | 1.00000E+38      |  varies  dlzidp  |
| residual magnitude              | 1.00000E-06      |  1.0e-06 tolbt   |
| correction magnitude            | 1.00000E-06      |  1.0e-06 toldl   |
| search/find tolerance           | 1.00000E-06      |  varies  tolx    |
| supersaturation                 | 5.00000E-03      |  varies  tolsat  |
| supersaturation set size        | 1.00000E-02      |  varies  tolsst  |
| max. size Taylor's series term  | 1.00000E-04      |  1.0e-04 screw1  |
| max. initial value betamx       |                  |  n/a     screw2  |
| max. Taylor's series term (kin.)| 1.00000E-04      |  1.0e-04 screw3  |
| corrector iteration             | 1.00000E-04      |  1.0e-04 screw4  |
| max. size of N-R correction term|  4.0000          |  4.0     screw5  |
| step size (economy mode)        |  4.0000          |  4.0     screw6  |
| log mass of phases              | -6.0000          |  varies  zklogu  |
| decrement mass (p.r.s.)         |  2.0000          |  2.0     zklogl  |
| min. left after p.r.s.          | 0.80000          |  .98     zkfac   |
| initial step size               | 1.00000E-09      |  varies  dlzmx1  |
| upper limit step size           | 1.00000E+38      |  varies  dlzmx2  |
| maximum order                   |         6        |  6       nordlm  |
| num. attempted assemblages      |        25        |  25      ntrymx  |
| slide -> over phase bound.      |        12        |  8       npslmx  |
| slide -> over redox insta.      |         8        |  3       nsslmx  |
| fo2 scan control                |                  |  none    ioscan  |
|------------------------------------------------------------------------|
c pickup file written by eq6.7.2bR137                                    |
c supported by eqlib.7.2bR168                                            |
|EQ6 input file name= j13_All-22.6i.txt                                  |
|Description= React J-13 water with Carbon Steel and Alloy-22.           |
|Equilibrium with atmospheric gases.                                     |
|Version level= 7.2                                                      |
|Created 01/19/99    Creator= D.H. Lester                                |
|Revised             Revisor=                                            |
|                                                                        |
|Water from well J-13 at the Nevada Test site                            |
|                                                                        |
|Purpose: To model reaction with carbon steel (iron) and alloy C-22      |
|simultaneously to determine an expected Cr concentration in the water   |
|corroding the C-22 after breaching the CAM.                             |
|                                                                        |
|It is assumed that a significant amount of carbon steel is still        |
|present. The rate constant for the steel was assumed to be 1.0E-11      |
|which is the higher value suggested in simulation studies at LLNL.      |
|Reference: Eng. Barrier System & Near Field Envir. Perf. Assess.,       |
|FY-96 Activities: End-of-Year Summary, Sept 1996, Wm.G.Halsey, "Report|
|on Initial Simulation of Water Interaction With Mild Steel Containers   |
|Rate for C-22 is the median value for dripping at high temp. in the     |
|TSPA simulations for the VA document.                                   |
|The data base was modified to add the solid KFe(CrO4)2:2H2O             |
|Total amount of Steel and C-22 reduced to 20 moles each for a more      |
|realistic proportion of materials contacting 1L of water                |
|------------------------------------------------------------------------|
```

```
| temperature (C)                    |     25.000                                |
|------------------------------------------------------------------------------|
| electrical imbalance               |   5.752163835343278E-14                   |
|------------------------------------------------------------------------------|
| number of aqueous master species   |     38                                    |
|------------------------------------------------------------------------------|
| position of last pure mineral      |     46                                    |
|------------------------------------------------------------------------------|
| position of last solid solution    |     58                                    |
|------------------------------------------------------------------------------|
| suppressed species     (suppress,replace,augmentk,augmentg)  value            |
|------------------------------------------------------------------------------|
| Phlogopite                | mineral        | suppress |  0.00000                |
| Annite                    | mineral        | suppress |  0.00000                |
| Clinochlore-14A           | mineral        | suppress |  0.00000                |
| Daphnite-14A              | mineral        | suppress |  0.00000                |
| Clinozoisite              | mineral        | suppress |  0.00000                |
| Epidote                   | mineral        | suppress |  0.00000                |
| Epidote-ord               | mineral        | suppress |  0.00000                |
| Andradite                 | mineral        | suppress |  0.00000                |
| Grossular                 | mineral        | suppress |  0.00000                |
| Enstatite                 | mineral        | suppress |  0.00000                |
| Ferrosilite               | mineral        | suppress |  0.00000                |
| Pyrite                    | mineral        | suppress |  0.00000                |
| Pyrrhotite                | mineral        | suppress |  0.00000                |
| Troilite                  | mineral        | suppress |  0.00000                |
| Alabandite                | mineral        | suppress |  0.00000                |
| Brezinaite                | mineral        | suppress |  0.00000                |
| Chalcocite                | mineral        | suppress |  0.00000                |
| Covellite                 | mineral        | suppress |  0.00000                |
| Millerite                 | mineral        | suppress |  0.00000                |
| Polydymite                | mineral        | suppress |  0.00000                |
| Vaesite                   | mineral        | suppress |  0.00000                |
| Heazlewoodite             | mineral        | suppress |  0.00000                |
| Galena                    | mineral        | suppress |  0.00000                |
| Sulfur                    | mineral        | suppress |  0.00000                |
| CaZrO3                    | mineral        | suppress |  0.00000                |
| BaZrO3                    | mineral        | suppress |  0.00000                |
| SrZrO3                    | mineral        | suppress |  0.00000                |
| U2S3                      | mineral        | suppress |  0.00000                |
| U3S5                      | mineral        | suppress |  0.00000                |
| US2                       | mineral        | suppress |  0.00000                |
| US3                       | mineral        | suppress |  0.00000                |
| US                        | mineral        | suppress |  0.00000                |
| US1.9                     | mineral        | suppress |  0.00000                |
| U3P4                      | mineral        | suppress |  0.00000                |
| UP                        | mineral        | suppress |  0.00000                |
| UP2                       | mineral        | suppress |  0.00000                |
| HS-                       | aqueous        | suppress |  0.00000                |
| H2S(aq)                   | aqueous        | suppress |  0.00000                |
| S--                       | aqueous        | suppress |  0.00000                |
|------------------------------------------------------------------------------|
| iopg options                                                                 |
|------------------------------------------------------------------------------|
| - pH SCALE CONVENTION -                                                      |
|    * modified NBS                                                            |
|      internal                                                                |
|      rational                                                                |
| - ACTIVITY COEFFICIENT OPTIONS -                                             |
|    * use B-dot equation                                                      |
|      Davies' equation                                                        |
|      Pitzer's equations                                                      |
|------------------------------------------------------------------------------|
```

elements, moles and moles aqueous		
O	4.005551824589011E+04	5.551561085605852E+01
Al	1.482500000694482E-06	8.350662363712990E-13
B	1.238799999942330E-05	1.238799999942830E-05
Ba	1.000000000006594E-10	1.000000000006549E-10
Ca	3.243700000162714E-04	2.093442664796157E-04
Ce	1.000000000975802E-24	1.000000000965983E-24
Cl	2.014000000000269E-04	2.014000000000266E-04
Cr	1.120613903776555E-05	1.120613903776501E-05
Cs	1.000000000000039E-10	1.000000000000040E-10
Cu	1.050000000528221E-14	1.050000000522826E-14
F	1.147500000001528E-04	1.054945210353321E-04
Fe	3.606901161048865E-02	1.232835632416906E-12
Gd	1.000000001150365E-14	1.000000001138839E-14
H	1.110188738405208E+02	1.110188648556773E+02
C	1.000000281221851E+04	1.609074082324033E-03
P	2.776756126455861E-05	1.124370098226412E-09
K	1.289100000000803E-04	1.288416233991738E-04
La	1.000000000980088E-14	1.000000000970186E-14
Li	1.000000000000469E-10	1.000000000000463E-10
Mg	8.269900000408464E-05	1.427346165493602E-05
Mn	3.867967789502451E-04	1.732040693939735E-16
Mo	4.281832813095956E-06	4.281832813095955E-06
N	1.420000000000891E-04	1.420000000000884E-04
Na	1.992200000002518E-03	1.992100467894124E-03
Nd	1.000000000990082E-14	1.000000000980111E-14
Ni	2.409378484421566E-05	2.086677147521238E-08
Pb	1.000000000003566E-10	1.000000000003535E-10
Pu	1.000000001138469E-14	1.000000001125065E-14
S	2.235534298360348E-04	2.235534298359774E-04
Si	1.218062935366498E-03	1.040266363620606E-04
Sm	1.000000000991962E-14	1.000000000981977E-14
Sr	1.000000000034016E-10	1.000000000033649E-10
Ti	1.000000000000003E-10	1.000000000000003E-10
U	9.999999988006304E-15	9.999999988108922E-15
V	1.766428967578776E-07	1.766428967587080E-07
Zn	1.000000000089305E-10	1.000000000088579E-10
Zr	1.000000000323548E-20	1.000000000320315E-20

master species and logarithmic basis variables		
H2O	H2O	1.744360513579298E+00
Al+++	Al+++	-2.292856579851757E+01
B(OH)3(aq)	B(OH)3(aq)	-4.980778294205192E+00
Ba++	Ba++	-1.000357070816477E+01
Ca++	Ca++	-3.707444152308734E+00
Ce+++	Ce+++	-2.712553136559723E+01
Cl-	Cl-	-3.696086773227916E+00
CrO4--	CrO4--	-4.954274007604342E+00
Cs+	Cs+	-1.000005623321762E+01
Cu++	Cu++	-1.620802275558502E+01
F-	F-	-3.977277191071264E+00
Fe++	Fe++	-2.440086858769020E+01
Gd+++	Gd+++	-1.762242675569426E+01
H+	H+	-8.456164512691318E+00
HCO3-	HCO3-	-2.807447008151342E+00
HPO4--	HPO4--	-9.024989194034642E+00
K+	K+	-3.890507940945671E+00
La+++	La+++	-1.664617789532065E+01
Li+	Li+	-1.000044263959068E+01
Mg++	Mg++	-4.873481172226500E+00
Mn++	Mn++	-1.650781858769020E+01

```
| MoO4--                    | MoO4--                    | -5.368370294016680E+00 |
| NO3-                      | NH3(aq)                   | -3.848049468544347E+00 |
| Na+                       | Na+                       | -2.702141805990843E+00 |
| Nd+++                     | Nd+++                     | -1.721365260937569E+01 |
| Ni++                      | Ni++                      | -7.688768587690200E+00 |
| Pb++                      | Pb++                      | -1.000212306227904E+01 |
| Pu++++                    | Pu++++                    | -4.251610654863374E+01 |
| SO4--                     | SO4--                     | -3.663045887587390E+00 |
| SiO2(aq)                  | SiO2(aq)                  | -3.999298469947687E+00 |
| Sm+++                     | Sm+++                     | -1.741357044684483E+01 |
| Sr++                      | Sr++                      | -1.001697371544555E+01 |
| Ti(OH)4(aq)               | Ti(OH)4(aq)               | -9.999999999999998E+00 |
| UO2++                     | UO2++                     | -2.202933681723489E+01 |
| VO++                      | VO++                      | -3.023593746475955E+01 |
| Zn++                      | Zn++                      | -1.011827822644198E+01 |
| Zr(OH)2++                 | Zr(OH)2++                 | -3.562855122898122E+01 |
| O2(g)                     | O2(g)                     | -6.778000000000000E-01 |
|                           | Dolomite-ord              | -4.165844589991347E+00 |
|                           | Fluorapatite              | -5.033601101881788E+00 |
|                           | Hematite                  | -1.744003950919113E+00 |
|                           | Ni2SiO4                   | -4.919501257857758E+00 |
|                           | Pyrolusite                | -3.412517151160996E+00 |
|                           | Quartz                    | -2.964365110226766E+00 |
|                           | fix     CO2(g)            |  4.000000046323056E+00 |
|                           | fix     O2(g)             |  3.999998758881205E+00 |
| Smectite-di               | Beidellite-Ca             | -4.398906569109231E+01 |
| Smectite-di               | Beidellite-K              | -4.514542661919696E+01 |
| Smectite-di               | Beidellite-Mg             | -4.445624770223136E+01 |
| Smectite-di               | Beidellite-Na             | -4.498237092307460E+01 |
| Smectite-di               | Montmor-Ca                | -3.120681522235838E+01 |
| Smectite-di               | Montmor-K                 | -3.215014584743271E+01 |
| Smectite-di               | Montmor-Mg                | -3.146308814258834E+01 |
| Smectite-di               | Montmor-Na                | -3.199799924221946E+01 |
| Smectite-di               | Nontronite-Ca             | -5.527245504149418E+00 |
| Smectite-di               | Nontronite-K              | -6.683606432254048E+00 |
| Smectite-di               | Nontronite-Mg             | -5.994124484985438E+00 |
| Smectite-di               | Nontronite-Na             | -6.520550736131710E+00 |
|-------------------------------------------------------------------------|
| physically removed subsystem  (solid solution, mineral, moles)          |
|-------------------------------------------------------------------------|
| none                      |                           |                          |
|-------------------------------------------------------------------------|
|-------------------------------------------------------------------------|
|EQ6 input file name= j13_All-22.6i.txt                                   |
|Description= React J-13 water with Carbon Steel and Alloy-22.            |
|Equilibrium with atmospheric gases.                                      |
|Version level= 7.2                                                       |
|Created 01/19/99    Creator= D.H. Lester                                 |
|Revised             Revisor=                                             |
|                                                                         |
|Water from well J-13 at the Nevada Test site                             |
|                                                                         |
|Purpose: To model reaction with carbon steel (iron) and alloy C-22       |
|simultaneously to determine an expected Cr concentration in the water    |
|corroding the C-22 after breaching the CAM.                              |
|                                                                         |
|It is assumed that a significant amount of carbon steel is still         |
|present. The rate constant for the steel was assumed to be 1.0E-11       |
|which is the higher value suggested in simulation studies at LLNL.       |
|Reference: Eng. Barrier System & Near Field Envir. Perf. Assess.,        |
|FY-96 Activities: End-of-Year Summary, Sept 1996, Wm.G.Halsey, "Report|
|on Initial Simulation of Water Interaction With Mild Steel Containers |
|Rate for C-22 is the median value for dripping at high temp. in the      |
```

```
|TSPA simulations for the VA document.                                |
|The data base was modified to add the solid KFe(CrO4)2:2H2O         |
|Total amount of Steel and C-22 reduced to 20 moles each for a more   |
|realistic proportion of materials contacting 1L of water             |
|---------------------------------------------------------------------|
| calculational mode   |*normal     | economy           | super economy|
|---------------------------------------------------------------------|
| model type           |*titration  | closed            | open         |
|---------------------------------------------------------------------|
| temperature model    |*power      | fluid mixing                     |
|---------------------------------------------------------------------|
c power model  -->   temp = tstart + tk1*zi + tk2*zi**2 + tk3*zi**3   |
c mixing model -->   temp = (tstart * tk1 + zi*tk2) / (zi + tk1)      |
c--------------------------------------------------------------------|
| tstart(c)|  25.00    |tk1| 0.0000    |tk2| 0.0000    |tk3| 0.0000   |
|---------------------------------------------------------------------|
| starting value of zi | 0.14064    |max. value of zi    | 1.00000E+38 |
|---------------------------------------------------------------------|
| starting time (sec)  | 1.40486E+08|max. time (sec)     | 1.00000E+38 |
|---------------------------------------------------------------------|
| max. steps           |       400  |max. steps w/o print|       150   |
|---------------------------------------------------------------------|
| linear print interval|  10.000    |log print interval  | 1.00000E+38 |
|---------------------------------------------------------------------|
| suppress mineral phases                                             |
|---------------------------------------------------------------------|
| phases w/ elements|                          |                          |n
| phases except     |                          |                          |n
|---------------------------------------------------------------------|
| fixed fugacity phases- species, moles(per kg h2o), log fugacity(bars)|
|---------------------------------------------------------------------|
| CO2(g)                              | 0.00000        | -3.5000        |n
| O2(g)                               | 0.00000        |-0.67780        |n
|---------------------------------------------------------------------|
c                  R A T E     L A W S
c 1 = relative                  rate = rk1 + rk2*zi + (1/2)rk3*zi*zi
c 2 = transition state theory   rate = CHECK DOCUMENTATION
c 3 = specified rate            rate = CHECK DOCUMENTATION
c 4 = activity term rate        rate = CHECK DOCUMENTATION
c
c                  R E A C T A N T     T Y P E S
c mineral     solid solution     special    aqueous    gas
c
c                  S U R F A C E    T Y P E
c 0 = fixed surface area     1 = fixed specific surface area
c
c                  N O T E S
c status and jreac are normally not set by the user
|---------------------------------------------------------------------|
| reactants   (ss) solid solution only     (sp) special reactant only |
|---------------------------------------------------------------------|
| REACTANT         | carbon steel            |status   | 0            |
| moles remaining  |  19.860                 |destroyed| 0.14049      |
| reactant type    |  special                |sk       |  100.00      |
| surface type     |   0                     |fk       |  1.0000      |
| end-member       |                         |mole fr  |              |ss,n
| volume           | 0.00000                 |         |              |sp
| element          | C            |moles     |  2.190000000000000E-02 |sp,n
| element          | Mn           |moles     |  1.030000000000000E-02 |sp,n
| element          | S            |moles     |  8.530000000000000E-04 |sp,n
| element          | Si           |moles     |  5.360000000000000E-03 |sp,n
| element          | P            |moles     |  7.060000000000000E-04 |sp,n
| element          | Fe           |moles     |  9.610000000000000E-01 |sp,n
```

```
| DISSOLUTION LAW   |    3                        |          |                |
| rate constant rk1| 1.00000E-11                 |csigma1   |                |
| temperature (c)   |   25.000                    |          |                |234
| PRECIPITATION LAW|    0                        |          |                |
c-----------------------------------------------------------------------------|
| REACTANT          | Alloy-22                    |status    | 0              |
| moles remaining   |  20.000                     |destroyed| 1.58749E-04     |
| reactant type     |  special                    |sk        |  100.00        |
| surface type      |   0                         |fk        |  1.0000        |
| end-member        |                             |mole fr   |                |ss,n
| volume            | 0.00000                     |          |                |sp
| element           | Cr            |moles        |  2.561060000000000E-01 |sp,n
| element           | Fe            |moles        |  5.420400000000000E-02 |sp,n
| element           | Ni            |moles        |  5.681220000000000E-01 |sp,n
| element           | Mo            |moles        |  1.009620000000000E-01 |sp,n
| element           | V             |moles        |  4.160000000000000E-03 |sp,n
| element           | Mn            |moles        |  5.510000000000000E-03 |sp,n
| DISSOLUTION LAW   |    3                        |          |                |
| rate constant rk1| 1.13000E-14                 |csigma1   |                |
| temperature (c)   |   25.000                    |          |                |234
| PRECIPITATION LAW|    0                        |          |                |
|-----------------------------------------------------------------------------|
| options                                                                     |
|-----------------------------------------------------------------------------|
| - SOLID SOLUTIONS -                                                         |
|     ignore solid solutions                                                  |
|   * process solid solutions                                                 |
| - LOADING OF SPECIES INTO MEMORY -                                          |
|   * don't print                                                             |
|     lists species loaded into memory                                        |
| - LIST DERIVATIVES OF BASIS ELEMENTS AT EACH PRINT POINT -                  |
|   * don't print                                                             |
|     print                                                                   |
| - LIST ALL SPECIES LOADED INTO MEMORY AND THEIR LOG K VALUES -              |
|   * don't print                                                             |
|     print                                                                   |
| - LIST DISTRIBUTION OF AQUEOUS SPECIES AT EACH PRINT POINT -                |
|   * only species > 10**-12 molal                                            |
|     all species                                                             |
|     don't print                                                             |
| - LIST CATION/H+ ACTIVITY RATIOS AT EACH PRINT POINT -                      |
|   * don't print                                                             |
|     print                                                                   |
| - LIST BULK ELEMENT AND OXIDE COMPOSITION AT EACH PRINT POINT -             |
|   * don't print                                                             |
|     print                                                                   |
| - MINERAL SATURATION STATES -                                               |
|   * print if affinity > -10 kcals                                           |
|     print all                                                               |
|     don't print                                                             |
| - LIST GAS SPECIES SUMMARY AT EACH PRINT POINT -                            |
|     don't print                                                             |
|   * print                                                                   |
| - PRINT AQUEOUS MASS AND CONCENTRATION TOTALS -                             |
|   * don't print                                                             |
|     print                                                                   |
| - TAB FILES -                                                               |
|   * write                                                                   |
|     append to previous tabx file                                            |
|     don't write                                                             |
| - WRITE PICKUP FILE -                                                       |
|     write pickup file at end of run                                         |
|     don't write pickup file                                                 |
```

```
|   * write pickup file for each print point                              |
| - PHYSICALLY REMOVED SUBSYSTEM -                                        |
|   * does nothing                                                        |
|     transfer minerals but leave trivial mass in the system              |
|     transfer minerals                                                   |
| - CLEAR INITIAL PHYSICALLY REMOVED SUBSYSTEM -                          |
|   * does nothing                                                        |
|     clear p.r.s. before first reaction progress advance                 |
| - PHASE BOUNDARY SEARCH -                                               |
|   * step size constrained by predicted phase boundaries                 |
|     phase boundaries estimated from Taylor's series and printed         |
|     locations of phase boundaries ignored                               |
| - AUTO BASIS SWITCHING -                                                |
|   * off                                                                 |
|     on                                                                  |
| - SUPPRESS REDOX REACTIONS -                                            |
|   * does nothing                                                        |
|     suppress all redox reactions                                        |
| - LINEAR OR LOGARITHMIC TAYLOR'S SERIES -                               |
|   * linear for kcol = 1,kdim, logarithmic for kcol = 1,kbt              |
|     logarithmic for kcol = 1,kbt                                        |
|     linear for kcol = 1,kdim                                            |
| - AZERO AND HYDRATION NUMBERS -                                         |
|   * no change                                                           |
|     read in new azero and hydration numbers                             |
| - PRINT MEAN MOLAL ACTIVITY COEFFICIENTS FOR DISSOLVED SPECIES -        |
|   * does nothing                                                        |
|     print                                                               |
| - PITZER DATABASE INFORMATION -                                         |
|   * print only warnings                                                 |
|     print species in model and number of Pitzer coefficients            |
|     print species in model and names of Pitzer coefficients             |
| - PRINT DIAGNOSTIC MESSAGES -                                           |
|   * don't print                                                         |
|     print level 1 messages                                              |
|     print level 2 messages                                              |
| - PRINT PRE-NEWTON-RAPHSON OPTIMIZATION -                               |
|   * don't print                                                         |
|     print summary information                                           |
|     print detailed information                                          |
| - PRINT STEP SIZE AND ORDER -                                           |
|   * don't print                                                         |
|     print scale factor                                                  |
|     print orders and step size scaling factors                          |
| - CONTROL STEP SIZE AND ORDER PRINT -                                   |
|   * does nothing                                                        |
|     print step size and order when delzi .le. dlzmx1                    |
| - NEWTON ITERATIONS -                                                   |
|   * don't print                                                         |
|     print summary of newton iterations                                  |
|     print summary, residual functions and correction terms              |
|     print summary, residual functions, correction terms and matrix      |
| - PRINT SEARCH ITERATIONS -                                             |
|   * don't print                                                         |
|     print                                                               |
| - PRINT HPSAT ITERATIONS -                                              |
|   * don't print                                                         |
|     print                                                               |
| - PRINT FINITE DIFFERENCE AND DERIVATIVE DATA -                         |
|   * don't print                                                         |
|     print computations from RDERIV, and RTAYLR                          |
|     print computations from RDERIV, RTAYLR, DERIV and TAYLOR            |
| - PRINT KINETICS DIAGNOSTIC MESSAGES -                                  |
```

```
|   * don't print                                                      |
|     print level 1 diagnostics                                        |
|     print level 1 and level 2 diagnostics                            |
| - PRINT AKMATR -                                                     |
|   * don't print                                                      |
|     print level 1 diagnostics                                        |
| - KILL ITERATION VARIABLES -                                         |
|   * does nothing                                                     |
|     allow selection of variables to remove                           |
|----------------------------------------------------------------------|
| development options  (used for code development)                     |
|----------------------------------------------------------------------|
|    0 check finite difference and Taylor series expression            |
|    0 check reaction rate finite difference and Taylor series         |
|----------------------------------------------------------------------|
| tolerances                        desired values - defaults info-only |
|----------------------------------------------------------------------|
| number of N-R iterations        |        90        |  90      itermx |
| p.r.s. transfer interval        | 1.00000E+38      |  varies  dlzidp |
| residual magnitude              | 1.00000E-06      |  1.0e-06 tolbt  |
| correction magnitude            | 1.00000E-06      |  1.0e-06 toldl  |
| search/find tolerance           | 1.00000E-06      |  varies  tolx   |
| supersaturation                 | 5.00000E-03      |  varies  tolsat |
| supersaturation set size        | 1.00000E-02      |  varies  tolsst |
| max. size Taylor's series term  | 1.00000E-04      |  1.0e-04 screw1 |
| max. initial value betamx       |                  |  n/a     screw2 |
| max. Taylor's series term (kin.)| 1.00000E-04      |  1.0e-04 screw3 |
| corrector iteration             | 1.00000E-04      |  1.0e-04 screw4 |
| max. size of N-R correction term|  4.0000          |  4.0     screw5 |
| step size (economy mode)        |  4.0000          |  4.0     screw6 |
| log mass of phases              | -6.0000          |  varies  zklogu |
| decrement mass (p.r.s.)         |  2.0000          |  2.0     zklogl |
| min. left after p.r.s.          | 0.80000          |  .98     zkfac  |
| initial step size               | 1.00000E-09      |  varies  dlzmx1 |
| upper limit step size           | 1.00000E+38      |  varies  dlzmx2 |
| maximum order                   |         6        |  6       nordlm |
| num. attempted assemblages      |        25        |  25      ntrymx |
| slide -> over phase bound.      |        12        |  8       npslmx |
| slide -> over redox insta.      |         8        |  3       nsslmx |
| fo2 scan control                |                  |  none    ioscan |
|----------------------------------------------------------------------|
c pickup file written by eq6.7.2bR137                                  |
c supported by eqlib.7.2bR168                                          |
|EQ6 input file name= j13_All-22.6i.txt                                |
|Description= React J-13 water with Carbon Steel and Alloy-22.         |
|Equilibrium with atmospheric gases.                                   |
|Version level= 7.2                                                    |
|Created 01/19/99    Creator= D.H. Lester                              |
|Revised             Revisor=                                          |
|                                                                      |
|Water from well J-13 at the Nevada Test site                          |
|                                                                      |
|Purpose: To model reaction with carbon steel (iron) and alloy C-22    |
|simultaneously to determine an expected Cr concentration in the water |
|corroding the C-22 after breaching the CAM.                           |
|                                                                      |
|It is assumed that a significant amount of carbon steel is still      |
|present. The rate constant for the steel was assumed to be 1.0E-11    |
|which is the higher value suggested in simulation studies at LLNL.    |
|Reference: Eng. Barrier System & Near Field Envir. Perf. Assess.,     |
|FY-96 Activities: End-of-Year Summary, Sept 1996, Wm.G.Halsey, "Report|
|on Initial Simulation of Water Interaction With Mild Steel Containers |
|Rate for C-22 is the median value for dripping at high temp. in the   |
```

```
|TSPA simulations for the VA document.                                |
|The data base was modified to add the solid KFe(CrO4)2:2H2O         |
|Total amount of Steel and C-22 reduced to 20 moles each for a more   |
|realistic proportion of materials contacting 1L of water             |
|---------------------------------------------------------------------|
| temperature (C)                    |     25.000                     |
|---------------------------------------------------------------------|
| electrical imbalance               |   5.752163835343278E-14        |
|---------------------------------------------------------------------|
| number of aqueous master species   |     38                         |
|---------------------------------------------------------------------|
| position of last pure mineral      |     47                         |
|---------------------------------------------------------------------|
| position of last solid solution    |     59                         |
|---------------------------------------------------------------------|
| suppressed species     (suppress,replace,augmentk,augmentg)  value  |
|---------------------------------------------------------------------|
| Phlogopite               | mineral        | suppress |  0.00000      |
| Annite                   | mineral        | suppress |  0.00000      |
| Clinochlore-14A          | mineral        | suppress |  0.00000      |
| Daphnite-14A             | mineral        | suppress |  0.00000      |
| Clinozoisite             | mineral        | suppress |  0.00000      |
| Epidote                  | mineral        | suppress |  0.00000      |
| Epidote-ord              | mineral        | suppress |  0.00000      |
| Andradite                | mineral        | suppress |  0.00000      |
| Grossular                | mineral        | suppress |  0.00000      |
| Enstatite                | mineral        | suppress |  0.00000      |
| Ferrosilite              | mineral        | suppress |  0.00000      |
| Pyrite                   | mineral        | suppress |  0.00000      |
| Pyrrhotite               | mineral        | suppress |  0.00000      |
| Troilite                 | mineral        | suppress |  0.00000      |
| Alabandite               | mineral        | suppress |  0.00000      |
| Brezinaite               | mineral        | suppress |  0.00000      |
| Chalcocite               | mineral        | suppress |  0.00000      |
| Covellite                | mineral        | suppress |  0.00000      |
| Millerite                | mineral        | suppress |  0.00000      |
| Polydymite               | mineral        | suppress |  0.00000      |
| Vaesite                  | mineral        | suppress |  0.00000      |
| Heazlewoodite            | mineral        | suppress |  0.00000      |
| Galena                   | mineral        | suppress |  0.00000      |
| Sulfur                   | mineral        | suppress |  0.00000      |
| CaZrO3                   | mineral        | suppress |  0.00000      |
| BaZrO3                   | mineral        | suppress |  0.00000      |
| SrZrO3                   | mineral        | suppress |  0.00000      |
| U2S3                     | mineral        | suppress |  0.00000      |
| U3S5                     | mineral        | suppress |  0.00000      |
| US2                      | mineral        | suppress |  0.00000      |
| US3                      | mineral        | suppress |  0.00000      |
| US                       | mineral        | suppress |  0.00000      |
| US1.9                    | mineral        | suppress |  0.00000      |
| U3P4                     | mineral        | suppress |  0.00000      |
| UP                       | mineral        | suppress |  0.00000      |
| UP2                      | mineral        | suppress |  0.00000      |
| HS-                      | aqueous        | suppress |  0.00000      |
| H2S(aq)                  | aqueous        | suppress |  0.00000      |
| S--                      | aqueous        | suppress |  0.00000      |
|---------------------------------------------------------------------|
| iopg options                                                        |
|---------------------------------------------------------------------|
| - pH SCALE CONVENTION -                                             |
|    * modified NBS                                                   |
|      internal                                                       |
|      rational                                                       |
```

```
| - ACTIVITY COEFFICIENT OPTIONS -                                      |
|    * use B-dot equation                                               |
|      Davies' equation                                                 |
|      Pitzer's equations                                               |
|-----------------------------------------------------------------------|
| elements, moles and moles aqueous                                     |
|-----------------------------------------------------------------------|
| O                         |  4.005551824589011E+04 |  5.551535771979226E+01 |
| Al                        |  1.482500000694482E-06 |  7.843845438086642E-13 |
| B                         |  1.238799999942330E-05 |  1.238799999942329E-05 |
| Ba                        |  1.000000000006594E-10 |  1.000000000006593E-10 |
| Ca                        |  3.243700000162714E-04 |  1.281252878775909E-04 |
| Ce                        |  1.000000000975802E-24 |  1.000000000975809E-24 |
| Cl                        |  2.014000000000269E-04 |  2.014000000000269E-04 |
| Cr                        |  4.100142494200741E-05 |  4.100142494200751E-05 |
| Cs                        |  1.000000000000039E-10 |  1.000000000000039E-10 |
| Cu                        |  1.050000000528221E-14 |  1.050000000528222E-14 |
| F                         |  1.147500000001528E-04 |  8.126640871978020E-05 |
| Fe                        |  1.350155095336439E-01 |  1.217759746547827E-12 |
| Gd                        |  1.000000001150365E-14 |  1.000000001150370E-14 |
| H                         |  1.110188738405208E+02 |  1.110188643621960E+02 |
| C                         |  1.000000506694296E+04 |  1.303784613694698E-03 |
| P                         |  1.004541121955743E-04 |  3.338354456680846E-09 |
| K                         |  1.289100000000803E-04 |  1.288459321301751E-04 |
| La                        |  1.000000000980088E-14 |  1.000000000980091E-14 |
| Li                        |  1.000000000000469E-10 |  1.000000000000467E-10 |
| Mg                        |  8.269900000408464E-05 |  5.319082649898182E-05 |
| Mn                        |  1.447878992635123E-03 |  1.671514928604500E-16 |
| Mo                        |  1.602771793669348E-05 |  1.602771793669348E-05 |
| N                         |  1.420000000000891E-04 |  1.420000000000893E-04 |
| Na                        |  1.992200000002518E-03 |  1.992106697568499E-03 |
| Nd                        |  1.000000000990082E-14 |  1.000000000990088E-14 |
| Ni                        |  9.018890724857046E-05 |  3.175793156336033E-08 |
| Pb                        |  1.000000000003566E-10 |  1.000000000003564E-10 |
| Pu                        |  1.000000001138469E-14 |  1.000000001138479E-14 |
| S                         |  3.113744325897975E-04 |  3.113744325897976E-04 |
| Si                        |  1.769904171896589E-03 |  1.033053520343314E-04 |
| Sm                        |  1.000000000991962E-14 |  1.000000000991964E-14 |
| Sr                        |  1.000000000034016E-10 |  1.000000000034015E-10 |
| Ti                        |  1.000000000000003E-10 |  1.000000000000003E-10 |
| U                         |  9.999999988006304E-15 |  9.999999988006300E-15 |
| V                         |  6.606158976311336E-07 |  6.606158976311362E-07 |
| Zn                        |  1.000000000089305E-10 |  1.000000000089305E-10 |
| Zr                        |  1.000000000323548E-20 |  1.000000000323551E-20 |
|-----------------------------------------------------------------------|
| master species and logarithmic basis variables                        |
|-----------------------------------------------------------------------|
| H2O                       | H2O                       |  1.744361654374222E+00 |
| Al+++                     | Al+++                     | -2.259766106130438E+01 |
| B(OH)3(aq)                | B(OH)3(aq)                | -4.967828459720692E+00 |
| Ba++                      | Ba++                      | -1.000250576335281E+01 |
| Ca++                      | Ca++                      | -3.917544870072603E+00 |
| Ce+++                     | Ce+++                     | -2.684133983520445E+01 |
| Cl-                       | Cl-                       | -3.696090750557135E+00 |
| CrO4--                    | CrO4--                    | -4.391782865682069E+00 |
| Cs+                       | Cs+                       | -1.000005623251786E+01 |
| Cu++                      | Cu++                      | -1.603168112283536E+01 |
| F-                        | F-                        | -4.090754528307306E+00 |
| Fe++                      | Fe++                      | -2.422138274295440E+01 |
| Gd+++                     | Gd+++                     | -1.730536216664276E+01 |
| H+                        | H+                        | -8.366420222951452E+00 |
| HCO3-                     | HCO3-                     | -2.897186883917134E+00 |
| HPO4--                    | HPO4--                    | -8.547247634534458E+00 |
```

```
| K+                        | K+                        | -3.890713751546276E+00 |
| La+++                     | La+++                     | -1.640577415997902E+01 |
| Li+                       | Li+                       | -1.000061393128136E+01 |
| Mg++                      | Mg++                      | -4.304408797189035E+00 |
| Mn++                      | Mn++                      | -1.632833274295440E+01 |
| MoO4--                    | MoO4--                    | -4.795128309090314E+00 |
| NO3-                      | NH3(aq)                   | -3.847919947392338E+00 |
| Na+                       | Na+                       | -2.702150629019495E+00 |
| Nd+++                     | Nd+++                     | -1.692252428981145E+01 |
| Ni++                      | Ni++                      | -7.509282742954402E+00 |
| Pb++                      | Pb++                      | -1.000206807837214E+01 |
| Pu++++                    | Pu++++                    | -4.205788721740741E+01 |
| SO4--                     | SO4--                     | -3.519066113449179E+00 |
| SiO2(aq)                  | SiO2(aq)                  | -3.999297329152762E+00 |
| Sm+++                     | Sm+++                     | -1.712229661590346E+01 |
| Sr++                      | Sr++                      | -1.001966797117878E+01 |
| Ti(OH)4(aq)               | Ti(OH)4(aq)               | -9.999999999999998E+00 |
| UO2++                     | UO2++                     | -2.157819356559701E+01 |
| VO++                      | VO++                      | -2.930886664168955E+01 |
| Zn++                      | Zn++                      | -1.009850366334955E+01 |
| Zr(OH)2++                 | Zr(OH)2++                 | -3.544906837947097E+01 |
| O2(g)                     | O2(g)                     | -6.778000000000000E-01 |
|                           | Dolomite-ord              | -4.545672463631124E+00 |
|                           | Fluorapatite              | -4.475167967954630E+00 |
|                           | Hematite                  | -1.170675237777712E+00 |
|                           | Ni2SiO4                   | -4.346029824385758E+00 |
|                           | Pyrolusite                | -2.839267733046962E+00 |
|                           | Quartz                    | -2.794783155772912E+00 |
|                           | Talc                      | -6.607759430646502E+00 |
|                           | fix     CO2(g)            |  4.000000160959329E+00 |
|                           | fix     O2(g)             |  3.999995354159808E+00 |
| Smectite-di               | Beidellite-Ca             | -4.374838151385299E+01 |
| Smectite-di               | Beidellite-K              | -4.479989834724000E+01 |
| Smectite-di               | Beidellite-Mg             | -4.382597696249236E+01 |
| Smectite-di               | Beidellite-Na             | -4.463664565876285E+01 |
| Smectite-di               | Montmor-Ca                | -3.069989699581849E+01 |
| Smectite-di               | Montmor-K                 | -3.153838352617519E+01 |
| Smectite-di               | Montmor-Mg                | -3.056658335354876E+01 |
| Smectite-di               | Montmor-Na                | -3.138603992860712E+01 |
| Smectite-di               | Nontronite-Ca             | -5.660356821452790E+00 |
| Smectite-di               | Nontronite-K              | -6.711873654839792E+00 |
| Smectite-di               | Nontronite-Mg             | -5.737649239789142E+00 |
| Smectite-di               | Nontronite-Na             | -6.548620966362650E+00 |
|-------------------------------------------------------------------------|
| physically removed subsystem  (solid solution, mineral, moles)          |
|-------------------------------------------------------------------------|
| none                      |                           |                        |
|-------------------------------------------------------------------------|
|-------------------------------------------------------------------------|
|EQ6 input file name= j13_All-22.6i.txt                                   |
|Description= React J-13 water with Carbon Steel and Alloy-22.            |
|Equilibrium with atmospheric gases.                                      |
|Version level= 7.2                                                       |
|Created 01/19/99    Creator= D.H. Lester                                 |
|Revised             Revisor=                                             |
|                                                                         |
|Water from well J-13 at the Nevada Test site                             |
|                                                                         |
|Purpose: To model reaction with carbon steel (iron) and alloy C-22       |
|simultaneously to determine an expected Cr concentration in the water    |
|corroding the C-22 after breaching the CAM.                              |
|                                                                         |
|It is assumed that a significant amount of carbon steel is still         |
```

```
|present. The rate constant for the steel was assumed to be 1.0E-11    |
|which is the higher value suggested in simulation studies at LLNL.     |
|Reference: Eng. Barrier System & Near Field Envir. Perf. Assess.,      |
|FY-96 Activities: End-of-Year Summary, Sept 1996, Wm.G.Halsey, "Report|
|on Initial Simulation of Water Interaction With Mild Steel Containers |
|Rate for C-22 is the median value for dripping at high temp. in the   |
|TSPA simulations for the VA document.                                 |
|The data base was modified to add the solid KFe(CrO4)2:2H2O           |
|Total amount of Steel and C-22 reduced to 20 moles each for a more    |
|realistic proportion of materials contacting 1L of water              |
|----------------------------------------------------------------------|
| calculational mode   |*normal     | economy           | super economy|
|----------------------------------------------------------------------|
| model type           |*titration  | closed            | open         |
|----------------------------------------------------------------------|
| temperature model    |*power      | fluid mixing                     |
|----------------------------------------------------------------------|
c power model  -->   temp = tstart + tk1*zi + tk2*zi**2 + tk3*zi**3    |
c mixing model -->   temp = (tstart * tk1 + zi*tk2) / (zi + tk1)       |
c---------------------------------------------------------------------|
| tstart(c)|  25.00    |tk1| 0.0000    |tk2| 0.0000    |tk3| 0.0000    |
|----------------------------------------------------------------------|
| starting value of zi | 0.15997    |max. value of zi    | 1.00000E+38 |
|----------------------------------------------------------------------|
| starting time (sec)  | 1.59790E+08|max. time (sec)     | 1.00000E+38 |
|----------------------------------------------------------------------|
| max. steps           |       400  |max. steps w/o print|       150   |
|----------------------------------------------------------------------|
| linear print interval|  10.000    |log print interval  | 1.00000E+38 |
|----------------------------------------------------------------------|
| suppress mineral phases                                              |
|----------------------------------------------------------------------|
| phases w/ elements|                          |                          |n
| phases except     |                          |                          |n
|----------------------------------------------------------------------|
| fixed fugacity phases- species, moles(per kg h2o), log fugacity(bars)|
|----------------------------------------------------------------------|
| CO2(g)                              | 0.00000        | -3.5000        |n
| O2(g)                               | 0.00000        |-0.67780        |n
|----------------------------------------------------------------------|
c                  R A T E     L A W S
c 1 = relative                  rate = rk1 + rk2*zi + (1/2)rk3*zi*zi
c 2 = transition state theory   rate = CHECK DOCUMENTATION
c 3 = specified rate            rate = CHECK DOCUMENTATION
c 4 = activity term rate        rate = CHECK DOCUMENTATION
c
c                  R E A C T A N T     T Y P E S
c mineral     solid solution     special    aqueous    gas
c
c                  S U R F A C E    T Y P E
c 0 = fixed surface area     1 = fixed specific surface area
c
c                  N O T E S
c status and jreac are normally not set by the user
|----------------------------------------------------------------------|
| reactants   (ss) solid solution only     (sp) special reactant only  |
|----------------------------------------------------------------------|
| REACTANT         | carbon steel            |status   | 0            |
| moles remaining  |  19.840                 |destroyed| 0.15979      |
| reactant type    |  special                |sk       |  100.00      |
| surface type     |   0                     |fk       |  1.0000      |
| end-member       |                         |mole fr  |              |ss,n
| volume           | 0.00000                 |         |              |sp
```

```
| element           | C            |moles       |  2.190000000000000E-02 |sp,n
| element           | Mn           |moles       |  1.030000000000000E-02 |sp,n
| element           | S            |moles       |  8.530000000000000E-04 |sp,n
| element           | Si           |moles       |  5.360000000000000E-03 |sp,n
| element           | P            |moles       |  7.060000000000000E-04 |sp,n
| element           | Fe           |moles       |  9.610000000000000E-01 |sp,n
| DISSOLUTION LAW   |    3                      |          |              |
| rate constant rk1| 1.00000E-11               |csigma1   |              |
| temperature (c)   |   25.000                  |          |              |234
| PRECIPITATION LAW|    0                       |          |              |
c-----------------------------------------------------------------------|
| REACTANT          | Alloy-22                  |status    | 0            |
| moles remaining   |  20.000                   |destroyed| 1.80563E-04   |
| reactant type     |  special                  |sk        |  100.00      |
| surface type      |   0                       |fk        |  1.0000      |
| end-member        |                           |mole fr   |              |ss,n
| volume            | 0.00000                   |          |              |sp
| element           | Cr           |moles       |  2.561060000000000E-01 |sp,n
| element           | Fe           |moles       |  5.420400000000000E-02 |sp,n
| element           | Ni           |moles       |  5.681220000000000E-01 |sp,n
| element           | Mo           |moles       |  1.009620000000000E-01 |sp,n
| element           | V            |moles       |  4.160000000000000E-03 |sp,n
| element           | Mn           |moles       |  5.510000000000000E-03 |sp,n
| DISSOLUTION LAW   |    3                      |          |              |
| rate constant rk1| 1.13000E-14               |csigma1   |              |
| temperature (c)   |   25.000                  |          |              |234
| PRECIPITATION LAW|    0                       |          |              |
|-----------------------------------------------------------------------|
| options                                                               |
|-----------------------------------------------------------------------|
| - SOLID SOLUTIONS -                                                   |
|     ignore solid solutions                                            |
|   * process solid solutions                                           |
| - LOADING OF SPECIES INTO MEMORY -                                    |
|   * don't print                                                       |
|     lists species loaded into memory                                  |
| - LIST DERIVATIVES OF BASIS ELEMENTS AT EACH PRINT POINT -            |
|   * don't print                                                       |
|     print                                                             |
| - LIST ALL SPECIES LOADED INTO MEMORY AND THEIR LOG K VALUES -        |
|   * don't print                                                       |
|     print                                                             |
| - LIST DISTRIBUTION OF AQUEOUS SPECIES AT EACH PRINT POINT -          |
|   * only species > 10**-12 molal                                      |
|     all species                                                       |
|     don't print                                                       |
| - LIST CATION/H+ ACTIVITY RATIOS AT EACH PRINT POINT -                |
|   * don't print                                                       |
|     print                                                             |
| - LIST BULK ELEMENT AND OXIDE COMPOSITION AT EACH PRINT POINT -       |
|   * don't print                                                       |
|     print                                                             |
| - MINERAL SATURATION STATES -                                         |
|   * print if affinity > -10 kcals                                     |
|     print all                                                         |
|     don't print                                                       |
| - LIST GAS SPECIES SUMMARY AT EACH PRINT POINT -                      |
|     don't print                                                       |
|   * print                                                             |
| - PRINT AQUEOUS MASS AND CONCENTRATION TOTALS -                       |
|   * don't print                                                       |
|     print                                                             |
| - TAB FILES -                                                         |
```

```
|   * write                                                                |
|     append to previous tabx file                                         |
|     don't write                                                          |
| - WRITE PICKUP FILE -                                                    |
|     write pickup file at end of run                                      |
|     don't write pickup file                                              |
|   * write pickup file for each print point                               |
| - PHYSICALLY REMOVED SUBSYSTEM -                                         |
|   * does nothing                                                         |
|     transfer minerals but leave trivial mass in the system               |
|     transfer minerals                                                    |
| - CLEAR INITIAL PHYSICALLY REMOVED SUBSYSTEM -                           |
|   * does nothing                                                         |
|     clear p.r.s. before first reaction progress advance                  |
| - PHASE BOUNDARY SEARCH -                                                |
|   * step size constrained by predicted phase boundaries                  |
|     phase boundaries estimated from Taylor's series and printed          |
|     locations of phase boundaries ignored                                |
| - AUTO BASIS SWITCHING -                                                 |
|   * off                                                                  |
|     on                                                                   |
| - SUPPRESS REDOX REACTIONS -                                             |
|   * does nothing                                                         |
|     suppress all redox reactions                                         |
| - LINEAR OR LOGARITHMIC TAYLOR'S SERIES -                                |
|   * linear for kcol = 1,kdim, logarithmic for kcol = 1,kbt               |
|     logarithmic for kcol = 1,kbt                                         |
|     linear for kcol = 1,kdim                                             |
| - AZERO AND HYDRATION NUMBERS -                                          |
|   * no change                                                            |
|     read in new azero and hydration numbers                              |
| - PRINT MEAN MOLAL ACTIVITY COEFFICIENTS FOR DISSOLVED SPECIES -         |
|   * does nothing                                                         |
|     print                                                                |
| - PITZER DATABASE INFORMATION -                                          |
|   * print only warnings                                                  |
|     print species in model and number of Pitzer coefficients             |
|     print species in model and names of Pitzer coefficients              |
| - PRINT DIAGNOSTIC MESSAGES -                                            |
|   * don't print                                                          |
|     print level 1 messages                                               |
|     print level 2 messages                                               |
| - PRINT PRE-NEWTON-RAPHSON OPTIMIZATION -                                |
|   * don't print                                                          |
|     print summary information                                            |
|     print detailed information                                           |
| - PRINT STEP SIZE AND ORDER -                                            |
|   * don't print                                                          |
|     print scale factor                                                   |
|     print orders and step size scaling factors                           |
| - CONTROL STEP SIZE AND ORDER PRINT -                                    |
|   * does nothing                                                         |
|     print step size and order when delzi .le. dlzmx1                     |
| - NEWTON ITERATIONS -                                                    |
|   * don't print                                                          |
|     print summary of newton iterations                                   |
|     print summary, residual functions and correction terms               |
|     print summary, residual functions, correction terms and matrix       |
| - PRINT SEARCH ITERATIONS -                                              |
|   * don't print                                                          |
|     print                                                                |
| - PRINT HPSAT ITERATIONS -                                               |
|   * don't print                                                          |
```

```
|     print                                                                |
| - PRINT FINITE DIFFERENCE AND DERIVATIVE DATA -                          |
|   * don't print                                                          |
|     print computations from RDERIV, and RTAYLR                           |
|     print computations from RDERIV, RTAYLR, DERIV and TAYLOR             |
| - PRINT KINETICS DIAGNOSTIC MESSAGES -                                   |
|   * don't print                                                          |
|     print level 1 diagnostics                                            |
|     print level 1 and level 2 diagnostics                                |
| - PRINT AKMATR -                                                         |
|   * don't print                                                          |
|     print level 1 diagnostics                                            |
| - KILL ITERATION VARIABLES -                                             |
|   * does nothing                                                         |
|     allow selection of variables to remove                               |
|--------------------------------------------------------------------------|
| development options  (used for code development)                         |
|--------------------------------------------------------------------------|
|    0 check finite difference and Taylor series expression                |
|    0 check reaction rate finite difference and Taylor series             |
|--------------------------------------------------------------------------|
| tolerances                        desired values - defaults info-only    |
|--------------------------------------------------------------------------|
| number of N-R iterations        |        90         |  90      itermx  |
| p.r.s. transfer interval        | 1.00000E+38       |  varies  dlzidp  |
| residual magnitude              | 1.00000E-06       |  1.0e-06 tolbt   |
| correction magnitude            | 1.00000E-06       |  1.0e-06 toldl   |
| search/find tolerance           | 1.00000E-06       |  varies  tolx    |
| supersaturation                 | 5.00000E-03       |  varies  tolsat  |
| supersaturation set size        | 1.00000E-02       |  varies  tolsst  |
| max. size Taylor's series term  | 1.00000E-04       |  1.0e-04 screw1  |
| max. initial value betamx       |                   |  n/a     screw2  |
| max. Taylor's series term (kin.)| 1.00000E-04       |  1.0e-04 screw3  |
| corrector iteration             | 1.00000E-04       |  1.0e-04 screw4  |
| max. size of N-R correction term|  4.0000           |  4.0     screw5  |
| step size (economy mode)        |  4.0000           |  4.0     screw6  |
| log mass of phases              | -6.0000           |  varies  zklogu  |
| decrement mass (p.r.s.)         |  2.0000           |  2.0     zklogl  |
| min. left after p.r.s.          | 0.80000           |  .98     zkfac   |
| initial step size               | 1.00000E-09       |  varies  dlzmx1  |
| upper limit step size           | 1.00000E+38       |  varies  dlzmx2  |
| maximum order                   |         6         |  6       nordlm  |
| num. attempted assemblages      |        25         |  25      ntrymx  |
| slide -> over phase bound.      |        12         |  8       npslmx  |
| slide -> over redox insta.      |         8         |  3       nsslmx  |
| fo2 scan control                |                   |  none    ioscan  |
|--------------------------------------------------------------------------|
c pickup file written by eq6.7.2bR137                                      |
c supported by eqlib.7.2bR168                                              |
|EQ6 input file name= j13_All-22.6i.txt                                    |
|Description= React J-13 water with Carbon Steel and Alloy-22.             |
|Equilibrium with atmospheric gases.                                       |
|Version level= 7.2                                                        |
|Created 01/19/99    Creator= D.H. Lester                                  |
|Revised             Revisor=                                              |
|                                                                          |
|Water from well J-13 at the Nevada Test site                              |
|                                                                          |
|Purpose: To model reaction with carbon steel (iron) and alloy C-22        |
|simultaneously to determine an expected Cr concentration in the water     |
|corroding the C-22 after breaching the CAM.                               |
|                                                                          |
|It is assumed that a significant amount of carbon steel is still          |
```

```
|present. The rate constant for the steel was assumed to be 1.0E-11    |
|which is the higher value suggested in simulation studies at LLNL.    |
|Reference: Eng. Barrier System & Near Field Envir. Perf. Assess.,     |
|FY-96 Activities: End-of-Year Summary, Sept 1996, Wm.G.Halsey, "Report|
|on Initial Simulation of Water Interaction With Mild Steel Containers |
|Rate for C-22 is the median value for dripping at high temp. in the   |
|TSPA simulations for the VA document.                                 |
|The data base was modified to add the solid KFe(CrO4)2:2H2O           |
|Total amount of Steel and C-22 reduced to 20 moles each for a more    |
|realistic proportion of materials contacting 1L of water              |
|----------------------------------------------------------------------|
| temperature (C)                    |     25.000                      |
|----------------------------------------------------------------------|
| electrical imbalance               |   5.752163835343278E-14         |
|----------------------------------------------------------------------|
| number of aqueous master species   |     38                          |
|----------------------------------------------------------------------|
| position of last pure mineral      |     46                          |
|----------------------------------------------------------------------|
| position of last solid solution    |     58                          |
|----------------------------------------------------------------------|
| suppressed species     (suppress,replace,augmentk,augmentg)  value   |
|----------------------------------------------------------------------|
| Phlogopite                | mineral        | suppress |  0.00000      |
| Annite                    | mineral        | suppress |  0.00000      |
| Clinochlore-14A           | mineral        | suppress |  0.00000      |
| Daphnite-14A              | mineral        | suppress |  0.00000      |
| Clinozoisite              | mineral        | suppress |  0.00000      |
| Epidote                   | mineral        | suppress |  0.00000      |
| Epidote-ord               | mineral        | suppress |  0.00000      |
| Andradite                 | mineral        | suppress |  0.00000      |
| Grossular                 | mineral        | suppress |  0.00000      |
| Enstatite                 | mineral        | suppress |  0.00000      |
| Ferrosilite               | mineral        | suppress |  0.00000      |
| Pyrite                    | mineral        | suppress |  0.00000      |
| Pyrrhotite                | mineral        | suppress |  0.00000      |
| Troilite                  | mineral        | suppress |  0.00000      |
| Alabandite                | mineral        | suppress |  0.00000      |
| Brezinaite                | mineral        | suppress |  0.00000      |
| Chalcocite                | mineral        | suppress |  0.00000      |
| Covellite                 | mineral        | suppress |  0.00000      |
| Millerite                 | mineral        | suppress |  0.00000      |
| Polydymite                | mineral        | suppress |  0.00000      |
| Vaesite                   | mineral        | suppress |  0.00000      |
| Heazlewoodite             | mineral        | suppress |  0.00000      |
| Galena                    | mineral        | suppress |  0.00000      |
| Sulfur                    | mineral        | suppress |  0.00000      |
| CaZrO3                    | mineral        | suppress |  0.00000      |
| BaZrO3                    | mineral        | suppress |  0.00000      |
| SrZrO3                    | mineral        | suppress |  0.00000      |
| U2S3                      | mineral        | suppress |  0.00000      |
| U3S5                      | mineral        | suppress |  0.00000      |
| US2                       | mineral        | suppress |  0.00000      |
| US3                       | mineral        | suppress |  0.00000      |
| US                        | mineral        | suppress |  0.00000      |
| US1.9                     | mineral        | suppress |  0.00000      |
| U3P4                      | mineral        | suppress |  0.00000      |
| UP                        | mineral        | suppress |  0.00000      |
| UP2                       | mineral        | suppress |  0.00000      |
| HS-                       | aqueous        | suppress |  0.00000      |
| H2S(aq)                   | aqueous        | suppress |  0.00000      |
| S--                       | aqueous        | suppress |  0.00000      |
|----------------------------------------------------------------------|
```

```
| iopg options                                                        |
|---------------------------------------------------------------------|
| - pH SCALE CONVENTION -                                             |
|    * modified NBS                                                   |
|      internal                                                       |
|      rational                                                       |
| - ACTIVITY COEFFICIENT OPTIONS -                                    |
|    * use B-dot equation                                             |
|      Davies' equation                                               |
|      Pitzer's equations                                             |
|---------------------------------------------------------------------|
| elements, moles and moles aqueous                                   |
|---------------------------------------------------------------------|
| O                        |  4.005551824589011E+04 |  5.551537884660144E+01 |
| Al                       |  1.482500000694482E-06 |  7.701854754646586E-13 |
| B                        |  1.238799999942330E-05 |  1.238799999992119E-05 |
| Ba                       |  1.000000000006594E-10 |  1.000000000002721E-10 |
| Ca                       |  3.243700000162714E-04 |  1.338755434337204E-04 |
| Ce                       |  1.000000000975802E-24 |  9.999999998042274E-25 |
| Cl                       |  2.014000000000269E-04 |  2.013999999999991E-04 |
| Cr                       |  4.658811790578734E-05 |  4.658811790545200E-05 |
| Cs                       |  1.000000000000039E-10 |  9.999999999999930E-11 |
| Cu                       |  1.050000000528221E-14 |  1.049999999873917E-14 |
| F                        |  1.147500000001528E-04 |  7.672340993196118E-05 |
| Fe                       |  1.535682331260448E-01 |  1.216462160408050E-12 |
| Gd                       |  1.000000001150365E-14 |  9.999999997582070E-15 |
| H                        |  1.110188738405208E+02 |  1.110188470320435E+02 |
| C                        |  1.000000548970961E+04 |  1.277003927053101E-03 |
| P                        |  1.140830279895968E-04 |  3.257785239939892E-09 |
| K                        |  1.289100000000803E-04 |  1.288471651762586E-04 |
| La                       |  1.000000000980088E-14 |  9.999999997870596E-15 |
| Li                       |  1.000000000000469E-10 |  9.999999999994560E-11 |
| Mg                       |  8.269900000408464E-05 |  5.566097977195190E-05 |
| Mn                       |  1.646834644755292E-03 |  1.673972340683732E-16 |
| Mo                       |  1.823010169579771E-05 |  1.823010169579772E-05 |
| N                        |  1.420000000000891E-04 |  1.420000000000423E-04 |
| Na                       |  1.992200000002518E-03 |  1.992108488072813E-03 |
| Nd                       |  1.000000000990082E-14 |  9.999999997869210E-15 |
| Ni                       |  1.025819131912996E-04 |  3.322503521993651E-08 |
| Pb                       |  1.000000000003566E-10 |  1.000000000000297E-10 |
| Pu                       |  1.000000001138469E-14 |  9.999999993515886E-15 |
| S                        |  3.278410971397992E-04 |  3.278410971294778E-04 |
| Si                       |  1.873375827216646E-03 |  1.032405275313852E-04 |
| Sm                       |  1.000000000991962E-14 |  9.999999997884200E-15 |
| Sr                       |  1.000000000034016E-10 |  9.999999999767978E-11 |
| Ti                       |  1.000000000000003E-10 |  1.000000000000003E-10 |
| U                        |  9.999999988006304E-15 |  9.999999997722872E-15 |
| V                        |  7.513620836998886E-07 |  7.513620841208080E-07 |
| Zn                       |  1.000000000089305E-10 |  1.000000000015856E-10 |
| Zr                       |  1.000000000323548E-20 |  9.999999999307056E-21 |
|---------------------------------------------------------------------|
| master species and logarithmic basis variables                      |
|---------------------------------------------------------------------|
| H2O                      | H2O                      |  1.744361688084745E+00 |
| Al+++                    | Al+++                    | -2.256763576224518E+01 |
| B(OH)3(aq)               | B(OH)3(aq)               | -4.966682264335490E+00 |
| Ba++                     | Ba++                     | -1.000241470065551E+01 |
| Ca++                     | Ca++                     | -3.898446189665628E+00 |
| Ce+++                    | Ce+++                    | -2.681215258305290E+01 |
| Cl-                      | Cl-                      | -3.696091542115109E+00 |
| CrO4--                   | CrO4--                   | -4.336398358223333E+00 |
| Cs+                      | Cs+                      | -1.000005618286869E+01 |
| Cu++                     | Cu++                     | -1.601319170747494E+01 |
```

```
| F-                        | F-                        | -4.115763048404034E+00 |
| Fe++                      | Fe++                      | -2.420227905743740E+01 |
| Gd+++                     | Gd+++                     | -1.727219327819763E+01 |
| H+                        | H+                        | -8.357058414823876E+00 |
| HCO3-                     | HCO3-                     | -2.906209640319239E+00 |
| HPO4--                    | HPO4--                    | -8.559582904834000E+00 |
| K+                        | K+                        | -3.890748899520086E+00 |
| La+++                     | La+++                     | -1.638086002731273E+01 |
| Li+                       | Li+                       | -1.000064455621302E+01 |
| Mg++                      | Mg++                      | -4.285348253331406E+00 |
| Mn++                      | Mn++                      | -1.630922905743740E+01 |
| MoO4--                    | MoO4--                    | -4.739210908646142E+00 |
| NO3-                      | NH3(aq)                   | -3.847928959963500E+00 |
| Na+                       | Na+                       | -2.702167580284472E+00 |
| Nd+++                     | Nd+++                     | -1.689244618392568E+01 |
| Ni++                      | Ni++                      | -7.490179057437398E+00 |
| Pb++                      | Pb++                      | -1.000205416707367E+01 |
| Pu++++                    | Pu++++                    | -4.200988127685725E+01 |
| SO4--                     | SO4--                     | -3.496988810774991E+00 |
| SiO2(aq)                  | SiO2(aq)                  | -3.999297295442239E+00 |
| Sm+++                     | Sm+++                     | -1.709219596745855E+01 |
| Sr++                      | Sr++                      | -1.002027884058250E+01 |
| Ti(OH)4(aq)               | Ti(OH)4(aq)               | -9.999999999999998E+00 |
| UO2++                     | UO2++                     | -2.153451124788152E+01 |
| VO++                      | VO++                      | -2.921666295474356E+01 |
| Zn++                      | Zn++                      | -1.009654206684706E+01 |
| Zr(OH)2++                 | Zr(OH)2++                 | -3.542992951096570E+01 |
| O2(g)                     | O2(g)                     | -6.778000000000000E-01 |
|                           | Fluorapatite              | -4.419912617028496E+00 |
|                           | Hematite                  | -1.114754018216332E+00 |
|                           | Ni2SiO4                   | -4.290099886593144E+00 |
|                           | Pyrolusite                | -2.783350005247716E+00 |
|                           | Quartz                    | -2.778135659430892E+00 |
|                           | Talc                      | -5.050033752745416E+00 |
|                           | fix     CO2(g)            |  4.000000182955445E+00 |
|                           | fix     O2(g)             |  3.999994715762925E+00 |
| Smectite-di               | Beidellite-Ca             | -4.374138606883120E+01 |
| Smectite-di               | Beidellite-K              | -4.480233145569786E+01 |
| Smectite-di               | Beidellite-Mg             | -4.381897901762894E+01 |
| Smectite-di               | Beidellite-Na             | -4.463905415900229E+01 |
| Smectite-di               | Montmor-Ca                | -3.069488379231566E+01 |
| Smectite-di               | Montmor-K                 | -3.154279887615201E+01 |
| Smectite-di               | Montmor-Mg                | -3.056156765020431E+01 |
| Smectite-di               | Montmor-Na                | -3.139043067036554E+01 |
| Smectite-di               | Nontronite-Ca             | -5.659368152468054E+00 |
| Smectite-di               | Nontronite-K              | -6.720313539334700E+00 |
| Smectite-di               | Nontronite-Mg             | -5.736658070962768E+00 |
| Smectite-di               | Nontronite-Na             | -6.557036242639142E+00 |
|-------------------------------------------------------------------------|
| physically removed subsystem  (solid solution, mineral, moles)          |
|-------------------------------------------------------------------------|
| none                      |                           |                        |
|-------------------------------------------------------------------------|
|-------------------------------------------------------------------------|
|EQ6 input file name= j13_All-22.6i.txt                                   |
|Description= React J-13 water with Carbon Steel and Alloy-22.            |
|Equilibrium with atmospheric gases.                                      |
|Version level= 7.2                                                       |
|Created 01/19/99    Creator= D.H. Lester                                 |
|Revised             Revisor=                                             |
|                                                                         |
|Water from well J-13 at the Nevada Test site                             |
|                                                                         |
```

```
|Purpose: To model reaction with carbon steel (iron) and alloy C-22    |
|simultaneously to determine an expected Cr concentration in the water |
|corroding the C-22 after breaching the CAM.                            |
|                                                                       |
|It is assumed that a significant amount of carbon steel is still      |
|present. The rate constant for the steel was assumed to be 1.0E-11    |
|which is the higher value suggested in simulation studies at LLNL.     |
|Reference: Eng. Barrier System & Near Field Envir. Perf. Assess.,      |
|FY-96 Activities: End-of-Year Summary, Sept 1996, Wm.G.Halsey, "Report|
|on Initial Simulation of Water Interaction With Mild Steel Containers |
|Rate for C-22 is the median value for dripping at high temp. in the    |
|TSPA simulations for the VA document.                                  |
|The data base was modified to add the solid KFe(CrO4)2:2H2O            |
|Total amount of Steel and C-22 reduced to 20 moles each for a more     |
|realistic proportion of materials contacting 1L of water               |
|-----------------------------------------------------------------------|
| calculational mode   |*normal     | economy           | super economy|
|-----------------------------------------------------------------------|
| model type           |*titration  | closed            | open         |
|-----------------------------------------------------------------------|
| temperature model    |*power      | fluid mixing                     |
|-----------------------------------------------------------------------|
c power model  -->   temp = tstart + tk1*zi + tk2*zi**2 + tk3*zi**3    |
c mixing model -->   temp = (tstart * tk1 + zi*tk2) / (zi + tk1)       |
c----------------------------------------------------------------------|
| tstart(c)|  25.00    |tk1| 0.0000    |tk2| 0.0000    |tk3| 0.0000    |
|-----------------------------------------------------------------------|
| starting value of zi | 0.22291    |max. value of zi    | 1.00000E+38 |
|-----------------------------------------------------------------------|
| starting time (sec)  | 2.22662E+08|max. time (sec)     | 1.00000E+38 |
|-----------------------------------------------------------------------|
| max. steps           |       400  |max. steps w/o print|       150   |
|-----------------------------------------------------------------------|
| linear print interval|  10.000    |log print interval  | 1.00000E+38 |
|-----------------------------------------------------------------------|
| suppress mineral phases                                               |
|-----------------------------------------------------------------------|
| phases w/ elements|                         |                         |n
| phases except     |                         |                         |n
|-----------------------------------------------------------------------|
| fixed fugacity phases- species, moles(per kg h2o), log fugacity(bars)|
|-----------------------------------------------------------------------|
| CO2(g)                              | 0.00000        | -3.5000        |n
| O2(g)                               | 0.00000        |-0.67780        |n
|-----------------------------------------------------------------------|
c                  R A T E     L A W S
c 1 = relative                  rate = rk1 + rk2*zi + (1/2)rk3*zi*zi
c 2 = transition state theory   rate = CHECK DOCUMENTATION
c 3 = specified rate            rate = CHECK DOCUMENTATION
c 4 = activity term rate        rate = CHECK DOCUMENTATION
c
c                  R E A C T A N T     T Y P E S
c mineral     solid solution     special    aqueous    gas
c
c                  S U R F A C E    T Y P E
c 0 = fixed surface area     1 = fixed specific surface area
c
c                  N O T E S
c status and jreac are normally not set by the user
|-----------------------------------------------------------------------|
| reactants   (ss) solid solution only     (sp) special reactant only  |
|-----------------------------------------------------------------------|
| REACTANT         | carbon steel             |status   | 0            |
```

```
| moles remaining  |  19.777                  |destroyed| 0.22266      |
| reactant type    |  special                 |sk       |  100.00      |
| surface type     |   0                      |fk       |  1.0000      |
| end-member       |                          |mole fr  |              |ss,n
| volume           | 0.00000                  |         |              |sp
| element          | C            |moles      |  2.190000000000000E-02 |sp,n
| element          | Mn           |moles      |  1.030000000000000E-02 |sp,n
| element          | S            |moles      |  8.530000000000000E-04 |sp,n
| element          | Si           |moles      |  5.360000000000000E-03 |sp,n
| element          | P            |moles      |  7.060000000000000E-04 |sp,n
| element          | Fe           |moles      |  9.610000000000000E-01 |sp,n
| DISSOLUTION LAW  |    3                     |         |              |
| rate constant rk1| 1.00000E-11              |csigma1  |              |
| temperature (c)  |   25.000                 |         |              |234
| PRECIPITATION LAW|    0                     |         |              |
c-----------------------------------------------------------------------|
| REACTANT         | Alloy-22                 |status   | 0            |
| moles remaining  |  20.000                  |destroyed| 2.51608E-04  |
| reactant type    |  special                 |sk       |  100.00      |
| surface type     |   0                      |fk       |  1.0000      |
| end-member       |                          |mole fr  |              |ss,n
| volume           | 0.00000                  |         |              |sp
| element          | Cr           |moles      |  2.561060000000000E-01 |sp,n
| element          | Fe           |moles      |  5.420400000000000E-02 |sp,n
| element          | Ni           |moles      |  5.681220000000000E-01 |sp,n
| element          | Mo           |moles      |  1.009620000000000E-01 |sp,n
| element          | V            |moles      |  4.160000000000000E-03 |sp,n
| element          | Mn           |moles      |  5.510000000000000E-03 |sp,n
| DISSOLUTION LAW  |    3                     |         |              |
| rate constant rk1| 1.13000E-14              |csigma1  |              |
| temperature (c)  |   25.000                 |         |              |234
| PRECIPITATION LAW|    0                     |         |              |
|-----------------------------------------------------------------------|
| options                                                               |
|-----------------------------------------------------------------------|
| - SOLID SOLUTIONS -                                                   |
|     ignore solid solutions                                            |
|   * process solid solutions                                           |
| - LOADING OF SPECIES INTO MEMORY -                                    |
|   * don't print                                                       |
|     lists species loaded into memory                                  |
| - LIST DERIVATIVES OF BASIS ELEMENTS AT EACH PRINT POINT -            |
|   * don't print                                                       |
|     print                                                             |
| - LIST ALL SPECIES LOADED INTO MEMORY AND THEIR LOG K VALUES -        |
|   * don't print                                                       |
|     print                                                             |
| - LIST DISTRIBUTION OF AQUEOUS SPECIES AT EACH PRINT POINT -          |
|   * only species > 10**-12 molal                                      |
|     all species                                                       |
|     don't print                                                       |
| - LIST CATION/H+ ACTIVITY RATIOS AT EACH PRINT POINT -                |
|   * don't print                                                       |
|     print                                                             |
| - LIST BULK ELEMENT AND OXIDE COMPOSITION AT EACH PRINT POINT -       |
|   * don't print                                                       |
|     print                                                             |
| - MINERAL SATURATION STATES -                                         |
|   * print if affinity > -10 kcals                                     |
|     print all                                                         |
|     don't print                                                       |
| - LIST GAS SPECIES SUMMARY AT EACH PRINT POINT -                      |
|     don't print                                                       |
```

```
|   * print                                                          |
| - PRINT AQUEOUS MASS AND CONCENTRATION TOTALS -                    |
|   * don't print                                                    |
|     print                                                          |
| - TAB FILES -                                                      |
|   * write                                                          |
|     append to previous tabx file                                   |
|     don't write                                                    |
| - WRITE PICKUP FILE -                                              |
|     write pickup file at end of run                                |
|     don't write pickup file                                        |
|   * write pickup file for each print point                         |
| - PHYSICALLY REMOVED SUBSYSTEM -                                   |
|   * does nothing                                                   |
|     transfer minerals but leave trivial mass in the system         |
|     transfer minerals                                              |
| - CLEAR INITIAL PHYSICALLY REMOVED SUBSYSTEM -                     |
|   * does nothing                                                   |
|     clear p.r.s. before first reaction progress advance            |
| - PHASE BOUNDARY SEARCH -                                          |
|   * step size constrained by predicted phase boundaries            |
|     phase boundaries estimated from Taylor's series and printed    |
|     locations of phase boundaries ignored                          |
| - AUTO BASIS SWITCHING -                                           |
|   * off                                                            |
|     on                                                             |
| - SUPPRESS REDOX REACTIONS -                                       |
|   * does nothing                                                   |
|     suppress all redox reactions                                   |
| - LINEAR OR LOGARITHMIC TAYLOR'S SERIES -                          |
|   * linear for kcol = 1,kdim, logarithmic for kcol = 1,kbt         |
|     logarithmic for kcol = 1,kbt                                   |
|     linear for kcol = 1,kdim                                       |
| - AZERO AND HYDRATION NUMBERS -                                    |
|   * no change                                                      |
|     read in new azero and hydration numbers                        |
| - PRINT MEAN MOLAL ACTIVITY COEFFICIENTS FOR DISSOLVED SPECIES -   |
|   * does nothing                                                   |
|     print                                                          |
| - PITZER DATABASE INFORMATION -                                    |
|   * print only warnings                                            |
|     print species in model and number of Pitzer coefficients       |
|     print species in model and names of Pitzer coefficients        |
| - PRINT DIAGNOSTIC MESSAGES -                                      |
|   * don't print                                                    |
|     print level 1 messages                                         |
|     print level 2 messages                                         |
| - PRINT PRE-NEWTON-RAPHSON OPTIMIZATION -                          |
|   * don't print                                                    |
|     print summary information                                      |
|     print detailed information                                     |
| - PRINT STEP SIZE AND ORDER -                                      |
|   * don't print                                                    |
|     print scale factor                                             |
|     print orders and step size scaling factors                     |
| - CONTROL STEP SIZE AND ORDER PRINT -                              |
|   * does nothing                                                   |
|     print step size and order when delzi .le. dlzmx1               |
| - NEWTON ITERATIONS -                                              |
|   * don't print                                                    |
|     print summary of newton iterations                             |
|     print summary, residual functions and correction terms         |
|     print summary, residual functions, correction terms and matrix |
```

```
| - PRINT SEARCH ITERATIONS -                                          |
|   * don't print                                                      |
|     print                                                            |
| - PRINT HPSAT ITERATIONS -                                           |
|   * don't print                                                      |
|     print                                                            |
| - PRINT FINITE DIFFERENCE AND DERIVATIVE DATA -                      |
|   * don't print                                                      |
|     print computations from RDERIV, and RTAYLR                       |
|     print computations from RDERIV, RTAYLR, DERIV and TAYLOR         |
| - PRINT KINETICS DIAGNOSTIC MESSAGES -                               |
|   * don't print                                                      |
|     print level 1 diagnostics                                        |
|     print level 1 and level 2 diagnostics                            |
| - PRINT AKMATR -                                                     |
|   * don't print                                                      |
|     print level 1 diagnostics                                        |
| - KILL ITERATION VARIABLES -                                         |
|   * does nothing                                                     |
|     allow selection of variables to remove                           |
|----------------------------------------------------------------------|
| development options  (used for code development)                     |
|----------------------------------------------------------------------|
|    0 check finite difference and Taylor series expression            |
|    0 check reaction rate finite difference and Taylor series         |
|----------------------------------------------------------------------|
| tolerances                        desired values - defaults info-only |
|----------------------------------------------------------------------|
| number of N-R iterations         |        90        |  90      itermx |
| p.r.s. transfer interval         | 1.00000E+38      |  varies  dlzidp |
| residual magnitude               | 1.00000E-06      |  1.0e-06 tolbt  |
| correction magnitude             | 1.00000E-06      |  1.0e-06 toldl  |
| search/find tolerance            | 1.00000E-06      |  varies  tolx   |
| supersaturation                  | 5.00000E-03      |  varies  tolsat |
| supersaturation set size         | 1.00000E-02      |  varies  tolsst |
| max. size Taylor's series term   | 1.00000E-04      |  1.0e-04 screw1 |
| max. initial value betamx        |                  |  n/a     screw2 |
| max. Taylor's series term (kin.) | 1.00000E-04      |  1.0e-04 screw3 |
| corrector iteration              | 1.00000E-04      |  1.0e-04 screw4 |
| max. size of N-R correction term|  4.0000          |  4.0     screw5 |
| step size (economy mode)         |  4.0000          |  4.0     screw6 |
| log mass of phases               | -6.0000          |  varies  zklogu |
| decrement mass (p.r.s.)          |  2.0000          |  2.0     zklogl |
| min. left after p.r.s.           | 0.80000          |  .98     zkfac  |
| initial step size                | 1.00000E-09      |  varies  dlzmx1 |
| upper limit step size            | 1.00000E+38      |  varies  dlzmx2 |
| maximum order                    |         6        |  6       nordlm |
| num. attempted assemblages       |        25        |  25      ntrymx |
| slide -> over phase bound.       |        12        |  8       npslmx |
| slide -> over redox insta.       |         8        |  3       nsslmx |
| fo2 scan control                 |                  |  none    ioscan |
|----------------------------------------------------------------------|
c pickup file written by eq6.7.2bR137                                  |
c supported by eqlib.7.2bR168                                          |
|EQ6 input file name= j13_All-22.6i.txt                                |
|Description= React J-13 water with Carbon Steel and Alloy-22.         |
|Equilibrium with atmospheric gases.                                   |
|Version level= 7.2                                                    |
|Created 01/19/99    Creator= D.H. Lester                              |
|Revised             Revisor=                                          |
|                                                                      |
|Water from well J-13 at the Nevada Test site                          |
|                                                                      |
```

```
|Purpose: To model reaction with carbon steel (iron) and alloy C-22    |
|simultaneously to determine an expected Cr concentration in the water |
|corroding the C-22 after breaching the CAM.                            |
|                                                                       |
|It is assumed that a significant amount of carbon steel is still      |
|present. The rate constant for the steel was assumed to be 1.0E-11    |
|which is the higher value suggested in simulation studies at LLNL.     |
|Reference: Eng. Barrier System & Near Field Envir. Perf. Assess.,      |
|FY-96 Activities: End-of-Year Summary, Sept 1996, Wm.G.Halsey, "Report|
|on Initial Simulation of Water Interaction With Mild Steel Containers |
|Rate for C-22 is the median value for dripping at high temp. in the    |
|TSPA simulations for the VA document.                                  |
|The data base was modified to add the solid KFe(CrO4)2:2H2O            |
|Total amount of Steel and C-22 reduced to 20 moles each for a more     |
|realistic proportion of materials contacting 1L of water               |
|-----------------------------------------------------------------------|
| temperature (C)                    |     25.000                       |
|-----------------------------------------------------------------------|
| electrical imbalance               |   5.752163835343278E-14          |
|-----------------------------------------------------------------------|
| number of aqueous master species   |     38                           |
|-----------------------------------------------------------------------|
| position of last pure mineral      |     45                           |
|-----------------------------------------------------------------------|
| position of last solid solution    |     57                           |
|-----------------------------------------------------------------------|
| suppressed species     (suppress,replace,augmentk,augmentg)  value    |
|-----------------------------------------------------------------------|
| Phlogopite                | mineral        | suppress |  0.00000       |
| Annite                    | mineral        | suppress |  0.00000       |
| Clinochlore-14A           | mineral        | suppress |  0.00000       |
| Daphnite-14A              | mineral        | suppress |  0.00000       |
| Clinozoisite              | mineral        | suppress |  0.00000       |
| Epidote                   | mineral        | suppress |  0.00000       |
| Epidote-ord               | mineral        | suppress |  0.00000       |
| Andradite                 | mineral        | suppress |  0.00000       |
| Grossular                 | mineral        | suppress |  0.00000       |
| Enstatite                 | mineral        | suppress |  0.00000       |
| Ferrosilite               | mineral        | suppress |  0.00000       |
| Pyrite                    | mineral        | suppress |  0.00000       |
| Pyrrhotite                | mineral        | suppress |  0.00000       |
| Troilite                  | mineral        | suppress |  0.00000       |
| Alabandite                | mineral        | suppress |  0.00000       |
| Brezinaite                | mineral        | suppress |  0.00000       |
| Chalcocite                | mineral        | suppress |  0.00000       |
| Covellite                 | mineral        | suppress |  0.00000       |
| Millerite                 | mineral        | suppress |  0.00000       |
| Polydymite                | mineral        | suppress |  0.00000       |
| Vaesite                   | mineral        | suppress |  0.00000       |
| Heazlewoodite             | mineral        | suppress |  0.00000       |
| Galena                    | mineral        | suppress |  0.00000       |
| Sulfur                    | mineral        | suppress |  0.00000       |
| CaZrO3                    | mineral        | suppress |  0.00000       |
| BaZrO3                    | mineral        | suppress |  0.00000       |
| SrZrO3                    | mineral        | suppress |  0.00000       |
| U2S3                      | mineral        | suppress |  0.00000       |
| U3S5                      | mineral        | suppress |  0.00000       |
| US2                       | mineral        | suppress |  0.00000       |
| US3                       | mineral        | suppress |  0.00000       |
| US                        | mineral        | suppress |  0.00000       |
| US1.9                     | mineral        | suppress |  0.00000       |
| U3P4                      | mineral        | suppress |  0.00000       |
| UP                        | mineral        | suppress |  0.00000       |
```

```
| UP2                        | mineral        | suppress |  0.00000      |
| HS-                        | aqueous        | suppress |  0.00000      |
| H2S(aq)                    | aqueous        | suppress |  0.00000      |
| S--                        | aqueous        | suppress |  0.00000      |
|-----------------------------------------------------------------------|
| iopg options                                                          |
|-----------------------------------------------------------------------|
| - pH SCALE CONVENTION -                                               |
|    * modified NBS                                                     |
|      internal                                                         |
|      rational                                                         |
| - ACTIVITY COEFFICIENT OPTIONS -                                      |
|    * use B-dot equation                                               |
|      Davies' equation                                                 |
|      Pitzer's equations                                               |
|-----------------------------------------------------------------------|
| elements, moles and moles aqueous                                     |
|-----------------------------------------------------------------------|
| O                          |  4.005551824589011E+04 |  5.551512625947384E+01 |
| Al                         |  1.482500000694482E-06 |  8.315297764465166E-13 |
| B                          |  1.238799999942330E-05 |  1.238799999937789E-05 |
| Ba                         |  1.000000000006594E-10 |  1.000000000006899E-10 |
| Ca                         |  3.243700000162714E-04 |  6.001748069747124E-05 |
| Ce                         |  1.000000000975802E-24 |  1.000000001100586E-24 |
| Cl                         |  2.014000000000269E-04 |  2.014000000000298E-04 |
| Cr                         |  6.478310138802878E-05 |  6.478310138808998E-05 |
| Cs                         |  1.000000000000039E-10 |  1.000000000000044E-10 |
| Cu                         |  1.050000000528221E-14 |  1.050000000598510E-14 |
| F                          |  1.147500000001528E-04 |  6.193184331676350E-05 |
| Fe                         |  2.139915464355217E-01 |  1.205849132430378E-12 |
| Gd                         |  1.000000001150365E-14 |  1.000000001300440E-14 |
| H                          |  1.110188738405208E+02 |  1.110188648556774E+02 |
| C                          |  1.000000686659435E+04 |  1.047820812348994E-03 |
| P                          |  1.584702709186082E-04 |  1.580086841931411E-08 |
| K                          |  1.289100000000803E-04 |  1.288422648391819E-04 |
| La                         |  1.000000000980088E-14 |  1.000000001108663E-14 |
| Li                         |  1.000000000000469E-10 |  1.000000000000597E-10 |
| Mg                         |  8.269900000408464E-05 |  8.230269634340840E-05 |
| Mn                         |  2.294802025009492E-03 |  1.748725821471679E-16 |
| Mo                         |  2.540292045964572E-05 |  2.540292045964572E-05 |
| N                          |  1.420000000000891E-04 |  1.420000000000914E-04 |
| Na                         |  1.992200000002518E-03 |  1.992101315121832E-03 |
| Nd                         |  1.000000000990082E-14 |  1.000000001119841E-14 |
| Ni                         |  1.429439914163235E-04 |  4.917450099801504E-08 |
| Pb                         |  1.000000000003566E-10 |  1.000000000003919E-10 |
| Pu                         |  1.000000001138469E-14 |  1.000000001341628E-14 |
| S                          |  3.814704430582790E-04 |  3.814704430594897E-04 |
| Si                         |  2.210366793363248E-03 |  1.026940368051701E-04 |
| Sm                         |  1.000000000991962E-14 |  1.000000001121802E-14 |
| Sr                         |  1.000000000034016E-10 |  1.000000000040943E-10 |
| Ti                         |  1.000000000000003E-10 |  1.000000000000003E-10 |
| U                          |  9.999999988006304E-15 |  9.999999987231312E-15 |
| V                          |  1.046908190726371E-06 |  1.046908190663824E-06 |
| Zn                         |  1.000000000089305E-10 |  1.000000000096100E-10 |
| Zr                         |  1.000000000323548E-20 |  1.000000000365931E-20 |
|-----------------------------------------------------------------------|
| master species and logarithmic basis variables                        |
|-----------------------------------------------------------------------|
| H2O                        | H2O                    |  1.744362623751973E+00 |
| Al+++                      | Al+++                  | -2.219830384444629E+01 |
| B(OH)3(aq)                 | B(OH)3(aq)             | -4.956564107440064E+00 |
| Ba++                       | Ba++                   | -1.000177410718441E+01 |
| Ca++                       | Ca++                   | -4.244916896228887E+00 |
```

```
| Ce+++                    | Ce+++                    | -2.656727551158827E+01 |
| Cl-                      | Cl-                      | -3.696093168304223E+00 |
| CrO4--                   | CrO4--                   | -4.194221657257575E+00 |
| Cs+                      | Cs+                      | -1.000005625062385E+01 |
| Cu++                     | Cu++                     | -1.585206025214710E+01 |
| F-                       | F-                       | -4.208855643774535E+00 |
| Fe++                     | Fe++                     | -2.403384153760111E+01 |
| Gd+++                    | Gd+++                    | -1.699034771470156E+01 |
| H+                       | H+                       | -8.272577212261728E+00 |
| HCO3-                    | HCO3-                    | -2.991153197530310E+00 |
| HPO4--                   | HPO4--                   | -7.869088354245196E+00 |
| K+                       | K+                       | -3.890903173761078E+00 |
| La+++                    | La+++                    | -1.617233937771773E+01 |
| Li+                      | Li+                      | -1.000075154949303E+01 |
| Mg++                     | Mg++                     | -4.116850342119344E+00 |
| Mn++                     | Mn++                     | -1.614079153760111E+01 |
| MoO4--                   | MoO4--                   | -4.595116351624222E+00 |
| NO3-                     | NH3(aq)                  | -3.847809772423382E+00 |
| Na+                      | Na+                      | -2.702153897593399E+00 |
| Nd+++                    | Nd+++                    | -1.663845798778622E+01 |
| Ni++                     | Ni++                     | -7.321741537601106E+00 |
| Pb++                     | Pb++                     | -1.000202861908045E+01 |
| Pu++++                   | Pu++++                   | -4.160458521510429E+01 |
| SO4--                    | SO4--                    | -3.430557891517821E+00 |
| SiO2(aq)                 | SiO2(aq)                 | -3.999296359775011E+00 |
| Sm+++                    | Sm+++                    | -1.683799272637373E+01 |
| Sr++                     | Sr++                     | -1.002203360812213E+01 |
| Ti(OH)4(aq)              | Ti(OH)4(aq)              | -9.999999999999998E+00 |
| UO2++                    | UO2++                    | -2.113643218529347E+01 |
| VO++                     | VO++                     | -2.873938474354898E+01 |
| Zn++                     | Zn++                     | -1.008109476463720E+01 |
| Zr(OH)2++                | Zr(OH)2++                | -3.526154290483400E+01 |
| O2(g)                    | O2(g)                    | -6.778000000000000E-01 |
|                          | Fluorapatite             | -4.277216759437280E+00 |
|                          | Hematite                 | -9.706516134991224E-01 |
|                          | Ni2SiO4                  | -4.146013519328551E+00 |
|                          | Pyrolusite               | -2.639254775553592E+00 |
|                          | Quartz                   | -2.694704929007319E+00 |
|                          | fix     CO2(g)           |  4.000000252706050E+00 |
|                          | fix     O2(g)            |  3.999992636597200E+00 |
| Smectite-di              | Beidellite-Ca            | -4.317135535079542E+01 |
| Smectite-di              | Beidellite-K             | -4.405943447821397E+01 |
| Smectite-di              | Beidellite-Mg            | -4.299149359499732E+01 |
| Smectite-di              | Beidellite-Na            | -4.389599802303056E+01 |
| Smectite-di              | Montmor-Ca               | -3.035924535115776E+01 |
| Smectite-di              | Montmor-K                | -3.103429417554601E+01 |
| Smectite-di              | Montmor-Mg               | -2.996847450445057E+01 |
| Smectite-di              | Montmor-Na               | -3.088176681127170E+01 |
| Smectite-di              | Nontronite-Ca            | -5.799620645553368E+00 |
| Smectite-di              | Nontronite-K             | -6.687699772971922E+00 |
| Smectite-di              | Nontronite-Mg            | -5.619455859452262E+00 |
| Smectite-di              | Nontronite-Na            | -6.524263317788528E+00 |
|-------------------------------------------------------------------------|
| physically removed subsystem  (solid solution, mineral, moles)          |
|-------------------------------------------------------------------------|
| none                     |                          |                        |
|-------------------------------------------------------------------------|
|-------------------------------------------------------------------------|
|EQ6 input file name= j13_All-22.6i.txt                                   |
|Description= React J-13 water with Carbon Steel and Alloy-22.            |
|Equilibrium with atmospheric gases.                                      |
|Version level= 7.2                                                       |
|Created 01/19/99    Creator= D.H. Lester                                 |
```

```
|Revised             Revisor=                                          |
|                                                                      |
|Water from well J-13 at the Nevada Test site                          |
|                                                                      |
|Purpose: To model reaction with carbon steel (iron) and alloy C-22    |
|simultaneously to determine an expected Cr concentration in the water |
|corroding the C-22 after breaching the CAM.                           |
|                                                                      |
|It is assumed that a significant amount of carbon steel is still      |
|present. The rate constant for the steel was assumed to be 1.0E-11    |
|which is the higher value suggested in simulation studies at LLNL.    |
|Reference: Eng. Barrier System & Near Field Envir. Perf. Assess.,     |
|FY-96 Activities: End-of-Year Summary, Sept 1996, Wm.G.Halsey, "Report|
|on Initial Simulation of Water Interaction With Mild Steel Containers |
|Rate for C-22 is the median value for dripping at high temp. in the   |
|TSPA simulations for the VA document.                                 |
|The data base was modified to add the solid KFe(CrO4)2:2H2O           |
|Total amount of Steel and C-22 reduced to 20 moles each for a more    |
|realistic proportion of materials contacting 1L of water              |
|----------------------------------------------------------------------|
| calculational mode   |*normal     | economy           | super economy|
|----------------------------------------------------------------------|
| model type           |*titration  | closed            | open         |
|----------------------------------------------------------------------|
| temperature model    |*power      | fluid mixing                     |
|----------------------------------------------------------------------|
c power model  -->   temp = tstart + tk1*zi + tk2*zi**2 + tk3*zi**3    |
c mixing model -->   temp = (tstart * tk1 + zi*tk2) / (zi + tk1)       |
c---------------------------------------------------------------------|
| tstart(c)|  25.00    |tk1| 0.0000    |tk2| 0.0000    |tk3| 0.0000    |
|----------------------------------------------------------------------|
| starting value of zi | 0.27140    |max. value of zi    | 1.00000E+38 |
|----------------------------------------------------------------------|
| starting time (sec)  | 2.71089E+08|max. time (sec)     | 1.00000E+38 |
|----------------------------------------------------------------------|
| max. steps           |       400  |max. steps w/o print|       150   |
|----------------------------------------------------------------------|
| linear print interval|  10.000    |log print interval  | 1.00000E+38 |
|----------------------------------------------------------------------|
| suppress mineral phases                                              |
|----------------------------------------------------------------------|
| phases w/ elements|                         |                         |n
| phases except     |                         |                         |n
|----------------------------------------------------------------------|
| fixed fugacity phases- species, moles(per kg h2o), log fugacity(bars)|
|----------------------------------------------------------------------|
| CO2(g)                              | 0.00000        | -3.5000        |n
| O2(g)                               | 0.00000        |-0.67780        |n
|----------------------------------------------------------------------|
c                 R A T E     L A W S
c 1 = relative                  rate = rk1 + rk2*zi + (1/2)rk3*zi*zi
c 2 = transition state theory   rate = CHECK DOCUMENTATION
c 3 = specified rate            rate = CHECK DOCUMENTATION
c 4 = activity term rate        rate = CHECK DOCUMENTATION
c
c                 R E A C T A N T     T Y P E S
c mineral     solid solution     special    aqueous    gas
c
c                 S U R F A C E    T Y P E
c 0 = fixed surface area     1 = fixed specific surface area
c
c                 N O T E S
c status and jreac are normally not set by the user
```

```
|-----------------------------------------------------------------------|
| reactants   (ss) solid solution only     (sp) special reactant only   |
|-----------------------------------------------------------------------|
| REACTANT          | carbon steel                |status    | 0          |
| moles remaining   |  19.729                     |destroyed| 0.27109     |
| reactant type     |  special                    |sk        |  100.00    |
| surface type      |   0                         |fk        |  1.0000    |
| end-member        |                             |mole fr   |            |ss,n
| volume            | 0.00000                     |          |            |sp
| element           | C            |moles         |  2.190000000000000E-02 |sp,n
| element           | Mn           |moles         |  1.030000000000000E-02 |sp,n
| element           | S            |moles         |  8.530000000000000E-04 |sp,n
| element           | Si           |moles         |  5.360000000000000E-03 |sp,n
| element           | P            |moles         |  7.060000000000000E-04 |sp,n
| element           | Fe           |moles         |  9.610000000000000E-01 |sp,n
| DISSOLUTION LAW   |    3                        |          |            |
| rate constant rk1| 1.00000E-11                  |csigma1   |            |
| temperature (c)   |   25.000                    |          |            |234
| PRECIPITATION LAW|    0                         |          |            |
c-----------------------------------------------------------------------|
| REACTANT          | Alloy-22                    |status    | 0          |
| moles remaining   |  20.000                     |destroyed| 3.06331E-04 |
| reactant type     |  special                    |sk        |  100.00    |
| surface type      |   0                         |fk        |  1.0000    |
| end-member        |                             |mole fr   |            |ss,n
| volume            | 0.00000                     |          |            |sp
| element           | Cr           |moles         |  2.561060000000000E-01 |sp,n
| element           | Fe           |moles         |  5.420400000000000E-02 |sp,n
| element           | Ni           |moles         |  5.681220000000000E-01 |sp,n
| element           | Mo           |moles         |  1.009620000000000E-01 |sp,n
| element           | V            |moles         |  4.160000000000000E-03 |sp,n
| element           | Mn           |moles         |  5.510000000000000E-03 |sp,n
| DISSOLUTION LAW   |    3                        |          |            |
| rate constant rk1| 1.13000E-14                  |csigma1   |            |
| temperature (c)   |   25.000                    |          |            |234
| PRECIPITATION LAW|    0                         |          |            |
|-----------------------------------------------------------------------|
| options                                                               |
|-----------------------------------------------------------------------|
| - SOLID SOLUTIONS -                                                   |
|     ignore solid solutions                                            |
|   * process solid solutions                                           |
| - LOADING OF SPECIES INTO MEMORY -                                    |
|   * don't print                                                       |
|     lists species loaded into memory                                  |
| - LIST DERIVATIVES OF BASIS ELEMENTS AT EACH PRINT POINT -            |
|   * don't print                                                       |
|     print                                                             |
| - LIST ALL SPECIES LOADED INTO MEMORY AND THEIR LOG K VALUES -        |
|   * don't print                                                       |
|     print                                                             |
| - LIST DISTRIBUTION OF AQUEOUS SPECIES AT EACH PRINT POINT -          |
|   * only species > 10**-12 molal                                      |
|     all species                                                       |
|     don't print                                                       |
| - LIST CATION/H+ ACTIVITY RATIOS AT EACH PRINT POINT -                |
|   * don't print                                                       |
|     print                                                             |
| - LIST BULK ELEMENT AND OXIDE COMPOSITION AT EACH PRINT POINT -       |
|   * don't print                                                       |
|     print                                                             |
| - MINERAL SATURATION STATES -                                         |
|   * print if affinity > -10 kcals                                     |
```

```
|     print all                                                          |
|     don't print                                                        |
| - LIST GAS SPECIES SUMMARY AT EACH PRINT POINT -                       |
|     don't print                                                        |
|   * print                                                              |
| - PRINT AQUEOUS MASS AND CONCENTRATION TOTALS -                        |
|   * don't print                                                        |
|     print                                                              |
| - TAB FILES -                                                          |
|   * write                                                              |
|     append to previous tabx file                                       |
|     don't write                                                        |
| - WRITE PICKUP FILE -                                                  |
|     write pickup file at end of run                                    |
|     don't write pickup file                                            |
|   * write pickup file for each print point                             |
| - PHYSICALLY REMOVED SUBSYSTEM -                                       |
|   * does nothing                                                       |
|     transfer minerals but leave trivial mass in the system             |
|     transfer minerals                                                  |
| - CLEAR INITIAL PHYSICALLY REMOVED SUBSYSTEM -                         |
|   * does nothing                                                       |
|     clear p.r.s. before first reaction progress advance                |
| - PHASE BOUNDARY SEARCH -                                              |
|   * step size constrained by predicted phase boundaries                |
|     phase boundaries estimated from Taylor's series and printed        |
|     locations of phase boundaries ignored                              |
| - AUTO BASIS SWITCHING -                                               |
|   * off                                                                |
|     on                                                                 |
| - SUPPRESS REDOX REACTIONS -                                           |
|   * does nothing                                                       |
|     suppress all redox reactions                                       |
| - LINEAR OR LOGARITHMIC TAYLOR'S SERIES -                              |
|   * linear for kcol = 1,kdim, logarithmic for kcol = 1,kbt             |
|     logarithmic for kcol = 1,kbt                                       |
|     linear for kcol = 1,kdim                                           |
| - AZERO AND HYDRATION NUMBERS -                                        |
|   * no change                                                          |
|     read in new azero and hydration numbers                            |
| - PRINT MEAN MOLAL ACTIVITY COEFFICIENTS FOR DISSOLVED SPECIES -       |
|   * does nothing                                                       |
|     print                                                              |
| - PITZER DATABASE INFORMATION -                                        |
|   * print only warnings                                                |
|     print species in model and number of Pitzer coefficients           |
|     print species in model and names of Pitzer coefficients            |
| - PRINT DIAGNOSTIC MESSAGES -                                          |
|   * don't print                                                        |
|     print level 1 messages                                             |
|     print level 2 messages                                             |
| - PRINT PRE-NEWTON-RAPHSON OPTIMIZATION -                              |
|   * don't print                                                        |
|     print summary information                                          |
|     print detailed information                                         |
| - PRINT STEP SIZE AND ORDER -                                          |
|   * don't print                                                        |
|     print scale factor                                                 |
|     print orders and step size scaling factors                         |
| - CONTROL STEP SIZE AND ORDER PRINT -                                  |
|   * does nothing                                                       |
|     print step size and order when delzi .le. dlzmx1                   |
| - NEWTON ITERATIONS -                                                  |
```

```
|   * don't print                                                          |
|     print summary of newton iterations                                   |
|     print summary, residual functions and correction terms               |
|     print summary, residual functions, correction terms and matrix       |
| - PRINT SEARCH ITERATIONS -                                              |
|   * don't print                                                          |
|     print                                                                |
| - PRINT HPSAT ITERATIONS -                                               |
|   * don't print                                                          |
|     print                                                                |
| - PRINT FINITE DIFFERENCE AND DERIVATIVE DATA -                          |
|   * don't print                                                          |
|     print computations from RDERIV, and RTAYLR                           |
|     print computations from RDERIV, RTAYLR, DERIV and TAYLOR             |
| - PRINT KINETICS DIAGNOSTIC MESSAGES -                                   |
|   * don't print                                                          |
|     print level 1 diagnostics                                            |
|     print level 1 and level 2 diagnostics                                |
| - PRINT AKMATR -                                                         |
|   * don't print                                                          |
|     print level 1 diagnostics                                            |
| - KILL ITERATION VARIABLES -                                             |
|   * does nothing                                                         |
|     allow selection of variables to remove                               |
|--------------------------------------------------------------------------|
| development options  (used for code development)                         |
|--------------------------------------------------------------------------|
|    0 check finite difference and Taylor series expression                |
|    0 check reaction rate finite difference and Taylor series             |
|--------------------------------------------------------------------------|
| tolerances                        desired values - defaults info-only    |
|--------------------------------------------------------------------------|
| number of N-R iterations         |        90        |  90      itermx   |
| p.r.s. transfer interval         | 1.00000E+38      |  varies  dlzidp   |
| residual magnitude               | 1.00000E-06      |  1.0e-06 tolbt    |
| correction magnitude             | 1.00000E-06      |  1.0e-06 toldl    |
| search/find tolerance            | 1.00000E-06      |  varies  tolx     |
| supersaturation                  | 5.00000E-03      |  varies  tolsat   |
| supersaturation set size         | 1.00000E-02      |  varies  tolsst   |
| max. size Taylor's series term   | 1.00000E-04      |  1.0e-04 screw1   |
| max. initial value betamx        |                  |  n/a     screw2   |
| max. Taylor's series term (kin.)| 1.00000E-04      |  1.0e-04 screw3   |
| corrector iteration              | 1.00000E-04      |  1.0e-04 screw4   |
| max. size of N-R correction term|  4.0000          |  4.0     screw5   |
| step size (economy mode)         |  4.0000          |  4.0     screw6   |
| log mass of phases               | -6.0000          |  varies  zklogu   |
| decrement mass (p.r.s.)          |  2.0000          |  2.0     zklogl   |
| min. left after p.r.s.           | 0.80000          |  .98     zkfac    |
| initial step size                | 1.00000E-09      |  varies  dlzmx1   |
| upper limit step size            | 1.00000E+38      |  varies  dlzmx2   |
| maximum order                    |         6        |  6       nordlm   |
| num. attempted assemblages       |        25        |  25      ntrymx   |
| slide -> over phase bound.       |        12        |  8       npslmx   |
| slide -> over redox insta.       |         8        |  3       nsslmx   |
| fo2 scan control                 |                  |  none    ioscan   |
|--------------------------------------------------------------------------|
c pickup file written by eq6.7.2bR137                                      |
c supported by eqlib.7.2bR168                                              |
|EQ6 input file name= j13_All-22.6i.txt                                    |
|Description= React J-13 water with Carbon Steel and Alloy-22.             |
|Equilibrium with atmospheric gases.                                       |
|Version level= 7.2                                                        |
|Created 01/19/99    Creator= D.H. Lester                                  |
```

```
|Revised             Revisor=                                            |
|                                                                        |
|Water from well J-13 at the Nevada Test site                            |
|                                                                        |
|Purpose: To model reaction with carbon steel (iron) and alloy C-22      |
|simultaneously to determine an expected Cr concentration in the water   |
|corroding the C-22 after breaching the CAM.                             |
|                                                                        |
|It is assumed that a significant amount of carbon steel is still        |
|present. The rate constant for the steel was assumed to be 1.0E-11      |
|which is the higher value suggested in simulation studies at LLNL.      |
|Reference: Eng. Barrier System & Near Field Envir. Perf. Assess.,       |
|FY-96 Activities: End-of-Year Summary, Sept 1996, Wm.G.Halsey, "Report|
|on Initial Simulation of Water Interaction With Mild Steel Containers   |
|Rate for C-22 is the median value for dripping at high temp. in the     |
|TSPA simulations for the VA document.                                   |
|The data base was modified to add the solid KFe(CrO4)2:2H2O             |
|Total amount of Steel and C-22 reduced to 20 moles each for a more      |
|realistic proportion of materials contacting 1L of water                |
|------------------------------------------------------------------------|
| temperature (C)                    |     25.000                        |
|------------------------------------------------------------------------|
| electrical imbalance               |   5.752163835343278E-14           |
|------------------------------------------------------------------------|
| number of aqueous master species   |     38                            |
|------------------------------------------------------------------------|
| position of last pure mineral      |     46                            |
|------------------------------------------------------------------------|
| position of last solid solution    |     58                            |
|------------------------------------------------------------------------|
| suppressed species     (suppress,replace,augmentk,augmentg)  value     |
|------------------------------------------------------------------------|
| Phlogopite               | mineral        | suppress |  0.00000        |
| Annite                   | mineral        | suppress |  0.00000        |
| Clinochlore-14A          | mineral        | suppress |  0.00000        |
| Daphnite-14A             | mineral        | suppress |  0.00000        |
| Clinozoisite             | mineral        | suppress |  0.00000        |
| Epidote                  | mineral        | suppress |  0.00000        |
| Epidote-ord              | mineral        | suppress |  0.00000        |
| Andradite                | mineral        | suppress |  0.00000        |
| Grossular                | mineral        | suppress |  0.00000        |
| Enstatite                | mineral        | suppress |  0.00000        |
| Ferrosilite              | mineral        | suppress |  0.00000        |
| Pyrite                   | mineral        | suppress |  0.00000        |
| Pyrrhotite               | mineral        | suppress |  0.00000        |
| Troilite                 | mineral        | suppress |  0.00000        |
| Alabandite               | mineral        | suppress |  0.00000        |
| Brezinaite               | mineral        | suppress |  0.00000        |
| Chalcocite               | mineral        | suppress |  0.00000        |
| Covellite                | mineral        | suppress |  0.00000        |
| Millerite                | mineral        | suppress |  0.00000        |
| Polydymite               | mineral        | suppress |  0.00000        |
| Vaesite                  | mineral        | suppress |  0.00000        |
| Heazlewoodite            | mineral        | suppress |  0.00000        |
| Galena                   | mineral        | suppress |  0.00000        |
| Sulfur                   | mineral        | suppress |  0.00000        |
| CaZrO3                   | mineral        | suppress |  0.00000        |
| BaZrO3                   | mineral        | suppress |  0.00000        |
| SrZrO3                   | mineral        | suppress |  0.00000        |
| U2S3                     | mineral        | suppress |  0.00000        |
| U3S5                     | mineral        | suppress |  0.00000        |
| US2                      | mineral        | suppress |  0.00000        |
| US3                      | mineral        | suppress |  0.00000        |
```

```
| US                        | mineral         | suppress |  0.00000      |
| US1.9                     | mineral         | suppress |  0.00000      |
| U3P4                      | mineral         | suppress |  0.00000      |
| UP                        | mineral         | suppress |  0.00000      |
| UP2                       | mineral         | suppress |  0.00000      |
| HS-                       | aqueous         | suppress |  0.00000      |
| H2S(aq)                   | aqueous         | suppress |  0.00000      |
| S--                       | aqueous         | suppress |  0.00000      |
|-------------------------------------------------------------------------|
| iopg options                                                            |
|-------------------------------------------------------------------------|
| - pH SCALE CONVENTION -                                                 |
|    * modified NBS                                                       |
|      internal                                                           |
|      rational                                                           |
| - ACTIVITY COEFFICIENT OPTIONS -                                        |
|    * use B-dot equation                                                 |
|      Davies' equation                                                   |
|      Pitzer's equations                                                 |
|-------------------------------------------------------------------------|
| elements, moles and moles aqueous                                       |
|-------------------------------------------------------------------------|
| O                         |  4.005551824589011E+04 |  5.551482895591004E+01 |
| Al                        |  1.482500000694482E-06 |  1.110258129364863E-12 |
| B                         |  1.238799999942330E-05 |  1.238799999942331E-05 |
| Ba                        |  1.000000000006594E-10 |  1.000000000006595E-10 |
| Ca                        |  3.243700000162714E-04 |  5.198041421433696E-06 |
| Ce                        |  1.000000000975802E-24 |  1.000000000975800E-24 |
| Cl                        |  2.014000000000269E-04 |  2.013999999561610E-04 |
| Cr                        |  7.879797208352138E-05 |  7.879797208352138E-05 |
| Cs                        |  1.000000000000039E-10 |  1.000000000000040E-10 |
| Cu                        |  1.050000000528221E-14 |  1.050000000528220E-14 |
| F                         |  1.147500000001528E-04 |  5.093619397831708E-05 |
| Fe                        |  2.605332167729567E-01 |  1.196885075191275E-12 |
| Gd                        |  1.000000001150365E-14 |  1.000000001150367E-14 |
| H                         |  1.110188738405208E+02 |  1.110188648556790E+02 |
| C                         |  1.000000792715379E+04 |  8.313482342156550E-04 |
| P                         |  1.926599952888817E-04 |  1.218577091777553E-06 |
| K                         |  1.289100000000803E-04 |  1.288197397482220E-04 |
| La                        |  1.000000000980088E-14 |  1.000000000980085E-14 |
| Li                        |  1.000000000000469E-10 |  1.000000000000467E-10 |
| Mg                        |  8.269900000408464E-05 |  8.217158995036076E-05 |
| Mn                        |  2.793905476135080E-03 |  2.034420858418739E-16 |
| Mo                        |  3.092785691235798E-05 |  3.092785691235803E-05 |
| N                         |  1.420000000000891E-04 |  1.420000000000890E-04 |
| Na                        |  1.992200000002518E-03 |  1.992068438442706E-03 |
| Nd                        |  1.000000000990082E-14 |  1.000000000990079E-14 |
| Ni                        |  1.740332918203150E-04 |  7.783098656893098E-08 |
| Pb                        |  1.000000000003566E-10 |  9.978067185222114E-11 |
| Pu                        |  1.000000001138469E-14 |  1.000000001138467E-14 |
| S                         |  4.227789910580571E-04 |  4.227789910580572E-04 |
| Si                        |  2.469937505296203E-03 |  1.021732346027619E-04 |
| Sm                        |  1.000000000991962E-14 |  1.000000000991958E-14 |
| Sr                        |  1.000000000034016E-10 |  1.000000000034015E-10 |
| Ti                        |  1.000000000000003E-10 |  1.000000000000003E-10 |
| U                         |  9.999999988006304E-15 |  9.999999988006270E-15 |
| V                         |  1.274555579281303E-06 |  1.274555579281306E-06 |
| Zn                        |  1.000000000089305E-10 |  1.000000000089304E-10 |
| Zr                        |  1.000000000323548E-20 |  1.000000000323541E-20 |
|-------------------------------------------------------------------------|
| master species and logarithmic basis variables                          |
|-------------------------------------------------------------------------|
| H2O                       | H2O                     |  1.744363443262469E+00 |
```

Al+++	Al+++	-2.167815076713803E+01
B(OH)3(aq)	B(OH)3(aq)	-4.946708357763080E+00
Ba++	Ba++	-1.000127943437775E+01
Ca++	Ca++	-5.306008926002066E+00
Ce+++	Ce+++	-2.632166115279938E+01
Cl-	Cl-	-3.696089789979123E+00
CrO4--	CrO4--	-4.110643448456323E+00
Cs+	Cs+	-1.000005636057790E+01
Cu++	Cu++	-1.567081112814687E+01
F-	F-	-4.293657492174066E+00
Fe++	Fe++	-2.383595071867894E+01
Gd+++	Gd+++	-1.672766406971958E+01
H+	H+	-8.173210654584506E+00
HCO3-	HCO3-	-3.091266410649751E+00
HPO4--	HPO4--	-5.976940703929634E+00
K+	K+	-3.891093196131502E+00
La+++	La+++	-1.595918695972800E+01
Li+	Li+	-1.000083842000520E+01
Mg++	Mg++	-4.118952121297427E+00
Mn++	Mn++	-1.594290071867894E+01
MoO4--	MoO4--	-4.509650172573060E+00
NO3-	NH3(aq)	-3.847720273152799E+00
Na+	Na+	-2.702133936859551E+00
Nd+++	Nd+++	-1.640244415868485E+01
Ni++	Ni++	-7.123850718678938E+00
Pb++	Pb++	-1.000331832462872E+01
Pu++++	Pu++++	-4.115285406484065E+01
SO4--	SO4--	-3.384165584500645E+00
SiO2(aq)	SiO2(aq)	-3.999295540264515E+00
Sm+++	Sm+++	-1.661209578017261E+01
Sr++	Sr++	-1.002357436623374E+01
Ti(OH)4(aq)	Ti(OH)4(aq)	-9.999999999999998E+00
UO2++	UO2++	-2.070662064549096E+01
VO++	VO++	-2.826310313321262E+01
Zn++	Zn++	-1.006832039296183E+01
Zr(OH)2++	Zr(OH)2++	-3.506373141277022E+01
O2(g)	O2(g)	-6.778000000000000E-01
	Fluorapatite	-4.195085352149469E+00
	Hematite	-8.851818714677892E-01
	Ni2SiO4	-4.060591928934285E+00
	Pyrolusite	-2.553788291094940E+00
	Pyromorphite	-1.335787563259715E+01
	Quartz	-2.645066157028355E+00
	fix CO2(g)	4.000000308166810E+00
	fix O2(g)	3.999991035091765E+00
Smectite-di	Beidellite-Ca	-4.221814523362054E+01
Smectite-di	Beidellite-K	-4.257621427150434E+01
Smectite-di	Beidellite-Mg	-4.150883544291527E+01
Smectite-di	Beidellite-Na	-4.241258179862911E+01
Smectite-di	Montmor-Ca	-3.005443949761980E+01
Smectite-di	Montmor-K	-3.019947823247330E+01
Smectite-di	Montmor-Mg	-2.913422061600544E+01
Smectite-di	Montmor-Na	-3.004675485050715E+01
Smectite-di	Nontronite-Ca	-6.204948360972214E+00
Smectite-di	Nontronite-K	-6.563017398856010E+00
Smectite-di	Nontronite-Mg	-5.495335539963926E+00
Smectite-di	Nontronite-Na	-6.399384925980784E+00

physically removed subsystem (solid solution, mineral, moles)		
none		

```
|EQ6 input file name= j13_All-22.6i.txt                                |
|Description= React J-13 water with Carbon Steel and Alloy-22.         |
|Equilibrium with atmospheric gases.                                   |
|Version level= 7.2                                                    |
|Created 01/19/99    Creator= D.H. Lester                              |
|Revised             Revisor=                                          |
|                                                                      |
|Water from well J-13 at the Nevada Test site                          |
|                                                                      |
|Purpose: To model reaction with carbon steel (iron) and alloy C-22    |
|simultaneously to determine an expected Cr concentration in the water |
|corroding the C-22 after breaching the CAM.                           |
|                                                                      |
|It is assumed that a significant amount of carbon steel is still      |
|present. The rate constant for the steel was assumed to be 1.0E-11    |
|which is the higher value suggested in simulation studies at LLNL.    |
|Reference: Eng. Barrier System & Near Field Envir. Perf. Assess.,     |
|FY-96 Activities: End-of-Year Summary, Sept 1996, Wm.G.Halsey, "Report|
|on Initial Simulation of Water Interaction With Mild Steel Containers |
|Rate for C-22 is the median value for dripping at high temp. in the   |
|TSPA simulations for the VA document.                                 |
|The data base was modified to add the solid KFe(CrO4)2:2H2O           |
|Total amount of Steel and C-22 reduced to 20 moles each for a more    |
|realistic proportion of materials contacting 1L of water              |
|----------------------------------------------------------------------|
| calculational mode   |*normal     | economy           | super economy|
|----------------------------------------------------------------------|
| model type           |*titration  | closed            | open         |
|----------------------------------------------------------------------|
| temperature model    |*power      | fluid mixing                     |
|----------------------------------------------------------------------|
c power model  -->   temp = tstart + tk1*zi + tk2*zi**2 + tk3*zi**3   |
c mixing model -->   temp = (tstart * tk1 + zi*tk2) / (zi + tk1)      |
c---------------------------------------------------------------------|
| tstart(c)|  25.00    |tk1| 0.0000    |tk2| 0.0000    |tk3| 0.0000   |
|----------------------------------------------------------------------|
| starting value of zi | 0.62941    |max. value of zi    | 1.00000E+38 |
|----------------------------------------------------------------------|
| starting time (sec)  | 6.28700E+08|max. time (sec)     | 1.00000E+38 |
|----------------------------------------------------------------------|
| max. steps           |       400  |max. steps w/o print|       150   |
|----------------------------------------------------------------------|
| linear print interval|  10.000    |log print interval  | 1.00000E+38 |
|----------------------------------------------------------------------|
| suppress mineral phases                                              |
|----------------------------------------------------------------------|
| phases w/ elements|                          |                          |n
| phases except     |                          |                          |n
|----------------------------------------------------------------------|
| fixed fugacity phases- species, moles(per kg h2o), log fugacity(bars)|
|----------------------------------------------------------------------|
| CO2(g)                              | 0.00000        | -3.5000        |n
| O2(g)                               | 0.00000        |-0.67780        |n
|----------------------------------------------------------------------|
c                  R A T E     L A W S
c 1 = relative                  rate = rk1 + rk2*zi + (1/2)rk3*zi*zi
c 2 = transition state theory   rate = CHECK DOCUMENTATION
c 3 = specified rate            rate = CHECK DOCUMENTATION
c 4 = activity term rate        rate = CHECK DOCUMENTATION
c
c                  R E A C T A N T     T Y P E S
c mineral     solid solution     special    aqueous    gas
c
```

```
c                  S U R F A C E    T Y P E
c 0 = fixed surface area     1 = fixed specific surface area
c
c                  N O T E S
c status and jreac are normally not set by the user
|-----------------------------------------------------------------------|
| reactants   (ss) solid solution only     (sp) special reactant only   |
|-----------------------------------------------------------------------|
| REACTANT          | carbon steel              |status    | 0            |
| moles remaining   |  19.371                   |destroyed| 0.62870       |
| reactant type     |  special                  |sk        |  100.00      |
| surface type      |   0                       |fk        |  1.0000      |
| end-member        |                           |mole fr   |              |ss,n
| volume            | 0.00000                   |          |              |sp
| element           | C            |moles       |  2.190000000000000E-02 |sp,n
| element           | Mn           |moles       |  1.030000000000000E-02 |sp,n
| element           | S            |moles       |  8.530000000000000E-04 |sp,n
| element           | Si           |moles       |  5.360000000000000E-03 |sp,n
| element           | P            |moles       |  7.060000000000000E-04 |sp,n
| element           | Fe           |moles       |  9.610000000000000E-01 |sp,n
| DISSOLUTION LAW   |    3                      |          |              |
| rate constant rk1| 1.00000E-11                |csigma1   |              |
| temperature (c)   |   25.000                  |          |              |234
| PRECIPITATION LAW|    0                       |          |              |
c-----------------------------------------------------------------------|
| REACTANT          | Alloy-22                  |status    | 0            |
| moles remaining   |  19.999                   |destroyed| 7.10431E-04   |
| reactant type     |  special                  |sk        |  100.00      |
| surface type      |   0                       |fk        |  1.0000      |
| end-member        |                           |mole fr   |              |ss,n
| volume            | 0.00000                   |          |              |sp
| element           | Cr           |moles       |  2.561060000000000E-01 |sp,n
| element           | Fe           |moles       |  5.420400000000000E-02 |sp,n
| element           | Ni           |moles       |  5.681220000000000E-01 |sp,n
| element           | Mo           |moles       |  1.009620000000000E-01 |sp,n
| element           | V            |moles       |  4.160000000000000E-03 |sp,n
| element           | Mn           |moles       |  5.510000000000000E-03 |sp,n
| DISSOLUTION LAW   |    3                      |          |              |
| rate constant rk1| 1.13000E-14                |csigma1   |              |
| temperature (c)   |   25.000                  |          |              |234
| PRECIPITATION LAW|    0                       |          |              |
|-----------------------------------------------------------------------|
| options                                                               |
|-----------------------------------------------------------------------|
| - SOLID SOLUTIONS -                                                   |
|     ignore solid solutions                                            |
|   * process solid solutions                                           |
| - LOADING OF SPECIES INTO MEMORY -                                    |
|   * don't print                                                       |
|     lists species loaded into memory                                  |
| - LIST DERIVATIVES OF BASIS ELEMENTS AT EACH PRINT POINT -            |
|   * don't print                                                       |
|     print                                                             |
| - LIST ALL SPECIES LOADED INTO MEMORY AND THEIR LOG K VALUES -        |
|   * don't print                                                       |
|     print                                                             |
| - LIST DISTRIBUTION OF AQUEOUS SPECIES AT EACH PRINT POINT -          |
|   * only species > 10**-12 molal                                      |
|     all species                                                       |
|     don't print                                                       |
| - LIST CATION/H+ ACTIVITY RATIOS AT EACH PRINT POINT -                |
|   * don't print                                                       |
|     print                                                             |
```

```
| - LIST BULK ELEMENT AND OXIDE COMPOSITION AT EACH PRINT POINT -      |
|   * don't print                                                      |
|     print                                                            |
| - MINERAL SATURATION STATES -                                        |
|   * print if affinity > -10 kcals                                    |
|     print all                                                        |
|     don't print                                                      |
| - LIST GAS SPECIES SUMMARY AT EACH PRINT POINT -                     |
|     don't print                                                      |
|   * print                                                            |
| - PRINT AQUEOUS MASS AND CONCENTRATION TOTALS -                      |
|   * don't print                                                      |
|     print                                                            |
| - TAB FILES -                                                        |
|   * write                                                            |
|     append to previous tabx file                                     |
|     don't write                                                      |
| - WRITE PICKUP FILE -                                                |
|     write pickup file at end of run                                  |
|     don't write pickup file                                          |
|   * write pickup file for each print point                           |
| - PHYSICALLY REMOVED SUBSYSTEM -                                     |
|   * does nothing                                                     |
|     transfer minerals but leave trivial mass in the system           |
|     transfer minerals                                                |
| - CLEAR INITIAL PHYSICALLY REMOVED SUBSYSTEM -                       |
|   * does nothing                                                     |
|     clear p.r.s. before first reaction progress advance              |
| - PHASE BOUNDARY SEARCH -                                            |
|   * step size constrained by predicted phase boundaries              |
|     phase boundaries estimated from Taylor's series and printed      |
|     locations of phase boundaries ignored                            |
| - AUTO BASIS SWITCHING -                                             |
|   * off                                                              |
|     on                                                               |
| - SUPPRESS REDOX REACTIONS -                                         |
|   * does nothing                                                     |
|     suppress all redox reactions                                     |
| - LINEAR OR LOGARITHMIC TAYLOR'S SERIES -                            |
|   * linear for kcol = 1,kdim, logarithmic for kcol = 1,kbt           |
|     logarithmic for kcol = 1,kbt                                     |
|     linear for kcol = 1,kdim                                         |
| - AZERO AND HYDRATION NUMBERS -                                      |
|   * no change                                                        |
|     read in new azero and hydration numbers                          |
| - PRINT MEAN MOLAL ACTIVITY COEFFICIENTS FOR DISSOLVED SPECIES -     |
|   * does nothing                                                     |
|     print                                                            |
| - PITZER DATABASE INFORMATION -                                      |
|   * print only warnings                                              |
|     print species in model and number of Pitzer coefficients         |
|     print species in model and names of Pitzer coefficients          |
| - PRINT DIAGNOSTIC MESSAGES -                                        |
|   * don't print                                                      |
|     print level 1 messages                                           |
|     print level 2 messages                                           |
| - PRINT PRE-NEWTON-RAPHSON OPTIMIZATION -                            |
|   * don't print                                                      |
|     print summary information                                        |
|     print detailed information                                       |
| - PRINT STEP SIZE AND ORDER -                                        |
|   * don't print                                                      |
|     print scale factor                                               |
```

```
|     print orders and step size scaling factors                          |
| - CONTROL STEP SIZE AND ORDER PRINT -                                   |
|   * does nothing                                                        |
|     print step size and order when delzi .le. dlzmx1                    |
| - NEWTON ITERATIONS -                                                   |
|   * don't print                                                         |
|     print summary of newton iterations                                  |
|     print summary, residual functions and correction terms              |
|     print summary, residual functions, correction terms and matrix      |
| - PRINT SEARCH ITERATIONS -                                             |
|   * don't print                                                         |
|     print                                                               |
| - PRINT HPSAT ITERATIONS -                                              |
|   * don't print                                                         |
|     print                                                               |
| - PRINT FINITE DIFFERENCE AND DERIVATIVE DATA -                         |
|   * don't print                                                         |
|     print computations from RDERIV, and RTAYLR                          |
|     print computations from RDERIV, RTAYLR, DERIV and TAYLOR            |
| - PRINT KINETICS DIAGNOSTIC MESSAGES -                                  |
|   * don't print                                                         |
|     print level 1 diagnostics                                           |
|     print level 1 and level 2 diagnostics                               |
| - PRINT AKMATR -                                                        |
|   * don't print                                                         |
|     print level 1 diagnostics                                           |
| - KILL ITERATION VARIABLES -                                            |
|   * does nothing                                                        |
|     allow selection of variables to remove                              |
|-------------------------------------------------------------------------|
| development options  (used for code development)                        |
|-------------------------------------------------------------------------|
|    0 check finite difference and Taylor series expression               |
|    0 check reaction rate finite difference and Taylor series            |
|-------------------------------------------------------------------------|
| tolerances                        desired values - defaults info-only   |
|-------------------------------------------------------------------------|
| number of N-R iterations        |        90        |  90      itermx  |
| p.r.s. transfer interval        | 1.00000E+38      |  varies  dlzidp  |
| residual magnitude              | 1.00000E-06      |  1.0e-06 tolbt   |
| correction magnitude            | 1.00000E-06      |  1.0e-06 toldl   |
| search/find tolerance           | 1.00000E-06      |  varies  tolx    |
| supersaturation                 | 5.00000E-03      |  varies  tolsat  |
| supersaturation set size        | 1.00000E-02      |  varies  tolsst  |
| max. size Taylor's series term  | 1.00000E-04      |  1.0e-04 screw1  |
| max. initial value betamx       |                  |  n/a     screw2  |
| max. Taylor's series term (kin.)| 1.00000E-04      |  1.0e-04 screw3  |
| corrector iteration             | 1.00000E-04      |  1.0e-04 screw4  |
| max. size of N-R correction term|  4.0000          |  4.0     screw5  |
| step size (economy mode)        |  4.0000          |  4.0     screw6  |
| log mass of phases              | -6.0000          |  varies  zklogu  |
| decrement mass (p.r.s.)         |  2.0000          |  2.0     zklogl  |
| min. left after p.r.s.          | 0.80000          |  .98     zkfac   |
| initial step size               | 1.00000E-09      |  varies  dlzmx1  |
| upper limit step size           | 1.00000E+38      |  varies  dlzmx2  |
| maximum order                   |         6        |  6       nordlm  |
| num. attempted assemblages      |        25        |  25      ntrymx  |
| slide -> over phase bound.      |        12        |  8       npslmx  |
| slide -> over redox insta.      |         8        |  3       nsslmx  |
| fo2 scan control                |                  |  none    ioscan  |
|-------------------------------------------------------------------------|
c pickup file written by eq6.7.2bR137                                     |
c supported by eqlib.7.2bR168                                             |
```

```
|EQ6 input file name= j13_All-22.6i.txt                                |
|Description= React J-13 water with Carbon Steel and Alloy-22.         |
|Equilibrium with atmospheric gases.                                   |
|Version level= 7.2                                                    |
|Created 01/19/99    Creator= D.H. Lester                              |
|Revised             Revisor=                                          |
|                                                                      |
|Water from well J-13 at the Nevada Test site                          |
|                                                                      |
|Purpose: To model reaction with carbon steel (iron) and alloy C-22    |
|simultaneously to determine an expected Cr concentration in the water |
|corroding the C-22 after breaching the CAM.                           |
|                                                                      |
|It is assumed that a significant amount of carbon steel is still      |
|present. The rate constant for the steel was assumed to be 1.0E-11    |
|which is the higher value suggested in simulation studies at LLNL.    |
|Reference: Eng. Barrier System & Near Field Envir. Perf. Assess.,     |
|FY-96 Activities: End-of-Year Summary, Sept 1996, Wm.G.Halsey, "Report|
|on Initial Simulation of Water Interaction With Mild Steel Containers |
|Rate for C-22 is the median value for dripping at high temp. in the   |
|TSPA simulations for the VA document.                                 |
|The data base was modified to add the solid KFe(CrO4)2:2H2O           |
|Total amount of Steel and C-22 reduced to 20 moles each for a more    |
|realistic proportion of materials contacting 1L of water              |
|----------------------------------------------------------------------|
| temperature (C)                    |     25.000                      |
|----------------------------------------------------------------------|
| electrical imbalance               |   5.752163835343278E-14         |
|----------------------------------------------------------------------|
| number of aqueous master species   |     38                          |
|----------------------------------------------------------------------|
| position of last pure mineral      |     45                          |
|----------------------------------------------------------------------|
| position of last solid solution    |     57                          |
|----------------------------------------------------------------------|
| suppressed species     (suppress,replace,augmentk,augmentg)  value   |
|----------------------------------------------------------------------|
| Phlogopite               | mineral        | suppress |  0.00000      |
| Annite                   | mineral        | suppress |  0.00000      |
| Clinochlore-14A          | mineral        | suppress |  0.00000      |
| Daphnite-14A             | mineral        | suppress |  0.00000      |
| Clinozoisite             | mineral        | suppress |  0.00000      |
| Epidote                  | mineral        | suppress |  0.00000      |
| Epidote-ord              | mineral        | suppress |  0.00000      |
| Andradite                | mineral        | suppress |  0.00000      |
| Grossular                | mineral        | suppress |  0.00000      |
| Enstatite                | mineral        | suppress |  0.00000      |
| Ferrosilite              | mineral        | suppress |  0.00000      |
| Pyrite                   | mineral        | suppress |  0.00000      |
| Pyrrhotite               | mineral        | suppress |  0.00000      |
| Troilite                 | mineral        | suppress |  0.00000      |
| Alabandite               | mineral        | suppress |  0.00000      |
| Brezinaite               | mineral        | suppress |  0.00000      |
| Chalcocite               | mineral        | suppress |  0.00000      |
| Covellite                | mineral        | suppress |  0.00000      |
| Millerite                | mineral        | suppress |  0.00000      |
| Polydymite               | mineral        | suppress |  0.00000      |
| Vaesite                  | mineral        | suppress |  0.00000      |
| Heazlewoodite            | mineral        | suppress |  0.00000      |
| Galena                   | mineral        | suppress |  0.00000      |
| Sulfur                   | mineral        | suppress |  0.00000      |
| CaZrO3                   | mineral        | suppress |  0.00000      |
| BaZrO3                   | mineral        | suppress |  0.00000      |
```

SrZrO3	mineral	suppress	0.00000
U2S3	mineral	suppress	0.00000
U3S5	mineral	suppress	0.00000
US2	mineral	suppress	0.00000
US3	mineral	suppress	0.00000
US	mineral	suppress	0.00000
US1.9	mineral	suppress	0.00000
U3P4	mineral	suppress	0.00000
UP	mineral	suppress	0.00000
UP2	mineral	suppress	0.00000
HS-	aqueous	suppress	0.00000
H2S(aq)	aqueous	suppress	0.00000
S--	aqueous	suppress	0.00000

```
iopg options

- pH SCALE CONVENTION -
    * modified NBS
      internal
      rational
- ACTIVITY COEFFICIENT OPTIONS -
    * use B-dot equation
      Davies' equation
      Pitzer's equations
```

elements, moles and moles aqueous

O	4.005551824589011E+04	5.551536287402664E+01
Al	1.482500000694482E-06	1.061693607037509E-11
B	1.238799999942330E-05	1.238799999942643E-05
Ba	1.000000000006594E-10	1.000000000006355E-10
Ca	3.243700000162714E-04	5.109105417595092E-06
Ce	1.000000000975802E-24	1.000000000342098E-24
Cl	2.014000000000269E-04	2.014000000000168E-04
Cr	1.822904343894060E-04	1.822904343703984E-04
Cs	1.000000000000039E-10	1.000000000000020E-10
Cu	1.050000000528221E-14	1.050000000331628E-14
F	1.147500000001528E-04	5.091841544368612E-05
Fe	6.042190179269430E-01	1.877488955409765E-12
Gd	1.000000001150365E-14	1.000000000395401E-14
H	1.110188738405208E+02	1.110188648557365E+02
C	1.000001575882844E+04	2.929827349538500E-05
P	4.451331602234040E-04	2.536384065039389E-04
K	1.289100000000803E-04	1.288176162865013E-04
La	1.000000000980088E-14	1.000000000367685E-14
Li	1.000000000000469E-10	9.999999999996648E-11
Mg	8.269900000408464E-05	8.217434764852094E-05
Mn	6.479522434339636E-03	2.787741305468708E-13
Mo	7.172661203456018E-05	7.172661203456022E-05
N	1.420000000000891E-04	1.420000000000784E-04
Na	1.992200000002518E-03	1.992065142664384E-03
Nd	1.000000000990082E-14	1.000000000315282E-14
Ni	4.036114534805016E-04	1.589610980288465E-04
Pb	1.000000000003566E-10	9.999999999829668E-11
Pu	1.000000001138469E-14	1.000000000285410E-14
S	7.278209311276714E-04	7.278209311175904E-04
Si	4.386730938793428E-03	1.002084382603477E-04
Sm	1.000000000991962E-14	1.000000000310270E-14
Sr	1.000000000034016E-10	9.999999999934010E-11
Ti	1.000000000000003E-10	1.000000000000003E-10
U	9.999999988006304E-15	9.999999983676888E-15
V	2.955612029315585E-06	2.955612029371471E-06
Zn	1.000000000089305E-10	1.000000000059331E-10

```
| Zr                        |  1.000000000323548E-20 |  1.000000000176959E-20 |
|-----------------------------------------------------------------------------|
| master species and logarithmic basis variables                              |
|-----------------------------------------------------------------------------|
| H2O                       | H2O                       |  1.744364485238364E+00 |
| Al+++                     | Al+++                     | -1.506049700044477E+01 |
| B(OH)3(aq)                | B(OH)3(aq)                | -4.907946713784964E+00 |
| Ba++                      | Ba++                      | -1.000040948793376E+01 |
| Ca++                      | Ca++                      | -5.322036346241934E+00 |
| Ce+++                     | Ce+++                     | -2.519148096529351E+01 |
| Cl-                       | Cl-                       | -3.696091440513105E+00 |
| CrO4--                    | CrO4--                    | -3.975078079297336E+00 |
| Cs+                       | Cs+                       | -1.000005549534141E+01 |
| Cu++                      | Cu++                      | -1.426996713627738E+01 |
| F-                        | F-                        | -4.294024212351940E+00 |
| Fe++                      | Fe++                      | -2.053448823065196E+01 |
| Gd+++                     | Gd+++                     | -1.589413280119369E+01 |
| H+                        | H+                        | -6.525811336438162E+00 |
| HCO3-                     | HCO3-                     | -4.732744170844322E+00 |
| HPO4--                    | HPO4--                    | -4.271239724996087E+00 |
| K+                        | K+                        | -3.891903401205177E+00 |
| La+++                     | La+++                     | -1.495159616282668E+01 |
| Li+                       | Li+                       | -1.000138278522414E+01 |
| Mg++                      | Mg++                      | -4.140680223990665E+00 |
| Mn++                      | Mn++                      | -1.264143823065197E+01 |
| MoO4--                    | MoO4--                    | -4.144319682331224E+00 |
| NO3-                      | NH3(aq)                   | -3.847846578857690E+00 |
| Na+                       | Na+                       | -2.702414429197410E+00 |
| Nd+++                     | Nd+++                     | -1.553346526501097E+01 |
| Ni++                      | Ni++                      | -3.822388230651965E+00 |
| Pb++                      | Pb++                      | -1.001878206247412E+01 |
| Pu++++                    | Pu++++                    | -4.217195378833716E+01 |
| SO4--                     | SO4--                     | -3.152610035511214E+00 |
| SiO2(aq)                  | SiO2(aq)                  | -3.999294498288620E+00 |
| Sm+++                     | Sm+++                     | -1.580601530889993E+01 |
| Sr++                      | Sr++                      | -1.003636784899572E+01 |
| Ti(OH)4(aq)               | Ti(OH)4(aq)               | -9.999999999999998E+00 |
| UO2++                     | UO2++                     | -1.837355383535054E+01 |
| VO++                      | VO++                      | -2.199400071682987E+01 |
| Zn++                      | Zn++                      | -1.002882968143689E+01 |
| Zr(OH)2++                 | Zr(OH)2++                 | -3.176163029948455E+01 |
| O2(g)                     | O2(g)                     | -6.778000000000000E-01 |
|                           | Fluorapatite              | -4.194964374502051E+00 |
|                           | Hematite                  | -5.198420630392642E-01 |
|                           | Ni2SiO4                   | -3.912484144590070E+00 |
|                           | Pyrolusite                | -2.188457002137921E+00 |
|                           | Quartz                    | -2.382191590727675E+00 |
|                           | fix     CO2(g)            |  4.000000683124278E+00 |
|                           | fix     O2(g)             |  3.999979208636645E+00 |
| Smectite-di               | Beidellite-Ca             | -3.216383888901044E+01 |
| Smectite-di               | Beidellite-K              | -3.251199184273424E+01 |
| Smectite-di               | Beidellite-Mg             | -3.145698866926595E+01 |
| Smectite-di               | Beidellite-Na             | -3.234771268114369E+01 |
| Smectite-di               | Montmor-Ca                | -2.664040297625973E+01 |
| Smectite-di               | Montmor-K                 | -2.677552562695323E+01 |
| Smectite-di               | Montmor-Mg                | -2.572264366560615E+01 |
| Smectite-di               | Montmor-Na                | -2.662215555627177E+01 |
| Smectite-di               | Nontronite-Ca             | -6.204765571094390E+00 |
| Smectite-di               | Nontronite-K              | -6.552918524818178E+00 |
| Smectite-di               | Nontronite-Mg             | -5.497612321046876E+00 |
| Smectite-di               | Nontronite-Na             | -6.388639363227644E+00 |
|-----------------------------------------------------------------------------|
| physically removed subsystem  (solid solution, mineral, moles)              |
```

```
|-----------------------------------------------------------------------|
| none                     |                          |                  |
|-----------------------------------------------------------------------|
|-----------------------------------------------------------------------|
|EQ6 input file name= j13_All-22.6i.txt                                 |
|Description= React J-13 water with Carbon Steel and Alloy-22.          |
|Equilibrium with atmospheric gases.                                    |
|Version level= 7.2                                                     |
|Created 01/19/99    Creator= D.H. Lester                               |
|Revised             Revisor=                                           |
|                                                                       |
|Water from well J-13 at the Nevada Test site                           |
|                                                                       |
|Purpose: To model reaction with carbon steel (iron) and alloy C-22     |
|simultaneously to determine an expected Cr concentration in the water  |
|corroding the C-22 after breaching the CAM.                            |
|                                                                       |
|It is assumed that a significant amount of carbon steel is still       |
|present. The rate constant for the steel was assumed to be 1.0E-11     |
|which is the higher value suggested in simulation studies at LLNL.     |
|Reference: Eng. Barrier System & Near Field Envir. Perf. Assess.,      |
|FY-96 Activities: End-of-Year Summary, Sept 1996, Wm.G.Halsey, "Report|
|on Initial Simulation of Water Interaction With Mild Steel Containers  |
|Rate for C-22 is the median value for dripping at high temp. in the    |
|TSPA simulations for the VA document.                                  |
|The data base was modified to add the solid KFe(CrO4)2:2H2O            |
|Total amount of Steel and C-22 reduced to 20 moles each for a more     |
|realistic proportion of materials contacting 1L of water               |
|-----------------------------------------------------------------------|
| calculational mode   |*normal     | economy           | super economy|
|-----------------------------------------------------------------------|
| model type           |*titration  | closed            | open         |
|-----------------------------------------------------------------------|
| temperature model    |*power      | fluid mixing                     |
|-----------------------------------------------------------------------|
c power model  -->   temp = tstart + tk1*zi + tk2*zi**2 + tk3*zi**3    |
c mixing model -->   temp = (tstart * tk1 + zi*tk2) / (zi + tk1)        |
c-----------------------------------------------------------------------|
| tstart(c)|  25.00    |tk1| 0.0000    |tk2| 0.0000    |tk3| 0.0000    |
|-----------------------------------------------------------------------|
| starting value of zi | 0.81044    |max. value of zi    | 1.00000E+38 |
|-----------------------------------------------------------------------|
| starting time (sec)  | 8.09527E+08|max. time (sec)     | 1.00000E+38 |
|-----------------------------------------------------------------------|
| max. steps           |       400  |max. steps w/o print|       150   |
|-----------------------------------------------------------------------|
| linear print interval|  10.000    |log print interval  | 1.00000E+38 |
|-----------------------------------------------------------------------|
| suppress mineral phases                                               |
|-----------------------------------------------------------------------|
| phases w/ elements|                          |                        |n
| phases except     |                          |                        |n
|-----------------------------------------------------------------------|
| fixed fugacity phases- species, moles(per kg h2o), log fugacity(bars)|
|-----------------------------------------------------------------------|
| CO2(g)                              | 0.00000        | -3.5000        |n
| O2(g)                               | 0.00000        |-0.67780        |n
|-----------------------------------------------------------------------|
c                  R A T E     L A W S
c 1 = relative                  rate = rk1 + rk2*zi + (1/2)rk3*zi*zi
c 2 = transition state theory   rate = CHECK DOCUMENTATION
c 3 = specified rate            rate = CHECK DOCUMENTATION
c 4 = activity term rate        rate = CHECK DOCUMENTATION
```

```
c
c                  R E A C T A N T     T Y P E S
c mineral     solid solution     special    aqueous    gas
c
c                  S U R F A C E    T Y P E
c 0 = fixed surface area     1 = fixed specific surface area
c
c                  N O T E S
c status and jreac are normally not set by the user
|-----------------------------------------------------------------------|
| reactants   (ss) solid solution only     (sp) special reactant only   |
|-----------------------------------------------------------------------|
| REACTANT          | carbon steel              |status    | 0            |
| moles remaining   |  19.190                   |destroyed| 0.80953       |
| reactant type     |  special                  |sk        |  100.00      |
| surface type      |   0                       |fk        |  1.0000      |
| end-member        |                           |mole fr   |              |ss,n
| volume            | 0.00000                   |          |              |sp
| element           | C            |moles       |  2.190000000000000E-02 |sp,n
| element           | Mn           |moles       |  1.030000000000000E-02 |sp,n
| element           | S            |moles       |  8.530000000000000E-04 |sp,n
| element           | Si           |moles       |  5.360000000000000E-03 |sp,n
| element           | P            |moles       |  7.060000000000000E-04 |sp,n
| element           | Fe           |moles       |  9.610000000000000E-01 |sp,n
| DISSOLUTION LAW   |    3                      |          |              |
| rate constant rk1| 1.00000E-11                |csigma1   |              |
| temperature (c)   |   25.000                  |          |              |234
| PRECIPITATION LAW|    0                       |          |              |
c-----------------------------------------------------------------------|
| REACTANT          | Alloy-22                  |status    | 0            |
| moles remaining   |  19.999                   |destroyed| 9.14766E-04   |
| reactant type     |  special                  |sk        |  100.00      |
| surface type      |   0                       |fk        |  1.0000      |
| end-member        |                           |mole fr   |              |ss,n
| volume            | 0.00000                   |          |              |sp
| element           | Cr           |moles       |  2.561060000000000E-01 |sp,n
| element           | Fe           |moles       |  5.420400000000000E-02 |sp,n
| element           | Ni           |moles       |  5.681220000000000E-01 |sp,n
| element           | Mo           |moles       |  1.009620000000000E-01 |sp,n
| element           | V            |moles       |  4.160000000000000E-03 |sp,n
| element           | Mn           |moles       |  5.510000000000000E-03 |sp,n
| DISSOLUTION LAW   |    3                      |          |              |
| rate constant rk1| 1.13000E-14                |csigma1   |              |
| temperature (c)   |   25.000                  |          |              |234
| PRECIPITATION LAW|    0                       |          |              |
|-----------------------------------------------------------------------|
| options                                                               |
|-----------------------------------------------------------------------|
| - SOLID SOLUTIONS -                                                   |
|     ignore solid solutions                                            |
|   * process solid solutions                                           |
| - LOADING OF SPECIES INTO MEMORY -                                    |
|   * don't print                                                       |
|     lists species loaded into memory                                  |
| - LIST DERIVATIVES OF BASIS ELEMENTS AT EACH PRINT POINT -            |
|   * don't print                                                       |
|     print                                                             |
| - LIST ALL SPECIES LOADED INTO MEMORY AND THEIR LOG K VALUES -        |
|   * don't print                                                       |
|     print                                                             |
| - LIST DISTRIBUTION OF AQUEOUS SPECIES AT EACH PRINT POINT -          |
|   * only species > 10**-12 molal                                      |
|     all species                                                       |
```

```
|     don't print                                                        |
| - LIST CATION/H+ ACTIVITY RATIOS AT EACH PRINT POINT -                 |
|   * don't print                                                        |
|     print                                                              |
| - LIST BULK ELEMENT AND OXIDE COMPOSITION AT EACH PRINT POINT -        |
|   * don't print                                                        |
|     print                                                              |
| - MINERAL SATURATION STATES -                                          |
|   * print if affinity > -10 kcals                                      |
|     print all                                                          |
|     don't print                                                        |
| - LIST GAS SPECIES SUMMARY AT EACH PRINT POINT -                       |
|     don't print                                                        |
|   * print                                                              |
| - PRINT AQUEOUS MASS AND CONCENTRATION TOTALS -                        |
|   * don't print                                                        |
|     print                                                              |
| - TAB FILES -                                                          |
|   * write                                                              |
|     append to previous tabx file                                       |
|     don't write                                                        |
| - WRITE PICKUP FILE -                                                  |
|     write pickup file at end of run                                    |
|     don't write pickup file                                            |
|   * write pickup file for each print point                             |
| - PHYSICALLY REMOVED SUBSYSTEM -                                       |
|   * does nothing                                                       |
|     transfer minerals but leave trivial mass in the system             |
|     transfer minerals                                                  |
| - CLEAR INITIAL PHYSICALLY REMOVED SUBSYSTEM -                         |
|   * does nothing                                                       |
|     clear p.r.s. before first reaction progress advance                |
| - PHASE BOUNDARY SEARCH -                                              |
|   * step size constrained by predicted phase boundaries                |
|     phase boundaries estimated from Taylor's series and printed        |
|     locations of phase boundaries ignored                              |
| - AUTO BASIS SWITCHING -                                               |
|   * off                                                                |
|     on                                                                 |
| - SUPPRESS REDOX REACTIONS -                                           |
|   * does nothing                                                       |
|     suppress all redox reactions                                       |
| - LINEAR OR LOGARITHMIC TAYLOR'S SERIES -                              |
|   * linear for kcol = 1,kdim, logarithmic for kcol = 1,kbt             |
|     logarithmic for kcol = 1,kbt                                       |
|     linear for kcol = 1,kdim                                           |
| - AZERO AND HYDRATION NUMBERS -                                        |
|   * no change                                                          |
|     read in new azero and hydration numbers                            |
| - PRINT MEAN MOLAL ACTIVITY COEFFICIENTS FOR DISSOLVED SPECIES -       |
|   * does nothing                                                       |
|     print                                                              |
| - PITZER DATABASE INFORMATION -                                        |
|   * print only warnings                                                |
|     print species in model and number of Pitzer coefficients           |
|     print species in model and names of Pitzer coefficients            |
| - PRINT DIAGNOSTIC MESSAGES -                                          |
|   * don't print                                                        |
|     print level 1 messages                                             |
|     print level 2 messages                                             |
| - PRINT PRE-NEWTON-RAPHSON OPTIMIZATION -                              |
|   * don't print                                                        |
|     print summary information                                          |
```

```
|     print detailed information                                          |
| - PRINT STEP SIZE AND ORDER -                                           |
|   * don't print                                                         |
|     print scale factor                                                  |
|     print orders and step size scaling factors                          |
| - CONTROL STEP SIZE AND ORDER PRINT -                                   |
|   * does nothing                                                        |
|     print step size and order when delzi .le. dlzmx1                    |
| - NEWTON ITERATIONS -                                                   |
|   * don't print                                                         |
|     print summary of newton iterations                                  |
|     print summary, residual functions and correction terms              |
|     print summary, residual functions, correction terms and matrix      |
| - PRINT SEARCH ITERATIONS -                                             |
|   * don't print                                                         |
|     print                                                               |
| - PRINT HPSAT ITERATIONS -                                              |
|   * don't print                                                         |
|     print                                                               |
| - PRINT FINITE DIFFERENCE AND DERIVATIVE DATA -                         |
|   * don't print                                                         |
|     print computations from RDERIV, and RTAYLR                          |
|     print computations from RDERIV, RTAYLR, DERIV and TAYLOR            |
| - PRINT KINETICS DIAGNOSTIC MESSAGES -                                  |
|   * don't print                                                         |
|     print level 1 diagnostics                                           |
|     print level 1 and level 2 diagnostics                               |
| - PRINT AKMATR -                                                        |
|   * don't print                                                         |
|     print level 1 diagnostics                                           |
| - KILL ITERATION VARIABLES -                                            |
|   * does nothing                                                        |
|     allow selection of variables to remove                              |
|-------------------------------------------------------------------------|
| development options  (used for code development)                        |
|-------------------------------------------------------------------------|
|    0 check finite difference and Taylor series expression               |
|    0 check reaction rate finite difference and Taylor series            |
|-------------------------------------------------------------------------|
| tolerances                       desired values - defaults info-only    |
|-------------------------------------------------------------------------|
| number of N-R iterations        |        90        |  90      itermx  |
| p.r.s. transfer interval        | 1.00000E+38      |  varies  dlzidp  |
| residual magnitude              | 1.00000E-06      |  1.0e-06 tolbt   |
| correction magnitude            | 1.00000E-06      |  1.0e-06 toldl   |
| search/find tolerance           | 1.00000E-06      |  varies  tolx    |
| supersaturation                 | 5.00000E-03      |  varies  tolsat  |
| supersaturation set size        | 1.00000E-02      |  varies  tolsst  |
| max. size Taylor's series term  | 1.00000E-04      |  1.0e-04 screw1  |
| max. initial value betamx       |                  |  n/a     screw2  |
| max. Taylor's series term (kin.)| 1.00000E-04      |  1.0e-04 screw3  |
| corrector iteration             | 1.00000E-04      |  1.0e-04 screw4  |
| max. size of N-R correction term|  4.0000          |  4.0     screw5  |
| step size (economy mode)        |  4.0000          |  4.0     screw6  |
| log mass of phases              | -6.0000          |  varies  zklogu  |
| decrement mass (p.r.s.)         |  2.0000          |  2.0     zklogl  |
| min. left after p.r.s.          | 0.80000          |  .98     zkfac   |
| initial step size               | 1.00000E-09      |  varies  dlzmx1  |
| upper limit step size           | 1.00000E+38      |  varies  dlzmx2  |
| maximum order                   |         6        |  6       nordlm  |
| num. attempted assemblages      |        25        |  25      ntrymx  |
| slide -> over phase bound.      |        12        |  8       npslmx  |
| slide -> over redox insta.      |         8        |  3       nsslmx  |
```

```
| fo2 scan control                |                   |  none    ioscan |
|-------------------------------------------------------------------------|
c pickup file written by eq6.7.2bR137                                     |
c supported by eqlib.7.2bR168                                             |
|EQ6 input file name= j13_All-22.6i.txt                                   |
|Description= React J-13 water with Carbon Steel and Alloy-22.            |
|Equilibrium with atmospheric gases.                                      |
|Version level= 7.2                                                       |
|Created 01/19/99    Creator= D.H. Lester                                 |
|Revised             Revisor=                                             |
|                                                                         |
|Water from well J-13 at the Nevada Test site                             |
|                                                                         |
|Purpose: To model reaction with carbon steel (iron) and alloy C-22       |
|simultaneously to determine an expected Cr concentration in the water    |
|corroding the C-22 after breaching the CAM.                              |
|                                                                         |
|It is assumed that a significant amount of carbon steel is still         |
|present. The rate constant for the steel was assumed to be 1.0E-11       |
|which is the higher value suggested in simulation studies at LLNL.       |
|Reference: Eng. Barrier System & Near Field Envir. Perf. Assess.,        |
|FY-96 Activities: End-of-Year Summary, Sept 1996, Wm.G.Halsey, "Report|
|on Initial Simulation of Water Interaction With Mild Steel Containers    |
|Rate for C-22 is the median value for dripping at high temp. in the      |
|TSPA simulations for the VA document.                                    |
|The data base was modified to add the solid KFe(CrO4)2:2H2O              |
|Total amount of Steel and C-22 reduced to 20 moles each for a more       |
|realistic proportion of materials contacting 1L of water                 |
|-------------------------------------------------------------------------|
| temperature (C)                    |     25.000                         |
|-------------------------------------------------------------------------|
| electrical imbalance               |   5.752163835343278E-14            |
|-------------------------------------------------------------------------|
| number of aqueous master species   |     38                             |
|-------------------------------------------------------------------------|
| position of last pure mineral      |     46                             |
|-------------------------------------------------------------------------|
| position of last solid solution    |     58                             |
|-------------------------------------------------------------------------|
| suppressed species     (suppress,replace,augmentk,augmentg)  value      |
|-------------------------------------------------------------------------|
| Phlogopite                | mineral        | suppress |  0.00000        |
| Annite                    | mineral        | suppress |  0.00000        |
| Clinochlore-14A           | mineral        | suppress |  0.00000        |
| Daphnite-14A              | mineral        | suppress |  0.00000        |
| Clinozoisite              | mineral        | suppress |  0.00000        |
| Epidote                   | mineral        | suppress |  0.00000        |
| Epidote-ord               | mineral        | suppress |  0.00000        |
| Andradite                 | mineral        | suppress |  0.00000        |
| Grossular                 | mineral        | suppress |  0.00000        |
| Enstatite                 | mineral        | suppress |  0.00000        |
| Ferrosilite               | mineral        | suppress |  0.00000        |
| Pyrite                    | mineral        | suppress |  0.00000        |
| Pyrrhotite                | mineral        | suppress |  0.00000        |
| Troilite                  | mineral        | suppress |  0.00000        |
| Alabandite                | mineral        | suppress |  0.00000        |
| Brezinaite                | mineral        | suppress |  0.00000        |
| Chalcocite                | mineral        | suppress |  0.00000        |
| Covellite                 | mineral        | suppress |  0.00000        |
| Millerite                 | mineral        | suppress |  0.00000        |
| Polydymite                | mineral        | suppress |  0.00000        |
| Vaesite                   | mineral        | suppress |  0.00000        |
| Heazlewoodite             | mineral        | suppress |  0.00000        |
```

```
| Galena                    | mineral         | suppress |  0.00000      |
| Sulfur                    | mineral         | suppress |  0.00000      |
| CaZrO3                    | mineral         | suppress |  0.00000      |
| BaZrO3                    | mineral         | suppress |  0.00000      |
| SrZrO3                    | mineral         | suppress |  0.00000      |
| U2S3                      | mineral         | suppress |  0.00000      |
| U3S5                      | mineral         | suppress |  0.00000      |
| US2                       | mineral         | suppress |  0.00000      |
| US3                       | mineral         | suppress |  0.00000      |
| US                        | mineral         | suppress |  0.00000      |
| US1.9                     | mineral         | suppress |  0.00000      |
| U3P4                      | mineral         | suppress |  0.00000      |
| UP                        | mineral         | suppress |  0.00000      |
| UP2                       | mineral         | suppress |  0.00000      |
| HS-                       | aqueous         | suppress |  0.00000      |
| H2S(aq)                   | aqueous         | suppress |  0.00000      |
| S--                       | aqueous         | suppress |  0.00000      |
|-------------------------------------------------------------------------|
| iopg options                                                            |
|-------------------------------------------------------------------------|
| - pH SCALE CONVENTION -                                                 |
|    * modified NBS                                                       |
|      internal                                                           |
|      rational                                                           |
| - ACTIVITY COEFFICIENT OPTIONS -                                        |
|    * use B-dot equation                                                 |
|      Davies' equation                                                   |
|      Pitzer's equations                                                 |
|-------------------------------------------------------------------------|
| elements, moles and moles aqueous                                       |
|-------------------------------------------------------------------------|
| O                         |  4.005551824589011E+04 |  5.551661447005054E+01 |
| Al                        |  1.482500000694482E-06 |  5.862226228286466E-11 |
| B                         |  1.238799999942330E-05 |  1.238799999942330E-05 |
| Ba                        |  1.000000000006594E-10 |  1.000000000006595E-10 |
| Ca                        |  3.243700000162714E-04 |  6.950860774900598E-06 |
| Ce                        |  1.000000000975802E-24 |  1.000000000976208E-24 |
| Cl                        |  2.014000000000269E-04 |  2.014000000000269E-04 |
| Cr                        |  2.346218512505691E-04 |  2.346218512505896E-04 |
| Cs                        |  1.000000000000039E-10 |  1.000000000000038E-10 |
| Cu                        |  1.050000000528221E-14 |  1.050000000528338E-14 |
| F                         |  1.147500000001528E-04 |  5.128965268498566E-05 |
| Fe                        |  7.780052486216342E-01 |  2.376579869412014E-12 |
| Gd                        |  1.000000001150365E-14 |  1.000000001150863E-14 |
| H                         |  1.110188738405208E+02 |  1.110188648560275E+02 |
| C                         |  1.000001971894904E+04 |  2.239570275719889E-05 |
| P                         |  5.727973219030748E-04 |  3.806119847158304E-04 |
| K                         |  1.289100000000803E-04 |  1.288189564705320E-04 |
| La                        |  1.000000000980088E-14 |  1.000000000980480E-14 |
| Li                        |  1.000000000000469E-10 |  1.000000000000469E-10 |
| Mg                        |  8.269900000408464E-05 |  8.218717828473072E-05 |
| Mn                        |  8.343170792229824E-03 |  7.417013796555728E-13 |
| Mo                        |  9.235668126033684E-05 |  9.235668126033678E-05 |
| N                         |  1.420000000000891E-04 |  1.420000000000891E-04 |
| Na                        |  1.992200000002518E-03 |  1.992067050923421E-03 |
| Nd                        |  1.000000000990082E-14 |  1.000000000990515E-14 |
| Ni                        |  5.196986564745654E-04 |  4.216628704236609E-04 |
| Pb                        |  1.000000000003566E-10 |  1.000000000003576E-10 |
| Pu                        |  1.000000001138469E-14 |  1.000000001139007E-14 |
| S                         |  8.820667242052338E-04 |  8.820667242052466E-04 |
| Si                        |  5.355965933981864E-03 |  1.001911024368031E-04 |
| Sm                        |  1.000000000991962E-14 |  1.000000000992409E-14 |
| Sr                        |  1.000000000034016E-10 |  1.000000000034048E-10 |
```

Ti	1.000000000000003E-10	1.000000000000003E-10
U	9.999999988006304E-15	9.999999988009240E-15
V	3.805645586289801E-06	3.805645586289788E-06
Zn	1.000000000089305E-10	1.000000000089321E-10
Zr	1.000000000323548E-20	1.000000000323636E-20

master species and logarithmic basis variables		
H2O	H2O	1.744363333073402E+00
Al+++	Al+++	-1.422179188276274E+01
B(OH)3(aq)	B(OH)3(aq)	-4.907594659017490E+00
Ba++	Ba++	-1.000039819013661E+01
Ca++	Ca++	-5.191014642992070E+00
Ce+++	Ce+++	-2.507569323003270E+01
Cl-	Cl-	-3.696097047413857E+00
CrO4--	CrO4--	-3.959232354621346E+00
Cs+	Cs+	-1.000005469516896E+01
Cu++	Cu++	-1.421643152431132E+01
F-	F-	-4.291014551393835E+00
Fe++	Fe++	-2.011378225977095E+01
Gd+++	Gd+++	-1.572519444305001E+01
H+	H+	-6.318582147348624E+00
HCO3-	HCO3-	-4.934501651759694E+00
HPO4--	HPO4--	-4.254073415870712E+00
K+	K+	-3.892181153805297E+00
La+++	La+++	-1.487776680862447E+01
Li+	Li+	-1.000160347239454E+01
Mg++	Mg++	-4.145884525365381E+00
Mn++	Mn++	-1.222073225977095E+01
MoO4--	MoO4--	-4.034531681387368E+00
NO3-	NH3(aq)	-3.848047872198485E+00
Na+	Na+	-2.702657424896213E+00
Nd+++	Nd+++	-1.538662416794556E+01
Ni++	Ni++	-3.401682259770951E+00
Pb++	Pb++	-1.001847524585836E+01
Pu++++	Pu++++	-4.220349267170161E+01
SO4--	SO4--	-3.076201816999052E+00
SiO2(aq)	SiO2(aq)	-3.999295650453582E+00
Sm+++	Sm+++	-1.564240671440580E+01
Sr++	Sr++	-1.004058467109839E+01
Ti(OH)4(aq)	Ti(OH)4(aq)	-9.999999999999998E+00
UO2++	UO2++	-1.824768538150951E+01
VO++	VO++	-2.122984416174164E+01
Zn++	Zn++	-1.002700824313608E+01
Zr(OH)2++	Zr(OH)2++	-3.134025658354240E+01
O2(g)	O2(g)	-6.778000000000000E-01
	Fluorapatite	-4.197497555358080E+00
	Hematite	-4.100524841155968E-01
	Ni2SiO4	-4.321803394886814E+00
	Ni3(PO4)2	-6.044722391841934E+00
	Pyrolusite	-2.078668865964105E+00
	Quartz	-2.284696800777554E+00
	fix CO2(g)	4.000000855409600E+00
	fix O2(g)	3.999973228416591E+00
Smectite-di	Beidellite-Ca	-3.088367629923932E+01
Smectite-di	Beidellite-K	-3.129513516626511E+01
Smectite-di	Beidellite-Mg	-3.024453857547979E+01
Smectite-di	Beidellite-Na	-3.113069891879940E+01
Smectite-di	Montmor-Ca	-2.618900663792207E+01
Smectite-di	Montmor-K	-2.638743520191756E+01
Smectite-di	Montmor-Mg	-2.533895982325344E+01
Smectite-di	Montmor-Na	-2.623390804536094E+01
Smectite-di	Nontronite-Ca	-6.147805986875968E+00

```
| Smectite-di              | Nontronite-K             | -6.559264853901756E+00 |
| Smectite-di              | Nontronite-Mg            | -5.508365232813410E+00 |
| Smectite-di              | Nontronite-Na            | -6.394828606436048E+00 |
|-------------------------------------------------------------------------|
| physically removed subsystem  (solid solution, mineral, moles)          |
|-------------------------------------------------------------------------|
| none                     |                          |                        |
|-------------------------------------------------------------------------|
|-------------------------------------------------------------------------|
|EQ6 input file name= j13_All-22.6i.txt                                   |
|Description= React J-13 water with Carbon Steel and Alloy-22.            |
|Equilibrium with atmospheric gases.                                      |
|Version level= 7.2                                                       |
|Created 01/19/99    Creator= D.H. Lester                                 |
|Revised             Revisor=                                             |
|                                                                         |
|Water from well J-13 at the Nevada Test site                             |
|                                                                         |
|Purpose: To model reaction with carbon steel (iron) and alloy C-22       |
|simultaneously to determine an expected Cr concentration in the water    |
|corroding the C-22 after breaching the CAM.                              |
|                                                                         |
|It is assumed that a significant amount of carbon steel is still         |
|present. The rate constant for the steel was assumed to be 1.0E-11       |
|which is the higher value suggested in simulation studies at LLNL.       |
|Reference: Eng. Barrier System & Near Field Envir. Perf. Assess.,        |
|FY-96 Activities: End-of-Year Summary, Sept 1996, Wm.G.Halsey, "Report|
|on Initial Simulation of Water Interaction With Mild Steel Containers    |
|Rate for C-22 is the median value for dripping at high temp. in the      |
|TSPA simulations for the VA document.                                    |
|The data base was modified to add the solid KFe(CrO4)2:2H2O              |
|Total amount of Steel and C-22 reduced to 20 moles each for a more       |
|realistic proportion of materials contacting 1L of water                 |
|-------------------------------------------------------------------------|
| calculational mode   |*normal     | economy           | super economy|
|-------------------------------------------------------------------------|
| model type           |*titration  | closed            | open         |
|-------------------------------------------------------------------------|
| temperature model    |*power      | fluid mixing                         |
|-------------------------------------------------------------------------|
c power model  -->   temp = tstart + tk1*zi + tk2*zi**2 + tk3*zi**3      |
c mixing model -->   temp = (tstart * tk1 + zi*tk2) / (zi + tk1)         |
c-------------------------------------------------------------------------|
| tstart(c)|  25.00    |tk1| 0.0000    |tk2| 0.0000    |tk3| 0.0000     |
|-------------------------------------------------------------------------|
| starting value of zi | 0.86055    |max. value of zi    | 1.00000E+38 |
|-------------------------------------------------------------------------|
| starting time (sec)  | 8.59575E+08|max. time (sec)     | 1.00000E+38 |
|-------------------------------------------------------------------------|
| max. steps           |       400  |max. steps w/o print|       150   |
|-------------------------------------------------------------------------|
| linear print interval|  10.000    |log print interval  | 1.00000E+38 |
|-------------------------------------------------------------------------|
| suppress mineral phases                                                 |
|-------------------------------------------------------------------------|
| phases w/ elements|                          |                          |n
| phases except     |                          |                          |n
|-------------------------------------------------------------------------|
| fixed fugacity phases- species, moles(per kg h2o), log fugacity(bars)|
|-------------------------------------------------------------------------|
| CO2(g)                              | 0.00000        | -3.5000        |n
| O2(g)                               | 0.00000        |-0.67780        |n
|-------------------------------------------------------------------------|
```

```
c                  R A T E     L A W S
c 1 = relative                  rate = rk1 + rk2*zi + (1/2)rk3*zi*zi
c 2 = transition state theory   rate = CHECK DOCUMENTATION
c 3 = specified rate            rate = CHECK DOCUMENTATION
c 4 = activity term rate        rate = CHECK DOCUMENTATION
c
c                  R E A C T A N T     T Y P E S
c mineral     solid solution     special    aqueous    gas
c
c                  S U R F A C E    T Y P E
c 0 = fixed surface area     1 = fixed specific surface area
c
c                  N O T E S
c status and jreac are normally not set by the user
|-----------------------------------------------------------------------|
| reactants   (ss) solid solution only     (sp) special reactant only   |
|-----------------------------------------------------------------------|
| REACTANT          | carbon steel             |status    | 0            |
| moles remaining   |  19.140                  |destroyed| 0.85957       |
| reactant type     |  special                 |sk        |  100.00      |
| surface type      |   0                      |fk        |  1.0000      |
| end-member        |                          |mole fr   |              |ss,n
| volume            | 0.00000                  |          |              |sp
| element           | C            |moles      |  2.190000000000000E-02 |sp,n
| element           | Mn           |moles      |  1.030000000000000E-02 |sp,n
| element           | S            |moles      |  8.530000000000000E-04 |sp,n
| element           | Si           |moles      |  5.360000000000000E-03 |sp,n
| element           | P            |moles      |  7.060000000000000E-04 |sp,n
| element           | Fe           |moles      |  9.610000000000000E-01 |sp,n
| DISSOLUTION LAW   |    3                     |          |              |
| rate constant rk1| 1.00000E-11               |csigma1   |              |
| temperature (c)   |   25.000                 |          |              |234
| PRECIPITATION LAW|    0                      |          |              |
c-----------------------------------------------------------------------|
| REACTANT          | Alloy-22                 |status    | 0            |
| moles remaining   |  19.999                  |destroyed| 9.71319E-04   |
| reactant type     |  special                 |sk        |  100.00      |
| surface type      |   0                      |fk        |  1.0000      |
| end-member        |                          |mole fr   |              |ss,n
| volume            | 0.00000                  |          |              |sp
| element           | Cr           |moles      |  2.561060000000000E-01 |sp,n
| element           | Fe           |moles      |  5.420400000000000E-02 |sp,n
| element           | Ni           |moles      |  5.681220000000000E-01 |sp,n
| element           | Mo           |moles      |  1.009620000000000E-01 |sp,n
| element           | V            |moles      |  4.160000000000000E-03 |sp,n
| element           | Mn           |moles      |  5.510000000000000E-03 |sp,n
| DISSOLUTION LAW   |    3                     |          |              |
| rate constant rk1| 1.13000E-14               |csigma1   |              |
| temperature (c)   |   25.000                 |          |              |234
| PRECIPITATION LAW|    0                      |          |              |
|-----------------------------------------------------------------------|
| options                                                               |
|-----------------------------------------------------------------------|
| - SOLID SOLUTIONS -                                                   |
|     ignore solid solutions                                            |
|   * process solid solutions                                           |
| - LOADING OF SPECIES INTO MEMORY -                                    |
|   * don't print                                                       |
|     lists species loaded into memory                                  |
| - LIST DERIVATIVES OF BASIS ELEMENTS AT EACH PRINT POINT -            |
|   * don't print                                                       |
|     print                                                             |
| - LIST ALL SPECIES LOADED INTO MEMORY AND THEIR LOG K VALUES -        |
```

```
|   * don't print                                                        |
|     print                                                              |
| - LIST DISTRIBUTION OF AQUEOUS SPECIES AT EACH PRINT POINT -           |
|   * only species > 10**-12 molal                                       |
|     all species                                                        |
|     don't print                                                        |
| - LIST CATION/H+ ACTIVITY RATIOS AT EACH PRINT POINT -                 |
|   * don't print                                                        |
|     print                                                              |
| - LIST BULK ELEMENT AND OXIDE COMPOSITION AT EACH PRINT POINT -        |
|   * don't print                                                        |
|     print                                                              |
| - MINERAL SATURATION STATES -                                          |
|   * print if affinity > -10 kcals                                      |
|     print all                                                          |
|     don't print                                                        |
| - LIST GAS SPECIES SUMMARY AT EACH PRINT POINT -                       |
|     don't print                                                        |
|   * print                                                              |
| - PRINT AQUEOUS MASS AND CONCENTRATION TOTALS -                        |
|   * don't print                                                        |
|     print                                                              |
| - TAB FILES -                                                          |
|   * write                                                              |
|     append to previous tabx file                                       |
|     don't write                                                        |
| - WRITE PICKUP FILE -                                                  |
|     write pickup file at end of run                                    |
|     don't write pickup file                                            |
|   * write pickup file for each print point                             |
| - PHYSICALLY REMOVED SUBSYSTEM -                                       |
|   * does nothing                                                       |
|     transfer minerals but leave trivial mass in the system             |
|     transfer minerals                                                  |
| - CLEAR INITIAL PHYSICALLY REMOVED SUBSYSTEM -                         |
|   * does nothing                                                       |
|     clear p.r.s. before first reaction progress advance                |
| - PHASE BOUNDARY SEARCH -                                              |
|   * step size constrained by predicted phase boundaries                |
|     phase boundaries estimated from Taylor's series and printed        |
|     locations of phase boundaries ignored                              |
| - AUTO BASIS SWITCHING -                                               |
|   * off                                                                |
|     on                                                                 |
| - SUPPRESS REDOX REACTIONS -                                           |
|   * does nothing                                                       |
|     suppress all redox reactions                                       |
| - LINEAR OR LOGARITHMIC TAYLOR'S SERIES -                              |
|   * linear for kcol = 1,kdim, logarithmic for kcol = 1,kbt             |
|     logarithmic for kcol = 1,kbt                                       |
|     linear for kcol = 1,kdim                                           |
| - AZERO AND HYDRATION NUMBERS -                                        |
|   * no change                                                          |
|     read in new azero and hydration numbers                            |
| - PRINT MEAN MOLAL ACTIVITY COEFFICIENTS FOR DISSOLVED SPECIES -       |
|   * does nothing                                                       |
|     print                                                              |
| - PITZER DATABASE INFORMATION -                                        |
|   * print only warnings                                                |
|     print species in model and number of Pitzer coefficients           |
|     print species in model and names of Pitzer coefficients            |
| - PRINT DIAGNOSTIC MESSAGES -                                          |
|   * don't print                                                        |
```

```
|     print level 1 messages                                              |
|     print level 2 messages                                              |
| - PRINT PRE-NEWTON-RAPHSON OPTIMIZATION -                               |
|   * don't print                                                         |
|     print summary information                                           |
|     print detailed information                                          |
| - PRINT STEP SIZE AND ORDER -                                           |
|   * don't print                                                         |
|     print scale factor                                                  |
|     print orders and step size scaling factors                          |
| - CONTROL STEP SIZE AND ORDER PRINT -                                   |
|   * does nothing                                                        |
|     print step size and order when delzi .le. dlzmx1                    |
| - NEWTON ITERATIONS -                                                   |
|   * don't print                                                         |
|     print summary of newton iterations                                  |
|     print summary, residual functions and correction terms              |
|     print summary, residual functions, correction terms and matrix      |
| - PRINT SEARCH ITERATIONS -                                             |
|   * don't print                                                         |
|     print                                                               |
| - PRINT HPSAT ITERATIONS -                                              |
|   * don't print                                                         |
|     print                                                               |
| - PRINT FINITE DIFFERENCE AND DERIVATIVE DATA -                         |
|   * don't print                                                         |
|     print computations from RDERIV, and RTAYLR                          |
|     print computations from RDERIV, RTAYLR, DERIV and TAYLOR            |
| - PRINT KINETICS DIAGNOSTIC MESSAGES -                                  |
|   * don't print                                                         |
|     print level 1 diagnostics                                           |
|     print level 1 and level 2 diagnostics                               |
| - PRINT AKMATR -                                                        |
|   * don't print                                                         |
|     print level 1 diagnostics                                           |
| - KILL ITERATION VARIABLES -                                            |
|   * does nothing                                                        |
|     allow selection of variables to remove                              |
|-------------------------------------------------------------------------|
| development options  (used for code development)                        |
|-------------------------------------------------------------------------|
|    0 check finite difference and Taylor series expression               |
|    0 check reaction rate finite difference and Taylor series            |
|-------------------------------------------------------------------------|
| tolerances                        desired values - defaults info-only   |
|-------------------------------------------------------------------------|
| number of N-R iterations        |        90        |  90      itermx   |
| p.r.s. transfer interval        | 1.00000E+38      |  varies  dlzidp   |
| residual magnitude              | 1.00000E-06      |  1.0e-06 tolbt    |
| correction magnitude            | 1.00000E-06      |  1.0e-06 toldl    |
| search/find tolerance           | 1.00000E-06      |  varies  tolx     |
| supersaturation                 | 5.00000E-03      |  varies  tolsat   |
| supersaturation set size        | 1.00000E-02      |  varies  tolsst   |
| max. size Taylor's series term  | 1.00000E-04      |  1.0e-04 screw1   |
| max. initial value betamx       |                  |  n/a     screw2   |
| max. Taylor's series term (kin.)| 1.00000E-04      |  1.0e-04 screw3   |
| corrector iteration             | 1.00000E-04      |  1.0e-04 screw4   |
| max. size of N-R correction term|  4.0000          |  4.0     screw5   |
| step size (economy mode)        |  4.0000          |  4.0     screw6   |
| log mass of phases              | -6.0000          |  varies  zklogu   |
| decrement mass (p.r.s.)         |  2.0000          |  2.0     zklogl   |
| min. left after p.r.s.          | 0.80000          |  .98     zkfac    |
| initial step size               | 1.00000E-09      |  varies  dlzmx1   |
```

```
| upper limit step size          | 1.00000E+38      |  varies  dlzmx2 |
| maximum order                  |         6        |  6       nordlm |
| num. attempted assemblages     |        25        |  25      ntrymx |
| slide -> over phase bound.     |        12        |  8       npslmx |
| slide -> over redox insta.     |         8        |  3       nsslmx |
| fo2 scan control               |                  |  none    ioscan |
|-----------------------------------------------------------------------|
c pickup file written by eq6.7.2bR137                                   |
c supported by eqlib.7.2bR168                                           |
|EQ6 input file name= j13_All-22.6i.txt                                 |
|Description= React J-13 water with Carbon Steel and Alloy-22.          |
|Equilibrium with atmospheric gases.                                    |
|Version level= 7.2                                                     |
|Created 01/19/99    Creator= D.H. Lester                               |
|Revised             Revisor=                                           |
|                                                                       |
|Water from well J-13 at the Nevada Test site                           |
|                                                                       |
|Purpose: To model reaction with carbon steel (iron) and alloy C-22     |
|simultaneously to determine an expected Cr concentration in the water |
|corroding the C-22 after breaching the CAM.                            |
|                                                                       |
|It is assumed that a significant amount of carbon steel is still       |
|present. The rate constant for the steel was assumed to be 1.0E-11     |
|which is the higher value suggested in simulation studies at LLNL.     |
|Reference: Eng. Barrier System & Near Field Envir. Perf. Assess.,      |
|FY-96 Activities: End-of-Year Summary, Sept 1996, Wm.G.Halsey, "Report|
|on Initial Simulation of Water Interaction With Mild Steel Containers |
|Rate for C-22 is the median value for dripping at high temp. in the    |
|TSPA simulations for the VA document.                                  |
|The data base was modified to add the solid KFe(CrO4)2:2H2O            |
|Total amount of Steel and C-22 reduced to 20 moles each for a more     |
|realistic proportion of materials contacting 1L of water               |
|-----------------------------------------------------------------------|
| temperature (C)                    |     25.000                       |
|-----------------------------------------------------------------------|
| electrical imbalance               |   5.752163835343278E-14          |
|-----------------------------------------------------------------------|
| number of aqueous master species   |     38                           |
|-----------------------------------------------------------------------|
| position of last pure mineral      |     45                           |
|-----------------------------------------------------------------------|
| position of last solid solution    |     57                           |
|-----------------------------------------------------------------------|
| suppressed species     (suppress,replace,augmentk,augmentg)  value    |
|-----------------------------------------------------------------------|
| Phlogopite               | mineral        | suppress |  0.00000       |
| Annite                   | mineral        | suppress |  0.00000       |
| Clinochlore-14A          | mineral        | suppress |  0.00000       |
| Daphnite-14A             | mineral        | suppress |  0.00000       |
| Clinozoisite             | mineral        | suppress |  0.00000       |
| Epidote                  | mineral        | suppress |  0.00000       |
| Epidote-ord              | mineral        | suppress |  0.00000       |
| Andradite                | mineral        | suppress |  0.00000       |
| Grossular                | mineral        | suppress |  0.00000       |
| Enstatite                | mineral        | suppress |  0.00000       |
| Ferrosilite              | mineral        | suppress |  0.00000       |
| Pyrite                   | mineral        | suppress |  0.00000       |
| Pyrrhotite               | mineral        | suppress |  0.00000       |
| Troilite                 | mineral        | suppress |  0.00000       |
| Alabandite               | mineral        | suppress |  0.00000       |
| Brezinaite               | mineral        | suppress |  0.00000       |
| Chalcocite               | mineral        | suppress |  0.00000       |
```

```
| Covellite                | mineral         | suppress |  0.00000      |
| Millerite                | mineral         | suppress |  0.00000      |
| Polydymite               | mineral         | suppress |  0.00000      |
| Vaesite                  | mineral         | suppress |  0.00000      |
| Heazlewoodite            | mineral         | suppress |  0.00000      |
| Galena                   | mineral         | suppress |  0.00000      |
| Sulfur                   | mineral         | suppress |  0.00000      |
| CaZrO3                   | mineral         | suppress |  0.00000      |
| BaZrO3                   | mineral         | suppress |  0.00000      |
| SrZrO3                   | mineral         | suppress |  0.00000      |
| U2S3                     | mineral         | suppress |  0.00000      |
| U3S5                     | mineral         | suppress |  0.00000      |
| US2                      | mineral         | suppress |  0.00000      |
| US3                      | mineral         | suppress |  0.00000      |
| US                       | mineral         | suppress |  0.00000      |
| US1.9                    | mineral         | suppress |  0.00000      |
| U3P4                     | mineral         | suppress |  0.00000      |
| UP                       | mineral         | suppress |  0.00000      |
| UP2                      | mineral         | suppress |  0.00000      |
| HS-                      | aqueous         | suppress |  0.00000      |
| H2S(aq)                  | aqueous         | suppress |  0.00000      |
| S--                      | aqueous         | suppress |  0.00000      |
|-------------------------------------------------------------------------|
| iopg options                                                            |
|-------------------------------------------------------------------------|
| - pH SCALE CONVENTION -                                                 |
|    * modified NBS                                                       |
|      internal                                                           |
|      rational                                                           |
| - ACTIVITY COEFFICIENT OPTIONS -                                        |
|    * use B-dot equation                                                 |
|      Davies' equation                                                   |
|      Pitzer's equations                                                 |
|-------------------------------------------------------------------------|
| elements, moles and moles aqueous                                       |
|-------------------------------------------------------------------------|
| O                        |  4.005551824589011E+04 |  5.551679928658924E+01 |
| Al                       |  1.482500000694482E-06 |  6.980044457750540E-11 |
| B                        |  1.238799999942330E-05 |  1.238799999945701E-05 |
| Ba                       |  1.000000000006594E-10 |  1.000000000002454E-10 |
| Ca                       |  3.243700000162714E-04 |  7.601208891427958E-06 |
| Ce                       |  1.000000000975802E-24 |  9.999999899999662E-25 |
| Cl                       |  2.014000000000269E-04 |  2.013999999998270E-04 |
| Cr                       |  2.491055702822972E-04 |  2.491055696749066E-04 |
| Cs                       |  1.000000000000039E-10 |  9.999999999997328E-11 |
| Cu                       |  1.050000000528221E-14 |  1.049999997491151E-14 |
| F                        |  1.147500000001528E-04 |  5.142062267628160E-05 |
| Fe                       |  8.261039069026214E-01 |  2.438115661647747E-12 |
| Gd                       |  1.000000001150365E-14 |  9.999999875063320E-15 |
| H                        |  1.110188738405208E+02 |  1.110188648560919E+02 |
| C                        |  1.000002081498805E+04 |  2.187204867124130E-05 |
| P                        |  6.081308167536930E-04 |  3.611593322924865E-04 |
| K                        |  1.289100000000803E-04 |  1.288195028515543E-04 |
| La                       |  1.000000000980088E-14 |  9.999999904727044E-15 |
| Li                       |  1.000000000000469E-10 |  9.999999999828828E-11 |
| Mg                       |  8.269900000408464E-05 |  8.219101885622980E-05 |
| Mn                       |  8.858971066876218E-03 |  8.134491743436178E-13 |
| Mo                       |  9.806644690769116E-05 |  9.806644690769110E-05 |
| N                        |  1.420000000000891E-04 |  1.419999999995626E-04 |
| Na                       |  1.992200000002518E-03 |  1.992067838017912E-03 |
| Nd                       |  1.000000000990082E-14 |  9.999999891331014E-15 |
| Ni                       |  5.518280069143964E-04 |  4.663529800120986E-04 |
| Pb                       |  1.000000000003566E-10 |  9.999999996686452E-11 |
```

Pu	1.000000001138469E-14	9.999999859922022E-15
S	9.247571931961360E-04	9.247571928133492E-04
Si	5.624220229165026E-03	1.001898279663995E-04
Sm	1.000000000991962E-14	9.999999888560834E-15
Sr	1.000000000034016E-10	9.999999991961726E-11
Ti	1.000000000000003E-10	1.000000000000003E-10
U	9.999999988006304E-15	9.999999906494762E-15
V	4.040908606960886E-06	4.040908606904275E-06
Zn	1.000000000089305E-10	9.999999996174798E-11
Zr	1.000000000323548E-20	9.999999976376744E-21

master species and logarithmic basis variables

H2O	H2O	1.744363425793497E+00
Al+++	Al+++	-1.413813234466954E+01
B(OH)3(aq)	B(OH)3(aq)	-4.907567955635036E+00
Ba++	Ba++	-1.000039631397332E+01
Ca++	Ca++	-5.152396136452830E+00
Ce+++	Ce+++	-2.503096735365887E+01
Cl-	Cl-	-3.696097951512448E+00
CrO4--	CrO4--	-3.943546447745946E+00
Cs+	Cs+	-1.000005455733343E+01
Cu++	Cu++	-1.419748641527388E+01
F-	F-	-4.289910489223148E+00
Fe++	Fe++	-2.007096157194239E+01
Gd+++	Gd+++	-1.566522495117673E+01
H+	H+	-6.297713512295046E+00
HCO3-	HCO3-	-4.954426599902792E+00
HPO4--	HPO4--	-4.292866558306731E+00
K+	K+	-3.892252755320017E+00
La+++	La+++	-1.484143391192044E+01
Li+	Li+	-1.000166868917924E+01
Mg++	Mg++	-4.146637559295219E+00
Mn++	Mn++	-1.217791157194239E+01
MoO4--	MoO4--	-4.008479559545867E+00
NO3-	NH3(aq)	-3.848080919810694E+00
Na+	Na+	-2.702716226735657E+00
Nd+++	Nd+++	-1.533361622308428E+01
Ni++	Ni++	-3.358860071353525E+00
Pb++	Pb++	-1.001693253345394E+01
Pu++++	Pu++++	-4.203634686163960E+01
SO4--	SO4--	-3.056772589431450E+00
SiO2(aq)	SiO2(aq)	-3.999295557733488E+00
Sm+++	Sm+++	-1.558475245904446E+01
Sr++	Sr++	-1.004177743136028E+01
Ti(OH)4(aq)	Ti(OH)4(aq)	-9.999999999999998E+00
UO2++	UO2++	-1.819483341954912E+01
VO++	VO++	-2.113851031251930E+01
Zn++	Zn++	-1.002457378952993E+01
Zr(OH)2++	Zr(OH)2++	-3.129731435429072E+01
O2(g)	O2(g)	-6.778000000000000E-01
	Fluorapatite	-4.198394782086444E+00
	Hematite	-3.840000428491057E-01
	Ni3(PO4)2	-4.545282009869798E+00
	Pyrolusite	-2.052616716745082E+00
	Quartz	-2.259042026105207E+00
	fix CO2(g)	4.000000903032615E+00
	fix O2(g)	3.999971573261693E+00
Smectite-di	Beidellite-Ca	-3.075552912094356E+01
Smectite-di	Beidellite-K	-3.118594398249090E+01
Smectite-di	Beidellite-Mg	-3.013600438231382E+01
Smectite-di	Beidellite-Na	-3.102147245260893E+01
Smectite-di	Montmor-Ca	-2.614118338971533E+01

```
| Smectite-di              | Montmor-K                | -2.635856794823237E+01 |
| Smectite-di              | Montmor-Mg               | -2.531074956017650E+01 |
| Smectite-di              | Montmor-Na               | -2.620500550925948E+01 |
| Smectite-di              | Nontronite-Ca            | -6.131464198095636E+00 |
| Smectite-di              | Nontronite-K             | -6.561879059642964E+00 |
| Smectite-di              | Nontronite-Mg            | -5.511636429162882E+00 |
| Smectite-di              | Nontronite-Na            | -6.397407529761000E+00 |
|-------------------------------------------------------------------------|
| physically removed subsystem  (solid solution, mineral, moles)          |
|-------------------------------------------------------------------------|
| none                     |                          |                        |
|-------------------------------------------------------------------------|
|-------------------------------------------------------------------------|
|EQ6 input file name= j13_All-22.6i.txt                                   |
|Description= React J-13 water with Carbon Steel and Alloy-22.            |
|Equilibrium with atmospheric gases.                                      |
|Version level= 7.2                                                       |
|Created 01/19/99    Creator= D.H. Lester                                 |
|Revised             Revisor=                                             |
|                                                                         |
|Water from well J-13 at the Nevada Test site                             |
|                                                                         |
|Purpose: To model reaction with carbon steel (iron) and alloy C-22       |
|simultaneously to determine an expected Cr concentration in the water    |
|corroding the C-22 after breaching the CAM.                              |
|                                                                         |
|It is assumed that a significant amount of carbon steel is still         |
|present. The rate constant for the steel was assumed to be 1.0E-11       |
|which is the higher value suggested in simulation studies at LLNL.       |
|Reference: Eng. Barrier System & Near Field Envir. Perf. Assess.,        |
|FY-96 Activities: End-of-Year Summary, Sept 1996, Wm.G.Halsey, "Report|
|on Initial Simulation of Water Interaction With Mild Steel Containers    |
|Rate for C-22 is the median value for dripping at high temp. in the      |
|TSPA simulations for the VA document.                                    |
|The data base was modified to add the solid KFe(CrO4)2:2H2O              |
|Total amount of Steel and C-22 reduced to 20 moles each for a more       |
|realistic proportion of materials contacting 1L of water                 |
|-------------------------------------------------------------------------|
| calculational mode   |*normal     | economy           | super economy|
|-------------------------------------------------------------------------|
| model type           |*titration  | closed            | open         |
|-------------------------------------------------------------------------|
| temperature model    |*power      | fluid mixing                         |
|-------------------------------------------------------------------------|
c power model  -->   temp = tstart + tk1*zi + tk2*zi**2 + tk3*zi**3      |
c mixing model -->   temp = (tstart * tk1 + zi*tk2) / (zi + tk1)         |
c------------------------------------------------------------------------|
| tstart(c)|  25.00    |tk1| 0.0000    |tk2| 0.0000    |tk3| 0.0000     |
|-------------------------------------------------------------------------|
| starting value of zi | 0.94066    |max. value of zi    | 1.00000E+38 |
|-------------------------------------------------------------------------|
| starting time (sec)  | 9.39593E+08|max. time (sec)     | 1.00000E+38 |
|-------------------------------------------------------------------------|
| max. steps           |       400  |max. steps w/o print|       150   |
|-------------------------------------------------------------------------|
| linear print interval|  10.000    |log print interval  | 1.00000E+38 |
|-------------------------------------------------------------------------|
| suppress mineral phases                                                 |
|-------------------------------------------------------------------------|
| phases w/ elements|                          |                         |n
| phases except     |                          |                         |n
|-------------------------------------------------------------------------|
| fixed fugacity phases- species, moles(per kg h2o), log fugacity(bars)|
```

```
|-----------------------------------------------------------------------|
| CO2(g)                              | 0.00000        | -3.5000        |n
| O2(g)                               | 0.00000        |-0.67780        |n
|-----------------------------------------------------------------------|
c                  R A T E     L A W S
c 1 = relative                  rate = rk1 + rk2*zi + (1/2)rk3*zi*zi
c 2 = transition state theory   rate = CHECK DOCUMENTATION
c 3 = specified rate            rate = CHECK DOCUMENTATION
c 4 = activity term rate        rate = CHECK DOCUMENTATION
c
c                  R E A C T A N T     T Y P E S
c mineral     solid solution     special    aqueous    gas
c
c                  S U R F A C E    T Y P E
c 0 = fixed surface area     1 = fixed specific surface area
c
c                  N O T E S
c status and jreac are normally not set by the user
|-----------------------------------------------------------------------|
| reactants   (ss) solid solution only     (sp) special reactant only   |
|-----------------------------------------------------------------------|
| REACTANT          | carbon steel             |status    | 0            |
| moles remaining   |  19.060                  |destroyed| 0.93959       |
| reactant type     |  special                 |sk        |  100.00      |
| surface type      |   0                      |fk        |  1.0000      |
| end-member        |                          |mole fr   |              |ss,n
| volume            | 0.00000                  |          |              |sp
| element           | C            |moles      |  2.190000000000000E-02 |sp,n
| element           | Mn           |moles      |  1.030000000000000E-02 |sp,n
| element           | S            |moles      |  8.530000000000000E-04 |sp,n
| element           | Si           |moles      |  5.360000000000000E-03 |sp,n
| element           | P            |moles      |  7.060000000000000E-04 |sp,n
| element           | Fe           |moles      |  9.610000000000000E-01 |sp,n
| DISSOLUTION LAW   |    3                     |          |              |
| rate constant rk1| 1.00000E-11               |csigma1   |              |
| temperature (c)   |   25.000                 |          |              |234
| PRECIPITATION LAW|    0                      |          |              |
c-----------------------------------------------------------------------|
| REACTANT          | Alloy-22                 |status    | 0            |
| moles remaining   |  19.999                  |destroyed| 1.06174E-03   |
| reactant type     |  special                 |sk        |  100.00      |
| surface type      |   0                      |fk        |  1.0000      |
| end-member        |                          |mole fr   |              |ss,n
| volume            | 0.00000                  |          |              |sp
| element           | Cr           |moles      |  2.561060000000000E-01 |sp,n
| element           | Fe           |moles      |  5.420400000000000E-02 |sp,n
| element           | Ni           |moles      |  5.681220000000000E-01 |sp,n
| element           | Mo           |moles      |  1.009620000000000E-01 |sp,n
| element           | V            |moles      |  4.160000000000000E-03 |sp,n
| element           | Mn           |moles      |  5.510000000000000E-03 |sp,n
| DISSOLUTION LAW   |    3                     |          |              |
| rate constant rk1| 1.13000E-14               |csigma1   |              |
| temperature (c)   |   25.000                 |          |              |234
| PRECIPITATION LAW|    0                      |          |              |
|-----------------------------------------------------------------------|
| options                                                               |
|-----------------------------------------------------------------------|
| - SOLID SOLUTIONS -                                                   |
|     ignore solid solutions                                            |
|   * process solid solutions                                           |
| - LOADING OF SPECIES INTO MEMORY -                                    |
|   * don't print                                                       |
|     lists species loaded into memory                                  |
```

```
| - LIST DERIVATIVES OF BASIS ELEMENTS AT EACH PRINT POINT -                |
|   * don't print                                                           |
|     print                                                                 |
| - LIST ALL SPECIES LOADED INTO MEMORY AND THEIR LOG K VALUES -            |
|   * don't print                                                           |
|     print                                                                 |
| - LIST DISTRIBUTION OF AQUEOUS SPECIES AT EACH PRINT POINT -              |
|   * only species > 10**-12 molal                                          |
|     all species                                                           |
|     don't print                                                           |
| - LIST CATION/H+ ACTIVITY RATIOS AT EACH PRINT POINT -                    |
|   * don't print                                                           |
|     print                                                                 |
| - LIST BULK ELEMENT AND OXIDE COMPOSITION AT EACH PRINT POINT -           |
|   * don't print                                                           |
|     print                                                                 |
| - MINERAL SATURATION STATES -                                             |
|   * print if affinity > -10 kcals                                         |
|     print all                                                             |
|     don't print                                                           |
| - LIST GAS SPECIES SUMMARY AT EACH PRINT POINT -                          |
|     don't print                                                           |
|   * print                                                                 |
| - PRINT AQUEOUS MASS AND CONCENTRATION TOTALS -                           |
|   * don't print                                                           |
|     print                                                                 |
| - TAB FILES -                                                             |
|   * write                                                                 |
|     append to previous tabx file                                          |
|     don't write                                                           |
| - WRITE PICKUP FILE -                                                     |
|     write pickup file at end of run                                       |
|     don't write pickup file                                               |
|   * write pickup file for each print point                                |
| - PHYSICALLY REMOVED SUBSYSTEM -                                          |
|   * does nothing                                                          |
|     transfer minerals but leave trivial mass in the system                |
|     transfer minerals                                                     |
| - CLEAR INITIAL PHYSICALLY REMOVED SUBSYSTEM -                            |
|   * does nothing                                                          |
|     clear p.r.s. before first reaction progress advance                   |
| - PHASE BOUNDARY SEARCH -                                                 |
|   * step size constrained by predicted phase boundaries                   |
|     phase boundaries estimated from Taylor's series and printed           |
|     locations of phase boundaries ignored                                 |
| - AUTO BASIS SWITCHING -                                                  |
|   * off                                                                   |
|     on                                                                    |
| - SUPPRESS REDOX REACTIONS -                                              |
|   * does nothing                                                          |
|     suppress all redox reactions                                          |
| - LINEAR OR LOGARITHMIC TAYLOR'S SERIES -                                 |
|   * linear for kcol = 1,kdim, logarithmic for kcol = 1,kbt                |
|     logarithmic for kcol = 1,kbt                                          |
|     linear for kcol = 1,kdim                                              |
| - AZERO AND HYDRATION NUMBERS -                                           |
|   * no change                                                             |
|     read in new azero and hydration numbers                               |
| - PRINT MEAN MOLAL ACTIVITY COEFFICIENTS FOR DISSOLVED SPECIES -          |
|   * does nothing                                                          |
|     print                                                                 |
| - PITZER DATABASE INFORMATION -                                           |
|   * print only warnings                                                   |
```

```
|     print species in model and number of Pitzer coefficients         |
|     print species in model and names of Pitzer coefficients          |
| - PRINT DIAGNOSTIC MESSAGES -                                        |
|   * don't print                                                      |
|     print level 1 messages                                           |
|     print level 2 messages                                           |
| - PRINT PRE-NEWTON-RAPHSON OPTIMIZATION -                            |
|   * don't print                                                      |
|     print summary information                                        |
|     print detailed information                                       |
| - PRINT STEP SIZE AND ORDER -                                        |
|   * don't print                                                      |
|     print scale factor                                               |
|     print orders and step size scaling factors                       |
| - CONTROL STEP SIZE AND ORDER PRINT -                                |
|   * does nothing                                                     |
|     print step size and order when delzi .le. dlzmx1                 |
| - NEWTON ITERATIONS -                                                |
|   * don't print                                                      |
|     print summary of newton iterations                               |
|     print summary, residual functions and correction terms           |
|     print summary, residual functions, correction terms and matrix   |
| - PRINT SEARCH ITERATIONS -                                          |
|   * don't print                                                      |
|     print                                                            |
| - PRINT HPSAT ITERATIONS -                                           |
|   * don't print                                                      |
|     print                                                            |
| - PRINT FINITE DIFFERENCE AND DERIVATIVE DATA -                      |
|   * don't print                                                      |
|     print computations from RDERIV, and RTAYLR                       |
|     print computations from RDERIV, RTAYLR, DERIV and TAYLOR         |
| - PRINT KINETICS DIAGNOSTIC MESSAGES -                               |
|   * don't print                                                      |
|     print level 1 diagnostics                                        |
|     print level 1 and level 2 diagnostics                            |
| - PRINT AKMATR -                                                     |
|   * don't print                                                      |
|     print level 1 diagnostics                                        |
| - KILL ITERATION VARIABLES -                                         |
|   * does nothing                                                     |
|     allow selection of variables to remove                           |
|----------------------------------------------------------------------|
| development options  (used for code development)                     |
|----------------------------------------------------------------------|
|    0 check finite difference and Taylor series expression            |
|    0 check reaction rate finite difference and Taylor series         |
|----------------------------------------------------------------------|
| tolerances                       desired values - defaults info-only |
|----------------------------------------------------------------------|
| number of N-R iterations        |        90        |  90      itermx |
| p.r.s. transfer interval        | 1.00000E+38      |  varies  dlzidp |
| residual magnitude              | 1.00000E-06      |  1.0e-06 tolbt  |
| correction magnitude            | 1.00000E-06      |  1.0e-06 toldl  |
| search/find tolerance           | 1.00000E-06      |  varies  tolx   |
| supersaturation                 | 5.00000E-03      |  varies  tolsat |
| supersaturation set size        | 1.00000E-02      |  varies  tolsst |
| max. size Taylor's series term  | 1.00000E-04      |  1.0e-04 screw1 |
| max. initial value betamx       |                  |  n/a     screw2 |
| max. Taylor's series term (kin.)| 1.00000E-04      |  1.0e-04 screw3 |
| corrector iteration             | 1.00000E-04      |  1.0e-04 screw4 |
| max. size of N-R correction term|  4.0000          |  4.0     screw5 |
| step size (economy mode)        |  4.0000          |  4.0     screw6 |
```

```
| log mass of phases              | -6.0000          |  varies  zklogu |
| decrement mass (p.r.s.)         |  2.0000          |  2.0     zklogl |
| min. left after p.r.s.          | 0.80000          |  .98     zkfac  |
| initial step size               | 1.00000E-09      |  varies  dlzmx1 |
| upper limit step size           | 1.00000E+38      |  varies  dlzmx2 |
| maximum order                   |         6        |  6       nordlm |
| num. attempted assemblages      |        25        |  25      ntrymx |
| slide -> over phase bound.      |        12        |  8       npslmx |
| slide -> over redox insta.      |         8        |  3       nsslmx |
| fo2 scan control                |                  |  none    ioscan |
|-------------------------------------------------------------------------|
c pickup file written by eq6.7.2bR137                                     |
c supported by eqlib.7.2bR168                                             |
|EQ6 input file name= j13_All-22.6i.txt                                   |
|Description= React J-13 water with Carbon Steel and Alloy-22.            |
|Equilibrium with atmospheric gases.                                      |
|Version level= 7.2                                                       |
|Created 01/19/99    Creator= D.H. Lester                                 |
|Revised             Revisor=                                             |
|                                                                         |
|Water from well J-13 at the Nevada Test site                             |
|                                                                         |
|Purpose: To model reaction with carbon steel (iron) and alloy C-22       |
|simultaneously to determine an expected Cr concentration in the water    |
|corroding the C-22 after breaching the CAM.                              |
|                                                                         |
|It is assumed that a significant amount of carbon steel is still         |
|present. The rate constant for the steel was assumed to be 1.0E-11       |
|which is the higher value suggested in simulation studies at LLNL.       |
|Reference: Eng. Barrier System & Near Field Envir. Perf. Assess.,        |
|FY-96 Activities: End-of-Year Summary, Sept 1996, Wm.G.Halsey, "Report|
|on Initial Simulation of Water Interaction With Mild Steel Containers    |
|Rate for C-22 is the median value for dripping at high temp. in the      |
|TSPA simulations for the VA document.                                    |
|The data base was modified to add the solid KFe(CrO4)2:2H2O              |
|Total amount of Steel and C-22 reduced to 20 moles each for a more       |
|realistic proportion of materials contacting 1L of water                 |
|-------------------------------------------------------------------------|
| temperature (C)                    |     25.000                         |
|-------------------------------------------------------------------------|
| electrical imbalance               |   5.752163835343278E-14            |
|-------------------------------------------------------------------------|
| number of aqueous master species   |     38                             |
|-------------------------------------------------------------------------|
| position of last pure mineral      |     44                             |
|-------------------------------------------------------------------------|
| position of last solid solution    |     56                             |
|-------------------------------------------------------------------------|
| suppressed species     (suppress,replace,augmentk,augmentg)  value      |
|-------------------------------------------------------------------------|
| Phlogopite               | mineral        | suppress |  0.00000        |
| Annite                   | mineral        | suppress |  0.00000        |
| Clinochlore-14A          | mineral        | suppress |  0.00000        |
| Daphnite-14A             | mineral        | suppress |  0.00000        |
| Clinozoisite             | mineral        | suppress |  0.00000        |
| Epidote                  | mineral        | suppress |  0.00000        |
| Epidote-ord              | mineral        | suppress |  0.00000        |
| Andradite                | mineral        | suppress |  0.00000        |
| Grossular                | mineral        | suppress |  0.00000        |
| Enstatite                | mineral        | suppress |  0.00000        |
| Ferrosilite              | mineral        | suppress |  0.00000        |
| Pyrite                   | mineral        | suppress |  0.00000        |
| Pyrrhotite               | mineral        | suppress |  0.00000        |
```

Troilite	mineral	suppress	0.00000
Alabandite	mineral	suppress	0.00000
Brezinaite	mineral	suppress	0.00000
Chalcocite	mineral	suppress	0.00000
Covellite	mineral	suppress	0.00000
Millerite	mineral	suppress	0.00000
Polydymite	mineral	suppress	0.00000
Vaesite	mineral	suppress	0.00000
Heazlewoodite	mineral	suppress	0.00000
Galena	mineral	suppress	0.00000
Sulfur	mineral	suppress	0.00000
CaZrO3	mineral	suppress	0.00000
BaZrO3	mineral	suppress	0.00000
SrZrO3	mineral	suppress	0.00000
U2S3	mineral	suppress	0.00000
U3S5	mineral	suppress	0.00000
US2	mineral	suppress	0.00000
US3	mineral	suppress	0.00000
US	mineral	suppress	0.00000
US1.9	mineral	suppress	0.00000
U3P4	mineral	suppress	0.00000
UP	mineral	suppress	0.00000
UP2	mineral	suppress	0.00000
HS-	aqueous	suppress	0.00000
H2S(aq)	aqueous	suppress	0.00000
S--	aqueous	suppress	0.00000

```
iopg options

- pH SCALE CONVENTION -
    * modified NBS
      internal
      rational
- ACTIVITY COEFFICIENT OPTIONS -
    * use B-dot equation
      Davies' equation
      Pitzer's equations
```

elements, moles and moles aqueous

O	4.005551824589011E+04	5.551752071131284E+01
Al	1.482500000694482E-06	2.633221011004738E-10
B	1.238799999942330E-05	1.238799999942590E-05
Ba	1.000000000006594E-10	1.000000000006155E-10
Ca	3.243700000162714E-04	9.578194657259168E-06
Ce	1.000000000975802E-24	9.999999998140218E-25
Cl	2.014000000000269E-04	2.014000000000046E-04
Cr	2.722629604078366E-04	2.722629603253331E-04
Cs	1.000000000000039E-10	1.000000000000007E-10
Cu	1.050000000528221E-14	1.050000000222219E-14
F	1.147500000001528E-04	5.181845985638308E-05
Fe	9.030067653389006E-01	3.068476498846733E-12
Gd	1.000000001150365E-14	9.999999996773714E-15
H	1.110188738405208E+02	1.110188648572677E+02
C	1.000002256739727E+04	1.868185125584875E-05
P	6.646240090727436E-04	4.758293884353080E-04
K	1.289100000000803E-04	1.288210355455514E-04
La	1.000000000980088E-14	9.999999998709624E-15
Li	1.000000000000469E-10	9.999999999984684E-11
Mg	8.269900000408464E-05	8.220144086919252E-05
Mn	9.683661753065390E-03	1.627323844880013E-12
Mo	1.071955435389872E-04	1.071955435389873E-04
N	1.420000000000891E-04	1.420000000000167E-04

Na	1.992200000002518E-03	1.992070055301690E-03
Nd	1.000000000990082E-14	9.999999997276402E-15
Ni	6.031982317154620E-04	6.031982316781150E-04
Pb	1.000000000003566E-10	9.999999999685488E-11
Pu	1.000000001138469E-14	9.999999995128922E-15
S	9.930131323578214E-04	9.930131323062486E-04
Si	6.053120386148182E-03	1.001817153460768E-04
Sm	1.000000000991962E-14	9.999999996899784E-15
Sr	1.000000000034016E-10	9.999999999403392E-11
Ti	1.000000000000003E-10	1.000000000000003E-10
U	9.999999988006304E-15	9.999999978971708E-15
V	4.417060446129996E-06	4.417060446046438E-06
Zn	1.000000000089305E-10	1.000000000040700E-10
Zr	1.000000000323548E-20	1.000000000032260E-20

master species and logarithmic basis variables		
H2O	H2O	1.744362401962308E+00
Al+++	Al+++	-1.354336979260816E+01
B(OH)3(aq)	B(OH)3(aq)	-4.907405158878292E+00
Ba++	Ba++	-1.000039157043337E+01
Ca++	Ca++	-5.052783373333346E+00
Ce+++	Ce+++	-2.496017621074206E+01
Cl-	Cl-	-3.696100999827082E+00
CrO4--	CrO4--	-3.989519062026939E+00
Cs+	Cs+	-1.000005421003667E+01
Cu++	Cu++	-1.416915800804802E+01
F-	F-	-4.286732498914138E+00
Fe++	Fe++	-1.977064339059192E+01
Gd+++	Gd+++	-1.555268217209446E+01
H+	H+	-6.148925885156132E+00
HCO3-	HCO3-	-5.100838696702514E+00
HPO4--	HPO4--	-4.298354908759300E+00
K+	K+	-3.892356736910059E+00
La+++	La+++	-1.479824767754481E+01
Li+	Li+	-1.000175654892969E+01
Mg++	Mg++	-4.148255341888918E+00
Mn++	Mn++	-1.187759339059192E+01
MoO4--	MoO4--	-3.969823269276241E+00
NO3-	NH3(aq)	-3.848182281888290E+00
Na+	Na+	-2.702808240458978E+00
Nd+++	Nd+++	-1.523844209733085E+01
Ni++	Ni++	-3.248198399388055E+00
Pb++	Pb++	-1.001637689236969E+01
Pu++++	Pu++++	-4.199658508679432E+01
SO4--	SO4--	-3.029214285746558E+00
SiO2(aq)	SiO2(aq)	-3.999296581564676E+00
Sm+++	Sm+++	-1.547545476819443E+01
Sr++	Sr++	-1.004326772256085E+01
Ti(OH)4(aq)	Ti(OH)4(aq)	-9.999999999999998E+00
UO2++	UO2++	-1.811018987156905E+01
VO++	VO++	-2.063724840200241E+01
Zn++	Zn++	-1.002315888480095E+01
Zr(OH)2++	Zr(OH)2++	-3.099667886580330E+01
O2(g)	O2(g)	-6.778000000000000E-01
	Fluorapatite	-4.201131639494606E+00
	Hematite	-3.453433120505811E-01
	Pyrolusite	-2.013960388793452E+00
	Quartz	-2.226472863650151E+00
	fix CO2(g)	4.000000979277164E+00
	fix O2(g)	3.999968926893724E+00
Smectite-di	Beidellite-Ca	-2.985446371480292E+01
Smectite-di	Beidellite-K	-3.033372099557303E+01

```
| Smectite-di              | Beidellite-Mg            | -2.928536585377518E+01 |
| Smectite-di              | Beidellite-Na            | -3.016917895684414E+01 |
| Smectite-di              | Montmor-Ca               | -2.582535880204561E+01 |
| Smectite-di              | Montmor-K                | -2.609158577978542E+01 |
| Smectite-di              | Montmor-Mg               | -2.504535185010877E+01 |
| Smectite-di              | Montmor-Na               | -2.593795283196562E+01 |
| Smectite-di              | Nontronite-Ca            | -6.090040140548818E+00 |
| Smectite-di              | Nontronite-K             | -6.569297421318926E+00 |
| Smectite-di              | Nontronite-Mg            | -5.520639249218048E+00 |
| Smectite-di              | Nontronite-Na            | -6.404755382590042E+00 |
|-------------------------------------------------------------------------|
| physically removed subsystem  (solid solution, mineral, moles)          |
|-------------------------------------------------------------------------|
| none                     |                          |                        |
|-------------------------------------------------------------------------|
|-------------------------------------------------------------------------|
|EQ6 input file name= j13_All-22.6i.txt                                   |
|Description= React J-13 water with Carbon Steel and Alloy-22.            |
|Equilibrium with atmospheric gases.                                      |
|Version level= 7.2                                                       |
|Created 01/19/99    Creator= D.H. Lester                                 |
|Revised             Revisor=                                             |
|                                                                         |
|Water from well J-13 at the Nevada Test site                             |
|                                                                         |
|Purpose: To model reaction with carbon steel (iron) and alloy C-22       |
|simultaneously to determine an expected Cr concentration in the water    |
|corroding the C-22 after breaching the CAM.                              |
|                                                                         |
|It is assumed that a significant amount of carbon steel is still         |
|present. The rate constant for the steel was assumed to be 1.0E-11       |
|which is the higher value suggested in simulation studies at LLNL.       |
|Reference: Eng. Barrier System & Near Field Envir. Perf. Assess.,        |
|FY-96 Activities: End-of-Year Summary, Sept 1996, Wm.G.Halsey, "Report|
|on Initial Simulation of Water Interaction With Mild Steel Containers    |
|Rate for C-22 is the median value for dripping at high temp. in the      |
|TSPA simulations for the VA document.                                    |
|The data base was modified to add the solid KFe(CrO4)2:2H2O              |
|Total amount of Steel and C-22 reduced to 20 moles each for a more       |
|realistic proportion of materials contacting 1L of water                 |
|-------------------------------------------------------------------------|
| calculational mode   |*normal     | economy          | super economy|
|-------------------------------------------------------------------------|
| model type           |*titration  | closed           | open         |
|-------------------------------------------------------------------------|
| temperature model    |*power      | fluid mixing                        |
|-------------------------------------------------------------------------|
c power model  -->   temp = tstart + tk1*zi + tk2*zi**2 + tk3*zi**3      |
c mixing model -->   temp = (tstart * tk1 + zi*tk2) / (zi + tk1)         |
c------------------------------------------------------------------------|
| tstart(c)|  25.00    |tk1| 0.0000    |tk2| 0.0000    |tk3| 0.0000     |
|-------------------------------------------------------------------------|
| starting value of zi |  1.0899    |max. value of zi    | 1.00000E+38 |
|-------------------------------------------------------------------------|
| starting time (sec)  | 1.08865E+09|max. time (sec)     | 1.00000E+38 |
|-------------------------------------------------------------------------|
| max. steps           |       400  |max. steps w/o print|       150   |
|-------------------------------------------------------------------------|
| linear print interval|  10.000    |log print interval  | 1.00000E+38 |
|-------------------------------------------------------------------------|
| suppress mineral phases                                                 |
|-------------------------------------------------------------------------|
| phases w/ elements|                          |                         |n
```

```
| phases except     |                          |                          |n
|-----------------------------------------------------------------------|
| fixed fugacity phases- species, moles(per kg h2o), log fugacity(bars)|
|-----------------------------------------------------------------------|
| CO2(g)                              | 0.00000        | -3.5000        |n
| O2(g)                               | 0.00000        |-0.67780        |n
|-----------------------------------------------------------------------|
c                  R A T E     L A W S
c 1 = relative                  rate = rk1 + rk2*zi + (1/2)rk3*zi*zi
c 2 = transition state theory   rate = CHECK DOCUMENTATION
c 3 = specified rate            rate = CHECK DOCUMENTATION
c 4 = activity term rate        rate = CHECK DOCUMENTATION
c
c                  R E A C T A N T     T Y P E S
c mineral     solid solution     special    aqueous    gas
c
c                  S U R F A C E    T Y P E
c 0 = fixed surface area     1 = fixed specific surface area
c
c                  N O T E S
c status and jreac are normally not set by the user
|-----------------------------------------------------------------------|
| reactants   (ss) solid solution only     (sp) special reactant only   |
|-----------------------------------------------------------------------|
| REACTANT          | carbon steel              |status    | 0            |
| moles remaining   |  18.911                   |destroyed|  1.0887       |
| reactant type     |  special                  |sk        |  100.00       |
| surface type      |   0                       |fk        |  1.0000       |
| end-member        |                           |mole fr   |               |ss,n
| volume            | 0.00000                   |          |               |sp
| element           | C            |moles       |  2.190000000000000E-02 |sp,n
| element           | Mn           |moles       |  1.030000000000000E-02 |sp,n
| element           | S            |moles       |  8.530000000000000E-04 |sp,n
| element           | Si           |moles       |  5.360000000000000E-03 |sp,n
| element           | P            |moles       |  7.060000000000000E-04 |sp,n
| element           | Fe           |moles       |  9.610000000000000E-01 |sp,n
| DISSOLUTION LAW   |    3                      |          |               |
| rate constant rk1| 1.00000E-11                |csigma1   |               |
| temperature (c)   |   25.000                  |          |               |234
| PRECIPITATION LAW|    0                       |          |               |
c-----------------------------------------------------------------------|
| REACTANT          | Alloy-22                  |status    | 0            |
| moles remaining   |  19.999                   |destroyed| 1.23018E-03   |
| reactant type     |  special                  |sk        |  100.00       |
| surface type      |   0                       |fk        |  1.0000       |
| end-member        |                           |mole fr   |               |ss,n
| volume            | 0.00000                   |          |               |sp
| element           | Cr           |moles       |  2.561060000000000E-01 |sp,n
| element           | Fe           |moles       |  5.420400000000000E-02 |sp,n
| element           | Ni           |moles       |  5.681220000000000E-01 |sp,n
| element           | Mo           |moles       |  1.009620000000000E-01 |sp,n
| element           | V            |moles       |  4.160000000000000E-03 |sp,n
| element           | Mn           |moles       |  5.510000000000000E-03 |sp,n
| DISSOLUTION LAW   |    3                      |          |               |
| rate constant rk1| 1.13000E-14                |csigma1   |               |
| temperature (c)   |   25.000                  |          |               |234
| PRECIPITATION LAW|    0                       |          |               |
|-----------------------------------------------------------------------|
| options                                                               |
|-----------------------------------------------------------------------|
| - SOLID SOLUTIONS -                                                   |
|     ignore solid solutions                                            |
|   * process solid solutions                                           |
```

```
| - LOADING OF SPECIES INTO MEMORY -                                |
|   * don't print                                                   |
|     lists species loaded into memory                              |
| - LIST DERIVATIVES OF BASIS ELEMENTS AT EACH PRINT POINT -        |
|   * don't print                                                   |
|     print                                                         |
| - LIST ALL SPECIES LOADED INTO MEMORY AND THEIR LOG K VALUES -    |
|   * don't print                                                   |
|     print                                                         |
| - LIST DISTRIBUTION OF AQUEOUS SPECIES AT EACH PRINT POINT -      |
|   * only species > 10**-12 molal                                  |
|     all species                                                   |
|     don't print                                                   |
| - LIST CATION/H+ ACTIVITY RATIOS AT EACH PRINT POINT -            |
|   * don't print                                                   |
|     print                                                         |
| - LIST BULK ELEMENT AND OXIDE COMPOSITION AT EACH PRINT POINT -   |
|   * don't print                                                   |
|     print                                                         |
| - MINERAL SATURATION STATES -                                     |
|   * print if affinity > -10 kcals                                 |
|     print all                                                     |
|     don't print                                                   |
| - LIST GAS SPECIES SUMMARY AT EACH PRINT POINT -                  |
|     don't print                                                   |
|   * print                                                         |
| - PRINT AQUEOUS MASS AND CONCENTRATION TOTALS -                   |
|   * don't print                                                   |
|     print                                                         |
| - TAB FILES -                                                     |
|   * write                                                         |
|     append to previous tabx file                                  |
|     don't write                                                   |
| - WRITE PICKUP FILE -                                             |
|     write pickup file at end of run                               |
|     don't write pickup file                                       |
|   * write pickup file for each print point                        |
| - PHYSICALLY REMOVED SUBSYSTEM -                                  |
|   * does nothing                                                  |
|     transfer minerals but leave trivial mass in the system        |
|     transfer minerals                                             |
| - CLEAR INITIAL PHYSICALLY REMOVED SUBSYSTEM -                    |
|   * does nothing                                                  |
|     clear p.r.s. before first reaction progress advance           |
| - PHASE BOUNDARY SEARCH -                                         |
|   * step size constrained by predicted phase boundaries           |
|     phase boundaries estimated from Taylor's series and printed   |
|     locations of phase boundaries ignored                         |
| - AUTO BASIS SWITCHING -                                          |
|   * off                                                           |
|     on                                                            |
| - SUPPRESS REDOX REACTIONS -                                      |
|   * does nothing                                                  |
|     suppress all redox reactions                                  |
| - LINEAR OR LOGARITHMIC TAYLOR'S SERIES -                         |
|   * linear for kcol = 1,kdim, logarithmic for kcol = 1,kbt        |
|     logarithmic for kcol = 1,kbt                                  |
|     linear for kcol = 1,kdim                                      |
| - AZERO AND HYDRATION NUMBERS -                                   |
|   * no change                                                     |
|     read in new azero and hydration numbers                       |
| - PRINT MEAN MOLAL ACTIVITY COEFFICIENTS FOR DISSOLVED SPECIES -  |
|   * does nothing                                                  |
```

```
|     print                                                          |
| - PITZER DATABASE INFORMATION -                                    |
|   * print only warnings                                            |
|     print species in model and number of Pitzer coefficients       |
|     print species in model and names of Pitzer coefficients        |
| - PRINT DIAGNOSTIC MESSAGES -                                      |
|   * don't print                                                    |
|     print level 1 messages                                         |
|     print level 2 messages                                         |
| - PRINT PRE-NEWTON-RAPHSON OPTIMIZATION -                          |
|   * don't print                                                    |
|     print summary information                                      |
|     print detailed information                                     |
| - PRINT STEP SIZE AND ORDER -                                      |
|   * don't print                                                    |
|     print scale factor                                             |
|     print orders and step size scaling factors                     |
| - CONTROL STEP SIZE AND ORDER PRINT -                              |
|   * does nothing                                                   |
|     print step size and order when delzi .le. dlzmx1               |
| - NEWTON ITERATIONS -                                              |
|   * don't print                                                    |
|     print summary of newton iterations                             |
|     print summary, residual functions and correction terms         |
|     print summary, residual functions, correction terms and matrix |
| - PRINT SEARCH ITERATIONS -                                        |
|   * don't print                                                    |
|     print                                                          |
| - PRINT HPSAT ITERATIONS -                                         |
|   * don't print                                                    |
|     print                                                          |
| - PRINT FINITE DIFFERENCE AND DERIVATIVE DATA -                    |
|   * don't print                                                    |
|     print computations from RDERIV, and RTAYLR                     |
|     print computations from RDERIV, RTAYLR, DERIV and TAYLOR       |
| - PRINT KINETICS DIAGNOSTIC MESSAGES -                             |
|   * don't print                                                    |
|     print level 1 diagnostics                                      |
|     print level 1 and level 2 diagnostics                          |
| - PRINT AKMATR -                                                   |
|   * don't print                                                    |
|     print level 1 diagnostics                                      |
| - KILL ITERATION VARIABLES -                                       |
|   * does nothing                                                   |
|     allow selection of variables to remove                         |
|--------------------------------------------------------------------|
| development options  (used for code development)                   |
|--------------------------------------------------------------------|
|    0 check finite difference and Taylor series expression          |
|    0 check reaction rate finite difference and Taylor series       |
|--------------------------------------------------------------------|
| tolerances                       desired values - defaults info-only |
|--------------------------------------------------------------------|
| number of N-R iterations        |        90        |  90      itermx |
| p.r.s. transfer interval        | 1.00000E+38      |  varies  dlzidp |
| residual magnitude              | 1.00000E-06      |  1.0e-06 tolbt  |
| correction magnitude            | 1.00000E-06      |  1.0e-06 toldl  |
| search/find tolerance           | 1.00000E-06      |  varies  tolx   |
| supersaturation                 | 5.00000E-03      |  varies  tolsat |
| supersaturation set size        | 1.00000E-02      |  varies  tolsst |
| max. size Taylor's series term  | 1.00000E-04      |  1.0e-04 screw1 |
| max. initial value betamx       |                  |  n/a     screw2 |
| max. Taylor's series term (kin.)| 1.00000E-04      |  1.0e-04 screw3 |
```

```
| corrector iteration              | 1.00000E-04      |  1.0e-04 screw4 |
| max. size of N-R correction term|  4.0000          |  4.0     screw5 |
| step size (economy mode)         |  4.0000          |  4.0     screw6 |
| log mass of phases               | -6.0000          |  varies  zklogu |
| decrement mass (p.r.s.)          |  2.0000          |  2.0     zklogl |
| min. left after p.r.s.           | 0.80000          |  .98     zkfac  |
| initial step size                | 1.00000E-09      |  varies  dlzmx1 |
| upper limit step size            | 1.00000E+38      |  varies  dlzmx2 |
| maximum order                    |         6        |  6       nordlm |
| num. attempted assemblages       |        25        |  25      ntrymx |
| slide -> over phase bound.       |        12        |  8       npslmx |
| slide -> over redox insta.       |         8        |  3       nsslmx |
| fo2 scan control                 |                  |  none    ioscan |
|-----------------------------------------------------------------------|
c pickup file written by eq6.7.2bR137                                   |
c supported by eqlib.7.2bR168                                           |
|EQ6 input file name= j13_All-22.6i.txt                                 |
|Description= React J-13 water with Carbon Steel and Alloy-22.          |
|Equilibrium with atmospheric gases.                                    |
|Version level= 7.2                                                     |
|Created 01/19/99    Creator= D.H. Lester                               |
|Revised             Revisor=                                           |
|                                                                       |
|Water from well J-13 at the Nevada Test site                           |
|                                                                       |
|Purpose: To model reaction with carbon steel (iron) and alloy C-22     |
|simultaneously to determine an expected Cr concentration in the water |
|corroding the C-22 after breaching the CAM.                            |
|                                                                       |
|It is assumed that a significant amount of carbon steel is still       |
|present. The rate constant for the steel was assumed to be 1.0E-11     |
|which is the higher value suggested in simulation studies at LLNL.     |
|Reference: Eng. Barrier System & Near Field Envir. Perf. Assess.,      |
|FY-96 Activities: End-of-Year Summary, Sept 1996, Wm.G.Halsey, "Report|
|on Initial Simulation of Water Interaction With Mild Steel Containers |
|Rate for C-22 is the median value for dripping at high temp. in the    |
|TSPA simulations for the VA document.                                  |
|The data base was modified to add the solid KFe(CrO4)2:2H2O            |
|Total amount of Steel and C-22 reduced to 20 moles each for a more     |
|realistic proportion of materials contacting 1L of water               |
|-----------------------------------------------------------------------|
| temperature (C)                    |     25.000                       |
|-----------------------------------------------------------------------|
| electrical imbalance               |   5.752163835343278E-14          |
|-----------------------------------------------------------------------|
| number of aqueous master species   |     38                           |
|-----------------------------------------------------------------------|
| position of last pure mineral      |     44                           |
|-----------------------------------------------------------------------|
| position of last solid solution    |     44                           |
|-----------------------------------------------------------------------|
| suppressed species     (suppress,replace,augmentk,augmentg)  value    |
|-----------------------------------------------------------------------|
| Phlogopite               | mineral        | suppress |  0.00000       |
| Annite                   | mineral        | suppress |  0.00000       |
| Clinochlore-14A          | mineral        | suppress |  0.00000       |
| Daphnite-14A             | mineral        | suppress |  0.00000       |
| Clinozoisite             | mineral        | suppress |  0.00000       |
| Epidote                  | mineral        | suppress |  0.00000       |
| Epidote-ord              | mineral        | suppress |  0.00000       |
| Andradite                | mineral        | suppress |  0.00000       |
| Grossular                | mineral        | suppress |  0.00000       |
| Enstatite                | mineral        | suppress |  0.00000       |
```

```
| Ferrosilite                | mineral         | suppress |  0.00000       |
| Pyrite                     | mineral         | suppress |  0.00000       |
| Pyrrhotite                 | mineral         | suppress |  0.00000       |
| Troilite                   | mineral         | suppress |  0.00000       |
| Alabandite                 | mineral         | suppress |  0.00000       |
| Brezinaite                 | mineral         | suppress |  0.00000       |
| Chalcocite                 | mineral         | suppress |  0.00000       |
| Covellite                  | mineral         | suppress |  0.00000       |
| Millerite                  | mineral         | suppress |  0.00000       |
| Polydymite                 | mineral         | suppress |  0.00000       |
| Vaesite                    | mineral         | suppress |  0.00000       |
| Heazlewoodite              | mineral         | suppress |  0.00000       |
| Galena                     | mineral         | suppress |  0.00000       |
| Sulfur                     | mineral         | suppress |  0.00000       |
| CaZrO3                     | mineral         | suppress |  0.00000       |
| BaZrO3                     | mineral         | suppress |  0.00000       |
| SrZrO3                     | mineral         | suppress |  0.00000       |
| U2S3                       | mineral         | suppress |  0.00000       |
| U3S5                       | mineral         | suppress |  0.00000       |
| US2                        | mineral         | suppress |  0.00000       |
| US3                        | mineral         | suppress |  0.00000       |
| US                         | mineral         | suppress |  0.00000       |
| US1.9                      | mineral         | suppress |  0.00000       |
| U3P4                       | mineral         | suppress |  0.00000       |
| UP                         | mineral         | suppress |  0.00000       |
| UP2                        | mineral         | suppress |  0.00000       |
| HS-                        | aqueous         | suppress |  0.00000       |
| H2S(aq)                    | aqueous         | suppress |  0.00000       |
| S--                        | aqueous         | suppress |  0.00000       |
|-----------------------------------------------------------------------|
| iopg options                                                          |
|-----------------------------------------------------------------------|
| - pH SCALE CONVENTION -                                               |
|    * modified NBS                                                     |
|      internal                                                         |
|      rational                                                         |
| - ACTIVITY COEFFICIENT OPTIONS -                                      |
|    * use B-dot equation                                               |
|      Davies' equation                                                 |
|      Pitzer's equations                                               |
|-----------------------------------------------------------------------|
| elements, moles and moles aqueous                                     |
|-----------------------------------------------------------------------|
| O                          |  4.005551824589011E+04 |  5.551863955756226E+01 |
| Al                         |  1.482500000694482E-06 |  1.482500000248897E-06 |
| B                          |  1.238799999942330E-05 |  1.238799999942338E-05 |
| Ba                         |  1.000000000006594E-10 |  1.000000000006477E-10 |
| Ca                         |  3.243700000162714E-04 |  9.433687890417468E-05 |
| Ce                         |  1.000000000975802E-24 |  1.000000000760620E-24 |
| Cl                         |  2.014000000000269E-04 |  2.014000000000203E-04 |
| Cr                         |  3.154004833374488E-04 |  3.154004832996330E-04 |
| Cs                         |  1.000000000000039E-10 |  1.000000000000032E-10 |
| Cu                         |  1.050000000528221E-14 |  1.050000000507442E-14 |
| F                          |  1.147500000001528E-04 |  6.874337577693914E-05 |
| Fe                         |  1.046261199502840E+00 |  3.661753496132679E-11 |
| Gd                         |  1.000000001150365E-14 |  1.000000000859721E-14 |
| H                          |  1.110188738405208E+02 |  1.110188738405206E+02 |
| C                          |  1.000002583178038E+04 |  1.167744042393321E-05 |
| P                          |  7.698593730675136E-04 |  6.318395003219468E-04 |
| K                          |  1.289100000000803E-04 |  1.289099999999805E-04 |
| La                         |  1.000000000980088E-14 |  1.000000000766260E-14 |
| Li                         |  1.000000000000469E-10 |  9.999999999998872E-11 |
| Mg                         |  8.269900000408464E-05 |  8.269900000144602E-05 |
```

Mn	1.121989330560500E-02	1.094239753900334E-10
Mo	1.242011997517254E-04	1.242011997517253E-04
N	1.420000000000891E-04	1.420000000000626E-04
Na	1.992200000002518E-03	1.992200000001178E-03
Nd	1.000000000990082E-14	1.000000000747758E-14
Ni	6.988905458424922E-04	6.988905458301558E-04
Pb	1.000000000003566E-10	1.000000000001465E-10
Pu	1.000000001138469E-14	1.000000000653473E-14
S	1.120160108969066E-03	1.120160108951108E-03
Si	6.852074424408756E-03	1.001640183075157E-04
Sm	1.000000000991962E-14	1.000000000732274E-14
Sr	1.000000000034016E-10	1.000000000007979E-10
Ti	1.000000000000003E-10	1.000000000000003E-10
U	9.999999988006304E-15	9.999999985412698E-15
V	5.117755062371658E-06	5.117755062281584E-06
Zn	1.000000000089305E-10	1.000000000086868E-10
Zr	1.000000000323548E-20	1.000000000246109E-20

master species and logarithmic basis variables

H2O	H2O	1.744360572777739E+00
Al+++	Al+++	-9.976325679515086E+00
B(OH)3(aq)	B(OH)3(aq)	-4.907047523297658E+00
Ba++	Ba++	-1.000038897210198E+01
Ca++	Ca++	-4.056683722329642E+00
Ce+++	Ce+++	-2.448287723597881E+01
Cl-	Cl-	-3.696108152690508E+00
CrO4--	CrO4--	-4.674988658444290E+00
Cs+	Cs+	-1.000005383111824E+01
Cu++	Cu++	-1.401704108526754E+01
F-	F-	-4.189772979803693E+00
Fe++	Fe++	-1.791639631711542E+01
Gd+++	Gd+++	-1.468856891282516E+01
H+	H+	-5.223306594273658E+00
HCO3-	HCO3-	-6.023869920117668E+00
HPO4--	HPO4--	-5.051218559556232E+00
K+	K+	-3.892206085183255E+00
La+++	La+++	-1.445291168415510E+01
Li+	Li+	-1.000193582680959E+01
Mg++	Mg++	-4.143132719379306E+00
Mn++	Mn++	-1.002334631711542E+01
MoO4--	MoO4--	-3.905874208965901E+00
NO3-	NH3(aq)	-3.848370655772932E+00
Na+	Na+	-2.702866703038352E+00
Nd+++	Nd+++	-1.459545188447085E+01
Ni++	Ni++	-3.186691129327294E+00
Pb++	Pb++	-1.000439951092533E+01
Pu++++	Pu++++	-3.891329055765704E+01
SO4--	SO4--	-2.981175214893431E+00
SiO2(aq)	SiO2(aq)	-3.999298410749245E+00
Sm+++	Sm+++	-1.467039832278830E+01
Sr++	Sr++	-1.004573862266612E+01
Ti(OH)4(aq)	Ti(OH)4(aq)	-9.999999999999998E+00
UO2++	UO2++	-1.715268785151278E+01
VO++	VO++	-1.776575437728036E+01
Zn++	Zn++	-1.000441587802438E+01
Zr(OH)2++	Zr(OH)2++	-2.914208288549703E+01
O2(g)	O2(g)	-6.778000000000000E-01
	Fluorapatite	-4.337179632318924E+00
	Hematite	-2.813898758307905E-01
	Pyrolusite	-1.950011277173440E+00
	Quartz	-2.170573329177721E+00
	fix CO2(g)	4.000001121351376E+00

```
|                          | fix     O2(g)            |  3.999963997202847E+00 |
|-------------------------------------------------------------------------|
| physically removed subsystem  (solid solution, mineral, moles)          |
|-------------------------------------------------------------------------|
| none                     |                          |                        |
|-------------------------------------------------------------------------|
|-------------------------------------------------------------------------|
|EQ6 input file name= j13_All-22.6i.txt                                   |
|Description= React J-13 water with Carbon Steel and Alloy-22.            |
|Equilibrium with atmospheric gases.                                      |
|Version level= 7.2                                                       |
|Created 01/19/99    Creator= D.H. Lester                                 |
|Revised             Revisor=                                             |
|                                                                         |
|Water from well J-13 at the Nevada Test site                             |
|                                                                         |
|Purpose: To model reaction with carbon steel (iron) and alloy C-22       |
|simultaneously to determine an expected Cr concentration in the water    |
|corroding the C-22 after breaching the CAM.                              |
|                                                                         |
|It is assumed that a significant amount of carbon steel is still         |
|present. The rate constant for the steel was assumed to be 1.0E-11       |
|which is the higher value suggested in simulation studies at LLNL.       |
|Reference: Eng. Barrier System & Near Field Envir. Perf. Assess.,        |
|FY-96 Activities: End-of-Year Summary, Sept 1996, Wm.G.Halsey, "Report|
|on Initial Simulation of Water Interaction With Mild Steel Containers    |
|Rate for C-22 is the median value for dripping at high temp. in the      |
|TSPA simulations for the VA document.                                    |
|The data base was modified to add the solid KFe(CrO4)2:2H2O              |
|Total amount of Steel and C-22 reduced to 20 moles each for a more       |
|realistic proportion of materials contacting 1L of water                 |
|-------------------------------------------------------------------------|
| calculational mode   |*normal     | economy           | super economy|
|-------------------------------------------------------------------------|
| model type           |*titration  | closed            | open         |
|-------------------------------------------------------------------------|
| temperature model    |*power      | fluid mixing                         |
|-------------------------------------------------------------------------|
c power model  -->   temp = tstart + tk1*zi + tk2*zi**2 + tk3*zi**3      |
c mixing model -->   temp = (tstart * tk1 + zi*tk2) / (zi + tk1)          |
c-------------------------------------------------------------------------|
| tstart(c)|  25.00    |tk1| 0.0000    |tk2| 0.0000    |tk3| 0.0000      |
|-------------------------------------------------------------------------|
| starting value of zi |  1.2823    |max. value of zi    | 1.00000E+38 |
|-------------------------------------------------------------------------|
| starting time (sec)  | 1.28090E+09|max. time (sec)     | 1.00000E+38 |
|-------------------------------------------------------------------------|
| max. steps           |       400  |max. steps w/o print|       150   |
|-------------------------------------------------------------------------|
| linear print interval|  10.000    |log print interval  | 1.00000E+38 |
|-------------------------------------------------------------------------|
| suppress mineral phases                                                 |
|-------------------------------------------------------------------------|
| phases w/ elements|                          |                          |n
| phases except     |                          |                          |n
|-------------------------------------------------------------------------|
| fixed fugacity phases- species, moles(per kg h2o), log fugacity(bars)|
|-------------------------------------------------------------------------|
| CO2(g)                            | 0.00000        | -3.5000        |n
| O2(g)                             | 0.00000        |-0.67780        |n
|-------------------------------------------------------------------------|
c                  R A T E     L A W S
c 1 = relative                  rate = rk1 + rk2*zi + (1/2)rk3*zi*zi
```

```
c 2 = transition state theory   rate = CHECK DOCUMENTATION
c 3 = specified rate            rate = CHECK DOCUMENTATION
c 4 = activity term rate        rate = CHECK DOCUMENTATION
c
c                  R E A C T A N T     T Y P E S
c mineral     solid solution     special    aqueous    gas
c
c                  S U R F A C E    T Y P E
c 0 = fixed surface area     1 = fixed specific surface area
c
c                  N O T E S
c status and jreac are normally not set by the user
|-----------------------------------------------------------------------|
| reactants   (ss) solid solution only     (sp) special reactant only   |
|-----------------------------------------------------------------------|
| REACTANT          | carbon steel              |status    | 0            |
| moles remaining   |  18.719                   |destroyed|  1.2809       |
| reactant type     |  special                  |sk        |  100.00       |
| surface type      |   0                       |fk        |  1.0000       |
| end-member        |                           |mole fr   |               |ss,n
| volume            | 0.00000                   |          |               |sp
| element           | C            |moles       |  2.190000000000000E-02 |sp,n
| element           | Mn           |moles       |  1.030000000000000E-02 |sp,n
| element           | S            |moles       |  8.530000000000000E-04 |sp,n
| element           | Si           |moles       |  5.360000000000000E-03 |sp,n
| element           | P            |moles       |  7.060000000000000E-04 |sp,n
| element           | Fe           |moles       |  9.610000000000000E-01 |sp,n
| DISSOLUTION LAW   |    3                      |          |               |
| rate constant rk1| 1.00000E-11                |csigma1   |               |
| temperature (c)   |   25.000                  |          |               |234
| PRECIPITATION LAW|    0                       |          |               |
c-----------------------------------------------------------------------|
| REACTANT          | Alloy-22                  |status    | 0            |
| moles remaining   |  19.999                   |destroyed| 1.44741E-03   |
| reactant type     |  special                  |sk        |  100.00       |
| surface type      |   0                       |fk        |  1.0000       |
| end-member        |                           |mole fr   |               |ss,n
| volume            | 0.00000                   |          |               |sp
| element           | Cr           |moles       |  2.561060000000000E-01 |sp,n
| element           | Fe           |moles       |  5.420400000000000E-02 |sp,n
| element           | Ni           |moles       |  5.681220000000000E-01 |sp,n
| element           | Mo           |moles       |  1.009620000000000E-01 |sp,n
| element           | V            |moles       |  4.160000000000000E-03 |sp,n
| element           | Mn           |moles       |  5.510000000000000E-03 |sp,n
| DISSOLUTION LAW   |    3                      |          |               |
| rate constant rk1| 1.13000E-14                |csigma1   |               |
| temperature (c)   |   25.000                  |          |               |234
| PRECIPITATION LAW|    0                       |          |               |
|-----------------------------------------------------------------------|
| options                                                               |
|-----------------------------------------------------------------------|
| - SOLID SOLUTIONS -                                                   |
|     ignore solid solutions                                            |
|   * process solid solutions                                           |
| - LOADING OF SPECIES INTO MEMORY -                                    |
|   * don't print                                                       |
|     lists species loaded into memory                                  |
| - LIST DERIVATIVES OF BASIS ELEMENTS AT EACH PRINT POINT -            |
|   * don't print                                                       |
|     print                                                             |
| - LIST ALL SPECIES LOADED INTO MEMORY AND THEIR LOG K VALUES -        |
|   * don't print                                                       |
|     print                                                             |
```

```
| - LIST DISTRIBUTION OF AQUEOUS SPECIES AT EACH PRINT POINT -          |
|   * only species > 10**-12 molal                                      |
|     all species                                                       |
|     don't print                                                       |
| - LIST CATION/H+ ACTIVITY RATIOS AT EACH PRINT POINT -                |
|   * don't print                                                       |
|     print                                                             |
| - LIST BULK ELEMENT AND OXIDE COMPOSITION AT EACH PRINT POINT -       |
|   * don't print                                                       |
|     print                                                             |
| - MINERAL SATURATION STATES -                                         |
|   * print if affinity > -10 kcals                                     |
|     print all                                                         |
|     don't print                                                       |
| - LIST GAS SPECIES SUMMARY AT EACH PRINT POINT -                      |
|     don't print                                                       |
|   * print                                                             |
| - PRINT AQUEOUS MASS AND CONCENTRATION TOTALS -                       |
|   * don't print                                                       |
|     print                                                             |
| - TAB FILES -                                                         |
|   * write                                                             |
|     append to previous tabx file                                      |
|     don't write                                                       |
| - WRITE PICKUP FILE -                                                 |
|     write pickup file at end of run                                   |
|     don't write pickup file                                           |
|   * write pickup file for each print point                            |
| - PHYSICALLY REMOVED SUBSYSTEM -                                      |
|   * does nothing                                                      |
|     transfer minerals but leave trivial mass in the system            |
|     transfer minerals                                                 |
| - CLEAR INITIAL PHYSICALLY REMOVED SUBSYSTEM -                        |
|   * does nothing                                                      |
|     clear p.r.s. before first reaction progress advance               |
| - PHASE BOUNDARY SEARCH -                                             |
|   * step size constrained by predicted phase boundaries               |
|     phase boundaries estimated from Taylor's series and printed       |
|     locations of phase boundaries ignored                             |
| - AUTO BASIS SWITCHING -                                              |
|   * off                                                               |
|     on                                                                |
| - SUPPRESS REDOX REACTIONS -                                          |
|   * does nothing                                                      |
|     suppress all redox reactions                                      |
| - LINEAR OR LOGARITHMIC TAYLOR'S SERIES -                             |
|   * linear for kcol = 1,kdim, logarithmic for kcol = 1,kbt            |
|     logarithmic for kcol = 1,kbt                                      |
|     linear for kcol = 1,kdim                                          |
| - AZERO AND HYDRATION NUMBERS -                                       |
|   * no change                                                         |
|     read in new azero and hydration numbers                           |
| - PRINT MEAN MOLAL ACTIVITY COEFFICIENTS FOR DISSOLVED SPECIES -      |
|   * does nothing                                                      |
|     print                                                             |
| - PITZER DATABASE INFORMATION -                                       |
|   * print only warnings                                               |
|     print species in model and number of Pitzer coefficients          |
|     print species in model and names of Pitzer coefficients           |
| - PRINT DIAGNOSTIC MESSAGES -                                         |
|   * don't print                                                       |
|     print level 1 messages                                            |
|     print level 2 messages                                            |
```

```
| - PRINT PRE-NEWTON-RAPHSON OPTIMIZATION -                                |
|   * don't print                                                          |
|     print summary information                                            |
|     print detailed information                                           |
| - PRINT STEP SIZE AND ORDER -                                            |
|   * don't print                                                          |
|     print scale factor                                                   |
|     print orders and step size scaling factors                           |
| - CONTROL STEP SIZE AND ORDER PRINT -                                    |
|   * does nothing                                                         |
|     print step size and order when delzi .le. dlzmx1                     |
| - NEWTON ITERATIONS -                                                    |
|   * don't print                                                          |
|     print summary of newton iterations                                   |
|     print summary, residual functions and correction terms               |
|     print summary, residual functions, correction terms and matrix       |
| - PRINT SEARCH ITERATIONS -                                              |
|   * don't print                                                          |
|     print                                                                |
| - PRINT HPSAT ITERATIONS -                                               |
|   * don't print                                                          |
|     print                                                                |
| - PRINT FINITE DIFFERENCE AND DERIVATIVE DATA -                          |
|   * don't print                                                          |
|     print computations from RDERIV, and RTAYLR                           |
|     print computations from RDERIV, RTAYLR, DERIV and TAYLOR             |
| - PRINT KINETICS DIAGNOSTIC MESSAGES -                                   |
|   * don't print                                                          |
|     print level 1 diagnostics                                            |
|     print level 1 and level 2 diagnostics                                |
| - PRINT AKMATR -                                                         |
|   * don't print                                                          |
|     print level 1 diagnostics                                            |
| - KILL ITERATION VARIABLES -                                             |
|   * does nothing                                                         |
|     allow selection of variables to remove                               |
|--------------------------------------------------------------------------|
| development options  (used for code development)                         |
|--------------------------------------------------------------------------|
|    0 check finite difference and Taylor series expression                |
|    0 check reaction rate finite difference and Taylor series             |
|--------------------------------------------------------------------------|
| tolerances                        desired values - defaults info-only    |
|--------------------------------------------------------------------------|
| number of N-R iterations        |        90        |  90      itermx |
| p.r.s. transfer interval        | 1.00000E+38      |  varies  dlzidp |
| residual magnitude              | 1.00000E-06      |  1.0e-06 tolbt  |
| correction magnitude            | 1.00000E-06      |  1.0e-06 toldl  |
| search/find tolerance           | 1.00000E-06      |  varies  tolx   |
| supersaturation                 | 5.00000E-03      |  varies  tolsat |
| supersaturation set size        | 1.00000E-02      |  varies  tolsst |
| max. size Taylor's series term  | 1.00000E-04      |  1.0e-04 screw1 |
| max. initial value betamx       |                  |  n/a     screw2 |
| max. Taylor's series term (kin.)| 1.00000E-04      |  1.0e-04 screw3 |
| corrector iteration             | 1.00000E-04      |  1.0e-04 screw4 |
| max. size of N-R correction term|  4.0000          |  4.0     screw5 |
| step size (economy mode)        |  4.0000          |  4.0     screw6 |
| log mass of phases              | -6.0000          |  varies  zklogu |
| decrement mass (p.r.s.)         |  2.0000          |  2.0     zklogl |
| min. left after p.r.s.          | 0.80000          |  .98     zkfac  |
| initial step size               | 1.00000E-09      |  varies  dlzmx1 |
| upper limit step size           | 1.00000E+38      |  varies  dlzmx2 |
| maximum order                   |         6        |  6       nordlm |
```

```
| num. attempted assemblages      |        25        |  25      ntrymx |
| slide -> over phase bound.      |        12        |  8       npslmx |
| slide -> over redox insta.      |         8        |  3       nsslmx |
| fo2 scan control                |                  |  none    ioscan |
|-------------------------------------------------------------------------|
c pickup file written by eq6.7.2bR137                                     |
c supported by eqlib.7.2bR168                                             |
|EQ6 input file name= j13_All-22.6i.txt                                   |
|Description= React J-13 water with Carbon Steel and Alloy-22.            |
|Equilibrium with atmospheric gases.                                      |
|Version level= 7.2                                                       |
|Created 01/19/99    Creator= D.H. Lester                                 |
|Revised             Revisor=                                             |
|                                                                         |
|Water from well J-13 at the Nevada Test site                             |
|                                                                         |
|Purpose: To model reaction with carbon steel (iron) and alloy C-22       |
|simultaneously to determine an expected Cr concentration in the water    |
|corroding the C-22 after breaching the CAM.                              |
|                                                                         |
|It is assumed that a significant amount of carbon steel is still         |
|present. The rate constant for the steel was assumed to be 1.0E-11       |
|which is the higher value suggested in simulation studies at LLNL.       |
|Reference: Eng. Barrier System & Near Field Envir. Perf. Assess.,        |
|FY-96 Activities: End-of-Year Summary, Sept 1996, Wm.G.Halsey, "Report|
|on Initial Simulation of Water Interaction With Mild Steel Containers |
|Rate for C-22 is the median value for dripping at high temp. in the      |
|TSPA simulations for the VA document.                                    |
|The data base was modified to add the solid KFe(CrO4)2:2H2O              |
|Total amount of Steel and C-22 reduced to 20 moles each for a more       |
|realistic proportion of materials contacting 1L of water                 |
|-------------------------------------------------------------------------|
| temperature (C)                    |     25.000                         |
|-------------------------------------------------------------------------|
| electrical imbalance               |   5.752163835343278E-14            |
|-------------------------------------------------------------------------|
| number of aqueous master species   |     38                             |
|-------------------------------------------------------------------------|
| position of last pure mineral      |     43                             |
|-------------------------------------------------------------------------|
| position of last solid solution    |     43                             |
|-------------------------------------------------------------------------|
| suppressed species     (suppress,replace,augmentk,augmentg)  value      |
|-------------------------------------------------------------------------|
| Phlogopite                | mineral        | suppress |  0.00000       |
| Annite                    | mineral        | suppress |  0.00000       |
| Clinochlore-14A           | mineral        | suppress |  0.00000       |
| Daphnite-14A              | mineral        | suppress |  0.00000       |
| Clinozoisite              | mineral        | suppress |  0.00000       |
| Epidote                   | mineral        | suppress |  0.00000       |
| Epidote-ord               | mineral        | suppress |  0.00000       |
| Andradite                 | mineral        | suppress |  0.00000       |
| Grossular                 | mineral        | suppress |  0.00000       |
| Enstatite                 | mineral        | suppress |  0.00000       |
| Ferrosilite               | mineral        | suppress |  0.00000       |
| Pyrite                    | mineral        | suppress |  0.00000       |
| Pyrrhotite                | mineral        | suppress |  0.00000       |
| Troilite                  | mineral        | suppress |  0.00000       |
| Alabandite                | mineral        | suppress |  0.00000       |
| Brezinaite                | mineral        | suppress |  0.00000       |
| Chalcocite                | mineral        | suppress |  0.00000       |
| Covellite                 | mineral        | suppress |  0.00000       |
| Millerite                 | mineral        | suppress |  0.00000       |
```

Polydymite	mineral	suppress	0.00000
Vaesite	mineral	suppress	0.00000
Heazlewoodite	mineral	suppress	0.00000
Galena	mineral	suppress	0.00000
Sulfur	mineral	suppress	0.00000
CaZrO3	mineral	suppress	0.00000
BaZrO3	mineral	suppress	0.00000
SrZrO3	mineral	suppress	0.00000
U2S3	mineral	suppress	0.00000
U3S5	mineral	suppress	0.00000
US2	mineral	suppress	0.00000
US3	mineral	suppress	0.00000
US	mineral	suppress	0.00000
US1.9	mineral	suppress	0.00000
U3P4	mineral	suppress	0.00000
UP	mineral	suppress	0.00000
UP2	mineral	suppress	0.00000
HS-	aqueous	suppress	0.00000
H2S(aq)	aqueous	suppress	0.00000
S--	aqueous	suppress	0.00000

```
iopg options
- pH SCALE CONVENTION -
    * modified NBS
      internal
      rational
- ACTIVITY COEFFICIENT OPTIONS -
    * use B-dot equation
      Davies' equation
      Pitzer's equations
```

elements, moles and moles aqueous

O	4.005551824589011E+04	5.552037976732338E+01
Al	1.482500000694482E-06	1.482499997434998E-06
B	1.238799999942330E-05	1.238799999942344E-05
Ba	1.000000000006594E-10	1.000000000005770E-10
Ca	3.243700000162714E-04	3.243699999734744E-04
Ce	1.000000000975802E-24	9.999999995794236E-25
Cl	2.014000000000269E-04	2.013999999999756E-04
Cr	3.710361526838584E-04	3.710361523497649E-04
Cs	1.000000000000039E-10	9.999999999999796E-11
Cu	1.050000000528221E-14	1.050000000422124E-14
F	1.147500000001528E-04	1.147499999901732E-04
Fe	1.231020448302468E+00	4.352379493554367E-10
Gd	1.000000001150365E-14	9.999999994088448E-15
H	1.110188738405208E+02	1.110188738405189E+02
C	1.000003004194654E+04	1.099322428685415E-05
P	9.055843641458244E-04	9.055843633263842E-04
K	1.289100000000803E-04	1.289099999993010E-04
La	1.000000000980088E-14	9.999999995521298E-15
Li	1.000000000000469E-10	9.999999999959118E-11
Mg	8.269900000408464E-05	8.269899998441734E-05
Mn	1.320121408835083E-02	1.428064293316267E-09
Mo	1.461338700076047E-04	1.461338700076047E-04
N	1.420000000000891E-04	1.419999999997843E-04
Na	1.992200000002518E-03	1.992199999992075E-03
Nd	1.000000000990082E-14	9.999999994352820E-15
Ni	8.223075987050608E-04	8.223075985948696E-04
Pb	1.000000000003566E-10	9.999999999951094E-11
Pu	1.000000001138469E-14	9.999999976262402E-15
S	1.284145119436203E-03	1.284145119252130E-03

Si	7.882507784436728E-03	1.001617598196164E-04
Sm	1.000000000991962E-14	9.999999993760586E-15
Sr	1.000000000034016E-10	9.999999998371908E-11
Ti	1.000000000000003E-10	1.000000000000003E-10
U	9.999999988006304E-15	9.999999969173728E-15
V	6.021460498718576E-06	6.021460497720548E-06
Zn	1.000000000089305E-10	1.000000000080996E-10
Zr	1.000000000323548E-20	9.999999997664586E-21

master species and logarithmic basis variables

H2O	H2O	1.744358065489590E+00
Al+++	Al+++	-1.049169120829452E+01
B(OH)3(aq)	B(OH)3(aq)	-4.907012701183442E+00
Ba++	Ba++	-1.000038726156350E+01
Ca++	Ca++	-3.521743467991508E+00
Ce+++	Ce+++	-2.445196378893154E+01
Cl-	Cl-	-3.696123255697484E+00
CrO4--	CrO4--	-5.128513091045694E+00
Cs+	Cs+	-1.000005306578234E+01
Cu++	Cu++	-1.400504195026868E+01
F-	F-	-3.967663682682737E+00
Fe++	Fe++	-1.680179620858058E+01
Gd+++	Gd+++	-1.458450697291807E+01
H+	H+	-4.669070079662152E+00
HCO3-	HCO3-	-6.572871893632026E+00
HPO4--	HPO4--	-5.434190976054856E+00
K+	K+	-3.892432726236533E+00
La+++	La+++	-1.443479121483072E+01
Li+	Li+	-1.000212285410031E+01
Mg++	Mg++	-4.146406181225505E+00
Mn++	Mn++	-8.908746208580578E+00
MoO4--	MoO4--	-3.835249114300968E+00
NO3-	NH3(aq)	-3.848771379019990E+00
Na+	Na+	-2.703061493715388E+00
Nd+++	Nd+++	-1.455758779680903E+01
Ni++	Ni++	-3.118135319409748E+00
Pb++	Pb++	-1.000290214271925E+01
Pu++++	Pu++++	-3.733126849907880E+01
SO4--	SO4--	-2.929423286533578E+00
SiO2(aq)	SiO2(aq)	-3.999300918037394E+00
Sm+++	Sm+++	-1.458787521526956E+01
Sr++	Sr++	-1.004853627495006E+01
Ti(OH)4(aq)	Ti(OH)4(aq)	-9.999999999999998E+00
UO2++	UO2++	-1.674643480404255E+01
VO++	VO++	-1.605069640849306E+01
Zn++	Zn++	-1.000229424383362E+01
Zr(OH)2++	Zr(OH)2++	-2.802674556448805E+01
O2(g)	O2(g)	-6.778000000000000E-01
	Hematite	-2.107647288235255E-01
	Pyrolusite	-1.879386172772856E+00
	Quartz	-2.108889463169784E+00
	fix CO2(g)	4.000001304225773E+00
	fix O2(g)	3.999957639161409E+00

physically removed subsystem (solid solution, mineral, moles)

none		

EQ6 input file name= j13_All-22.6i.txt
Description= React J-13 water with Carbon Steel and Alloy-22.
Equilibrium with atmospheric gases.

```
|Version level= 7.2                                                    |
|Created 01/19/99    Creator= D.H. Lester                              |
|Revised             Revisor=                                          |
|                                                                      |
|Water from well J-13 at the Nevada Test site                          |
|                                                                      |
|Purpose: To model reaction with carbon steel (iron) and alloy C-22    |
|simultaneously to determine an expected Cr concentration in the water |
|corroding the C-22 after breaching the CAM.                           |
|                                                                      |
|It is assumed that a significant amount of carbon steel is still      |
|present. The rate constant for the steel was assumed to be 1.0E-11    |
|which is the higher value suggested in simulation studies at LLNL.    |
|Reference: Eng. Barrier System & Near Field Envir. Perf. Assess.,     |
|FY-96 Activities: End-of-Year Summary, Sept 1996, Wm.G.Halsey, "Report|
|on Initial Simulation of Water Interaction With Mild Steel Containers |
|Rate for C-22 is the median value for dripping at high temp. in the   |
|TSPA simulations for the VA document.                                 |
|The data base was modified to add the solid KFe(CrO4)2:2H2O           |
|Total amount of Steel and C-22 reduced to 20 moles each for a more    |
|realistic proportion of materials contacting 1L of water              |
|----------------------------------------------------------------------|
| calculational mode   |*normal     | economy           | super economy|
|----------------------------------------------------------------------|
| model type           |*titration  | closed            | open         |
|----------------------------------------------------------------------|
| temperature model    |*power      | fluid mixing                     |
|----------------------------------------------------------------------|
c power model  -->   temp = tstart + tk1*zi + tk2*zi**2 + tk3*zi**3    |
c mixing model -->   temp = (tstart * tk1 + zi*tk2) / (zi + tk1)       |
c---------------------------------------------------------------------|
| tstart(c)|  25.00    |tk1| 0.0000    |tk2| 0.0000    |tk3| 0.0000    |
|----------------------------------------------------------------------|
| starting value of zi |  1.9226    |max. value of zi    | 1.00000E+38 |
|----------------------------------------------------------------------|
| starting time (sec)  | 1.92040E+09|max. time (sec)     | 1.00000E+38 |
|----------------------------------------------------------------------|
| max. steps           |       400  |max. steps w/o print|       150   |
|----------------------------------------------------------------------|
| linear print interval|  10.000    |log print interval  | 1.00000E+38 |
|----------------------------------------------------------------------|
| suppress mineral phases                                              |
|----------------------------------------------------------------------|
| phases w/ elements|                          |                          |n
| phases except     |                          |                          |n
|----------------------------------------------------------------------|
| fixed fugacity phases- species, moles(per kg h2o), log fugacity(bars)|
|----------------------------------------------------------------------|
| CO2(g)                              | 0.00000        | -3.5000        |n
| O2(g)                               | 0.00000        |-0.67780        |n
|----------------------------------------------------------------------|
c                  R A T E     L A W S
c 1 = relative                  rate = rk1 + rk2*zi + (1/2)rk3*zi*zi
c 2 = transition state theory   rate = CHECK DOCUMENTATION
c 3 = specified rate            rate = CHECK DOCUMENTATION
c 4 = activity term rate        rate = CHECK DOCUMENTATION
c
c                  R E A C T A N T     T Y P E S
c mineral     solid solution     special    aqueous    gas
c
c                  S U R F A C E    T Y P E
c 0 = fixed surface area     1 = fixed specific surface area
c
```

```
c                  N O T E S
c status and jreac are normally not set by the user
|-----------------------------------------------------------------------|
| reactants   (ss) solid solution only     (sp) special reactant only   |
|-----------------------------------------------------------------------|
| REACTANT          | carbon steel              |status    | 0           |
| moles remaining   |  18.080                   |destroyed|  1.9204      |
| reactant type     |  special                  |sk        |  100.00      |
| surface type      |   0                       |fk        |  1.0000      |
| end-member        |                           |mole fr   |              |ss,n
| volume            | 0.00000                   |          |              |sp
| element           | C            |moles       |  2.190000000000000E-02 |sp,n
| element           | Mn           |moles       |  1.030000000000000E-02 |sp,n
| element           | S            |moles       |  8.530000000000000E-04 |sp,n
| element           | Si           |moles       |  5.360000000000000E-03 |sp,n
| element           | P            |moles       |  7.060000000000000E-04 |sp,n
| element           | Fe           |moles       |  9.610000000000000E-01 |sp,n
| DISSOLUTION LAW   |    3                      |          |              |
| rate constant rk1| 1.00000E-11                |csigma1   |              |
| temperature (c)   |   25.000                  |          |              |234
| PRECIPITATION LAW|    0                       |          |              |
c-----------------------------------------------------------------------|
| REACTANT          | Alloy-22                  |status    | 0           |
| moles remaining   |  19.998                   |destroyed| 2.17005E-03  |
| reactant type     |  special                  |sk        |  100.00      |
| surface type      |   0                       |fk        |  1.0000      |
| end-member        |                           |mole fr   |              |ss,n
| volume            | 0.00000                   |          |              |sp
| element           | Cr           |moles       |  2.561060000000000E-01 |sp,n
| element           | Fe           |moles       |  5.420400000000000E-02 |sp,n
| element           | Ni           |moles       |  5.681220000000000E-01 |sp,n
| element           | Mo           |moles       |  1.009620000000000E-01 |sp,n
| element           | V            |moles       |  4.160000000000000E-03 |sp,n
| element           | Mn           |moles       |  5.510000000000000E-03 |sp,n
| DISSOLUTION LAW   |    3                      |          |              |
| rate constant rk1| 1.13000E-14                |csigma1   |              |
| temperature (c)   |   25.000                  |          |              |234
| PRECIPITATION LAW|    0                       |          |              |
|-----------------------------------------------------------------------|
| options                                                               |
|-----------------------------------------------------------------------|
| - SOLID SOLUTIONS -                                                   |
|     ignore solid solutions                                            |
|   * process solid solutions                                           |
| - LOADING OF SPECIES INTO MEMORY -                                    |
|   * don't print                                                       |
|     lists species loaded into memory                                  |
| - LIST DERIVATIVES OF BASIS ELEMENTS AT EACH PRINT POINT -            |
|   * don't print                                                       |
|     print                                                             |
| - LIST ALL SPECIES LOADED INTO MEMORY AND THEIR LOG K VALUES -        |
|   * don't print                                                       |
|     print                                                             |
| - LIST DISTRIBUTION OF AQUEOUS SPECIES AT EACH PRINT POINT -          |
|   * only species > 10**-12 molal                                      |
|     all species                                                       |
|     don't print                                                       |
| - LIST CATION/H+ ACTIVITY RATIOS AT EACH PRINT POINT -                |
|   * don't print                                                       |
|     print                                                             |
| - LIST BULK ELEMENT AND OXIDE COMPOSITION AT EACH PRINT POINT -       |
|   * don't print                                                       |
|     print                                                             |
```

```
| - MINERAL SATURATION STATES -                                          |
|   * print if affinity > -10 kcals                                      |
|     print all                                                          |
|     don't print                                                        |
| - LIST GAS SPECIES SUMMARY AT EACH PRINT POINT -                       |
|     don't print                                                        |
|   * print                                                              |
| - PRINT AQUEOUS MASS AND CONCENTRATION TOTALS -                        |
|   * don't print                                                        |
|     print                                                              |
| - TAB FILES -                                                          |
|   * write                                                              |
|     append to previous tabx file                                       |
|     don't write                                                        |
| - WRITE PICKUP FILE -                                                  |
|     write pickup file at end of run                                    |
|     don't write pickup file                                            |
|   * write pickup file for each print point                             |
| - PHYSICALLY REMOVED SUBSYSTEM -                                       |
|   * does nothing                                                       |
|     transfer minerals but leave trivial mass in the system             |
|     transfer minerals                                                  |
| - CLEAR INITIAL PHYSICALLY REMOVED SUBSYSTEM -                         |
|   * does nothing                                                       |
|     clear p.r.s. before first reaction progress advance                |
| - PHASE BOUNDARY SEARCH -                                              |
|   * step size constrained by predicted phase boundaries                |
|     phase boundaries estimated from Taylor's series and printed        |
|     locations of phase boundaries ignored                              |
| - AUTO BASIS SWITCHING -                                               |
|   * off                                                                |
|     on                                                                 |
| - SUPPRESS REDOX REACTIONS -                                           |
|   * does nothing                                                       |
|     suppress all redox reactions                                       |
| - LINEAR OR LOGARITHMIC TAYLOR'S SERIES -                              |
|   * linear for kcol = 1,kdim, logarithmic for kcol = 1,kbt             |
|     logarithmic for kcol = 1,kbt                                       |
|     linear for kcol = 1,kdim                                           |
| - AZERO AND HYDRATION NUMBERS -                                        |
|   * no change                                                          |
|     read in new azero and hydration numbers                            |
| - PRINT MEAN MOLAL ACTIVITY COEFFICIENTS FOR DISSOLVED SPECIES -       |
|   * does nothing                                                       |
|     print                                                              |
| - PITZER DATABASE INFORMATION -                                        |
|   * print only warnings                                                |
|     print species in model and number of Pitzer coefficients           |
|     print species in model and names of Pitzer coefficients            |
| - PRINT DIAGNOSTIC MESSAGES -                                          |
|   * don't print                                                        |
|     print level 1 messages                                             |
|     print level 2 messages                                             |
| - PRINT PRE-NEWTON-RAPHSON OPTIMIZATION -                              |
|   * don't print                                                        |
|     print summary information                                          |
|     print detailed information                                         |
| - PRINT STEP SIZE AND ORDER -                                          |
|   * don't print                                                        |
|     print scale factor                                                 |
|     print orders and step size scaling factors                         |
| - CONTROL STEP SIZE AND ORDER PRINT -                                  |
|   * does nothing                                                       |
```

```
|     print step size and order when delzi .le. dlzmx1                  |
| - NEWTON ITERATIONS -                                                 |
|   * don't print                                                       |
|     print summary of newton iterations                                |
|     print summary, residual functions and correction terms            |
|     print summary, residual functions, correction terms and matrix    |
| - PRINT SEARCH ITERATIONS -                                           |
|   * don't print                                                       |
|     print                                                             |
| - PRINT HPSAT ITERATIONS -                                            |
|   * don't print                                                       |
|     print                                                             |
| - PRINT FINITE DIFFERENCE AND DERIVATIVE DATA -                       |
|   * don't print                                                       |
|     print computations from RDERIV, and RTAYLR                        |
|     print computations from RDERIV, RTAYLR, DERIV and TAYLOR          |
| - PRINT KINETICS DIAGNOSTIC MESSAGES -                                |
|   * don't print                                                       |
|     print level 1 diagnostics                                         |
|     print level 1 and level 2 diagnostics                             |
| - PRINT AKMATR -                                                      |
|   * don't print                                                       |
|     print level 1 diagnostics                                         |
| - KILL ITERATION VARIABLES -                                          |
|   * does nothing                                                      |
|     allow selection of variables to remove                            |
|-----------------------------------------------------------------------|
| development options  (used for code development)                      |
|-----------------------------------------------------------------------|
|    0 check finite difference and Taylor series expression             |
|    0 check reaction rate finite difference and Taylor series          |
|-----------------------------------------------------------------------|
| tolerances                        desired values - defaults info-only |
|-----------------------------------------------------------------------|
| number of N-R iterations        |        90        |  90      itermx |
| p.r.s. transfer interval        | 1.00000E+38      |  varies  dlzidp |
| residual magnitude              | 1.00000E-06      |  1.0e-06 tolbt  |
| correction magnitude            | 1.00000E-06      |  1.0e-06 toldl  |
| search/find tolerance           | 1.00000E-06      |  varies  tolx   |
| supersaturation                 | 5.00000E-03      |  varies  tolsat |
| supersaturation set size        | 1.00000E-02      |  varies  tolsst |
| max. size Taylor's series term  | 1.00000E-04      |  1.0e-04 screw1 |
| max. initial value betamx       |                  |  n/a     screw2 |
| max. Taylor's series term (kin.)| 1.00000E-04      |  1.0e-04 screw3 |
| corrector iteration             | 1.00000E-04      |  1.0e-04 screw4 |
| max. size of N-R correction term|  4.0000          |  4.0     screw5 |
| step size (economy mode)        |  4.0000          |  4.0     screw6 |
| log mass of phases              | -6.0000          |  varies  zklogu |
| decrement mass (p.r.s.)         |  2.0000          |  2.0     zklogl |
| min. left after p.r.s.          | 0.80000          |  .98     zkfac  |
| initial step size               | 1.00000E-09      |  varies  dlzmx1 |
| upper limit step size           | 1.00000E+38      |  varies  dlzmx2 |
| maximum order                   |         6        |  6       nordlm |
| num. attempted assemblages      |        25        |  25      ntrymx |
| slide -> over phase bound.      |        12        |  8       npslmx |
| slide -> over redox insta.      |         8        |  3       nsslmx |
| fo2 scan control                |                  |  none    ioscan |
|-----------------------------------------------------------------------|
c pickup file written by eq6.7.2bR137                                   |
c supported by eqlib.7.2bR168                                           |
|EQ6 input file name= j13_All-22.6i.txt                                 |
|Description= React J-13 water with Carbon Steel and Alloy-22.          |
|Equilibrium with atmospheric gases.                                    |
```

```
|Version level= 7.2                                                    |
|Created 01/19/99    Creator= D.H. Lester                              |
|Revised             Revisor=                                          |
|                                                                      |
|Water from well J-13 at the Nevada Test site                          |
|                                                                      |
|Purpose: To model reaction with carbon steel (iron) and alloy C-22    |
|simultaneously to determine an expected Cr concentration in the water |
|corroding the C-22 after breaching the CAM.                           |
|                                                                      |
|It is assumed that a significant amount of carbon steel is still      |
|present. The rate constant for the steel was assumed to be 1.0E-11    |
|which is the higher value suggested in simulation studies at LLNL.    |
|Reference: Eng. Barrier System & Near Field Envir. Perf. Assess.,     |
|FY-96 Activities: End-of-Year Summary, Sept 1996, Wm.G.Halsey, "Report|
|on Initial Simulation of Water Interaction With Mild Steel Containers |
|Rate for C-22 is the median value for dripping at high temp. in the   |
|TSPA simulations for the VA document.                                 |
|The data base was modified to add the solid KFe(CrO4)2:2H2O           |
|Total amount of Steel and C-22 reduced to 20 moles each for a more    |
|realistic proportion of materials contacting 1L of water              |
|----------------------------------------------------------------------|
| temperature (C)                    |     25.000                      |
|----------------------------------------------------------------------|
| electrical imbalance               |   5.752163835343278E-14         |
|----------------------------------------------------------------------|
| number of aqueous master species   |     38                          |
|----------------------------------------------------------------------|
| position of last pure mineral      |     44                          |
|----------------------------------------------------------------------|
| position of last solid solution    |     44                          |
|----------------------------------------------------------------------|
| suppressed species     (suppress,replace,augmentk,augmentg)  value   |
|----------------------------------------------------------------------|
| Phlogopite               | mineral        | suppress |  0.00000      |
| Annite                   | mineral        | suppress |  0.00000      |
| Clinochlore-14A          | mineral        | suppress |  0.00000      |
| Daphnite-14A             | mineral        | suppress |  0.00000      |
| Clinozoisite             | mineral        | suppress |  0.00000      |
| Epidote                  | mineral        | suppress |  0.00000      |
| Epidote-ord              | mineral        | suppress |  0.00000      |
| Andradite                | mineral        | suppress |  0.00000      |
| Grossular                | mineral        | suppress |  0.00000      |
| Enstatite                | mineral        | suppress |  0.00000      |
| Ferrosilite              | mineral        | suppress |  0.00000      |
| Pyrite                   | mineral        | suppress |  0.00000      |
| Pyrrhotite               | mineral        | suppress |  0.00000      |
| Troilite                 | mineral        | suppress |  0.00000      |
| Alabandite               | mineral        | suppress |  0.00000      |
| Brezinaite               | mineral        | suppress |  0.00000      |
| Chalcocite               | mineral        | suppress |  0.00000      |
| Covellite                | mineral        | suppress |  0.00000      |
| Millerite                | mineral        | suppress |  0.00000      |
| Polydymite               | mineral        | suppress |  0.00000      |
| Vaesite                  | mineral        | suppress |  0.00000      |
| Heazlewoodite            | mineral        | suppress |  0.00000      |
| Galena                   | mineral        | suppress |  0.00000      |
| Sulfur                   | mineral        | suppress |  0.00000      |
| CaZrO3                   | mineral        | suppress |  0.00000      |
| BaZrO3                   | mineral        | suppress |  0.00000      |
| SrZrO3                   | mineral        | suppress |  0.00000      |
| U2S3                     | mineral        | suppress |  0.00000      |
| U3S5                     | mineral        | suppress |  0.00000      |
```

```
| US2                       | mineral         | suppress |  0.00000      |
| US3                       | mineral         | suppress |  0.00000      |
| US                        | mineral         | suppress |  0.00000      |
| US1.9                     | mineral         | suppress |  0.00000      |
| U3P4                      | mineral         | suppress |  0.00000      |
| UP                        | mineral         | suppress |  0.00000      |
| UP2                       | mineral         | suppress |  0.00000      |
| HS-                       | aqueous         | suppress |  0.00000      |
| H2S(aq)                   | aqueous         | suppress |  0.00000      |
| S--                       | aqueous         | suppress |  0.00000      |
|-------------------------------------------------------------------------|
| iopg options                                                            |
|-------------------------------------------------------------------------|
| - pH SCALE CONVENTION -                                                 |
|    * modified NBS                                                       |
|      internal                                                           |
|      rational                                                           |
| - ACTIVITY COEFFICIENT OPTIONS -                                        |
|    * use B-dot equation                                                 |
|      Davies' equation                                                   |
|      Pitzer's equations                                                 |
|-------------------------------------------------------------------------|
| elements, moles and moles aqueous                                       |
|-------------------------------------------------------------------------|
| O                         |  4.005551824589011E+04 |  5.552431637428126E+01 |
| Al                        |  1.482500000694482E-06 |  1.482500000708279E-06 |
| B                         |  1.238799999942330E-05 |  1.238799999942329E-05 |
| Ba                        |  1.000000000006594E-10 |  1.000000000006593E-10 |
| Ca                        |  3.243700000162714E-04 |  3.243700000165026E-04 |
| Ce                        |  1.000000000975802E-24 |  1.000000000982141E-24 |
| Cl                        |  2.014000000000269E-04 |  2.014000000000272E-04 |
| Cr                        |  5.561074163138898E-04 |  5.561074163162206E-04 |
| Cs                        |  1.000000000000039E-10 |  1.000000000000038E-10 |
| Cu                        |  1.050000000528221E-14 |  1.050000000528622E-14 |
| F                         |  1.147500000001528E-04 |  1.147500000002965E-04 |
| Fe                        |  1.845619464444066E+00 |  7.010137824462926E-07 |
| Gd                        |  1.000000001150365E-14 |  1.000000001157694E-14 |
| H                         |  1.110188738405208E+02 |  1.110188661769977E+02 |
| C                         |  1.000004404700443E+04 |  1.072561030958336E-05 |
| P                         |  1.357071618637871E-03 |  1.349408095418587E-03 |
| K                         |  1.289100000000803E-04 |  1.289100000000849E-04 |
| La                        |  1.000000000980088E-14 |  1.000000000986693E-14 |
| Li                        |  1.000000000000469E-10 |  1.000000000000495E-10 |
| Mg                        |  8.269900000408464E-05 |  8.269900000418956E-05 |
| Mn                        |  1.979204952228953E-02 |  2.046576041800654E-06 |
| Mo                        |  2.190925860026039E-04 |  2.190925860026038E-04 |
| N                         |  1.420000000000891E-04 |  1.420000000000907E-04 |
| Na                        |  1.992200000002518E-03 |  1.992200000002579E-03 |
| Nd                        |  1.000000000990082E-14 |  1.000000000997065E-14 |
| Ni                        |  1.232852671589026E-03 |  1.232852671589931E-03 |
| Pb                        |  1.000000000003566E-10 |  1.000000000003584E-10 |
| Pu                        |  1.000000001138469E-14 |  1.000000001155006E-14 |
| S                         |  1.829638926917387E-03 |  1.829638926919027E-03 |
| Si                        |  1.131022971655765E-02 |  1.001592297765363E-04 |
| Sm                        |  1.000000000991962E-14 |  1.000000000998992E-14 |
| Sr                        |  1.000000000034016E-10 |  1.000000000035082E-10 |
| Ti                        |  1.000000000000003E-10 |  1.000000000000003E-10 |
| U                         |  9.999999988006304E-15 |  9.999999988103528E-15 |
| V                         |  9.027623793217458E-06 |  9.027623793240454E-06 |
| Zn                        |  1.000000000089305E-10 |  1.000000000089315E-10 |
| Zr                        |  1.000000000323548E-20 |  1.000000000326232E-20 |
|-------------------------------------------------------------------------|
| master species and logarithmic basis variables                          |
```

H2O	H2O	1.744349880642650E+00
Al+++	Al+++	-9.755333372933526E+00
B(OH)3(aq)	B(OH)3(aq)	-4.906999187107144E+00
Ba++	Ba++	-1.000035939705908E+01
Ca++	Ca++	-3.528195460860972E+00
Ce+++	Ce+++	-2.443490424215254E+01
Cl-	Cl-	-3.696189444298230E+00
CrO4--	CrO4--	-6.498436153254320E+00
Cs+	Cs+	-1.000005171151577E+01
Cu++	Cu++	-1.400007329950972E+01
F-	F-	-4.251985812182455E+00
Fe++	Fe++	-1.365546527728085E+01
Gd+++	Gd+++	-1.446250392985621E+01
H+	H+	-3.101404479340100E+00
HCO3-	HCO3-	-8.131298968280354E+00
HPO4--	HPO4--	-6.846262439591058E+00
K+	K+	-3.893186343191410E+00
La+++	La+++	-1.443786838157209E+01
Li+	Li+	-1.000272163011815E+01
Mg++	Mg++	-4.158814959281739E+00
Mn++	Mn++	-5.762415277280846E+00
MoO4--	MoO4--	-3.659372318526181E+00
NO3-	NH3(aq)	-3.849001911567070E+00
Na+	Na+	-2.703715231132015E+00
Nd+++	Nd+++	-1.450751674853708E+01
Ni++	Ni++	-2.949407725757496E+00
Pb++	Pb++	-1.000175115902886E+01
Pu++++	Pu++++	-3.162194228212778E+01
SO4--	SO4--	-2.800476037244595E+00
SiO2(aq)	SiO2(aq)	-3.999309102884334E+00
Sm+++	Sm+++	-1.450933117984817E+01
Sr++	Sr++	-1.005849819583611E+01
Ti(OH)4(aq)	Ti(OH)4(aq)	-9.999999999999998E+00
UO2++	UO2++	-1.582445906941536E+01
VO++	VO++	-1.205739295052934E+01
Zn++	Zn++	-1.000067817434164E+01
Zr(OH)2++	Zr(OH)2++	-2.488753333422566E+01
O2(g)	O2(g)	-6.778000000000000E-01
	Hematite	-3.488799888609200E-02
	MnHPO4	-5.115571522087778E+00
	Pyrolusite	-1.703722350836304E+00
	Quartz	-1.950391656635728E+00
	fix CO2(g)	4.000001912467078E+00
	fix O2(g)	3.999936488763851E+00

physically removed subsystem (solid solution, mineral, moles)		
none		

```
EQ6 input file name= j13_All-22.6i.txt
Description= React J-13 water with Carbon Steel and Alloy-22.
Equilibrium with atmospheric gases.
Version level= 7.2
Created 01/19/99    Creator= D.H. Lester
Revised             Revisor=

Water from well J-13 at the Nevada Test site

Purpose: To model reaction with carbon steel (iron) and alloy C-22
simultaneously to determine an expected Cr concentration in the water
corroding the C-22 after breaching the CAM.
```

```
|                                                                      |
|It is assumed that a significant amount of carbon steel is still      |
|present. The rate constant for the steel was assumed to be 1.0E-11    |
|which is the higher value suggested in simulation studies at LLNL.    |
|Reference: Eng. Barrier System & Near Field Envir. Perf. Assess.,     |
|FY-96 Activities: End-of-Year Summary, Sept 1996, Wm.G.Halsey, "Report|
|on Initial Simulation of Water Interaction With Mild Steel Containers |
|Rate for C-22 is the median value for dripping at high temp. in the   |
|TSPA simulations for the VA document.                                 |
|The data base was modified to add the solid KFe(CrO4)2:2H2O           |
|Total amount of Steel and C-22 reduced to 20 moles each for a more    |
|realistic proportion of materials contacting 1L of water              |
|----------------------------------------------------------------------|
| calculational mode   |*normal     | economy           | super economy|
|----------------------------------------------------------------------|
| model type           |*titration  | closed            | open         |
|----------------------------------------------------------------------|
| temperature model    |*power      | fluid mixing                     |
|----------------------------------------------------------------------|
c power model  -->   temp = tstart + tk1*zi + tk2*zi**2 + tk3*zi**3    |
c mixing model -->   temp = (tstart * tk1 + zi*tk2) / (zi + tk1)       |
c---------------------------------------------------------------------|
| tstart(c)|  25.00    |tk1| 0.0000    |tk2| 0.0000    |tk3| 0.0000    |
|----------------------------------------------------------------------|
| starting value of zi |  10.000    |max. value of zi    | 1.00000E+38 |
|----------------------------------------------------------------------|
| starting time (sec)  | 9.98871E+09|max. time (sec)     | 1.00000E+38 |
|----------------------------------------------------------------------|
| max. steps           |       400  |max. steps w/o print|       150   |
|----------------------------------------------------------------------|
| linear print interval|  10.000    |log print interval  | 1.00000E+38 |
|----------------------------------------------------------------------|
| suppress mineral phases                                              |
|----------------------------------------------------------------------|
| phases w/ elements|                          |                         |n
| phases except     |                          |                         |n
|----------------------------------------------------------------------|
| fixed fugacity phases- species, moles(per kg h2o), log fugacity(bars)|
|----------------------------------------------------------------------|
| CO2(g)                              | 0.00000        | -3.5000        |n
| O2(g)                               | 0.00000        |-0.67780        |n
|----------------------------------------------------------------------|
c                  R A T E     L A W S
c 1 = relative                  rate = rk1 + rk2*zi + (1/2)rk3*zi*zi
c 2 = transition state theory   rate = CHECK DOCUMENTATION
c 3 = specified rate            rate = CHECK DOCUMENTATION
c 4 = activity term rate        rate = CHECK DOCUMENTATION
c
c                  R E A C T A N T     T Y P E S
c mineral     solid solution     special    aqueous    gas
c
c                  S U R F A C E    T Y P E
c 0 = fixed surface area     1 = fixed specific surface area
c
c                  N O T E S
c status and jreac are normally not set by the user
|----------------------------------------------------------------------|
| reactants   (ss) solid solution only     (sp) special reactant only  |
|----------------------------------------------------------------------|
| REACTANT         | carbon steel             |status   | 0            |
| moles remaining  |  10.011                  |destroyed|  9.9887      |
| reactant type    |  special                 |sk       |  100.00      |
| surface type     |   0                      |fk       |  1.0000      |
```

```
| end-member        |                          |mole fr  |              |ss,n
| volume            | 0.00000                  |         |              |sp
| element           | C            |moles      |  2.190000000000000E-02 |sp,n
| element           | Mn           |moles      |  1.030000000000000E-02 |sp,n
| element           | S            |moles      |  8.530000000000000E-04 |sp,n
| element           | Si           |moles      |  5.360000000000000E-03 |sp,n
| element           | P            |moles      |  7.060000000000000E-04 |sp,n
| element           | Fe           |moles      |  9.610000000000000E-01 |sp,n
| DISSOLUTION LAW   |    3                     |         |              |
| rate constant rk1| 1.00000E-11               |csigma1  |              |
| temperature (c)   |   25.000                 |         |              |234
| PRECIPITATION LAW|    0                      |         |              |
c-------------------------------------------------------------------------|
| REACTANT          | Alloy-22                 |status   | 0            |
| moles remaining   |  19.989                  |destroyed| 1.12872E-02  |
| reactant type     |  special                 |sk       |  100.00      |
| surface type      |   0                      |fk       |  1.0000      |
| end-member        |                          |mole fr  |              |ss,n
| volume            | 0.00000                  |         |              |sp
| element           | Cr           |moles      |  2.561060000000000E-01 |sp,n
| element           | Fe           |moles      |  5.420400000000000E-02 |sp,n
| element           | Ni           |moles      |  5.681220000000000E-01 |sp,n
| element           | Mo           |moles      |  1.009620000000000E-01 |sp,n
| element           | V            |moles      |  4.160000000000000E-03 |sp,n
| element           | Mn           |moles      |  5.510000000000000E-03 |sp,n
| DISSOLUTION LAW   |    3                     |         |              |
| rate constant rk1| 1.13000E-14               |csigma1  |              |
| temperature (c)   |   25.000                 |         |              |234
| PRECIPITATION LAW|    0                      |         |              |
|-------------------------------------------------------------------------|
| options                                                                 |
|-------------------------------------------------------------------------|
| - SOLID SOLUTIONS -                                                     |
|     ignore solid solutions                                              |
|   * process solid solutions                                             |
| - LOADING OF SPECIES INTO MEMORY -                                      |
|   * don't print                                                         |
|     lists species loaded into memory                                    |
| - LIST DERIVATIVES OF BASIS ELEMENTS AT EACH PRINT POINT -              |
|   * don't print                                                         |
|     print                                                               |
| - LIST ALL SPECIES LOADED INTO MEMORY AND THEIR LOG K VALUES -          |
|   * don't print                                                         |
|     print                                                               |
| - LIST DISTRIBUTION OF AQUEOUS SPECIES AT EACH PRINT POINT -            |
|   * only species > 10**-12 molal                                        |
|     all species                                                         |
|     don't print                                                         |
| - LIST CATION/H+ ACTIVITY RATIOS AT EACH PRINT POINT -                  |
|   * don't print                                                         |
|     print                                                               |
| - LIST BULK ELEMENT AND OXIDE COMPOSITION AT EACH PRINT POINT -         |
|   * don't print                                                         |
|     print                                                               |
| - MINERAL SATURATION STATES -                                           |
|   * print if affinity > -10 kcals                                       |
|     print all                                                           |
|     don't print                                                         |
| - LIST GAS SPECIES SUMMARY AT EACH PRINT POINT -                        |
|     don't print                                                         |
|   * print                                                               |
| - PRINT AQUEOUS MASS AND CONCENTRATION TOTALS -                         |
|   * don't print                                                         |
```

```
|     print                                                                |
| - TAB FILES -                                                            |
|   * write                                                                |
|     append to previous tabx file                                         |
|     don't write                                                          |
| - WRITE PICKUP FILE -                                                    |
|     write pickup file at end of run                                      |
|     don't write pickup file                                              |
|   * write pickup file for each print point                               |
| - PHYSICALLY REMOVED SUBSYSTEM -                                         |
|   * does nothing                                                         |
|     transfer minerals but leave trivial mass in the system               |
|     transfer minerals                                                    |
| - CLEAR INITIAL PHYSICALLY REMOVED SUBSYSTEM -                           |
|   * does nothing                                                         |
|     clear p.r.s. before first reaction progress advance                  |
| - PHASE BOUNDARY SEARCH -                                                |
|   * step size constrained by predicted phase boundaries                  |
|     phase boundaries estimated from Taylor's series and printed          |
|     locations of phase boundaries ignored                                |
| - AUTO BASIS SWITCHING -                                                 |
|   * off                                                                  |
|     on                                                                   |
| - SUPPRESS REDOX REACTIONS -                                             |
|   * does nothing                                                         |
|     suppress all redox reactions                                         |
| - LINEAR OR LOGARITHMIC TAYLOR'S SERIES -                                |
|   * linear for kcol = 1,kdim, logarithmic for kcol = 1,kbt               |
|     logarithmic for kcol = 1,kbt                                         |
|     linear for kcol = 1,kdim                                             |
| - AZERO AND HYDRATION NUMBERS -                                          |
|   * no change                                                            |
|     read in new azero and hydration numbers                              |
| - PRINT MEAN MOLAL ACTIVITY COEFFICIENTS FOR DISSOLVED SPECIES -         |
|   * does nothing                                                         |
|     print                                                                |
| - PITZER DATABASE INFORMATION -                                          |
|   * print only warnings                                                  |
|     print species in model and number of Pitzer coefficients             |
|     print species in model and names of Pitzer coefficients              |
| - PRINT DIAGNOSTIC MESSAGES -                                            |
|   * don't print                                                          |
|     print level 1 messages                                               |
|     print level 2 messages                                               |
| - PRINT PRE-NEWTON-RAPHSON OPTIMIZATION -                                |
|   * don't print                                                          |
|     print summary information                                            |
|     print detailed information                                           |
| - PRINT STEP SIZE AND ORDER -                                            |
|   * don't print                                                          |
|     print scale factor                                                   |
|     print orders and step size scaling factors                           |
| - CONTROL STEP SIZE AND ORDER PRINT -                                    |
|   * does nothing                                                         |
|     print step size and order when delzi .le. dlzmx1                     |
| - NEWTON ITERATIONS -                                                    |
|   * don't print                                                          |
|     print summary of newton iterations                                   |
|     print summary, residual functions and correction terms               |
|     print summary, residual functions, correction terms and matrix       |
| - PRINT SEARCH ITERATIONS -                                              |
|   * don't print                                                          |
|     print                                                                |
```

```
| - PRINT HPSAT ITERATIONS -                                          |
|   * don't print                                                     |
|     print                                                           |
| - PRINT FINITE DIFFERENCE AND DERIVATIVE DATA -                     |
|   * don't print                                                     |
|     print computations from RDERIV, and RTAYLR                      |
|     print computations from RDERIV, RTAYLR, DERIV and TAYLOR        |
| - PRINT KINETICS DIAGNOSTIC MESSAGES -                              |
|   * don't print                                                     |
|     print level 1 diagnostics                                       |
|     print level 1 and level 2 diagnostics                           |
| - PRINT AKMATR -                                                    |
|   * don't print                                                     |
|     print level 1 diagnostics                                       |
| - KILL ITERATION VARIABLES -                                        |
|   * does nothing                                                    |
|     allow selection of variables to remove                          |
|---------------------------------------------------------------------|
| development options  (used for code development)                    |
|---------------------------------------------------------------------|
|    0 check finite difference and Taylor series expression           |
|    0 check reaction rate finite difference and Taylor series        |
|---------------------------------------------------------------------|
| tolerances                        desired values - defaults info-only |
|---------------------------------------------------------------------|
| number of N-R iterations        |        90        |  90      itermx |
| p.r.s. transfer interval        | 1.00000E+38      |  varies  dlzidp |
| residual magnitude              | 1.00000E-06      |  1.0e-06 tolbt  |
| correction magnitude            | 1.00000E-06      |  1.0e-06 toldl  |
| search/find tolerance           | 1.00000E-06      |  varies  tolx   |
| supersaturation                 | 5.00000E-03      |  varies  tolsat |
| supersaturation set size        | 1.00000E-02      |  varies  tolsst |
| max. size Taylor's series term  | 1.00000E-04      |  1.0e-04 screw1 |
| max. initial value betamx       |                  |  n/a     screw2 |
| max. Taylor's series term (kin.)| 1.00000E-04      |  1.0e-04 screw3 |
| corrector iteration             | 1.00000E-04      |  1.0e-04 screw4 |
| max. size of N-R correction term|  4.0000          |  4.0     screw5 |
| step size (economy mode)        |  4.0000          |  4.0     screw6 |
| log mass of phases              | -6.0000          |  varies  zklogu |
| decrement mass (p.r.s.)         |  2.0000          |  2.0     zklogl |
| min. left after p.r.s.          | 0.80000          |  .98     zkfac  |
| initial step size               | 1.00000E-09      |  varies  dlzmx1 |
| upper limit step size           | 1.00000E+38      |  varies  dlzmx2 |
| maximum order                   |         6        |  6       nordlm |
| num. attempted assemblages      |        25        |  25      ntrymx |
| slide -> over phase bound.      |        12        |  8       npslmx |
| slide -> over redox insta.      |         8        |  3       nsslmx |
| fo2 scan control                |                  |  none    ioscan |
|---------------------------------------------------------------------|
c pickup file written by eq6.7.2bR137                                 |
c supported by eqlib.7.2bR168                                         |
|EQ6 input file name= j13_All-22.6i.txt                               |
|Description= React J-13 water with Carbon Steel and Alloy-22.        |
|Equilibrium with atmospheric gases.                                  |
|Version level= 7.2                                                   |
|Created 01/19/99    Creator= D.H. Lester                             |
|Revised             Revisor=                                         |
|                                                                     |
|Water from well J-13 at the Nevada Test site                         |
|                                                                     |
|Purpose: To model reaction with carbon steel (iron) and alloy C-22   |
|simultaneously to determine an expected Cr concentration in the water |
|corroding the C-22 after breaching the CAM.                          |
```

```
|                                                                      |
|It is assumed that a significant amount of carbon steel is still      |
|present. The rate constant for the steel was assumed to be 1.0E-11    |
|which is the higher value suggested in simulation studies at LLNL.    |
|Reference: Eng. Barrier System & Near Field Envir. Perf. Assess.,     |
|FY-96 Activities: End-of-Year Summary, Sept 1996, Wm.G.Halsey, "Report|
|on Initial Simulation of Water Interaction With Mild Steel Containers |
|Rate for C-22 is the median value for dripping at high temp. in the   |
|TSPA simulations for the VA document.                                 |
|The data base was modified to add the solid KFe(CrO4)2:2H2O           |
|Total amount of Steel and C-22 reduced to 20 moles each for a more    |
|realistic proportion of materials contacting 1L of water              |
|----------------------------------------------------------------------|
| temperature (C)                    |     25.000                      |
|----------------------------------------------------------------------|
| electrical imbalance               |   5.752163835343278E-14         |
|----------------------------------------------------------------------|
| number of aqueous master species   |     38                          |
|----------------------------------------------------------------------|
| position of last pure mineral      |     44                          |
|----------------------------------------------------------------------|
| position of last solid solution    |     44                          |
|----------------------------------------------------------------------|
| suppressed species     (suppress,replace,augmentk,augmentg)  value   |
|----------------------------------------------------------------------|
| Phlogopite               | mineral        | suppress |  0.00000      |
| Annite                   | mineral        | suppress |  0.00000      |
| Clinochlore-14A          | mineral        | suppress |  0.00000      |
| Daphnite-14A             | mineral        | suppress |  0.00000      |
| Clinozoisite             | mineral        | suppress |  0.00000      |
| Epidote                  | mineral        | suppress |  0.00000      |
| Epidote-ord              | mineral        | suppress |  0.00000      |
| Andradite                | mineral        | suppress |  0.00000      |
| Grossular                | mineral        | suppress |  0.00000      |
| Enstatite                | mineral        | suppress |  0.00000      |
| Ferrosilite              | mineral        | suppress |  0.00000      |
| Pyrite                   | mineral        | suppress |  0.00000      |
| Pyrrhotite               | mineral        | suppress |  0.00000      |
| Troilite                 | mineral        | suppress |  0.00000      |
| Alabandite               | mineral        | suppress |  0.00000      |
| Brezinaite               | mineral        | suppress |  0.00000      |
| Chalcocite               | mineral        | suppress |  0.00000      |
| Covellite                | mineral        | suppress |  0.00000      |
| Millerite                | mineral        | suppress |  0.00000      |
| Polydymite               | mineral        | suppress |  0.00000      |
| Vaesite                  | mineral        | suppress |  0.00000      |
| Heazlewoodite            | mineral        | suppress |  0.00000      |
| Galena                   | mineral        | suppress |  0.00000      |
| Sulfur                   | mineral        | suppress |  0.00000      |
| CaZrO3                   | mineral        | suppress |  0.00000      |
| BaZrO3                   | mineral        | suppress |  0.00000      |
| SrZrO3                   | mineral        | suppress |  0.00000      |
| U2S3                     | mineral        | suppress |  0.00000      |
| U3S5                     | mineral        | suppress |  0.00000      |
| US2                      | mineral        | suppress |  0.00000      |
| US3                      | mineral        | suppress |  0.00000      |
| US                       | mineral        | suppress |  0.00000      |
| US1.9                    | mineral        | suppress |  0.00000      |
| U3P4                     | mineral        | suppress |  0.00000      |
| UP                       | mineral        | suppress |  0.00000      |
| UP2                      | mineral        | suppress |  0.00000      |
| HS-                      | aqueous        | suppress |  0.00000      |
| H2S(aq)                  | aqueous        | suppress |  0.00000      |
```

```
| S--                        | aqueous        | suppress |  0.00000      |
|-----------------------------------------------------------------------|
| iopg options                                                          |
|-----------------------------------------------------------------------|
| - pH SCALE CONVENTION -                                               |
|    * modified NBS                                                     |
|      internal                                                         |
|      rational                                                         |
| - ACTIVITY COEFFICIENT OPTIONS -                                      |
|    * use B-dot equation                                               |
|      Davies' equation                                                 |
|      Pitzer's equations                                               |
|-----------------------------------------------------------------------|
| elements, moles and moles aqueous                                     |
|-----------------------------------------------------------------------|
| O                          |  4.005551824589011E+04 |  5.555421137011718E+01 |
| Al                         |  1.482500000694482E-06 |  1.482500018777849E-06 |
| B                          |  1.238799999942330E-05 |  1.238799999942330E-05 |
| Ba                         |  1.000000000006594E-10 |  1.000000000011056E-10 |
| Ca                         |  3.243700000162714E-04 |  3.243700007980110E-04 |
| Ce                         |  1.000000000975802E-24 |  1.000000013287203E-24 |
| Cl                         |  2.014000000000269E-04 |  2.014000000015656E-04 |
| Cr                         |  2.891076123660765E-03 |  2.891076145627207E-03 |
| Cs                         |  1.000000000000039E-10 |  1.000000000000475E-10 |
| Cu                         |  1.050000000528221E-14 |  1.050000000617858E-14 |
| F                          |  1.147500000001528E-04 |  1.147500003452905E-04 |
| Fe                         |  9.599764771008760E+00 |  5.748522886088714E-06 |
| Gd                         |  1.000000001150365E-14 |  1.000000016968145E-14 |
| H                          |  1.110188738405208E+02 |  1.110121441649782E+02 |
| C                          |  1.000022074311212E+04 |  1.065923581950521E-05 |
| P                          |  7.053302304738924E-03 |  3.236267302075087E-04 |
| K                          |  1.289100000000803E-04 |  1.289100000223596E-04 |
| La                         |  1.000000000980088E-14 |  1.000000014507396E-14 |
| Li                         |  1.000000000000469E-10 |  1.000000000128789E-10 |
| Mg                         |  8.269900000408464E-05 |  8.269900033144526E-05 |
| Mn                         |  1.029459340944733E-01 |  1.305684703082287E-04 |
| Mo                         |  1.139582971355369E-03 |  1.139582971355369E-03 |
| N                          |  1.420000000000891E-04 |  1.420000000075319E-04 |
| Na                         |  1.992200000002518E-03 |  1.992200000297136E-03 |
| Nd                         |  1.000000000990082E-14 |  1.000000014992332E-14 |
| Ni                         |  6.412532538344672E-03 |  6.412532554229018E-03 |
| Pb                         |  1.000000000003566E-10 |  1.000000000025195E-10 |
| Pu                         |  1.000000001138469E-14 |  1.000000034692957E-14 |
| S                          |  8.711911979671210E-03 |  8.711912008743572E-03 |
| Si                         |  5.455640036457698E-02 |  1.001477184257472E-04 |
| Sm                         |  1.000000000991962E-14 |  1.000000015219531E-14 |
| Sr                         |  1.000000000034016E-10 |  1.000000003510025E-10 |
| Ti                         |  1.000000000000003E-10 |  1.000000000000003E-10 |
| U                          |  9.999999988006304E-15 |  1.000000011067785E-14 |
| V                          |  4.695516091676396E-05 |  4.695516115720544E-05 |
| Zn                         |  1.000000000089305E-10 |  1.000000000112397E-10 |
| Zr                         |  1.000000000323548E-20 |  1.000000006534652E-20 |
|-----------------------------------------------------------------------|
| master species and logarithmic basis variables                        |
|-----------------------------------------------------------------------|
| H2O                        | H2O                        |  1.744300030442878E+00 |
| Al+++                      | Al+++                      | -8.384679070564924E+00 |
| B(OH)3(aq)                 | B(OH)3(aq)                 | -4.906998865225936E+00 |
| Ba++                       | Ba++                       | -1.000026875280529E+01 |
| Ca++                       | Ca++                       | -3.570303676122548E+00 |
| Ce+++                      | Ce+++                      | -2.455780978308784E+01 |
| Cl-                        | Cl-                        | -3.696650353737829E+00 |
| CrO4--                     | CrO4--                     | -6.580298305266366E+00 |
```

```
| Cs+                       | Cs+                       | -1.000004444356009E+01 |
| Cu++                      | Cu++                      | -1.398167336710256E+01 |
| F-                        | F-                        | -4.797597418122234E+00 |
| Fe++                      | Fe++                      | -1.191127974824039E+01 |
| Gd+++                     | Gd+++                     | -1.453594489619075E+01 |
| H+                        | H+                        | -2.260999920057302E+00 |
| HCO3-                     | HCO3-                     | -8.921673936946618E+00 |
| HPO4--                    | HPO4--                    | -8.364901970198504E+00 |
| K+                        | K+                        | -3.899294632783167E+00 |
| La+++                     | La+++                     | -1.459980896745433E+01 |
| Li+                       | Li+                       | -1.000761131678144E+01 |
| Mg++                      | Mg++                      | -4.238429014053205E+00 |
| Mn++                      | Mn++                      | -4.018229748240389E+00 |
| MoO4--                    | MoO4--                    | -2.943254048991750E+00 |
| NO3-                      | NH3(aq)                   | -3.851211449157436E+00 |
| Na+                       | Na+                       | -2.709082279032151E+00 |
| Nd+++                     | Nd+++                     | -1.466883587740501E+01 |
| Ni++                      | Ni++                      | -2.276752103650506E+00 |
| Pb++                      | Pb++                      | -1.000124494599897E+01 |
| Pu++++                    | Pu++++                    | -2.559262650845382E+01 |
| SO4--                     | SO4--                     | -2.234251585805090E+00 |
| SiO2(aq)                  | SiO2(aq)                  | -3.999358953084107E+00 |
| Sm+++                     | Sm+++                     | -1.467765618901014E+01 |
| Sr++                      | Sr++                      | -1.011701534986113E+01 |
| Ti(OH)4(aq)               | Ti(OH)4(aq)               | -9.999999999999998E+00 |
| UO2++                     | UO2++                     | -1.487414670488926E+01 |
| VO++                      | VO++                      | -1.020691637727398E+01 |
| Zn++                      | Zn++                      | -1.000077796771455E+01 |
| Zr(OH)2++                 | Zr(OH)2++                 | -2.320609856835599E+01 |
| O2(g)                     | O2(g)                     | -6.778000000000000E-01 |
|                           | Hematite                  |  6.812303356549456E-01 |
|                           | MnHPO4                    | -2.172005871649085E+00 |
|                           | Pyrolusite                | -1.017341286589346E+00 |
|                           | Quartz                    | -1.263952247518508E+00 |
|                           | fix     CO2(g)            |  4.000009586182827E+00 |
|                           | fix     O2(g)             |  3.999669700495774E+00 |
|-------------------------------------------------------------------------|
| physically removed subsystem  (solid solution, mineral, moles)          |
|-------------------------------------------------------------------------|
| none                      |                           |                          |
|-------------------------------------------------------------------------|
|-------------------------------------------------------------------------|
|EQ6 input file name= j13_All-22.6i.txt                                   |
|Description= React J-13 water with Carbon Steel and Alloy-22.            |
|Equilibrium with atmospheric gases.                                      |
|Version level= 7.2                                                       |
|Created 01/19/99    Creator= D.H. Lester                                 |
|Revised             Revisor=                                             |
|                                                                         |
|Water from well J-13 at the Nevada Test site                             |
|                                                                         |
|Purpose: To model reaction with carbon steel (iron) and alloy C-22       |
|simultaneously to determine an expected Cr concentration in the water    |
|corroding the C-22 after breaching the CAM.                              |
|                                                                         |
|It is assumed that a significant amount of carbon steel is still         |
|present. The rate constant for the steel was assumed to be 1.0E-11       |
|which is the higher value suggested in simulation studies at LLNL.       |
|Reference: Eng. Barrier System & Near Field Envir. Perf. Assess.,        |
|FY-96 Activities: End-of-Year Summary, Sept 1996, Wm.G.Halsey, "Report|
|on Initial Simulation of Water Interaction With Mild Steel Containers |
|Rate for C-22 is the median value for dripping at high temp. in the      |
|TSPA simulations for the VA document.                                    |
```

```
|The data base was modified to add the solid KFe(CrO4)2:2H2O           |
|Total amount of Steel and C-22 reduced to 20 moles each for a more    |
|realistic proportion of materials contacting 1L of water              |
|----------------------------------------------------------------------|
| calculational mode   |*normal     | economy           | super economy|
|----------------------------------------------------------------------|
| model type           |*titration  | closed            | open         |
|----------------------------------------------------------------------|
| temperature model    |*power      | fluid mixing                     |
|----------------------------------------------------------------------|
c power model  -->   temp = tstart + tk1*zi + tk2*zi**2 + tk3*zi**3   |
c mixing model -->   temp = (tstart * tk1 + zi*tk2) / (zi + tk1)      |
c---------------------------------------------------------------------|
| tstart(c)|  25.00    |tk1| 0.0000    |tk2| 0.0000    |tk3| 0.0000    |
|----------------------------------------------------------------------|
| starting value of zi |  20.000    |max. value of zi    | 1.00000E+38 |
|----------------------------------------------------------------------|
| starting time (sec)  | 1.99774E+10|max. time (sec)     | 1.00000E+38 |
|----------------------------------------------------------------------|
| max. steps           |       400  |max. steps w/o print|       150   |
|----------------------------------------------------------------------|
| linear print interval|  10.000    |log print interval  | 1.00000E+38 |
|----------------------------------------------------------------------|
| suppress mineral phases                                              |
|----------------------------------------------------------------------|
| phases w/ elements|                          |                          |n
| phases except     |                          |                          |n
|----------------------------------------------------------------------|
| fixed fugacity phases- species, moles(per kg h2o), log fugacity(bars)|
|----------------------------------------------------------------------|
| CO2(g)                              | 0.00000        | -3.5000        |n
| O2(g)                               | 0.00000        |-0.67780        |n
|----------------------------------------------------------------------|
c                  R A T E     L A W S
c 1 = relative                  rate = rk1 + rk2*zi + (1/2)rk3*zi*zi
c 2 = transition state theory   rate = CHECK DOCUMENTATION
c 3 = specified rate            rate = CHECK DOCUMENTATION
c 4 = activity term rate        rate = CHECK DOCUMENTATION
c
c                  R E A C T A N T     T Y P E S
c mineral     solid solution     special    aqueous    gas
c
c                  S U R F A C E    T Y P E
c 0 = fixed surface area     1 = fixed specific surface area
c
c                  N O T E S
c status and jreac are normally not set by the user
|----------------------------------------------------------------------|
| reactants   (ss) solid solution only     (sp) special reactant only  |
|----------------------------------------------------------------------|
| REACTANT         | carbon steel             |status   | 0            |
| moles remaining  | 2.25745E-02              |destroyed|  19.977      |
| reactant type    |  special                 |sk       |  100.00      |
| surface type     |   0                      |fk       |  1.0000      |
| end-member       |                          |mole fr  |              |ss,n
| volume           | 0.00000                  |         |              |sp
| element          | C            |moles      |  2.190000000000000E-02 |sp,n
| element          | Mn           |moles      |  1.030000000000000E-02 |sp,n
| element          | S            |moles      |  8.530000000000000E-04 |sp,n
| element          | Si           |moles      |  5.360000000000000E-03 |sp,n
| element          | P            |moles      |  7.060000000000000E-04 |sp,n
| element          | Fe           |moles      |  9.610000000000000E-01 |sp,n
| DISSOLUTION LAW  |    3                     |         |              |
```

```
| rate constant rk1| 1.00000E-11                |csigma1  |              |
| temperature (c)  |   25.000                   |         |              |234
| PRECIPITATION LAW|    0                       |         |              |
c-----------------------------------------------------------------------|
| REACTANT         | Alloy-22                   |status   | 0            |
| moles remaining  |  19.977                    |destroyed| 2.25745E-02  |
| reactant type    |  special                   |sk       |  100.00      |
| surface type     |   0                        |fk       |  1.0000      |
| end-member       |                            |mole fr  |              |ss,n
| volume           | 0.00000                    |         |              |sp
| element          | Cr           |moles        |  2.561060000000000E-01 |sp,n
| element          | Fe           |moles        |  5.420400000000000E-02 |sp,n
| element          | Ni           |moles        |  5.681220000000000E-01 |sp,n
| element          | Mo           |moles        |  1.009620000000000E-01 |sp,n
| element          | V            |moles        |  4.160000000000000E-03 |sp,n
| element          | Mn           |moles        |  5.510000000000000E-03 |sp,n
| DISSOLUTION LAW  |    3                       |         |              |
| rate constant rk1| 1.13000E-14                |csigma1  |              |
| temperature (c)  |   25.000                   |         |              |234
| PRECIPITATION LAW|    0                       |         |              |
|-----------------------------------------------------------------------|
| options                                                               |
|-----------------------------------------------------------------------|
| - SOLID SOLUTIONS -                                                   |
|     ignore solid solutions                                            |
|   * process solid solutions                                           |
| - LOADING OF SPECIES INTO MEMORY -                                    |
|   * don't print                                                       |
|     lists species loaded into memory                                  |
| - LIST DERIVATIVES OF BASIS ELEMENTS AT EACH PRINT POINT -            |
|   * don't print                                                       |
|     print                                                             |
| - LIST ALL SPECIES LOADED INTO MEMORY AND THEIR LOG K VALUES -        |
|   * don't print                                                       |
|     print                                                             |
| - LIST DISTRIBUTION OF AQUEOUS SPECIES AT EACH PRINT POINT -          |
|   * only species > 10**-12 molal                                      |
|     all species                                                       |
|     don't print                                                       |
| - LIST CATION/H+ ACTIVITY RATIOS AT EACH PRINT POINT -                |
|   * don't print                                                       |
|     print                                                             |
| - LIST BULK ELEMENT AND OXIDE COMPOSITION AT EACH PRINT POINT -       |
|   * don't print                                                       |
|     print                                                             |
| - MINERAL SATURATION STATES -                                         |
|   * print if affinity > -10 kcals                                     |
|     print all                                                         |
|     don't print                                                       |
| - LIST GAS SPECIES SUMMARY AT EACH PRINT POINT -                      |
|     don't print                                                       |
|   * print                                                             |
| - PRINT AQUEOUS MASS AND CONCENTRATION TOTALS -                       |
|   * don't print                                                       |
|     print                                                             |
| - TAB FILES -                                                         |
|   * write                                                             |
|     append to previous tabx file                                      |
|     don't write                                                       |
| - WRITE PICKUP FILE -                                                 |
|     write pickup file at end of run                                   |
|     don't write pickup file                                           |
|   * write pickup file for each print point                            |
```

```
| - PHYSICALLY REMOVED SUBSYSTEM -                                        |
|   * does nothing                                                        |
|     transfer minerals but leave trivial mass in the system              |
|     transfer minerals                                                   |
| - CLEAR INITIAL PHYSICALLY REMOVED SUBSYSTEM -                          |
|   * does nothing                                                        |
|     clear p.r.s. before first reaction progress advance                 |
| - PHASE BOUNDARY SEARCH -                                               |
|   * step size constrained by predicted phase boundaries                 |
|     phase boundaries estimated from Taylor's series and printed         |
|     locations of phase boundaries ignored                               |
| - AUTO BASIS SWITCHING -                                                |
|   * off                                                                 |
|     on                                                                  |
| - SUPPRESS REDOX REACTIONS -                                            |
|   * does nothing                                                        |
|     suppress all redox reactions                                        |
| - LINEAR OR LOGARITHMIC TAYLOR'S SERIES -                               |
|   * linear for kcol = 1,kdim, logarithmic for kcol = 1,kbt              |
|     logarithmic for kcol = 1,kbt                                        |
|     linear for kcol = 1,kdim                                            |
| - AZERO AND HYDRATION NUMBERS -                                         |
|   * no change                                                           |
|     read in new azero and hydration numbers                             |
| - PRINT MEAN MOLAL ACTIVITY COEFFICIENTS FOR DISSOLVED SPECIES -        |
|   * does nothing                                                        |
|     print                                                               |
| - PITZER DATABASE INFORMATION -                                         |
|   * print only warnings                                                 |
|     print species in model and number of Pitzer coefficients            |
|     print species in model and names of Pitzer coefficients             |
| - PRINT DIAGNOSTIC MESSAGES -                                           |
|   * don't print                                                         |
|     print level 1 messages                                              |
|     print level 2 messages                                              |
| - PRINT PRE-NEWTON-RAPHSON OPTIMIZATION -                               |
|   * don't print                                                         |
|     print summary information                                           |
|     print detailed information                                          |
| - PRINT STEP SIZE AND ORDER -                                           |
|   * don't print                                                         |
|     print scale factor                                                  |
|     print orders and step size scaling factors                          |
| - CONTROL STEP SIZE AND ORDER PRINT -                                   |
|   * does nothing                                                        |
|     print step size and order when delzi .le. dlzmx1                    |
| - NEWTON ITERATIONS -                                                   |
|   * don't print                                                         |
|     print summary of newton iterations                                  |
|     print summary, residual functions and correction terms              |
|     print summary, residual functions, correction terms and matrix      |
| - PRINT SEARCH ITERATIONS -                                             |
|   * don't print                                                         |
|     print                                                               |
| - PRINT HPSAT ITERATIONS -                                              |
|   * don't print                                                         |
|     print                                                               |
| - PRINT FINITE DIFFERENCE AND DERIVATIVE DATA -                         |
|   * don't print                                                         |
|     print computations from RDERIV, and RTAYLR                          |
|     print computations from RDERIV, RTAYLR, DERIV and TAYLOR            |
| - PRINT KINETICS DIAGNOSTIC MESSAGES -                                  |
|   * don't print                                                         |
```

```
|     print level 1 diagnostics                                          |
|     print level 1 and level 2 diagnostics                              |
| - PRINT AKMATR -                                                       |
|   * don't print                                                        |
|     print level 1 diagnostics                                          |
| - KILL ITERATION VARIABLES -                                           |
|   * does nothing                                                       |
|     allow selection of variables to remove                             |
|------------------------------------------------------------------------|
| development options  (used for code development)                       |
|------------------------------------------------------------------------|
|    0 check finite difference and Taylor series expression              |
|    0 check reaction rate finite difference and Taylor series           |
|------------------------------------------------------------------------|
| tolerances                        desired values - defaults info-only  |
|------------------------------------------------------------------------|
| number of N-R iterations        |        90        |  90      itermx  |
| p.r.s. transfer interval        | 1.00000E+38      |  varies  dlzidp  |
| residual magnitude              | 1.00000E-06      |  1.0e-06 tolbt   |
| correction magnitude            | 1.00000E-06      |  1.0e-06 toldl   |
| search/find tolerance           | 1.00000E-06      |  varies  tolx    |
| supersaturation                 | 5.00000E-03      |  varies  tolsat  |
| supersaturation set size        | 1.00000E-02      |  varies  tolsst  |
| max. size Taylor's series term  | 1.00000E-04      |  1.0e-04 screw1  |
| max. initial value betamx       |                  |  n/a     screw2  |
| max. Taylor's series term (kin.)| 1.00000E-04      |  1.0e-04 screw3  |
| corrector iteration             | 1.00000E-04      |  1.0e-04 screw4  |
| max. size of N-R correction term|  4.0000          |  4.0     screw5  |
| step size (economy mode)        |  4.0000          |  4.0     screw6  |
| log mass of phases              | -6.0000          |  varies  zklogu  |
| decrement mass (p.r.s.)         |  2.0000          |  2.0     zklogl  |
| min. left after p.r.s.          | 0.80000          |  .98     zkfac   |
| initial step size               | 1.00000E-09      |  varies  dlzmx1  |
| upper limit step size           | 1.00000E+38      |  varies  dlzmx2  |
| maximum order                   |         6        |  6       nordlm  |
| num. attempted assemblages      |        25        |  25      ntrymx  |
| slide -> over phase bound.      |        12        |  8       npslmx  |
| slide -> over redox insta.      |         8        |  3       nsslmx  |
| fo2 scan control                |                  |  none    ioscan  |
|------------------------------------------------------------------------|
c pickup file written by eq6.7.2bR137                                    |
c supported by eqlib.7.2bR168                                            |
|EQ6 input file name= j13_All-22.6i.txt                                  |
|Description= React J-13 water with Carbon Steel and Alloy-22.           |
|Equilibrium with atmospheric gases.                                     |
|Version level= 7.2                                                      |
|Created 01/19/99    Creator= D.H. Lester                                |
|Revised             Revisor=                                            |
|                                                                        |
|Water from well J-13 at the Nevada Test site                            |
|                                                                        |
|Purpose: To model reaction with carbon steel (iron) and alloy C-22      |
|simultaneously to determine an expected Cr concentration in the water   |
|corroding the C-22 after breaching the CAM.                             |
|                                                                        |
|It is assumed that a significant amount of carbon steel is still        |
|present. The rate constant for the steel was assumed to be 1.0E-11      |
|which is the higher value suggested in simulation studies at LLNL.      |
|Reference: Eng. Barrier System & Near Field Envir. Perf. Assess.,       |
|FY-96 Activities: End-of-Year Summary, Sept 1996, Wm.G.Halsey, "Report|
|on Initial Simulation of Water Interaction With Mild Steel Containers   |
|Rate for C-22 is the median value for dripping at high temp. in the     |
|TSPA simulations for the VA document.                                   |
```

```
|The data base was modified to add the solid KFe(CrO4)2:2H2O            |
|Total amount of Steel and C-22 reduced to 20 moles each for a more     |
|realistic proportion of materials contacting 1L of water               |
|-----------------------------------------------------------------------|
| temperature (C)                    |     25.000                       |
|-----------------------------------------------------------------------|
| electrical imbalance               |   5.752163835343278E-14          |
|-----------------------------------------------------------------------|
| number of aqueous master species   |     38                           |
|-----------------------------------------------------------------------|
| position of last pure mineral      |     44                           |
|-----------------------------------------------------------------------|
| position of last solid solution    |     44                           |
|-----------------------------------------------------------------------|
| suppressed species     (suppress,replace,augmentk,augmentg)  value    |
|-----------------------------------------------------------------------|
| Phlogopite               | mineral        | suppress |  0.00000       |
| Annite                   | mineral        | suppress |  0.00000       |
| Clinochlore-14A          | mineral        | suppress |  0.00000       |
| Daphnite-14A             | mineral        | suppress |  0.00000       |
| Clinozoisite             | mineral        | suppress |  0.00000       |
| Epidote                  | mineral        | suppress |  0.00000       |
| Epidote-ord              | mineral        | suppress |  0.00000       |
| Andradite                | mineral        | suppress |  0.00000       |
| Grossular                | mineral        | suppress |  0.00000       |
| Enstatite                | mineral        | suppress |  0.00000       |
| Ferrosilite              | mineral        | suppress |  0.00000       |
| Pyrite                   | mineral        | suppress |  0.00000       |
| Pyrrhotite               | mineral        | suppress |  0.00000       |
| Troilite                 | mineral        | suppress |  0.00000       |
| Alabandite               | mineral        | suppress |  0.00000       |
| Brezinaite               | mineral        | suppress |  0.00000       |
| Chalcocite               | mineral        | suppress |  0.00000       |
| Covellite                | mineral        | suppress |  0.00000       |
| Millerite                | mineral        | suppress |  0.00000       |
| Polydymite               | mineral        | suppress |  0.00000       |
| Vaesite                  | mineral        | suppress |  0.00000       |
| Heazlewoodite            | mineral        | suppress |  0.00000       |
| Galena                   | mineral        | suppress |  0.00000       |
| Sulfur                   | mineral        | suppress |  0.00000       |
| CaZrO3                   | mineral        | suppress |  0.00000       |
| BaZrO3                   | mineral        | suppress |  0.00000       |
| SrZrO3                   | mineral        | suppress |  0.00000       |
| U2S3                     | mineral        | suppress |  0.00000       |
| U3S5                     | mineral        | suppress |  0.00000       |
| US2                      | mineral        | suppress |  0.00000       |
| US3                      | mineral        | suppress |  0.00000       |
| US                       | mineral        | suppress |  0.00000       |
| US1.9                    | mineral        | suppress |  0.00000       |
| U3P4                     | mineral        | suppress |  0.00000       |
| UP                       | mineral        | suppress |  0.00000       |
| UP2                      | mineral        | suppress |  0.00000       |
| HS-                      | aqueous        | suppress |  0.00000       |
| H2S(aq)                  | aqueous        | suppress |  0.00000       |
| S--                      | aqueous        | suppress |  0.00000       |
|-----------------------------------------------------------------------|
| iopg options                                                          |
|-----------------------------------------------------------------------|
| - pH SCALE CONVENTION -                                               |
|    * modified NBS                                                     |
|      internal                                                         |
|      rational                                                         |
| - ACTIVITY COEFFICIENT OPTIONS -                                      |
```

```
|    * use B-dot equation                                                |
|      Davies' equation                                                  |
|      Pitzer's equations                                                |
|------------------------------------------------------------------------|
| elements, moles and moles aqueous                                      |
|------------------------------------------------------------------------|
| O                        |  4.005551824589011E+04 |  5.559507731955278E+01 |
| Al                       |  1.482500000694482E-06 |  1.482500019145637E-06 |
| B                        |  1.238799999942330E-05 |  1.238799999942330E-05 |
| Ba                       |  1.000000000006594E-10 |  1.000000000011281E-10 |
| Ca                       |  3.243700000162714E-04 |  3.243700011509316E-04 |
| Ce                       |  1.000000000975802E-24 |  1.000000016217520E-24 |
| Cl                       |  2.014000000000269E-04 |  2.014000000037786E-04 |
| Cr                       |  5.781807397321530E-03 |  5.781807454468000E-03 |
| Cs                       |  1.000000000000039E-10 |  1.000000000000544E-10 |
| Cu                       |  1.050000000528221E-14 |  1.050000000580907E-14 |
| F                        |  1.147500000001528E-04 |  1.147500004328765E-04 |
| Fe                       |  1.919952954201752E+01 |  1.595537342612084E-05 |
| Gd                       |  1.000000001150365E-14 |  1.000000021731823E-14 |
| H                        |  1.110188738405208E+02 |  1.110050058046827E+02 |
| C                        |  1.000043949592144E+04 |  1.058860595036985E-05 |
| P                        |  1.410533350947757E-02 |  2.372975918265704E-04 |
| K                        |  1.289100000000803E-04 |  1.289100000396373E-04 |
| La                       |  1.000000000980088E-14 |  1.000000018242602E-14 |
| Li                       |  1.000000000000469E-10 |  1.000000000226826E-10 |
| Mg                       |  8.269900000408464E-05 |  8.269900046839816E-05 |
| Mn                       |  2.058918681889465E-01 |  5.936700388362538E-04 |
| Mo                       |  2.279165842710737E-03 |  2.279165842710739E-03 |
| N                        |  1.420000000000891E-04 |  1.420000000146733E-04 |
| Na                       |  1.992200000002518E-03 |  1.992200000522818E-03 |
| Nd                       |  1.000000000990082E-14 |  1.000000018691887E-14 |
| Ni                       |  1.282506497668934E-02 |  1.282506502276300E-02 |
| Pb                       |  1.000000000003566E-10 |  1.000000000026304E-10 |
| Pu                       |  1.000000001138469E-14 |  1.000000040025504E-14 |
| S                        |  1.723228395933419E-02 |  1.723228405046097E-02 |
| Si                       |  1.080959007291650E-01 |  1.001324331330382E-04 |
| Sm                       |  1.000000000991962E-14 |  1.000000019056910E-14 |
| Sr                       |  1.000000000034016E-10 |  1.000000005005944E-10 |
| Ti                       |  1.000000000000003E-10 |  1.000000000000003E-10 |
| U                        |  9.999999988006304E-15 |  1.000000013309699E-14 |
| V                        |  9.391010183352800E-05 |  9.391010248599680E-05 |
| Zn                       |  1.000000000089305E-10 |  1.000000000122760E-10 |
| Zr                       |  1.000000000323548E-20 |  1.000000009076516E-20 |
|------------------------------------------------------------------------|
| master species and logarithmic basis variables                         |
|------------------------------------------------------------------------|
| H2O                      | H2O                    |  1.744233745977861E+00 |
| Al+++                    | Al+++                  | -7.859075643375154E+00 |
| B(OH)3(aq)               | B(OH)3(aq)             | -4.906998836765602E+00 |
| Ba++                     | Ba++                   | -1.000022523560581E+01 |
| Ca++                     | Ca++                   | -3.585303375535279E+00 |
| Ce+++                    | Ce+++                  | -2.459321656053141E+01 |
| Cl-                      | Cl-                    | -3.697245885001159E+00 |
| CrO4--                   | CrO4--                 | -6.571016196807416E+00 |
| Cs+                      | Cs+                    | -1.000004013234990E+01 |
| Cu++                     | Cu++                   | -1.398019979195965E+01 |
| F-                       | F-                     | -5.032972238711606E+00 |
| Fe++                     | Fe++                   | -1.127614660746010E+01 |
| Gd+++                    | Gd+++                  | -1.454688567096544E+01 |
| H+                       | H+                     | -1.964245008395162E+00 |
| HCO3-                    | HCO3-                  | -9.188536612264688E+00 |
| HPO4--                   | HPO4--                 | -8.857359723236194E+00 |
| K+                       | K+                     | -3.903017737408557E+00 |
```

```
| La+++                    | La+++                    | -1.465439109717710E+01 |
| Li+                      | Li+                      | -1.001069361457703E+01 |
| Mg++                     | Mg++                     | -4.268443524678217E+00 |
| Mn++                     | Mn++                     | -3.383096607460100E+00 |
| MoO4--                   | MoO4--                   | -2.642224072382743E+00 |
| NO3-                     | NH3(aq)                  | -3.853332681432095E+00 |
| Na+                      | Na+                      | -2.712382363569266E+00 |
| Nd+++                    | Nd+++                    | -1.472203210399781E+01 |
| Ni++                     | Ni++                     | -1.991158533616954E+00 |
| Pb++                     | Pb++                     | -1.000103289262928E+01 |
| Pu++++                   | Pu++++                   | -2.431364732278926E+01 |
| SO4--                    | SO4--                    | -2.009960099189770E+00 |
| SiO2(aq)                 | SiO2(aq)                 | -3.999425237549123E+00 |
| Sm+++                    | Sm+++                    | -1.473451851504836E+01 |
| Sr++                     | Sr++                     | -1.013579611396276E+01 |
| Ti(OH)4(aq)              | Ti(OH)4(aq)              | -9.999999999999998E+00 |
| UO2++                    | UO2++                    | -1.472116861498062E+01 |
| VO++                     | VO++                     | -9.558464422838552E+00 |
| Zn++                     | Zn++                     | -1.000087496209364E+01 |
| Zr(OH)2++                | Zr(OH)2++                | -2.265552291145033E+01 |
| O2(g)                    | O2(g)                    | -6.778000000000000E-01 |
|                          | Hematite                 |  9.822602304712226E-01 |
|                          | MnHPO4                   | -1.857985042127649E+00 |
|                          | Pyrolusite               | -7.179896326023878E-01 |
|                          | Quartz                   | -9.665932615657184E-01 |
|                          | fix     CO2(g)           |  4.000019086186091E+00 |
|                          | fix     O2(g)            |  3.999339165828937E+00 |
|-------------------------------------------------------------------------|
| physically removed subsystem  (solid solution, mineral, moles)          |
|-------------------------------------------------------------------------|
| none                     |                          |                      |
|-------------------------------------------------------------------------|
|-------------------------------------------------------------------------|
|EQ6 input file name= j13_All-22.6i.txt                                   |
|Description= React J-13 water with Carbon Steel and Alloy-22.            |
|Equilibrium with atmospheric gases.                                      |
|Version level= 7.2                                                       |
|Created 01/19/99    Creator= D.H. Lester                                 |
|Revised             Revisor=                                             |
|                                                                         |
|Water from well J-13 at the Nevada Test site                             |
|                                                                         |
|Purpose: To model reaction with carbon steel (iron) and alloy C-22       |
|simultaneously to determine an expected Cr concentration in the water    |
|corroding the C-22 after breaching the CAM.                              |
|                                                                         |
|It is assumed that a significant amount of carbon steel is still         |
|present. The rate constant for the steel was assumed to be 1.0E-11       |
|which is the higher value suggested in simulation studies at LLNL.       |
|Reference: Eng. Barrier System & Near Field Envir. Perf. Assess.,        |
|FY-96 Activities: End-of-Year Summary, Sept 1996, Wm.G.Halsey, "Report|
|on Initial Simulation of Water Interaction With Mild Steel Containers    |
|Rate for C-22 is the median value for dripping at high temp. in the      |
|TSPA simulations for the VA document.                                    |
|The data base was modified to add the solid KFe(CrO4)2:2H2O              |
|Total amount of Steel and C-22 reduced to 20 moles each for a more       |
|realistic proportion of materials contacting 1L of water                 |
|-------------------------------------------------------------------------|
| calculational mode   |*normal     | economy           | super economy|
|-------------------------------------------------------------------------|
| model type           |*titration  | closed            | open         |
|-------------------------------------------------------------------------|
| temperature model    |*power      | fluid mixing                         |
```

```
|-----------------------------------------------------------------------|
c power model  -->   temp = tstart + tk1*zi + tk2*zi**2 + tk3*zi**3    |
c mixing model -->   temp = (tstart * tk1 + zi*tk2) / (zi + tk1)       |
c-----------------------------------------------------------------------|
| tstart(c)|  25.00    |tk1| 0.0000    |tk2| 0.0000    |tk3| 0.0000    |
|-----------------------------------------------------------------------|
| starting value of zi |  20.023    |max. value of zi    | 1.00000E+38 |
|-----------------------------------------------------------------------|
| starting time (sec)  | 2.00000E+10|max. time (sec)     | 1.00000E+38 |
|-----------------------------------------------------------------------|
| max. steps           |       400  |max. steps w/o print|       150   |
|-----------------------------------------------------------------------|
| linear print interval|  10.000    |log print interval  | 1.00000E+38 |
|-----------------------------------------------------------------------|
| suppress mineral phases                                               |
|-----------------------------------------------------------------------|
| phases w/ elements|                          |                          |n
| phases except     |                          |                          |n
|-----------------------------------------------------------------------|
| fixed fugacity phases- species, moles(per kg h2o), log fugacity(bars)|
|-----------------------------------------------------------------------|
| CO2(g)                              | 0.00000        | -3.5000        |n
| O2(g)                               | 0.00000        |-0.67780        |n
|-----------------------------------------------------------------------|
c                  R A T E     L A W S
c 1 = relative                  rate = rk1 + rk2*zi + (1/2)rk3*zi*zi
c 2 = transition state theory   rate = CHECK DOCUMENTATION
c 3 = specified rate            rate = CHECK DOCUMENTATION
c 4 = activity term rate        rate = CHECK DOCUMENTATION
c
c                  R E A C T A N T     T Y P E S
c mineral     solid solution     special    aqueous    gas
c
c                  S U R F A C E    T Y P E
c 0 = fixed surface area     1 = fixed specific surface area
c
c                  N O T E S
c status and jreac are normally not set by the user
|-----------------------------------------------------------------------|
| reactants   (ss) solid solution only     (sp) special reactant only   |
|-----------------------------------------------------------------------|
| REACTANT         | carbon steel             |status    | 1            |
| moles remaining  | 0.00000                  |destroyed|  20.000       |
| reactant type    |  special                 |sk        |  100.00       |
| surface type     |   0                      |fk        |  1.0000       |
| end-member       |                          |mole fr   |               |ss,n
| volume           | 0.00000                  |          |               |sp
| element          | C            |moles      |  2.190000000000000E-02 |sp,n
| element          | Mn           |moles      |  1.030000000000000E-02 |sp,n
| element          | S            |moles      |  8.530000000000000E-04 |sp,n
| element          | Si           |moles      |  5.360000000000000E-03 |sp,n
| element          | P            |moles      |  7.060000000000000E-04 |sp,n
| element          | Fe           |moles      |  9.610000000000000E-01 |sp,n
| DISSOLUTION LAW  |    3                     |          |               |
| rate constant rk1| 1.00000E-11              |csigma1   |               |
| temperature (c)  |   25.000                 |          |               |234
| PRECIPITATION LAW|    0                     |          |               |
c-----------------------------------------------------------------------|
| REACTANT         | Alloy-22                 |status    | 0             |
| moles remaining  |  19.977                  |destroyed| 2.26000E-02    |
| reactant type    |  special                 |sk        |  100.00       |
| surface type     |   0                      |fk        |  1.0000       |
| end-member       |                          |mole fr   |               |ss,n
```

```
| volume            | 0.00000                   |          |                |sp
| element           | Cr            |moles      |  2.561060000000000E-01 |sp,n
| element           | Fe            |moles      |  5.420400000000000E-02 |sp,n
| element           | Ni            |moles      |  5.681220000000000E-01 |sp,n
| element           | Mo            |moles      |  1.009620000000000E-01 |sp,n
| element           | V             |moles      |  4.160000000000000E-03 |sp,n
| element           | Mn            |moles      |  5.510000000000000E-03 |sp,n
| DISSOLUTION LAW   |    3                      |          |                |
| rate constant rk1| 1.13000E-14                |csigma1   |                |
| temperature (c)   |   25.000                  |          |                |234
| PRECIPITATION LAW|    0                       |          |                |
|-----------------------------------------------------------------------|
| options                                                               |
|-----------------------------------------------------------------------|
| - SOLID SOLUTIONS -                                                   |
|     ignore solid solutions                                            |
|   * process solid solutions                                           |
| - LOADING OF SPECIES INTO MEMORY -                                    |
|   * don't print                                                       |
|     lists species loaded into memory                                  |
| - LIST DERIVATIVES OF BASIS ELEMENTS AT EACH PRINT POINT -            |
|   * don't print                                                       |
|     print                                                             |
| - LIST ALL SPECIES LOADED INTO MEMORY AND THEIR LOG K VALUES -        |
|   * don't print                                                       |
|     print                                                             |
| - LIST DISTRIBUTION OF AQUEOUS SPECIES AT EACH PRINT POINT -          |
|   * only species > 10**-12 molal                                      |
|     all species                                                       |
|     don't print                                                       |
| - LIST CATION/H+ ACTIVITY RATIOS AT EACH PRINT POINT -                |
|   * don't print                                                       |
|     print                                                             |
| - LIST BULK ELEMENT AND OXIDE COMPOSITION AT EACH PRINT POINT -       |
|   * don't print                                                       |
|     print                                                             |
| - MINERAL SATURATION STATES -                                         |
|   * print if affinity > -10 kcals                                     |
|     print all                                                         |
|     don't print                                                       |
| - LIST GAS SPECIES SUMMARY AT EACH PRINT POINT -                      |
|     don't print                                                       |
|   * print                                                             |
| - PRINT AQUEOUS MASS AND CONCENTRATION TOTALS -                       |
|   * don't print                                                       |
|     print                                                             |
| - TAB FILES -                                                         |
|   * write                                                             |
|     append to previous tabx file                                      |
|     don't write                                                       |
| - WRITE PICKUP FILE -                                                 |
|     write pickup file at end of run                                   |
|     don't write pickup file                                           |
|   * write pickup file for each print point                            |
| - PHYSICALLY REMOVED SUBSYSTEM -                                      |
|   * does nothing                                                      |
|     transfer minerals but leave trivial mass in the system            |
|     transfer minerals                                                 |
| - CLEAR INITIAL PHYSICALLY REMOVED SUBSYSTEM -                        |
|   * does nothing                                                      |
|     clear p.r.s. before first reaction progress advance               |
| - PHASE BOUNDARY SEARCH -                                             |
|   * step size constrained by predicted phase boundaries               |
```

```
|     phase boundaries estimated from Taylor's series and printed      |
|     locations of phase boundaries ignored                            |
| - AUTO BASIS SWITCHING -                                             |
|   * off                                                              |
|     on                                                               |
| - SUPPRESS REDOX REACTIONS -                                         |
|   * does nothing                                                     |
|     suppress all redox reactions                                     |
| - LINEAR OR LOGARITHMIC TAYLOR'S SERIES -                            |
|   * linear for kcol = 1,kdim, logarithmic for kcol = 1,kbt           |
|     logarithmic for kcol = 1,kbt                                     |
|     linear for kcol = 1,kdim                                         |
| - AZERO AND HYDRATION NUMBERS -                                      |
|   * no change                                                        |
|     read in new azero and hydration numbers                          |
| - PRINT MEAN MOLAL ACTIVITY COEFFICIENTS FOR DISSOLVED SPECIES -     |
|   * does nothing                                                     |
|     print                                                            |
| - PITZER DATABASE INFORMATION -                                      |
|   * print only warnings                                              |
|     print species in model and number of Pitzer coefficients         |
|     print species in model and names of Pitzer coefficients          |
| - PRINT DIAGNOSTIC MESSAGES -                                        |
|   * don't print                                                      |
|     print level 1 messages                                           |
|     print level 2 messages                                           |
| - PRINT PRE-NEWTON-RAPHSON OPTIMIZATION -                            |
|   * don't print                                                      |
|     print summary information                                        |
|     print detailed information                                       |
| - PRINT STEP SIZE AND ORDER -                                        |
|   * don't print                                                      |
|     print scale factor                                               |
|     print orders and step size scaling factors                       |
| - CONTROL STEP SIZE AND ORDER PRINT -                                |
|   * does nothing                                                     |
|     print step size and order when delzi .le. dlzmx1                 |
| - NEWTON ITERATIONS -                                                |
|   * don't print                                                      |
|     print summary of newton iterations                               |
|     print summary, residual functions and correction terms           |
|     print summary, residual functions, correction terms and matrix   |
| - PRINT SEARCH ITERATIONS -                                          |
|   * don't print                                                      |
|     print                                                            |
| - PRINT HPSAT ITERATIONS -                                           |
|   * don't print                                                      |
|     print                                                            |
| - PRINT FINITE DIFFERENCE AND DERIVATIVE DATA -                      |
|   * don't print                                                      |
|     print computations from RDERIV, and RTAYLR                       |
|     print computations from RDERIV, RTAYLR, DERIV and TAYLOR         |
| - PRINT KINETICS DIAGNOSTIC MESSAGES -                               |
|   * don't print                                                      |
|     print level 1 diagnostics                                        |
|     print level 1 and level 2 diagnostics                            |
| - PRINT AKMATR -                                                     |
|   * don't print                                                      |
|     print level 1 diagnostics                                        |
| - KILL ITERATION VARIABLES -                                         |
|   * does nothing                                                     |
|     allow selection of variables to remove                           |
|----------------------------------------------------------------------|
```

```
| development options  (used for code development)                    |
|---------------------------------------------------------------------|
|    0 check finite difference and Taylor series expression           |
|    0 check reaction rate finite difference and Taylor series        |
|---------------------------------------------------------------------|
| tolerances                        desired values - defaults info-only |
|---------------------------------------------------------------------|
| number of N-R iterations        |        90        |  90      itermx |
| p.r.s. transfer interval        | 1.00000E+38      |  varies  dlzidp |
| residual magnitude              | 1.00000E-06      |  1.0e-06 tolbt  |
| correction magnitude            | 1.00000E-06      |  1.0e-06 toldl  |
| search/find tolerance           | 1.00000E-06      |  varies  tolx   |
| supersaturation                 | 5.00000E-03      |  varies  tolsat |
| supersaturation set size        | 1.00000E-02      |  varies  tolsst |
| max. size Taylor's series term  | 1.00000E-04      |  1.0e-04 screw1 |
| max. initial value betamx       |                  |  n/a     screw2 |
| max. Taylor's series term (kin.)| 1.00000E-04      |  1.0e-04 screw3 |
| corrector iteration             | 1.00000E-04      |  1.0e-04 screw4 |
| max. size of N-R correction term|  4.0000          |  4.0     screw5 |
| step size (economy mode)        |  4.0000          |  4.0     screw6 |
| log mass of phases              | -6.0000          |  varies  zklogu |
| decrement mass (p.r.s.)         |  2.0000          |  2.0     zklogl |
| min. left after p.r.s.          | 0.80000          |  .98     zkfac  |
| initial step size               | 1.00000E-09      |  varies  dlzmx1 |
| upper limit step size           | 1.00000E+38      |  varies  dlzmx2 |
| maximum order                   |         6        |  6       nordlm |
| num. attempted assemblages      |        25        |  25      ntrymx |
| slide -> over phase bound.      |        12        |  8       npslmx |
| slide -> over redox insta.      |         8        |  3       nsslmx |
| fo2 scan control                |                  |  none    ioscan |
|---------------------------------------------------------------------|
c pickup file written by eq6.7.2bR137                                 |
c supported by eqlib.7.2bR168                                         |
|EQ6 input file name= j13_All-22.6i.txt                               |
|Description= React J-13 water with Carbon Steel and Alloy-22.        |
|Equilibrium with atmospheric gases.                                  |
|Version level= 7.2                                                   |
|Created 01/19/99    Creator= D.H. Lester                             |
|Revised             Revisor=                                         |
|                                                                     |
|Water from well J-13 at the Nevada Test site                         |
|                                                                     |
|Purpose: To model reaction with carbon steel (iron) and alloy C-22   |
|simultaneously to determine an expected Cr concentration in the water |
|corroding the C-22 after breaching the CAM.                          |
|                                                                     |
|It is assumed that a significant amount of carbon steel is still     |
|present. The rate constant for the steel was assumed to be 1.0E-11   |
|which is the higher value suggested in simulation studies at LLNL.   |
|Reference: Eng. Barrier System & Near Field Envir. Perf. Assess.,    |
|FY-96 Activities: End-of-Year Summary, Sept 1996, Wm.G.Halsey, "Report|
|on Initial Simulation of Water Interaction With Mild Steel Containers |
|Rate for C-22 is the median value for dripping at high temp. in the  |
|TSPA simulations for the VA document.                                |
|The data base was modified to add the solid KFe(CrO4)2:2H2O          |
|Total amount of Steel and C-22 reduced to 20 moles each for a more   |
|realistic proportion of materials contacting 1L of water             |
|---------------------------------------------------------------------|
| temperature (C)                    |     25.000                     |
|---------------------------------------------------------------------|
| electrical imbalance               |   5.752163835343278E-14        |
|---------------------------------------------------------------------|
| number of aqueous master species   |     38                         |
```

```
|-----------------------------------------------------------------------|
| position of last pure mineral      |     44                           |
|-----------------------------------------------------------------------|
| position of last solid solution    |     44                           |
|-----------------------------------------------------------------------|
| suppressed species     (suppress,replace,augmentk,augmentg)  value    |
|-----------------------------------------------------------------------|
| Phlogopite                | mineral        | suppress |  0.00000       |
| Annite                    | mineral        | suppress |  0.00000       |
| Clinochlore-14A           | mineral        | suppress |  0.00000       |
| Daphnite-14A              | mineral        | suppress |  0.00000       |
| Clinozoisite              | mineral        | suppress |  0.00000       |
| Epidote                   | mineral        | suppress |  0.00000       |
| Epidote-ord               | mineral        | suppress |  0.00000       |
| Andradite                 | mineral        | suppress |  0.00000       |
| Grossular                 | mineral        | suppress |  0.00000       |
| Enstatite                 | mineral        | suppress |  0.00000       |
| Ferrosilite               | mineral        | suppress |  0.00000       |
| Pyrite                    | mineral        | suppress |  0.00000       |
| Pyrrhotite                | mineral        | suppress |  0.00000       |
| Troilite                  | mineral        | suppress |  0.00000       |
| Alabandite                | mineral        | suppress |  0.00000       |
| Brezinaite                | mineral        | suppress |  0.00000       |
| Chalcocite                | mineral        | suppress |  0.00000       |
| Covellite                 | mineral        | suppress |  0.00000       |
| Millerite                 | mineral        | suppress |  0.00000       |
| Polydymite                | mineral        | suppress |  0.00000       |
| Vaesite                   | mineral        | suppress |  0.00000       |
| Heazlewoodite             | mineral        | suppress |  0.00000       |
| Galena                    | mineral        | suppress |  0.00000       |
| Sulfur                    | mineral        | suppress |  0.00000       |
| CaZrO3                    | mineral        | suppress |  0.00000       |
| BaZrO3                    | mineral        | suppress |  0.00000       |
| SrZrO3                    | mineral        | suppress |  0.00000       |
| U2S3                      | mineral        | suppress |  0.00000       |
| U3S5                      | mineral        | suppress |  0.00000       |
| US2                       | mineral        | suppress |  0.00000       |
| US3                       | mineral        | suppress |  0.00000       |
| US                        | mineral        | suppress |  0.00000       |
| US1.9                     | mineral        | suppress |  0.00000       |
| U3P4                      | mineral        | suppress |  0.00000       |
| UP                        | mineral        | suppress |  0.00000       |
| UP2                       | mineral        | suppress |  0.00000       |
| HS-                       | aqueous        | suppress |  0.00000       |
| H2S(aq)                   | aqueous        | suppress |  0.00000       |
| S--                       | aqueous        | suppress |  0.00000       |
|-----------------------------------------------------------------------|
| iopg options                                                          |
|-----------------------------------------------------------------------|
| - pH SCALE CONVENTION -                                               |
|    * modified NBS                                                     |
|      internal                                                         |
|      rational                                                         |
| - ACTIVITY COEFFICIENT OPTIONS -                                      |
|    * use B-dot equation                                               |
|      Davies' equation                                                 |
|      Pitzer's equations                                               |
|-----------------------------------------------------------------------|
| elements, moles and moles aqueous                                     |
|-----------------------------------------------------------------------|
| O                         |  4.005551824589011E+04 |  5.559517030772202E+01 |
| Al                        |  1.482500000694482E-06 |  1.482500001674087E-06 |
| B                         |  1.238799999942330E-05 |  1.238799999942330E-05 |
```

Ba	1.000000000006594E-10	1.000000000006843E-10
Ca	3.243700000162714E-04	3.243700000765471E-04
Ce	1.000000000975802E-24	1.000000001785293E-24
Cl	2.014000000000269E-04	2.014000000002267E-04
Cr	5.788340450028924E-03	5.788340453067724E-03
Cs	1.000000000000039E-10	1.000000000000066E-10
Cu	1.050000000528221E-14	1.050000000531014E-14
F	1.147500000001528E-04	1.147500000231348E-04
Fe	1.922122501040005E+01	1.598450512382587E-05
Gd	1.000000001150365E-14	1.000000002243533E-14
H	1.110188738405208E+02	1.110049897807546E+02
C	1.000043999030279E+04	1.058845097764135E-05
P	1.412127110000032E-02	2.372113295705377E-04
K	1.289100000000803E-04	1.289100000021824E-04
La	1.000000000980088E-14	1.000000001896951E-14
Li	1.000000000000469E-10	1.000000000012497E-10
Mg	8.269900000408464E-05	8.269900002874934E-05
Mn	2.061245260000012E-01	5.950300249213226E-04
Mo	2.281741300011402E-03	2.281741300011402E-03
N	1.420000000000891E-04	1.420000000008644E-04
Na	1.992200000002518E-03	1.992200000030168E-03
Nd	1.000000000990082E-14	1.000000001930264E-14
Ni	1.283955730006416E-02	1.283955730251447E-02
Pb	1.000000000003566E-10	1.000000000004771E-10
Pu	1.000000001138469E-14	1.000000003203632E-14
S	1.725154000000828E-02	1.725154000485521E-02
Si	1.082168999999892E-01	1.001323994399828E-04
Sm	1.000000000991962E-14	1.000000001951439E-14
Sr	1.000000000034016E-10	1.000000000298130E-10
Ti	1.000000000000003E-10	1.000000000000003E-10
U	9.999999988006304E-15	9.999999995712056E-15
V	9.401622000046966E-05	9.401622003516768E-05
Zn	1.000000000089305E-10	1.000000000091082E-10
Zr	1.000000000323548E-20	1.000000000788503E-20

master species and logarithmic basis variables		
H2O	H2O	1.744233599850491E+00
Al+++	Al+++	-7.858315715432230E+00
B(OH)3(aq)	B(OH)3(aq)	-4.906998836735454E+00
Ba++	Ba++	-1.000022516489940E+01
Ca++	Ca++	-3.585325289102013E+00
Ce+++	Ce+++	-2.459326282320142E+01
Cl-	Cl-	-3.697247197980587E+00
CrO4--	CrO4--	-6.570972983971728E+00
Cs+	Cs+	-1.000004012489555E+01
Cu++	Cu++	-1.398019828324218E+01
F-	F-	-5.033328302410370E+00
Fe++	Fe++	-1.127518574581162E+01
Gd+++	Gd+++	-1.454688501460554E+01
H+	H+	-1.963802133699607E+00
HCO3-	HCO3-	-9.188927702353252E+00
HPO4--	HPO4--	-8.858066945417364E+00
K+	K+	-3.903024389323807E+00
La+++	La+++	-1.465447038354384E+01
Li+	Li+	-1.001069921161765E+01
Mg++	Mg++	-4.268489364593810E+00
Mn++	Mn++	-3.382135745811623E+00
MoO4--	MoO4--	-2.641733596704139E+00
NO3-	NH3(aq)	-3.853337084637451E+00
Na+	Na+	-2.712388287003812E+00
Nd+++	Nd+++	-1.472210846518251E+01
Ni++	Ni++	-1.990690596753653E+00

```
| Pb++                      | Pb++                      | -1.000103255198765E+01 |
| Pu++++                    | Pu++++                    | -2.431216540543245E+01 |
| SO4--                     | SO4--                     | -2.009595816402914E+00 |
| SiO2(aq)                  | SiO2(aq)                  | -3.999425383676493E+00 |
| Sm+++                     | Sm+++                     | -1.473460109741973E+01 |
| Sr++                      | Sr++                      | -1.013582209807235E+01 |
| Ti(OH)4(aq)               | Ti(OH)4(aq)               | -9.999999999999998E+00 |
| UO2++                     | UO2++                     | -1.472101217255525E+01 |
| VO++                      | VO++                      | -9.557456024899442E+00 |
| Zn++                      | Zn++                      | -1.000087511575224E+01 |
| Zr(OH)2++                 | Zr(OH)2++                 | -2.265475324969191E+01 |
| O2(g)                     | O2(g)                     | -6.778000000000000E-01 |
|                           | Hematite                  |  9.827507059183158E-01 |
|                           | MnHPO4                    | -1.857483525368537E+00 |
|                           | Pyrolusite                | -7.175015184640172E-01 |
|                           | Quartz                    | -9.661069470116924E-01 |
|                           | fix     CO2(g)            |  4.000019107655863E+00 |
|                           | fix     O2(g)             |  3.999338418540431E+00 |
|-------------------------------------------------------------------------|
| physically removed subsystem  (solid solution, mineral, moles)          |
|-------------------------------------------------------------------------|
| none                      |                           |                        |
|-------------------------------------------------------------------------|
|-------------------------------------------------------------------------|
|EQ6 input file name= j13_All-22.6i.txt                                   |
|Description= React J-13 water with Carbon Steel and Alloy-22.            |
|Equilibrium with atmospheric gases.                                      |
|Version level= 7.2                                                       |
|Created 01/19/99    Creator= D.H. Lester                                 |
|Revised             Revisor=                                             |
|                                                                         |
|Water from well J-13 at the Nevada Test site                             |
|                                                                         |
|Purpose: To model reaction with carbon steel (iron) and alloy C-22       |
|simultaneously to determine an expected Cr concentration in the water    |
|corroding the C-22 after breaching the CAM.                              |
|                                                                         |
|It is assumed that a significant amount of carbon steel is still         |
|present. The rate constant for the steel was assumed to be 1.0E-11       |
|which is the higher value suggested in simulation studies at LLNL.       |
|Reference: Eng. Barrier System & Near Field Envir. Perf. Assess.,        |
|FY-96 Activities: End-of-Year Summary, Sept 1996, Wm.G.Halsey, "Report|
|on Initial Simulation of Water Interaction With Mild Steel Containers |
|Rate for C-22 is the median value for dripping at high temp. in the      |
|TSPA simulations for the VA document.                                    |
|The data base was modified to add the solid KFe(CrO4)2:2H2O              |
|Total amount of Steel and C-22 reduced to 20 moles each for a more       |
|realistic proportion of materials contacting 1L of water                 |
|-------------------------------------------------------------------------|
| calculational mode   |*normal     | economy           | super economy|
|-------------------------------------------------------------------------|
| model type           |*titration  | closed            | open         |
|-------------------------------------------------------------------------|
| temperature model    |*power      | fluid mixing                         |
|-------------------------------------------------------------------------|
c power model  -->   temp = tstart + tk1*zi + tk2*zi**2 + tk3*zi**3      |
c mixing model -->   temp = (tstart * tk1 + zi*tk2) / (zi + tk1)          |
c-------------------------------------------------------------------------|
| tstart(c)|  25.00    |tk1| 0.0000    |tk2| 0.0000    |tk3| 0.0000     |
|-------------------------------------------------------------------------|
| starting value of zi |  20.042    |max. value of zi    | 1.00000E+38 |
|-------------------------------------------------------------------------|
| starting time (sec)  | 3.74591E+10|max. time (sec)     | 1.00000E+38 |
```

```
|-----------------------------------------------------------------------|
| max. steps           |       400  |max. steps w/o print|       150   |
|-----------------------------------------------------------------------|
| linear print interval|  10.000    |log print interval  | 1.00000E+38 |
|-----------------------------------------------------------------------|
| suppress mineral phases                                               |
|-----------------------------------------------------------------------|
| phases w/ elements|                          |                          |n
| phases except     |                          |                          |n
|-----------------------------------------------------------------------|
| fixed fugacity phases- species, moles(per kg h2o), log fugacity(bars)|
|-----------------------------------------------------------------------|
| CO2(g)                              | 0.00000        | -3.5000        |n
| O2(g)                               | 0.00000        |-0.67780        |n
|-----------------------------------------------------------------------|
c                  R A T E     L A W S
c 1 = relative                   rate = rk1 + rk2*zi + (1/2)rk3*zi*zi
c 2 = transition state theory    rate = CHECK DOCUMENTATION
c 3 = specified rate             rate = CHECK DOCUMENTATION
c 4 = activity term rate         rate = CHECK DOCUMENTATION
c
c                  R E A C T A N T     T Y P E S
c mineral     solid solution     special    aqueous    gas
c
c                  S U R F A C E    T Y P E
c 0 = fixed surface area     1 = fixed specific surface area
c
c                  N O T E S
c status and jreac are normally not set by the user
|-----------------------------------------------------------------------|
| reactants   (ss) solid solution only     (sp) special reactant only   |
|-----------------------------------------------------------------------|
| REACTANT         | carbon steel             |status   | 1             |
| moles remaining  | 0.00000                  |destroyed|  20.000       |
| reactant type    |  special                 |sk       |  100.00       |
| surface type     |   0                      |fk       |  1.0000       |
| end-member       |                          |mole fr  |               |ss,n
| volume           | 0.00000                  |         |               |sp
| element          | C            |moles      |  2.190000000000000E-02 |sp,n
| element          | Mn           |moles      |  1.030000000000000E-02 |sp,n
| element          | S            |moles      |  8.530000000000000E-04 |sp,n
| element          | Si           |moles      |  5.360000000000000E-03 |sp,n
| element          | P            |moles      |  7.060000000000000E-04 |sp,n
| element          | Fe           |moles      |  9.610000000000000E-01 |sp,n
| DISSOLUTION LAW  |    3                     |         |               |
| rate constant rk1| 1.00000E-11              |csigma1  |               |
| temperature (c)  |   25.000                 |         |               |234
| PRECIPITATION LAW|    0                     |         |               |
c-----------------------------------------------------------------------|
| REACTANT         | Alloy-22                 |status   | 0             |
| moles remaining  |  19.958                  |destroyed| 4.23288E-02   |
| reactant type    |  special                 |sk       |  100.00       |
| surface type     |   0                      |fk       |  1.0000       |
| end-member       |                          |mole fr  |               |ss,n
| volume           | 0.00000                  |         |               |sp
| element          | Cr           |moles      |  2.561060000000000E-01 |sp,n
| element          | Fe           |moles      |  5.420400000000000E-02 |sp,n
| element          | Ni           |moles      |  5.681220000000000E-01 |sp,n
| element          | Mo           |moles      |  1.009620000000000E-01 |sp,n
| element          | V            |moles      |  4.160000000000000E-03 |sp,n
| element          | Mn           |moles      |  5.510000000000000E-03 |sp,n
| DISSOLUTION LAW  |    3                     |         |               |
| rate constant rk1| 1.13000E-14              |csigma1  |               |
```

```
| temperature (c)  |   25.000                  |         |               |234
| PRECIPITATION LAW|    0                      |         |               |
|-----------------------------------------------------------------------|
| options                                                               |
|-----------------------------------------------------------------------|
| - SOLID SOLUTIONS -                                                   |
|     ignore solid solutions                                            |
|   * process solid solutions                                           |
| - LOADING OF SPECIES INTO MEMORY -                                    |
|   * don't print                                                       |
|     lists species loaded into memory                                  |
| - LIST DERIVATIVES OF BASIS ELEMENTS AT EACH PRINT POINT -            |
|   * don't print                                                       |
|     print                                                             |
| - LIST ALL SPECIES LOADED INTO MEMORY AND THEIR LOG K VALUES -        |
|   * don't print                                                       |
|     print                                                             |
| - LIST DISTRIBUTION OF AQUEOUS SPECIES AT EACH PRINT POINT -          |
|   * only species > 10**-12 molal                                      |
|     all species                                                       |
|     don't print                                                       |
| - LIST CATION/H+ ACTIVITY RATIOS AT EACH PRINT POINT -                |
|   * don't print                                                       |
|     print                                                             |
| - LIST BULK ELEMENT AND OXIDE COMPOSITION AT EACH PRINT POINT -       |
|   * don't print                                                       |
|     print                                                             |
| - MINERAL SATURATION STATES -                                         |
|   * print if affinity > -10 kcals                                     |
|     print all                                                         |
|     don't print                                                       |
| - LIST GAS SPECIES SUMMARY AT EACH PRINT POINT -                      |
|     don't print                                                       |
|   * print                                                             |
| - PRINT AQUEOUS MASS AND CONCENTRATION TOTALS -                       |
|   * don't print                                                       |
|     print                                                             |
| - TAB FILES -                                                         |
|   * write                                                             |
|     append to previous tabx file                                      |
|     don't write                                                       |
| - WRITE PICKUP FILE -                                                 |
|     write pickup file at end of run                                   |
|     don't write pickup file                                           |
|   * write pickup file for each print point                            |
| - PHYSICALLY REMOVED SUBSYSTEM -                                      |
|   * does nothing                                                      |
|     transfer minerals but leave trivial mass in the system            |
|     transfer minerals                                                 |
| - CLEAR INITIAL PHYSICALLY REMOVED SUBSYSTEM -                        |
|   * does nothing                                                      |
|     clear p.r.s. before first reaction progress advance               |
| - PHASE BOUNDARY SEARCH -                                             |
|   * step size constrained by predicted phase boundaries               |
|     phase boundaries estimated from Taylor's series and printed       |
|     locations of phase boundaries ignored                             |
| - AUTO BASIS SWITCHING -                                              |
|   * off                                                               |
|     on                                                                |
| - SUPPRESS REDOX REACTIONS -                                          |
|   * does nothing                                                      |
|     suppress all redox reactions                                      |
| - LINEAR OR LOGARITHMIC TAYLOR'S SERIES -                             |
```

```
|   * linear for kcol = 1,kdim, logarithmic for kcol = 1,kbt            |
|     logarithmic for kcol = 1,kbt                                      |
|     linear for kcol = 1,kdim                                          |
| - AZERO AND HYDRATION NUMBERS -                                       |
|   * no change                                                         |
|     read in new azero and hydration numbers                           |
| - PRINT MEAN MOLAL ACTIVITY COEFFICIENTS FOR DISSOLVED SPECIES -      |
|   * does nothing                                                      |
|     print                                                             |
| - PITZER DATABASE INFORMATION -                                       |
|   * print only warnings                                               |
|     print species in model and number of Pitzer coefficients          |
|     print species in model and names of Pitzer coefficients           |
| - PRINT DIAGNOSTIC MESSAGES -                                         |
|   * don't print                                                       |
|     print level 1 messages                                            |
|     print level 2 messages                                            |
| - PRINT PRE-NEWTON-RAPHSON OPTIMIZATION -                             |
|   * don't print                                                       |
|     print summary information                                         |
|     print detailed information                                        |
| - PRINT STEP SIZE AND ORDER -                                         |
|   * don't print                                                       |
|     print scale factor                                                |
|     print orders and step size scaling factors                        |
| - CONTROL STEP SIZE AND ORDER PRINT -                                 |
|   * does nothing                                                      |
|     print step size and order when delzi .le. dlzmx1                  |
| - NEWTON ITERATIONS -                                                 |
|   * don't print                                                       |
|     print summary of newton iterations                                |
|     print summary, residual functions and correction terms            |
|     print summary, residual functions, correction terms and matrix    |
| - PRINT SEARCH ITERATIONS -                                           |
|   * don't print                                                       |
|     print                                                             |
| - PRINT HPSAT ITERATIONS -                                            |
|   * don't print                                                       |
|     print                                                             |
| - PRINT FINITE DIFFERENCE AND DERIVATIVE DATA -                       |
|   * don't print                                                       |
|     print computations from RDERIV, and RTAYLR                        |
|     print computations from RDERIV, RTAYLR, DERIV and TAYLOR          |
| - PRINT KINETICS DIAGNOSTIC MESSAGES -                                |
|   * don't print                                                       |
|     print level 1 diagnostics                                         |
|     print level 1 and level 2 diagnostics                             |
| - PRINT AKMATR -                                                      |
|   * don't print                                                       |
|     print level 1 diagnostics                                         |
| - KILL ITERATION VARIABLES -                                          |
|   * does nothing                                                      |
|     allow selection of variables to remove                            |
|-----------------------------------------------------------------------|
| development options  (used for code development)                      |
|-----------------------------------------------------------------------|
|    0 check finite difference and Taylor series expression             |
|    0 check reaction rate finite difference and Taylor series          |
|-----------------------------------------------------------------------|
| tolerances                      desired values - defaults info-only   |
|-----------------------------------------------------------------------|
| number of N-R iterations        |        90        |  90      itermx |
| p.r.s. transfer interval        | 1.00000E+38      |  varies  dlzidp |
```

```
| residual magnitude              | 1.00000E-06      |  1.0e-06 tolbt  |
| correction magnitude            | 1.00000E-06      |  1.0e-06 toldl  |
| search/find tolerance           | 1.00000E-06      |  varies  tolx   |
| supersaturation                 | 5.00000E-03      |  varies  tolsat |
| supersaturation set size        | 1.00000E-02      |  varies  tolsst |
| max. size Taylor's series term  | 1.00000E-04      |  1.0e-04 screw1 |
| max. initial value betamx       |                  |  n/a     screw2 |
| max. Taylor's series term (kin.)| 1.00000E-04      |  1.0e-04 screw3 |
| corrector iteration             | 1.00000E-04      |  1.0e-04 screw4 |
| max. size of N-R correction term|  4.0000          |  4.0     screw5 |
| step size (economy mode)        |  4.0000          |  4.0     screw6 |
| log mass of phases              | -6.0000          |  varies  zklogu |
| decrement mass (p.r.s.)         |  2.0000          |  2.0     zklogl |
| min. left after p.r.s.          | 0.80000          |  .98     zkfac  |
| initial step size               | 1.00000E-09      |  varies  dlzmx1 |
| upper limit step size           | 1.00000E+38      |  varies  dlzmx2 |
| maximum order                   |         6        |  6       nordlm |
| num. attempted assemblages      |        25        |  25      ntrymx |
| slide -> over phase bound.      |        12        |  8       npslmx |
| slide -> over redox insta.      |         8        |  3       nsslmx |
| fo2 scan control                |                  |  none    ioscan |
|-----------------------------------------------------------------------|
c pickup file written by eq6.7.2bR137                                   |
c supported by eqlib.7.2bR168                                           |
|EQ6 input file name= j13_All-22.6i.txt                                 |
|Description= React J-13 water with Carbon Steel and Alloy-22.          |
|Equilibrium with atmospheric gases.                                    |
|Version level= 7.2                                                     |
|Created 01/19/99    Creator= D.H. Lester                               |
|Revised             Revisor=                                           |
|                                                                       |
|Water from well J-13 at the Nevada Test site                           |
|                                                                       |
|Purpose: To model reaction with carbon steel (iron) and alloy C-22     |
|simultaneously to determine an expected Cr concentration in the water |
|corroding the C-22 after breaching the CAM.                            |
|                                                                       |
|It is assumed that a significant amount of carbon steel is still       |
|present. The rate constant for the steel was assumed to be 1.0E-11     |
|which is the higher value suggested in simulation studies at LLNL.     |
|Reference: Eng. Barrier System & Near Field Envir. Perf. Assess.,      |
|FY-96 Activities: End-of-Year Summary, Sept 1996, Wm.G.Halsey, "Report|
|on Initial Simulation of Water Interaction With Mild Steel Containers |
|Rate for C-22 is the median value for dripping at high temp. in the    |
|TSPA simulations for the VA document.                                  |
|The data base was modified to add the solid KFe(CrO4)2:2H2O            |
|Total amount of Steel and C-22 reduced to 20 moles each for a more     |
|realistic proportion of materials contacting 1L of water               |
|-----------------------------------------------------------------------|
| temperature (C)                    |     25.000                       |
|-----------------------------------------------------------------------|
| electrical imbalance               |   5.752163835343278E-14          |
|-----------------------------------------------------------------------|
| number of aqueous master species   |     38                           |
|-----------------------------------------------------------------------|
| position of last pure mineral      |     44                           |
|-----------------------------------------------------------------------|
| position of last solid solution    |     44                           |
|-----------------------------------------------------------------------|
| suppressed species     (suppress,replace,augmentk,augmentg)  value    |
|-----------------------------------------------------------------------|
| Phlogopite                | mineral        | suppress |  0.00000      |
| Annite                    | mineral        | suppress |  0.00000      |
```

```
| Clinochlore-14A          | mineral        | suppress |  0.00000      |
| Daphnite-14A             | mineral        | suppress |  0.00000      |
| Clinozoisite             | mineral        | suppress |  0.00000      |
| Epidote                  | mineral        | suppress |  0.00000      |
| Epidote-ord              | mineral        | suppress |  0.00000      |
| Andradite                | mineral        | suppress |  0.00000      |
| Grossular                | mineral        | suppress |  0.00000      |
| Enstatite                | mineral        | suppress |  0.00000      |
| Ferrosilite              | mineral        | suppress |  0.00000      |
| Pyrite                   | mineral        | suppress |  0.00000      |
| Pyrrhotite               | mineral        | suppress |  0.00000      |
| Troilite                 | mineral        | suppress |  0.00000      |
| Alabandite               | mineral        | suppress |  0.00000      |
| Brezinaite               | mineral        | suppress |  0.00000      |
| Chalcocite               | mineral        | suppress |  0.00000      |
| Covellite                | mineral        | suppress |  0.00000      |
| Millerite                | mineral        | suppress |  0.00000      |
| Polydymite               | mineral        | suppress |  0.00000      |
| Vaesite                  | mineral        | suppress |  0.00000      |
| Heazlewoodite            | mineral        | suppress |  0.00000      |
| Galena                   | mineral        | suppress |  0.00000      |
| Sulfur                   | mineral        | suppress |  0.00000      |
| CaZrO3                   | mineral        | suppress |  0.00000      |
| BaZrO3                   | mineral        | suppress |  0.00000      |
| SrZrO3                   | mineral        | suppress |  0.00000      |
| U2S3                     | mineral        | suppress |  0.00000      |
| U3S5                     | mineral        | suppress |  0.00000      |
| US2                      | mineral        | suppress |  0.00000      |
| US3                      | mineral        | suppress |  0.00000      |
| US                       | mineral        | suppress |  0.00000      |
| US1.9                    | mineral        | suppress |  0.00000      |
| U3P4                     | mineral        | suppress |  0.00000      |
| UP                       | mineral        | suppress |  0.00000      |
| UP2                      | mineral        | suppress |  0.00000      |
| HS-                      | aqueous        | suppress |  0.00000      |
| H2S(aq)                  | aqueous        | suppress |  0.00000      |
| S--                      | aqueous        | suppress |  0.00000      |
|-------------------------------------------------------------------------|
| iopg options                                                            |
|-------------------------------------------------------------------------|
| - pH SCALE CONVENTION -                                                 |
|    * modified NBS                                                       |
|      internal                                                           |
|      rational                                                           |
| - ACTIVITY COEFFICIENT OPTIONS -                                        |
|    * use B-dot equation                                                 |
|      Davies' equation                                                   |
|      Pitzer's equations                                                 |
|-------------------------------------------------------------------------|
| elements, moles and moles aqueous                                       |
|-------------------------------------------------------------------------|
| O                        |  4.005551824589011E+04 |  5.562827836615016E+01 |
| Al                       |  1.482500000694482E-06 |  1.482500223869846E-06 |
| B                        |  1.238799999942330E-05 |  1.238799999942316E-05 |
| Ba                       |  1.000000000006594E-10 |  1.000000000050546E-10 |
| Ca                       |  3.243700000162714E-04 |  3.243700112169935E-04 |
| Ce                       |  1.000000000975802E-24 |  1.000000150131104E-24 |
| Cl                       |  2.014000000000269E-04 |  2.014000000222631E-04 |
| Cr                       |  1.084100083116027E-02 |  1.084100197801122E-02 |
| Cs                       |  1.000000000000039E-10 |  1.000000000005080E-10 |
| Cu                       |  1.050000000528221E-14 |  1.050000002708181E-14 |
| F                        |  1.147500000001528E-04 |  1.147500039550891E-04 |
| Fe                       |  1.922229438949814E+01 |  2.410566871222318E-06 |
```

Gd	1.000000001150365E-14	1.000000203457061E-14
H	1.110188738405208E+02	1.110053702333057E+02
C	1.000043999030279E+04	1.053456337899684E-05
P	1.412127110000032E-02	6.176631297584362E-04
K	1.289100000000803E-04	1.289100004238655E-04
La	1.000000000980088E-14	1.000000171631992E-14
Li	1.000000000000469E-10	1.000000002439083E-10
Mg	8.269900000408464E-05	8.269900463783882E-05
Mn	2.062332316090069E-01	3.185182624042631E-05
Mo	4.273598958167724E-03	4.273598958167724E-03
N	1.420000000000891E-04	1.420000002408006E-04
Na	1.992200000002518E-03	1.992200005608981E-03
Nd	1.000000000990082E-14	1.000000175590339E-14
Ni	2.404791446877205E-02	2.404791532176547E-02
Pb	1.000000000003566E-10	1.000000000222942E-10
Pu	1.000000001138469E-14	1.000000351626914E-14
S	1.725154000000828E-02	1.725154097627955E-02
Si	1.082168999999892E-01	1.001406450693000E-04
Sm	1.000000000991962E-14	1.000000179447855E-14
Sr	1.000000000034016E-10	1.000000049164343E-10
Ti	1.000000000000003E-10	1.000000000000003E-10
U	9.999999988006304E-15	1.000000177967319E-14
V	1.760879683605488E-04	1.760879813318568E-04
Zn	1.000000000089305E-10	1.000000000427707E-10
Zr	1.000000000323548E-20	1.000000076566081E-20

master species and logarithmic basis variables		
H2O	H2O	1.744269336868339E+00
Al+++	Al+++	-8.765241995923672E+00
B(OH)3(aq)	B(OH)3(aq)	-4.906998956839694E+00
Ba++	Ba++	-1.000020475816168E+01
Ca++	Ca++	-3.581033946142592E+00
Ce+++	Ce+++	-2.457710901315573E+01
Cl-	Cl-	-3.696603916276876E+00
CrO4--	CrO4--	-5.688449366302018E+00
Cs+	Cs+	-1.000003778133445E+01
Cu++	Cu++	-1.398427111415562E+01
F-	F-	-4.503906294908312E+00
Fe++	Fe++	-1.254122675580561E+01
Gd+++	Gd+++	-1.451387246465782E+01
H+	H+	-2.609329796357418E+00
HCO3-	HCO3-	-8.526209692219236E+00
HPO4--	HPO4--	-7.507554811561502E+00
K+	K+	-3.903361606702567E+00
La+++	La+++	-1.463649587515786E+01
Li+	Li+	-1.001113430139201E+01
Mg++	Mg++	-4.263489816075425E+00
Mn++	Mn++	-4.648176755805612E+00
MoO4--	MoO4--	-2.369206235196454E+00
NO3-	NH3(aq)	-3.856732086829865E+00
Na+	Na+	-2.712792582380990E+00
Nd+++	Nd+++	-1.470409277694219E+01
Ni++	Ni++	-1.713743154851016E+00
Pb++	Pb++	-1.000095727207858E+01
Pu++++	Pu++++	-2.812917528239961E+01
SO4--	SO4--	-1.947226798777255E+00
SiO2(aq)	SiO2(aq)	-3.999389646658645E+00
Sm+++	Sm+++	-1.471628188486844E+01
Sr++	Sr++	-1.012878605224410E+01
Ti(OH)4(aq)	Ti(OH)4(aq)	-9.999999999999998E+00
UO2++	UO2++	-1.510976069046086E+01
VO++	VO++	-9.975335575877660E+00

```
| Zn++                      | Zn++                      | -1.000088975787481E+01 |
| Zr(OH)2++                 | Zr(OH)2++                 | -2.376444812352712E+01 |
| O2(g)                     | O2(g)                     | -6.778000000000000E-01 |
|                           | Hematite                  |  9.827751740606980E-01 |
|                           | MnHPO4                    | -1.869550176800383E+00 |
|                           | Pyrolusite                | -7.151233072474306E-01 |
|                           | Quartz                    | -9.661069801335802E-01 |
|                           | fix     CO2(g)            |  4.000019107658203E+00 |
|                           | fix     O2(g)             |  3.999337650505734E+00 |
|-----------------------------------------------------------------------|
| physically removed subsystem  (solid solution, mineral, moles)        |
|-----------------------------------------------------------------------|
| none                      |                           |                        |
|-----------------------------------------------------------------------|
|-----------------------------------------------------------------------|
|EQ6 input file name= j13_All-22.6i.txt                                 |
|Description= React J-13 water with Carbon Steel and Alloy-22.          |
|Equilibrium with atmospheric gases.                                    |
|Version level= 7.2                                                     |
|Created 01/19/99    Creator= D.H. Lester                               |
|Revised             Revisor=                                           |
|                                                                       |
|Water from well J-13 at the Nevada Test site                           |
|                                                                       |
|Purpose: To model reaction with carbon steel (iron) and alloy C-22     |
|simultaneously to determine an expected Cr concentration in the water  |
|corroding the C-22 after breaching the CAM.                            |
|                                                                       |
|It is assumed that a significant amount of carbon steel is still       |
|present. The rate constant for the steel was assumed to be 1.0E-11     |
|which is the higher value suggested in simulation studies at LLNL.     |
|Reference: Eng. Barrier System & Near Field Envir. Perf. Assess.,      |
|FY-96 Activities: End-of-Year Summary, Sept 1996, Wm.G.Halsey, "Report|
|on Initial Simulation of Water Interaction With Mild Steel Containers  |
|Rate for C-22 is the median value for dripping at high temp. in the    |
|TSPA simulations for the VA document.                                  |
|The data base was modified to add the solid KFe(CrO4)2:2H2O            |
|Total amount of Steel and C-22 reduced to 20 moles each for a more     |
|realistic proportion of materials contacting 1L of water               |
|-----------------------------------------------------------------------|
| calculational mode   |*normal     | economy           | super economy|
|-----------------------------------------------------------------------|
| model type           |*titration  | closed            | open         |
|-----------------------------------------------------------------------|
| temperature model    |*power      | fluid mixing                     |
|-----------------------------------------------------------------------|
c power model  -->   temp = tstart + tk1*zi + tk2*zi**2 + tk3*zi**3    |
c mixing model -->   temp = (tstart * tk1 + zi*tk2) / (zi + tk1)        |
c----------------------------------------------------------------------|
| tstart(c)|  25.00    |tk1| 0.0000    |tk2| 0.0000    |tk3| 0.0000    |
|-----------------------------------------------------------------------|
| starting value of zi |  20.042    |max. value of zi    | 1.00000E+38 |
|-----------------------------------------------------------------------|
| starting time (sec)  | 3.74591E+10|max. time (sec)     | 1.00000E+38 |
|-----------------------------------------------------------------------|
| max. steps           |       400  |max. steps w/o print|       150   |
|-----------------------------------------------------------------------|
| linear print interval|  10.000    |log print interval  | 1.00000E+38 |
|-----------------------------------------------------------------------|
| suppress mineral phases                                               |
|-----------------------------------------------------------------------|
| phases w/ elements|                          |                        |n
| phases except     |                          |                        |n
```

```
|-----------------------------------------------------------------------|
| fixed fugacity phases- species, moles(per kg h2o), log fugacity(bars)|
|-----------------------------------------------------------------------|
| CO2(g)                              | 0.00000        | -3.5000        |n
| O2(g)                               | 0.00000        |-0.67780        |n
|-----------------------------------------------------------------------|
c                  R A T E     L A W S
c 1 = relative                  rate = rk1 + rk2*zi + (1/2)rk3*zi*zi
c 2 = transition state theory   rate = CHECK DOCUMENTATION
c 3 = specified rate            rate = CHECK DOCUMENTATION
c 4 = activity term rate        rate = CHECK DOCUMENTATION
c
c                  R E A C T A N T     T Y P E S
c mineral     solid solution     special    aqueous    gas
c
c                  S U R F A C E    T Y P E
c 0 = fixed surface area     1 = fixed specific surface area
c
c                  N O T E S
c status and jreac are normally not set by the user
|-----------------------------------------------------------------------|
| reactants   (ss) solid solution only     (sp) special reactant only   |
|-----------------------------------------------------------------------|
| REACTANT          | carbon steel              |status    | 1            |
| moles remaining   | 0.00000                   |destroyed|  20.000       |
| reactant type     |  special                  |sk        |  100.00       |
| surface type      |   0                       |fk        |  1.0000       |
| end-member        |                           |mole fr   |               |ss,n
| volume            | 0.00000                   |          |               |sp
| element           | C            |moles       |  2.190000000000000E-02 |sp,n
| element           | Mn           |moles       |  1.030000000000000E-02 |sp,n
| element           | S            |moles       |  8.530000000000000E-04 |sp,n
| element           | Si           |moles       |  5.360000000000000E-03 |sp,n
| element           | P            |moles       |  7.060000000000000E-04 |sp,n
| element           | Fe           |moles       |  9.610000000000000E-01 |sp,n
| DISSOLUTION LAW   |    3                      |          |               |
| rate constant rk1| 1.00000E-11                |csigma1   |               |
| temperature (c)   |   25.000                  |          |               |234
| PRECIPITATION LAW|    0                       |          |               |
c-----------------------------------------------------------------------|
| REACTANT          | Alloy-22                  |status    | 0            |
| moles remaining   |  19.958                   |destroyed| 4.23288E-02   |
| reactant type     |  special                  |sk        |  100.00       |
| surface type      |   0                       |fk        |  1.0000       |
| end-member        |                           |mole fr   |               |ss,n
| volume            | 0.00000                   |          |               |sp
| element           | Cr           |moles       |  2.561060000000000E-01 |sp,n
| element           | Fe           |moles       |  5.420400000000000E-02 |sp,n
| element           | Ni           |moles       |  5.681220000000000E-01 |sp,n
| element           | Mo           |moles       |  1.009620000000000E-01 |sp,n
| element           | V            |moles       |  4.160000000000000E-03 |sp,n
| element           | Mn           |moles       |  5.510000000000000E-03 |sp,n
| DISSOLUTION LAW   |    3                      |          |               |
| rate constant rk1| 1.13000E-14                |csigma1   |               |
| temperature (c)   |   25.000                  |          |               |234
| PRECIPITATION LAW|    0                       |          |               |
|-----------------------------------------------------------------------|
| options                                                               |
|-----------------------------------------------------------------------|
| - SOLID SOLUTIONS -                                                   |
|     ignore solid solutions                                            |
|   * process solid solutions                                           |
| - LOADING OF SPECIES INTO MEMORY -                                    |
```

```
|   * don't print                                                        |
|     lists species loaded into memory                                   |
| - LIST DERIVATIVES OF BASIS ELEMENTS AT EACH PRINT POINT -             |
|   * don't print                                                        |
|     print                                                              |
| - LIST ALL SPECIES LOADED INTO MEMORY AND THEIR LOG K VALUES -         |
|   * don't print                                                        |
|     print                                                              |
| - LIST DISTRIBUTION OF AQUEOUS SPECIES AT EACH PRINT POINT -           |
|   * only species > 10**-12 molal                                       |
|     all species                                                        |
|     don't print                                                        |
| - LIST CATION/H+ ACTIVITY RATIOS AT EACH PRINT POINT -                 |
|   * don't print                                                        |
|     print                                                              |
| - LIST BULK ELEMENT AND OXIDE COMPOSITION AT EACH PRINT POINT -        |
|   * don't print                                                        |
|     print                                                              |
| - MINERAL SATURATION STATES -                                          |
|   * print if affinity > -10 kcals                                      |
|     print all                                                          |
|     don't print                                                        |
| - LIST GAS SPECIES SUMMARY AT EACH PRINT POINT -                       |
|     don't print                                                        |
|   * print                                                              |
| - PRINT AQUEOUS MASS AND CONCENTRATION TOTALS -                        |
|   * don't print                                                        |
|     print                                                              |
| - TAB FILES -                                                          |
|   * write                                                              |
|     append to previous tabx file                                       |
|     don't write                                                        |
| - WRITE PICKUP FILE -                                                  |
|     write pickup file at end of run                                    |
|     don't write pickup file                                            |
|   * write pickup file for each print point                             |
| - PHYSICALLY REMOVED SUBSYSTEM -                                       |
|   * does nothing                                                       |
|     transfer minerals but leave trivial mass in the system             |
|     transfer minerals                                                  |
| - CLEAR INITIAL PHYSICALLY REMOVED SUBSYSTEM -                         |
|   * does nothing                                                       |
|     clear p.r.s. before first reaction progress advance                |
| - PHASE BOUNDARY SEARCH -                                              |
|   * step size constrained by predicted phase boundaries                |
|     phase boundaries estimated from Taylor's series and printed        |
|     locations of phase boundaries ignored                              |
| - AUTO BASIS SWITCHING -                                               |
|   * off                                                                |
|     on                                                                 |
| - SUPPRESS REDOX REACTIONS -                                           |
|   * does nothing                                                       |
|     suppress all redox reactions                                       |
| - LINEAR OR LOGARITHMIC TAYLOR'S SERIES -                              |
|   * linear for kcol = 1,kdim, logarithmic for kcol = 1,kbt             |
|     logarithmic for kcol = 1,kbt                                       |
|     linear for kcol = 1,kdim                                           |
| - AZERO AND HYDRATION NUMBERS -                                        |
|   * no change                                                          |
|     read in new azero and hydration numbers                            |
| - PRINT MEAN MOLAL ACTIVITY COEFFICIENTS FOR DISSOLVED SPECIES -       |
|   * does nothing                                                       |
|     print                                                              |
```

```
| - PITZER DATABASE INFORMATION -                                        |
|   * print only warnings                                                |
|     print species in model and number of Pitzer coefficients           |
|     print species in model and names of Pitzer coefficients            |
| - PRINT DIAGNOSTIC MESSAGES -                                          |
|   * don't print                                                        |
|     print level 1 messages                                             |
|     print level 2 messages                                             |
| - PRINT PRE-NEWTON-RAPHSON OPTIMIZATION -                              |
|   * don't print                                                        |
|     print summary information                                          |
|     print detailed information                                         |
| - PRINT STEP SIZE AND ORDER -                                          |
|   * don't print                                                        |
|     print scale factor                                                 |
|     print orders and step size scaling factors                         |
| - CONTROL STEP SIZE AND ORDER PRINT -                                  |
|   * does nothing                                                       |
|     print step size and order when delzi .le. dlzmx1                   |
| - NEWTON ITERATIONS -                                                  |
|   * don't print                                                        |
|     print summary of newton iterations                                 |
|     print summary, residual functions and correction terms             |
|     print summary, residual functions, correction terms and matrix     |
| - PRINT SEARCH ITERATIONS -                                            |
|   * don't print                                                        |
|     print                                                              |
| - PRINT HPSAT ITERATIONS -                                             |
|   * don't print                                                        |
|     print                                                              |
| - PRINT FINITE DIFFERENCE AND DERIVATIVE DATA -                        |
|   * don't print                                                        |
|     print computations from RDERIV, and RTAYLR                         |
|     print computations from RDERIV, RTAYLR, DERIV and TAYLOR           |
| - PRINT KINETICS DIAGNOSTIC MESSAGES -                                 |
|   * don't print                                                        |
|     print level 1 diagnostics                                          |
|     print level 1 and level 2 diagnostics                              |
| - PRINT AKMATR -                                                       |
|   * don't print                                                        |
|     print level 1 diagnostics                                          |
| - KILL ITERATION VARIABLES -                                           |
|   * does nothing                                                       |
|     allow selection of variables to remove                             |
|------------------------------------------------------------------------|
| development options  (used for code development)                       |
|------------------------------------------------------------------------|
|    0 check finite difference and Taylor series expression              |
|    0 check reaction rate finite difference and Taylor series           |
|------------------------------------------------------------------------|
| tolerances                       desired values - defaults info-only   |
|------------------------------------------------------------------------|
| number of N-R iterations        |        90        |  90      itermx |
| p.r.s. transfer interval        | 1.00000E+38      |  varies  dlzidp |
| residual magnitude              | 1.00000E-06      |  1.0e-06 tolbt  |
| correction magnitude            | 1.00000E-06      |  1.0e-06 toldl  |
| search/find tolerance           | 1.00000E-06      |  varies  tolx   |
| supersaturation                 | 5.00000E-03      |  varies  tolsat |
| supersaturation set size        | 1.00000E-02      |  varies  tolsst |
| max. size Taylor's series term  | 1.00000E-04      |  1.0e-04 screw1 |
| max. initial value betamx       |                  |  n/a     screw2 |
| max. Taylor's series term (kin.)| 1.00000E-04      |  1.0e-04 screw3 |
| corrector iteration             | 1.00000E-04      |  1.0e-04 screw4 |
```

```
| max. size of N-R correction term|  4.0000          |  4.0     screw5 |
| step size (economy mode)        |  4.0000          |  4.0     screw6 |
| log mass of phases              | -6.0000          |  varies  zklogu |
| decrement mass (p.r.s.)         |  2.0000          |  2.0     zklogl |
| min. left after p.r.s.          | 0.80000          |  .98     zkfac  |
| initial step size               | 1.00000E-09      |  varies  dlzmx1 |
| upper limit step size           | 1.00000E+38      |  varies  dlzmx2 |
| maximum order                   |         6        |  6       nordlm |
| num. attempted assemblages      |        25        |  25      ntrymx |
| slide -> over phase bound.      |        12        |  8       npslmx |
| slide -> over redox insta.      |         8        |  3       nsslmx |
| fo2 scan control                |                  |  none    ioscan |
|-----------------------------------------------------------------------|
c pickup file written by eq6.7.2bR137                                   |
c supported by eqlib.7.2bR168                                           |
|EQ6 input file name= j13_All-22.6i.txt                                 |
|Description= React J-13 water with Carbon Steel and Alloy-22.          |
|Equilibrium with atmospheric gases.                                    |
|Version level= 7.2                                                     |
|Created 01/19/99    Creator= D.H. Lester                               |
|Revised             Revisor=                                           |
|                                                                       |
|Water from well J-13 at the Nevada Test site                           |
|                                                                       |
|Purpose: To model reaction with carbon steel (iron) and alloy C-22     |
|simultaneously to determine an expected Cr concentration in the water |
|corroding the C-22 after breaching the CAM.                            |
|                                                                       |
|It is assumed that a significant amount of carbon steel is still       |
|present. The rate constant for the steel was assumed to be 1.0E-11     |
|which is the higher value suggested in simulation studies at LLNL.     |
|Reference: Eng. Barrier System & Near Field Envir. Perf. Assess.,      |
|FY-96 Activities: End-of-Year Summary, Sept 1996, Wm.G.Halsey, "Report|
|on Initial Simulation of Water Interaction With Mild Steel Containers |
|Rate for C-22 is the median value for dripping at high temp. in the    |
|TSPA simulations for the VA document.                                  |
|The data base was modified to add the solid KFe(CrO4)2:2H2O            |
|Total amount of Steel and C-22 reduced to 20 moles each for a more     |
|realistic proportion of materials contacting 1L of water               |
|-----------------------------------------------------------------------|
| temperature (C)                    |     25.000                       |
|-----------------------------------------------------------------------|
| electrical imbalance               |   5.752163835343278E-14          |
|-----------------------------------------------------------------------|
| number of aqueous master species   |     38                           |
|-----------------------------------------------------------------------|
| position of last pure mineral      |     44                           |
|-----------------------------------------------------------------------|
| position of last solid solution    |     44                           |
|-----------------------------------------------------------------------|
| suppressed species     (suppress,replace,augmentk,augmentg)  value    |
|-----------------------------------------------------------------------|
| Phlogopite               | mineral        | suppress |  0.00000       |
| Annite                   | mineral        | suppress |  0.00000       |
| Clinochlore-14A          | mineral        | suppress |  0.00000       |
| Daphnite-14A             | mineral        | suppress |  0.00000       |
| Clinozoisite             | mineral        | suppress |  0.00000       |
| Epidote                  | mineral        | suppress |  0.00000       |
| Epidote-ord              | mineral        | suppress |  0.00000       |
| Andradite                | mineral        | suppress |  0.00000       |
| Grossular                | mineral        | suppress |  0.00000       |
| Enstatite                | mineral        | suppress |  0.00000       |
| Ferrosilite              | mineral        | suppress |  0.00000       |
```

Pyrite	mineral	suppress	0.00000
Pyrrhotite	mineral	suppress	0.00000
Troilite	mineral	suppress	0.00000
Alabandite	mineral	suppress	0.00000
Brezinaite	mineral	suppress	0.00000
Chalcocite	mineral	suppress	0.00000
Covellite	mineral	suppress	0.00000
Millerite	mineral	suppress	0.00000
Polydymite	mineral	suppress	0.00000
Vaesite	mineral	suppress	0.00000
Heazlewoodite	mineral	suppress	0.00000
Galena	mineral	suppress	0.00000
Sulfur	mineral	suppress	0.00000
CaZrO3	mineral	suppress	0.00000
BaZrO3	mineral	suppress	0.00000
SrZrO3	mineral	suppress	0.00000
U2S3	mineral	suppress	0.00000
U3S5	mineral	suppress	0.00000
US2	mineral	suppress	0.00000
US3	mineral	suppress	0.00000
US	mineral	suppress	0.00000
US1.9	mineral	suppress	0.00000
U3P4	mineral	suppress	0.00000
UP	mineral	suppress	0.00000
UP2	mineral	suppress	0.00000
HS-	aqueous	suppress	0.00000
H2S(aq)	aqueous	suppress	0.00000
S--	aqueous	suppress	0.00000

```
iopg options

 - pH SCALE CONVENTION -
    * modified NBS
      internal
      rational
 - ACTIVITY COEFFICIENT OPTIONS -
    * use B-dot equation
      Davies' equation
      Pitzer's equations
```

elements, moles and moles aqueous

O	4.005551824589011E+04	5.562827836615016E+01
Al	1.482500000694482E-06	1.482500223869846E-06
B	1.238799999942330E-05	1.238799999942316E-05
Ba	1.000000000006594E-10	1.000000000050546E-10
Ca	3.243700000162714E-04	3.243700112169935E-04
Ce	1.000000000975802E-24	1.000000150131104E-24
Cl	2.014000000000269E-04	2.014000000222631E-04
Cr	1.084100083116027E-02	1.084100197801122E-02
Cs	1.000000000000039E-10	1.000000000005080E-10
Cu	1.050000000528221E-14	1.050000002708181E-14
F	1.147500000001528E-04	1.147500039550891E-04
Fe	1.922229438949814E+01	2.410566871222318E-06
Gd	1.000000001150365E-14	1.000000203457061E-14
H	1.110188738405208E+02	1.110053702333057E+02
C	1.000043999030279E+04	1.053456337899684E-05
P	1.412127110000032E-02	6.176631297584362E-04
K	1.289100000000803E-04	1.289100004238655E-04
La	1.000000000980088E-14	1.000000171631992E-14
Li	1.000000000000469E-10	1.000000002439083E-10
Mg	8.269900000408464E-05	8.269900463783882E-05
Mn	2.062332316090069E-01	3.185182624042631E-05

Mo	4.273598958167724E-03	4.273598958167724E-03
N	1.420000000000891E-04	1.420000002408006E-04
Na	1.992200000002518E-03	1.992200005608981E-03
Nd	1.000000000990082E-14	1.000000175590339E-14
Ni	2.404791446877205E-02	2.404791532176547E-02
Pb	1.000000000003566E-10	1.000000000222942E-10
Pu	1.000000001138469E-14	1.000000351626914E-14
S	1.725154000000828E-02	1.725154097627955E-02
Si	1.082168999999892E-01	1.001406450693000E-04
Sm	1.000000000991962E-14	1.000000179447855E-14
Sr	1.000000000034016E-10	1.000000049164343E-10
Ti	1.000000000000003E-10	1.000000000000003E-10
U	9.999999988006304E-15	1.000000177967319E-14
V	1.760879683605488E-04	1.760879813318568E-04
Zn	1.000000000089305E-10	1.000000000427707E-10
Zr	1.000000000323548E-20	1.000000076566081E-20

master species and logarithmic basis variables

H2O	H2O	1.744269336868339E+00
Al+++	Al+++	-8.765241995923672E+00
B(OH)3(aq)	B(OH)3(aq)	-4.906998956839694E+00
Ba++	Ba++	-1.000020475816168E+01
Ca++	Ca++	-3.581033946142592E+00
Ce+++	Ce+++	-2.457710901315573E+01
Cl-	Cl-	-3.696603916276876E+00
CrO4--	CrO4--	-5.688449366302018E+00
Cs+	Cs+	-1.000003778133445E+01
Cu++	Cu++	-1.398427111415562E+01
F-	F-	-4.503906294908312E+00
Fe++	Fe++	-1.254122675580561E+01
Gd+++	Gd+++	-1.451387246465782E+01
H+	H+	-2.609329796357418E+00
HCO3-	HCO3-	-8.526209692219236E+00
HPO4--	HPO4--	-7.507554811561502E+00
K+	K+	-3.903361606702567E+00
La+++	La+++	-1.463649587515786E+01
Li+	Li+	-1.001113430139201E+01
Mg++	Mg++	-4.263489816075425E+00
Mn++	Mn++	-4.648176755805612E+00
MoO4--	MoO4--	-2.369206235196454E+00
NO3-	NH3(aq)	-3.856732086829865E+00
Na+	Na+	-2.712792582380990E+00
Nd+++	Nd+++	-1.470409277694219E+01
Ni++	Ni++	-1.713743154851016E+00
Pb++	Pb++	-1.000095727207858E+01
Pu++++	Pu++++	-2.812917528239961E+01
SO4--	SO4--	-1.947226798777255E+00
SiO2(aq)	SiO2(aq)	-3.999389646658645E+00
Sm+++	Sm+++	-1.471628188486844E+01
Sr++	Sr++	-1.012878605224410E+01
Ti(OH)4(aq)	Ti(OH)4(aq)	-9.999999999999998E+00
UO2++	UO2++	-1.510976069046086E+01
VO++	VO++	-9.975335575877660E+00
Zn++	Zn++	-1.000088975787481E+01
Zr(OH)2++	Zr(OH)2++	-2.376444812352712E+01
O2(g)	O2(g)	-6.778000000000000E-01
	Hematite	9.827751740606980E-01
	MnHPO4	-1.869550176800383E+00
	Pyrolusite	-7.151233072474306E-01
	Quartz	-9.661069801335802E-01
	fix CO2(g)	4.000019107658203E+00
	fix O2(g)	3.999337650505734E+00

```
|-------------------------------------------------------------------------|
| physically removed subsystem  (solid solution, mineral, moles)          |
|-------------------------------------------------------------------------|
| none                      |                           |                 |
|-------------------------------------------------------------------------|
```

```
EQ3/6, Version 7.2b (EQ3/6-V7-REL-V7.2b-PC)
EQ3NR Speciation-Solubility Code (EQ3/6-V7-EQ3NR-EXE-R139-P5)
Supported by the EQLIB library (EQ3/6-V7-EQLIB-LIB-R168-P5)
```

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```
Run  17:28:21  01/14/99



--- Reading the input file ---
|-----------------------------------------------------------------------|
|EQ3NR input file name= j13solB.3i                                      |
|Description= "J-13 well water, boron solubility                        |
|Version level= 7.2b                                                    |
|Created 01/14/99    Creator= D. H. Lester                              |
|Revised             Revisor=                                           |
|                                                                       |
|  Water from well J-13 at the Nevada Test Site. The composition        |
|is nearly identical to that in the EQ3NR test case input file j13w.3i,|
|which is based on data reported by Harrar et al. (1990) and on p. 3 of|
|Preliminary Scenario Definitions, May 17, 1996, except for fixing of  |
|bicarbonate via fixed fugacity of CO2 and pH.  Al, Fe, Mn, etc. re-   |
|tained, as these are needed to model reaction with tuff, etc.  traces |
|of Pu, U, Gd, Ba, La, Nd, Ce, Sm, Pb, Cr, Ni, Cu, Zr, Sr, Cs,          |
|Zn, & Mo added to enable modeling of waste glass and alloys.  Nb isn't|
|in data base.                                                          |
|                                                                       |
|This run uses revised data base, with essentially no organics.  Also,  |
|several to many other unlikely aqueous species removed.                |
|                                                                       |
|Electrical balancing is on Cl-.  These data do not agree exactly with  |
|those reported in the SCP.  CO2 and O2 fixed at atmospheric values.    |
|                                                                       |
|  This run uses the revised data base, incorporating SKB data.         |
|                                                                       |
|  Purpose: To determine manganese solubility This run represents       |
|  a run with a boron content that just saturates the first boron       |
|  mineral (Boric Acid) to precipitate.                                 |
|                            References                                 |
|                                                                       |
|Harrar, J. E., Carley, J. F., Isherwood, W. F., and Raber, E., 1990,   |
|  Report of the Committee to Review the Use of J-13 Well Water in      |
|  Nevada Nuclear Waste Storage Investigations: UCID-21867, Lawrence    |
|  Livermore National Laboratory, Livermore, California.                |
|-----------------------------------------------------------------------|
|Temperature (C)         | 25.00        |Density(gm/cm3)|  1.00000      |
|-----------------------------------------------------------------------|
|Total Dissolved Salts   |              | mg/kg | mg/l  |*not used      |
|-----------------------------------------------------------------------------|
|Electrical Balancing on |                       |*code selects| not performed|
|-----------------------------------------------------------------------------|
| SPECIES                | BASIS SWITCH/CONSTRAINT| CONC/ETC  | UNITS OR TYPE  |
|-----------------------------------------------------------------------------|
|redox                   |                       |-6.7778E-01|logfo2          |
```

Na+		1.9922E-03	molality
SiO2(aq)		1.0169E-03	molality
Ca++		3.2437E-04	molality
K+		1.2891E-04	molality
Mg++		8.2699E-05	molality
H+		7.4100	pH
HCO3-	CO2(g)	-3.5000	log fugacity
F-		1.1475E-04	molality
Cl-		2.0140E-04	molality
NH3(aq)	NO3-	0.142 E-03	molality
SO4--		1.9154E-04	molality
B(OH)3(aq)		6.0000E-01	molality
HPO4--		1.2711E-06	molality
Al+++		1.4825E-06	molality
Mn++		7.2809E-18	molality
Fe++		1.0000E-18	molality
CrO4--		3.4485E-07	molality
Cu++		1.05000E-14	molality
MoO4--		1.00000E-10	molality
Cs+		1.00000E-10	molality
Li+		1.00000E-10	molality
Ni++		1.00000E-10	molality
La+++		1.00000E-14	molality
Nd+++		1.00000E-14	molality
Sm+++		1.00000E-14	molality
Ce+++		1.00000E-24	molality
Pu++++		1.00000E-14	molality
Gd+++		1.00000E-14	molality
UO2++		1.00000E-14	molality
Sr++		1.00000E-10	molality
Ba++		1.00000E-10	molality
Ti(OH)4(aq)		1.00000E-10	molality
Zn++		1.00000E-10	molality
Zr(OH)2++		1.00000E-20	molality
Pb++		1.00000E-10	molality

Input Solid Solutions

none			

SUPPRESSED SPECIES	(suppress,replace,augmentk,augmentg)		value
Phlogopite	mineral	suppress	0.00000E+00
Annite	mineral	suppress	0.00000E+00
Clinochlore-14A	mineral	suppress	0.00000E+00
Daphnite-14A	mineral	suppress	0.00000E+00
Clinozoisite	mineral	suppress	0.00000E+00
Epidote	mineral	suppress	0.00000E+00
Epidote-ord	mineral	suppress	0.00000E+00
Andradite	mineral	suppress	0.00000E+00
Grossular	mineral	suppress	0.00000E+00
Enstatite	mineral	suppress	0.00000E+00
Ferrosilite	mineral	suppress	0.00000E+00
Pyrite	mineral	suppress	0.00000E+00
Pyrrhotite	mineral	suppress	0.00000E+00
Troilite	mineral	suppress	0.00000E+00
Alabandite	mineral	suppress	0.00000E+00
Brezinaite	mineral	suppress	0.00000E+00
Chalcocite	mineral	suppress	0.00000E+00
Covellite	mineral	suppress	0.00000E+00
Millerite	mineral	suppress	0.00000E+00
Polydymite	mineral	suppress	0.00000E+00
Vaesite	mineral	suppress	0.00000E+00

```
| Heazlewoodite          | mineral        | suppress | 0.00000E+00     |
| Galena                 | mineral        | suppress | 0.00000E+00     |
| Sulfur                 | mineral        | suppress | 0.00000E+00     |
| CaZrO3                 | mineral        | suppress | 0.00000E+00     |
| BaZrO3                 | mineral        | suppress | 0.00000E+00     |
| SrZrO3                 | mineral        | suppress | 0.00000E+00     |
| U2S3                   | mineral        | suppress | 0.00000E+00     |
| U3S5                   | mineral        | suppress | 0.00000E+00     |
| US2                    | mineral        | suppress | 0.00000E+00     |
| US3                    | mineral        | suppress | 0.00000E+00     |
| US                     | mineral        | suppress | 0.00000E+00     |
| US1.9                  | mineral        | suppress | 0.00000E+00     |
| U3P4                   | mineral        | suppress | 0.00000E+00     |
| UP                     | mineral        | suppress | 0.00000E+00     |
| UP2                    | mineral        | suppress | 0.00000E+00     |
| HS-                    | aqueous        | suppress | 0.00000E+00     |
| H2S(aq)                | aqueous        | suppress | 0.00000E+00     |
| S--                    | aqueous        | suppress | 0.00000E+00     |
|-------------------------------------------------------------------------|
|OPTIONS                                                                  |
|-------------------------------------------------------------------------|
| - SOLID SOLUTIONS -                                                     |
|     ignore solid solutions                                              |
|   * process hypothetical solid solutions                                |
|     process input and hypothetical solid solutions                      |
| - LOADING OF SPECIES INTO MEMORY -                                      |
|   * does nothing                                                        |
|     lists species loaded into memory                                    |
| - ECHO DATABASE INFORMATION -                                           |
|   * does nothing                                                        |
|     lists all reactions                                                 |
|     lists reactions and log K values                                    |
|     lists reactions, log K values and polynomial coef.                  |
| - LIST OF AQUEOUS SPECIES (ordering) -                                  |
|   * in order of decreasing concentration                                |
|     in same order as input file                                         |
| - LIST OF AQUEOUS SPECIES (concentration limit) -                       |
|     all species                                                         |
|     only species > 10**-20 molal                                        |
|   * only species > 10**-12 molal                                        |
|     not printed                                                         |
| - LIST OF AQUEOUS SPECIES (by element) -                                |
|   * print major species                                                 |
|     print all species                                                   |
|     don't print                                                         |
| - MINERAL SATURATION STATES -                                           |
|   * print if affinity > -10 kcals                                       |
|     print all                                                           |
|     don't print                                                         |
| - pH SCALE CONVENTION -                                                 |
|   * modified NBS                                                        |
|     internal                                                            |
|     rational                                                            |
| - ACTIVITY COEFFICIENT OPTIONS -                                        |
|   * use B-dot equation                                                  |
|     Davies' equation                                                    |
|     Pitzer's equations                                                  |
| - AUTO BASIS SWITCHING -                                                |
|   * off                                                                 |
|     on                                                                  |
| - PITZER DATABASE INFORMATION -                                         |
|   * print only warnings                                                 |
|     print species in model and number of Pitzer coefficients            |
```

```
|     print species in model and names of Pitzer coefficients          |
| - PICKUP FILE -                                                      |
|   * write pickup file                                                |
|     don't write pickup file                                          |
| - LIST MEAN IONIC PROPERTIES -                                       |
|   * don't print                                                      |
|     print                                                            |
| - LIST AQUEOUS SPECIES, ION SIZES, AND HYDRATION NUMBERS -           |
|     print                                                            |
|   * don't print                                                      |
| - CONVERGENCE CRITERIA -                                             |
|   * test both residual functions and correction terms                |
|     test only residual functions                                     |
|----------------------------------------------------------------------|
|DEBUGGING SWITCHES (0 = off, 1,2 = on                                 |
|----------------------------------------------------------------------|
|0  generic debugging information                                      |2
|0  print details of pre-Newton-Raphson iteration                      |2
|0  print details of Newton-Raphson iteration                          |
|0  print details of stoichiometric factors                            |2
|0  print details of stoichiometric factors calculation                |
|0  write reactions on RLIST                                           |
|0  list stoichiometric concentrations of master species               |
|0  request iteration variables to be killed                           |
|----------------------------------------------------------------------|
|DEVELOPMENT OPTIONS  (used for code development)                      |
|----------------------------------------------------------------------|
| none                                                                 |
|----------------------------------------------------------------------|
|TOLERANCES                  (desired values)        (defaults)        |
|----------------------------------------------------------------------|
|      residual functions  |                      |1.0e-10  tolbt     |
|        correction terms  |                      |1.0e-10  toldl     |
|        saturation state  |                      |0.5      tolsat    |
|number of N-R iterations  |                      |30       itermx    |
|----------------------------------------------------------------------|

 --- The input file has been successfully read ---

 --- Reading the data1 file ---

 --- The data1 file has been successfully read ---

 * note - (eqlib/inbdot) The following aqueous species
       have been assigned a default hard core diameter of
         4.000 Angstroms-
         Cu(NO2)2(aq)
         Nd(HPO4)2-

 The species Phlogopite               has been user-suppressed

 The species Annite                   has been user-suppressed

 The species Clinochlore-14A          has been user-suppressed

 The species Daphnite-14A             has been user-suppressed

 The species Clinozoisite             has been user-suppressed

 The species Epidote                  has been user-suppressed

 The species Epidote-ord              has been user-suppressed
```

```
The species Andradite                has been user-suppressed
The species Grossular                has been user-suppressed
The species Enstatite                has been user-suppressed
The species Ferrosilite              has been user-suppressed
The species Pyrite                   has been user-suppressed
The species Pyrrhotite               has been user-suppressed
The species Troilite                 has been user-suppressed
The species Alabandite               has been user-suppressed
The species Brezinaite               has been user-suppressed
The species Chalcocite               has been user-suppressed
The species Covellite                has been user-suppressed
The species Millerite                has been user-suppressed
The species Polydymite               has been user-suppressed
The species Vaesite                  has been user-suppressed
The species Heazlewoodite            has been user-suppressed
The species Galena                   has been user-suppressed
The species Sulfur                   has been user-suppressed
The species CaZrO3                   has been user-suppressed
The species BaZrO3                   has been user-suppressed
The species SrZrO3                   has been user-suppressed
The species U2S3                     has been user-suppressed
The species U3S5                     has been user-suppressed
The species US2                      has been user-suppressed
The species US3                      has been user-suppressed
The species US                       has been user-suppressed
The species US1.9                    has been user-suppressed
The species U3P4                     has been user-suppressed
The species UP                       has been user-suppressed
The species UP2                      has been user-suppressed
The species HS-                      has been user-suppressed
The species H2S(aq)                  has been user-suppressed
The species S--                      has been user-suppressed
```

```
eeee   qqq   33333  n   n  rrrr
e     q   q      3  nn  n  r   r
eeee  q   q    33   n n n  rrrr
e     q q q      3  n  nn  r  r
eeee   qqq   3333   n   n  r   r
          q
```

EQ3NR, version 7.2b (R139   )
 supported by EQLIB, version 7.2b (R168   )

```
|EQ3NR input file name= j13solB.3i                                      |
|Description= "J-13 well water, boron solubility                        |
|Version level= 7.2b                                                    |
|Created 01/14/99    Creator= D. H. Lester                              |
|Revised             Revisor=                                           |
|                                                                       |
|  Water from well J-13 at the Nevada Test Site. The composition        |
|is nearly identical to that in the EQ3NR test case input file j13w.3i,|
|which is based on data reported by Harrar et al. (1990) and on p. 3 of|
|Preliminary Scenario Definitions, May 17, 1996, except for fixing of  |
|bicarbonate via fixed fugacity of CO2 and pH.  Al, Fe, Mn, etc. re-   |
|tained, as these are needed to model reaction with tuff, etc.  traces |
|of Pu, U, Gd, Ba, La, Nd, Ce, Sm, Pb, Cr, Ni, Cu, Zr, Sr, Cs,          |
|Zn, & Mo added to enable modeling of waste glass and alloys.  Nb isn't|
|in data base.                                                          |
|                                                                       |
|This run uses revised data base, with essentially no organics.  Also, |
|several to many other unlikely aqueous species removed.                |
|                                                                       |
|Electrical balancing is on Cl-.  These data do not agree exactly with |
|those reported in the SCP.  CO2 and O2 fixed at atmospheric values.   |
|                                                                       |
|  This run uses the revised data base, incorporating SKB data.         |
|                                                                       |
|  Purpose: To determine manganese solubility This run represents       |
|  a run with a boron content that just saturates the first boron       |
|  mineral (Boric Acid) to precipitate.                                 |
|                              References                               |
|                                                                       |
|Harrar, J. E., Carley, J. F., Isherwood, W. F., and Raber, E., 1990,   |
|  Report of the Committee to Review the Use of J-13 Well Water in      |
|  Nevada Nuclear Waste Storage Investigations: UCID-21867, Lawrence    |
|  Livermore National Laboratory, Livermore, California.                |
```

data0.nuc.dhl
THERMODYNAMIC DATABASE
This data base is a modified version of data0.nuc.R3 as changed by D.H. Lester

The data base datao.nuc.R3is a composite of data0.alt.V8.R5 and data0.b19.skb, by P. L. Cloke on 15-aug-96. It was specially modified for evaluation of nuclear criticality needs on the Yucca Mt. Project. Six EQ3NR runs were made using input data for elements in J13 well water and components of the current design for waste glass packages. Three runs were saturated with air, at pH 4, 7.41, and 10. The other three were for highly reducing conditions, log fO2 =

-80, and carbonated limited to the solubility of atmospheric CO2 in water, 1.0 E-5 m. Solid and solution species appearing on the outputs and which constituted less than 0.1% of dissolved elements, or whose affinities did not exceed 1.0 E-10, on any of the outputs, were deleted from this data base.

The lanthanide data from the .skb data base replaced those in the .alt file in those cases in which there was overlap, except for the lanthanide metals. This includes replacing data for LnO2H, LnO+, and LnO2- by the .skb data for Ln(OH)3 Ln(OH()2+, and Ln(OH)4-, respectively. Ce++++ was added as well as more data for Y. Lanthanide data in the .skb base that aren't in the .alt base were added. LnPO4.xH2O, to which .skb assigned a value of 10 to x, was changed to LnPO4.H2O, in keeping with the formula for rhabdophane (and in keeping with the XRD pattern).

Exceptions: the .skb data for Eu were not entered as replacements for .alt data. The .skb data for Pm were not entered. Divalent lanthanide data were not entered.

```
Output package:  eq3
Data set:        cm2
+-------------------------------------------------------------------
```

The activity coefficients of aqueous solute species and the activity of water are calculated according to the B-dot equation plus others

```
Temperature=  25.00 degrees Celsius
pressure=    1.0132 bars


        79 elements are in the data base
       100 elements can be loaded into memory
        36 elements are active in this problem


      1170 aqueous species are in the data base
       645 aqueous species were loaded into memory
      2000 aqueous species can be loaded into memory
       559 aqueous species are active in this problem

      1090 aqueous reactions are in the data base
       565 aqueous reactions were loaded into memory
      1899 aqueous reactions can be loaded into memory


           1034 minerals are in the data base
            672 minerals were loaded into memory
            850 minerals can be loaded into memory
            634 minerals are active in this problem

             15 solid solutions are in the data base
             50 solid solutions can be loaded into memory

             87 gases are in the data base
             56 gases were loaded into memory
             80 gases can be loaded into memory
             56 gases are active in this problem
```

```
iopt1  =  0 (redox option switch)
iopt2  =  0 (automatic basis switching switch)
iopt3  =  0 (interfacing output control switch)
iopt4  =  1 (turn-on solid solutions switch)
iopt5  =  0 (not used)
iopt6  =  0 (conv. test criteria switch)
iopt7  =  0 (0/1 version 7/post-version 7 pickup file)
iopt8  =  0 (not used)
iopt9  =  0 (not used)
iopt10 =  0 (not used)


     iopg1  =  0 (act. coeff. choice)
     iopg2  =  0 (pH scale convention switch)
     iopg3  =  0 (not used)
     iopg4  =  0 (not used)
     iopg5  =  0 (not used)
     iopg6  =  0 (not used)
     iopg7  =  0 (not used)
     iopg8  =  0 (not used)
     iopg9  =  0 (not used)
     iopg10 =  0 (not used)


          iopr1  =  0 (list loading of species)
          iopr2  =  0 (list reactions and log K values)
          iopr3  =  0 (aqueous species print order control)
          iopr4  = -2 (aqueous species print cut-off control)
          iopr5  =  0 (mass balance percentages print control)
          iopr6  =  0 (mean ionic act coeff print control)
          iopr7  =  0 (mineral affinity print control)
          iopr8  = -1 (ion size and hydr. no. print control)
          iopr9  =  0 (Pitzer coefficients tabulation)
          iopr10 =  0 (print concbs array)
          iopr11 =  0 (not used)
          iopr12 =  0 (not used)
          iopr13 =  0 (not used)
          iopr14 =  0 (not used)
          iopr15 =  0 (not used)
          iopr16 =  0 (not used)
          iopr17 =  0 (not used)
          iopr18 =  0 (not used)
          iopr19 =  0 (not used)
          iopr20 =  0 (not used)


               iodb1  =  0 (print info. messages switch)
               iodb2  =  0 (print pre-Newton-Raphson optimizations switch)
               iodb3  =  0 (request iteration variables to kill)
               iodb4  =  0 (print Newton-Raphson iterations switch)
               iodb5  =  0 (list stoichiometric equivalences)
               iodb6  =  0 (controls iodb5 level of detail)
               iodb7  =  0 (write reactions on file rlist switch)
               iodb8  =  0 (not used)
               iodb9  =  0 (not used)
               iodb10 =  0 (not used)

The default redox state is constrained by log fO2 =   -0.6778 (log bars)


          Solution density =  1.00000 g/mL
```

```
     Total dissolved salts =       0.00 mg/kg solution
     Total dissolved salts =       0.00 mg/L


  Tolbt  =  0.10000E-05 (convergence tolerance on residual functions)
  Toldl  =  0.10000E-05 (convergence tolerance on correction terms)
  Tolsat =  0.50000E+00 (phase saturation tolerance, does not affect
                         convergence)


                  --- Input Constraints ---

   Species                    Csp      Jflag   Input Type/Co-species

Na+                        1.9922E-03    0    Total conc, molal
SiO2(aq)                   1.0169E-03    0    Total conc, molal
Ca++                       3.2437E-04    0    Total conc, molal
K+                         1.2891E-04    0    Total conc, molal
Mg++                       8.2699E-05    0    Total conc, molal
H+                        -7.4100E+00   16    Log activity
HCO3-                     -3.5000E+00   21    Gas equilibrium
                                                  CO2(g)

                     1.000  CO2(g)
                  +  1.000  H2O
                        ==
                     1.000  H+
                  +  1.000  HCO3-
F-                         1.1475E-04    0    Total conc, molal
Cl-                        2.0140E-04    0    Total conc, molal
NH3(aq)                    1.4200E-04    0    Total conc, molal
    switch with NO3-
SO4--                      1.9154E-04    0    Total conc, molal
B(OH)3(aq)                 6.0000E-01    0    Total conc, molal
HPO4--                     1.2711E-06    0    Total conc, molal
Al+++                      1.4825E-06    0    Total conc, molal
Mn++                       7.2809E-18    0    Total conc, molal
Fe++                       1.0000E-18    0    Total conc, molal
CrO4--                     3.4485E-07    0    Total conc, molal
Cu++                       1.0500E-14    0    Total conc, molal
MoO4--                     1.0000E-10    0    Total conc, molal
Cs+                        1.0000E-10    0    Total conc, molal
Li+                        1.0000E-10    0    Total conc, molal
Ni++                       1.0000E-10    0    Total conc, molal
La+++                      1.0000E-14    0    Total conc, molal
Nd+++                      1.0000E-14    0    Total conc, molal
Sm+++                      1.0000E-14    0    Total conc, molal
Ce+++                      1.0000E-24    0    Total conc, molal
Pu++++                     1.0000E-14    0    Total conc, molal
Gd+++                      1.0000E-14    0    Total conc, molal
UO2++                      1.0000E-14    0    Total conc, molal
Sr++                       1.0000E-10    0    Total conc, molal
Ba++                       1.0000E-10    0    Total conc, molal
Ti(OH)4(aq)                1.0000E-10    0    Total conc, molal
Zn++                       1.0000E-10    0    Total conc, molal
Zr(OH)2++                  1.0000E-20    0    Total conc, molal
Pb++                       1.0000E-10    0    Total conc, molal


* note - (eq3nr/eq3nr) Have picked the species "Na+                      "
      to be adjusted for electrical balance.  Any
```

```
 other specified constraint will be overridden.

 Switching NO3- into the basis set for NH3(aq)


                   1.000  NO3-
                +  1.000  H2O
                +  1.000  H+
                       ==
                   1.000  NH3(aq)
                +  2.000  O2(g)

                   1.000  NH3(aq)
                +  2.000  O2(g)
                       ==
                   1.000  H2O
                +  1.000  H+
                +  1.000  NO3-

        --- Inactive Aqueous Species ---

    HS-                          H2S(aq)
    S--



                     --- Modified Input Constraints ---

   Species                     Csp      Jflag   Input Type/Co-species

Al+++                     1.4825E-06    0    Total conc, molal
B(OH)3(aq)                6.0000E-01    0    Total conc, molal
Ba++                      1.0000E-10    0    Total conc, molal
Ca++                      3.2437E-04    0    Total conc, molal
Ce+++                     1.0000E-24    0    Total conc, molal
Cl-                       2.0140E-04    0    Total conc, molal
CrO4--                    3.4485E-07    0    Total conc, molal
Cs+                       1.0000E-10    0    Total conc, molal
Cu++                      1.0500E-14    0    Total conc, molal
F-                        1.1475E-04    0    Total conc, molal
Fe++                      1.0000E-18    0    Total conc, molal
Gd+++                     1.0000E-14    0    Total conc, molal
H+                       -7.4100E+00   16    Log activity
HCO3-                    -3.5000E+00   21    Gas equilibrium
                                                 CO2(g)

                   1.000  CO2(g)
                +  1.000  H2O
                       ==
                   1.000  H+
                +  1.000  HCO3-
HCO3-                    -3.5000E+00   21    Gas equilibrium
HPO4--                    1.2711E-06    0    Total conc, molal
K+                        1.2891E-04    0    Total conc, molal
La+++                     1.0000E-14    0    Total conc, molal
Li+                       1.0000E-10    0    Total conc, molal
Mg++                      8.2699E-05    0    Total conc, molal
Mn++                      7.2809E-18    0    Total conc, molal
MoO4--                    1.0000E-10    0    Total conc, molal
NO3-                      1.4200E-04    0    Total conc, molal
Na+                       1.9922E-03    0    Total conc, molal
Nd+++                     1.0000E-14    0    Total conc, molal
Ni++                      1.0000E-10    0    Total conc, molal
```

```
Pb++                        1.0000E-10    0    Total conc, molal
Pu++++                      1.0000E-14    0    Total conc, molal
SO4--                       1.9154E-04    0    Total conc, molal
SiO2(aq)                    1.0169E-03    0    Total conc, molal
Sm+++                       1.0000E-14    0    Total conc, molal
Sr++                        1.0000E-10    0    Total conc, molal
Ti(OH)4(aq)                 1.0000E-10    0    Total conc, molal
UO2++                       1.0000E-14    0    Total conc, molal
Zn++                        1.0000E-10    0    Total conc, molal
Zr(OH)2++                   1.0000E-20    0    Total conc, molal
HS-                         0.0000E+00   30    Eliminated species
S2--                        0.0000E+00   30    Eliminated species
S2O3--                      0.0000E+00   30    Eliminated species
CN-                         0.0000E+00   30    Eliminated species
ClO-                        0.0000E+00   30    Eliminated species
ClO2-                       0.0000E+00   30    Eliminated species
ClO3-                       0.0000E+00   30    Eliminated species
ClO4-                       0.0000E+00   30    Eliminated species
Cr++                        0.0000E+00   30    Eliminated species
Cr+++                       0.0000E+00   30    Eliminated species
CrO4---                     0.0000E+00   30    Eliminated species
Cu+                         0.0000E+00   30    Eliminated species
Fe+++                       0.0000E+00   30    Eliminated species
H2(aq)                      0.0000E+00   27    Dependent species
HSO5-                       0.0000E+00   30    Eliminated species
Mn+++                       0.0000E+00   30    Eliminated species
MnO4--                      0.0000E+00   30    Eliminated species
N2(aq)                      0.0000E+00   30    Eliminated species
N3-                         0.0000E+00   30    Eliminated species
NO2-                        0.0000E+00   30    Eliminated species
NH3(aq)                     0.0000E+00   30    Eliminated species
O2(aq)                      0.0000E+00   27    Dependent species
Pb++++                      0.0000E+00   30    Eliminated species
Pu+++                       0.0000E+00   30    Eliminated species
PuO2+                       0.0000E+00   30    Eliminated species
PuO2++                      0.0000E+00   30    Eliminated species
S2O4--                      0.0000E+00   30    Eliminated species
S2O6--                      0.0000E+00   30    Eliminated species
S2O8--                      0.0000E+00   30    Eliminated species
S3--                        0.0000E+00   30    Eliminated species
S3O6--                      0.0000E+00   30    Eliminated species
S4--                        0.0000E+00   30    Eliminated species
S4O6--                      0.0000E+00   30    Eliminated species
S5--                        0.0000E+00   30    Eliminated species
S5O6--                      0.0000E+00   30    Eliminated species
SCN-                        0.0000E+00   30    Eliminated species
SO3--                       0.0000E+00   30    Eliminated species
Sm++                        0.0000E+00   30    Eliminated species
U+++                        0.0000E+00   30    Eliminated species
U++++                       0.0000E+00   30    Eliminated species
UO2+                        0.0000E+00   30    Eliminated species
Zr++++                      0.0000E+00   30    Eliminated species



--- Optimization ended within requested limits ---


iter=   0
       del(                )=  0.00000E+00, delfnc=  0.00000E+00
      beta(conc    Pu++++  )= -1.80471E-02, betfnc=  0.00000E+00
        bbig=  1.79748E-03, ubbig= SO4--
```

```
        bneg= -1.80471E-02, ubneg= Pu++++
        bgamx= -2.62268E-02, ubgamx= (PuO2)3(CO3)6(6-)
        bsigmm=  4.98016E-04
        bxi=  3.63848E-02
        btfcnr=  0.00000E+00

iter=   1
       del(conc    Pu++++  )=  9.86990E-03, delfnc=  0.00000E+00
      beta(conc    Pu++++  )=  4.48496E-04, betfnc=  9.75149E-01
        bbig=  4.48496E-04, ubbig= Pu++++
        bneg= -6.14871E-07, ubneg= B(OH)3(aq)
        bgamx=  3.58937E-04, ubgamx= (PuO2)3(CO3)6(6-)
        bsigmm= -6.02939E-05
        bxi= -4.85790E-04
        btfcnr=  9.90729E-01

iter=   2
       del(conc    Pu++++  )= -2.07369E-04, delfnc=  9.78990E-01
      beta(conc    Pu++++  )=  5.42655E-06, betfnc=  9.87901E-01
        bbig=  5.42655E-06, ubbig= Pu++++
        bneg= -1.19635E-08, ubneg= B(OH)3(aq)
        bgamx=  6.80103E-06, ubgamx= (PuO2)3(CO3)6(6-)
        bsigmm= -2.02949E-07
        bxi= -9.20766E-06
        btfcnr=  9.99729E-01

iter=   3
       del(conc    Pu++++  )= -3.01868E-06, delfnc=  9.85443E-01
      beta(conc    Pu++++  )=  3.43089E-07, betfnc=  9.36776E-01
        bbig=  3.43089E-07, ubbig= Pu++++
        bneg= -7.71173E-10, ubneg= B(OH)3(aq)
        bgamx=  4.38095E-07, ubgamx= (PuO2)3(CO3)6(6-)
        bsigmm= -1.05338E-08
        bxi= -5.93124E-07
        btfcnr=  9.99544E-01

iter=   4
       del(conc    Pu++++  )= -1.81741E-07, delfnc=  9.39794E-01
      beta(conc    Pu++++  )=  1.60514E-08, betfnc=  9.53215E-01
        bbig=  1.60514E-08, ubbig= Pu++++
        bneg= -3.60810E-11, ubneg= B(OH)3(aq)
        bgamx=  2.04971E-08, ubgamx= (PuO2)3(CO3)6(6-)
        bsigmm= -4.92822E-10
        bxi= -2.77505E-08
        btfcnr=  9.99572E-01


Hybrid Newton-Raphson iteration converged in   4 steps.


                    --- Summary of the Aqueous Solution ---


          --- Elemental Composition of the Aqueous Solution ---


  Element           mg/L          mg/kg           Moles/kg

    O           0.91682E+06    0.91682E+06    0.5730322608E+02
    Al          0.40000E-01    0.40000E-01    0.1482500006E-05
    B            6486.6         6486.6        0.6000000000E+00
    Ba          0.13733E-04    0.13733E-04    0.1000000000E-09
```

Ca	13.000	13.000	0.3243700003E-03
Ce	0.14012E-18	0.14012E-18	0.1000000005E-23
Cl	7.1402	7.1402	0.2014000000E-03
Cr	0.17931E-01	0.17931E-01	0.3448500001E-06
Cs	0.13291E-04	0.13291E-04	0.1000000000E-09
Cu	0.66723E-09	0.66723E-09	0.1050000003E-13
F	2.1801	2.1801	0.1147500000E-03
Fe	0.55847E-13	0.55847E-13	0.1000000002E-17
Gd	0.15725E-08	0.15725E-08	0.1000000011E-13
H	0.11368E+06	0.11368E+06	0.1127882398E+03
C	1.7994	1.7994	0.1498161899E-03
P	0.39371E-01	0.39371E-01	0.1271100003E-05
K	5.0402	5.0402	0.1289100000E-03
La	0.13891E-08	0.13891E-08	0.1000000005E-13
Li	0.69410E-06	0.69410E-06	0.1000000000E-09
Mg	2.0100	2.0100	0.8269900006E-04
Mn	0.40000E-12	0.40000E-12	0.7280900002E-17
Mo	0.95940E-05	0.95940E-05	0.1000000000E-09
N	1.9890	1.9890	0.1420000000E-03
Na	229.62	229.62	0.9987735012E-02
Nd	0.14424E-08	0.14424E-08	0.1000000008E-13
Ni	0.58690E-05	0.58690E-05	0.1000000000E-09
Pb	0.20720E-04	0.20720E-04	0.1000000000E-09
Pu	0.24400E-08	0.24400E-08	0.1000000016E-13
S	6.1419	6.1419	0.1915400001E-03
Si	28.560	28.560	0.1016900000E-02
Sm	0.15036E-08	0.15036E-08	0.1000000008E-13
Sr	0.87620E-05	0.87620E-05	0.1000000000E-09
Ti	0.47880E-05	0.47880E-05	0.1000000000E-09
U	0.23803E-08	0.23803E-08	0.1000000003E-13
Zn	0.65390E-05	0.65390E-05	0.1000000000E-09
Zr	0.91224E-15	0.91224E-15	0.1000000003E-19

--- Elemental Composition as Strict Basis Species ---

Species	mg/L	mg/kg	Moles/kg
H2O	0.10323E+07	0.10323E+07	0.5730322608E+02
Al+++	0.40000E-01	0.40000E-01	0.1482500006E-05
B(OH)3(aq)	37100.	37100.	0.6000000000E+00
Ba++	0.13733E-04	0.13733E-04	0.1000000000E-09
Ca++	13.000	13.000	0.3243700003E-03
Ce+++	0.14012E-18	0.14012E-18	0.1000000005E-23
Cl-	7.1402	7.1402	0.2014000000E-03
CrO4--	0.40000E-01	0.40000E-01	0.3448500001E-06
Cs+	0.13291E-04	0.13291E-04	0.1000000000E-09
Cu++	0.66723E-09	0.66723E-09	0.1050000003E-13
F-	2.1801	2.1801	0.1147500000E-03
Fe++	0.55847E-13	0.55847E-13	0.1000000002E-17
Gd+++	0.15725E-08	0.15725E-08	0.1000000011E-13
H+	0.11368E+06	0.11368E+06	0.1127882398E+03
HCO3-	9.1414	9.1414	0.1498161899E-03
HPO4--	0.12200	0.12200	0.1271100003E-05
K+	5.0402	5.0402	0.1289100000E-03
La+++	0.13891E-08	0.13891E-08	0.1000000005E-13
Li+	0.69410E-06	0.69410E-06	0.1000000000E-09
Mg++	2.0100	2.0100	0.8269900006E-04
Mn++	0.40000E-12	0.40000E-12	0.7280900002E-17
MoO4--	0.15994E-04	0.15994E-04	0.1000000000E-09
NH3(aq)	2.4183	2.4183	0.1420000000E-03
Na+	229.62	229.62	0.9987735012E-02

Nd+++	0.14424E-08	0.14424E-08	0.1000000008E-13
Ni++	0.58690E-05	0.58690E-05	0.1000000000E-09
Pb++	0.20720E-04	0.20720E-04	0.1000000000E-09
Pu++++	0.24400E-08	0.24400E-08	0.1000000016E-13
SO4--	18.400	18.400	0.1915400001E-03
SiO2(aq)	61.100	61.100	0.1016900000E-02
Sm+++	0.15036E-08	0.15036E-08	0.1000000008E-13
Sr++	0.87620E-05	0.87620E-05	0.1000000000E-09
Ti(OH)4(aq)	0.11591E-04	0.11591E-04	0.1000000000E-09
UO2++	0.27003E-08	0.27003E-08	0.1000000003E-13
Zn++	0.65390E-05	0.65390E-05	0.1000000000E-09
Zr(OH)2++	0.12524E-14	0.12524E-14	0.1000000003E-19

--- Equivalent Composition of the Aqueous Solution ---

--- Original Basis ---

Species	Moles/kg H2O
H2O	0.5730322608E+02
Al+++	0.1482500006E-05
B(OH)3(aq)	0.6000000000E+00
Ba++	0.1000000000E-09
Ca++	0.3243700003E-03
Ce+++	0.1000000005E-23
Cl-	0.2014000000E-03
CrO4--	0.3448500001E-06
Cs+	0.1000000000E-09
Cu++	0.1050000003E-13
F-	0.1147500000E-03
Fe++	0.1000000002E-17
Gd+++	0.1000000011E-13
H+	0.1127882398E+03
HCO3-	0.1498161899E-03
HPO4--	0.1271100003E-05
K+	0.1289100000E-03
La+++	0.1000000005E-13
Li+	0.1000000000E-09
Mg++	0.8269900006E-04
Mn++	0.7280900002E-17
MoO4--	0.1000000000E-09
NH3(aq)	0.1420000000E-03
Na+	0.9987735012E-02
Nd+++	0.1000000008E-13
Ni++	0.1000000000E-09
Pb++	0.1000000000E-09
Pu++++	0.1000000016E-13
SO4--	0.1915400001E-03
SiO2(aq)	0.1016900000E-02
Sm+++	0.1000000008E-13
Sr++	0.1000000000E-09
Ti(OH)4(aq)	0.1000000000E-09
UO2++	0.1000000003E-13
Zn++	0.1000000000E-09
Zr(OH)2++	0.1000000003E-19

--- Current Basis (cte) ---

Species	Moles/kg H2O
H2O	0.5730322608E+02

Al+++	0.1482500006E-05
B(OH)3(aq)	0.6000000000E+00
Ba++	0.1000000000E-09
Ca++	0.3243700003E-03
Ce+++	0.1000000005E-23
Cl-	0.2014000000E-03
CrO4--	0.3448500001E-06
Cs+	0.1000000000E-09
Cu++	0.1050000003E-13
F-	0.1147500000E-03
Fe++	0.1000000002E-17
Gd+++	0.1000000011E-13
H+	0.1127882398E+03
HCO3-	0.1498161899E-03
HPO4--	0.1271100003E-05
K+	0.1289100000E-03
La+++	0.1000000005E-13
Li+	0.1000000000E-09
Mg++	0.8269900006E-04
Mn++	0.7280900002E-17
MoO4--	0.1000000000E-09
NO3-	0.1420000000E-03
Na+	0.9987735012E-02
Nd+++	0.1000000008E-13
Ni++	0.1000000000E-09
Pb++	0.1000000000E-09
Pu++++	0.1000000016E-13
SO4--	0.1915400001E-03
SiO2(aq)	0.1016900000E-02
Sm+++	0.1000000008E-13
Sr++	0.1000000000E-09
Ti(OH)4(aq)	0.1000000000E-09
UO2++	0.1000000003E-13
Zn++	0.1000000000E-09
Zr(OH)2++	0.1000000003E-19

Single ion activities and activity coefficients are here defined
with respect to the modified NBS pH scale

	pH	Eh	pe
modified NBS pH scale	7.4100	0.7808	1.3199E+01
rational pH scale	7.3675	0.7833	1.3242E+01

pHCl = 11.1531

Activity of water = 0.98904
Log activity of water = -0.00479

True osmotic coefficient= 0.99878
Stoichiometric osmotic coefficient= 0.99832

Sum of true molalities= 0.6123311004661
Sum of stoichiometric molalities= 0.6126190693625

True ionic strength= 0.0111128778781
Stoichiometric ionic strength= 0.0065750048039

```
--- Electrical Balance Totals ---

                                        equiv/kg H2O

                 Sigma(mz) cations =     0.1065026416E-01
                 Sigma(mz) anions  =    -0.1065026414E-01
                      Total charge =     0.2130052830E-01
                       Mean charge =     0.1065026415E-01
                  Charge imbalance =     0.2222353996E-10

 Total charge = sigma(mz) cations + abs ( sigma(mz) anions )
 Mean charge = 1/2 total charge


 The electrical imbalance is

       0.104E-06 per cent of the total charge
       0.209E-06 per cent of the mean charge
       0.209E-06 per cent of sigma(mz) cations
       0.209E-06 per cent of abs ( sigma(mz) anions )


--- Electrical Balancing on Na+                        ---

                 mg/L          mg/kg           Moles/kg

input        45.800         45.800        0.1992200000E-02
final        229.62         229.62        0.9987735012E-02
adj          183.82         183.82        0.7995535012E-02


                --- Activity Ratios of Ions -----

      Log ( act(Al+++                  ) / act(H+)xx 3 ) =      9.5594
      Log ( act(B(OH)3(aq)             )               ) =     -0.2291
      Log ( act(Ba++                   ) / act(H+)xx 2 ) =      4.6326
      Log ( act(Ca++                   ) / act(H+)xx 2 ) =     10.9940
      Log ( act(Ce+++                  ) / act(H+)xx 3 ) =     -2.9887
      Log ( act(Cl-                    ) x act(H+)xx 1 ) =    -11.1531
      Log ( act(CrO4--                 ) x act(H+)xx 2 ) =    -21.5042
      Log ( act(Cs+                    ) / act(H+)xx 1 ) =     -2.6410
      Log ( act(Cu++                   ) / act(H+)xx 2 ) =      0.1988
      Log ( act(F-                     ) x act(H+)xx 1 ) =    -11.3973
      Log ( act(Fe++                   ) / act(H+)xx 2 ) =    -13.6259
      Log ( act(Gd+++                  ) / act(H+)xx 3 ) =      6.8102
      Log ( act(HCO3-                  ) x act(H+)xx 1 ) =    -11.3184
      Log ( act(HPO4--                 ) x act(H+)xx 2 ) =    -21.1007
      Log ( act(K+                     ) / act(H+)xx 1 ) =      3.4697
      Log ( act(La+++                  ) / act(H+)xx 3 ) =      7.3712
      Log ( act(Li+                    ) / act(H+)xx 1 ) =     -2.6363
      Log ( act(Mg++                   ) / act(H+)xx 2 ) =     10.3802
      Log ( act(Mn++                   ) / act(H+)xx 2 ) =     -2.5114
      Log ( act(MoO4--                 ) x act(H+)xx 2 ) =    -25.0024
      Log ( act(NH3(aq)                )               ) =    -66.2573
      Log ( act(Na+                    ) / act(H+)xx 1 ) =      5.3541
      Log ( act(Nd+++                  ) / act(H+)xx 3 ) =      7.0474
      Log ( act(Ni++                   ) / act(H+)xx 2 ) =      4.6337
      Log ( act(Pb++                   ) / act(H+)xx 2 ) =      4.6283
      Log ( act(Pu++++                 ) / act(H+)xx 4 ) =     -8.9098
      Log ( act(SO4--                  ) x act(H+)xx 2 ) =    -18.7489
      Log ( act(SiO2(aq)               )               ) =     -2.9946
      Log ( act(Sm+++                  ) / act(H+)xx 3 ) =      6.8625
```

```
Log ( act(Sr++                    ) / act(H+)xx 2 ) =      4.6261
Log ( act(Ti(OH)4(aq)             )               ) =    -10.0000
Log ( act(UO2++                   ) / act(H+)xx 2 ) =     -3.7606
Log ( act(Zn++                    ) / act(H+)xx 2 ) =      4.6274
Log ( act(Zr(OH)2++               ) / act(H+)xx 2 ) =    -18.7623
Log ( act(S2--                    ) x act(H+)xx 2 ) =   *********
Log ( act(S2O3--                  ) x act(H+)xx 2 ) =   -163.8802
Log ( act(CN-                     ) x act(H+)xx 1 ) =   -131.8286
Log ( act(ClO-                    ) x act(H+)xx 1 ) =    -28.0426
Log ( act(ClO2-                   ) x act(H+)xx 1 ) =    -37.8372
Log ( act(ClO3-                   ) x act(H+)xx 1 ) =    -33.7781
Log ( act(ClO4-                   ) x act(H+)xx 1 ) =    -34.0143
Log ( act(Cr++                    ) / act(H+)xx 2 ) =    -39.5559
Log ( act(Cr+++                   ) / act(H+)xx 3 ) =    -10.4261
Log ( act(CrO4---                 ) x act(H+)xx 3 ) =    -40.3836
Log ( act(Cu+                     ) / act(H+)xx 1 ) =    -17.6799
Log ( act(Fe+++                   ) / act(H+)xx 3 ) =     -6.0275
Log ( act(H2(aq)                  )               ) =    -44.3234
Log ( act(HSO5-                   ) x act(H+)xx 1 ) =    -37.8235
Log ( act(Mn+++                   ) / act(H+)xx 3 ) =     -7.4842
Log ( act(MnO4--                  ) x act(H+)xx 2 ) =    -38.5117
Log ( act(N2(aq)                  )               ) =    -21.4034
Log ( act(N3-                     ) x act(H+)xx 1 ) =   -108.9370
Log ( act(NO2-                    ) x act(H+)xx 1 ) =    -24.7514
Log ( act(NO3-                    ) x act(H+)xx 1 ) =    -11.3046
Log ( act(O2(aq)                  )               ) =     -3.5761
Log ( act(Pb++++                  ) / act(H+)xx 4 ) =    -11.3352
Log ( act(Pu+++                   ) / act(H+)xx 3 ) =    -12.5252
Log ( act(PuO2+                   ) / act(H+)xx 1 ) =     -6.8741
Log ( act(PuO2++                  ) / act(H+)xx 2 ) =     -2.5754
Log ( act(S2O4--                  ) x act(H+)xx 2 ) =   -150.5852
Log ( act(S2O6--                  ) x act(H+)xx 2 ) =    -87.1249
Log ( act(S2O8--                  ) x act(H+)xx 2 ) =    -61.7810
Log ( act(S3--                    ) x act(H+)xx 2 ) =   *********
Log ( act(S3O6--                  ) x act(H+)xx 2 ) =   -195.1898
Log ( act(S4--                    ) x act(H+)xx 2 ) =   *********
Log ( act(S4O6--                  ) x act(H+)xx 2 ) =   -287.3484
Log ( act(S5--                    ) x act(H+)xx 2 ) =   *********
Log ( act(S5O6--                  ) x act(H+)xx 2 ) =   -408.3875
Log ( act(SCN-                    ) x act(H+)xx 1 ) =   *********
Log ( act(SO3--                   ) x act(H+)xx 2 ) =    -63.5852
Log ( act(Sm++                    ) / act(H+)xx 2 ) =    -40.2082
Log ( act(U+++                    ) / act(H+)xx 3 ) =    -65.8790
Log ( act(U++++                   ) / act(H+)xx 4 ) =    -35.9168
Log ( act(UO2+                    ) / act(H+)xx 1 ) =    -22.8858
Log ( act(Zr++++                  ) / act(H+)xx 4 ) =    -18.5143
```

--- Distribution of Aqueous Species ---

(Species with concentrations .lt. 1.e-12 are not listed)

Species	Molality	Log molality	Log gamma	Log activity
B(OH)3(aq)	5.9006E-01	-0.2291	0.0000	-0.2291
Na+	9.8370E-03	-2.0071	-0.0487	-2.0559
BO2-	9.6793E-03	-2.0142	-0.0451	-2.0592
SiO2(aq)	1.0126E-03	-2.9946	0.0000	-2.9946
O2(aq)	2.6470E-04	-3.5773	0.0012	-3.5761
Ca++	2.2683E-04	-3.6443	-0.1817	-3.8260
Cl-	2.0112E-04	-3.6965	-0.0465	-3.7431
SO4--	1.8046E-04	-3.7436	-0.1853	-3.9289
NO3-	1.4189E-04	-3.8480	-0.0465	-3.8946

NaB(OH)4(aq)	1.4004E-04	-3.8537	0.0000	-3.8537
HCO3-	1.3699E-04	-3.8633	-0.0451	-3.9084
K+	1.2880E-04	-3.8901	-0.0502	-3.9403
F-	1.1442E-04	-3.9415	-0.0458	-3.9873
CaB(OH)4+	9.4755E-05	-4.0234	-0.0487	-4.0721
Mg++	5.3982E-05	-4.2678	-0.1720	-4.4398
MgB(OH)4+	2.7438E-05	-4.5617	-0.0487	-4.6104
CO2(aq)	1.0713E-05	-4.9701	0.0012	-4.9689
NaSO4-	7.5913E-06	-5.1197	-0.0451	-5.1647
HSiO3-	3.1858E-06	-5.4968	-0.0451	-5.5419
CaSO4(aq)	2.2708E-06	-5.6438	0.0000	-5.6438
NaHCO3(aq)	1.5483E-06	-5.8101	0.0000	-5.8101
AlO2-	1.3232E-06	-5.8784	-0.0451	-5.9234
NaHSiO3(aq)	1.1241E-06	-5.9492	0.0000	-5.9492
MgSO4(aq)	1.1041E-06	-5.9570	0.0000	-5.9570
HPO4--	8.0272E-07	-6.0954	-0.1853	-6.2807
H2PO4-	3.6287E-07	-6.4402	-0.0451	-6.4853
CrO4--	3.1698E-07	-6.4990	-0.1853	-6.6842
OH-	2.8570E-07	-6.5441	-0.0458	-6.5899
NaCl(aq)	2.6550E-07	-6.5759	0.0000	-6.5759
CaHCO3+	2.2962E-07	-6.6390	-0.0487	-6.6877
CO3--	2.2660E-07	-6.6447	-0.1824	-6.8272
HAlO2(aq)	1.3091E-07	-6.8830	0.0000	-6.8830
KSO4-	1.1362E-07	-6.9445	-0.0451	-6.9896
CaNO3+	1.0669E-07	-6.9719	-0.0487	-7.0206
MgF+	9.4198E-08	-7.0260	-0.0487	-7.0747
NaF(aq)	9.1044E-08	-7.0408	0.0000	-7.0408
CaF+	8.2622E-08	-7.0829	-0.0487	-7.1316
MgHCO3+	5.4482E-08	-7.2637	-0.0487	-7.3125
CaCO3(aq)	4.7194E-08	-7.3261	0.0000	-7.3261
CaHPO4(aq)	4.2980E-08	-7.3667	0.0000	-7.3667
H+	4.2901E-08	-7.3675	-0.0425	-7.4100
NaHPO4-	4.2511E-08	-7.3715	-0.0451	-7.4166
HCrO4-	2.7875E-08	-7.5548	-0.0451	-7.5998
MgHPO4(aq)	1.5471E-08	-7.8105	0.0000	-7.8105
AlF3(aq)	1.1683E-08	-7.9324	0.0000	-7.9324
AlF2+	1.0083E-08	-7.9964	-0.0487	-8.0451
CaCl+	6.0814E-09	-8.2160	-0.0487	-8.2647
HF(aq)	5.8994E-09	-8.2292	0.0000	-8.2292
MgCl+	5.3820E-09	-8.2691	-0.0487	-8.3178
MgCO3(aq)	5.1515E-09	-8.2881	0.0000	-8.2881
NaCO3-	4.7471E-09	-8.3236	-0.0451	-8.3686
Al(OH)2+	3.9273E-09	-8.4059	-0.0487	-8.4546
CaPO4-	3.0657E-09	-8.5135	-0.0451	-8.5585
NaAlO2(aq)	1.8942E-09	-8.7226	0.0000	-8.7226
MgPO4-	1.0041E-09	-8.9982	-0.0451	-9.0433
KCl(aq)	6.6375E-10	-9.1780	0.0000	-9.1780
CaOH+	5.9966E-10	-9.2221	-0.0487	-9.2708
HSO4-	4.8447E-10	-9.3147	-0.0451	-9.3598
KHPO4-	4.0184E-10	-9.3960	-0.0451	-9.4410
NaOH(aq)	3.5856E-10	-9.4454	0.0000	-9.4454
AlF++	3.4032E-10	-9.4681	-0.1897	-9.6579
AlF4-	3.3521E-10	-9.4747	-0.0451	-9.5197
MoO4--	1.0000E-10	-10.0000	-0.1824	-10.1824
Ti(OH)4(aq)	1.0000E-10	-10.0000	0.0000	-10.0000
Cs+	9.9988E-11	-10.0001	-0.0510	-10.0510
Li+	9.9930E-11	-10.0003	-0.0460	-10.0463
Ba++	9.9913E-11	-10.0004	-0.1870	-10.1874
Pb++	9.9552E-11	-10.0020	-0.1897	-10.1917
Ni++	9.8950E-11	-10.0046	-0.1817	-10.1863
Sr++	9.8410E-11	-10.0070	-0.1870	-10.1939
Zn++	9.7524E-11	-10.0109	-0.1817	-10.1926
AlOH++	9.2747E-11	-10.0327	-0.1897	-10.2224

PO3F--	5.1446E-11	-10.2886	-0.1853	-10.4739
PO4---	1.6892E-11	-10.7723	-0.4202	-11.1925
H2SiO4--	1.0994E-11	-10.9589	-0.1853	-11.1441
KOH(aq)	1.0114E-11	-10.9951	0.0000	-10.9951
AlHPO4+	3.1438E-12	-11.5025	-0.0487	-11.5513
ZnOH+	2.0014E-12	-11.6987	-0.0487	-11.7474
H3PO4(aq)	1.8810E-12	-11.7256	0.0000	-11.7256
SrSO4(aq)	1.5037E-12	-11.8228	0.0000	-11.8228
HCl(aq)	1.5028E-12	-11.8231	0.0000	-11.8231
CaCl2(aq)	1.1071E-12	-11.9558	0.0000	-11.9558
NiSO4(aq)	1.0245E-12	-11.9895	0.0000	-11.9895

--- Major Aqueous Species Contributing to Mass Balances ---

Aqueous species accounting for 99% or more of Al+++

Species	Factor	Molality	Per Cent
AlO2-	1.00	1.3232E-06	89.26
HAlO2(aq)	1.00	1.3091E-07	8.83
AlF3(aq)	1.00	1.1683E-08	7.881E-01
AlF2+	1.00	1.0083E-08	6.801E-01
Total		1.4825E-06	99.56

Aqueous species accounting for 99% or more of B(OH)3(aq)

Species	Factor	Molality	Per Cent
B(OH)3(aq)	1.00	5.9006E-01	98.34
BO2-	1.00	9.6793E-03	1.61
Total		6.0000E-01	99.96

Aqueous species accounting for 99% or more of Ba++

Species	Factor	Molality	Per Cent
Ba++	1.00	9.9913E-11	99.91
Total		1.0000E-10	99.91

Aqueous species accounting for 99% or more of Ca++

Species	Factor	Molality	Per Cent
Ca++	1.00	2.2683E-04	69.93
CaB(OH)4+	1.00	9.4755E-05	29.21
Total		3.2437E-04	99.14

Aqueous species accounting for 99% or more of Ce+++

Species	Factor	Molality	Per Cent
Ce(OH)2++	1.00	3.7518E-25	37.52
CeCO3+	1.00	3.1699E-25	31.70

```
  Ce+++                          1.00    1.4327E-25     14.33
  CePO4(aq)                      1.00    8.1415E-26      8.14
  CeF++                          1.00    3.8350E-26      3.83
  CeSO4+                         1.00    2.0005E-26      2.00
  CeOH++                         1.00    1.0387E-26      1.04
  CeHPO4+                        1.00    5.6146E-27    5.615E-01
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                  1.0000E-24     99.12


Aqueous species accounting for 99% or more of Cl-

     Species                    Factor    Molality     Per Cent

  Cl-                            1.00    2.0112E-04     99.86
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                  2.0140E-04     99.86


Aqueous species accounting for 99% or more of CrO4--

     Species                    Factor    Molality     Per Cent

  CrO4--                         1.00    3.1698E-07     91.92
  HCrO4-                         1.00    2.7875E-08      8.08
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                  3.4485E-07    100.00


Aqueous species accounting for 99% or more of Cs+

     Species                    Factor    Molality     Per Cent

  Cs+                            1.00    9.9988E-11     99.99
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                  1.0000E-10     99.99


Aqueous species accounting for 99% or more of Cu++

     Species                    Factor    Molality     Per Cent

  Cu++                           1.00    3.6353E-15     34.62
  CuOH+                          1.00    3.5096E-15     33.42
  CuCO3(aq)                      1.00    3.2132E-15     30.60
  CuPO4-                         1.00    1.2061E-16      1.15
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                  1.0500E-14     99.80


Aqueous species accounting for 99% or more of F-

     Species                    Factor    Molality     Per Cent

  F-                             1.00    1.1442E-04     99.71
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                  1.1475E-04     99.71


Aqueous species accounting for 99% or more of Fe++

     Species                    Factor    Molality     Per Cent
```

```
  Fe(OH)3(aq)                  1.00    9.0812E-19     90.81
  Fe(OH)2+                     1.00    8.5437E-20      8.54
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                1.0000E-18     99.36


Aqueous species accounting for 99% or more of Gd+++

     Species                   Factor    Molality     Per Cent

  GdCO3+                       1.00    3.9803E-15     39.80
  GdPO4(aq)                    1.00    3.6272E-15     36.27
  Gd+++                        1.00    9.9709E-16      9.97
  GdF++                        1.00    7.6319E-16      7.63
  GdOH++                       1.00    1.4633E-16      1.46
  GdSO4+                       1.00    1.2589E-16      1.26
  Gd(CO3)2-                    1.00    1.1675E-16      1.17
  GdHPO4+                      1.00    1.1173E-16      1.12
  GdF2+                        1.00    7.1500E-17    7.150E-01
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                1.0000E-14     99.40


Aqueous species accounting for 99% or more of HCO3-

     Species                   Factor    Molality     Per Cent

  HCO3-                        1.00    1.3699E-04     91.44
  CO2(aq)                      1.00    1.0713E-05      7.15
  NaHCO3(aq)                   1.00    1.5483E-06      1.03
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                1.4982E-04     99.62


Aqueous species accounting for 99% or more of HPO4--

     Species                   Factor    Molality     Per Cent

  HPO4--                       1.00    8.0272E-07     63.15
  H2PO4-                       1.00    3.6287E-07     28.55
  CaHPO4(aq)                   1.00    4.2980E-08      3.38
  NaHPO4-                      1.00    4.2511E-08      3.34
  MgHPO4(aq)                   1.00    1.5471E-08      1.22
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                1.2711E-06     99.64


Aqueous species accounting for 99% or more of K+

     Species                   Factor    Molality     Per Cent

  K+                           1.00    1.2880E-04     99.91
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                1.2891E-04     99.91


Aqueous species accounting for 99% or more of La+++

     Species                   Factor    Molality     Per Cent

  LaCO3+                       1.00    4.5806E-15     45.81
  La+++                        1.00    3.2813E-15     32.81
  LaPO4(aq)                    1.00    7.5958E-16      7.60
```

```
  LaF++                          1.00    5.5416E-16      5.54
  LaSO4+                         1.00    4.5815E-16      4.58
  LaOH++                         1.00    1.3377E-16      1.34
  LaHPO4+                        1.00    1.0214E-16      1.02
  LaHCO3++                       1.00    5.2789E-17    5.279E-01
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                  1.0000E-14     99.22


Aqueous species accounting for 99% or more of Li+

     Species                     Factor    Molality     Per Cent

  Li+                            1.00    9.9930E-11     99.93
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                  1.0000E-10     99.93


Aqueous species accounting for 99% or more of Mg++

     Species                     Factor    Molality     Per Cent

  Mg++                           1.00    5.3982E-05     65.27
  MgB(OH)4+                      1.00    2.7438E-05     33.18
  MgSO4(aq)                      1.00    1.1041E-06      1.34
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                  8.2699E-05     99.79


Aqueous species accounting for 99% or more of Mn++

     Species                     Factor    Molality     Per Cent

  Mn++                           1.00    7.0838E-18     97.29
  MnSO4(aq)                      1.00    1.2375E-19      1.70
  MnCO3(aq)                      1.00    2.2981E-20    3.156E-01
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                  7.2809E-18     99.31


Aqueous species accounting for 99% or more of MoO4--

     Species                     Factor    Molality     Per Cent

  MoO4--                         1.00    1.0000E-10    100.00
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                  1.0000E-10    100.00


Aqueous species accounting for 99% or more of NH3(aq)

     Species                     Factor    Molality     Per Cent

  NO3-                           1.00    1.4189E-04     99.92
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                  1.4200E-04     99.92


Aqueous species accounting for 99% or more of Na+

     Species                     Factor    Molality     Per Cent

  Na+                            1.00    9.8370E-03     98.49
```

```
  NaB(OH)4(aq)                 1.00    1.4004E-04      1.40
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                9.9877E-03     99.89


Aqueous species accounting for 99% or more of Nd+++

     Species                   Factor    Molality     Per Cent

  NdCO3+                        1.00    4.3360E-15     43.36
  NdPO4(aq)                     1.00    2.4932E-15     24.93
  Nd+++                         1.00    1.5567E-15     15.57
  NdF++                         1.00    6.6040E-16      6.60
  NdF2+                         1.00    2.8582E-16      2.86
  NdSO4+                        1.00    2.7364E-16      2.74
  NdOH++                        1.00    2.0069E-16      2.01
  NdHPO4+                       1.00    9.6687E-17    9.669E-01
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                1.0000E-14     99.03


Aqueous species accounting for 99% or more of Ni++

     Species                   Factor    Molality     Per Cent

  Ni++                          1.00    9.8950E-11     98.95
  NiSO4(aq)                     1.00    1.0245E-12      1.02
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                1.0000E-10     99.97


Aqueous species accounting for 99% or more of Pb++

     Species                   Factor    Molality     Per Cent

  Pb++                          1.00    9.9552E-11     99.55
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                1.0000E-10     99.55


Aqueous species accounting for 99% or more of Pu++++

     Species                   Factor    Molality     Per Cent

  PuO2+                         1.00    5.8159E-15     58.16
  PuO2CO3(aq)                   1.00    1.2231E-15     12.23
  PuO2(OH)2(aq)                 1.00    9.2230E-16      9.22
  PuO2HPO4(aq)                  1.00    7.3103E-16      7.31
  PuO2OH+                       1.00    4.8248E-16      4.82
  PuO2(OH)3-                    1.00    3.9825E-16      3.98
  Pu(OH)4(aq)                   1.00    1.9533E-16      1.95
  PuO2CO3-                      1.00    1.0087E-16      1.01
  PuO2OH(aq)                    1.00    3.8549E-17    3.855E-01
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                1.0000E-14     99.08


Aqueous species accounting for 99% or more of SO4--

     Species                   Factor    Molality     Per Cent

  SO4--                         1.00    1.8046E-04     94.22
  NaSO4-                        1.00    7.5913E-06      3.96
```

```
  CaSO4(aq)                    1.00    2.2708E-06      1.19
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                1.9154E-04     99.36
```

Aqueous species accounting for 99% or more of SiO2(aq)

```
     Species                   Factor    Molality     Per Cent

  SiO2(aq)                      1.00    1.0126E-03     99.58
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                1.0169E-03     99.58
```

Aqueous species accounting for 99% or more of Sm+++

```
     Species                   Factor    Molality     Per Cent

  SmCO3+                        1.00    4.4900E-15     44.90
  SmPO4(aq)                     1.00    3.2501E-15     32.50
  Sm+++                         1.00    1.0171E-15     10.17
  SmF++                         1.00    4.3148E-16      4.31
  SmF2+                         1.00    2.2107E-16      2.21
  SmOH++                        1.00    2.0781E-16      2.08
  SmSO4+                        1.00    1.7879E-16      1.79
  SmHPO4+                       1.00    1.0012E-16      1.00
  Sm(CO3)2-                     1.00    6.6009E-17    6.601E-01
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                1.0000E-14     99.63
```

Aqueous species accounting for 99% or more of Sr++

```
     Species                   Factor    Molality     Per Cent

  Sr++                          1.00    9.8410E-11     98.41
  SrSO4(aq)                     1.00    1.5037E-12      1.50
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                1.0000E-10     99.91
```

Aqueous species accounting for 99% or more of Ti(OH)4(aq)

```
     Species                   Factor    Molality     Per Cent

  Ti(OH)4(aq)                   1.00    1.0000E-10    100.00
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                1.0000E-10    100.00
```

Aqueous species accounting for 99% or more of UO2++

```
     Species                   Factor    Molality     Per Cent

  UO2(OH)2(aq)                  1.00    8.2271E-15     82.27
  UO2(CO3)2--                   1.00    7.2647E-16      7.26
  UO2PO4-                       1.00    4.7159E-16      4.72
  UO2(OH)3-                     1.00    2.8729E-16      2.87
  UO2CO3(aq)                    1.00    1.8098E-16      1.81
  UO2OH+                        1.00    4.6350E-17    4.635E-01
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                1.0000E-14     99.40
```

Aqueous species accounting for 99% or more of Zn++

Species	Factor	Molality	Per Cent
Zn++	1.00	9.7524E-11	97.52
ZnOH+	1.00	2.0014E-12	2.00
Total		1.0000E-10	99.53

Aqueous species accounting for 99% or more of Zr(OH)2++

Species	Factor	Molality	Per Cent
Zr(OH)4(aq)	1.00	1.0000E-20	100.00
Total		1.0000E-20	100.00

--- Summary of Aqueous Redox Reactions ---

Couple		Eh, volts	pe-	Log fO2	Ah, kcal
DEFAULT		0.781	0.1320E+02	-0.678	18.007
S2O3--	/SO4--	0.781	0.1320E+02	-0.678	18.007
CN-	/NH3(aq)	0.781	0.1320E+02	-0.678	18.007
ClO-	/Cl-	0.781	0.1320E+02	-0.678	18.007
ClO2-	/Cl-	0.781	0.1320E+02	-0.678	18.007
ClO3-	/Cl-	0.781	0.1320E+02	-0.678	18.007
ClO4-	/Cl-	0.781	0.1320E+02	-0.678	18.007
Cr++	/CrO4--	0.781	0.1320E+02	-0.678	18.007
Cr+++	/CrO4--	0.781	0.1320E+02	-0.678	18.007
CrO4---	/CrO4--	0.781	0.1320E+02	-0.678	18.007
Cu+	/Cu++	0.781	0.1320E+02	-0.678	18.007
Fe+++	/Fe++	0.781	0.1320E+02	-0.678	18.007
H2(aq)	/H2O	0.781	0.1320E+02	-0.678	18.007
HSO5-	/SO4--	0.781	0.1320E+02	-0.678	18.007
Mn+++	/Mn++	0.781	0.1320E+02	-0.678	18.007
MnO4--	/Mn++	0.781	0.1320E+02	-0.678	18.007
N2(aq)	/NH3(aq)	0.781	0.1320E+02	-0.678	18.007
N3-	/NH3(aq)	0.781	0.1320E+02	-0.678	18.007
NO2-	/NH3(aq)	0.781	0.1320E+02	-0.678	18.007
NO3-	/NH3(aq)	0.781	0.1320E+02	-0.678	18.007
O2(aq)	/H2O	0.781	0.1320E+02	-0.678	18.007
Pb++++	/Pb++	0.781	0.1320E+02	-0.678	18.007
Pu+++	/Pu++++	0.781	0.1320E+02	-0.678	18.007
PuO2+	/Pu++++	0.781	0.1320E+02	-0.678	18.007
PuO2++	/Pu++++	0.781	0.1320E+02	-0.678	18.007
S2O4--	/SO4--	0.781	0.1320E+02	-0.678	18.007
S2O6--	/SO4--	0.781	0.1320E+02	-0.678	18.007
S2O8--	/SO4--	0.781	0.1320E+02	-0.678	18.007
S3O6--	/SO4--	0.781	0.1320E+02	-0.678	18.007
S4O6--	/SO4--	0.781	0.1320E+02	-0.678	18.007
S5O6--	/SO4--	0.781	0.1320E+02	-0.678	18.007
SO3--	/SO4--	0.781	0.1320E+02	-0.678	18.007
Sm++	/Sm+++	0.781	0.1320E+02	-0.678	18.007
U+++	/UO2++	0.781	0.1320E+02	-0.678	18.007
U++++	/UO2++	0.781	0.1320E+02	-0.678	18.007
UO2+	/UO2++	0.781	0.1320E+02	-0.678	18.007

--- Summary of Aqueous Non-equilibrium Non-redox Neactions ---

Reaction	Log Q/K	Aff, kcal	State

None

--- Summary of Pure Mineral Saturation States ---

(Minerals with affinities .lt. -10 kcal are not listed)

Mineral	Log Q/K	Aff, kcal	State
Alamosite	-4.044	-5.518	
Albite	3.156	4.305	ssatd
Albite_high	1.837	2.506	ssatd
Albite_low	3.156	4.305	ssatd
Alunite	-5.031	-6.863	
Amesite-14A	-1.755	-2.394	
Analcime	2.055	2.803	ssatd
Analcime-dehy	-4.303	-5.871	
Andalusite	0.165	0.226	satd
Anglesite	-6.268	-8.551	
Anhydrite	-3.449	-4.705	
Anorthite	-2.473	-3.374	
Aragonite	-2.318	-3.162	
B2O3	-5.990	-8.172	
BaCrO4	-6.939	-9.467	
Barite	-4.145	-5.655	
Bassanite	-4.096	-5.588	
Beidellite-Ca	7.484	10.210	ssatd
Beidellite-Cs	5.236	7.143	ssatd
Beidellite-H	6.628	9.042	ssatd
Beidellite-K	7.097	9.683	ssatd
Beidellite-Mg	7.420	10.123	ssatd
Beidellite-Na	7.381	10.069	ssatd
Berlinite	-4.333	-5.911	
Boehmite	1.986	2.709	ssatd
Borax	-2.272	-3.099	
Boric_acid	-0.071	-0.097	satd
Brucite	-5.927	-8.087	
CaSO4:0.5H2O(beta)	-4.264	-5.817	
Calcite	-2.173	-2.965	
CeO2	-3.645	-4.973	
Celadonite	3.954	5.395	ssatd
Cerussite	-3.481	-4.749	
Chalcedony	0.734	1.001	ssatd
Chrysotile	-5.998	-8.183	
Clinoptilolite	16.152	22.037	ssatd
Clinoptilolite-Ca	15.340	20.928	ssatd
Clinoptilolite-Cs	-6.827	-9.313	
Clinoptilolite-K	12.250	16.713	ssatd
Clinoptilolite-Na	14.971	20.425	ssatd
Clinoptilolite-Sr	4.440	6.058	ssatd
Clinoptilolite-hy-Ca	15.338	20.925	ssatd
Clinoptilolite-hy-Cs	-6.800	-9.277	
Clinoptilolite-hy-K	12.270	16.740	ssatd
Clinoptilolite-hy-Na	14.974	20.428	ssatd
Clinoptilolite-hy-Sr	4.427	6.040	ssatd
Coesite	0.195	0.266	satd
Colemanite	-0.892	-1.217	
Cordierite_hydr	-5.841	-7.969	

Corundum	0.792	1.081	ssatd
Cristobalite(alpha)	0.454	0.620	ssatd
Cristobalite(beta)	0.011	0.015	satd
Crocoite	-4.158	-5.673	
Dawsonite	-0.761	-1.038	
Diaspore	2.390	3.260	ssatd
Diopside	-5.589	-7.625	
Dolomite	-3.776	-5.152	
Dolomite-dis	-5.320	-7.259	
Dolomite-ord	-3.776	-5.152	
Epsomite	-6.440	-8.786	
Fluorapatite	5.264	7.182	ssatd
Fluorite	-1.764	-2.406	
GdPO4:H2O	-2.345	-3.200	
Gibbsite	1.789	2.441	ssatd
Gismondine	6.449	8.798	ssatd
Goethite	-6.572	-8.966	
Gypsum	-3.282	-4.478	
Heulandite	6.879	9.385	ssatd
Hexahydrite	-6.671	-9.101	
Hydroboracite	-0.359	-0.489	satd
Hydroxylapatite	-5.262	-7.179	
Ice	-0.143	-0.196	satd
Illite	7.133	9.731	ssatd
Jadeite	0.526	0.718	ssatd
K-Feldspar	4.311	5.882	ssatd
Kalsilite	-0.874	-1.192	
Kaolinite	6.296	8.589	ssatd
Kyanite	0.436	0.595	ssatd
LaPO4:H2O	-1.384	-1.888	
Lansfordite	-5.803	-7.917	
Laumontite	4.430	6.043	ssatd
Lawsonite	1.882	2.567	ssatd
Magnesite	-3.232	-4.409	
Manganite	-7.329	-9.999	
Margarite	2.139	2.918	ssatd
Maximum_Microcline	4.311	5.882	ssatd
Mesolite	7.201	9.825	ssatd
Mirabilite	-6.949	-9.480	
MnO2(gamma)	-4.385	-5.983	
Monohydrocalcite	-3.012	-4.109	
Montmor-Ca	6.711	9.156	ssatd
Montmor-Cs	4.529	6.180	ssatd
Montmor-K	6.395	8.725	ssatd
Montmor-Mg	6.717	9.164	ssatd
Montmor-Na	6.675	9.106	ssatd
Mordenite	4.120	5.621	ssatd
Muscovite	9.550	13.029	ssatd
Nahcolite	-5.852	-7.984	
Natrolite	2.294	3.130	ssatd
NdOHCO3	-7.116	-9.709	
NdPO4:H2O	-1.908	-2.603	
Nepheline	-1.891	-2.580	
Nesquehonite	-5.948	-8.115	
Nontronite-Ca	-6.517	-8.890	
Nontronite-K	-6.903	-9.418	
Nontronite-Mg	-6.580	-8.977	
Nontronite-Na	-6.620	-9.031	
Okenite	-5.391	-7.355	
Paragonite	7.498	10.229	ssatd
Paralaurionite	-6.733	-9.186	
PbHPO4	-4.906	-6.693	
Pentahydrite	-7.005	-9.557	

Petalite	-1.249	-1.705	
Plattnerite	-3.384	-4.617	
Plumbogummite	-0.777	-1.060	
Prehnite	-0.836	-1.141	
Pseudowollastonite	-6.005	-8.193	
PuO2	-1.555	-2.121	
PuO2(OH)2	-6.135	-8.370	
Pyrolusite	-2.868	-3.912	
Pyromorphite	-3.418	-4.664	
Pyrophyllite	6.682	9.116	ssatd
Quartz	1.005	1.371	ssatd
Rutile	-0.345	-0.471	satd
Sanidine_high	3.112	4.246	ssatd
Saponite-Ca	-1.193	-1.628	
Saponite-Cs	-3.441	-4.695	
Saponite-H	-2.049	-2.796	
Saponite-K	-1.580	-2.155	
Saponite-Mg	-1.257	-1.714	
Saponite-Na	-1.296	-1.768	
Scolecite	5.219	7.120	ssatd
Sellaite	-3.030	-4.134	
Sepiolite	-6.943	-9.472	
SiO2(am)	-0.281	-0.383	satd
Sillimanite	-0.198	-0.270	satd
SmPO4:H2O	-2.093	-2.855	
Smectite-low-Fe-Mg	-4.199	-5.729	
Smithsonite	-7.154	-9.760	
Spodumene	-6.073	-8.285	
Stilbite	11.258	15.359	ssatd
Strontianite	-6.379	-8.702	
Talc	-1.995	-2.722	
Tridymite	0.833	1.137	ssatd
Wairakite	0.030	0.040	satd
Whitlockite	-4.995	-6.814	
Witherite	-3.689	-5.033	
Wollastonite	-5.766	-7.866	
Zincite	-6.586	-8.985	
Zircon	-6.338	-8.646	
Zn(OH)2(beta)	-7.316	-9.981	
Zn(OH)2(epsilon)	-7.045	-9.611	
Zn(OH)2(gamma)	-7.265	-9.912	
Zoisite	-1.653	-2.255	

--- Summary of Hypothetical Solid Solutions ---

--- Biotite ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Annite	0.0000E+00			
Phlogopite	0.0000E+00			

Mineral	Log Q/K	Aff, kcal	State
Biotite	0.000	-999.000	

```
               --- Carbonate-Calcite        ---

  Ideal solution

   Component                    x           Log x   Log lambda  Log activity

Calcite                     9.1959E-01     -0.0364      0.0000     -0.0364
Magnesite                   8.0341E-02     -1.0951      0.0000     -1.0951
Rhodochrosite               3.1599E-12    -11.5003      0.0000    -11.5003
Siderite                    2.4236E-23    -22.6155      0.0000    -22.6155
Smithsonite                 9.6032E-06     -5.0176      0.0000     -5.0176
Strontianite                5.7289E-05     -4.2419      0.0000     -4.2419


   Mineral                      Log Q/K     Aff, kcal  State

Carbonate-Calcite               -2.137      -2.915
  Calcite                       -2.137      -2.915
  Magnesite                     -2.137      -2.915
  Rhodochrosite                 -2.137      -2.915
  Siderite                      -2.137      -2.915
  Smithsonite                   -2.137      -2.915
  Strontianite                  -2.137      -2.915



               --- Chlorite-ss              ---

  Ideal solution

   Component                    x           Log x   Log lambda  Log activity

Clinochlore-14A             0.0000E+00
Daphnite-14A                0.0000E+00


   Mineral                      Log Q/K     Aff, kcal  State

Chlorite-ss                      0.000    -999.000



               --- Clinoptilolite-hy-ss     ---

  Ideal solution

   Component                    x           Log x   Log lambda  Log activity

Clinoptilolite-hy-Ca        6.9764E-01     -0.1564      0.0000     -0.1564
Clinoptilolite-hy-Cs        5.0853E-23    -22.2937      0.0000    -22.2937
Clinoptilolite-hy-K         5.9751E-04     -3.2237      0.0000     -3.2237
Clinoptilolite-hy-Na        3.0177E-01     -0.5203      0.0000     -0.5203
Clinoptilolite-hy-Sr        8.5719E-12    -11.0669      0.0000    -11.0669


   Mineral                      Log Q/K     Aff, kcal  State

Clinoptilolite-hy-ss            15.494      21.138   ssatd
  Clinoptilolite-hy-Ca          15.494      21.138   ssatd
  Clinoptilolite-hy-Cs          15.494      21.138   ssatd
  Clinoptilolite-hy-K           15.494      21.138   ssatd
  Clinoptilolite-hy-Na          15.494      21.138   ssatd
  Clinoptilolite-hy-Sr          15.494      21.138   ssatd
```

```
               --- Clinoptilolite-ss        ---

  Ideal solution

   Component                    x           Log x   Log lambda  Log activity

Clinoptilolite-Ca           5.2323E-01     -0.2813     -0.6920     -0.9733
Clinoptilolite-Cs           2.0524E-07     -6.6877    -16.4518    -23.1396
Clinoptilolite-K            6.6948E-02     -1.1743     -2.8887     -4.0630
Clinoptilolite-NH4          1.1764E-62    -61.9294   -152.3464   -214.2759
Clinoptilolite-Na           4.0946E-01     -0.3878     -0.9540     -1.3418
Clinoptilolite-Sr           3.7037E-04     -3.4314     -8.4412    -11.8725


   Mineral                      Log Q/K     Aff, kcal  State

Clinoptilolite-ss               16.313      22.256   ssatd
  Clinoptilolite-Ca             16.313      22.256   ssatd
  Clinoptilolite-Cs             16.313      22.256   ssatd
  Clinoptilolite-K              16.313      22.256   ssatd
  Clinoptilolite-NH4            16.313      22.256   ssatd
  Clinoptilolite-Na             16.313      22.256   ssatd
  Clinoptilolite-Sr             16.313      22.256   ssatd


               --- Epidote-ss                ---

  Ideal solution

   Component                    x           Log x   Log lambda  Log activity

Clinozoisite                0.0000E+00
Epidote                     0.0000E+00


   Mineral                      Log Q/K     Aff, kcal  State

Epidote-ss                        0.000    -999.000


               --- Garnet-ss                 ---

  Ideal solution

   Component                    x           Log x   Log lambda  Log activity

Andradite                   0.0000E+00
Grossular                   0.0000E+00


   Mineral                      Log Q/K     Aff, kcal  State

Garnet-ss                         0.000    -999.000


               --- Orthopyroxene            ---
```

Ideal solution

Component	x	Log x	Log lambda	Log activity
Enstatite	0.0000E+00			
Ferrosilite	0.0000E+00			

Mineral	Log Q/K	Aff, kcal	State
Orthopyroxene	0.000	-999.000	

--- Saponite-tri ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Saponite-Ca	4.5476E-01	-0.3422	0.2293	-0.1129
Saponite-H	1.1575E-03	-2.9365	1.9674	-0.9690
Saponite-K	3.0658E-02	-1.5135	1.0140	-0.4994
Saponite-Mg	2.9184E-01	-0.5349	0.3584	-0.1765
Saponite-Na	2.2159E-01	-0.6545	0.4385	-0.2160

Mineral	Log Q/K	Aff, kcal	State
Saponite-tri	-1.080	-1.474	
Saponite-Ca	-1.080	-1.474	
Saponite-H	-1.080	-1.474	
Saponite-K	-1.080	-1.474	
Saponite-Mg	-1.080	-1.474	
Saponite-Na	-1.080	-1.474	

--- Smectite-di ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Beidellite-Ca	4.5252E-01	-0.3444	0.2307	-0.1136
Beidellite-K	3.0529E-02	-1.5153	1.0152	-0.5000
Beidellite-Mg	2.9041E-01	-0.5370	0.3598	-0.1772
Beidellite-Na	2.2050E-01	-0.6566	0.4399	-0.2167
Montmor-Ca	2.0625E-03	-2.6856	1.7993	-0.8862
Montmor-K	2.2725E-04	-3.6435	2.4411	-1.2024
Montmor-Mg	2.1512E-03	-2.6673	1.7871	-0.8802
Montmor-Na	1.6006E-03	-2.7957	1.8731	-0.9226
Nontronite-Ca	1.7003E-43	-42.7695	28.6556	-14.1139
Nontronite-K	1.1471E-44	-43.9404	29.4401	-14.5003
Nontronite-Mg	1.0919E-43	-42.9618	28.7844	-14.1774
Nontronite-Na	8.2847E-44	-43.0817	28.8648	-14.2170

Mineral	Log Q/K	Aff, kcal	State
Smectite-di	7.597	10.365	ssatd
Beidellite-Ca	7.597	10.365	ssatd
Beidellite-K	7.597	10.365	ssatd

Beidellite-Mg	7.597	10.365	ssatd
Beidellite-Na	7.597	10.365	ssatd
Montmor-Ca	7.597	10.365	ssatd
Montmor-K	7.597	10.365	ssatd
Montmor-Mg	7.597	10.365	ssatd
Montmor-Na	7.597	10.365	ssatd
Nontronite-Ca	7.597	10.365	ssatd
Nontronite-K	7.597	10.365	ssatd
Nontronite-Mg	7.597	10.365	ssatd
Nontronite-Na	7.597	10.365	ssatd

--- Lanthanide hydroxide ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
La(OH)3	3.2540E-05	-4.4876	0.0000	-4.4876
Ce(OH)3	3.5690E-15	-14.4475	0.0000	-14.4475
Nd(OH)3(c)	4.8819E-01	-0.3114	0.0000	-0.3114
Gd(OH)3	4.4814E-01	-0.3486	0.0000	-0.3486
Sm(OH)3	6.3642E-02	-1.1963	0.0000	-1.1963

Mineral	Log Q/K	Aff, kcal	State
Lanthanide hydroxide	-8.485	-11.576	
La(OH)3	-8.485	-11.576	
Ce(OH)3	-8.485	-11.576	
Nd(OH)3(c)	-8.485	-11.576	
Gd(OH)3	-8.485	-11.576	
Sm(OH)3	-8.485	-11.576	

--- Rhabdophane-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaPO4:H2O	6.2332E-01	-0.2053	0.0000	-0.2053
CePO4:H2O	2.1619E-11	-10.6652	0.0000	-10.6652
NdPO4:H2O	1.8659E-01	-0.7291	0.0000	-0.7291
GdPO4:H2O	6.8187E-02	-1.1663	0.0000	-1.1663
SmPO4:H2O	1.2191E-01	-0.9140	0.0000	-0.9140

Mineral	Log Q/K	Aff, kcal	State
Rhabdophane-ss	-1.179	-1.608	
LaPO4:H2O	-1.179	-1.608	
CePO4:H2O	-1.179	-1.608	
NdPO4:H2O	-1.179	-1.608	
GdPO4:H2O	-1.179	-1.608	
SmPO4:H2O	-1.179	-1.608	

--- Lanthanide fluoride ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaF3:0.5H2O	7.1389E-01	-0.1464	0.0000	-0.1464
CeF3:0.5H2O	3.9243E-11	-10.4062	0.0000	-10.4062
NdF3:0.5H2O	2.6903E-01	-0.5702	0.0000	-0.5702
GdF3:0.5H2O	3.1091E-03	-2.5074	0.0000	-2.5074
SmF3:0.5H2O	1.3962E-02	-1.8550	0.0000	-1.8550

Mineral	Log Q/K	Aff, kcal	State
Lanthanide fluoride	-7.977	-10.883	
LaF3:0.5H2O	-7.977	-10.883	
CeF3:0.5H2O	-7.977	-10.883	
NdF3:0.5H2O	-7.977	-10.883	
GdF3:0.5H2O	-7.977	-10.883	
SmF3:0.5H2O	-7.977	-10.883	

10 approx. saturated pure minerals
0 approx. saturated input solid solutions
0 saturated hypothetical solid solutions

54 supersaturated pure minerals
0 supersatd. input solid solutions
3 supersatd. hypothetical solid solutions

--- Summary of Gases ---

Gas	Fugacity	Log fugacity
Al(g)	4.0598-189	-188.3915
B(g)	4.1420-199	-198.3828
BF3(g)	3.6288E-32	-31.4402
C(g)	3.0916-190	-189.5098
CH4(g)	3.4522-146	-145.4619
CO(g)	6.0393E-49	-48.2190
CO2(g)	3.1623E-04	-3.5000
Ca(g)	5.0047-153	-152.3006
Chlorine	8.1305E-28	-27.0899
Cs(g)	9.3329E-84	-83.0300
Cu(g)	2.0909E-82	-81.6797
Fluorine	5.0397E-81	-80.2976
H2(g)	6.0479E-42	-41.2184
H2O(g)	2.5693E-02	-1.5902
H2S(g)	0.0000E+00	-999.0000
HCl(g)	3.4786E-18	-17.4586
HF(g)	3.0910E-13	-12.5099
K(g)	6.0235E-78	-77.2202
Li(g)	2.0561E-97	-96.6870
Mg(g)	8.2040-131	-130.0860
Nitrogen	6.0668E-19	-18.2170
NH3(g)	8.8326E-69	-68.0539
NO(g)	2.4527E-25	-24.6104
NO2(g)	1.6771E-19	-18.7755

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Na(g)                          2.4088E-75    -74.6182
O2(g)                          2.1000E-01     -0.6778
Pb(g)                          6.3476E-70    -69.1974
S2(g)                          0.0000E+00   -999.0000
SO2(g)                         2.0662E-55    -54.6848
Si(g)                          4.2718-220   -219.3694
SiF4(g)                        4.1583E-34    -33.3811
Ti(g)                          1.7169-231   -230.7652
TiCl4(g)                       2.2646E-83    -82.6450
U(g)                           1.7976-297   -296.7453
U2Cl10(g)                      9.0049-241   -240.0455
U2Cl8(g)                       3.4337-244   -243.4642
U2F10(g)                       3.6586-148   -147.4367
UCl(g)                         5.6035-253   -252.2515
UCl2(g)                        5.2254-207   -206.2819
UCl3(g)                        1.0673-158   -157.9717
UCl4(g)                        1.1804-127   -126.9280
UCl5(g)                        6.7172-134   -133.1728
UCl6(g)                        7.1015-135   -134.1487
UF(g)                          1.0582-237   -236.9754
UF2(g)                         4.6196-196   -195.3354
UF3(g)                         4.9631-148   -147.3042
UF4(g)                         7.8706E-97    -96.1040
UF5(g)                         5.7169E-87    -86.2428
UF6(g)                         4.0889E-91    -90.3884
UO(g)                          1.4197-212   -211.8478
UO2(g)                         2.6304-128   -127.5800
UO2Cl2(g)                      9.3376E-75    -74.0298
UO2F2(g)                       5.9886E-62    -61.2227
UO3(g)                         1.9348E-75    -74.7134
UOF4(g)                        2.3454E-74    -73.6298
Zn(g)                          9.9244E-80    -79.0033

--- Reading the input file ---

--- No further input found ---

         Start time = 17:28:21  01/14/99
           End time = 17:28:24  01/14/99

          Run time =   2.91     seconds
         User time =   2.91     seconds
          Cpu time =   2.91     seconds

Normal exit
```

```
EQ3/6, Version 7.2b (EQ3/6-V7-REL-V7.2b-PC)
EQ3NR Speciation-Solubility Code (EQ3/6-V7-EQ3NR-EXE-R139-P5)
Supported by the EQLIB library (EQ3/6-V7-EQLIB-LIB-R168-P5)
```

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This work is subject to additional statements and disclaimers which may be found in the README.txt file included in the EQ3/6 software transmittal package.

```
Run  10:34:27  01/22/99



--- Reading the input file ---
|-----------------------------------------------------------------------|
|EQ3NR input file name= j13solBa.3i                                     |
|Description= "J-13 well water, barium solubility                       |
|Version level= 7.2b                                                    |
|Created 01/22/99    Creator= D. H. Lester                              |
|Revised             Revisor=                                           |
|                                                                       |
|  Water from well J-13 at the Nevada Test Site. The composition        |
|is nearly identical to that in the EQ3NR test case input file j13w.3i,|
|which is based on data reported by Harrar et al. (1990) and on p. 3 of|
|Preliminary Scenario Definitions, May 17, 1996, except for fixing of  |
|bicarbonate via fixed fugacity of CO2 and pH.  Al, Fe, Mn, etc. re-   |
|tained, as these are needed to model reaction with tuff, etc.  traces |
|of Pu, U, Gd, Ba, La, Nd, Ce, Sm, Pb, Cr, Ni, Cu, Zr, Sr, Cs,          |
|Zn, & Mo added to enable modeling .  Nb isn't in data base.            |
|                                                                       |
|                                                                       |
|This run uses revised data base, with essentially no organics.  Also, |
|several to many other unlikely aqueous species removed.                |
|                                                                       |
|Electrical balancing is on Cl-.  These data do not agree exactly with |
|those reported in the SCP.  CO2 and O2 fixed at atmospheric values.   |
|                                                                       |
|  This run uses the revised data base, incorporating SKB data.         |
|                                                                       |
|  Purpose: To determine barium solubility This run represents          |
|  a run with a barium content that just saturates the first Ba         |
|  mineral ( witherite  ) to precipitate.                               |
|                            References                                 |
|                                                                       |
|Harrar, J. E., Carley, J. F., Isherwood, W. F., and Raber, E., 1990,   |
|  Report of the Committee to Review the Use of J-13 Well Water in      |
|  Nevada Nuclear Waste Storage Investigations: UCID-21867, Lawrence    |
|  Livermore National Laboratory, Livermore, California.                |
|-----------------------------------------------------------------------|
|Temperature (C)         | 25.00        |Density(gm/cm3)|  1.00000      |
|-----------------------------------------------------------------------|
|Total Dissolved Salts   |              | mg/kg | mg/l  |*not used      |
|-----------------------------------------------------------------------------|
|Electrical Balancing on |Cl-                     | code selects| not performed|
|-----------------------------------------------------------------------------|
| SPECIES                | BASIS SWITCH/CONSTRAINT| CONC/ETC  | UNITS OR TYPE  |
|-----------------------------------------------------------------------------|
|redox                   |                        |-6.7778E-01|logfo2          |
```

Na+		1.9922E-03	molality
SiO2(aq)		1.0169E-03	molality
Ca++		3.2437E-04	molality
K+		1.2891E-04	molality
Mg++		8.2699E-05	molality
H+		7.4100	pH
HCO3-	CO2(g)	-3.5000	log fugacity
F-		1.1475E-04	molality
Cl-		2.0140E-04	molality
NH3(aq)	NO3-	0.142 E-03	molality
SO4--		1.9154E-04	molality
B(OH)3(aq)		1.2388E-05	molality
HPO4--		1.2711E-06	molality
Al+++		1.4825E-06	molality
Mn++		7.2809E-18	molality
Fe++		1.0000E-18	molality
CrO4--		3.4485E-07	molality
Cu++		1.05000E-14	molality
MoO4--		1.00000E-10	molality
Cs+		1.00000E-10	molality
Li+		1.00000E-10	molality
Ni++		1.00000E-10	molality
La+++		1.00000E-14	molality
Nd+++		1.00000E-14	molality
Sm+++		1.00000E-14	molality
Ce+++		1.00000E-24	molality
Pu++++		1.00000E-14	molality
Gd+++		1.00000E-14	molality
UO2++		1.00000E-14	molality
Sr++		1.00000E-10	molality
Ba++		3.00000E-07	molality
Ti(OH)4(aq)		1.00000E-10	molality
Zn++		1.00000E-10	molality
Zr(OH)2++		1.00000E-20	molality
Pb++		1.00000E-10	molality

Input Solid Solutions

none			

SUPPRESSED SPECIES	(suppress,replace,augmentk,augmentg)		value
Phlogopite	mineral	suppress	0.00000E+00
Annite	mineral	suppress	0.00000E+00
Clinochlore-14A	mineral	suppress	0.00000E+00
Daphnite-14A	mineral	suppress	0.00000E+00
Clinozoisite	mineral	suppress	0.00000E+00
Epidote	mineral	suppress	0.00000E+00
Epidote-ord	mineral	suppress	0.00000E+00
Andradite	mineral	suppress	0.00000E+00
Grossular	mineral	suppress	0.00000E+00
Enstatite	mineral	suppress	0.00000E+00
Ferrosilite	mineral	suppress	0.00000E+00
Pyrite	mineral	suppress	0.00000E+00
Pyrrhotite	mineral	suppress	0.00000E+00
Troilite	mineral	suppress	0.00000E+00
Alabandite	mineral	suppress	0.00000E+00
Brezinaite	mineral	suppress	0.00000E+00
Chalcocite	mineral	suppress	0.00000E+00
Covellite	mineral	suppress	0.00000E+00
Millerite	mineral	suppress	0.00000E+00
Polydymite	mineral	suppress	0.00000E+00
Vaesite	mineral	suppress	0.00000E+00

```
| Heazlewoodite          | mineral        | suppress | 0.00000E+00     |
| Galena                 | mineral        | suppress | 0.00000E+00     |
| Sulfur                 | mineral        | suppress | 0.00000E+00     |
| CaZrO3                 | mineral        | suppress | 0.00000E+00     |
| BaZrO3                 | mineral        | suppress | 0.00000E+00     |
| SrZrO3                 | mineral        | suppress | 0.00000E+00     |
| U2S3                   | mineral        | suppress | 0.00000E+00     |
| U3S5                   | mineral        | suppress | 0.00000E+00     |
| US2                    | mineral        | suppress | 0.00000E+00     |
| US3                    | mineral        | suppress | 0.00000E+00     |
| US                     | mineral        | suppress | 0.00000E+00     |
| US1.9                  | mineral        | suppress | 0.00000E+00     |
| U3P4                   | mineral        | suppress | 0.00000E+00     |
| UP                     | mineral        | suppress | 0.00000E+00     |
| UP2                    | mineral        | suppress | 0.00000E+00     |
| HS-                    | aqueous        | suppress | 0.00000E+00     |
| H2S(aq)                | aqueous        | suppress | 0.00000E+00     |
| S--                    | aqueous        | suppress | 0.00000E+00     |
|-------------------------------------------------------------------------|
|OPTIONS                                                                  |
|-------------------------------------------------------------------------|
| - SOLID SOLUTIONS -                                                     |
|     ignore solid solutions                                              |
|   * process hypothetical solid solutions                                |
|     process input and hypothetical solid solutions                      |
| - LOADING OF SPECIES INTO MEMORY -                                      |
|   * does nothing                                                        |
|     lists species loaded into memory                                    |
| - ECHO DATABASE INFORMATION -                                           |
|   * does nothing                                                        |
|     lists all reactions                                                 |
|     lists reactions and log K values                                    |
|     lists reactions, log K values and polynomial coef.                  |
| - LIST OF AQUEOUS SPECIES (ordering) -                                  |
|   * in order of decreasing concentration                                |
|     in same order as input file                                         |
| - LIST OF AQUEOUS SPECIES (concentration limit) -                       |
|     all species                                                         |
|     only species > 10**-20 molal                                        |
|   * only species > 10**-12 molal                                        |
|     not printed                                                         |
| - LIST OF AQUEOUS SPECIES (by element) -                                |
|   * print major species                                                 |
|     print all species                                                   |
|     don't print                                                         |
| - MINERAL SATURATION STATES -                                           |
|   * print if affinity > -10 kcals                                       |
|     print all                                                           |
|     don't print                                                         |
| - pH SCALE CONVENTION -                                                 |
|   * modified NBS                                                        |
|     internal                                                            |
|     rational                                                            |
| - ACTIVITY COEFFICIENT OPTIONS -                                        |
|   * use B-dot equation                                                  |
|     Davies' equation                                                    |
|     Pitzer's equations                                                  |
| - AUTO BASIS SWITCHING -                                                |
|   * off                                                                 |
|     on                                                                  |
| - PITZER DATABASE INFORMATION -                                         |
|   * print only warnings                                                 |
|     print species in model and number of Pitzer coefficients            |
```

```
|     print species in model and names of Pitzer coefficients          |
| - PICKUP FILE -                                                      |
|   * write pickup file                                                |
|     don't write pickup file                                          |
| - LIST MEAN IONIC PROPERTIES -                                       |
|   * don't print                                                      |
|     print                                                            |
| - LIST AQUEOUS SPECIES, ION SIZES, AND HYDRATION NUMBERS -           |
|     print                                                            |
|   * don't print                                                      |
| - CONVERGENCE CRITERIA -                                             |
|   * test both residual functions and correction terms                |
|     test only residual functions                                     |
|----------------------------------------------------------------------|
|DEBUGGING SWITCHES (0 = off, 1,2 = on                                 |
|----------------------------------------------------------------------|
|0  generic debugging information                                      |2
|0  print details of pre-Newton-Raphson iteration                      |2
|0  print details of Newton-Raphson iteration                          |
|0  print details of stoichiometric factors                            |2
|0  print details of stoichiometric factors calculation                |
|0  write reactions on RLIST                                           |
|0  list stoichiometric concentrations of master species               |
|0  request iteration variables to be killed                           |
|----------------------------------------------------------------------|
|DEVELOPMENT OPTIONS  (used for code development)                      |
|----------------------------------------------------------------------|
| none                                                                 |
|----------------------------------------------------------------------|
|TOLERANCES                  (desired values)        (defaults)        |
|----------------------------------------------------------------------|
|      residual functions  |                      |1.0e-10  tolbt     |
|        correction terms  |                      |1.0e-10  toldl     |
|        saturation state  |                      |0.5      tolsat    |
|number of N-R iterations  |                      |30       itermx    |
|----------------------------------------------------------------------|

 --- The input file has been successfully read ---

 --- Reading the data1 file ---

 --- The data1 file has been successfully read ---

 * note - (eqlib/inbdot) The following aqueous species
       have been assigned a default hard core diameter of
         4.000 Angstroms-
         Cu(NO2)2(aq)
         Nd(HPO4)2-

 The species Phlogopite               has been user-suppressed

 The species Annite                   has been user-suppressed

 The species Clinochlore-14A          has been user-suppressed

 The species Daphnite-14A             has been user-suppressed

 The species Clinozoisite             has been user-suppressed

 The species Epidote                  has been user-suppressed

 The species Epidote-ord              has been user-suppressed
```

```
The species Andradite                has been user-suppressed
The species Grossular                has been user-suppressed
The species Enstatite                has been user-suppressed
The species Ferrosilite              has been user-suppressed
The species Pyrite                   has been user-suppressed
The species Pyrrhotite               has been user-suppressed
The species Troilite                 has been user-suppressed
The species Alabandite               has been user-suppressed
The species Brezinaite               has been user-suppressed
The species Chalcocite               has been user-suppressed
The species Covellite                has been user-suppressed
The species Millerite                has been user-suppressed
The species Polydymite               has been user-suppressed
The species Vaesite                  has been user-suppressed
The species Heazlewoodite            has been user-suppressed
The species Galena                   has been user-suppressed
The species Sulfur                   has been user-suppressed
The species CaZrO3                   has been user-suppressed
The species BaZrO3                   has been user-suppressed
The species SrZrO3                   has been user-suppressed
The species U2S3                     has been user-suppressed
The species U3S5                     has been user-suppressed
The species US2                      has been user-suppressed
The species US3                      has been user-suppressed
The species US                       has been user-suppressed
The species US1.9                    has been user-suppressed
The species U3P4                     has been user-suppressed
The species UP                       has been user-suppressed
The species UP2                      has been user-suppressed
The species HS-                      has been user-suppressed
The species H2S(aq)                  has been user-suppressed
The species S--                      has been user-suppressed
```

```
eeee   qqq   33333  n   n  rrrr
e     q   q      3  nn  n  r   r
eeee  q   q    33   n n n  rrrr
e     q q q      3  n  nn  r  r
eeee   qqq   3333   n   n  r   r
          q
```

EQ3NR, version 7.2b (R139   )
 supported by EQLIB, version 7.2b (R168   )

```
|EQ3NR input file name= j13solBa.3i                                      |
|Description= "J-13 well water, barium solubility                        |
|Version level= 7.2b                                                     |
|Created 01/22/99    Creator= D. H. Lester                               |
|Revised             Revisor=                                            |
|                                                                        |
|  Water from well J-13 at the Nevada Test Site. The composition         |
|is nearly identical to that in the EQ3NR test case input file j13w.3i,|
|which is based on data reported by Harrar et al. (1990) and on p. 3 of|
|Preliminary Scenario Definitions, May 17, 1996, except for fixing of  |
|bicarbonate via fixed fugacity of CO2 and pH.  Al, Fe, Mn, etc. re-   |
|tained, as these are needed to model reaction with tuff, etc.  traces |
|of Pu, U, Gd, Ba, La, Nd, Ce, Sm, Pb, Cr, Ni, Cu, Zr, Sr, Cs,          |
|Zn, & Mo added to enable modeling .  Nb isn't in data base.             |
|                                                                        |
|                                                                        |
|This run uses revised data base, with essentially no organics.  Also, |
|several to many other unlikely aqueous species removed.                |
|                                                                        |
|Electrical balancing is on Cl-.  These data do not agree exactly with |
|those reported in the SCP.  CO2 and O2 fixed at atmospheric values.    |
|                                                                        |
|  This run uses the revised data base, incorporating SKB data.          |
|                                                                        |
|  Purpose: To determine barium solubility This run represents           |
|  a run with a barium content that just saturates the first Ba          |
|  mineral ( witherite  ) to precipitate.                                |
|                             References                                 |
|                                                                        |
|Harrar, J. E., Carley, J. F., Isherwood, W. F., and Raber, E., 1990,   |
|  Report of the Committee to Review the Use of J-13 Well Water in       |
|  Nevada Nuclear Waste Storage Investigations: UCID-21867, Lawrence     |
|  Livermore National Laboratory, Livermore, California.                 |
```

data0.nuc.dhl
THERMODYNAMIC DATABASE
This data base is a modified version of data0.nuc.R3 as changed by D.H. Lester

The data base datao.nuc.R3is a composite of data0.alt.V8.R5 and data0.b19.skb, by P. L. Cloke on 15-aug-96. It was specially modified for evaluation of nuclear criticality needs on the Yucca Mt. Project. Six EQ3NR runs were made using input data for elements in J13 well water and components of the current design for waste glass packages. Three runs were saturated with air, at pH 4, 7.41, and 10. The other three were for highly reducing conditions, log fO2 =

-80, and carbonated limited to the solubility of atmospheric CO2 in water, 1.0 E-5 m. Solid and solution species appearing on the outputs and which constituted less than 0.1% of dissolved elements, or whose affinities did not exceed 1.0 E-10, on any of the outputs, were deleted from this data base.

The lanthanide data from the .skb data base replaced those in the .alt file in those cases in which there was overlap, except for the lanthanide metals. This includes replacing data for LnO2H, LnO+, and LnO2- by the .skb data for Ln(OH)3 Ln(OH()2+, and Ln(OH)4-, respectively. Ce++++ was added as well as more data for Y. Lanthanide data in the .skb base that aren't in the .alt base were added. LnPO4.xH2O, to which .skb assigned a value of 10 to x, was changed to LnPO4.H2O, in keeping with the formula for rhabdophane (and in keeping with the XRD pattern).

Exceptions: the .skb data for Eu were not entered as replacements for .alt data. The .skb data for Pm were not entered. Divalent lanthanide data were not entered.

Output package: eq3
Data set: cm2
+----------

The activity coefficients of aqueous solute species and the activity of water are calculated according to the B-dot equation plus others

Temperature= 25.00 degrees Celsius
pressure= 1.0132 bars

```
  79 elements are in the data base
 100 elements can be loaded into memory
  36 elements are active in this problem

1170 aqueous species are in the data base
 645 aqueous species were loaded into memory
2000 aqueous species can be loaded into memory
 559 aqueous species are active in this problem

1090 aqueous reactions are in the data base
 565 aqueous reactions were loaded into memory
1899 aqueous reactions can be loaded into memory

1034 minerals are in the data base
 672 minerals were loaded into memory
 850 minerals can be loaded into memory
 634 minerals are active in this problem

  15 solid solutions are in the data base
  50 solid solutions can be loaded into memory

  87 gases are in the data base
  56 gases were loaded into memory
  80 gases can be loaded into memory
  56 gases are active in this problem
```

```
iopt1  =  0 (redox option switch)
iopt2  =  0 (automatic basis switching switch)
iopt3  =  0 (interfacing output control switch)
iopt4  =  1 (turn-on solid solutions switch)
iopt5  =  0 (not used)
iopt6  =  0 (conv. test criteria switch)
iopt7  =  0 (0/1 version 7/post-version 7 pickup file)
iopt8  =  0 (not used)
iopt9  =  0 (not used)
iopt10 =  0 (not used)


     iopg1  =  0 (act. coeff. choice)
     iopg2  =  0 (pH scale convention switch)
     iopg3  =  0 (not used)
     iopg4  =  0 (not used)
     iopg5  =  0 (not used)
     iopg6  =  0 (not used)
     iopg7  =  0 (not used)
     iopg8  =  0 (not used)
     iopg9  =  0 (not used)
     iopg10 =  0 (not used)


          iopr1  =  0 (list loading of species)
          iopr2  =  0 (list reactions and log K values)
          iopr3  =  0 (aqueous species print order control)
          iopr4  = -2 (aqueous species print cut-off control)
          iopr5  =  0 (mass balance percentages print control)
          iopr6  =  0 (mean ionic act coeff print control)
          iopr7  =  0 (mineral affinity print control)
          iopr8  = -1 (ion size and hydr. no. print control)
          iopr9  =  0 (Pitzer coefficients tabulation)
          iopr10 =  0 (print concbs array)
          iopr11 =  0 (not used)
          iopr12 =  0 (not used)
          iopr13 =  0 (not used)
          iopr14 =  0 (not used)
          iopr15 =  0 (not used)
          iopr16 =  0 (not used)
          iopr17 =  0 (not used)
          iopr18 =  0 (not used)
          iopr19 =  0 (not used)
          iopr20 =  0 (not used)


               iodb1  =  0 (print info. messages switch)
               iodb2  =  0 (print pre-Newton-Raphson optimizations switch)
               iodb3  =  0 (request iteration variables to kill)
               iodb4  =  0 (print Newton-Raphson iterations switch)
               iodb5  =  0 (list stoichiometric equivalences)
               iodb6  =  0 (controls iodb5 level of detail)
               iodb7  =  0 (write reactions on file rlist switch)
               iodb8  =  0 (not used)
               iodb9  =  0 (not used)
               iodb10 =  0 (not used)

The default redox state is constrained by log fO2 =   -0.6778 (log bars)


          Solution density =  1.00000 g/mL
```

```
     Total dissolved salts =       0.00 mg/kg solution
     Total dissolved salts =       0.00 mg/L


   Tolbt  =  0.10000E-05 (convergence tolerance on residual functions)
   Toldl  =  0.10000E-05 (convergence tolerance on correction terms)
   Tolsat =  0.50000E+00 (phase saturation tolerance, does not affect
                          convergence)


                  --- Input Constraints ---

   Species                    Csp      Jflag   Input Type/Co-species

Na+                        1.9922E-03    0    Total conc, molal
SiO2(aq)                   1.0169E-03    0    Total conc, molal
Ca++                       3.2437E-04    0    Total conc, molal
K+                         1.2891E-04    0    Total conc, molal
Mg++                       8.2699E-05    0    Total conc, molal
H+                        -7.4100E+00   16    Log activity
HCO3-                     -3.5000E+00   21    Gas equilibrium
                                                  CO2(g)

                     1.000  CO2(g)
                  +  1.000  H2O
                        ==
                     1.000  H+
                  +  1.000  HCO3-
F-                         1.1475E-04    0    Total conc, molal
Cl-                        2.0140E-04    0    Total conc, molal
NH3(aq)                    1.4200E-04    0    Total conc, molal
    switch with NO3-
SO4--                      1.9154E-04    0    Total conc, molal
B(OH)3(aq)                 1.2388E-05    0    Total conc, molal
HPO4--                     1.2711E-06    0    Total conc, molal
Al+++                      1.4825E-06    0    Total conc, molal
Mn++                       7.2809E-18    0    Total conc, molal
Fe++                       1.0000E-18    0    Total conc, molal
CrO4--                     3.4485E-07    0    Total conc, molal
Cu++                       1.0500E-14    0    Total conc, molal
MoO4--                     1.0000E-10    0    Total conc, molal
Cs+                        1.0000E-10    0    Total conc, molal
Li+                        1.0000E-10    0    Total conc, molal
Ni++                       1.0000E-10    0    Total conc, molal
La+++                      1.0000E-14    0    Total conc, molal
Nd+++                      1.0000E-14    0    Total conc, molal
Sm+++                      1.0000E-14    0    Total conc, molal
Ce+++                      1.0000E-24    0    Total conc, molal
Pu++++                     1.0000E-14    0    Total conc, molal
Gd+++                      1.0000E-14    0    Total conc, molal
UO2++                      1.0000E-14    0    Total conc, molal
Sr++                       1.0000E-10    0    Total conc, molal
Ba++                       3.0000E-07    0    Total conc, molal
Ti(OH)4(aq)                1.0000E-10    0    Total conc, molal
Zn++                       1.0000E-10    0    Total conc, molal
Zr(OH)2++                  1.0000E-20    0    Total conc, molal
Pb++                       1.0000E-10    0    Total conc, molal


Electrical balance will be achieved by adjusting
  the concentration of "Cl-                     ". Any other specified
```

constraint will be overridden.

Switching NO3- into the basis set for NH3(aq)

```
   1.000  NO3-
+  1.000  H2O
+  1.000  H+
       ==
   1.000  NH3(aq)
+  2.000  O2(g)

   1.000  NH3(aq)
+  2.000  O2(g)
       ==
   1.000  H2O
+  1.000  H+
+  1.000  NO3-
```

--- Inactive Aqueous Species ---

```
HS-                          H2S(aq)
S--
```

--- Modified Input Constraints ---

Species	Csp	Jflag	Input Type/Co-species
Al+++	1.4825E-06	0	Total conc, molal
B(OH)3(aq)	1.2388E-05	0	Total conc, molal
Ba++	3.0000E-07	0	Total conc, molal
Ca++	3.2437E-04	0	Total conc, molal
Ce+++	1.0000E-24	0	Total conc, molal
Cl-	2.0140E-04	0	Total conc, molal
CrO4--	3.4485E-07	0	Total conc, molal
Cs+	1.0000E-10	0	Total conc, molal
Cu++	1.0500E-14	0	Total conc, molal
F-	1.1475E-04	0	Total conc, molal
Fe++	1.0000E-18	0	Total conc, molal
Gd+++	1.0000E-14	0	Total conc, molal
H+	-7.4100E+00	16	Log activity
HCO3-	-3.5000E+00	21	Gas equilibrium CO2(g)

```
   1.000  CO2(g)
+  1.000  H2O
       ==
   1.000  H+
+  1.000  HCO3-
```

HCO3-	-3.5000E+00	21	Gas equilibrium
HPO4--	1.2711E-06	0	Total conc, molal
K+	1.2891E-04	0	Total conc, molal
La+++	1.0000E-14	0	Total conc, molal
Li+	1.0000E-10	0	Total conc, molal
Mg++	8.2699E-05	0	Total conc, molal
Mn++	7.2809E-18	0	Total conc, molal
MoO4--	1.0000E-10	0	Total conc, molal
NO3-	1.4200E-04	0	Total conc, molal
Na+	1.9922E-03	0	Total conc, molal
Nd+++	1.0000E-14	0	Total conc, molal

```
Ni++                        1.0000E-10    0    Total conc, molal
Pb++                        1.0000E-10    0    Total conc, molal
Pu++++                      1.0000E-14    0    Total conc, molal
SO4--                       1.9154E-04    0    Total conc, molal
SiO2(aq)                    1.0169E-03    0    Total conc, molal
Sm+++                       1.0000E-14    0    Total conc, molal
Sr++                        1.0000E-10    0    Total conc, molal
Ti(OH)4(aq)                 1.0000E-10    0    Total conc, molal
UO2++                       1.0000E-14    0    Total conc, molal
Zn++                        1.0000E-10    0    Total conc, molal
Zr(OH)2++                   1.0000E-20    0    Total conc, molal
HS-                         0.0000E+00   30    Eliminated species
S2--                        0.0000E+00   30    Eliminated species
S2O3--                      0.0000E+00   30    Eliminated species
CN-                         0.0000E+00   30    Eliminated species
ClO-                        0.0000E+00   30    Eliminated species
ClO2-                       0.0000E+00   30    Eliminated species
ClO3-                       0.0000E+00   30    Eliminated species
ClO4-                       0.0000E+00   30    Eliminated species
Cr++                        0.0000E+00   30    Eliminated species
Cr+++                       0.0000E+00   30    Eliminated species
CrO4---                     0.0000E+00   30    Eliminated species
Cu+                         0.0000E+00   30    Eliminated species
Fe+++                       0.0000E+00   30    Eliminated species
H2(aq)                      0.0000E+00   27    Dependent species
HSO5-                       0.0000E+00   30    Eliminated species
Mn+++                       0.0000E+00   30    Eliminated species
MnO4--                      0.0000E+00   30    Eliminated species
N2(aq)                      0.0000E+00   30    Eliminated species
N3-                         0.0000E+00   30    Eliminated species
NO2-                        0.0000E+00   30    Eliminated species
NH3(aq)                     0.0000E+00   30    Eliminated species
O2(aq)                      0.0000E+00   27    Dependent species
Pb++++                      0.0000E+00   30    Eliminated species
Pu+++                       0.0000E+00   30    Eliminated species
PuO2+                       0.0000E+00   30    Eliminated species
PuO2++                      0.0000E+00   30    Eliminated species
S2O4--                      0.0000E+00   30    Eliminated species
S2O6--                      0.0000E+00   30    Eliminated species
S2O8--                      0.0000E+00   30    Eliminated species
S3--                        0.0000E+00   30    Eliminated species
S3O6--                      0.0000E+00   30    Eliminated species
S4--                        0.0000E+00   30    Eliminated species
S4O6--                      0.0000E+00   30    Eliminated species
S5--                        0.0000E+00   30    Eliminated species
S5O6--                      0.0000E+00   30    Eliminated species
SCN-                        0.0000E+00   30    Eliminated species
SO3--                       0.0000E+00   30    Eliminated species
Sm++                        0.0000E+00   30    Eliminated species
U+++                        0.0000E+00   30    Eliminated species
U++++                       0.0000E+00   30    Eliminated species
UO2+                        0.0000E+00   30    Eliminated species
Zr++++                      0.0000E+00   30    Eliminated species



* note - (eq3nr/arrset) Optimization ended
      outside requested limits.


iter=   0
       del(                 )=  0.00000E+00, delfnc=  0.00000E+00
```

```
      beta(conc    Cl-     )=  5.03405E-01, betfnc=  0.00000E+00
        bbig=  5.03405E-01, ubbig= Cl-
        bneg= -2.44457E-09, ubneg= B(OH)3(aq)
        bgamx=  1.38645E-06, ubgamx= (PuO2)3(CO3)6(6-)
        bsigmm= -1.14095E-06
        bxi= -3.43161E-06
        btfcnr=  0.00000E+00

iter=   1
       del(conc    Cl-     )=  4.21104E+00, delfnc=  0.00000E+00
      Relaxation factor=  0.23747
      Relaxed del(conc    Cl-     )=  1.00000E+00
      beta(conc    Pu++++  )= -1.00536E-01, betfnc=  8.00288E-01
        bbig=  2.78487E-02, ubbig= Pb++
        bneg= -1.00536E-01, ubneg= Pu++++
        bgamx= -1.32591E-01, ubgamx= (PuO2)3(CO3)6(6-)
        bsigmm=  3.93430E-01
        bxi=  3.59231E-01
        btfcnr=  9.41659E-01

iter=   2
       del(conc    Pu++++  )=  5.78149E-02, delfnc=  9.86271E-01
      beta(conc    Gd+++   )= -2.67819E-03, betfnc=  9.73361E-01
        bbig=  3.56622E-04, ubbig= Pb++
        bneg= -2.67819E-03, ubneg= Gd+++
        bgamx= -9.89599E-03, ubgamx= (PuO2)3(CO3)6(6-)
        bsigmm=  2.25903E-02
        bxi=  2.15981E-02
        btfcnr=  9.41650E-01

iter=   3
       del(conc    Al+++   )=  1.70186E-03, delfnc=  9.70564E-01
      beta(conc    Pu++++  )=  2.48049E-04, betfnc=  9.07382E-01
        bbig=  2.48049E-04, ubbig= Pu++++
        bneg= -1.00480E-06, ubneg= Cl-
        bgamx=  3.07937E-04, ubgamx= (PuO2)3(CO3)6(6-)
        bsigmm= -7.44585E-04
        bxi= -6.61787E-04
        btfcnr=  9.98649E-01

iter=   4
       del(conc    Pu++++  )= -1.28963E-04, delfnc=  9.24222E-01
      beta(conc    Pu++++  )=  8.13439E-07, betfnc=  9.96721E-01
        bbig=  8.13439E-07, ubbig= Pu++++
        bneg= -1.72171E-09, ubneg= B(OH)3(aq)
        bgamx=  9.80485E-07, ubgamx= (PuO2)3(CO3)6(6-)
        bsigmm= -1.04351E-06
        bxi= -2.10815E-06
        btfcnr=  9.99875E-01

iter=   5
       del(conc    Pu++++  )= -4.21129E-07, delfnc=  9.96734E-01
      beta(conc    Pu++++  )=  1.50750E-09, betfnc=  9.98147E-01
        bbig=  1.50750E-09, ubbig= Pu++++
        bneg= -3.32017E-12, ubneg= B(OH)3(aq)
        bgamx=  1.88849E-09, ubgamx= (PuO2)3(CO3)6(6-)
        bsigmm= -4.97232E-10
        bxi= -4.06047E-09
        btfcnr=  1.00000E+00


Hybrid Newton-Raphson iteration converged in   5 steps.
```

--- Summary of the Aqueous Solution ---

--- Elemental Composition of the Aqueous Solution ---

Element	mg/L	mg/kg	Moles/kg
O	0.88817E+06	0.88817E+06	0.5551266484E+02
Al	0.40000E-01	0.40000E-01	0.1482500001E-05
B	0.13393	0.13393	0.1238800000E-04
Ba	0.41198E-01	0.41198E-01	0.3000000000E-06
Ca	13.000	13.000	0.3243700000E-03
Ce	0.14012E-18	0.14012E-18	0.1000000000E-23
Cl	76.362	76.362	0.2153913581E-02
Cr	0.17931E-01	0.17931E-01	0.3448500000E-06
Cs	0.13291E-04	0.13291E-04	0.1000000000E-09
Cu	0.66723E-09	0.66723E-09	0.1050000000E-13
F	2.1801	2.1801	0.1147500000E-03
Fe	0.55847E-13	0.55847E-13	0.1000000000E-17
Gd	0.15725E-08	0.15725E-08	0.1000000001E-13
H	0.11190E+06	0.11190E+06	0.1110170459E+03
C	1.7384	1.7384	0.1447370208E-03
P	0.39371E-01	0.39371E-01	0.1271100000E-05
K	5.0402	5.0402	0.1289100000E-03
La	0.13891E-08	0.13891E-08	0.1000000000E-13
Li	0.69410E-06	0.69410E-06	0.1000000000E-09
Mg	2.0100	2.0100	0.8269900000E-04
Mn	0.40000E-12	0.40000E-12	0.7280900000E-17
Mo	0.95940E-05	0.95940E-05	0.1000000000E-09
N	1.9890	1.9890	0.1420000000E-03
Na	45.800	45.800	0.1992200000E-02
Nd	0.14424E-08	0.14424E-08	0.1000000000E-13
Ni	0.58690E-05	0.58690E-05	0.1000000000E-09
Pb	0.20720E-04	0.20720E-04	0.1000000000E-09
Pu	0.24400E-08	0.24400E-08	0.1000000001E-13
S	6.1419	6.1419	0.1915400000E-03
Si	28.560	28.560	0.1016900000E-02
Sm	0.15036E-08	0.15036E-08	0.1000000000E-13
Sr	0.87620E-05	0.87620E-05	0.1000000000E-09
Ti	0.47880E-05	0.47880E-05	0.1000000000E-09
U	0.23803E-08	0.23803E-08	0.1000000000E-13
Zn	0.65390E-05	0.65390E-05	0.1000000000E-09
Zr	0.91224E-15	0.91224E-15	0.1000000000E-19

--- Elemental Composition as Strict Basis Species ---

Species	mg/L	mg/kg	Moles/kg
H2O	0.10001E+07	0.10001E+07	0.5551266484E+02
Al+++	0.40000E-01	0.40000E-01	0.1482500001E-05
B(OH)3(aq)	0.76599	0.76599	0.1238800000E-04
Ba++	0.41198E-01	0.41198E-01	0.3000000000E-06
Ca++	13.000	13.000	0.3243700000E-03
Ce+++	0.14012E-18	0.14012E-18	0.1000000000E-23
Cl-	76.362	76.362	0.2153913581E-02
CrO4--	0.40000E-01	0.40000E-01	0.3448500000E-06
Cs+	0.13291E-04	0.13291E-04	0.1000000000E-09
Cu++	0.66723E-09	0.66723E-09	0.1050000000E-13

F-	2.1801	2.1801	0.1147500000E-03
Fe++	0.55847E-13	0.55847E-13	0.1000000000E-17
Gd+++	0.15725E-08	0.15725E-08	0.1000000001E-13
H+	0.11190E+06	0.11190E+06	0.1110170459E+03
HCO3-	8.8314	8.8314	0.1447370208E-03
HPO4--	0.12200	0.12200	0.1271100000E-05
K+	5.0402	5.0402	0.1289100000E-03
La+++	0.13891E-08	0.13891E-08	0.1000000000E-13
Li+	0.69410E-06	0.69410E-06	0.1000000000E-09
Mg++	2.0100	2.0100	0.8269900000E-04
Mn++	0.40000E-12	0.40000E-12	0.7280900000E-17
MoO4--	0.15994E-04	0.15994E-04	0.1000000000E-09
NH3(aq)	2.4183	2.4183	0.1420000000E-03
Na+	45.800	45.800	0.1992200000E-02
Nd+++	0.14424E-08	0.14424E-08	0.1000000000E-13
Ni++	0.58690E-05	0.58690E-05	0.1000000000E-09
Pb++	0.20720E-04	0.20720E-04	0.1000000000E-09
Pu++++	0.24400E-08	0.24400E-08	0.1000000001E-13
SO4--	18.400	18.400	0.1915400000E-03
SiO2(aq)	61.100	61.100	0.1016900000E-02
Sm+++	0.15036E-08	0.15036E-08	0.1000000000E-13
Sr++	0.87620E-05	0.87620E-05	0.1000000000E-09
Ti(OH)4(aq)	0.11591E-04	0.11591E-04	0.1000000000E-09
UO2++	0.27003E-08	0.27003E-08	0.1000000000E-13
Zn++	0.65390E-05	0.65390E-05	0.1000000000E-09
Zr(OH)2++	0.12524E-14	0.12524E-14	0.1000000000E-19

--- Equivalent Composition of the Aqueous Solution ---

--- Original Basis ---

Species	Moles/kg H2O
H2O	0.5551266484E+02
Al+++	0.1482500001E-05
B(OH)3(aq)	0.1238800000E-04
Ba++	0.3000000000E-06
Ca++	0.3243700000E-03
Ce+++	0.1000000000E-23
Cl-	0.2153913581E-02
CrO4--	0.3448500000E-06
Cs+	0.1000000000E-09
Cu++	0.1050000000E-13
F-	0.1147500000E-03
Fe++	0.1000000000E-17
Gd+++	0.1000000001E-13
H+	0.1110170459E+03
HCO3-	0.1447370208E-03
HPO4--	0.1271100000E-05
K+	0.1289100000E-03
La+++	0.1000000000E-13
Li+	0.1000000000E-09
Mg++	0.8269900000E-04
Mn++	0.7280900000E-17
MoO4--	0.1000000000E-09
NH3(aq)	0.1420000000E-03
Na+	0.1992200000E-02
Nd+++	0.1000000000E-13
Ni++	0.1000000000E-09
Pb++	0.1000000000E-09
Pu++++	0.1000000001E-13
SO4--	0.1915400000E-03

SiO2(aq)	0.1016900000E-02
Sm+++	0.1000000000E-13
Sr++	0.1000000000E-09
Ti(OH)4(aq)	0.1000000000E-09
UO2++	0.1000000000E-13
Zn++	0.1000000000E-09
Zr(OH)2++	0.1000000000E-19

--- Current Basis (cte) ---

Species	Moles/kg H2O
H2O	0.5551266484E+02
Al+++	0.1482500001E-05
B(OH)3(aq)	0.1238800000E-04
Ba++	0.3000000000E-06
Ca++	0.3243700000E-03
Ce+++	0.1000000000E-23
Cl-	0.2153913581E-02
CrO4--	0.3448500000E-06
Cs+	0.1000000000E-09
Cu++	0.1050000000E-13
F-	0.1147500000E-03
Fe++	0.1000000000E-17
Gd+++	0.1000000001E-13
H+	0.1110170459E+03
HCO3-	0.1447370208E-03
HPO4--	0.1271100000E-05
K+	0.1289100000E-03
La+++	0.1000000000E-13
Li+	0.1000000000E-09
Mg++	0.8269900000E-04
Mn++	0.7280900000E-17
MoO4--	0.1000000000E-09
NO3-	0.1420000000E-03
Na+	0.1992200000E-02
Nd+++	0.1000000000E-13
Ni++	0.1000000000E-09
Pb++	0.1000000000E-09
Pu++++	0.1000000001E-13
SO4--	0.1915400000E-03
SiO2(aq)	0.1016900000E-02
Sm+++	0.1000000000E-13
Sr++	0.1000000000E-09
Ti(OH)4(aq)	0.1000000000E-09
UO2++	0.1000000000E-13
Zn++	0.1000000000E-09
Zr(OH)2++	0.1000000000E-19

Single ion activities and activity coefficients are here defined
with respect to the modified NBS pH scale

	pH	Eh	pe
modified NBS pH scale	7.4100	0.7807	1.3197E+01
rational pH scale	7.3837	0.7822	1.3223E+01

pHCl = 10.1047

```
                    Activity of water =  0.99988
                Log activity of water =   -0.00005

          True osmotic coefficient=    0.97804
Stoichiometric osmotic coefficient=    0.97472

          Sum of true molalities=    0.0065618428386
Sum of stoichiometric molalities=    0.0065841944168

          True ionic strength=    0.0035006601857
Stoichiometric ionic strength=    0.0035515783951


 --- Electrical Balance Totals ---


                                      equiv/kg H2O

            Sigma(mz) cations =     0.2917473795E-02
            Sigma(mz) anions  =    -0.2917473795E-02
                 Total charge =     0.5834947589E-02
                  Mean charge =     0.2917473795E-02
             Charge imbalance =    -0.2072007760E-15

  Total charge = sigma(mz) cations + abs ( sigma(mz) anions )
  Mean charge = 1/2 total charge


  The electrical imbalance is

       -0.355E-11 per cent of the total charge
       -0.710E-11 per cent of the mean charge
       -0.710E-11 per cent of sigma(mz) cations
       -0.710E-11 per cent of abs ( sigma(mz) anions )


 --- Electrical Balancing on Cl-                        ---

          mg/L          mg/kg           Moles/kg

input       7.1402        7.1402        0.2014000000E-03
final      76.362        76.362         0.2153913581E-02
adj        69.222        69.222         0.1952513581E-02


            --- Activity Ratios of Ions -----

 Log ( act(Al+++                  ) / act(H+)xx 3 ) =      9.5659
 Log ( act(B(OH)3(aq)             )               ) =     -4.9139
 Log ( act(Ba++                   ) / act(H+)xx 2 ) =      8.1850
 Log ( act(Ca++                   ) / act(H+)xx 2 ) =     11.2141
 Log ( act(Ce+++                  ) / act(H+)xx 3 ) =     -2.9427
 Log ( act(Cl-                    ) x act(H+)xx 1 ) =    -10.1047
 Log ( act(CrO4--                 ) x act(H+)xx 2 ) =    -21.4347
 Log ( act(Cs+                    ) / act(H+)xx 1 ) =     -2.6200
 Log ( act(Cu++                   ) / act(H+)xx 2 ) =      0.2253
 Log ( act(F-                     ) x act(H+)xx 1 ) =    -11.3792
 Log ( act(Fe++                   ) / act(H+)xx 2 ) =    -13.6355
 Log ( act(Gd+++                  ) / act(H+)xx 3 ) =      6.8159
 Log ( act(HCO3-                  ) x act(H+)xx 1 ) =    -11.3137
 Log ( act(HPO4--                 ) x act(H+)xx 2 ) =    -21.0528
 Log ( act(K+                     ) / act(H+)xx 1 ) =      3.4907
```

```
Log ( act(La+++                  ) / act(H+)xx 3 ) =      7.4167
Log ( act(Li+                    ) / act(H+)xx 1 ) =     -2.6180
Log ( act(Mg++                   ) / act(H+)xx 2 ) =     10.6173
Log ( act(Mn++                   ) / act(H+)xx 2 ) =     -2.4445
Log ( act(MoO4--                 ) x act(H+)xx 2 ) =    -24.9298
Log ( act(NH3(aq)                )                 ) =    -66.2340
Log ( act(Na+                    ) / act(H+)xx 1 ) =      4.6801
Log ( act(Nd+++                  ) / act(H+)xx 3 ) =      7.0628
Log ( act(Ni++                   ) / act(H+)xx 2 ) =      4.7039
Log ( act(Pb++                   ) / act(H+)xx 2 ) =      4.6876
Log ( act(Pu++++                 ) / act(H+)xx 4 ) =     -8.9089
Log ( act(SO4--                  ) x act(H+)xx 2 ) =    -18.6690
Log ( act(SiO2(aq)               )                 ) =     -2.9941
Log ( act(Sm+++                  ) / act(H+)xx 3 ) =      6.8672
Log ( act(Sr++                   ) / act(H+)xx 2 ) =      4.6983
Log ( act(Ti(OH)4(aq)            )                 ) =    -10.0000
Log ( act(UO2++                  ) / act(H+)xx 2 ) =     -3.7653
Log ( act(Zn++                   ) / act(H+)xx 2 ) =      4.6970
Log ( act(Zr(OH)2++              ) / act(H+)xx 2 ) =    -18.7718
Log ( act(S2--                   ) x act(H+)xx 2 ) =   *********
Log ( act(S2O3--                 ) x act(H+)xx 2 ) =   -163.7253
Log ( act(CN-                    ) x act(H+)xx 1 ) =   -131.8101
Log ( act(ClO-                   ) x act(H+)xx 1 ) =    -26.9942
Log ( act(ClO2-                  ) x act(H+)xx 1 ) =    -36.7888
Log ( act(ClO3-                  ) x act(H+)xx 1 ) =    -32.7297
Log ( act(ClO4-                  ) x act(H+)xx 1 ) =    -32.9660
Log ( act(Cr++                   ) / act(H+)xx 2 ) =    -39.4958
Log ( act(Cr+++                  ) / act(H+)xx 3 ) =    -10.3683
Log ( act(CrO4---                ) x act(H+)xx 3 ) =    -40.3117
Log ( act(Cu+                    ) / act(H+)xx 1 ) =    -17.6511
Log ( act(Fe+++                  ) / act(H+)xx 3 ) =     -6.0396
Log ( act(H2(aq)                 )                 ) =    -44.3187
Log ( act(HSO5-                  ) x act(H+)xx 1 ) =    -37.7436
Log ( act(Mn+++                  ) / act(H+)xx 3 ) =     -7.4196
Log ( act(MnO4--                 ) x act(H+)xx 2 ) =    -38.4352
Log ( act(N2(aq)                 )                 ) =    -21.3711
Log ( act(N3-                    ) x act(H+)xx 1 ) =   -108.8861
Log ( act(NO2-                   ) x act(H+)xx 1 ) =    -24.7329
Log ( act(NO3-                   ) x act(H+)xx 1 ) =    -11.2860
Log ( act(O2(aq)                 )                 ) =     -3.5761
Log ( act(Pb++++                 ) / act(H+)xx 4 ) =    -11.2807
Log ( act(Pu+++                  ) / act(H+)xx 3 ) =    -12.5220
Log ( act(PuO2+                  ) / act(H+)xx 1 ) =     -6.8661
Log ( act(PuO2++                 ) / act(H+)xx 2 ) =     -2.5697
Log ( act(S2O4--                 ) x act(H+)xx 2 ) =   -150.4303
Log ( act(S2O6--                 ) x act(H+)xx 2 ) =    -86.9699
Log ( act(S2O8--                 ) x act(H+)xx 2 ) =    -61.6260
Log ( act(S3--                   ) x act(H+)xx 2 ) =   *********
Log ( act(S3O6--                 ) x act(H+)xx 2 ) =   -194.9597
Log ( act(S4--                   ) x act(H+)xx 2 ) =   *********
Log ( act(S4O6--                 ) x act(H+)xx 2 ) =   -287.0432
Log ( act(S5--                   ) x act(H+)xx 2 ) =   *********
Log ( act(S5O6--                 ) x act(H+)xx 2 ) =   -408.0072
Log ( act(SCN-                   ) x act(H+)xx 1 ) =   *********
Log ( act(SO3--                  ) x act(H+)xx 2 ) =    -63.5053
Log ( act(Sm++                   ) / act(H+)xx 2 ) =    -40.2012
Log ( act(U+++                   ) / act(H+)xx 3 ) =    -65.8860
Log ( act(U++++                  ) / act(H+)xx 4 ) =    -35.9262
Log ( act(UO2+                   ) / act(H+)xx 1 ) =    -22.8881
Log ( act(Zr++++                 ) / act(H+)xx 4 ) =    -18.5332
```

(Species with concentrations .lt. 1.e-12 are not listed)

Species	Molality	Log molality	Log gamma	Log activity
Cl-	2.1531E-03	-2.6669	-0.0278	-2.6947
Na+	1.9891E-03	-2.7013	-0.0286	-2.7299
SiO2(aq)	1.0136E-03	-2.9941	0.0000	-2.9941
Ca++	3.1888E-04	-3.4964	-0.1095	-3.6059
O2(aq)	2.6519E-04	-3.5764	0.0004	-3.5761
SO4--	1.8273E-04	-3.7382	-0.1108	-3.8490
NO3-	1.4182E-04	-3.8483	-0.0278	-3.8760
HCO3-	1.3293E-04	-3.8764	-0.0273	-3.9037
K+	1.2876E-04	-3.8902	-0.0291	-3.9193
F-	1.1436E-04	-3.9417	-0.0275	-3.9692
Mg++	8.0015E-05	-4.0968	-0.1059	-4.2027
B(OH)3(aq)	1.2193E-05	-4.9139	0.0000	-4.9139
CO2(aq)	1.0733E-05	-4.9693	0.0004	-4.9689
CaSO4(aq)	4.5305E-06	-5.3439	0.0000	-5.3439
HSiO3-	3.0944E-06	-5.5094	-0.0273	-5.5367
MgSO4(aq)	2.2905E-06	-5.6401	0.0000	-5.6401
NaSO4-	1.8549E-06	-5.7317	-0.0273	-5.7590
AlO2-	1.3176E-06	-5.8802	-0.0273	-5.9075
HPO4--	7.5518E-07	-6.1219	-0.1108	-6.2328
NaCl(aq)	6.2855E-07	-6.2017	0.0000	-6.2017
H2PO4-	3.8894E-07	-6.4101	-0.0273	-6.4374
CaHCO3+	3.6789E-07	-6.4343	-0.0286	-6.4629
NaHCO3(aq)	3.3153E-07	-6.4795	0.0000	-6.4795
CrO4--	3.1345E-07	-6.5038	-0.1108	-6.6147
Ba++	2.9955E-07	-6.5235	-0.1115	-6.6350
OH-	2.7694E-07	-6.5576	-0.0275	-6.5852
NaHSiO3(aq)	2.4092E-07	-6.6181	0.0000	-6.6181
CO3--	1.9381E-07	-6.7126	-0.1098	-6.8225
BO2-	1.8991E-07	-6.7215	-0.0273	-6.7487
CaNO3+	1.7645E-07	-6.7534	-0.0286	-6.7820
MgF+	1.6181E-07	-6.7910	-0.0286	-6.8196
KSO4-	1.3757E-07	-6.8615	-0.0273	-6.8887
CaF+	1.3650E-07	-6.8649	-0.0286	-6.8935
HAlO2(aq)	1.3580E-07	-6.8671	0.0000	-6.8671
CaCl+	1.0773E-07	-6.9677	-0.0286	-6.9962
MgCl+	9.9135E-08	-7.0038	-0.0286	-7.0324
MgHCO3+	9.0763E-08	-7.0421	-0.0286	-7.0707
CaHPO4(aq)	7.9670E-08	-7.0987	0.0000	-7.0987
CaCO3(aq)	7.9202E-08	-7.1013	0.0000	-7.1013
H+	4.1330E-08	-7.3837	-0.0263	-7.4100
HCrO4-	3.1405E-08	-7.5030	-0.0273	-7.5303
MgHPO4(aq)	2.9819E-08	-7.5255	0.0000	-7.5255
NaF(aq)	2.0101E-08	-7.6968	0.0000	-7.6968
AlF3(aq)	1.3432E-08	-7.8718	0.0000	-7.8718
AlF2+	1.0617E-08	-7.9740	-0.0286	-8.0026
NaHPO4-	9.6508E-09	-8.0154	-0.0273	-8.0427
MgCO3(aq)	8.9893E-09	-8.0463	0.0000	-8.0463
KCl(aq)	7.7869E-09	-8.1086	0.0000	-8.1086
HF(aq)	6.1497E-09	-8.2111	0.0000	-8.2111
CaPO4-	5.4547E-09	-8.2632	-0.0273	-8.2905
Al(OH)2+	3.8894E-09	-8.4101	-0.0286	-8.4387
CaB(OH)4+	3.1372E-09	-8.5035	-0.0286	-8.5320
MgPO4-	1.8576E-09	-8.7310	-0.0273	-8.7583
NaCO3-	9.7566E-10	-9.0107	-0.0273	-9.0380
CaOH+	9.6077E-10	-9.0174	-0.0286	-9.0460
MgB(OH)4+	9.4457E-10	-9.0248	-0.0286	-9.0534
NaB(OH)4(aq)	6.1965E-10	-9.2079	0.0000	-9.2079
HSO4-	5.5890E-10	-9.2527	-0.0273	-9.2799

KHPO4-	4.5205E-10	-9.3448	-0.0273	-9.3721
NaAlO2(aq)	4.1617E-10	-9.3807	0.0000	-9.3807
AlF4-	3.8564E-10	-9.4138	-0.0273	-9.4411
AlF++	3.0137E-10	-9.5209	-0.1125	-9.6333
BaNO3+	2.6154E-10	-9.5825	-0.0286	-9.6110
CaCl2(aq)	2.2962E-10	-9.6390	0.0000	-9.6390
BaCl+	1.5891E-10	-9.7989	-0.0286	-9.8274
Ti(OH)4(aq)	1.0000E-10	-10.0000	0.0000	-10.0000
MoO4--	1.0000E-10	-10.0000	-0.1098	-10.1098
Li+	9.9911E-11	-10.0004	-0.0276	-10.0280
Cs+	9.9863E-11	-10.0006	-0.0294	-10.0300
Ni++	9.8508E-11	-10.0065	-0.1095	-10.1161
Sr++	9.7680E-11	-10.0102	-0.1115	-10.1217
Zn++	9.6939E-11	-10.0135	-0.1095	-10.1230
Pb++	9.5505E-11	-10.0200	-0.1125	-10.1324
AlOH++	7.9653E-11	-10.0988	-0.1125	-10.2112
NaOH(aq)	7.6776E-11	-10.1148	0.0000	-10.1148
PO3F--	4.9906E-11	-10.3018	-0.1108	-10.4127
BaF+	1.7419E-11	-10.7590	-0.0286	-10.7876
HCl(aq)	1.6798E-11	-10.7747	0.0000	-10.7747
BaCO3(aq)	1.5415E-11	-10.8121	0.0000	-10.8121
PO4---	1.2763E-11	-10.8940	-0.2506	-11.1446
KOH(aq)	1.0731E-11	-10.9694	0.0000	-10.9694
H2SiO4--	9.4753E-12	-11.0234	-0.1108	-11.1342
PbCl+	4.3534E-12	-11.3612	-0.0286	-11.3898
AlHPO4+	3.4017E-12	-11.4683	-0.0286	-11.4969
ZnOH+	2.2672E-12	-11.6445	-0.0286	-11.6731
SrSO4(aq)	2.1345E-12	-11.6707	0.0000	-11.6707
H3PO4(aq)	2.1004E-12	-11.6777	0.0000	-11.6777
NiSO4(aq)	1.4474E-12	-11.8394	0.0000	-11.8394

--- Major Aqueous Species Contributing to Mass Balances ---

Aqueous species accounting for 99% or more of Al+++

Species	Factor	Molality	Per Cent
AlO2-	1.00	1.3176E-06	88.88
HAlO2(aq)	1.00	1.3580E-07	9.16
AlF3(aq)	1.00	1.3432E-08	9.061E-01
AlF2+	1.00	1.0617E-08	7.161E-01
Total		1.4825E-06	99.66

Aqueous species accounting for 99% or more of B(OH)3(aq)

Species	Factor	Molality	Per Cent
B(OH)3(aq)	1.00	1.2193E-05	98.43
BO2-	1.00	1.8991E-07	1.53
Total		1.2388E-05	99.96

Aqueous species accounting for 99% or more of Ba++

Species	Factor	Molality	Per Cent
Ba++	1.00	2.9955E-07	99.85

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  Total                                 3.0000E-07     99.85


Aqueous species accounting for 99% or more of Ca++

     Species                   Factor    Molality     Per Cent

  Ca++                          1.00    3.1888E-04     98.31
  CaSO4(aq)                     1.00    4.5305E-06      1.40
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                 3.2437E-04     99.70


Aqueous species accounting for 99% or more of Ce+++

     Species                   Factor    Molality     Per Cent

  Ce(OH)2++                     1.00    3.5482E-25     35.48
  CeCO3+                        1.00    3.4010E-25     34.01
  Ce+++                         1.00    1.1504E-25     11.50
  CePO4(aq)                     1.00    1.0106E-25     10.11
  CeF++                         1.00    3.7195E-26      3.72
  CeSO4+                        1.00    2.5516E-26      2.55
  CeOH++                        1.00    9.7697E-27    9.770E-01
  CeHPO4+                       1.00    6.6538E-27    6.654E-01
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                 1.0000E-24     99.02


Aqueous species accounting for 99% or more of Cl-

     Species                   Factor    Molality     Per Cent

  Cl-                           1.00    2.1531E-03     99.96
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                 2.1539E-03     99.96


Aqueous species accounting for 99% or more of CrO4--

     Species                   Factor    Molality     Per Cent

  CrO4--                        1.00    3.1345E-07     90.89
  HCrO4-                        1.00    3.1405E-08      9.11
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                 3.4485E-07    100.00


Aqueous species accounting for 99% or more of Cs+

     Species                   Factor    Molality     Per Cent

  Cs+                           1.00    9.9863E-11     99.86
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                 1.0000E-10     99.86


Aqueous species accounting for 99% or more of Cu++

     Species                   Factor    Molality     Per Cent

  CuOH+                         1.00    3.6001E-15     34.29
  CuCO3(aq)                     1.00    3.4525E-15     32.88
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  Cu++                          1.00    3.2721E-15     31.16
  CuPO4-                        1.00    1.3739E-16      1.31
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                 1.0500E-14     99.64


Aqueous species accounting for 99% or more of F-

     Species                   Factor    Molality     Per Cent

  F-                            1.00    1.1436E-04     99.66
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                 1.1475E-04     99.66


Aqueous species accounting for 99% or more of Fe++

     Species                   Factor    Molality     Per Cent

  Fe(OH)3(aq)                   1.00    9.1263E-19     91.26
  Fe(OH)2+                      1.00    8.1083E-20      8.11
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                 1.0000E-18     99.37


Aqueous species accounting for 99% or more of Gd+++

     Species                   Factor    Molality     Per Cent

  GdPO4(aq)                     1.00    4.1039E-15     41.04
  GdCO3+                        1.00    3.8924E-15     38.92
  Gd+++                         1.00    6.8531E-16      6.85
  GdF++                         1.00    6.7467E-16      6.75
  GdSO4+                        1.00    1.4636E-16      1.46
  GdOH++                        1.00    1.2546E-16      1.25
  GdHPO4+                       1.00    1.2069E-16      1.21
  Gd(CO3)2-                     1.00    1.1605E-16      1.16
  GdF2+                         1.00    7.5158E-17    7.516E-01
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                 1.0000E-14     99.40


Aqueous species accounting for 99% or more of HCO3-

     Species                   Factor    Molality     Per Cent

  HCO3-                         1.00    1.3293E-04     91.84
  CO2(aq)                       1.00    1.0733E-05      7.42
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                 1.4474E-04     99.26


Aqueous species accounting for 99% or more of HPO4--

     Species                   Factor    Molality     Per Cent

  HPO4--                        1.00    7.5518E-07     59.41
  H2PO4-                        1.00    3.8894E-07     30.60
  CaHPO4(aq)                    1.00    7.9670E-08      6.27
  MgHPO4(aq)                    1.00    2.9819E-08      2.35
  NaHPO4-                       1.00    9.6508E-09    7.592E-01
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                 1.2711E-06     99.38
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Aqueous species accounting for 99% or more of K+

Species	Factor	Molality	Per Cent
K+	1.00	1.2876E-04	99.89
Total		1.2891E-04	99.89

Aqueous species accounting for 99% or more of La+++

Species	Factor	Molality	Per Cent
LaCO3+	1.00	4.9095E-15	49.09
La+++	1.00	2.6319E-15	26.32
LaPO4(aq)	1.00	9.4192E-16	9.42
LaSO4+	1.00	5.8377E-16	5.84
LaF++	1.00	5.3691E-16	5.37
LaOH++	1.00	1.2569E-16	1.26
LaHPO4+	1.00	1.2092E-16	1.21
LaHCO3++	1.00	4.9603E-17	4.960E-01
Total		1.0000E-14	99.00

Aqueous species accounting for 99% or more of Li+

Species	Factor	Molality	Per Cent
Li+	1.00	9.9911E-11	99.91
Total		1.0000E-10	99.91

Aqueous species accounting for 99% or more of Mg++

Species	Factor	Molality	Per Cent
Mg++	1.00	8.0015E-05	96.75
MgSO4(aq)	1.00	2.2905E-06	2.77
Total		8.2699E-05	99.52

Aqueous species accounting for 99% or more of Mn++

Species	Factor	Molality	Per Cent
Mn++	1.00	6.9998E-18	96.14
MnSO4(aq)	1.00	1.7354E-19	2.38
MnCO3(aq)	1.00	2.7107E-20	3.723E-01
MnCl+	1.00	2.3479E-20	3.225E-01
Total		7.2809E-18	99.22

Aqueous species accounting for 99% or more of MoO4--

Species	Factor	Molality	Per Cent
MoO4--	1.00	1.0000E-10	100.00

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- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                 1.0000E-10    100.00

Aqueous species accounting for 99% or more of NH3(aq)

     Species                   Factor    Molality     Per Cent

  NO3-                          1.00    1.4182E-04     99.88
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                 1.4200E-04     99.88

Aqueous species accounting for 99% or more of Na+

     Species                   Factor    Molality     Per Cent

  Na+                           1.00    1.9891E-03     99.85
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                 1.9922E-03     99.85

Aqueous species accounting for 99% or more of Nd+++

     Species                   Factor    Molality     Per Cent

  NdCO3+                        1.00    4.3367E-15     43.37
  NdPO4(aq)                     1.00    2.8849E-15     28.85
  Nd+++                         1.00    1.1652E-15     11.65
  NdF++                         1.00    5.9708E-16      5.97
  NdSO4+                        1.00    3.2536E-16      3.25
  NdF2+                         1.00    3.0726E-16      3.07
  NdOH++                        1.00    1.7597E-16      1.76
  NdHPO4+                       1.00    1.0681E-16      1.07
  Nd(CO3)2-                     1.00    6.4804E-17    6.480E-01
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                 1.0000E-14     99.64

Aqueous species accounting for 99% or more of Ni++

     Species                   Factor    Molality     Per Cent

  Ni++                          1.00    9.8508E-11     98.51
  NiSO4(aq)                     1.00    1.4474E-12      1.45
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                 1.0000E-10     99.96

Aqueous species accounting for 99% or more of Pb++

     Species                   Factor    Molality     Per Cent

  Pb++                          1.00    9.5505E-11     95.51
  PbCl+                         1.00    4.3534E-12      4.35
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                 1.0000E-10     99.86

Aqueous species accounting for 99% or more of Pu++++

     Species                   Factor    Molality     Per Cent
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  PuO2+                          1.00    5.6556E-15     56.56
  PuO2CO3(aq)                    1.00    1.2526E-15     12.53
  PuO2(OH)2(aq)                  1.00    9.5494E-16      9.55
  PuO2HPO4(aq)                   1.00    8.2697E-16      8.27
  PuO2OH+                        1.00    4.7175E-16      4.72
  PuO2(OH)3-                     1.00    4.0013E-16      4.00
  Pu(OH)4(aq)                    1.00    2.0446E-16      2.04
  PuO2CO3-                       1.00    9.9706E-17    9.971E-01
  PuO2OH(aq)                     1.00    3.9696E-17    3.970E-01
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                  1.0000E-14     99.06


Aqueous species accounting for 99% or more of SO4--

     Species                    Factor    Molality     Per Cent

  SO4--                          1.00    1.8273E-04     95.40
  CaSO4(aq)                      1.00    4.5305E-06      2.37
  MgSO4(aq)                      1.00    2.2905E-06      1.20
  NaSO4-                         1.00    1.8549E-06    9.684E-01
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                  1.9154E-04     99.93


Aqueous species accounting for 99% or more of SiO2(aq)

     Species                    Factor    Molality     Per Cent

  SiO2(aq)                       1.00    1.0136E-03     99.67
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                  1.0169E-03     99.67


Aqueous species accounting for 99% or more of Sm+++

     Species                    Factor    Molality     Per Cent

  SmCO3+                         1.00    4.3802E-15     43.80
  SmPO4(aq)                      1.00    3.6684E-15     36.68
  Sm+++                          1.00    7.4255E-16      7.43
  SmF++                          1.00    3.8051E-16      3.81
  SmF2+                          1.00    2.3182E-16      2.32
  SmSO4+                         1.00    2.0735E-16      2.07
  SmOH++                         1.00    1.7773E-16      1.78
  SmHPO4+                        1.00    1.0788E-16      1.08
  Sm(CO3)2-                      1.00    6.5454E-17    6.545E-01
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                  1.0000E-14     99.62


Aqueous species accounting for 99% or more of Sr++

     Species                    Factor    Molality     Per Cent

  Sr++                           1.00    9.7680E-11     97.68
  SrSO4(aq)                      1.00    2.1345E-12      2.13
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                  1.0000E-10     99.81


Aqueous species accounting for 99% or more of Ti(OH)4(aq)
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Species	Factor	Molality	Per Cent
Ti(OH)4(aq)	1.00	1.0000E-10	100.00
Total		1.0000E-10	100.00

Aqueous species accounting for 99% or more of UO2++

Species	Factor	Molality	Per Cent
UO2(OH)2(aq)	1.00	8.3184E-15	83.18
UO2(CO3)2--	1.00	6.1884E-16	6.19
UO2PO4-	1.00	5.0007E-16	5.00
UO2(OH)3-	1.00	2.8188E-16	2.82
UO2CO3(aq)	1.00	1.8100E-16	1.81
Total		1.0000E-14	99.00

Aqueous species accounting for 99% or more of Zn++

Species	Factor	Molality	Per Cent
Zn++	1.00	9.6939E-11	96.94
ZnOH+	1.00	2.2672E-12	2.27
Total		1.0000E-10	99.21

Aqueous species accounting for 99% or more of Zr(OH)2++

Species	Factor	Molality	Per Cent
Zr(OH)4(aq)	1.00	1.0000E-20	100.00
Total		1.0000E-20	100.00

--- Summary of Aqueous Redox Reactions ---

Couple		Eh, volts	pe-	Log fO2	Ah, kcal
DEFAULT		0.781	0.1320E+02	-0.678	18.004
S2O3--	/SO4--	0.781	0.1320E+02	-0.678	18.004
CN-	/NH3(aq)	0.781	0.1320E+02	-0.678	18.004
ClO-	/Cl-	0.781	0.1320E+02	-0.678	18.004
ClO2-	/Cl-	0.781	0.1320E+02	-0.678	18.004
ClO3-	/Cl-	0.781	0.1320E+02	-0.678	18.004
ClO4-	/Cl-	0.781	0.1320E+02	-0.678	18.004
Cr++	/CrO4--	0.781	0.1320E+02	-0.678	18.004
Cr+++	/CrO4--	0.781	0.1320E+02	-0.678	18.004
CrO4---	/CrO4--	0.781	0.1320E+02	-0.678	18.004
Cu+	/Cu++	0.781	0.1320E+02	-0.678	18.004
Fe+++	/Fe++	0.781	0.1320E+02	-0.678	18.004
H2(aq)	/H2O	0.781	0.1320E+02	-0.678	18.004
HSO5-	/SO4--	0.781	0.1320E+02	-0.678	18.004
Mn+++	/Mn++	0.781	0.1320E+02	-0.678	18.004
MnO4--	/Mn++	0.781	0.1320E+02	-0.678	18.004
N2(aq)	/NH3(aq)	0.781	0.1320E+02	-0.678	18.004
N3-	/NH3(aq)	0.781	0.1320E+02	-0.678	18.004
NO2-	/NH3(aq)	0.781	0.1320E+02	-0.678	18.004

NO3-	/NH3(aq)	0.781	0.1320E+02	-0.678	18.004
O2(aq)	/H2O	0.781	0.1320E+02	-0.678	18.004
Pb++++	/Pb++	0.781	0.1320E+02	-0.678	18.004
Pu+++	/Pu++++	0.781	0.1320E+02	-0.678	18.004
PuO2+	/Pu++++	0.781	0.1320E+02	-0.678	18.004
PuO2++	/Pu++++	0.781	0.1320E+02	-0.678	18.004
S2O4--	/SO4--	0.781	0.1320E+02	-0.678	18.004
S2O6--	/SO4--	0.781	0.1320E+02	-0.678	18.004
S2O8--	/SO4--	0.781	0.1320E+02	-0.678	18.004
S3O6--	/SO4--	0.781	0.1320E+02	-0.678	18.004
S4O6--	/SO4--	0.781	0.1320E+02	-0.678	18.004
S5O6--	/SO4--	0.781	0.1320E+02	-0.678	18.004
SO3--	/SO4--	0.781	0.1320E+02	-0.678	18.004
Sm++	/Sm+++	0.781	0.1320E+02	-0.678	18.004
U+++	/UO2++	0.781	0.1320E+02	-0.678	18.004
U++++	/UO2++	0.781	0.1320E+02	-0.678	18.004
UO2+	/UO2++	0.781	0.1320E+02	-0.678	18.004

--- Summary of Aqueous Non-equilibrium Non-redox Neactions ---

Reaction	Log Q/K	Aff, kcal	State

None

--- Summary of Pure Mineral Saturation States ---

(Minerals with affinities .lt. -10 kcal are not listed)

Mineral	Log Q/K	Aff, kcal	State
Alamosite	-3.980	-5.430	
Albite	2.499	3.409	ssatd
Albite_high	1.180	1.610	ssatd
Albite_low	2.499	3.409	ssatd
Alstonite	-5.813	-7.930	
Alunite	-4.802	-6.551	
Amesite-14A	-0.713	-0.973	
Analcime	1.428	1.949	ssatd
Analcime-dehy	-4.934	-6.732	
Andalusite	0.193	0.263	satd
Anglesite	-6.129	-8.361	
Anhydrite	-3.149	-4.296	
Anorthite	-2.221	-3.030	
Aragonite	-2.093	-2.855	
BaCrO4	-3.317	-4.526	
BaHPO4	-5.468	-7.460	
Barite	-0.513	-0.700	
Barytocalcite	-5.970	-8.145	
Bassanite	-3.793	-5.175	
Beidellite-Ca	7.559	10.312	ssatd
Beidellite-Cs	5.281	7.205	ssatd
Beidellite-H	6.666	9.095	ssatd
Beidellite-K	7.143	9.745	ssatd
Beidellite-Mg	7.498	10.229	ssatd
Beidellite-Na	7.197	9.819	ssatd
Berlinite	-4.278	-5.837	
Boehmite	2.002	2.731	ssatd
Boric_acid	-4.756	-6.488	
Brucite	-5.681	-7.750	
CaSO4:0.5H2O(beta)	-3.962	-5.405	

Calcite	-1.948	-2.658	
CeO2	-3.592	-4.901	
Celadonite	4.240	5.784	ssatd
Cerussite	-3.417	-4.662	
Chalcedony	0.734	1.001	ssatd
Chrysotile	-5.262	-7.179	
Clinoptilolite	16.053	21.901	ssatd
Clinoptilolite-Ca	15.834	21.602	ssatd
Clinoptilolite-Cs	-6.641	-9.060	
Clinoptilolite-K	12.436	16.966	ssatd
Clinoptilolite-Na	12.747	17.390	ssatd
Clinoptilolite-Sr	4.678	6.383	ssatd
Clinoptilolite-hy-Ca	15.835	21.604	ssatd
Clinoptilolite-hy-Cs	-6.636	-9.054	
Clinoptilolite-hy-K	12.440	16.971	ssatd
Clinoptilolite-hy-Na	12.749	17.393	ssatd
Clinoptilolite-hy-Sr	4.679	6.384	ssatd
Coesite	0.195	0.266	satd
Cordierite_hydr	-5.297	-7.226	
Corundum	0.820	1.118	ssatd
Cristobalite(alpha)	0.455	0.620	ssatd
Cristobalite(beta)	0.011	0.015	satd
Crocoite	-4.030	-5.497	
Dawsonite	-1.414	-1.929	
Diaspore	2.406	3.282	ssatd
Diopside	-5.121	-6.987	
Dolomite	-3.309	-4.515	
Dolomite-dis	-4.854	-6.622	
Dolomite-ord	-3.309	-4.515	
Epsomite	-6.090	-8.308	
Fluorapatite	6.527	8.904	ssatd
Fluorite	-1.507	-2.057	
GdPO4:H2O	-2.287	-3.120	
Gibbsite	1.810	2.469	ssatd
Gismondine	6.997	9.546	ssatd
Goethite	-6.574	-8.969	
Gypsum	-2.973	-4.056	
Haiweeite	-7.240	-9.878	
Halite	-7.010	-9.564	
Heulandite	7.062	9.634	ssatd
Hexahydrite	-6.325	-8.629	
Hydroxylapatite	-4.013	-5.475	
Ice	-0.139	-0.189	satd
Illite	7.245	9.884	ssatd
Jadeite	-0.131	-0.179	satd
K-Feldspar	4.349	5.934	ssatd
Kalsilite	-0.836	-1.141	
Kaolinite	6.333	8.640	ssatd
Kyanite	0.464	0.632	ssatd
LaPO4:H2O	-1.286	-1.755	
Lansfordite	-5.538	-7.555	
Laumontite	4.702	6.415	ssatd
Lawsonite	2.144	2.925	ssatd
Magnesite	-2.990	-4.079	
Manganite	-7.255	-9.898	
Margarite	2.423	3.306	ssatd
Maximum_Microcline	4.349	5.934	ssatd
Mesolite	6.936	9.462	ssatd
MnO2(gamma)	-4.314	-5.885	
Monohydrocalcite	-2.782	-3.795	
Montmor-Ca	6.857	9.355	ssatd
Montmor-Cs	4.646	6.339	ssatd
Montmor-K	6.512	8.884	ssatd

Montmor-Mg	6.866	9.367	ssatd
Montmor-Na	6.562	8.952	ssatd
Mordenite	3.974	5.422	ssatd
Muscovite	9.620	13.124	ssatd
Nahcolite	-6.522	-8.898	
Natrolite	0.989	1.349	ssatd
NdOHCO3	-7.091	-9.675	
NdPO4:H2O	-1.840	-2.510	
Nepheline	-2.549	-3.477	
Nesquehonite	-5.692	-7.766	
Nontronite-Ca	-6.479	-8.839	
Nontronite-K	-6.894	-9.406	
Nontronite-Mg	-6.539	-8.921	
Nontronite-Na	-6.840	-9.332	
Okenite	-5.156	-7.034	
Paragonite	6.873	9.377	ssatd
Paralaurionite	-5.621	-7.668	
PbHPO4	-4.798	-6.546	
Pentahydrite	-6.665	-9.093	
Petalite	-1.213	-1.656	
Plattnerite	-3.320	-4.529	
Plumbogummite	-0.574	-0.784	
Prehnite	-0.353	-0.482	satd
Pseudowollastonite	-5.780	-7.885	
PuO2	-1.544	-2.107	
PuO2(OH)2	-6.120	-8.349	
Pyrolusite	-2.796	-3.814	
Pyromorphite	-1.930	-2.633	
Pyrophyllite	6.715	9.162	ssatd
Quartz	1.005	1.371	ssatd
Rutile	-0.355	-0.484	satd
Sanbornite	-7.279	-9.930	
Sanidine_high	3.150	4.298	ssatd
Saponite-Ca	-0.420	-0.573	
Saponite-Cs	-2.698	-3.680	
Saponite-H	-1.312	-1.790	
Saponite-K	-0.836	-1.140	
Saponite-Mg	-0.481	-0.656	
Saponite-Na	-0.782	-1.066	
Scolecite	5.486	7.485	ssatd
Sellaite	-2.757	-3.761	
Sepiolite	-5.940	-8.104	
SiO2(am)	-0.281	-0.383	satd
Sillimanite	-0.170	-0.233	satd
SmPO4:H2O	-2.036	-2.777	
Smectite-low-Fe-Mg	-4.052	-5.528	
Smithsonite	-7.080	-9.659	
Spodumene	-6.038	-8.237	
Starkeyite	-7.052	-9.621	
Stilbite	11.463	15.639	ssatd
Strontianite	-6.302	-8.597	
Talc	-1.263	-1.723	
Tridymite	0.834	1.137	ssatd
Wairakite	0.293	0.399	satd
Whitlockite	-4.238	-5.782	
Witherite	-0.132	-0.180	satd
Wollastonite	-5.541	-7.559	
Zincite	-6.512	-8.884	
Zircon	-6.347	-8.659	
Zn(OH)2(beta)	-7.237	-9.874	
Zn(OH)2(epsilon)	-6.966	-9.503	
Zn(OH)2(gamma)	-7.186	-9.804	
Zoisite	-1.159	-1.581	

--- Summary of Hypothetical Solid Solutions ---

--- Biotite ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Annite	0.0000E+00			
Phlogopite	0.0000E+00			

Mineral	Log Q/K	Aff, kcal	State
Biotite	0.000	-999.000	

--- Carbonate-Calcite ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Calcite	9.1668E-01	-0.0378	0.0000	-0.0378
Magnesite	8.3274E-02	-1.0795	0.0000	-1.0795
Rhodochrosite	2.2140E-12	-11.6548	0.0000	-11.6548
Siderite	1.4233E-23	-22.8467	0.0000	-22.8467
Smithsonite	6.7684E-06	-5.1695	0.0000	-5.1695
Strontianite	4.0632E-05	-4.3911	0.0000	-4.3911

Mineral	Log Q/K	Aff, kcal	State
Carbonate-Calcite	-1.910	-2.606	
Calcite	-1.910	-2.606	
Magnesite	-1.910	-2.606	
Rhodochrosite	-1.910	-2.606	
Siderite	-1.910	-2.606	
Smithsonite	-1.910	-2.606	
Strontianite	-1.910	-2.606	

--- Chlorite-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinochlore-14A	0.0000E+00			
Daphnite-14A	0.0000E+00			

Mineral	Log Q/K	Aff, kcal	State
Chlorite-ss	0.000	-999.000	

--- Clinoptilolite-hy-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-hy-Ca	9.9878E-01	-0.0005	0.0000	-0.0005
Clinoptilolite-hy-Cs	3.3730E-23	-22.4720	0.0000	-22.4720
Clinoptilolite-hy-K	4.0161E-04	-3.3962	0.0000	-3.3962
Clinoptilolite-hy-Na	8.1905E-04	-3.0867	0.0000	-3.0867
Clinoptilolite-hy-Sr	6.9713E-12	-11.1567	0.0000	-11.1567

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-hy-ss	15.836	21.604	ssatd
Clinoptilolite-hy-Ca	15.836	21.604	ssatd
Clinoptilolite-hy-Cs	15.836	21.604	ssatd
Clinoptilolite-hy-K	15.836	21.604	ssatd
Clinoptilolite-hy-Na	15.836	21.604	ssatd
Clinoptilolite-hy-Sr	15.836	21.604	ssatd

--- Clinoptilolite-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-Ca	8.1106E-01	-0.0909	-0.2237	-0.3147
Clinoptilolite-Cs	2.5910E-07	-6.5865	-16.2029	-22.7894
Clinoptilolite-K	8.4501E-02	-1.0731	-2.6399	-3.7131
Clinoptilolite-NH4	1.4927E-62	-61.8260	-152.0921	-213.9181
Clinoptilolite-Na	1.0396E-01	-0.9831	-2.4185	-3.4017
Clinoptilolite-Sr	4.8410E-04	-3.3151	-8.1551	-11.4701

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-ss	16.149	22.031	ssatd
Clinoptilolite-Ca	16.149	22.031	ssatd
Clinoptilolite-Cs	16.149	22.031	ssatd
Clinoptilolite-K	16.149	22.031	ssatd
Clinoptilolite-NH4	16.149	22.031	ssatd
Clinoptilolite-Na	16.149	22.031	ssatd
Clinoptilolite-Sr	16.149	22.031	ssatd

--- Epidote-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinozoisite	0.0000E+00			
Epidote	0.0000E+00			

Mineral	Log Q/K	Aff, kcal	State
Epidote-ss	0.000	-999.000	

```
               --- Garnet-ss                --- 

  Ideal solution

   Component                    x           Log x   Log lambda  Log activity

Andradite                   0.0000E+00
Grossular                   0.0000E+00


   Mineral                     Log Q/K     Aff, kcal  State

Garnet-ss                        0.000    -999.000


               --- Orthopyroxene            --- 

  Ideal solution

   Component                    x           Log x   Log lambda  Log activity

Enstatite                   0.0000E+00
Ferrosilite                 0.0000E+00


   Mineral                     Log Q/K     Aff, kcal  State

Orthopyroxene                    0.000    -999.000


               --- Saponite-tri             --- 

  Ideal solution

   Component                    x           Log x   Log lambda  Log activity

Saponite-Ca                 5.5823E-01     -0.2532      0.1696     -0.0836
Saponite-H                  1.1028E-03     -2.9575      1.9815     -0.9760
Saponite-K                  3.0657E-02     -1.5135      1.0140     -0.4994
Saponite-Mg                 3.6530E-01     -0.4374      0.2930     -0.1443
Saponite-Na                 4.4715E-02     -1.3496      0.9042     -0.4454


   Mineral                     Log Q/K     Aff, kcal  State

Saponite-tri                     -0.336      -0.459   satd
  Saponite-Ca                    -0.336      -0.459   satd
  Saponite-H                     -0.336      -0.459   satd
  Saponite-K                     -0.336      -0.459   satd
  Saponite-Mg                    -0.336      -0.459   satd
  Saponite-Na                    -0.336      -0.459   satd


               --- Smectite-di              --- 

  Ideal solution
```

Component	x	Log x	Log lambda	Log activity
Beidellite-Ca	5.5355E-01	-0.2568	0.1721	-0.0848
Beidellite-K	3.0421E-02	-1.5168	1.0163	-0.5006
Beidellite-Mg	3.6224E-01	-0.4410	0.2955	-0.1455
Beidellite-Na	4.4340E-02	-1.3532	0.9066	-0.4466
Montmor-Ca	4.1401E-03	-2.3830	1.5966	-0.7864
Montmor-K	3.7158E-04	-3.4299	2.2981	-1.1319
Montmor-Mg	4.4031E-03	-2.3562	1.5787	-0.7776
Montmor-Na	5.2817E-04	-3.2772	2.1957	-1.0815
Nontronite-Ca	1.6064E-43	-42.7941	28.6721	-14.1221
Nontronite-K	8.8283E-45	-44.0541	29.5163	-14.5379
Nontronite-Mg	1.0520E-43	-42.9780	28.7953	-14.1827
Nontronite-Na	1.2868E-44	-43.8905	29.4066	-14.4839

Mineral	Log Q/K	Aff, kcal	State
Smectite-di	7.643	10.428	ssatd
Beidellite-Ca	7.643	10.428	ssatd
Beidellite-K	7.643	10.428	ssatd
Beidellite-Mg	7.643	10.428	ssatd
Beidellite-Na	7.643	10.428	ssatd
Montmor-Ca	7.643	10.428	ssatd
Montmor-K	7.643	10.428	ssatd
Montmor-Mg	7.643	10.428	ssatd
Montmor-Na	7.643	10.428	ssatd
Nontronite-Ca	7.643	10.428	ssatd
Nontronite-K	7.643	10.428	ssatd
Nontronite-Mg	7.643	10.428	ssatd
Nontronite-Na	7.643	10.428	ssatd

--- Lanthanide hydroxide ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
La(OH)3	3.5277E-05	-4.4525	0.0000	-4.4525
Ce(OH)3	3.8732E-15	-14.4119	0.0000	-14.4119
Nd(OH)3(c)	4.9388E-01	-0.3064	0.0000	-0.3064
Gd(OH)3	4.4328E-01	-0.3533	0.0000	-0.3533
Sm(OH)3	6.2800E-02	-1.2020	0.0000	-1.2020

Mineral	Log Q/K	Aff, kcal	State
Lanthanide hydroxide	-8.460	-11.542	
La(OH)3	-8.460	-11.542	
Ce(OH)3	-8.460	-11.542	
Nd(OH)3(c)	-8.460	-11.542	
Gd(OH)3	-8.460	-11.542	
Sm(OH)3	-8.460	-11.542	

--- Rhabdophane-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity

LaPO4:H2O	6.4219E-01	-0.1923	0.0000	-0.1923
CePO4:H2O	2.2297E-11	-10.6518	0.0000	-10.6518
NdPO4:H2O	1.7939E-01	-0.7462	0.0000	-0.7462
GdPO4:H2O	6.4099E-02	-1.1931	0.0000	-1.1931
SmPO4:H2O	1.1432E-01	-0.9419	0.0000	-0.9419

Mineral	Log Q/K	Aff, kcal	State
Rhabdophane-ss	-1.094	-1.492	
LaPO4:H2O	-1.094	-1.492	
CePO4:H2O	-1.094	-1.492	
NdPO4:H2O	-1.094	-1.492	
GdPO4:H2O	-1.094	-1.492	
SmPO4:H2O	-1.094	-1.492	

--- Lanthanide fluoride ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaF3:0.5H2O	7.2810E-01	-0.1378	0.0000	-0.1378
CeF3:0.5H2O	4.0065E-11	-10.3972	0.0000	-10.3972
NdF3:0.5H2O	2.5604E-01	-0.5917	0.0000	-0.5917
GdF3:0.5H2O	2.8932E-03	-2.5386	0.0000	-2.5386
SmF3:0.5H2O	1.2961E-02	-1.8873	0.0000	-1.8873

Mineral	Log Q/K	Aff, kcal	State
Lanthanide fluoride	-7.883	-10.755	
LaF3:0.5H2O	-7.883	-10.755	
CeF3:0.5H2O	-7.883	-10.755	
NdF3:0.5H2O	-7.883	-10.755	
GdF3:0.5H2O	-7.883	-10.755	
SmF3:0.5H2O	-7.883	-10.755	

11 approx. saturated pure minerals
0 approx. saturated input solid solutions
1 saturated hypothetical solid solutions

53 supersaturated pure minerals
0 supersatd. input solid solutions
3 supersatd. hypothetical solid solutions

--- Summary of Gases ---

Gas	Fugacity	Log fugacity
Al(g)	4.1885-189	-188.3779
B(g)	8.4204-204	-203.0747
BF3(g)	8.2211E-37	-36.0851

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C(g)                        3.0916-190   -189.5098
CH4(g)                      3.5283-146   -145.4524
CO(g)                       6.0393E-49    -48.2190
CO2(g)                      3.1623E-04     -3.5000
Ca(g)                       8.3989-153   -152.0758
Chlorine                    1.0048E-25    -24.9979
Cs(g)                       9.8505E-84    -83.0065
Cu(g)                       2.2466E-82    -81.6485
Fluorine                    5.4170E-81    -80.2662
H2(g)                       6.1142E-42    -41.2137
H2O(g)                      2.5975E-02     -1.5855
H2S(g)                      0.0000E+00   -999.0000
HCl(g)                      3.8884E-17    -16.4102
HF(g)                       3.2222E-13    -12.4918
K(g)                        6.3565E-78    -77.1968
Li(g)                       2.1564E-97    -96.6663
Mg(g)                       1.4316-130   -129.8442
Nitrogen                    6.5360E-19    -18.1847
NH3(g)                      9.3189E-69    -68.0306
NO(g)                       2.5458E-25    -24.5942
NO2(g)                      1.7407E-19    -18.7593
Na(g)                       5.1297E-76    -75.2899
O2(g)                       2.1000E-01     -0.6778
Pb(g)                       7.3555E-70    -69.1334
S2(g)                       0.0000E+00   -999.0000
SO2(g)                      2.4564E-55    -54.6097
Si(g)                       4.2759-220   -219.3690
SiF4(g)                     4.8090E-34    -33.3179
Ti(g)                       1.6799-231   -230.7747
TiCl4(g)                    3.3843E-79    -78.4705
U(g)                        1.7979-297   -296.7452
U2Cl10(g)                   2.5971-230   -229.5855
U2Cl8(g)                    8.0130-236   -235.0962
U2F10(g)                    5.2508-148   -147.2798
UCl(g)                      6.2303-252   -251.2055
UCl2(g)                     6.4588-205   -204.1898
UCl3(g)                     1.4666-155   -154.8337
UCl4(g)                     1.8032-123   -122.7440
UCl5(g)                     1.1408-128   -127.9428
UCl6(g)                     1.3407-128   -127.8727
UF(g)                       1.0972-237   -236.9597
UF2(g)                      4.9662-196   -195.3040
UF3(g)                      5.5316-148   -147.2571
UF4(g)                      9.0946E-97    -96.0412
UF5(g)                      6.8488E-87    -86.1644
UF6(g)                      5.0786E-91    -90.2943
UO(g)                       1.4199-212   -211.8477
UO2(g)                      2.6308-128   -127.5799
UO2Cl2(g)                   1.1542E-72    -71.9377
UO2F2(g)                    6.4379E-62    -61.1913
UO3(g)                      1.9350E-75    -74.7133
UOF4(g)                     2.7102E-74    -73.5670
Zn(g)                       1.1776E-79    -78.9290

--- Reading the input file ---

--- No further input found ---

         Start time = 10:34:27  01/22/99
           End time = 10:34:30  01/22/99

          Run time =   3.13     seconds
         User time =   3.13     seconds
```

```
          Cpu time =   3.13     seconds

Normal exit
```

```
EQ3/6, Version 7.2b (EQ3/6-V7-REL-V7.2b-PC)
EQ3NR Speciation-Solubility Code (EQ3/6-V7-EQ3NR-EXE-R139-P5)
Supported by the EQLIB library (EQ3/6-V7-EQLIB-LIB-R168-P5)
```

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This work is subject to additional statements and disclaimers which may be found in the README.txt file included in the EQ3/6 software transmittal package.

```
Run  11:17:54  01/22/99



--- Reading the input file ---
|-----------------------------------------------------------------------|
|EQ3NR input file name= j13solCd.3i                                     |
|Description= "J-13 well water, cadmium solubility                      |
|Version level= 7.2b                                                    |
|Created 01/22/99    Creator= D. H. Lester                              |
|Revised             Revisor=                                           |
|                                                                       |
|  Water from well J-13 at the Nevada Test Site. The composition        |
|is nearly identical to that in the EQ3NR test case input file j13w.3i,|
|which is based on data reported by Harrar et al. (1990) and on p. 3 of|
|Preliminary Scenario Definitions, May 17, 1996, except for fixing of  |
|bicarbonate via fixed fugacity of CO2 and pH.  Al, Fe, Mn, etc. re-   |
|tained, as these are needed to model reaction with tuff, etc.  traces |
|of Pu, U, Gd, Ba, La, Nd, Ce, Sm, Pb, Cr, Ni, Cu, Zr, Sr, Cs,          |
|Zn, & Mo added to enable modeling .  Nb isn't in data base.            |
|                                                                       |
|                                                                       |
|This run uses revised data base, with essentially no organics.  Also, |
|several to many other unlikely aqueous species removed.                |
|                                                                       |
|Electrical balancing is on H+.  These data do not agree exactly with |
|those reported in the SCP.  CO2 and O2 fixed at atmospheric values.    |
|                                                                       |
|  This run uses the revised data base, incorporating SKB data.         |
|                                                                       |
|  Purpose: To determine cadmium solubility This run represents         |
|  a run with a manganese content that just saturates the first Cd      |
|  mineral (otavite) to precipitate.                                    |
|                            References                                 |
|                                                                       |
|Harrar, J. E., Carley, J. F., Isherwood, W. F., and Raber, E., 1990,   |
|  Report of the Committee to Review the Use of J-13 Well Water in      |
|  Nevada Nuclear Waste Storage Investigations: UCID-21867, Lawrence    |
|  Livermore National Laboratory, Livermore, California.                |
|-----------------------------------------------------------------------|
|Temperature (C)         | 25.00        |Density(gm/cm3)|  1.00000      |
|-----------------------------------------------------------------------|
|Total Dissolved Salts   |              | mg/kg | mg/l  |*not used      |
|-----------------------------------------------------------------------------|
|Electrical Balancing on |H+                      | code selects| not performed|
|-----------------------------------------------------------------------------|
| SPECIES                | BASIS SWITCH/CONSTRAINT| CONC/ETC  | UNITS OR TYPE  |
|-----------------------------------------------------------------------------|
|redox                   |                        |-6.7778E-01|logfo2          |
```

Na+		1.9922E-03	molality
SiO2(aq)		1.0169E-03	molality
Ca++		3.2437E-04	molality
K+		1.2891E-04	molality
Mg++		8.2699E-05	molality
H+		7.4100	pH
HCO3-	CO2(g)	-3.5000	log fugacity
F-		1.1475E-04	molality
Cl-		2.0140E-04	molality
NH3(aq)	NO3-	0.142 E-03	molality
SO4--		1.9154E-04	molality
B(OH)3(aq)		1.2388E-05	molality
HPO4--		1.2711E-06	molality
Al+++		1.4825E-06	molality
Mn++		7.2809E-18	molality
Fe++		1.0000E-18	molality
CrO4--		3.4485E-07	molality
Cu++		1.05000E-14	molality
MoO4--		1.00000E-10	molality
Cd++		2.05000E-04	molality
Cs+		1.00000E-10	molality
Li+		1.00000E-10	molality
Ni++		1.00000E-10	molality
La+++		1.00000E-14	molality
Nd+++		1.00000E-14	molality
Sm+++		1.00000E-14	molality
Ce+++		1.00000E-24	molality
Pu++++		1.00000E-14	molality
Gd+++		1.00000E-14	molality
UO2++		1.00000E-14	molality
Sr++		1.00000E-10	molality
Ba++		1.00000E-10	molality
Ti(OH)4(aq)		1.00000E-10	molality
Zn++		1.00000E-10	molality
Zr(OH)2++		1.00000E-20	molality
Pb++		1.00000E-10	molality

Input Solid Solutions

none			

SUPPRESSED SPECIES	(suppress,replace,augmentk,augmentg)		value
Phlogopite	mineral	suppress	0.00000E+00
Annite	mineral	suppress	0.00000E+00
Clinochlore-14A	mineral	suppress	0.00000E+00
Daphnite-14A	mineral	suppress	0.00000E+00
Clinozoisite	mineral	suppress	0.00000E+00
Epidote	mineral	suppress	0.00000E+00
Epidote-ord	mineral	suppress	0.00000E+00
Andradite	mineral	suppress	0.00000E+00
Grossular	mineral	suppress	0.00000E+00
Enstatite	mineral	suppress	0.00000E+00
Ferrosilite	mineral	suppress	0.00000E+00
Pyrite	mineral	suppress	0.00000E+00
Pyrrhotite	mineral	suppress	0.00000E+00
Troilite	mineral	suppress	0.00000E+00
Alabandite	mineral	suppress	0.00000E+00
Brezinaite	mineral	suppress	0.00000E+00
Chalcocite	mineral	suppress	0.00000E+00
Covellite	mineral	suppress	0.00000E+00
Millerite	mineral	suppress	0.00000E+00
Polydymite	mineral	suppress	0.00000E+00

```
| Vaesite                | mineral        | suppress | 0.00000E+00     |
| Heazlewoodite          | mineral        | suppress | 0.00000E+00     |
| Galena                 | mineral        | suppress | 0.00000E+00     |
| Sulfur                 | mineral        | suppress | 0.00000E+00     |
| CaZrO3                 | mineral        | suppress | 0.00000E+00     |
| BaZrO3                 | mineral        | suppress | 0.00000E+00     |
| SrZrO3                 | mineral        | suppress | 0.00000E+00     |
| U2S3                   | mineral        | suppress | 0.00000E+00     |
| U3S5                   | mineral        | suppress | 0.00000E+00     |
| US2                    | mineral        | suppress | 0.00000E+00     |
| US3                    | mineral        | suppress | 0.00000E+00     |
| US                     | mineral        | suppress | 0.00000E+00     |
| US1.9                  | mineral        | suppress | 0.00000E+00     |
| U3P4                   | mineral        | suppress | 0.00000E+00     |
| UP                     | mineral        | suppress | 0.00000E+00     |
| UP2                    | mineral        | suppress | 0.00000E+00     |
| HS-                    | aqueous        | suppress | 0.00000E+00     |
| H2S(aq)                | aqueous        | suppress | 0.00000E+00     |
| S--                    | aqueous        | suppress | 0.00000E+00     |
|-----------------------------------------------------------------------|
|OPTIONS                                                                |
|-----------------------------------------------------------------------|
| - SOLID SOLUTIONS -                                                   |
|     ignore solid solutions                                            |
|   * process hypothetical solid solutions                              |
|     process input and hypothetical solid solutions                    |
| - LOADING OF SPECIES INTO MEMORY -                                    |
|   * does nothing                                                      |
|     lists species loaded into memory                                  |
| - ECHO DATABASE INFORMATION -                                         |
|   * does nothing                                                      |
|     lists all reactions                                               |
|     lists reactions and log K values                                  |
|     lists reactions, log K values and polynomial coef.                |
| - LIST OF AQUEOUS SPECIES (ordering) -                                |
|   * in order of decreasing concentration                              |
|     in same order as input file                                       |
| - LIST OF AQUEOUS SPECIES (concentration limit) -                     |
|     all species                                                       |
|     only species > 10**-20 molal                                      |
|   * only species > 10**-12 molal                                      |
|     not printed                                                       |
| - LIST OF AQUEOUS SPECIES (by element) -                              |
|   * print major species                                               |
|     print all species                                                 |
|     don't print                                                       |
| - MINERAL SATURATION STATES -                                         |
|   * print if affinity > -10 kcals                                     |
|     print all                                                         |
|     don't print                                                       |
| - pH SCALE CONVENTION -                                               |
|   * modified NBS                                                      |
|     internal                                                          |
|     rational                                                          |
| - ACTIVITY COEFFICIENT OPTIONS -                                      |
|   * use B-dot equation                                                |
|     Davies' equation                                                  |
|     Pitzer's equations                                                |
| - AUTO BASIS SWITCHING -                                              |
|   * off                                                               |
|     on                                                                |
| - PITZER DATABASE INFORMATION -                                       |
|   * print only warnings                                               |
```

```
|     print species in model and number of Pitzer coefficients         |
|     print species in model and names of Pitzer coefficients          |
| - PICKUP FILE -                                                      |
|   * write pickup file                                                |
|     don't write pickup file                                          |
| - LIST MEAN IONIC PROPERTIES -                                       |
|   * don't print                                                      |
|     print                                                            |
| - LIST AQUEOUS SPECIES, ION SIZES, AND HYDRATION NUMBERS -           |
|     print                                                            |
|   * don't print                                                      |
| - CONVERGENCE CRITERIA -                                             |
|   * test both residual functions and correction terms                |
|     test only residual functions                                     |
|----------------------------------------------------------------------|
|DEBUGGING SWITCHES (0 = off, 1,2 = on                                 |
|----------------------------------------------------------------------|
|0  generic debugging information                                      |2
|0  print details of pre-Newton-Raphson iteration                      |2
|0  print details of Newton-Raphson iteration                          |
|0  print details of stoichiometric factors                            |2
|0  print details of stoichiometric factors calculation                |
|0  write reactions on RLIST                                           |
|0  list stoichiometric concentrations of master species               |
|0  request iteration variables to be killed                           |
|----------------------------------------------------------------------|
|DEVELOPMENT OPTIONS  (used for code development)                      |
|----------------------------------------------------------------------|
| none                                                                 |
|----------------------------------------------------------------------|
|TOLERANCES                  (desired values)        (defaults)        |
|----------------------------------------------------------------------|
|      residual functions  |                      |1.0e-10  tolbt     |
|        correction terms  |                      |1.0e-10  toldl     |
|        saturation state  |                      |0.5      tolsat    |
|number of N-R iterations  |                      |30       itermx    |
|----------------------------------------------------------------------|

 --- The input file has been successfully read ---

 --- Reading the data1 file ---

 --- The data1 file has been successfully read ---

 * note - (eqlib/inbdot) The following aqueous species
       have been assigned a default hard core diameter of
         4.000 Angstroms-
         Cu(NO2)2(aq)
         Nd(HPO4)2-

 The species Phlogopite               has been user-suppressed

 The species Annite                   has been user-suppressed

 The species Clinochlore-14A          has been user-suppressed

 The species Daphnite-14A             has been user-suppressed

 The species Clinozoisite             has been user-suppressed

 The species Epidote                  has been user-suppressed

 The species Epidote-ord              has been user-suppressed
```

```
The species Andradite                has been user-suppressed
The species Grossular                has been user-suppressed
The species Enstatite                has been user-suppressed
The species Ferrosilite              has been user-suppressed
The species Pyrite                   has been user-suppressed
The species Pyrrhotite               has been user-suppressed
The species Troilite                 has been user-suppressed
The species Alabandite               has been user-suppressed
The species Brezinaite               has been user-suppressed
The species Chalcocite               has been user-suppressed
The species Covellite                has been user-suppressed
The species Millerite                has been user-suppressed
The species Polydymite               has been user-suppressed
The species Vaesite                  has been user-suppressed
The species Heazlewoodite            has been user-suppressed
The species Galena                   has been user-suppressed
The species Sulfur                   has been user-suppressed
The species CaZrO3                   has been user-suppressed
The species BaZrO3                   has been user-suppressed
The species SrZrO3                   has been user-suppressed
The species U2S3                     has been user-suppressed
The species U3S5                     has been user-suppressed
The species US2                      has been user-suppressed
The species US3                      has been user-suppressed
The species US                       has been user-suppressed
The species US1.9                    has been user-suppressed
The species U3P4                     has been user-suppressed
The species UP                       has been user-suppressed
The species UP2                      has been user-suppressed
The species HS-                      has been user-suppressed
The species H2S(aq)                  has been user-suppressed
```

```
The species S--                      has been user-suppressed


eeee   qqq   33333  n   n  rrrr
e     q   q      3  nn  n  r   r
eeee  q   q    33   n n n  rrrr
e     q q q      3  n  nn  r  r
eeee   qqq   3333   n   n  r   r
          q


EQ3NR, version 7.2b (R139    )
 supported by EQLIB, version 7.2b (R168    )


|EQ3NR input file name= j13solCd.3i                                      |
|Description= "J-13 well water, cadmium solubility                       |
|Version level= 7.2b                                                     |
|Created 01/22/99    Creator= D. H. Lester                               |
|Revised             Revisor=                                            |
|                                                                        |
|  Water from well J-13 at the Nevada Test Site. The composition         |
|is nearly identical to that in the EQ3NR test case input file j13w.3i,|
|which is based on data reported by Harrar et al. (1990) and on p. 3 of|
|Preliminary Scenario Definitions, May 17, 1996, except for fixing of  |
|bicarbonate via fixed fugacity of CO2 and pH.  Al, Fe, Mn, etc. re-   |
|tained, as these are needed to model reaction with tuff, etc.  traces |
|of Pu, U, Gd, Ba, La, Nd, Ce, Sm, Pb, Cr, Ni, Cu, Zr, Sr, Cs,          |
|Zn, & Mo added to enable modeling .  Nb isn't in data base.             |
|                                                                        |
|                                                                        |
|This run uses revised data base, with essentially no organics.  Also, |
|several to many other unlikely aqueous species removed.                |
|                                                                        |
|Electrical balancing is on H+.  These data do not agree exactly with |
|those reported in the SCP.  CO2 and O2 fixed at atmospheric values.    |
|                                                                        |
|  This run uses the revised data base, incorporating SKB data.          |
|                                                                        |
|  Purpose: To determine cadmium solubility This run represents          |
|  a run with a manganese content that just saturates the first Cd       |
|  mineral (otavite) to precipitate.                                     |
|                              References                                |
|                                                                        |
|Harrar, J. E., Carley, J. F., Isherwood, W. F., and Raber, E., 1990,   |
|  Report of the Committee to Review the Use of J-13 Well Water in       |
|  Nevada Nuclear Waste Storage Investigations: UCID-21867, Lawrence     |
|  Livermore National Laboratory, Livermore, California.                 |

data0.nuc.dhl
THERMODYNAMIC DATABASE
This data base is a modified version of data0.nuc.R3 as changed by D.H. Lester

The data base datao.nuc.R3is a composite of data0.alt.V8.R5 and data0.b19.skb,
by P. L. Cloke on 15-aug-96.  It was specially modified for evaluation of
nuclear criticality needs on the Yucca Mt. Project.  Six EQ3NR runs were made
using input data for elements in J13 well water and components of the current
design for waste glass packages.  Three runs were saturated with air, at pH 4,
```

7.41, and 10. The other three were for highly reducing conditions, log fO2 = -80, and carbonated limited to the solubility of atmospheric CO2 in water, 1.0 E-5 m. Solid and solution species appearing on the outputs and which constituted less than 0.1% of dissolved elements, or whose affinities did not exceed 1.0 E-10, on any of the outputs, were deleted from this data base.

The lanthanide data from the .skb data base replaced those in the .alt file in those cases in which there was overlap, except for the lanthanide metals. This includes replacing data for LnO2H, LnO+, and LnO2- by the .skb data for Ln(OH)3 Ln(OH()2+, and Ln(OH)4-, respectively. Ce++++ was added as well as more data for Y. Lanthanide data in the .skb base that aren't in the .alt base were added. LnPO4.xH2O, to which .skb assigned a value of 10 to x, was changed to LnPO4.H2O, in keeping with the formula for rhabdophane (and in keeping with the XRD pattern).

Exceptions: the .skb data for Eu were not entered as replacements for .alt data. The .skb data for Pm were not entered. Divalent lanthanide data were not entered.

```
Output package:  eq3
Data set:        cm2
+-------------------------------------------------------------------
```

The activity coefficients of aqueous solute species
and the activity of water are calculated according to the
B-dot equation plus others

```
Temperature=  25.00 degrees Celsius
pressure=    1.0132 bars


        79 elements are in the data base
       100 elements can be loaded into memory
        37 elements are active in this problem


      1170 aqueous species are in the data base
       652 aqueous species were loaded into memory
      2000 aqueous species can be loaded into memory
       567 aqueous species are active in this problem

      1090 aqueous reactions are in the data base
       572 aqueous reactions were loaded into memory
      1899 aqueous reactions can be loaded into memory


           1034 minerals are in the data base
            681 minerals were loaded into memory
            850 minerals can be loaded into memory
            643 minerals are active in this problem

             15 solid solutions are in the data base
             50 solid solutions can be loaded into memory

             87 gases are in the data base
             57 gases were loaded into memory
             80 gases can be loaded into memory
             57 gases are active in this problem
```

```
iopt1  =  0 (redox option switch)
iopt2  =  0 (automatic basis switching switch)
iopt3  =  0 (interfacing output control switch)
iopt4  =  1 (turn-on solid solutions switch)
iopt5  =  0 (not used)
iopt6  =  0 (conv. test criteria switch)
iopt7  =  0 (0/1 version 7/post-version 7 pickup file)
iopt8  =  0 (not used)
iopt9  =  0 (not used)
iopt10 =  0 (not used)


     iopg1  =  0 (act. coeff. choice)
     iopg2  =  0 (pH scale convention switch)
     iopg3  =  0 (not used)
     iopg4  =  0 (not used)
     iopg5  =  0 (not used)
     iopg6  =  0 (not used)
     iopg7  =  0 (not used)
     iopg8  =  0 (not used)
     iopg9  =  0 (not used)
     iopg10 =  0 (not used)


          iopr1  =  0 (list loading of species)
          iopr2  =  0 (list reactions and log K values)
          iopr3  =  0 (aqueous species print order control)
          iopr4  = -2 (aqueous species print cut-off control)
          iopr5  =  0 (mass balance percentages print control)
          iopr6  =  0 (mean ionic act coeff print control)
          iopr7  =  0 (mineral affinity print control)
          iopr8  = -1 (ion size and hydr. no. print control)
          iopr9  =  0 (Pitzer coefficients tabulation)
          iopr10 =  0 (print concbs array)
          iopr11 =  0 (not used)
          iopr12 =  0 (not used)
          iopr13 =  0 (not used)
          iopr14 =  0 (not used)
          iopr15 =  0 (not used)
          iopr16 =  0 (not used)
          iopr17 =  0 (not used)
          iopr18 =  0 (not used)
          iopr19 =  0 (not used)
          iopr20 =  0 (not used)


               iodb1  =  0 (print info. messages switch)
               iodb2  =  0 (print pre-Newton-Raphson optimizations switch)
               iodb3  =  0 (request iteration variables to kill)
               iodb4  =  0 (print Newton-Raphson iterations switch)
               iodb5  =  0 (list stoichiometric equivalences)
               iodb6  =  0 (controls iodb5 level of detail)
               iodb7  =  0 (write reactions on file rlist switch)
               iodb8  =  0 (not used)
               iodb9  =  0 (not used)
               iodb10 =  0 (not used)


The default redox state is constrained by log fO2 =   -0.6778 (log bars)
```

```
Solution density =  1.00000 g/mL

Total dissolved salts =       0.00 mg/kg solution
Total dissolved salts =       0.00 mg/L


Tolbt  =  0.10000E-05 (convergence tolerance on residual functions)
Toldl  =  0.10000E-05 (convergence tolerance on correction terms)
Tolsat =  0.50000E+00 (phase saturation tolerance, does not affect
                       convergence)


                    --- Input Constraints ---

   Species                    Csp      Jflag   Input Type/Co-species

Na+                       1.9922E-03    0    Total conc, molal
SiO2(aq)                  1.0169E-03    0    Total conc, molal
Ca++                      3.2437E-04    0    Total conc, molal
K+                        1.2891E-04    0    Total conc, molal
Mg++                      8.2699E-05    0    Total conc, molal
H+                       -7.4100E+00   16    Log activity
HCO3-                    -3.5000E+00   21    Gas equilibrium
                                                 CO2(g)

                     1.000  CO2(g)
                   +  1.000  H2O
                         ==
                     1.000  H+
                   +  1.000  HCO3-
F-                        1.1475E-04    0    Total conc, molal
Cl-                       2.0140E-04    0    Total conc, molal
NH3(aq)                   1.4200E-04    0    Total conc, molal
    switch with NO3-
SO4--                     1.9154E-04    0    Total conc, molal
B(OH)3(aq)                1.2388E-05    0    Total conc, molal
HPO4--                    1.2711E-06    0    Total conc, molal
Al+++                     1.4825E-06    0    Total conc, molal
Mn++                      7.2809E-18    0    Total conc, molal
Fe++                      1.0000E-18    0    Total conc, molal
CrO4--                    3.4485E-07    0    Total conc, molal
Cu++                      1.0500E-14    0    Total conc, molal
MoO4--                    1.0000E-10    0    Total conc, molal
Cd++                      2.0500E-04    0    Total conc, molal
Cs+                       1.0000E-10    0    Total conc, molal
Li+                       1.0000E-10    0    Total conc, molal
Ni++                      1.0000E-10    0    Total conc, molal
La+++                     1.0000E-14    0    Total conc, molal
Nd+++                     1.0000E-14    0    Total conc, molal
Sm+++                     1.0000E-14    0    Total conc, molal
Ce+++                     1.0000E-24    0    Total conc, molal
Pu++++                    1.0000E-14    0    Total conc, molal
Gd+++                     1.0000E-14    0    Total conc, molal
UO2++                     1.0000E-14    0    Total conc, molal
Sr++                      1.0000E-10    0    Total conc, molal
Ba++                      1.0000E-10    0    Total conc, molal
Ti(OH)4(aq)               1.0000E-10    0    Total conc, molal
Zn++                      1.0000E-10    0    Total conc, molal
Zr(OH)2++                 1.0000E-20    0    Total conc, molal
Pb++                      1.0000E-10    0    Total conc, molal
```

```
Electrical balance will be achieved by adjusting
  the concentration of "H+                      ". Any other specified
  constraint will be overridden.


     Switching NO3- into the basis set for NH3(aq)


                        1.000  NO3-
                      +  1.000  H2O
                      +  1.000  H+
                             ==
                        1.000  NH3(aq)
                      +  2.000  O2(g)

                        1.000  NH3(aq)
                      +  2.000  O2(g)
                             ==
                        1.000  H2O
                      +  1.000  H+
                      +  1.000  NO3-

          --- Inactive Aqueous Species ---

    HS-                           H2S(aq)
    S--



                       --- Modified Input Constraints ---

   Species                     Csp      Jflag   Input Type/Co-species

Al+++                      1.4825E-06    0    Total conc, molal
B(OH)3(aq)                 1.2388E-05    0    Total conc, molal
Ba++                       1.0000E-10    0    Total conc, molal
Ca++                       3.2437E-04    0    Total conc, molal
Cd++                       2.0500E-04    0    Total conc, molal
Ce+++                      1.0000E-24    0    Total conc, molal
Cl-                        2.0140E-04    0    Total conc, molal
CrO4--                     3.4485E-07    0    Total conc, molal
Cs+                        1.0000E-10    0    Total conc, molal
Cu++                       1.0500E-14    0    Total conc, molal
F-                         1.1475E-04    0    Total conc, molal
Fe++                       1.0000E-18    0    Total conc, molal
Gd+++                      1.0000E-14    0    Total conc, molal
H+                        -7.4100E+00   16    Log activity
HCO3-                     -3.5000E+00   21    Gas equilibrium
                                                  CO2(g)

                        1.000  CO2(g)
                      +  1.000  H2O
                             ==
                        1.000  H+
                      +  1.000  HCO3-
HCO3-                     -3.5000E+00   21    Gas equilibrium
HPO4--                     1.2711E-06    0    Total conc, molal
K+                         1.2891E-04    0    Total conc, molal
La+++                      1.0000E-14    0    Total conc, molal
Li+                        1.0000E-10    0    Total conc, molal
Mg++                       8.2699E-05    0    Total conc, molal
Mn++                       7.2809E-18    0    Total conc, molal
MoO4--                     1.0000E-10    0    Total conc, molal
```

NO3-	1.4200E-04	0	Total conc, molal
Na+	1.9922E-03	0	Total conc, molal
Nd+++	1.0000E-14	0	Total conc, molal
Ni++	1.0000E-10	0	Total conc, molal
Pb++	1.0000E-10	0	Total conc, molal
Pu++++	1.0000E-14	0	Total conc, molal
SO4--	1.9154E-04	0	Total conc, molal
SiO2(aq)	1.0169E-03	0	Total conc, molal
Sm+++	1.0000E-14	0	Total conc, molal
Sr++	1.0000E-10	0	Total conc, molal
Ti(OH)4(aq)	1.0000E-10	0	Total conc, molal
UO2++	1.0000E-14	0	Total conc, molal
Zn++	1.0000E-10	0	Total conc, molal
Zr(OH)2++	1.0000E-20	0	Total conc, molal
HS-	0.0000E+00	30	Eliminated species
S2--	0.0000E+00	30	Eliminated species
S2O3--	0.0000E+00	30	Eliminated species
CN-	0.0000E+00	30	Eliminated species
ClO-	0.0000E+00	30	Eliminated species
ClO2-	0.0000E+00	30	Eliminated species
ClO3-	0.0000E+00	30	Eliminated species
ClO4-	0.0000E+00	30	Eliminated species
Cr++	0.0000E+00	30	Eliminated species
Cr+++	0.0000E+00	30	Eliminated species
CrO4---	0.0000E+00	30	Eliminated species
Cu+	0.0000E+00	30	Eliminated species
Fe+++	0.0000E+00	30	Eliminated species
H2(aq)	0.0000E+00	27	Dependent species
HSO5-	0.0000E+00	30	Eliminated species
Mn+++	0.0000E+00	30	Eliminated species
MnO4--	0.0000E+00	30	Eliminated species
N2(aq)	0.0000E+00	30	Eliminated species
N3-	0.0000E+00	30	Eliminated species
NO2-	0.0000E+00	30	Eliminated species
NH3(aq)	0.0000E+00	30	Eliminated species
O2(aq)	0.0000E+00	27	Dependent species
Pb++++	0.0000E+00	30	Eliminated species
Pu+++	0.0000E+00	30	Eliminated species
PuO2+	0.0000E+00	30	Eliminated species
PuO2++	0.0000E+00	30	Eliminated species
S2O4--	0.0000E+00	30	Eliminated species
S2O6--	0.0000E+00	30	Eliminated species
S2O8--	0.0000E+00	30	Eliminated species
S3--	0.0000E+00	30	Eliminated species
S3O6--	0.0000E+00	30	Eliminated species
S4--	0.0000E+00	30	Eliminated species
S4O6--	0.0000E+00	30	Eliminated species
S5--	0.0000E+00	30	Eliminated species
S5O6--	0.0000E+00	30	Eliminated species
SCN-	0.0000E+00	30	Eliminated species
SO3--	0.0000E+00	30	Eliminated species
Sm++	0.0000E+00	30	Eliminated species
U+++	0.0000E+00	30	Eliminated species
U++++	0.0000E+00	30	Eliminated species
UO2+	0.0000E+00	30	Eliminated species
Zr++++	0.0000E+00	30	Eliminated species

* note - (eq3nr/arrset) Optimization ended
  outside requested limits.

```
iter=   0
       del(                 )=  0.00000E+00, delfnc=  0.00000E+00
      beta(conc    H+      )=  6.14101E-01, betfnc=  0.00000E+00
        bbig=  5.29453E-06, ubbig= Pu++++
        bneg= -3.15600E-01, ubneg= Cl-
        bgamx=  6.61169E-06, ubgamx= (PuO2)3(CO3)6(6-)
        bsigmm= -2.96138E-06
        bxi= -1.60844E-05
        btfcnr=  0.00000E+00

iter=   1
       del(conc    Al+++   )= -2.84143E+01, delfnc=  0.00000E+00
      Relaxation factor=  0.35194E-01
      Relaxed del(conc    Al+++   )= -1.00000E+00
      beta(conc    H+      )=  5.68937E-01, betfnc=  7.35441E-02
        bbig=  1.53200E-01, ubbig= La+++
        bneg= -3.05841E-01, ubneg= Cl-
        bgamx= -8.24355E-03, ubgamx= (PuO2)3(CO3)6(6-)
        bsigmm=  2.39430E-02
        bxi=  2.01686E-02
        btfcnr=  7.34928E-02

iter=   2
       del(conc    Al+++   )= -1.52231E+01, delfnc=  4.64245E-01
      Relaxation factor=  0.65690E-01
      Relaxed del(conc    Al+++   )= -1.00000E+00
      beta(conc    H+      )=  4.94972E-01, betfnc=  1.30006E-01
        bbig=  2.59580E-01, ubbig= UO2++
        bneg= -2.88020E-01, ubneg= Cl-
        bgamx= -1.43098E-02, ubgamx= (PuO2)3(CO3)6(6-)
        bsigmm=  4.11068E-02
        bxi=  3.48506E-02
        btfcnr=  1.29884E-01

iter=   3
       del(conc    Pu++++  )= -7.79397E+00, delfnc=  4.88017E-01
      Relaxation factor=  0.25661
      Relaxed del(conc    Pu++++  )= -2.00000E+00
      beta(conc    UO2++   )=  2.72663E+00, betfnc= -4.50865E+00
        bbig=  2.72663E+00, ubbig= UO2++
        bneg= -2.23949E-01, ubneg= Cl-
        bgamx= -7.03054E-02, ubgamx= (PuO2)3(CO3)6(6-)
        bsigmm=  1.96541E-01
        bxi=  1.75082E-01
        btfcnr= -4.30063E+00

iter=   4
       del(conc    UO2++   )= -1.78846E+00, delfnc=  7.70533E-01
      Relaxation factor=  0.50000
      Relaxed del(conc    UO2++   )= -8.94230E-01
      beta(conc    UO2++   )=  1.84279E+00, betfnc=  3.24150E-01
        bbig=  1.84279E+00, ubbig= UO2++
        bneg= -1.11848E-01, ubneg= Cl-
        bgamx= -3.73613E-02, ubgamx= (PuO2)3(CO3)6(6-)
        bsigmm=  9.69377E-02
        bxi=  8.48195E-02
        btfcnr=  3.44940E-01

iter=   5
       del(conc    UO2++   )= -7.11288E-01, delfnc=  6.02290E-01
      Relaxation factor=  0.50000
      Relaxed del(conc    UO2++   )= -3.55644E-01
```

```
      beta(conc    UO2++   )=  1.07680E+00, betfnc=  4.15671E-01
        bbig=  1.07680E+00, ubbig= UO2++
        bneg= -5.67136E-02, ubneg= Cl-
        bgamx= -1.09387E-02, ubgamx= (PuO2)3(CO3)6(6-)
        bsigmm=  2.90343E-02
        bxi=  2.35873E-02
        btfcnr=  4.22676E-01

iter=   6
       del(conc    UO2++   )= -4.09941E-01, delfnc=  4.23664E-01
      Relaxation factor=  0.50000
      Relaxed del(conc    UO2++   )= -2.04970E-01
      beta(conc    UO2++   )=  6.07791E-01, betfnc=  4.35557E-01
        bbig=  6.07791E-01, ubbig= UO2++
        bneg= -2.90340E-02, ubneg= Cl-
        bgamx= -4.55330E-03, ubgamx= (PuO2)3(CO3)6(6-)
        bsigmm=  1.27166E-02
        bxi=  9.68354E-03
        btfcnr=  4.39507E-01

iter=   7
       del(conc    Cl-     )=  3.26417E-01, delfnc=  2.03745E-01
      Relaxation factor=  0.50000
      Relaxed del(conc    Cl-     )=  1.63209E-01
      beta(conc    UO2++   )=  3.32618E-01, betfnc=  4.52743E-01
        bbig=  3.32618E-01, ubbig= UO2++
        bneg= -1.48995E-02, ubneg= Cl-
        bgamx= -1.99209E-03, ubgamx= (PuO2)3(CO3)6(6-)
        bsigmm=  5.95415E-03
        bxi=  4.21274E-03
        btfcnr=  4.55305E-01

iter=   8
       del(conc    Cl-     )=  2.67478E-01, delfnc=  1.80563E-01
      beta(conc    UO2++   )=  3.95656E-02, betfnc=  8.81048E-01
        bbig=  3.95656E-02, ubbig= UO2++
        bneg= -4.01871E-04, ubneg= Al+++
        bgamx= -1.92365E-03, ubgamx= (PuO2)3(CO3)6(6-)
        bsigmm=  5.85156E-03
        bxi=  4.06062E-03
        btfcnr=  8.84604E-01

iter=   9
       del(conc    Cl-     )=  1.18284E-01, delfnc=  5.57780E-01
      beta(conc    Cd++    )=  8.96939E-04, betfnc=  9.77330E-01
        bbig=  8.96939E-04, ubbig= Cd++
        bneg= -7.79565E-06, ubneg= B(OH)3(aq)
        bgamx=  3.26389E-04, ubgamx= (PuO2)3(CO3)6(6-)
        bsigmm= -2.37103E-04
        bxi= -6.86853E-04
        btfcnr=  9.79360E-01

iter=  10
       del(conc    Cd++    )= -1.92972E-02, delfnc=  8.36857E-01
      beta(conc    Cd++    )=  2.87686E-05, betfnc=  9.67926E-01
        bbig=  2.87686E-05, ubbig= Cd++
        bneg= -2.60439E-05, ubneg= UO2++
        bgamx=  4.42653E-05, ubgamx= (PuO2)3(CO3)6(6-)
        bsigmm= -2.47625E-05
        bxi= -9.31949E-05
        btfcnr=  9.80066E-01

iter=  11
```

```
      del(conc    Cd++    )= -4.41635E-04, delfnc=  9.77114E-01
     beta(conc    UO2++   )= -7.18577E-07, betfnc=  9.75022E-01
       bbig=  6.27676E-07, ubbig= Gd+++
       bneg= -7.18577E-07, ubneg= UO2++
       bgamx=  1.21483E-06, ubgamx= (PuO2)3(CO3)6(6-)
       bsigmm= -6.31129E-07
       bxi= -2.55784E-06
       btfcnr=  9.99682E-01

iter=  12
      del(conc    Pu++++  )= -4.99040E-07, delfnc=  9.98870E-01
     beta(conc    UO2++   )= -4.65455E-09, betfnc=  9.93523E-01
       bbig=  4.06252E-09, ubbig= Gd+++
       bneg= -4.65455E-09, ubneg= UO2++
       bgamx=  7.86568E-09, ubgamx= (PuO2)3(CO3)6(6-)
       bsigmm= -2.81936E-09
       bxi= -1.65613E-08
       btfcnr=  9.99996E-01


Hybrid Newton-Raphson iteration converged in  12 steps.


                    --- Summary of the Aqueous Solution ---


          --- Elemental Composition of the Aqueous Solution ---
```

Element	mg/L	mg/kg	Moles/kg
O	0.88828E+06	0.88828E+06	0.5551938881E+02
Al	0.40000E-01	0.40000E-01	0.1482500002E-05
B	0.13393	0.13393	0.1238800000E-04
Ba	0.13733E-04	0.13733E-04	0.1000000000E-09
Ca	13.000	13.000	0.3243700001E-03
Cd	23.044	23.044	0.2050000004E-03
Ce	0.14012E-18	0.14012E-18	0.1000000003E-23
Cl	7.1402	7.1402	0.2014000004E-03
Cr	0.17931E-01	0.17931E-01	0.3448500000E-06
Cs	0.13291E-04	0.13291E-04	0.1000000000E-09
Cu	0.66723E-09	0.66723E-09	0.1050000002E-13
F	2.1801	2.1801	0.1147500000E-03
Fe	0.55847E-13	0.55847E-13	0.1000000000E-17
Gd	0.15725E-08	0.15725E-08	0.1000000004E-13
H	0.11190E+06	0.11190E+06	0.1110192371E+03
C	28.448	28.448	0.2368468585E-02
P	0.39371E-01	0.39371E-01	0.1271100001E-05
K	5.0402	5.0402	0.1289100000E-03
La	0.13891E-08	0.13891E-08	0.1000000003E-13
Li	0.69410E-06	0.69410E-06	0.1000000000E-09
Mg	2.0100	2.0100	0.8269900002E-04
Mn	0.40000E-12	0.40000E-12	0.7280900002E-17
Mo	0.95940E-05	0.95940E-05	0.1000000000E-09
N	1.9890	1.9890	0.1420000000E-03
Na	45.800	45.800	0.1992200000E-02
Nd	0.14424E-08	0.14424E-08	0.1000000003E-13
Ni	0.58690E-05	0.58690E-05	0.1000000000E-09
Pb	0.20720E-04	0.20720E-04	0.1000000000E-09
Pu	0.24400E-08	0.24400E-08	0.1000000003E-13
S	6.1419	6.1419	0.1915400000E-03
Si	28.560	28.560	0.1016900000E-02

Sm	0.15036E-08	0.15036E-08	0.1000000003E-13
Sr	0.87620E-05	0.87620E-05	0.1000000000E-09
Ti	0.47880E-05	0.47880E-05	0.1000000000E-09
U	0.23803E-08	0.23803E-08	0.9999999953E-14
Zn	0.65390E-05	0.65390E-05	0.1000000000E-09
Zr	0.91224E-15	0.91224E-15	0.1000000001E-19

--- Elemental Composition as Strict Basis Species ---

Species	mg/L	mg/kg	Moles/kg
H2O	0.10002E+07	0.10002E+07	0.5551938881E+02
Al+++	0.40000E-01	0.40000E-01	0.1482500002E-05
B(OH)3(aq)	0.76599	0.76599	0.1238800000E-04
Ba++	0.13733E-04	0.13733E-04	0.1000000000E-09
Ca++	13.000	13.000	0.3243700001E-03
Cd++	23.044	23.044	0.2050000004E-03
Ce+++	0.14012E-18	0.14012E-18	0.1000000003E-23
Cl-	7.1402	7.1402	0.2014000004E-03
CrO4--	0.40000E-01	0.40000E-01	0.3448500000E-06
Cs+	0.13291E-04	0.13291E-04	0.1000000000E-09
Cu++	0.66723E-09	0.66723E-09	0.1050000002E-13
F-	2.1801	2.1801	0.1147500000E-03
Fe++	0.55847E-13	0.55847E-13	0.1000000000E-17
Gd+++	0.15725E-08	0.15725E-08	0.1000000004E-13
H+	0.11190E+06	0.11190E+06	0.1110192371E+03
HCO3-	144.52	144.52	0.2368468585E-02
HPO4--	0.12200	0.12200	0.1271100001E-05
K+	5.0402	5.0402	0.1289100000E-03
La+++	0.13891E-08	0.13891E-08	0.1000000003E-13
Li+	0.69410E-06	0.69410E-06	0.1000000000E-09
Mg++	2.0100	2.0100	0.8269900002E-04
Mn++	0.40000E-12	0.40000E-12	0.7280900002E-17
MoO4--	0.15994E-04	0.15994E-04	0.1000000000E-09
NH3(aq)	2.4183	2.4183	0.1420000000E-03
Na+	45.800	45.800	0.1992200000E-02
Nd+++	0.14424E-08	0.14424E-08	0.1000000003E-13
Ni++	0.58690E-05	0.58690E-05	0.1000000000E-09
Pb++	0.20720E-04	0.20720E-04	0.1000000000E-09
Pu++++	0.24400E-08	0.24400E-08	0.1000000003E-13
SO4--	18.400	18.400	0.1915400000E-03
SiO2(aq)	61.100	61.100	0.1016900000E-02
Sm+++	0.15036E-08	0.15036E-08	0.1000000003E-13
Sr++	0.87620E-05	0.87620E-05	0.1000000000E-09
Ti(OH)4(aq)	0.11591E-04	0.11591E-04	0.1000000000E-09
UO2++	0.27003E-08	0.27003E-08	0.9999999953E-14
Zn++	0.65390E-05	0.65390E-05	0.1000000000E-09
Zr(OH)2++	0.12524E-14	0.12524E-14	0.1000000001E-19

--- Equivalent Composition of the Aqueous Solution ---

--- Original Basis ---

Species	Moles/kg H2O
H2O	0.5551938881E+02
Al+++	0.1482500002E-05
B(OH)3(aq)	0.1238800000E-04
Ba++	0.1000000000E-09
Ca++	0.3243700001E-03

Cd++	0.2050000004E-03
Ce+++	0.1000000003E-23
Cl-	0.2014000004E-03
CrO4--	0.3448500000E-06
Cs+	0.1000000000E-09
Cu++	0.1050000002E-13
F-	0.1147500000E-03
Fe++	0.1000000000E-17
Gd+++	0.1000000004E-13
H+	0.1110192371E+03
HCO3-	0.2368468585E-02
HPO4--	0.1271100001E-05
K+	0.1289100000E-03
La+++	0.1000000003E-13
Li+	0.1000000000E-09
Mg++	0.8269900002E-04
Mn++	0.7280900002E-17
MoO4--	0.1000000000E-09
NH3(aq)	0.1420000000E-03
Na+	0.1992200000E-02
Nd+++	0.1000000003E-13
Ni++	0.1000000000E-09
Pb++	0.1000000000E-09
Pu++++	0.1000000003E-13
SO4--	0.1915400000E-03
SiO2(aq)	0.1016900000E-02
Sm+++	0.1000000003E-13
Sr++	0.1000000000E-09
Ti(OH)4(aq)	0.1000000000E-09
UO2++	0.9999999953E-14
Zn++	0.1000000000E-09
Zr(OH)2++	0.1000000001E-19

--- Current Basis (cte) ---

Species	Moles/kg H2O
H2O	0.5551938881E+02
Al+++	0.1482500002E-05
B(OH)3(aq)	0.1238800000E-04
Ba++	0.1000000000E-09
Ca++	0.3243700001E-03
Cd++	0.2050000004E-03
Ce+++	0.1000000003E-23
Cl-	0.2014000004E-03
CrO4--	0.3448500000E-06
Cs+	0.1000000000E-09
Cu++	0.1050000002E-13
F-	0.1147500000E-03
Fe++	0.1000000000E-17
Gd+++	0.1000000004E-13
H+	0.1110192371E+03
HCO3-	0.2368468585E-02
HPO4--	0.1271100001E-05
K+	0.1289100000E-03
La+++	0.1000000003E-13
Li+	0.1000000000E-09
Mg++	0.8269900002E-04
Mn++	0.7280900002E-17
MoO4--	0.1000000000E-09
NO3-	0.1420000000E-03
Na+	0.1992200000E-02

Nd+++	0.1000000003E-13
Ni++	0.1000000000E-09
Pb++	0.1000000000E-09
Pu++++	0.1000000003E-13
SO4--	0.1915400000E-03
SiO2(aq)	0.1016900000E-02
Sm+++	0.1000000003E-13
Sr++	0.1000000000E-09
Ti(OH)4(aq)	0.1000000000E-09
UO2++	0.9999999953E-14
Zn++	0.1000000000E-09
Zr(OH)2++	0.1000000001E-19

Single ion activities and activity coefficients are here defined
with respect to the modified NBS pH scale

	pH	Eh	pe
modified NBS pH scale	8.6408	0.7079	1.1966E+01
rational pH scale	8.6140	0.7095	1.1993E+01

pHCl = 134.6819

Activity of water = 0.99988
Log activity of water = -0.00005

True osmotic coefficient= 0.97725
Stoichiometric osmotic coefficient= 0.94169

Sum of true molalities= 0.0068027687449
Sum of stoichiometric molalities= 0.0070596658125

True ionic strength= 0.0036783754920
Stoichiometric ionic strength= 0.0040963699693

--- Electrical Balance Totals ---

	equiv/kg H2O
Sigma(mz) cations =	0.3064398996E-02
Sigma(mz) anions =	-0.3064398995E-02
Total charge =	0.6128797990E-02
Mean charge =	0.3064398995E-02
Charge imbalance =	0.6717265006E-12

Total charge = sigma(mz) cations + abs (sigma(mz) anions)
Mean charge = 1/2 total charge

The electrical imbalance is

0.110E-07 per cent of the total charge
0.219E-07 per cent of the mean charge
0.219E-07 per cent of sigma(mz) cations
0.219E-07 per cent of abs (sigma(mz) anions)

```
--- Electrical Balancing on H+                          ---

     Log activity

input       -7.4100
final       -8.6408
adj         -1.2308


            --- Activity Ratios of Ions -----

Log ( act(Al+++                  ) / act(H+)xx 3 ) =      8.3830
Log ( act(B(OH)3(aq)             )               ) =     -5.0113
Log ( act(Ba++                   ) / act(H+)xx 2 ) =      7.1608
Log ( act(Ca++                   ) / act(H+)xx 2 ) =     13.6365
Log ( act(Cd++                   ) / act(H+)xx 2 ) =     11.7238
Log ( act(Ce+++                  ) / act(H+)xx 3 ) =     -1.9776
Log ( act(Cl-                    ) x act(H+)xx 1 ) =   -134.6819
Log ( act(CrO4--                 ) x act(H+)xx 2 ) =    -23.8599
Log ( act(Cs+                    ) / act(H+)xx 1 ) =     -1.3893
Log ( act(Cu++                   ) / act(H+)xx 2 ) =      0.6420
Log ( act(F-                     ) x act(H+)xx 1 ) =    -12.6103
Log ( act(Fe++                   ) / act(H+)xx 2 ) =    -13.6460
Log ( act(Gd+++                  ) / act(H+)xx 3 ) =      7.4676
Log ( act(HCO3-                  ) x act(H+)xx 1 ) =    -11.3137
Log ( act(HPO4--                 ) x act(H+)xx 2 ) =    -23.4140
Log ( act(K+                     ) / act(H+)xx 1 ) =      4.7208
Log ( act(La+++                  ) / act(H+)xx 3 ) =      8.5780
Log ( act(Li+                    ) / act(H+)xx 1 ) =     -1.3878
Log ( act(Mg++                   ) / act(H+)xx 2 ) =     13.0562
Log ( act(Mn++                   ) / act(H+)xx 2 ) =     -1.1147
Log ( act(MoO4--                 ) x act(H+)xx 2 ) =    -27.3939
Log ( act(NH3(aq)                )               ) =    -67.4654
Log ( act(Na+                    ) / act(H+)xx 1 ) =      5.9083
Log ( act(Nd+++                  ) / act(H+)xx 3 ) =      7.9249
Log ( act(Ni++                   ) / act(H+)xx 2 ) =      7.1625
Log ( act(Pb++                   ) / act(H+)xx 2 ) =      7.1660
Log ( act(Pu++++                 ) / act(H+)xx 4 ) =     -9.2738
Log ( act(SO4--                  ) x act(H+)xx 2 ) =    -21.1319
Log ( act(SiO2(aq)               )               ) =     -3.0164
Log ( act(Sm+++                  ) / act(H+)xx 3 ) =      7.7237
Log ( act(Sr++                   ) / act(H+)xx 2 ) =      7.1476
Log ( act(Ti(OH)4(aq)            )               ) =    -10.0000
Log ( act(UO2++                  ) / act(H+)xx 2 ) =     -5.7467
Log ( act(Zn++                   ) / act(H+)xx 2 ) =      7.0055
Log ( act(Zr(OH)2++              ) / act(H+)xx 2 ) =    -18.7718
Log ( act(S2--                   ) x act(H+)xx 2 ) =   *********
Log ( act(S2O3--                 ) x act(H+)xx 2 ) =   -168.6510
Log ( act(CN-                    ) x act(H+)xx 1 ) =   -133.0415
Log ( act(ClO-                   ) x act(H+)xx 1 ) =   -151.5714
Log ( act(ClO2-                  ) x act(H+)xx 1 ) =   -161.3660
Log ( act(ClO3-                  ) x act(H+)xx 1 ) =   -157.3069
Log ( act(ClO4-                  ) x act(H+)xx 1 ) =   -157.5432
Log ( act(Cr++                   ) / act(H+)xx 2 ) =    -41.9210
Log ( act(Cr+++                  ) / act(H+)xx 3 ) =    -12.7935
Log ( act(CrO4---                ) x act(H+)xx 3 ) =    -42.7369
Log ( act(Cu+                    ) / act(H+)xx 1 ) =    -17.2344
Log ( act(Fe+++                  ) / act(H+)xx 3 ) =     -6.0500
Log ( act(H2(aq)                 )               ) =    -44.3187
Log ( act(HSO5-                  ) x act(H+)xx 1 ) =    -40.2065
Log ( act(Mn+++                  ) / act(H+)xx 3 ) =     -6.0898
Log ( act(MnO4--                 ) x act(H+)xx 2 ) =    -37.1055
Log ( act(N2(aq)                 )               ) =    -23.8339
```

```
Log ( act(N3-                    ) x act(H+)xx 1 ) =   -112.5802
Log ( act(NO2-                   ) x act(H+)xx 1 ) =    -25.9642
Log ( act(NO3-                   ) x act(H+)xx 1 ) =    -12.5174
Log ( act(O2(aq)                 )               ) =     -3.5761
Log ( act(Pb++++                 ) / act(H+)xx 4 ) =     -8.8023
Log ( act(Pu+++                  ) / act(H+)xx 3 ) =    -12.8869
Log ( act(PuO2+                  ) / act(H+)xx 1 ) =     -7.2310
Log ( act(PuO2++                 ) / act(H+)xx 2 ) =     -2.9346
Log ( act(S2O4--                 ) x act(H+)xx 2 ) =   -155.3560
Log ( act(S2O6--                 ) x act(H+)xx 2 ) =    -91.8956
Log ( act(S2O8--                 ) x act(H+)xx 2 ) =    -66.5517
Log ( act(S3--                   ) x act(H+)xx 2 ) =   *********
Log ( act(S3O6--                 ) x act(H+)xx 2 ) =   -202.3482
Log ( act(S4--                   ) x act(H+)xx 2 ) =   *********
Log ( act(S4O6--                 ) x act(H+)xx 2 ) =   -296.8946
Log ( act(S5--                   ) x act(H+)xx 2 ) =   *********
Log ( act(S5O6--                 ) x act(H+)xx 2 ) =   -420.3214
Log ( act(SCN-                   ) x act(H+)xx 1 ) =   *********
Log ( act(SO3--                  ) x act(H+)xx 2 ) =    -65.9682
Log ( act(Sm++                   ) / act(H+)xx 2 ) =    -39.3447
Log ( act(U+++                   ) / act(H+)xx 3 ) =    -67.8674
Log ( act(U++++                  ) / act(H+)xx 4 ) =    -37.9077
Log ( act(UO2+                   ) / act(H+)xx 1 ) =    -24.8696
Log ( act(Zr++++                 ) / act(H+)xx 4 ) =    -18.5332
```

--- Distribution of Aqueous Species ---

(Species with concentrations .lt. 1.e-12 are not listed)

Species	Molality	Log molality	Log gamma	Log activity
HCO3-	2.2648E-03	-2.6450	-0.0279	-2.6729
Na+	1.9806E-03	-2.7032	-0.0293	-2.7325
SiO2(aq)	9.6294E-04	-3.0164	0.0000	-3.0164
Ca++	2.9303E-04	-3.5331	-0.1120	-3.6451
O2(aq)	2.6517E-04	-3.5765	0.0004	-3.5761
CdCl+	2.0140E-04	-3.6959	-0.0293	-3.7252
SO4--	1.8327E-04	-3.7369	-0.1134	-3.8503
NO3-	1.4184E-04	-3.8482	-0.0284	-3.8766
K+	1.2877E-04	-3.8902	-0.0298	-3.9200
F-	1.1445E-04	-3.9414	-0.0282	-3.9695
Mg++	7.6354E-05	-4.1172	-0.1082	-4.2254
CO3--	5.6424E-05	-4.2485	-0.1123	-4.3609
HSiO3-	5.0088E-05	-4.3003	-0.0279	-4.3282
CaCO3(aq)	2.0947E-05	-4.6789	0.0000	-4.6789
CO2(aq)	1.0733E-05	-4.9693	0.0004	-4.9689
B(OH)3(aq)	9.7430E-06	-5.0113	0.0000	-5.0113
CaHCO3+	5.7278E-06	-5.2420	-0.0293	-5.2713
NaHCO3(aq)	5.6075E-06	-5.2512	0.0000	-5.2512
OH-	4.7185E-06	-5.3262	-0.0282	-5.3544
CaSO4(aq)	4.1275E-06	-5.3843	0.0000	-5.3843
NaHSiO3(aq)	3.8714E-06	-5.4121	0.0000	-5.4121
Cd++	3.5996E-06	-5.4437	-0.1140	-5.5578
BO2-	2.5854E-06	-5.5875	-0.0279	-5.6154
MgCO3(aq)	2.4698E-06	-5.6073	0.0000	-5.6073
MgSO4(aq)	2.1678E-06	-5.6640	0.0000	-5.6640
NaSO4-	1.8413E-06	-5.7349	-0.0279	-5.7628
AlO2-	1.4731E-06	-5.8318	-0.0279	-5.8597
MgHCO3+	1.4680E-06	-5.8333	-0.0293	-5.8625
HPO4--	9.5708E-07	-6.0191	-0.1134	-6.1324
CrO4--	3.4284E-07	-6.4649	-0.1134	-6.5783
NaCO3-	2.8116E-07	-6.5510	-0.0279	-6.5789

CaNO3+	1.6125E-07	-6.7925	-0.0293	-6.8218
MgF+	1.5372E-07	-6.8133	-0.0293	-6.8425
KSO4-	1.3716E-07	-6.8628	-0.0279	-6.8907
CaF+	1.2483E-07	-6.9037	-0.0293	-6.9330
CaPO4-	1.0699E-07	-6.9707	-0.0279	-6.9986
CaHPO4(aq)	9.1718E-08	-7.0375	0.0000	-7.0375
CaB(OH)4+	3.9028E-08	-7.4086	-0.0293	-7.4379
MgPO4-	3.7850E-08	-7.4219	-0.0279	-7.4498
MgHPO4(aq)	3.5660E-08	-7.4478	0.0000	-7.4478
H2PO4-	2.8845E-08	-7.5399	-0.0279	-7.5678
NaF(aq)	1.9971E-08	-7.6996	0.0000	-7.6996
CaOH+	1.4958E-08	-7.8251	-0.0293	-7.8544
MgB(OH)4+	1.2207E-08	-7.9134	-0.0293	-7.9426
NaHPO4-	1.2106E-08	-7.9170	-0.0279	-7.9449
HAlO2(aq)	8.9115E-09	-8.0500	0.0000	-8.0500
NaB(OH)4(aq)	8.3746E-09	-8.0770	0.0000	-8.0770
H2SiO4--	2.6210E-09	-8.5815	-0.1134	-8.6949
H+	2.4324E-09	-8.6140	-0.0268	-8.6408
HCrO4-	2.0101E-09	-8.6968	-0.0279	-8.7247
NaOH(aq)	1.2986E-09	-8.8865	0.0000	-8.8865
KHPO4-	5.6948E-10	-9.2445	-0.0279	-9.2724
NaAlO2(aq)	4.6193E-10	-9.3354	0.0000	-9.3354
CdSO4(aq)	3.9330E-10	-9.4053	0.0000	-9.4053
HF(aq)	3.6122E-10	-9.4422	0.0000	-9.4422
PO4---	2.7726E-10	-9.5571	-0.2563	-9.8134
KOH(aq)	1.8229E-10	-9.7392	0.0000	-9.7392
Ti(OH)4(aq)	1.0000E-10	-10.0000	0.0000	-10.0000
MoO4--	1.0000E-10	-10.0000	-0.1123	-10.1123
Cs+	1.0000E-10	-10.0000	-0.0301	-10.0301
Li+	9.9916E-11	-10.0004	-0.0282	-10.0286
Pb++	9.9870E-11	-10.0006	-0.1151	-10.1156
Ba++	9.8450E-11	-10.0068	-0.1140	-10.1208
Ni++	9.8390E-11	-10.0070	-0.1120	-10.1191
Sr++	9.5500E-11	-10.0200	-0.1140	-10.1340
Zn++	6.8536E-11	-10.1641	-0.1120	-10.2761
HSO4-	3.2802E-11	-10.4841	-0.0279	-10.5120
ZnOH+	2.7158E-11	-10.5661	-0.0293	-10.5954
Al(OH)2+	1.5025E-11	-10.8232	-0.0293	-10.8524
PO3F--	3.7151E-12	-11.4300	-0.1134	-11.5434
ZnHCO3+	3.1644E-12	-11.4997	-0.0293	-11.5290
SrCO3(aq)	2.3464E-12	-11.6296	0.0000	-11.6296
SrSO4(aq)	2.0686E-12	-11.6843	0.0000	-11.6843
BaCO3(aq)	1.4579E-12	-11.8363	0.0000	-11.8363
NiSO4(aq)	1.4333E-12	-11.8437	0.0000	-11.8437

--- Major Aqueous Species Contributing to Mass Balances ---

Aqueous species accounting for 99% or more of Al+++

Species	Factor	Molality	Per Cent
AlO2-	1.00	1.4731E-06	99.37
Total		1.4825E-06	99.37

Aqueous species accounting for 99% or more of B(OH)3(aq)

Species	Factor	Molality	Per Cent
B(OH)3(aq)	1.00	9.7430E-06	78.65

```
  BO2-                          1.00    2.5854E-06     20.87
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                 1.2388E-05     99.52


Aqueous species accounting for 99% or more of Ba++

     Species                   Factor    Molality     Per Cent

  Ba++                           1.00    9.8450E-11     98.45
  BaCO3(aq)                      1.00    1.4579E-12      1.46
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                 1.0000E-10     99.91


Aqueous species accounting for 99% or more of Ca++

     Species                   Factor    Molality     Per Cent

  Ca++                           1.00    2.9303E-04     90.34
  CaCO3(aq)                      1.00    2.0947E-05      6.46
  CaHCO3+                        1.00    5.7278E-06      1.77
  CaSO4(aq)                      1.00    4.1275E-06      1.27
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                 3.2437E-04     99.83


Aqueous species accounting for 99% or more of Cd++

     Species                   Factor    Molality     Per Cent

  CdCl+                          1.00    2.0140E-04     98.24
  Cd++                           1.00    3.5996E-06      1.76
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                 2.0500E-04    100.00


Aqueous species accounting for 99% or more of Ce+++

     Species                   Factor    Molality     Per Cent

  Ce(CO3)2-                      1.00    7.9900E-25     79.90
  CeCO3+                         1.00    1.8475E-25     18.47
  Ce(OH)2++                      1.00    1.1380E-26      1.14
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                 1.0000E-24     99.51


Aqueous species accounting for 99% or more of Cl-

     Species                   Factor    Molality     Per Cent

  CdCl+                          1.00    2.0140E-04    100.00
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                 2.0140E-04    100.00


Aqueous species accounting for 99% or more of CrO4--

     Species                   Factor    Molality     Per Cent

  CrO4--                         1.00    3.4284E-07     99.42
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
```

```
  Total                                 3.4485E-07     99.42

Aqueous species accounting for 99% or more of Cs+

     Species                    Factor    Molality     Per Cent

  Cs+                            1.00    1.0000E-10    100.00
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                  1.0000E-10    100.00

Aqueous species accounting for 99% or more of Cu++

     Species                    Factor    Molality     Per Cent

  CuCO3(aq)                      1.00    9.0123E-15     85.83
  Cu(CO3)2--                     1.00    8.5892E-16      8.18
  CuOH+                          1.00    5.5322E-16      5.27
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                  1.0500E-14     99.28

Aqueous species accounting for 99% or more of F-

     Species                    Factor    Molality     Per Cent

  F-                             1.00    1.1445E-04     99.74
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                  1.1475E-04     99.74

Aqueous species accounting for 99% or more of Fe++

     Species                    Factor    Molality     Per Cent

  Fe(OH)3(aq)                    1.00    8.9099E-19     89.10
  Fe(OH)4-                       1.00    1.0435E-19     10.44
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                  1.0000E-18     99.53

Aqueous species accounting for 99% or more of Gd+++

     Species                    Factor    Molality     Per Cent

  Gd(CO3)2-                      1.00    8.8674E-15     88.67
  GdCO3+                         1.00    1.0276E-15     10.28
  GdPO4(aq)                      1.00    8.0112E-17    8.011E-01
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                  1.0000E-14     99.75

Aqueous species accounting for 99% or more of HCO3-

     Species                    Factor    Molality     Per Cent

  HCO3-                          1.00    2.2648E-03     95.62
  CO3--                          1.00    5.6424E-05      2.38
  CaCO3(aq)                      1.00    2.0947E-05    8.844E-01
  CO2(aq)                        1.00    1.0733E-05    4.532E-01
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                  2.3685E-03     99.34
```

Aqueous species accounting for 99% or more of HPO4--

Species	Factor	Molality	Per Cent
HPO4--	1.00	9.5708E-07	75.30
CaPO4-	1.00	1.0699E-07	8.42
CaHPO4(aq)	1.00	9.1718E-08	7.22
MgPO4-	1.00	3.7850E-08	2.98
MgHPO4(aq)	1.00	3.5660E-08	2.81
H2PO4-	1.00	2.8845E-08	2.27
NaHPO4-	1.00	1.2106E-08	9.524E-01
Total		1.2711E-06	99.93

Aqueous species accounting for 99% or more of K+

Species	Factor	Molality	Per Cent
K+	1.00	1.2877E-04	99.89
Total		1.2891E-04	99.89

Aqueous species accounting for 99% or more of La+++

Species	Factor	Molality	Per Cent
La(CO3)2-	1.00	5.7297E-15	57.30
LaCO3+	1.00	4.1895E-15	41.90
Total		1.0000E-14	99.19

Aqueous species accounting for 99% or more of Li+

Species	Factor	Molality	Per Cent
Li+	1.00	9.9916E-11	99.92
Total		1.0000E-10	99.92

Aqueous species accounting for 99% or more of Mg++

Species	Factor	Molality	Per Cent
Mg++	1.00	7.6354E-05	92.33
MgCO3(aq)	1.00	2.4698E-06	2.99
MgSO4(aq)	1.00	2.1678E-06	2.62
MgHCO3+	1.00	1.4680E-06	1.78
Total		8.2699E-05	99.71

Aqueous species accounting for 99% or more of Mn++

Species	Factor	Molality	Per Cent
MnO4-	1.00	6.1344E-18	84.25
MnCO3(aq)	1.00	5.7926E-19	7.96

```
  Mn++                          1.00    5.1971E-19      7.14
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                 7.2809E-18     99.35
```

Aqueous species accounting for 99% or more of MoO4--

```
     Species                    Factor    Molality     Per Cent

  MoO4--                        1.00    1.0000E-10    100.00
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                 1.0000E-10    100.00
```

Aqueous species accounting for 99% or more of NH3(aq)

```
     Species                    Factor    Molality     Per Cent

  NO3-                          1.00    1.4184E-04     99.89
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                 1.4200E-04     99.89
```

Aqueous species accounting for 99% or more of Na+

```
     Species                    Factor    Molality     Per Cent

  Na+                           1.00    1.9806E-03     99.42
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                 1.9922E-03     99.42
```

Aqueous species accounting for 99% or more of Nd+++

```
     Species                    Factor    Molality     Per Cent

  Nd(CO3)2-                     1.00    8.0375E-15     80.38
  NdCO3+                        1.00    1.8585E-15     18.58
  NdPO4(aq)                     1.00    9.1416E-17    9.142E-01
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                 1.0000E-14     99.87
```

Aqueous species accounting for 99% or more of Ni++

```
     Species                    Factor    Molality     Per Cent

  Ni++                          1.00    9.8390E-11     98.39
  NiSO4(aq)                     1.00    1.4333E-12      1.43
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                 1.0000E-10     99.82
```

Aqueous species accounting for 99% or more of Pb++

```
     Species                    Factor    Molality     Per Cent

  Pb++                          1.00    9.9870E-11     99.87
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                 1.0000E-10     99.87
```

Aqueous species accounting for 99% or more of Pu++++

```
     Species                  Factor    Molality     Per Cent

  PuO2(CO3)3----               1.00    3.2203E-15     32.20
  PuO2(OH)3-                   1.00    2.9423E-15     29.42
  PuO2(CO3)2--                 1.00    1.8855E-15     18.86
  PuO2CO3-                     1.00    7.3319E-16      7.33
  PuO2CO3(aq)                  1.00    5.4064E-16      5.41
  PuO2(OH)2(aq)                1.00    4.1215E-16      4.12
  PuO2+                        1.00    1.4370E-16      1.44
  Pu(OH)4(aq)                  1.00    8.8247E-17    8.825E-01
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                1.0000E-14     99.66


Aqueous species accounting for 99% or more of SO4--

     Species                  Factor    Molality     Per Cent

  SO4--                        1.00    1.8327E-04     95.68
  CaSO4(aq)                    1.00    4.1275E-06      2.15
  MgSO4(aq)                    1.00    2.1678E-06      1.13
  NaSO4-                       1.00    1.8413E-06    9.613E-01
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                1.9154E-04     99.93


Aqueous species accounting for 99% or more of SiO2(aq)

     Species                  Factor    Molality     Per Cent

  SiO2(aq)                     1.00    9.6294E-04     94.69
  HSiO3-                       1.00    5.0088E-05      4.93
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                1.0169E-03     99.62


Aqueous species accounting for 99% or more of Sm+++

     Species                  Factor    Molality     Per Cent

  Sm(CO3)2-                    1.00    8.0145E-15     80.14
  SmCO3+                       1.00    1.8531E-15     18.53
  SmPO4(aq)                    1.00    1.1476E-16      1.15
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                1.0000E-14     99.82


Aqueous species accounting for 99% or more of Sr++

     Species                  Factor    Molality     Per Cent

  Sr++                         1.00    9.5500E-11     95.50
  SrCO3(aq)                    1.00    2.3464E-12      2.35
  SrSO4(aq)                    1.00    2.0686E-12      2.07
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                1.0000E-10     99.91


Aqueous species accounting for 99% or more of Ti(OH)4(aq)

     Species                  Factor    Molality     Per Cent
```

```
  Ti(OH)4(aq)                    1.00    1.0000E-10    100.00
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                  1.0000E-10    100.00


Aqueous species accounting for 99% or more of UO2++

     Species                    Factor    Molality     Per Cent

  UO2(CO3)3----                   1.00    7.9803E-15     79.80
  UO2(CO3)2--                     1.00    1.8804E-15     18.80
  UO2(OH)2(aq)                    1.00    8.6813E-17    8.681E-01
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                  1.0000E-14     99.48


Aqueous species accounting for 99% or more of Zn++

     Species                    Factor    Molality     Per Cent

  Zn++                            1.00    6.8536E-11     68.54
  ZnOH+                           1.00    2.7158E-11     27.16
  ZnHCO3+                         1.00    3.1644E-12      3.16
  ZnPO4-                          1.00    9.0855E-13    9.085E-01
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                  1.0000E-10     99.77


Aqueous species accounting for 99% or more of Zr(OH)2++

     Species                    Factor    Molality     Per Cent

  Zr(OH)4(aq)                     1.00    1.0000E-20    100.00
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                  1.0000E-20    100.00


          --- Summary of Aqueous Redox Reactions ---

     Couple                   Eh, volts      pe-       Log fO2     Ah, kcal

  DEFAULT                       0.708    0.1197E+02     -0.678      16.325
  S2O3--      /SO4--            0.708    0.1197E+02     -0.678      16.325
  CN-         /NH3(aq)          0.708    0.1197E+02     -0.678      16.325
  ClO-        /Cl-              0.708    0.1197E+02     -0.678      16.325
  ClO2-       /Cl-              0.708    0.1197E+02     -0.678      16.325
  ClO3-       /Cl-              0.708    0.1197E+02     -0.678      16.325
  ClO4-       /Cl-              0.708    0.1197E+02     -0.678      16.325
  Cr++        /CrO4--           0.708    0.1197E+02     -0.678      16.325
  Cr+++       /CrO4--           0.708    0.1197E+02     -0.678      16.325
  CrO4---     /CrO4--           0.708    0.1197E+02     -0.678      16.325
  Cu+         /Cu++             0.708    0.1197E+02     -0.678      16.325
  Fe+++       /Fe++             0.708    0.1197E+02     -0.678      16.325
  H2(aq)      /H2O              0.708    0.1197E+02     -0.678      16.325
  HSO5-       /SO4--            0.708    0.1197E+02     -0.678      16.325
  Mn+++       /Mn++             0.708    0.1197E+02     -0.678      16.325
  MnO4--      /Mn++             0.708    0.1197E+02     -0.678      16.325
  N2(aq)      /NH3(aq)          0.708    0.1197E+02     -0.678      16.325
  N3-         /NH3(aq)          0.708    0.1197E+02     -0.678      16.325
  NO2-        /NH3(aq)          0.708    0.1197E+02     -0.678      16.325
  NO3-        /NH3(aq)          0.708    0.1197E+02     -0.678      16.325
  O2(aq)      /H2O              0.708    0.1197E+02     -0.678      16.325
```

Pb++++	/Pb++	0.708	0.1197E+02	-0.678	16.325
Pu+++	/Pu++++	0.708	0.1197E+02	-0.678	16.325
PuO2+	/Pu++++	0.708	0.1197E+02	-0.678	16.325
PuO2++	/Pu++++	0.708	0.1197E+02	-0.678	16.325
S2O4--	/SO4--	0.708	0.1197E+02	-0.678	16.325
S2O6--	/SO4--	0.708	0.1197E+02	-0.678	16.325
S2O8--	/SO4--	0.708	0.1197E+02	-0.678	16.325
S3O6--	/SO4--	0.708	0.1197E+02	-0.678	16.325
S4O6--	/SO4--	0.708	0.1197E+02	-0.678	16.325
S5O6--	/SO4--	0.708	0.1197E+02	-0.678	16.325
SO3--	/SO4--	0.708	0.1197E+02	-0.678	16.325
Sm++	/Sm+++	0.708	0.1197E+02	-0.678	16.325
U+++	/UO2++	0.708	0.1197E+02	-0.678	16.325
U++++	/UO2++	0.708	0.1197E+02	-0.678	16.325
UO2+	/UO2++	0.708	0.1197E+02	-0.678	16.325

--- Summary of Aqueous Non-equilibrium Non-redox Neactions ---

Reaction	Log Q/K	Aff, kcal	State

None

--- Summary of Pure Mineral Saturation States ---

(Minerals with affinities .lt. -10 kcal are not listed)

Mineral	Log Q/K	Aff, kcal	State
Alamosite	-1.524	-2.079	
Albite	2.477	3.380	ssatd
Albite_high	1.159	1.581	ssatd
Albite_low	2.477	3.380	ssatd
Alstonite	-4.414	-6.022	
Amesite-14A	4.266	5.820	ssatd
Analcime	1.426	1.946	ssatd
Analcime-dehy	-4.936	-6.734	
Andalusite	-2.195	-2.995	
Anglesite	-6.113	-8.340	
Anhydrite	-3.189	-4.351	
Anorthite	-2.209	-3.013	
Anthophyllite	0.465	0.635	ssatd
Antigorite	46.942	64.042	ssatd
Aragonite	0.330	0.450	satd
Artinite	-4.857	-6.627	
BaCrO4	-6.767	-9.232	
Barite	-4.000	-5.457	
Barytocalcite	-4.572	-6.238	
Bassanite	-3.834	-5.231	
Beidellite-Ca	5.120	6.986	ssatd
Beidellite-Cs	2.849	3.887	ssatd
Beidellite-H	3.828	5.223	ssatd
Beidellite-K	4.711	6.427	ssatd
Beidellite-Mg	5.062	6.907	ssatd
Beidellite-Na	4.764	6.500	ssatd
Boehmite	0.819	1.117	ssatd
Boric_acid	-4.853	-6.621	
Brucite	-3.242	-4.423	
Bunsenite	-5.309	-7.244	
CaSO4:0.5H2O(beta)	-4.002	-5.460	
Calcite	0.474	0.647	ssatd

Cd(OH)2	-2.014	-2.748	
CeO2	-2.627	-3.584	
Celadonite	6.637	9.054	ssatd
Cerussite	-0.939	-1.281	
Chalcedony	0.712	0.971	ssatd
Chrysotile	2.010	2.742	ssatd
Clinochlore-7A	2.385	3.253	ssatd
Clinoptilolite	15.661	21.367	ssatd
Clinoptilolite-Ca	15.628	21.322	ssatd
Clinoptilolite-Cs	-6.779	-9.248	
Clinoptilolite-K	12.296	16.775	ssatd
Clinoptilolite-Na	12.601	17.191	ssatd
Clinoptilolite-Sr	4.519	6.166	ssatd
Clinoptilolite-hy-Ca	15.630	21.323	ssatd
Clinoptilolite-hy-Cs	-6.774	-9.242	
Clinoptilolite-hy-K	12.300	16.780	ssatd
Clinoptilolite-hy-Na	12.603	17.194	ssatd
Clinoptilolite-hy-Sr	4.520	6.167	ssatd
Coesite	0.173	0.236	satd
Cordierite_hydr	-5.262	-7.179	
Corundum	-1.546	-2.110	
Cristobalite(alpha)	0.432	0.590	ssatd
Cristobalite(beta)	-0.011	-0.015	satd
Crocoite	-3.976	-5.425	
Dawsonite	-1.369	-1.868	
Diaspore	1.223	1.668	ssatd
Diopside	-0.305	-0.415	satd
Dolomite	1.552	2.117	ssatd
Dolomite-dis	0.007	0.010	satd
Dolomite-ord	1.552	2.117	ssatd
Epsomite	-6.114	-8.341	
Fluorapatite	10.324	14.085	ssatd
Fluorite	-1.547	-2.111	
Forsterite	-4.767	-6.503	
GdOHCO3	-6.686	-9.122	
GdPO4:H2O	-3.996	-5.452	
Gibbsite	0.627	0.855	ssatd
Gismondine	7.021	9.579	ssatd
Goethite	-6.585	-8.983	
Gypsum	-3.013	-4.111	
Gyrolite	-4.686	-6.394	
Heulandite	6.761	9.223	ssatd
Hexahydrite	-6.349	-8.662	
Huntite	-2.751	-3.752	
Hydrocerussite	-4.548	-6.205	
Hydroxylapatite	1.015	1.385	ssatd
Ice	-0.139	-0.189	satd
Illite	5.794	7.904	ssatd
Jadeite	-0.130	-0.178	satd
K-Feldspar	4.330	5.907	ssatd
Kalicinite	-6.877	-9.382	
Kalsilite	-0.811	-1.107	
Kaolinite	3.923	5.352	ssatd
Kyanite	-1.925	-2.626	
LaPO4:H2O	-2.486	-3.392	
Lanarkite	-6.331	-8.637	
Lansfordite	-3.099	-4.227	
Laumontite	4.670	6.371	ssatd
Lawsonite	2.156	2.941	ssatd
Litharge	-5.478	-7.474	
Magnesite	-0.551	-0.752	
Manganite	-5.925	-8.084	
Margarite	0.069	0.095	satd

Massicot	-5.653	-7.713	
Maximum_Microcline	4.330	5.907	ssatd
Mesolite	6.936	9.463	ssatd
MnO2(gamma)	-2.984	-4.071	
Monohydrocalcite	-0.360	-0.491	satd
Monteponite	-3.373	-4.602	
Monticellite	-5.909	-8.062	
Montmor-Ca	5.997	8.182	ssatd
Montmor-Cs	3.793	5.174	ssatd
Montmor-K	5.658	7.719	ssatd
Montmor-Mg	6.009	8.198	ssatd
Montmor-Na	5.708	7.787	ssatd
Mordenite	3.894	5.313	ssatd
Muscovite	7.234	9.870	ssatd
Nahcolite	-5.294	-7.222	
Natrolite	1.013	1.382	ssatd
NdOHCO3	-6.229	-8.498	
NdPO4:H2O	-3.339	-4.555	
Nepheline	-2.526	-3.446	
Nesquehonite	-3.253	-4.438	
Ni(OH)2	-5.586	-7.621	
Ni2SiO4	-3.033	-4.138	
Nontronite-Ca	-6.572	-8.966	
Nontronite-K	-6.981	-9.525	
Nontronite-Mg	-6.630	-9.045	
Nontronite-Na	-6.928	-9.452	
Okenite	-2.778	-3.790	
Otavite	0.086	0.118	satd
Paragonite	4.486	6.120	ssatd
Pb2SiO4	-6.722	-9.170	
Pb3(PO4)2	-5.356	-7.307	
Pb4O(PO4)2	-5.592	-7.628	
PbCO3.PbO	-6.653	-9.076	
PbHPO4	-4.681	-6.387	
Pentahydrite	-6.689	-9.125	
Petalite	-1.255	-1.713	
Plattnerite	-0.842	-1.148	
Plumbogummite	-6.367	-8.687	
Prehnite	2.059	2.809	ssatd
Pseudowollastonite	-3.380	-4.611	
PuO2	-1.909	-2.605	
PuO2(OH)2	-6.485	-8.847	
Pyrolusite	-1.466	-2.000	
Pyrophyllite	4.260	5.812	ssatd
Quartz	0.983	1.341	ssatd
Rutile	-0.355	-0.484	satd
Sanidine_high	3.131	4.271	ssatd
Saponite-Ca	6.825	9.311	ssatd
Saponite-Cs	4.553	6.212	ssatd
Saponite-H	5.532	7.548	ssatd
Saponite-K	6.415	8.752	ssatd
Saponite-Mg	6.767	9.231	ssatd
Saponite-Na	6.468	8.825	ssatd
Scolecite	5.476	7.471	ssatd
Sellaite	-2.780	-3.793	
Sepiolite	3.682	5.023	ssatd
SiO2(am)	-0.303	-0.413	satd
Sillimanite	-2.559	-3.491	
SmPO4:H2O	-3.540	-4.830	
Smectite-low-Fe-Mg	-2.945	-4.018	
Smithsonite	-4.771	-6.510	
Spodumene	-6.035	-8.233	
Starkeyite	-7.076	-9.654	

Stilbite	11.375	15.519	ssatd
Strontianite	-3.852	-5.256	
Talc	5.965	8.137	ssatd
Tenorite	-7.014	-9.569	
Tremolite	7.186	9.803	ssatd
Tridymite	0.811	1.107	ssatd
Wairakite	0.260	0.355	satd
Whitlockite	-1.694	-2.311	
Witherite	-1.156	-1.578	
Wollastonite	-3.140	-4.285	
Zincite	-4.203	-5.734	
Zircon	-6.369	-8.689	
Zn(OH)2(beta)	-4.929	-6.724	
Zn(OH)2(epsilon)	-4.657	-6.354	
Zn(OH)2(gamma)	-4.878	-6.655	
Zoisite	0.071	0.096	satd

--- Summary of Hypothetical Solid Solutions ---

--- Biotite ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Annite	0.0000E+00			
Phlogopite	0.0000E+00			

Mineral	Log Q/K	Aff, kcal	State
Biotite	0.000	-999.000	

--- Carbonate-Calcite ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Calcite	9.1372E-01	-0.0392	0.0000	-0.0392
Magnesite	8.6228E-02	-1.0644	0.0000	-1.0644
Rhodochrosite	1.7831E-13	-12.7488	0.0000	-12.7488
Siderite	5.2371E-26	-25.2809	0.0000	-25.2809
Smithsonite	5.1907E-06	-5.2848	0.0000	-5.2848
Strontianite	4.3082E-05	-4.3657	0.0000	-4.3657

Mineral	Log Q/K	Aff, kcal	State
Carbonate-Calcite	0.513	0.700	ssatd
Calcite	0.513	0.700	ssatd
Magnesite	0.513	0.700	ssatd
Rhodochrosite	0.513	0.700	ssatd
Siderite	0.513	0.700	ssatd
Smithsonite	0.513	0.700	ssatd
Strontianite	0.513	0.700	ssatd

--- Chlorite-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinochlore-14A	0.0000E+00			
Daphnite-14A	0.0000E+00			

Mineral	Log Q/K	Aff, kcal	State
Chlorite-ss	0.000	-999.000	

--- Clinoptilolite-hy-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-hy-Ca	9.9859E-01	-0.0006	0.0000	-0.0006
Clinoptilolite-hy-Cs	3.9400E-23	-22.4045	0.0000	-22.4045
Clinoptilolite-hy-K	4.6704E-04	-3.3307	0.0000	-3.3307
Clinoptilolite-hy-Na	9.3833E-04	-3.0276	0.0000	-3.0276
Clinoptilolite-hy-Sr	7.7577E-12	-11.1103	0.0000	-11.1103

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-hy-ss	15.630	21.324	ssatd
Clinoptilolite-hy-Ca	15.630	21.324	ssatd
Clinoptilolite-hy-Cs	15.630	21.324	ssatd
Clinoptilolite-hy-K	15.630	21.324	ssatd
Clinoptilolite-hy-Na	15.630	21.324	ssatd
Clinoptilolite-hy-Sr	15.630	21.324	ssatd

--- Clinoptilolite-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-Ca	8.0465E-01	-0.0944	-0.2322	-0.3266
Clinoptilolite-Cs	2.6887E-07	-6.5705	-16.1633	-22.7338
Clinoptilolite-K	8.7576E-02	-1.0576	-2.6017	-3.6593
Clinoptilolite-NH4	5.2844E-65	-64.2770	-158.1214	-222.3984
Clinoptilolite-Na	1.0728E-01	-0.9695	-2.3850	-3.3545
Clinoptilolite-Sr	4.9537E-04	-3.3051	-8.1305	-11.4355

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-ss	15.955	21.767	ssatd
Clinoptilolite-Ca	15.955	21.767	ssatd
Clinoptilolite-Cs	15.955	21.767	ssatd
Clinoptilolite-K	15.955	21.767	ssatd
Clinoptilolite-NH4	15.955	21.767	ssatd
Clinoptilolite-Na	15.955	21.767	ssatd
Clinoptilolite-Sr	15.955	21.767	ssatd

```
               --- Epidote-ss               ---

  Ideal solution

   Component                    x           Log x   Log lambda  Log activity

Clinozoisite                0.0000E+00
Epidote                     0.0000E+00


   Mineral                     Log Q/K     Aff, kcal  State

Epidote-ss                       0.000    -999.000


               --- Garnet-ss                ---

  Ideal solution

   Component                    x           Log x   Log lambda  Log activity

Andradite                   0.0000E+00
Grossular                   0.0000E+00


   Mineral                     Log Q/K     Aff, kcal  State

Garnet-ss                        0.000    -999.000


               --- Orthopyroxene            ---

  Ideal solution

   Component                    x           Log x   Log lambda  Log activity

Enstatite                   0.0000E+00
Ferrosilite                 0.0000E+00


   Mineral                     Log Q/K     Aff, kcal  State

Orthopyroxene                    0.000    -999.000


               --- Saponite-tri             ---

  Ideal solution

   Component                    x           Log x   Log lambda  Log activity

Saponite-Ca                 5.5317E-01     -0.2571      0.1723     -0.0849
Saponite-H                  6.7197E-05     -4.1727      2.7957     -1.3770
Saponite-K                  3.1732E-02     -1.4985      1.0040     -0.4945
Saponite-Mg                 3.6895E-01     -0.4330      0.2901     -0.1429
Saponite-Na                 4.6084E-02     -1.3365      0.8954     -0.4410
```

Mineral	Log Q/K	Aff, kcal	State
Saponite-tri	6.909	9.426	ssatd
Saponite-Ca	6.909	9.426	ssatd
Saponite-H	6.909	9.426	ssatd
Saponite-K	6.909	9.426	ssatd
Saponite-Mg	6.909	9.426	ssatd
Saponite-Na	6.909	9.426	ssatd

--- Smectite-di ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Beidellite-Ca	9.5311E-04	-3.0209	2.0240	-0.9969
Beidellite-K	5.4712E-05	-4.2619	2.8555	-1.4064
Beidellite-Mg	6.3570E-04	-3.1968	2.1418	-1.0549
Beidellite-Na	7.9402E-05	-4.1002	2.7471	-1.3531
Montmor-Ca	4.3208E-01	-0.3644	0.2442	-0.1203
Montmor-K	4.0508E-02	-1.3925	0.9330	-0.4595
Montmor-Mg	4.6836E-01	-0.3294	0.2207	-0.1087
Montmor-Na	5.7329E-02	-1.2416	0.8319	-0.4097
Nontronite-Ca	3.5323E-39	-38.4519	25.7628	-12.6891
Nontronite-K	2.0277E-40	-39.6930	26.5943	-13.0987
Nontronite-Mg	2.3576E-39	-38.6275	25.8804	-12.7471
Nontronite-Na	2.9428E-40	-39.5312	26.4859	-13.0453

Mineral	Log Q/K	Aff, kcal	State
Smectite-di	6.117	8.346	ssatd
Beidellite-Ca	6.117	8.346	ssatd
Beidellite-K	6.117	8.346	ssatd
Beidellite-Mg	6.117	8.346	ssatd
Beidellite-Na	6.117	8.346	ssatd
Montmor-Ca	6.117	8.346	ssatd
Montmor-K	6.117	8.346	ssatd
Montmor-Mg	6.117	8.346	ssatd
Montmor-Na	6.117	8.346	ssatd
Nontronite-Ca	6.117	8.346	ssatd
Nontronite-K	6.117	8.346	ssatd
Nontronite-Mg	6.117	8.346	ssatd
Nontronite-Na	6.117	8.346	ssatd

--- Lanthanide hydroxide ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
La(OH)3	8.4735E-05	-4.0719	0.0000	-4.0719
Ce(OH)3	5.9221E-15	-14.2275	0.0000	-14.2275
Nd(OH)3(c)	5.9573E-01	-0.2249	0.0000	-0.2249
Gd(OH)3	3.2940E-01	-0.4823	0.0000	-0.4823
Sm(OH)3	7.4783E-02	-1.1262	0.0000	-1.1262

Mineral	Log Q/K	Aff, kcal	State
Lanthanide hydroxide	-7.680	-10.477	
La(OH)3	-7.680	-10.477	
Ce(OH)3	-7.680	-10.477	
Nd(OH)3(c)	-7.680	-10.477	
Gd(OH)3	-7.680	-10.477	
Sm(OH)3	-7.680	-10.477	

--- Rhabdophane-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaPO4:H2O	7.9402E-01	-0.1002	0.0000	-0.1002
CePO4:H2O	1.7549E-11	-10.7558	0.0000	-10.7558
NdPO4:H2O	1.1138E-01	-0.9532	0.0000	-0.9532
GdPO4:H2O	2.4519E-02	-1.6105	0.0000	-1.6105
SmPO4:H2O	7.0076E-02	-1.1544	0.0000	-1.1544

Mineral	Log Q/K	Aff, kcal	State
Rhabdophane-ss	-2.386	-3.255	
LaPO4:H2O	-2.386	-3.255	
CePO4:H2O	-2.386	-3.255	
NdPO4:H2O	-2.386	-3.255	
GdPO4:H2O	-2.386	-3.255	
SmPO4:H2O	-2.386	-3.255	

--- Lanthanide fluoride ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaF3:0.5H2O	8.4271E-01	-0.0743	0.0000	-0.0743
CeF3:0.5H2O	2.9518E-11	-10.5299	0.0000	-10.5299
NdF3:0.5H2O	1.4882E-01	-0.8273	0.0000	-0.8273
GdF3:0.5H2O	1.0360E-03	-2.9847	0.0000	-2.9847
SmF3:0.5H2O	7.4373E-03	-2.1286	0.0000	-2.1286

Mineral	Log Q/K	Aff, kcal	State
Lanthanide fluoride	-10.479	-14.296	
LaF3:0.5H2O	-10.479	-14.296	
CeF3:0.5H2O	-10.479	-14.296	
NdF3:0.5H2O	-10.479	-14.296	
GdF3:0.5H2O	-10.479	-14.296	
SmF3:0.5H2O	-10.479	-14.296	

14 approx. saturated pure minerals
0 approx. saturated input solid solutions
0 saturated hypothetical solid solutions

```
   69 supersaturated pure minerals
    0 supersatd. input solid solutions
    5 supersatd. hypothetical solid solutions
```

--- Summary of Gases ---

Gas	Fugacity	Log fugacity
Al(g)	2.7486-190	-189.5609
B(g)	6.7283-204	-203.1721
BF3(g)	1.3312E-40	-39.8757
C(g)	3.0916-190	-189.5098
CH4(g)	3.5282-146	-145.4524
CO(g)	6.0393E-49	-48.2190
CO2(g)	3.1623E-04	-3.5000
Ca(g)	2.2213-150	-149.6534
Cd(g)	2.3738E-57	-56.6246
Chlorine	7.0426-275	-274.1523
Cs(g)	1.6755E-82	-81.7759
Cu(g)	5.8644E-82	-81.2318
Fluorine	1.8690E-83	-82.7284
H2(g)	6.1142E-42	-41.2137
H2O(g)	2.5975E-02	-1.5855
H2S(g)	0.0000E+00	-999.0000
HCl(g)	1.0294-141	-140.9874
HF(g)	1.8926E-14	-13.7229
K(g)	1.0798E-76	-75.9667
Li(g)	3.6636E-96	-95.4361
Mg(g)	3.9332-128	-127.4053
Nitrogen	2.2519E-21	-20.6475
NH3(g)	5.4699E-70	-69.2620
NO(g)	1.4943E-26	-25.8256
NO2(g)	1.0217E-20	-19.9907
Na(g)	8.6764E-75	-74.0617
O2(g)	2.1000E-01	-0.6778
Pb(g)	2.2131E-67	-66.6550
S2(g)	0.0000E+00	-999.0000
SO2(g)	8.4617E-58	-57.0725
Si(g)	4.0624-220	-219.3912
SiF4(g)	5.4385E-39	-38.2645
Ti(g)	1.6799-231	-230.7747
TiCl4(g)	0.0000E+00	-576.7792
U(g)	1.8763-299	-298.7267
U2Cl10(g)	0.0000E+00	*********
U2Cl8(g)	0.0000E+00	*********
U2F10(g)	2.7958-164	-163.5535
UCl(g)	0.0000E+00	-377.7641
UCl2(g)	0.0000E+00	-455.3257
UCl3(g)	0.0000E+00	-530.5467
UCl4(g)	0.0000E+00	-623.0341
UCl5(g)	0.0000E+00	-752.8102
UCl6(g)	0.0000E+00	-877.3172
UF(g)	6.7260-241	-240.1722
UF2(g)	1.7882-200	-199.7476
UF3(g)	1.1699-153	-152.9318
UF4(g)	1.1298-103	-102.9470
UF5(g)	4.9975E-95	-94.3012
UF6(g)	2.1767-100	-99.6622

```
UO(g)                        1.4819-214   -213.8292
UO2(g)                       2.7455-130   -129.5614
UO2Cl2(g)                    0.0000E+00   -323.0735
UO2F2(g)                     2.3181E-66    -65.6349
UO3(g)                       2.0195E-77    -76.6948
UOF4(g)                      3.3668E-81    -80.4728
Zn(g)                        2.3962E-77    -76.6205

--- Reading the input file ---

--- No further input found ---

         Start time = 11:17:54  01/22/99
           End time = 11:17:58  01/22/99

          Run time =   4.17     seconds
         User time =   4.17     seconds
          Cpu time =   4.17     seconds

Normal exit
```

```
EQ3/6, Version 7.2b (EQ3/6-V7-REL-V7.2b-PC)
EQ3NR Speciation-Solubility Code (EQ3/6-V7-EQ3NR-EXE-R139-P5)
Supported by the EQLIB library (EQ3/6-V7-EQLIB-LIB-R168-P5)
```

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```
Run  11:53:19  01/14/99



--- Reading the input file ---
|-----------------------------------------------------------------------|
|EQ3NR input file name= j13solCu.3i                                     |
|Description= "J-13 well water, copper solubility                       |
|Version level= 7.2b                                                    |
|Created 01/14/99    Creator= D. H. Lester                              |
|Revised             Revisor=                                           |
|                                                                       |
|  Water from well J-13 at the Nevada Test Site. The composition        |
|is nearly identical to that in the EQ3NR test case input file j13w.3i,|
|which is based on data reported by Harrar et al. (1990) and on p. 3 of|
|Preliminary Scenario Definitions, May 17, 1996, except for fixing of  |
|bicarbonate via fixed fugacity of CO2 and pH.  Al, Fe, Mn, etc. re-   |
|tained, as these are needed to model reaction with tuff, etc.  traces |
|of Pu, U, Gd, Ba, La, Nd, Ce, Sm, Pb, Cr, Ni, Cu, Zr, Sr, Cs,          |
|Zn, & Mo added to enable modeling of waste glass and alloys.  Nb isn't|
|in data base.                                                          |
|                                                                       |
|This run uses revised data base, with essentially no organics.  Also, |
|several to many other unlikely aqueous species removed.                |
|                                                                       |
|Electrical balancing is on Cl-.  These data do not agree exactly with |
|those reported in the SCP.  CO2 and O2 fixed at atmospheric values.   |
|                                                                       |
|  This run uses the revised data base, incorporating SKB data.         |
|                                                                       |
|  Purpose: To determine copper solubility This run represents          |
|  a run with a copper content that just saturates the first Cu         |
|  mineral (tenorite) to precipitate.
|                            References                                 |
|                                                                       |
|Harrar, J. E., Carley, J. F., Isherwood, W. F., and Raber, E., 1990,   |
|  Report of the Committee to Review the Use of J-13 Well Water in      |
|  Nevada Nuclear Waste Storage Investigations: UCID-21867, Lawrence    |
|  Livermore National Laboratory, Livermore, California.                |
|-----------------------------------------------------------------------|
|Temperature (C)         | 25.00        |Density(gm/cm3)|  1.00000      |
|-----------------------------------------------------------------------|
|Total Dissolved Salts   |              | mg/kg | mg/l  |*not used      |
|-----------------------------------------------------------------------------|
|Electrical Balancing on |Cl-                     | code selects| not performed|
|-----------------------------------------------------------------------------|
| SPECIES                | BASIS SWITCH/CONSTRAINT| CONC/ETC  | UNITS OR TYPE  |
|-----------------------------------------------------------------------------|
|redox                   |                        |-6.7778E-01|logfo2          |
```

Na+		1.9922E-03	molality
SiO2(aq)		1.0169E-03	molality
Ca++		3.2437E-04	molality
K+		1.2891E-04	molality
Mg++		8.2699E-05	molality
H+		7.4100	pH
HCO3-	CO2(g)	-3.5000	log fugacity
F-		1.1475E-04	molality
Cl-		2.0140E-04	molality
NH3(aq)	NO3-	0.142 E-03	molality
SO4--		1.9154E-04	molality
B(OH)3(aq)		1.2388E-05	molality
HPO4--		1.2711E-06	molality
Al+++		1.4825E-06	molality
Mn++		7.2809E-18	molality
Fe++		1.0000E-18	molality
CrO4--		3.4485E-07	molality
Cu++		2.85000E-07	molality
MoO4--		1.00000E-10	molality
Cs+		1.00000E-10	molality
Li+		1.00000E-10	molality
Ni++		1.00000E-10	molality
La+++		1.00000E-14	molality
Nd+++		1.00000E-14	molality
Sm+++		1.00000E-14	molality
Ce+++		1.00000E-24	molality
Pu++++		1.00000E-14	molality
Gd+++		1.00000E-14	molality
UO2++		1.00000E-14	molality
Sr++		1.00000E-10	molality
Ba++		1.00000E-10	molality
Ti(OH)4(aq)		1.00000E-10	molality
Zn++		1.00000E-10	molality
Zr(OH)2++		1.00000E-20	molality
Pb++		1.00000E-10	molality

Input Solid Solutions

none			

SUPPRESSED SPECIES	(suppress,replace,augmentk,augmentg)		value
Phlogopite	mineral	suppress	0.00000E+00
Annite	mineral	suppress	0.00000E+00
Clinochlore-14A	mineral	suppress	0.00000E+00
Daphnite-14A	mineral	suppress	0.00000E+00
Clinozoisite	mineral	suppress	0.00000E+00
Epidote	mineral	suppress	0.00000E+00
Epidote-ord	mineral	suppress	0.00000E+00
Andradite	mineral	suppress	0.00000E+00
Grossular	mineral	suppress	0.00000E+00
Enstatite	mineral	suppress	0.00000E+00
Ferrosilite	mineral	suppress	0.00000E+00
Pyrite	mineral	suppress	0.00000E+00
Pyrrhotite	mineral	suppress	0.00000E+00
Troilite	mineral	suppress	0.00000E+00
Alabandite	mineral	suppress	0.00000E+00
Brezinaite	mineral	suppress	0.00000E+00
Chalcocite	mineral	suppress	0.00000E+00
Covellite	mineral	suppress	0.00000E+00
Millerite	mineral	suppress	0.00000E+00
Polydymite	mineral	suppress	0.00000E+00
Vaesite	mineral	suppress	0.00000E+00

```
| Heazlewoodite          | mineral        | suppress | 0.00000E+00     |
| Galena                 | mineral        | suppress | 0.00000E+00     |
| Sulfur                 | mineral        | suppress | 0.00000E+00     |
| CaZrO3                 | mineral        | suppress | 0.00000E+00     |
| BaZrO3                 | mineral        | suppress | 0.00000E+00     |
| SrZrO3                 | mineral        | suppress | 0.00000E+00     |
| U2S3                   | mineral        | suppress | 0.00000E+00     |
| U3S5                   | mineral        | suppress | 0.00000E+00     |
| US2                    | mineral        | suppress | 0.00000E+00     |
| US3                    | mineral        | suppress | 0.00000E+00     |
| US                     | mineral        | suppress | 0.00000E+00     |
| US1.9                  | mineral        | suppress | 0.00000E+00     |
| U3P4                   | mineral        | suppress | 0.00000E+00     |
| UP                     | mineral        | suppress | 0.00000E+00     |
| UP2                    | mineral        | suppress | 0.00000E+00     |
| HS-                    | aqueous        | suppress | 0.00000E+00     |
| H2S(aq)                | aqueous        | suppress | 0.00000E+00     |
| S--                    | aqueous        | suppress | 0.00000E+00     |
|-------------------------------------------------------------------------|
|OPTIONS                                                                  |
|-------------------------------------------------------------------------|
| - SOLID SOLUTIONS -                                                     |
|     ignore solid solutions                                              |
|   * process hypothetical solid solutions                                |
|     process input and hypothetical solid solutions                      |
| - LOADING OF SPECIES INTO MEMORY -                                      |
|   * does nothing                                                        |
|     lists species loaded into memory                                    |
| - ECHO DATABASE INFORMATION -                                           |
|   * does nothing                                                        |
|     lists all reactions                                                 |
|     lists reactions and log K values                                    |
|     lists reactions, log K values and polynomial coef.                  |
| - LIST OF AQUEOUS SPECIES (ordering) -                                  |
|   * in order of decreasing concentration                                |
|     in same order as input file                                         |
| - LIST OF AQUEOUS SPECIES (concentration limit) -                       |
|     all species                                                         |
|     only species > 10**-20 molal                                        |
|   * only species > 10**-12 molal                                        |
|     not printed                                                         |
| - LIST OF AQUEOUS SPECIES (by element) -                                |
|   * print major species                                                 |
|     print all species                                                   |
|     don't print                                                         |
| - MINERAL SATURATION STATES -                                           |
|   * print if affinity > -10 kcals                                       |
|     print all                                                           |
|     don't print                                                         |
| - pH SCALE CONVENTION -                                                 |
|   * modified NBS                                                        |
|     internal                                                            |
|     rational                                                            |
| - ACTIVITY COEFFICIENT OPTIONS -                                        |
|   * use B-dot equation                                                  |
|     Davies' equation                                                    |
|     Pitzer's equations                                                  |
| - AUTO BASIS SWITCHING -                                                |
|   * off                                                                 |
|     on                                                                  |
| - PITZER DATABASE INFORMATION -                                         |
|   * print only warnings                                                 |
|     print species in model and number of Pitzer coefficients            |
```

```
|     print species in model and names of Pitzer coefficients          |
| - PICKUP FILE -                                                      |
|   * write pickup file                                                |
|     don't write pickup file                                          |
| - LIST MEAN IONIC PROPERTIES -                                       |
|   * don't print                                                      |
|     print                                                            |
| - LIST AQUEOUS SPECIES, ION SIZES, AND HYDRATION NUMBERS -           |
|     print                                                            |
|   * don't print                                                      |
| - CONVERGENCE CRITERIA -                                             |
|   * test both residual functions and correction terms                |
|     test only residual functions                                     |
|----------------------------------------------------------------------|
|DEBUGGING SWITCHES (0 = off, 1,2 = on                                 |
|----------------------------------------------------------------------|
|0  generic debugging information                                      |2
|0  print details of pre-Newton-Raphson iteration                      |2
|0  print details of Newton-Raphson iteration                          |
|0  print details of stoichiometric factors                            |2
|0  print details of stoichiometric factors calculation                |
|0  write reactions on RLIST                                           |
|0  list stoichiometric concentrations of master species               |
|0  request iteration variables to be killed                           |
|----------------------------------------------------------------------|
|DEVELOPMENT OPTIONS  (used for code development)                      |
|----------------------------------------------------------------------|
| none                                                                 |
|----------------------------------------------------------------------|
|TOLERANCES                  (desired values)        (defaults)        |
|----------------------------------------------------------------------|
|      residual functions  |                      |1.0e-10  tolbt     |
|        correction terms  |                      |1.0e-10  toldl     |
|        saturation state  |                      |0.5      tolsat    |
|number of N-R iterations  |                      |30       itermx    |
|----------------------------------------------------------------------|

 --- The input file has been successfully read ---

 --- Reading the data1 file ---

 --- The data1 file has been successfully read ---

 * note - (eqlib/inbdot) The following aqueous species
       have been assigned a default hard core diameter of
         4.000 Angstroms-
         Cu(NO2)2(aq)
         Nd(HPO4)2-

 The species Phlogopite               has been user-suppressed

 The species Annite                   has been user-suppressed

 The species Clinochlore-14A          has been user-suppressed

 The species Daphnite-14A             has been user-suppressed

 The species Clinozoisite             has been user-suppressed

 The species Epidote                  has been user-suppressed

 The species Epidote-ord              has been user-suppressed
```

```
The species Andradite                has been user-suppressed
The species Grossular                has been user-suppressed
The species Enstatite                has been user-suppressed
The species Ferrosilite              has been user-suppressed
The species Pyrite                   has been user-suppressed
The species Pyrrhotite               has been user-suppressed
The species Troilite                 has been user-suppressed
The species Alabandite               has been user-suppressed
The species Brezinaite               has been user-suppressed
The species Chalcocite               has been user-suppressed
The species Covellite                has been user-suppressed
The species Millerite                has been user-suppressed
The species Polydymite               has been user-suppressed
The species Vaesite                  has been user-suppressed
The species Heazlewoodite            has been user-suppressed
The species Galena                   has been user-suppressed
The species Sulfur                   has been user-suppressed
The species CaZrO3                   has been user-suppressed
The species BaZrO3                   has been user-suppressed
The species SrZrO3                   has been user-suppressed
The species U2S3                     has been user-suppressed
The species U3S5                     has been user-suppressed
The species US2                      has been user-suppressed
The species US3                      has been user-suppressed
The species US                       has been user-suppressed
The species US1.9                    has been user-suppressed
The species U3P4                     has been user-suppressed
The species UP                       has been user-suppressed
The species UP2                      has been user-suppressed
The species HS-                      has been user-suppressed
The species H2S(aq)                  has been user-suppressed
The species S--                      has been user-suppressed
```

```
eeee   qqq   33333  n   n  rrrr
e     q   q      3  nn  n  r   r
eeee  q   q    33   n n n  rrrr
e     q q q      3  n  nn  r  r
eeee   qqq   3333   n   n  r   r
          q
```

EQ3NR, version 7.2b (R139   )
 supported by EQLIB, version 7.2b (R168   )

```
|EQ3NR input file name= j13solCu.3i                                      |
|Description= "J-13 well water, copper solubility                        |
|Version level= 7.2b                                                     |
|Created 01/14/99    Creator= D. H. Lester                               |
|Revised             Revisor=                                            |
|                                                                        |
|  Water from well J-13 at the Nevada Test Site. The composition         |
|is nearly identical to that in the EQ3NR test case input file j13w.3i,|
|which is based on data reported by Harrar et al. (1990) and on p. 3 of|
|Preliminary Scenario Definitions, May 17, 1996, except for fixing of  |
|bicarbonate via fixed fugacity of CO2 and pH.  Al, Fe, Mn, etc. re-   |
|tained, as these are needed to model reaction with tuff, etc.  traces |
|of Pu, U, Gd, Ba, La, Nd, Ce, Sm, Pb, Cr, Ni, Cu, Zr, Sr, Cs,          |
|Zn, & Mo added to enable modeling of waste glass and alloys.  Nb isn't|
|in data base.                                                           |
|                                                                        |
|This run uses revised data base, with essentially no organics.  Also,  |
|several to many other unlikely aqueous species removed.                |
|                                                                        |
|Electrical balancing is on Cl-.  These data do not agree exactly with  |
|those reported in the SCP.  CO2 and O2 fixed at atmospheric values.    |
|                                                                        |
|  This run uses the revised data base, incorporating SKB data.          |
|                                                                        |
|  Purpose: To determine copper solubility This run represents           |
|  a run with a copper content that just saturates the first Cu          |
|  mineral (tenorite) to precipitate.
|                              References                                |
|                                                                        |
|Harrar, J. E., Carley, J. F., Isherwood, W. F., and Raber, E., 1990,   |
|  Report of the Committee to Review the Use of J-13 Well Water in      |
|  Nevada Nuclear Waste Storage Investigations: UCID-21867, Lawrence    |
|  Livermore National Laboratory, Livermore, California.                 |
```

data0.nuc.dhl
THERMODYNAMIC DATABASE
This data base is a modified version of data0.nuc.R3 as changed by D.H. Lester

The data base datao.nuc.R3is a composite of data0.alt.V8.R5 and data0.b19.skb, by P. L. Cloke on 15-aug-96. It was specially modified for evaluation of nuclear criticality needs on the Yucca Mt. Project. Six EQ3NR runs were made using input data for elements in J13 well water and components of the current design for waste glass packages. Three runs were saturated with air, at pH 4, 7.41, and 10. The other three were for highly reducing conditions, log fO2 =

-80, and carbonated limited to the solubility of atmospheric CO2 in water, 1.0 E-5 m. Solid and solution species appearing on the outputs and which constituted less than 0.1% of dissolved elements, or whose affinities did not exceed 1.0 E-10, on any of the outputs, were deleted from this data base.

The lanthanide data from the .skb data base replaced those in the .alt file in those cases in which there was overlap, except for the lanthanide metals. This includes replacing data for LnO2H, LnO+, and LnO2- by the .skb data for Ln(OH)3 Ln(OH()2+, and Ln(OH)4-, respectively. Ce++++ was added as well as more data for Y. Lanthanide data in the .skb base that aren't in the .alt base were added. LnPO4.xH2O, to which .skb assigned a value of 10 to x, was changed to LnPO4.H2O, in keeping with the formula for rhabdophane (and in keeping with the XRD pattern).

Exceptions: the .skb data for Eu were not entered as replacements for .alt data. The .skb data for Pm were not entered. Divalent lanthanide data were not entered.

```
Output package:  eq3
Data set:        cm2
+-------------------------------------------------------------------
```

The activity coefficients of aqueous solute species and the activity of water are calculated according to the B-dot equation plus others

```
Temperature=  25.00 degrees Celsius
pressure=    1.0132 bars


        79 elements are in the data base
       100 elements can be loaded into memory
        36 elements are active in this problem


      1170 aqueous species are in the data base
       645 aqueous species were loaded into memory
      2000 aqueous species can be loaded into memory
       559 aqueous species are active in this problem

      1090 aqueous reactions are in the data base
       565 aqueous reactions were loaded into memory
      1899 aqueous reactions can be loaded into memory


           1034 minerals are in the data base
            672 minerals were loaded into memory
            850 minerals can be loaded into memory
            634 minerals are active in this problem

             15 solid solutions are in the data base
             50 solid solutions can be loaded into memory

             87 gases are in the data base
             56 gases were loaded into memory
             80 gases can be loaded into memory
             56 gases are active in this problem
```

```
iopt1  =  0 (redox option switch)
iopt2  =  0 (automatic basis switching switch)
iopt3  =  0 (interfacing output control switch)
iopt4  =  1 (turn-on solid solutions switch)
iopt5  =  0 (not used)
iopt6  =  0 (conv. test criteria switch)
iopt7  =  0 (0/1 version 7/post-version 7 pickup file)
iopt8  =  0 (not used)
iopt9  =  0 (not used)
iopt10 =  0 (not used)


     iopg1  =  0 (act. coeff. choice)
     iopg2  =  0 (pH scale convention switch)
     iopg3  =  0 (not used)
     iopg4  =  0 (not used)
     iopg5  =  0 (not used)
     iopg6  =  0 (not used)
     iopg7  =  0 (not used)
     iopg8  =  0 (not used)
     iopg9  =  0 (not used)
     iopg10 =  0 (not used)


          iopr1  =  0 (list loading of species)
          iopr2  =  0 (list reactions and log K values)
          iopr3  =  0 (aqueous species print order control)
          iopr4  = -2 (aqueous species print cut-off control)
          iopr5  =  0 (mass balance percentages print control)
          iopr6  =  0 (mean ionic act coeff print control)
          iopr7  =  0 (mineral affinity print control)
          iopr8  = -1 (ion size and hydr. no. print control)
          iopr9  =  0 (Pitzer coefficients tabulation)
          iopr10 =  0 (print concbs array)
          iopr11 =  0 (not used)
          iopr12 =  0 (not used)
          iopr13 =  0 (not used)
          iopr14 =  0 (not used)
          iopr15 =  0 (not used)
          iopr16 =  0 (not used)
          iopr17 =  0 (not used)
          iopr18 =  0 (not used)
          iopr19 =  0 (not used)
          iopr20 =  0 (not used)


               iodb1  =  0 (print info. messages switch)
               iodb2  =  0 (print pre-Newton-Raphson optimizations switch)
               iodb3  =  0 (request iteration variables to kill)
               iodb4  =  0 (print Newton-Raphson iterations switch)
               iodb5  =  0 (list stoichiometric equivalences)
               iodb6  =  0 (controls iodb5 level of detail)
               iodb7  =  0 (write reactions on file rlist switch)
               iodb8  =  0 (not used)
               iodb9  =  0 (not used)
               iodb10 =  0 (not used)

The default redox state is constrained by log fO2 =   -0.6778 (log bars)


          Solution density =  1.00000 g/mL
```

```
     Total dissolved salts =       0.00 mg/kg solution
     Total dissolved salts =       0.00 mg/L


   Tolbt  =  0.10000E-05 (convergence tolerance on residual functions)
   Toldl  =  0.10000E-05 (convergence tolerance on correction terms)
   Tolsat =  0.50000E+00 (phase saturation tolerance, does not affect
                          convergence)


                  --- Input Constraints ---

   Species                    Csp      Jflag   Input Type/Co-species

Na+                        1.9922E-03    0    Total conc, molal
SiO2(aq)                   1.0169E-03    0    Total conc, molal
Ca++                       3.2437E-04    0    Total conc, molal
K+                         1.2891E-04    0    Total conc, molal
Mg++                       8.2699E-05    0    Total conc, molal
H+                        -7.4100E+00   16    Log activity
HCO3-                     -3.5000E+00   21    Gas equilibrium
                                                  CO2(g)

                     1.000  CO2(g)
                  +  1.000  H2O
                        ==
                     1.000  H+
                  +  1.000  HCO3-
F-                         1.1475E-04    0    Total conc, molal
Cl-                        2.0140E-04    0    Total conc, molal
NH3(aq)                    1.4200E-04    0    Total conc, molal
    switch with NO3-
SO4--                      1.9154E-04    0    Total conc, molal
B(OH)3(aq)                 1.2388E-05    0    Total conc, molal
HPO4--                     1.2711E-06    0    Total conc, molal
Al+++                      1.4825E-06    0    Total conc, molal
Mn++                       7.2809E-18    0    Total conc, molal
Fe++                       1.0000E-18    0    Total conc, molal
CrO4--                     3.4485E-07    0    Total conc, molal
Cu++                       2.8500E-07    0    Total conc, molal
MoO4--                     1.0000E-10    0    Total conc, molal
Cs+                        1.0000E-10    0    Total conc, molal
Li+                        1.0000E-10    0    Total conc, molal
Ni++                       1.0000E-10    0    Total conc, molal
La+++                      1.0000E-14    0    Total conc, molal
Nd+++                      1.0000E-14    0    Total conc, molal
Sm+++                      1.0000E-14    0    Total conc, molal
Ce+++                      1.0000E-24    0    Total conc, molal
Pu++++                     1.0000E-14    0    Total conc, molal
Gd+++                      1.0000E-14    0    Total conc, molal
UO2++                      1.0000E-14    0    Total conc, molal
Sr++                       1.0000E-10    0    Total conc, molal
Ba++                       1.0000E-10    0    Total conc, molal
Ti(OH)4(aq)                1.0000E-10    0    Total conc, molal
Zn++                       1.0000E-10    0    Total conc, molal
Zr(OH)2++                  1.0000E-20    0    Total conc, molal
Pb++                       1.0000E-10    0    Total conc, molal


Electrical balance will be achieved by adjusting
  the concentration of "Cl-                     ". Any other specified
```

```
constraint will be overridden.

    Switching NO3- into the basis set for NH3(aq)


                      1.000  NO3-
                    +  1.000  H2O
                    +  1.000  H+
                           ==
                      1.000  NH3(aq)
                    +  2.000  O2(g)

                      1.000  NH3(aq)
                    +  2.000  O2(g)
                           ==
                      1.000  H2O
                    +  1.000  H+
                    +  1.000  NO3-

          --- Inactive Aqueous Species ---

    HS-                           H2S(aq)
    S--



                        --- Modified Input Constraints ---

   Species                      Csp      Jflag   Input Type/Co-species

Al+++                      1.4825E-06    0    Total conc, molal
B(OH)3(aq)                 1.2388E-05    0    Total conc, molal
Ba++                       1.0000E-10    0    Total conc, molal
Ca++                       3.2437E-04    0    Total conc, molal
Ce+++                      1.0000E-24    0    Total conc, molal
Cl-                        2.0140E-04    0    Total conc, molal
CrO4--                     3.4485E-07    0    Total conc, molal
Cs+                        1.0000E-10    0    Total conc, molal
Cu++                       2.8500E-07    0    Total conc, molal
F-                         1.1475E-04    0    Total conc, molal
Fe++                       1.0000E-18    0    Total conc, molal
Gd+++                      1.0000E-14    0    Total conc, molal
H+                        -7.4100E+00   16    Log activity
HCO3-                     -3.5000E+00   21    Gas equilibrium
                                                  CO2(g)

                      1.000  CO2(g)
                    +  1.000  H2O
                           ==
                      1.000  H+
                    +  1.000  HCO3-
HCO3-                     -3.5000E+00   21    Gas equilibrium
HPO4--                     1.2711E-06    0    Total conc, molal
K+                         1.2891E-04    0    Total conc, molal
La+++                      1.0000E-14    0    Total conc, molal
Li+                        1.0000E-10    0    Total conc, molal
Mg++                       8.2699E-05    0    Total conc, molal
Mn++                       7.2809E-18    0    Total conc, molal
MoO4--                     1.0000E-10    0    Total conc, molal
NO3-                       1.4200E-04    0    Total conc, molal
Na+                        1.9922E-03    0    Total conc, molal
Nd+++                      1.0000E-14    0    Total conc, molal
```

```
Ni++                        1.0000E-10    0    Total conc, molal
Pb++                        1.0000E-10    0    Total conc, molal
Pu++++                      1.0000E-14    0    Total conc, molal
SO4--                       1.9154E-04    0    Total conc, molal
SiO2(aq)                    1.0169E-03    0    Total conc, molal
Sm+++                       1.0000E-14    0    Total conc, molal
Sr++                        1.0000E-10    0    Total conc, molal
Ti(OH)4(aq)                 1.0000E-10    0    Total conc, molal
UO2++                       1.0000E-14    0    Total conc, molal
Zn++                        1.0000E-10    0    Total conc, molal
Zr(OH)2++                   1.0000E-20    0    Total conc, molal
HS-                         0.0000E+00   30    Eliminated species
S2--                        0.0000E+00   30    Eliminated species
S2O3--                      0.0000E+00   30    Eliminated species
CN-                         0.0000E+00   30    Eliminated species
ClO-                        0.0000E+00   30    Eliminated species
ClO2-                       0.0000E+00   30    Eliminated species
ClO3-                       0.0000E+00   30    Eliminated species
ClO4-                       0.0000E+00   30    Eliminated species
Cr++                        0.0000E+00   30    Eliminated species
Cr+++                       0.0000E+00   30    Eliminated species
CrO4---                     0.0000E+00   30    Eliminated species
Cu+                         0.0000E+00   30    Eliminated species
Fe+++                       0.0000E+00   30    Eliminated species
H2(aq)                      0.0000E+00   27    Dependent species
HSO5-                       0.0000E+00   30    Eliminated species
Mn+++                       0.0000E+00   30    Eliminated species
MnO4--                      0.0000E+00   30    Eliminated species
N2(aq)                      0.0000E+00   30    Eliminated species
N3-                         0.0000E+00   30    Eliminated species
NO2-                        0.0000E+00   30    Eliminated species
NH3(aq)                     0.0000E+00   30    Eliminated species
O2(aq)                      0.0000E+00   27    Dependent species
Pb++++                      0.0000E+00   30    Eliminated species
Pu+++                       0.0000E+00   30    Eliminated species
PuO2+                       0.0000E+00   30    Eliminated species
PuO2++                      0.0000E+00   30    Eliminated species
S2O4--                      0.0000E+00   30    Eliminated species
S2O6--                      0.0000E+00   30    Eliminated species
S2O8--                      0.0000E+00   30    Eliminated species
S3--                        0.0000E+00   30    Eliminated species
S3O6--                      0.0000E+00   30    Eliminated species
S4--                        0.0000E+00   30    Eliminated species
S4O6--                      0.0000E+00   30    Eliminated species
S5--                        0.0000E+00   30    Eliminated species
S5O6--                      0.0000E+00   30    Eliminated species
SCN-                        0.0000E+00   30    Eliminated species
SO3--                       0.0000E+00   30    Eliminated species
Sm++                        0.0000E+00   30    Eliminated species
U+++                        0.0000E+00   30    Eliminated species
U++++                       0.0000E+00   30    Eliminated species
UO2+                        0.0000E+00   30    Eliminated species
Zr++++                      0.0000E+00   30    Eliminated species



* note - (eq3nr/arrset) Optimization ended
      outside requested limits.


iter=   0
       del(                 )=  0.00000E+00, delfnc=  0.00000E+00
```

```
      beta(conc    Cl-     )=  5.03364E-01, betfnc=  0.00000E+00
        bbig=  5.03364E-01, ubbig= Cl-
        bneg= -2.45218E-09, ubneg= B(OH)3(aq)
        bgamx=  1.39077E-06, ubgamx= (PuO2)3(CO3)6(6-)
        bsigmm= -1.14302E-06
        bxi= -3.44252E-06
        btfcnr=  0.00000E+00

iter=   1
       del(conc    Cl-     )=  4.21034E+00, delfnc=  0.00000E+00
      Relaxation factor=  0.23751
      Relaxed del(conc    Cl-     )=  1.00000E+00
      beta(conc    Pu++++  )= -1.00532E-01, betfnc=  8.00280E-01
        bbig=  2.78492E-02, ubbig= Pb++
        bneg= -1.00532E-01, ubneg= Pu++++
        bgamx= -1.32600E-01, ubgamx= (PuO2)3(CO3)6(6-)
        bsigmm=  3.93432E-01
        bxi=  3.59285E-01
        btfcnr=  9.41653E-01

iter=   2
       del(conc    Pu++++  )=  5.78129E-02, delfnc=  9.86269E-01
      beta(conc    Gd+++   )= -2.66548E-03, betfnc=  9.73486E-01
        bbig=  3.56458E-04, ubbig= Pb++
        bneg= -2.66548E-03, ubneg= Gd+++
        bgamx= -9.87433E-03, ubgamx= (PuO2)3(CO3)6(6-)
        bsigmm=  2.25370E-02
        bxi=  2.15515E-02
        btfcnr=  9.41651E-01

iter=   3
       del(conc    Al+++   )=  1.69766E-03, delfnc=  9.70635E-01
      beta(conc    Pu++++  )=  2.46797E-04, betfnc=  9.07410E-01
        bbig=  2.46797E-04, ubbig= Pu++++
        bneg= -9.95205E-07, ubneg= Cl-
        bgamx=  3.06449E-04, ubgamx= (PuO2)3(CO3)6(6-)
        bsigmm= -7.41135E-04
        bxi= -6.58633E-04
        btfcnr=  9.98655E-01

iter=   4
       del(conc    Pu++++  )= -1.28316E-04, delfnc=  9.24416E-01
      beta(conc    Pu++++  )=  8.09199E-07, betfnc=  9.96721E-01
        bbig=  8.09199E-07, ubbig= Pu++++
        bneg= -1.71327E-09, ubneg= B(OH)3(aq)
        bgamx=  9.75671E-07, ubgamx= (PuO2)3(CO3)6(6-)
        bsigmm= -1.03585E-06
        bxi= -2.09794E-06
        btfcnr=  9.99876E-01

iter=   5
       del(conc    Pu++++  )= -4.18950E-07, delfnc=  9.96735E-01
      beta(conc    Pu++++  )=  1.50380E-09, betfnc=  9.98142E-01
        bbig=  1.50380E-09, ubbig= Pu++++
        bneg= -3.31415E-12, ubneg= B(OH)3(aq)
        bgamx=  1.88405E-09, ubgamx= (PuO2)3(CO3)6(6-)
        bsigmm= -4.98258E-10
        bxi= -4.05119E-09
        btfcnr=  1.00000E+00


Hybrid Newton-Raphson iteration converged in   5 steps.
```

--- Summary of the Aqueous Solution ---

--- Elemental Composition of the Aqueous Solution ---

Element	mg/L	mg/kg	Moles/kg
O	0.88817E+06	0.88817E+06	0.5551266522E+02
Al	0.40000E-01	0.40000E-01	0.1482500001E-05
B	0.13393	0.13393	0.1238800000E-04
Ba	0.13733E-04	0.13733E-04	0.1000000000E-09
Ca	13.000	13.000	0.3243700000E-03
Ce	0.14012E-18	0.14012E-18	0.1000000000E-23
Cl	76.351	76.351	0.2153594153E-02
Cr	0.17931E-01	0.17931E-01	0.3448500000E-06
Cs	0.13291E-04	0.13291E-04	0.1000000000E-09
Cu	0.18111E-01	0.18111E-01	0.2850000001E-06
F	2.1801	2.1801	0.1147500000E-03
Fe	0.55847E-13	0.55847E-13	0.1000000000E-17
Gd	0.15725E-08	0.15725E-08	0.1000000001E-13
H	0.11190E+06	0.11190E+06	0.1110170460E+03
C	1.7396	1.7396	0.1448302147E-03
P	0.39371E-01	0.39371E-01	0.1271100000E-05
K	5.0402	5.0402	0.1289100000E-03
La	0.13891E-08	0.13891E-08	0.1000000000E-13
Li	0.69410E-06	0.69410E-06	0.1000000000E-09
Mg	2.0100	2.0100	0.8269900000E-04
Mn	0.40000E-12	0.40000E-12	0.7280900000E-17
Mo	0.95940E-05	0.95940E-05	0.1000000000E-09
N	1.9890	1.9890	0.1420000000E-03
Na	45.800	45.800	0.1992200000E-02
Nd	0.14424E-08	0.14424E-08	0.1000000000E-13
Ni	0.58690E-05	0.58690E-05	0.1000000000E-09
Pb	0.20720E-04	0.20720E-04	0.1000000000E-09
Pu	0.24400E-08	0.24400E-08	0.1000000001E-13
S	6.1419	6.1419	0.1915400000E-03
Si	28.560	28.560	0.1016900000E-02
Sm	0.15036E-08	0.15036E-08	0.1000000000E-13
Sr	0.87620E-05	0.87620E-05	0.1000000000E-09
Ti	0.47880E-05	0.47880E-05	0.1000000000E-09
U	0.23803E-08	0.23803E-08	0.1000000000E-13
Zn	0.65390E-05	0.65390E-05	0.1000000000E-09
Zr	0.91224E-15	0.91224E-15	0.1000000000E-19

--- Elemental Composition as Strict Basis Species ---

Species	mg/L	mg/kg	Moles/kg
H2O	0.10001E+07	0.10001E+07	0.5551266522E+02
Al+++	0.40000E-01	0.40000E-01	0.1482500001E-05
B(OH)3(aq)	0.76599	0.76599	0.1238800000E-04
Ba++	0.13733E-04	0.13733E-04	0.1000000000E-09
Ca++	13.000	13.000	0.3243700000E-03
Ce+++	0.14012E-18	0.14012E-18	0.1000000000E-23
Cl-	76.351	76.351	0.2153594153E-02
CrO4--	0.40000E-01	0.40000E-01	0.3448500000E-06
Cs+	0.13291E-04	0.13291E-04	0.1000000000E-09
Cu++	0.18111E-01	0.18111E-01	0.2850000001E-06

F-	2.1801	2.1801	0.1147500000E-03
Fe++	0.55847E-13	0.55847E-13	0.1000000000E-17
Gd+++	0.15725E-08	0.15725E-08	0.1000000001E-13
H+	0.11190E+06	0.11190E+06	0.1110170460E+03
HCO3-	8.8371	8.8371	0.1448302147E-03
HPO4--	0.12200	0.12200	0.1271100000E-05
K+	5.0402	5.0402	0.1289100000E-03
La+++	0.13891E-08	0.13891E-08	0.1000000000E-13
Li+	0.69410E-06	0.69410E-06	0.1000000000E-09
Mg++	2.0100	2.0100	0.8269900000E-04
Mn++	0.40000E-12	0.40000E-12	0.7280900000E-17
MoO4--	0.15994E-04	0.15994E-04	0.1000000000E-09
NH3(aq)	2.4183	2.4183	0.1420000000E-03
Na+	45.800	45.800	0.1992200000E-02
Nd+++	0.14424E-08	0.14424E-08	0.1000000000E-13
Ni++	0.58690E-05	0.58690E-05	0.1000000000E-09
Pb++	0.20720E-04	0.20720E-04	0.1000000000E-09
Pu++++	0.24400E-08	0.24400E-08	0.1000000001E-13
SO4--	18.400	18.400	0.1915400000E-03
SiO2(aq)	61.100	61.100	0.1016900000E-02
Sm+++	0.15036E-08	0.15036E-08	0.1000000000E-13
Sr++	0.87620E-05	0.87620E-05	0.1000000000E-09
Ti(OH)4(aq)	0.11591E-04	0.11591E-04	0.1000000000E-09
UO2++	0.27003E-08	0.27003E-08	0.1000000000E-13
Zn++	0.65390E-05	0.65390E-05	0.1000000000E-09
Zr(OH)2++	0.12524E-14	0.12524E-14	0.1000000000E-19

--- Equivalent Composition of the Aqueous Solution ---

--- Original Basis ---

Species	Moles/kg H2O
H2O	0.5551266522E+02
Al+++	0.1482500001E-05
B(OH)3(aq)	0.1238800000E-04
Ba++	0.1000000000E-09
Ca++	0.3243700000E-03
Ce+++	0.1000000000E-23
Cl-	0.2153594153E-02
CrO4--	0.3448500000E-06
Cs+	0.1000000000E-09
Cu++	0.2850000001E-06
F-	0.1147500000E-03
Fe++	0.1000000000E-17
Gd+++	0.1000000001E-13
H+	0.1110170460E+03
HCO3-	0.1448302147E-03
HPO4--	0.1271100000E-05
K+	0.1289100000E-03
La+++	0.1000000000E-13
Li+	0.1000000000E-09
Mg++	0.8269900000E-04
Mn++	0.7280900000E-17
MoO4--	0.1000000000E-09
NH3(aq)	0.1420000000E-03
Na+	0.1992200000E-02
Nd+++	0.1000000000E-13
Ni++	0.1000000000E-09
Pb++	0.1000000000E-09
Pu++++	0.1000000001E-13
SO4--	0.1915400000E-03

SiO2(aq)	0.1016900000E-02
Sm+++	0.1000000000E-13
Sr++	0.1000000000E-09
Ti(OH)4(aq)	0.1000000000E-09
UO2++	0.1000000000E-13
Zn++	0.1000000000E-09
Zr(OH)2++	0.1000000000E-19

--- Current Basis (cte) ---

Species	Moles/kg H2O
H2O	0.5551266522E+02
Al+++	0.1482500001E-05
B(OH)3(aq)	0.1238800000E-04
Ba++	0.1000000000E-09
Ca++	0.3243700000E-03
Ce+++	0.1000000000E-23
Cl-	0.2153594153E-02
CrO4--	0.3448500000E-06
Cs+	0.1000000000E-09
Cu++	0.2850000001E-06
F-	0.1147500000E-03
Fe++	0.1000000000E-17
Gd+++	0.1000000001E-13
H+	0.1110170460E+03
HCO3-	0.1448302147E-03
HPO4--	0.1271100000E-05
K+	0.1289100000E-03
La+++	0.1000000000E-13
Li+	0.1000000000E-09
Mg++	0.8269900000E-04
Mn++	0.7280900000E-17
MoO4--	0.1000000000E-09
NO3-	0.1420000000E-03
Na+	0.1992200000E-02
Nd+++	0.1000000000E-13
Ni++	0.1000000000E-09
Pb++	0.1000000000E-09
Pu++++	0.1000000001E-13
SO4--	0.1915400000E-03
SiO2(aq)	0.1016900000E-02
Sm+++	0.1000000000E-13
Sr++	0.1000000000E-09
Ti(OH)4(aq)	0.1000000000E-09
UO2++	0.1000000000E-13
Zn++	0.1000000000E-09
Zr(OH)2++	0.1000000000E-19

Single ion activities and activity coefficients are here defined
with respect to the modified NBS pH scale

	pH	Eh	pe
modified NBS pH scale	7.4100	0.7807	1.3197E+01
rational pH scale	7.3837	0.7822	1.3223E+01

pHCl = 10.1048

```
                    Activity of water =  0.99988
                Log activity of water =   -0.00005

          True osmotic coefficient=    0.97804
Stoichiometric osmotic coefficient=    0.97471

          Sum of true molalities=    0.0065615039438
Sum of stoichiometric molalities=    0.0065839520425

          True ionic strength=    0.0035001239427
Stoichiometric ionic strength=    0.0035514348407


 --- Electrical Balance Totals ---


                                      equiv/kg H2O

            Sigma(mz) cations =     0.2917150748E-02
            Sigma(mz) anions  =    -0.2917150748E-02
                 Total charge =     0.5834301496E-02
                  Mean charge =     0.2917150748E-02
             Charge imbalance =    -0.1854254648E-15

  Total charge = sigma(mz) cations + abs ( sigma(mz) anions )
  Mean charge = 1/2 total charge


  The electrical imbalance is

       -0.318E-11 per cent of the total charge
       -0.636E-11 per cent of the mean charge
       -0.636E-11 per cent of sigma(mz) cations
       -0.636E-11 per cent of abs ( sigma(mz) anions )


 --- Electrical Balancing on Cl-                        ---

          mg/L          mg/kg           Moles/kg

input       7.1402        7.1402        0.2014000000E-03
final      76.351        76.351         0.2153594153E-02
adj        69.211        69.211         0.1952194153E-02


            --- Activity Ratios of Ions -----

 Log ( act(Al+++                  ) / act(H+)xx 3 ) =      9.5659
 Log ( act(B(OH)3(aq)             )               ) =     -4.9139
 Log ( act(Ba++                   ) / act(H+)xx 2 ) =      4.7079
 Log ( act(Ca++                   ) / act(H+)xx 2 ) =     11.2141
 Log ( act(Ce+++                  ) / act(H+)xx 3 ) =     -2.9426
 Log ( act(Cl-                    ) x act(H+)xx 1 ) =    -10.1048
 Log ( act(CrO4--                 ) x act(H+)xx 2 ) =    -21.4347
 Log ( act(Cs+                    ) / act(H+)xx 1 ) =     -2.6200
 Log ( act(Cu++                   ) / act(H+)xx 2 ) =      7.6590
 Log ( act(F-                     ) x act(H+)xx 1 ) =    -11.3792
 Log ( act(Fe++                   ) / act(H+)xx 2 ) =    -13.6355
 Log ( act(Gd+++                  ) / act(H+)xx 3 ) =      6.8165
 Log ( act(HCO3-                  ) x act(H+)xx 1 ) =    -11.3137
 Log ( act(HPO4--                 ) x act(H+)xx 2 ) =    -21.0542
 Log ( act(K+                     ) / act(H+)xx 1 ) =      3.4907
```

```
Log ( act(La+++                  ) / act(H+)xx 3 ) =      7.4169
Log ( act(Li+                    ) / act(H+)xx 1 ) =     -2.6180
Log ( act(Mg++                   ) / act(H+)xx 2 ) =     10.6173
Log ( act(Mn++                   ) / act(H+)xx 2 ) =     -2.4445
Log ( act(MoO4--                 ) x act(H+)xx 2 ) =    -24.9298
Log ( act(NH3(aq)                )                 ) =    -66.2340
Log ( act(Na+                    ) / act(H+)xx 1 ) =      4.6801
Log ( act(Nd+++                  ) / act(H+)xx 3 ) =      7.0633
Log ( act(Ni++                   ) / act(H+)xx 2 ) =      4.7039
Log ( act(Pb++                   ) / act(H+)xx 2 ) =      4.6876
Log ( act(Pu++++                 ) / act(H+)xx 4 ) =     -8.9088
Log ( act(SO4--                  ) x act(H+)xx 2 ) =    -18.6690
Log ( act(SiO2(aq)               )                 ) =     -2.9941
Log ( act(Sm+++                  ) / act(H+)xx 3 ) =      6.8677
Log ( act(Sr++                   ) / act(H+)xx 2 ) =      4.6983
Log ( act(Ti(OH)4(aq)            )                 ) =    -10.0000
Log ( act(UO2++                  ) / act(H+)xx 2 ) =     -3.7652
Log ( act(Zn++                   ) / act(H+)xx 2 ) =      4.6970
Log ( act(Zr(OH)2++              ) / act(H+)xx 2 ) =    -18.7718
Log ( act(S2--                   ) x act(H+)xx 2 ) =   *********
Log ( act(S2O3--                 ) x act(H+)xx 2 ) =   -163.7253
Log ( act(CN-                    ) x act(H+)xx 1 ) =   -131.8101
Log ( act(ClO-                   ) x act(H+)xx 1 ) =    -26.9943
Log ( act(ClO2-                  ) x act(H+)xx 1 ) =    -36.7889
Log ( act(ClO3-                  ) x act(H+)xx 1 ) =    -32.7298
Log ( act(ClO4-                  ) x act(H+)xx 1 ) =    -32.9661
Log ( act(Cr++                   ) / act(H+)xx 2 ) =    -39.4958
Log ( act(Cr+++                  ) / act(H+)xx 3 ) =    -10.3683
Log ( act(CrO4---                ) x act(H+)xx 3 ) =    -40.3117
Log ( act(Cu+                    ) / act(H+)xx 1 ) =    -10.2174
Log ( act(Fe+++                  ) / act(H+)xx 3 ) =     -6.0396
Log ( act(H2(aq)                 )                 ) =    -44.3187
Log ( act(HSO5-                  ) x act(H+)xx 1 ) =    -37.7436
Log ( act(Mn+++                  ) / act(H+)xx 3 ) =     -7.4196
Log ( act(MnO4--                 ) x act(H+)xx 2 ) =    -38.4352
Log ( act(N2(aq)                 )                 ) =    -21.3711
Log ( act(N3-                    ) x act(H+)xx 1 ) =   -108.8861
Log ( act(NO2-                   ) x act(H+)xx 1 ) =    -24.7329
Log ( act(NO3-                   ) x act(H+)xx 1 ) =    -11.2860
Log ( act(O2(aq)                 )                 ) =     -3.5761
Log ( act(Pb++++                 ) / act(H+)xx 4 ) =    -11.2807
Log ( act(Pu+++                  ) / act(H+)xx 3 ) =    -12.5218
Log ( act(PuO2+                  ) / act(H+)xx 1 ) =     -6.8660
Log ( act(PuO2++                 ) / act(H+)xx 2 ) =     -2.5696
Log ( act(S2O4--                 ) x act(H+)xx 2 ) =   -150.4302
Log ( act(S2O6--                 ) x act(H+)xx 2 ) =    -86.9699
Log ( act(S2O8--                 ) x act(H+)xx 2 ) =    -61.6260
Log ( act(S3--                   ) x act(H+)xx 2 ) =   *********
Log ( act(S3O6--                 ) x act(H+)xx 2 ) =   -194.9596
Log ( act(S4--                   ) x act(H+)xx 2 ) =   *********
Log ( act(S4O6--                 ) x act(H+)xx 2 ) =   -287.0432
Log ( act(S5--                   ) x act(H+)xx 2 ) =   *********
Log ( act(S5O6--                 ) x act(H+)xx 2 ) =   -408.0072
Log ( act(SCN-                   ) x act(H+)xx 1 ) =   *********
Log ( act(SO3--                  ) x act(H+)xx 2 ) =    -63.5053
Log ( act(Sm++                   ) / act(H+)xx 2 ) =    -40.2007
Log ( act(U+++                   ) / act(H+)xx 3 ) =    -65.8859
Log ( act(U++++                  ) / act(H+)xx 4 ) =    -35.9261
Log ( act(UO2+                   ) / act(H+)xx 1 ) =    -22.8881
Log ( act(Zr++++                 ) / act(H+)xx 4 ) =    -18.5332
```

(Species with concentrations .lt. 1.e-12 are not listed)

Species	Molality	Log molality	Log gamma	Log activity
Cl-	2.1528E-03	-2.6670	-0.0278	-2.6948
Na+	1.9891E-03	-2.7013	-0.0286	-2.7299
SiO2(aq)	1.0136E-03	-2.9941	0.0000	-2.9941
Ca++	3.1888E-04	-3.4964	-0.1095	-3.6059
O2(aq)	2.6519E-04	-3.5764	0.0004	-3.5761
SO4--	1.8273E-04	-3.7382	-0.1108	-3.8490
NO3-	1.4182E-04	-3.8483	-0.0278	-3.8760
HCO3-	1.3293E-04	-3.8764	-0.0273	-3.9037
K+	1.2876E-04	-3.8902	-0.0291	-3.9193
F-	1.1436E-04	-3.9417	-0.0275	-3.9692
Mg++	8.0015E-05	-4.0968	-0.1059	-4.2027
B(OH)3(aq)	1.2193E-05	-4.9139	0.0000	-4.9139
CO2(aq)	1.0733E-05	-4.9693	0.0004	-4.9689
CaSO4(aq)	4.5306E-06	-5.3438	0.0000	-5.3438
HSiO3-	3.0944E-06	-5.5094	-0.0273	-5.5367
MgSO4(aq)	2.2906E-06	-5.6400	0.0000	-5.6400
NaSO4-	1.8549E-06	-5.7317	-0.0273	-5.7590
AlO2-	1.3176E-06	-5.8802	-0.0273	-5.9075
HPO4--	7.5269E-07	-6.1234	-0.1108	-6.2342
NaCl(aq)	6.2847E-07	-6.2017	0.0000	-6.2017
H2PO4-	3.8767E-07	-6.4115	-0.0273	-6.4388
CaHCO3+	3.6790E-07	-6.4343	-0.0286	-6.4629
NaHCO3(aq)	3.3153E-07	-6.4795	0.0000	-6.4795
CrO4--	3.1344E-07	-6.5038	-0.1108	-6.6147
OH-	2.7694E-07	-6.5576	-0.0275	-6.5852
NaHSiO3(aq)	2.4092E-07	-6.6181	0.0000	-6.6181
CO3--	1.9381E-07	-6.7126	-0.1098	-6.8225
BO2-	1.8991E-07	-6.7215	-0.0273	-6.7487
CaNO3+	1.7645E-07	-6.7534	-0.0286	-6.7819
MgF+	1.6181E-07	-6.7910	-0.0286	-6.8196
KSO4-	1.3757E-07	-6.8615	-0.0273	-6.8887
CaF+	1.3650E-07	-6.8649	-0.0286	-6.8935
HAlO2(aq)	1.3580E-07	-6.8671	0.0000	-6.8671
CaCl+	1.0772E-07	-6.9677	-0.0286	-6.9963
MgCl+	9.9122E-08	-7.0038	-0.0286	-7.0324
CuOH+	9.7722E-08	-7.0100	-0.0286	-7.0386
CuCO3(aq)	9.3715E-08	-7.0282	0.0000	-7.0282
MgHCO3+	9.0764E-08	-7.0421	-0.0286	-7.0707
Cu++	8.8818E-08	-7.0515	-0.1095	-7.1610
CaHPO4(aq)	7.9411E-08	-7.1001	0.0000	-7.1001
CaCO3(aq)	7.9203E-08	-7.1013	0.0000	-7.1013
H+	4.1329E-08	-7.3837	-0.0263	-7.4100
HCrO4-	3.1405E-08	-7.5030	-0.0273	-7.5303
MgHPO4(aq)	2.9721E-08	-7.5269	0.0000	-7.5269
NaF(aq)	2.0102E-08	-7.6968	0.0000	-7.6968
AlF3(aq)	1.3433E-08	-7.8718	0.0000	-7.8718
AlF2+	1.0617E-08	-7.9740	-0.0286	-8.0026
NaHPO4-	9.6191E-09	-8.0169	-0.0273	-8.0441
MgCO3(aq)	8.9894E-09	-8.0463	0.0000	-8.0463
KCl(aq)	7.7858E-09	-8.1087	0.0000	-8.1087
HF(aq)	6.1497E-09	-8.2111	0.0000	-8.2111
CaPO4-	5.4369E-09	-8.2646	-0.0273	-8.2919
Al(OH)2+	3.8894E-09	-8.4101	-0.0286	-8.4387
CuPO4-	3.7172E-09	-8.4298	-0.0273	-8.4571
CaB(OH)4+	3.1372E-09	-8.5035	-0.0286	-8.5320
MgPO4-	1.8516E-09	-8.7325	-0.0273	-8.7597
NaCO3-	9.7566E-10	-9.0107	-0.0273	-9.0380
CaOH+	9.6078E-10	-9.0174	-0.0286	-9.0460

MgB(OH)4+	9.4458E-10	-9.0248	-0.0286	-9.0533
NaB(OH)4(aq)	6.1966E-10	-9.2078	0.0000	-9.2078
HSO4-	5.5891E-10	-9.2527	-0.0273	-9.2799
CuHPO4(aq)	4.6211E-10	-9.3353	0.0000	-9.3353
KHPO4-	4.5056E-10	-9.3462	-0.0273	-9.3735
NaAlO2(aq)	4.1618E-10	-9.3807	0.0000	-9.3807
CuCl+	4.0714E-10	-9.3903	-0.0286	-9.4188
AlF4-	3.8564E-10	-9.4138	-0.0273	-9.4411
AlF++	3.0137E-10	-9.5209	-0.1124	-9.6333
CaCl2(aq)	2.2956E-10	-9.6391	0.0000	-9.6391
CuF+	1.2540E-10	-9.9017	-0.0286	-9.9303
MoO4--	1.0000E-10	-10.0000	-0.1098	-10.1098
Ti(OH)4(aq)	1.0000E-10	-10.0000	0.0000	-10.0000
Li+	9.9911E-11	-10.0004	-0.0276	-10.0280
Cs+	9.9863E-11	-10.0006	-0.0294	-10.0300
Ba++	9.9849E-11	-10.0007	-0.1115	-10.1121
Ni++	9.8508E-11	-10.0065	-0.1095	-10.1161
Sr++	9.7680E-11	-10.0102	-0.1115	-10.1217
Zn++	9.6939E-11	-10.0135	-0.1095	-10.1230
Pb++	9.5506E-11	-10.0200	-0.1124	-10.1324
AlOH++	7.9652E-11	-10.0988	-0.1124	-10.2112
NaOH(aq)	7.6776E-11	-10.1148	0.0000	-10.1148
PO3F--	4.9742E-11	-10.3033	-0.1108	-10.4141
Cu(CO3)2--	3.0676E-11	-10.5132	-0.1108	-10.6240
HCl(aq)	1.6796E-11	-10.7748	0.0000	-10.7748
PO4---	1.2721E-11	-10.8955	-0.2505	-11.1460
KOH(aq)	1.0731E-11	-10.9694	0.0000	-10.9694
H2SiO4--	9.4751E-12	-11.0234	-0.1108	-11.1342
PbCl+	4.3528E-12	-11.3612	-0.0286	-11.3898
AlHPO4+	3.3905E-12	-11.4697	-0.0286	-11.4983
ZnOH+	2.2672E-12	-11.6445	-0.0286	-11.6731
SrSO4(aq)	2.1346E-12	-11.6707	0.0000	-11.6707
H3PO4(aq)	2.0936E-12	-11.6791	0.0000	-11.6791
CuH2PO4+	1.5443E-12	-11.8113	-0.0286	-11.8399
NiSO4(aq)	1.4474E-12	-11.8394	0.0000	-11.8394

--- Major Aqueous Species Contributing to Mass Balances ---

Aqueous species accounting for 99% or more of Al+++

Species	Factor	Molality	Per Cent
AlO2-	1.00	1.3176E-06	88.88
HAlO2(aq)	1.00	1.3580E-07	9.16
AlF3(aq)	1.00	1.3433E-08	9.061E-01
AlF2+	1.00	1.0617E-08	7.161E-01
Total		1.4825E-06	99.66

Aqueous species accounting for 99% or more of B(OH)3(aq)

Species	Factor	Molality	Per Cent
B(OH)3(aq)	1.00	1.2193E-05	98.43
BO2-	1.00	1.8991E-07	1.53
Total		1.2388E-05	99.96

Aqueous species accounting for 99% or more of Ba++

```
     Species                   Factor    Molality     Per Cent

  Ba++                          1.00    9.9849E-11     99.85
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                 1.0000E-10     99.85


Aqueous species accounting for 99% or more of Ca++

     Species                   Factor    Molality     Per Cent

  Ca++                          1.00    3.1888E-04     98.31
  CaSO4(aq)                     1.00    4.5306E-06      1.40
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                 3.2437E-04     99.70


Aqueous species accounting for 99% or more of Ce+++

     Species                   Factor    Molality     Per Cent

  Ce(OH)2++                     1.00    3.5494E-25     35.49
  CeCO3+                        1.00    3.4023E-25     34.02
  Ce+++                         1.00    1.1508E-25     11.51
  CePO4(aq)                     1.00    1.0077E-25     10.08
  CeF++                         1.00    3.7208E-26      3.72
  CeSO4+                        1.00    2.5526E-26      2.55
  CeOH++                        1.00    9.7730E-27    9.773E-01
  CeHPO4+                       1.00    6.6344E-27    6.634E-01
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                 1.0000E-24     99.02


Aqueous species accounting for 99% or more of Cl-

     Species                   Factor    Molality     Per Cent

  Cl-                           1.00    2.1528E-03     99.96
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                 2.1536E-03     99.96


Aqueous species accounting for 99% or more of CrO4--

     Species                   Factor    Molality     Per Cent

  CrO4--                        1.00    3.1344E-07     90.89
  HCrO4-                        1.00    3.1405E-08      9.11
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                 3.4485E-07    100.00


Aqueous species accounting for 99% or more of Cs+

     Species                   Factor    Molality     Per Cent

  Cs+                           1.00    9.9863E-11     99.86
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                 1.0000E-10     99.86


Aqueous species accounting for 99% or more of Cu++
```

```
     Species                  Factor    Molality     Per Cent

  CuOH+                        1.00    9.7722E-08     34.29
  CuCO3(aq)                    1.00    9.3715E-08     32.88
  Cu++                         1.00    8.8818E-08     31.16
  CuPO4-                       1.00    3.7172E-09      1.30
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                2.8500E-07     99.64


Aqueous species accounting for 99% or more of F-

     Species                  Factor    Molality     Per Cent

  F-                           1.00    1.1436E-04     99.66
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                1.1475E-04     99.66


Aqueous species accounting for 99% or more of Fe++

     Species                  Factor    Molality     Per Cent

  Fe(OH)3(aq)                  1.00    9.1263E-19     91.26
  Fe(OH)2+                     1.00    8.1083E-20      8.11
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                1.0000E-18     99.37


Aqueous species accounting for 99% or more of Gd+++

     Species                  Factor    Molality     Per Cent

  GdPO4(aq)                    1.00    4.0962E-15     40.96
  GdCO3+                       1.00    3.8979E-15     38.98
  Gd+++                        1.00    6.8624E-16      6.86
  GdF++                        1.00    6.7561E-16      6.76
  GdSO4+                       1.00    1.4657E-16      1.47
  GdOH++                       1.00    1.2563E-16      1.26
  GdHPO4+                      1.00    1.2047E-16      1.20
  Gd(CO3)2-                    1.00    1.1622E-16      1.16
  GdF2+                        1.00    7.5263E-17    7.526E-01
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                1.0000E-14     99.40


Aqueous species accounting for 99% or more of HCO3-

     Species                  Factor    Molality     Per Cent

  HCO3-                        1.00    1.3293E-04     91.78
  CO2(aq)                      1.00    1.0733E-05      7.41
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                1.4483E-04     99.19


Aqueous species accounting for 99% or more of HPO4--

     Species                  Factor    Molality     Per Cent

  HPO4--                       1.00    7.5269E-07     59.22
  H2PO4-                       1.00    3.8767E-07     30.50
```

```
  CaHPO4(aq)                    1.00    7.9411E-08      6.25
  MgHPO4(aq)                    1.00    2.9721E-08      2.34
  NaHPO4-                       1.00    9.6191E-09    7.568E-01
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                 1.2711E-06     99.06
```

Aqueous species accounting for 99% or more of K+

```
     Species                    Factor    Molality     Per Cent

  K+                            1.00    1.2876E-04     99.89
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                 1.2891E-04     99.89
```

Aqueous species accounting for 99% or more of La+++

```
     Species                    Factor    Molality     Per Cent

  LaCO3+                        1.00    4.9112E-15     49.11
  La+++                         1.00    2.6327E-15     26.33
  LaPO4(aq)                     1.00    9.3917E-16      9.39
  LaSO4+                        1.00    5.8399E-16      5.84
  LaF++                         1.00    5.3710E-16      5.37
  LaOH++                        1.00    1.2573E-16      1.26
  LaHPO4+                       1.00    1.2057E-16      1.21
  LaHCO3++                      1.00    4.9620E-17    4.962E-01
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                 1.0000E-14     99.00
```

Aqueous species accounting for 99% or more of Li+

```
     Species                    Factor    Molality     Per Cent

  Li+                           1.00    9.9911E-11     99.91
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                 1.0000E-10     99.91
```

Aqueous species accounting for 99% or more of Mg++

```
     Species                    Factor    Molality     Per Cent

  Mg++                          1.00    8.0015E-05     96.75
  MgSO4(aq)                     1.00    2.2906E-06      2.77
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                 8.2699E-05     99.52
```

Aqueous species accounting for 99% or more of Mn++

```
     Species                    Factor    Molality     Per Cent

  Mn++                          1.00    6.9998E-18     96.14
  MnSO4(aq)                     1.00    1.7355E-19      2.38
  MnCO3(aq)                     1.00    2.7108E-20    3.723E-01
  MnCl+                         1.00    2.3477E-20    3.224E-01
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                 7.2809E-18     99.22
```

Aqueous species accounting for 99% or more of MoO4--

Species	Factor	Molality	Per Cent
MoO4--	1.00	1.0000E-10	100.00
Total		1.0000E-10	100.00

Aqueous species accounting for 99% or more of NH3(aq)

Species	Factor	Molality	Per Cent
NO3-	1.00	1.4182E-04	99.88
Total		1.4200E-04	99.88

Aqueous species accounting for 99% or more of Na+

Species	Factor	Molality	Per Cent
Na+	1.00	1.9891E-03	99.85
Total		1.9922E-03	99.85

Aqueous species accounting for 99% or more of Nd+++

Species	Factor	Molality	Per Cent
NdCO3+	1.00	4.3410E-15	43.41
NdPO4(aq)	1.00	2.8783E-15	28.78
Nd+++	1.00	1.1663E-15	11.66
NdF++	1.00	5.9766E-16	5.98
NdSO4+	1.00	3.2569E-16	3.26
NdF2+	1.00	3.0757E-16	3.08
NdOH++	1.00	1.7614E-16	1.76
NdHPO4+	1.00	1.0657E-16	1.07
Nd(CO3)2-	1.00	6.4868E-17	6.487E-01
Total		1.0000E-14	99.64

Aqueous species accounting for 99% or more of Ni++

Species	Factor	Molality	Per Cent
Ni++	1.00	9.8508E-11	98.51
NiSO4(aq)	1.00	1.4474E-12	1.45
Total		1.0000E-10	99.96

Aqueous species accounting for 99% or more of Pb++

Species	Factor	Molality	Per Cent
Pb++	1.00	9.5506E-11	95.51
PbCl+	1.00	4.3528E-12	4.35
Total		1.0000E-10	99.86

Aqueous species accounting for 99% or more of Pu++++

Species	Factor	Molality	Per Cent
PuO2+	1.00	5.6572E-15	56.57
PuO2CO3(aq)	1.00	1.2530E-15	12.53
PuO2(OH)2(aq)	1.00	9.5521E-16	9.55
PuO2HPO4(aq)	1.00	8.2449E-16	8.24
PuO2OH+	1.00	4.7188E-16	4.72
PuO2(OH)3-	1.00	4.0024E-16	4.00
Pu(OH)4(aq)	1.00	2.0452E-16	2.05
PuO2CO3-	1.00	9.9734E-17	9.973E-01
PuO2OH(aq)	1.00	3.9707E-17	3.971E-01
Total		1.0000E-14	99.06

Aqueous species accounting for 99% or more of SO4--

Species	Factor	Molality	Per Cent
SO4--	1.00	1.8273E-04	95.40
CaSO4(aq)	1.00	4.5306E-06	2.37
MgSO4(aq)	1.00	2.2906E-06	1.20
NaSO4-	1.00	1.8549E-06	9.684E-01
Total		1.9154E-04	99.93

Aqueous species accounting for 99% or more of SiO2(aq)

Species	Factor	Molality	Per Cent
SiO2(aq)	1.00	1.0136E-03	99.67
Total		1.0169E-03	99.67

Aqueous species accounting for 99% or more of Sm+++

Species	Factor	Molality	Per Cent
SmCO3+	1.00	4.3857E-15	43.86
SmPO4(aq)	1.00	3.6609E-15	36.61
Sm+++	1.00	7.4346E-16	7.43
SmF++	1.00	3.8098E-16	3.81
SmF2+	1.00	2.3211E-16	2.32
SmSO4+	1.00	2.0761E-16	2.08
SmOH++	1.00	1.7795E-16	1.78
SmHPO4+	1.00	1.0767E-16	1.08
Sm(CO3)2-	1.00	6.5536E-17	6.554E-01
Total		1.0000E-14	99.62

Aqueous species accounting for 99% or more of Sr++

Species	Factor	Molality	Per Cent
Sr++	1.00	9.7680E-11	97.68
SrSO4(aq)	1.00	2.1346E-12	2.13

```
  Total                                1.0000E-10     99.81

Aqueous species accounting for 99% or more of Ti(OH)4(aq)

     Species                   Factor    Molality     Per Cent

  Ti(OH)4(aq)                   1.00    1.0000E-10    100.00
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                 1.0000E-10    100.00

Aqueous species accounting for 99% or more of UO2++

     Species                   Factor    Molality     Per Cent

  UO2(OH)2(aq)                  1.00    8.3199E-15     83.20
  UO2(CO3)2--                   1.00    6.1894E-16      6.19
  UO2PO4-                       1.00    4.9851E-16      4.99
  UO2(OH)3-                     1.00    2.8193E-16      2.82
  UO2CO3(aq)                    1.00    1.8104E-16      1.81
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                 1.0000E-14     99.00

Aqueous species accounting for 99% or more of Zn++

     Species                   Factor    Molality     Per Cent

  Zn++                          1.00    9.6939E-11     96.94
  ZnOH+                         1.00    2.2672E-12      2.27
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                 1.0000E-10     99.21

Aqueous species accounting for 99% or more of Zr(OH)2++

     Species                   Factor    Molality     Per Cent

  Zr(OH)4(aq)                   1.00    1.0000E-20    100.00
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                 1.0000E-20    100.00


          --- Summary of Aqueous Redox Reactions ---

     Couple                  Eh, volts      pe-       Log fO2     Ah, kcal

  DEFAULT                     0.781    0.1320E+02     -0.678      18.004
  S2O3--       /SO4--         0.781    0.1320E+02     -0.678      18.004
  CN-          /NH3(aq)       0.781    0.1320E+02     -0.678      18.004
  ClO-         /Cl-           0.781    0.1320E+02     -0.678      18.004
  ClO2-        /Cl-           0.781    0.1320E+02     -0.678      18.004
  ClO3-        /Cl-           0.781    0.1320E+02     -0.678      18.004
  ClO4-        /Cl-           0.781    0.1320E+02     -0.678      18.004
  Cr++         /CrO4--        0.781    0.1320E+02     -0.678      18.004
  Cr+++        /CrO4--        0.781    0.1320E+02     -0.678      18.004
  CrO4---      /CrO4--        0.781    0.1320E+02     -0.678      18.004
  Cu+          /Cu++          0.781    0.1320E+02     -0.678      18.004
  Fe+++        /Fe++          0.781    0.1320E+02     -0.678      18.004
  H2(aq)       /H2O           0.781    0.1320E+02     -0.678      18.004
  HSO5-        /SO4--         0.781    0.1320E+02     -0.678      18.004
```

Mn+++	/Mn++	0.781	0.1320E+02	-0.678	18.004
MnO4--	/Mn++	0.781	0.1320E+02	-0.678	18.004
N2(aq)	/NH3(aq)	0.781	0.1320E+02	-0.678	18.004
N3-	/NH3(aq)	0.781	0.1320E+02	-0.678	18.004
NO2-	/NH3(aq)	0.781	0.1320E+02	-0.678	18.004
NO3-	/NH3(aq)	0.781	0.1320E+02	-0.678	18.004
O2(aq)	/H2O	0.781	0.1320E+02	-0.678	18.004
Pb++++	/Pb++	0.781	0.1320E+02	-0.678	18.004
Pu+++	/Pu++++	0.781	0.1320E+02	-0.678	18.004
PuO2+	/Pu++++	0.781	0.1320E+02	-0.678	18.004
PuO2++	/Pu++++	0.781	0.1320E+02	-0.678	18.004
S2O4--	/SO4--	0.781	0.1320E+02	-0.678	18.004
S2O6--	/SO4--	0.781	0.1320E+02	-0.678	18.004
S2O8--	/SO4--	0.781	0.1320E+02	-0.678	18.004
S3O6--	/SO4--	0.781	0.1320E+02	-0.678	18.004
S4O6--	/SO4--	0.781	0.1320E+02	-0.678	18.004
S5O6--	/SO4--	0.781	0.1320E+02	-0.678	18.004
SO3--	/SO4--	0.781	0.1320E+02	-0.678	18.004
Sm++	/Sm+++	0.781	0.1320E+02	-0.678	18.004
U+++	/UO2++	0.781	0.1320E+02	-0.678	18.004
U++++	/UO2++	0.781	0.1320E+02	-0.678	18.004
UO2+	/UO2++	0.781	0.1320E+02	-0.678	18.004

--- Summary of Aqueous Non-equilibrium Non-redox Neactions ---

Reaction	Log Q/K	Aff, kcal	State

None

--- Summary of Pure Mineral Saturation States ---

(Minerals with affinities .lt. -10 kcal are not listed)

Mineral	Log Q/K	Aff, kcal	State
Alamosite	-3.980	-5.430	
Albite	2.499	3.409	ssatd
Albite_high	1.180	1.610	ssatd
Albite_low	2.499	3.409	ssatd
Alunite	-4.802	-6.551	
Amesite-14A	-0.713	-0.973	
Analcime	1.428	1.949	ssatd
Analcime-dehy	-4.934	-6.732	
Andalusite	0.193	0.263	satd
Anglesite	-6.129	-8.361	
Anhydrite	-3.149	-4.296	
Anorthite	-2.221	-3.030	
Antlerite	-4.423	-6.034	
Aragonite	-2.093	-2.855	
Atacamite	-3.858	-5.263	
BaCrO4	-6.795	-9.270	
Barite	-3.990	-5.444	
Bassanite	-3.793	-5.175	
Beidellite-Ca	7.559	10.312	ssatd
Beidellite-Cs	5.281	7.205	ssatd
Beidellite-H	6.666	9.095	ssatd
Beidellite-K	7.143	9.745	ssatd
Beidellite-Mg	7.498	10.229	ssatd
Beidellite-Na	7.197	9.819	ssatd
Berlinite	-4.280	-5.839	

Boehmite	2.002	2.731	ssatd
Boric_acid	-4.756	-6.488	
Brochantite	-3.470	-4.734	
Brucite	-5.681	-7.750	
CaSO4:0.5H2O(beta)	-3.962	-5.405	
Calcite	-1.948	-2.658	
CeO2	-3.592	-4.901	
Celadonite	4.240	5.784	ssatd
Cerussite	-3.417	-4.662	
Chalcedony	0.734	1.001	ssatd
Chrysocolla	-1.550	-2.114	
Chrysotile	-5.262	-7.179	
Clinoptilolite	15.838	21.607	ssatd
Clinoptilolite-Ca	15.834	21.602	ssatd
Clinoptilolite-Cs	-6.641	-9.060	
Clinoptilolite-K	12.436	16.966	ssatd
Clinoptilolite-Na	12.747	17.390	ssatd
Clinoptilolite-Sr	4.679	6.383	ssatd
Clinoptilolite-hy-Ca	15.835	21.604	ssatd
Clinoptilolite-hy-Cs	-6.636	-9.054	
Clinoptilolite-hy-K	12.440	16.971	ssatd
Clinoptilolite-hy-Na	12.749	17.393	ssatd
Clinoptilolite-hy-Sr	4.679	6.384	ssatd
Coesite	0.195	0.266	satd
Cordierite_hydr	-5.297	-7.226	
Corundum	0.820	1.118	ssatd
Cristobalite(alpha)	0.455	0.620	ssatd
Cristobalite(beta)	0.011	0.015	satd
Crocoite	-4.029	-5.497	
Cu3(PO4)2	-6.907	-9.423	
Dawsonite	-1.414	-1.929	
Diaspore	2.406	3.282	ssatd
Diopside	-5.121	-6.987	
Dioptase	-1.413	-1.927	
Dolomite	-3.309	-4.515	
Dolomite-dis	-4.854	-6.622	
Dolomite-ord	-3.309	-4.515	
Epsomite	-6.090	-8.308	
Fluorapatite	6.523	8.899	ssatd
Fluorite	-1.507	-2.057	
GdPO4:H2O	-2.288	-3.121	
Gibbsite	1.810	2.469	ssatd
Gismondine	6.997	9.546	ssatd
Goethite	-6.574	-8.969	
Gypsum	-2.973	-4.056	
Haiweeite	-7.240	-9.878	
Halite	-7.010	-9.564	
Heulandite	6.836	9.326	ssatd
Hexahydrite	-6.325	-8.629	
Hydroxylapatite	-4.018	-5.481	
Ice	-0.139	-0.189	satd
Illite	7.245	9.884	ssatd
Jadeite	-0.131	-0.179	satd
K-Feldspar	4.349	5.934	ssatd
Kalsilite	-0.836	-1.141	
Kaolinite	6.333	8.640	ssatd
Kyanite	0.464	0.632	ssatd
LaPO4:H2O	-1.287	-1.756	
Lansfordite	-5.538	-7.555	
Laumontite	4.702	6.415	ssatd
Lawsonite	2.144	2.925	ssatd
Magnesite	-2.990	-4.079	
Malachite	-1.936	-2.641	

Manganite	-7.255	-9.898	
Margarite	2.423	3.306	ssatd
Maximum_Microcline	4.349	5.934	ssatd
Mesolite	6.936	9.462	ssatd
MnO2(gamma)	-4.314	-5.885	
Monohydrocalcite	-2.782	-3.795	
Montmor-Ca	6.857	9.355	ssatd
Montmor-Cs	4.646	6.339	ssatd
Montmor-K	6.512	8.884	ssatd
Montmor-Mg	6.866	9.367	ssatd
Montmor-Na	6.562	8.952	ssatd
Mordenite	3.974	5.422	ssatd
Muscovite	9.620	13.124	ssatd
Nahcolite	-6.522	-8.898	
Natrolite	0.989	1.349	ssatd
NdOHCO3	-7.091	-9.674	
NdPO4:H2O	-1.841	-2.512	
Nepheline	-2.549	-3.477	
Nesquehonite	-5.692	-7.766	
Nontronite-Ca	-6.479	-8.839	
Nontronite-K	-6.894	-9.406	
Nontronite-Mg	-6.539	-8.921	
Nontronite-Na	-6.840	-9.332	
Okenite	-5.156	-7.034	
Paragonite	6.873	9.377	ssatd
Paralaurionite	-5.621	-7.668	
PbHPO4	-4.800	-6.548	
Pentahydrite	-6.665	-9.093	
Petalite	-1.213	-1.656	
Plattnerite	-3.320	-4.529	
Plumbogummite	-0.577	-0.787	
Prehnite	-0.353	-0.482	satd
Pseudowollastonite	-5.780	-7.885	
PuO2	-1.544	-2.107	
PuO2(OH)2	-6.120	-8.349	
Pyrolusite	-2.796	-3.814	
Pyromorphite	-1.934	-2.639	
Pyrophyllite	6.715	9.162	ssatd
Quartz	1.005	1.371	ssatd
Rutile	-0.355	-0.484	satd
Sanidine_high	3.150	4.298	ssatd
Saponite-Ca	-0.420	-0.573	
Saponite-Cs	-2.698	-3.680	
Saponite-H	-1.312	-1.790	
Saponite-K	-0.836	-1.140	
Saponite-Mg	-0.481	-0.656	
Saponite-Na	-0.782	-1.066	
Scolecite	5.486	7.485	ssatd
Sellaite	-2.757	-3.761	
Sepiolite	-5.940	-8.104	
SiO2(am)	-0.281	-0.383	satd
Sillimanite	-0.170	-0.233	satd
SmPO4:H2O	-2.036	-2.778	
Smectite-low-Fe-Mg	-4.052	-5.528	
Smithsonite	-7.080	-9.659	
Spodumene	-6.038	-8.237	
Starkeyite	-7.052	-9.621	
Stilbite	11.463	15.639	ssatd
Strontianite	-6.302	-8.597	
Talc	-1.263	-1.723	
Tenorite	0.003	0.004	satd
Tridymite	0.834	1.137	ssatd
Tsumebite	-6.552	-8.939	

Wairakite	0.293	0.399	satd
Whitlockite	-4.241	-5.786	
Witherite	-3.609	-4.924	
Wollastonite	-5.541	-7.559	
Zincite	-6.512	-8.884	
Zircon	-6.347	-8.659	
Zn(OH)2(beta)	-7.237	-9.874	
Zn(OH)2(epsilon)	-6.966	-9.503	
Zn(OH)2(gamma)	-7.186	-9.804	
Zoisite	-1.159	-1.581	

--- Summary of Hypothetical Solid Solutions ---

--- Biotite ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Annite	0.0000E+00			
Phlogopite	0.0000E+00			

Mineral	Log Q/K	Aff, kcal	State
Biotite	0.000	-999.000	

--- Carbonate-Calcite ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Calcite	9.1668E-01	-0.0378	0.0000	-0.0378
Magnesite	8.3274E-02	-1.0795	0.0000	-1.0795
Rhodochrosite	2.2140E-12	-11.6548	0.0000	-11.6548
Siderite	1.4233E-23	-22.8467	0.0000	-22.8467
Smithsonite	6.7684E-06	-5.1695	0.0000	-5.1695
Strontianite	4.0632E-05	-4.3911	0.0000	-4.3911

Mineral	Log Q/K	Aff, kcal	State
Carbonate-Calcite	-1.910	-2.606	
Calcite	-1.910	-2.606	
Magnesite	-1.910	-2.606	
Rhodochrosite	-1.910	-2.606	
Siderite	-1.910	-2.606	
Smithsonite	-1.910	-2.606	
Strontianite	-1.910	-2.606	

--- Chlorite-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity

```
Clinochlore-14A             0.0000E+00
Daphnite-14A                0.0000E+00


   Mineral                      Log Q/K     Aff, kcal  State

Chlorite-ss                       0.000    -999.000


               --- Clinoptilolite-hy-ss     ---

  Ideal solution

   Component                     x           Log x   Log lambda  Log activity

Clinoptilolite-hy-Ca        9.9878E-01     -0.0005      0.0000     -0.0005
Clinoptilolite-hy-Cs        3.3730E-23    -22.4720      0.0000    -22.4720
Clinoptilolite-hy-K         4.0160E-04     -3.3962      0.0000     -3.3962
Clinoptilolite-hy-Na        8.1904E-04     -3.0867      0.0000     -3.0867
Clinoptilolite-hy-Sr        6.9713E-12    -11.1567      0.0000    -11.1567


   Mineral                      Log Q/K     Aff, kcal  State

Clinoptilolite-hy-ss             15.836      21.604   ssatd
  Clinoptilolite-hy-Ca           15.836      21.604   ssatd
  Clinoptilolite-hy-Cs           15.836      21.604   ssatd
  Clinoptilolite-hy-K            15.836      21.604   ssatd
  Clinoptilolite-hy-Na           15.836      21.604   ssatd
  Clinoptilolite-hy-Sr           15.836      21.604   ssatd


               --- Clinoptilolite-ss        ---

  Ideal solution

   Component                     x           Log x   Log lambda  Log activity

Clinoptilolite-Ca           8.1106E-01     -0.0909     -0.2237     -0.3147
Clinoptilolite-Cs           2.5910E-07     -6.5865    -16.2029    -22.7894
Clinoptilolite-K            8.4501E-02     -1.0731     -2.6399     -3.7131
Clinoptilolite-NH4          1.4927E-62    -61.8260   -152.0921   -213.9181
Clinoptilolite-Na           1.0396E-01     -0.9831     -2.4185     -3.4017
Clinoptilolite-Sr           4.8410E-04     -3.3151     -8.1551    -11.4701


   Mineral                      Log Q/K     Aff, kcal  State

Clinoptilolite-ss                16.149      22.031   ssatd
  Clinoptilolite-Ca              16.149      22.031   ssatd
  Clinoptilolite-Cs              16.149      22.031   ssatd
  Clinoptilolite-K               16.149      22.031   ssatd
  Clinoptilolite-NH4             16.149      22.031   ssatd
  Clinoptilolite-Na              16.149      22.031   ssatd
  Clinoptilolite-Sr              16.149      22.031   ssatd


               --- Epidote-ss               ---

  Ideal solution
```

```
   Component                    x           Log x   Log lambda  Log activity

Clinozoisite               0.0000E+00
Epidote                    0.0000E+00


   Mineral                     Log Q/K     Aff, kcal  State

Epidote-ss                       0.000    -999.000


               --- Garnet-ss                ---

  Ideal solution

   Component                    x           Log x   Log lambda  Log activity

Andradite                  0.0000E+00
Grossular                  0.0000E+00


   Mineral                     Log Q/K     Aff, kcal  State

Garnet-ss                        0.000    -999.000


               --- Orthopyroxene            ---

  Ideal solution

   Component                    x           Log x   Log lambda  Log activity

Enstatite                  0.0000E+00
Ferrosilite                0.0000E+00


   Mineral                     Log Q/K     Aff, kcal  State

Orthopyroxene                    0.000    -999.000


               --- Saponite-tri             ---

  Ideal solution

   Component                    x           Log x   Log lambda  Log activity

Saponite-Ca                5.5823E-01     -0.2532      0.1696     -0.0836
Saponite-H                 1.1028E-03     -2.9575      1.9815     -0.9760
Saponite-K                 3.0656E-02     -1.5135      1.0140     -0.4994
Saponite-Mg                3.6530E-01     -0.4374      0.2930     -0.1443
Saponite-Na                4.4714E-02     -1.3496      0.9042     -0.4454


   Mineral                     Log Q/K     Aff, kcal  State

Saponite-tri                    -0.336      -0.459   satd
  Saponite-Ca                   -0.336      -0.459   satd
  Saponite-H                    -0.336      -0.459   satd
```

Saponite-K	-0.336	-0.459	satd
Saponite-Mg	-0.336	-0.459	satd
Saponite-Na	-0.336	-0.459	satd

--- Smectite-di ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Beidellite-Ca	5.5355E-01	-0.2568	0.1721	-0.0848
Beidellite-K	3.0421E-02	-1.5168	1.0163	-0.5006
Beidellite-Mg	3.6224E-01	-0.4410	0.2955	-0.1455
Beidellite-Na	4.4340E-02	-1.3532	0.9066	-0.4466
Montmor-Ca	4.1401E-03	-2.3830	1.5966	-0.7864
Montmor-K	3.7159E-04	-3.4299	2.2981	-1.1319
Montmor-Mg	4.4031E-03	-2.3562	1.5787	-0.7776
Montmor-Na	5.2817E-04	-3.2772	2.1957	-1.0815
Nontronite-Ca	1.6064E-43	-42.7941	28.6721	-14.1221
Nontronite-K	8.8281E-45	-44.0541	29.5163	-14.5379
Nontronite-Mg	1.0519E-43	-42.9780	28.7953	-14.1827
Nontronite-Na	1.2867E-44	-43.8905	29.4066	-14.4839

Mineral	Log Q/K	Aff, kcal	State
Smectite-di	7.643	10.428	ssatd
Beidellite-Ca	7.643	10.428	ssatd
Beidellite-K	7.643	10.428	ssatd
Beidellite-Mg	7.643	10.428	ssatd
Beidellite-Na	7.643	10.428	ssatd
Montmor-Ca	7.643	10.428	ssatd
Montmor-K	7.643	10.428	ssatd
Montmor-Mg	7.643	10.428	ssatd
Montmor-Na	7.643	10.428	ssatd
Nontronite-Ca	7.643	10.428	ssatd
Nontronite-K	7.643	10.428	ssatd
Nontronite-Mg	7.643	10.428	ssatd
Nontronite-Na	7.643	10.428	ssatd

--- Lanthanide hydroxide ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
La(OH)3	3.5248E-05	-4.4529	0.0000	-4.4529
Ce(OH)3	3.8700E-15	-14.4123	0.0000	-14.4123
Nd(OH)3(c)	4.9378E-01	-0.3065	0.0000	-0.3065
Gd(OH)3	4.4338E-01	-0.3532	0.0000	-0.3532
Sm(OH)3	6.2804E-02	-1.2020	0.0000	-1.2020

Mineral	Log Q/K	Aff, kcal	State
Lanthanide hydroxide	-8.460	-11.542	
La(OH)3	-8.460	-11.542	
Ce(OH)3	-8.460	-11.542	
Nd(OH)3(c)	-8.460	-11.542	

Gd(OH)3	-8.460	-11.542
Sm(OH)3	-8.460	-11.542

--- Rhabdophane-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaPO4:H2O	6.4201E-01	-0.1925	0.0000	-0.1925
CePO4:H2O	2.2291E-11	-10.6519	0.0000	-10.6519
NdPO4:H2O	1.7945E-01	-0.7461	0.0000	-0.7461
GdPO4:H2O	6.4148E-02	-1.1928	0.0000	-1.1928
SmPO4:H2O	1.1439E-01	-0.9416	0.0000	-0.9416

Mineral	Log Q/K	Aff, kcal	State
Rhabdophane-ss	-1.095	-1.494	
LaPO4:H2O	-1.095	-1.494	
CePO4:H2O	-1.095	-1.494	
NdPO4:H2O	-1.095	-1.494	
GdPO4:H2O	-1.095	-1.494	
SmPO4:H2O	-1.095	-1.494	

--- Lanthanide fluoride ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaF3:0.5H2O	7.2797E-01	-0.1379	0.0000	-0.1379
CeF3:0.5H2O	4.0058E-11	-10.3973	0.0000	-10.3973
NdF3:0.5H2O	2.5616E-01	-0.5915	0.0000	-0.5915
GdF3:0.5H2O	2.8957E-03	-2.5382	0.0000	-2.5382
SmF3:0.5H2O	1.2971E-02	-1.8870	0.0000	-1.8870

Mineral	Log Q/K	Aff, kcal	State
Lanthanide fluoride	-7.883	-10.755	
LaF3:0.5H2O	-7.883	-10.755	
CeF3:0.5H2O	-7.883	-10.755	
NdF3:0.5H2O	-7.883	-10.755	
GdF3:0.5H2O	-7.883	-10.755	
SmF3:0.5H2O	-7.883	-10.755	

11 approx. saturated pure minerals
0 approx. saturated input solid solutions
1 saturated hypothetical solid solutions

53 supersaturated pure minerals
0 supersatd. input solid solutions
3 supersatd. hypothetical solid solutions

--- Summary of Gases ---

Gas	Fugacity	Log fugacity
Al(g)	4.1885-189	-188.3779
B(g)	8.4204-204	-203.0747
BF3(g)	8.2211E-37	-36.0851
C(g)	3.0916-190	-189.5098
CH4(g)	3.5283-146	-145.4524
CO(g)	6.0393E-49	-48.2190
CO2(g)	3.1623E-04	-3.5000
Ca(g)	8.3991-153	-152.0758
Chlorine	1.0045E-25	-24.9980
Cs(g)	9.8506E-84	-83.0065
Cu(g)	6.0982E-75	-74.2148
Fluorine	5.4171E-81	-80.2662
H2(g)	6.1142E-42	-41.2137
H2O(g)	2.5975E-02	-1.5855
H2S(g)	0.0000E+00	-999.0000
HCl(g)	3.8878E-17	-16.4103
HF(g)	3.2222E-13	-12.4918
K(g)	6.3565E-78	-77.1968
Li(g)	2.1564E-97	-96.6663
Mg(g)	1.4316-130	-129.8442
Nitrogen	6.5361E-19	-18.1847
NH3(g)	9.3190E-69	-68.0306
NO(g)	2.5458E-25	-24.5942
NO2(g)	1.7407E-19	-18.7593
Na(g)	5.1298E-76	-75.2899
O2(g)	2.1000E-01	-0.6778
Pb(g)	7.3557E-70	-69.1334
S2(g)	0.0000E+00	-999.0000
SO2(g)	2.4564E-55	-54.6097
Si(g)	4.2759-220	-219.3690
SiF4(g)	4.8091E-34	-33.3179
Ti(g)	1.6799-231	-230.7747
TiCl4(g)	3.3823E-79	-78.4708
U(g)	1.7982-297	-296.7452
U2Cl10(g)	2.5943-230	-229.5860
U2Cl8(g)	8.0067-236	-235.0965
U2F10(g)	5.2529-148	-147.2796
UCl(g)	6.2305-252	-251.2055
UCl2(g)	6.4581-205	-204.1899
UCl3(g)	1.4662-155	-154.8338
UCl4(g)	1.8025-123	-122.7441
UCl5(g)	1.1401-128	-127.9430
UCl6(g)	1.3398-128	-127.8730
UF(g)	1.0974-237	-236.9596
UF2(g)	4.9671-196	-195.3039
UF3(g)	5.5327-148	-147.2571
UF4(g)	9.0964E-97	-96.0411
UF5(g)	6.8501E-87	-86.1643
UF6(g)	5.0796E-91	-90.2942
UO(g)	1.4202-212	-211.8477
UO2(g)	2.6312-128	-127.5798
UO2Cl2(g)	1.1541E-72	-71.9378
UO2F2(g)	6.4391E-62	-61.1912
UO3(g)	1.9354E-75	-74.7132
UOF4(g)	2.7107E-74	-73.5669
Zn(g)	1.1776E-79	-78.9290

```
--- Reading the input file ---

--- No further input found ---

         Start time = 11:53:19  01/14/99
           End time = 11:53:23  01/14/99

          Run time =   3.19     seconds
         User time =   3.19     seconds
          Cpu time =   3.19     seconds

Normal exit
```

```
EQ3/6, Version 7.2b (EQ3/6-V7-REL-V7.2b-PC)
EQ3NR Speciation-Solubility Code (EQ3/6-V7-EQ3NR-EXE-R139-P5)
Supported by the EQLIB library (EQ3/6-V7-EQLIB-LIB-R168-P5)
```

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```
Run  16:40:08  01/14/99



--- Reading the input file ---
|-----------------------------------------------------------------------|
|EQ3NR input file name= j13solMn.3i                                     |
|Description= "J-13 well water, manganese solubility                    |
|Version level= 7.2b                                                    |
|Created 01/14/99    Creator= D. H. Lester                              |
|Revised             Revisor=                                           |
|                                                                       |
|  Water from well J-13 at the Nevada Test Site. The composition        |
|is nearly identical to that in the EQ3NR test case input file j13w.3i,|
|which is based on data reported by Harrar et al. (1990) and on p. 3 of|
|Preliminary Scenario Definitions, May 17, 1996, except for fixing of  |
|bicarbonate via fixed fugacity of CO2 and pH.  Al, Fe, Mn, etc. re-   |
|tained, as these are needed to model reaction with tuff, etc.  traces |
|of Pu, U, Gd, Ba, La, Nd, Ce, Sm, Pb, Cr, Ni, Cu, Zr, Sr, Cs,          |
|Zn, & Mo added to enable modeling of waste glass and alloys.  Nb isn't|
|in data base.                                                          |
|                                                                       |
|This run uses revised data base, with essentially no organics.  Also,  |
|several to many other unlikely aqueous species removed.                |
|                                                                       |
|Electrical balancing is on Cl-.  These data do not agree exactly with  |
|those reported in the SCP.  CO2 and O2 fixed at atmospheric values.    |
|                                                                       |
|  This run uses the revised data base, incorporating SKB data.         |
|                                                                       |
|  Purpose: To determine manganese solubility This run represents       |
|  a run with a manganese content that just saturates the first Mn      |
|  mineral (pyrolusite MnO2) to precipitate.                            |
|                            References                                 |
|                                                                       |
|Harrar, J. E., Carley, J. F., Isherwood, W. F., and Raber, E., 1990,   |
|  Report of the Committee to Review the Use of J-13 Well Water in      |
|  Nevada Nuclear Waste Storage Investigations: UCID-21867, Lawrence    |
|  Livermore National Laboratory, Livermore, California.                |
|-----------------------------------------------------------------------|
|Temperature (C)         | 25.00        |Density(gm/cm3)|  1.00000      |
|-----------------------------------------------------------------------|
|Total Dissolved Salts   |              | mg/kg | mg/l  |*not used      |
|-----------------------------------------------------------------------------|
|Electrical Balancing on |Cl-                     | code selects| not performed|
|-----------------------------------------------------------------------------|
| SPECIES                | BASIS SWITCH/CONSTRAINT| CONC/ETC  | UNITS OR TYPE  |
|-----------------------------------------------------------------------------|
|redox                   |                        |-6.7778E-01|logfo2          |
```

Na+		1.9922E-03	molality
SiO2(aq)		1.0169E-03	molality
Ca++		3.2437E-04	molality
K+		1.2891E-04	molality
Mg++		8.2699E-05	molality
H+		7.4100	pH
HCO3-	CO2(g)	-3.5000	log fugacity
F-		1.1475E-04	molality
Cl-		2.0140E-04	molality
NH3(aq)	NO3-	0.142 E-03	molality
SO4--		1.9154E-04	molality
B(OH)3(aq)		1.2388E-05	molality
HPO4--		1.2711E-06	molality
Al+++		1.4825E-06	molality
Mn++		2.0000E-15	molality
Fe++		1.0000E-18	molality
CrO4--		3.4485E-07	molality
Cu++		1.05000E-14	molality
MoO4--		1.00000E-10	molality
Cs+		1.00000E-10	molality
Li+		1.00000E-10	molality
Ni++		1.00000E-10	molality
La+++		1.00000E-14	molality
Nd+++		1.00000E-14	molality
Sm+++		1.00000E-14	molality
Ce+++		1.00000E-24	molality
Pu++++		1.00000E-14	molality
Gd+++		1.00000E-14	molality
UO2++		1.00000E-14	molality
Sr++		1.00000E-10	molality
Ba++		1.00000E-10	molality
Ti(OH)4(aq)		1.00000E-10	molality
Zn++		1.00000E-10	molality
Zr(OH)2++		1.00000E-20	molality
Pb++		1.00000E-10	molality

Input Solid Solutions

none			

SUPPRESSED SPECIES	(suppress,replace,augmentk,augmentg)		value
Phlogopite	mineral	suppress	0.00000E+00
Annite	mineral	suppress	0.00000E+00
Clinochlore-14A	mineral	suppress	0.00000E+00
Daphnite-14A	mineral	suppress	0.00000E+00
Clinozoisite	mineral	suppress	0.00000E+00
Epidote	mineral	suppress	0.00000E+00
Epidote-ord	mineral	suppress	0.00000E+00
Andradite	mineral	suppress	0.00000E+00
Grossular	mineral	suppress	0.00000E+00
Enstatite	mineral	suppress	0.00000E+00
Ferrosilite	mineral	suppress	0.00000E+00
Pyrite	mineral	suppress	0.00000E+00
Pyrrhotite	mineral	suppress	0.00000E+00
Troilite	mineral	suppress	0.00000E+00
Alabandite	mineral	suppress	0.00000E+00
Brezinaite	mineral	suppress	0.00000E+00
Chalcocite	mineral	suppress	0.00000E+00
Covellite	mineral	suppress	0.00000E+00
Millerite	mineral	suppress	0.00000E+00
Polydymite	mineral	suppress	0.00000E+00
Vaesite	mineral	suppress	0.00000E+00

```
| Heazlewoodite          | mineral        | suppress | 0.00000E+00     |
| Galena                 | mineral        | suppress | 0.00000E+00     |
| Sulfur                 | mineral        | suppress | 0.00000E+00     |
| CaZrO3                 | mineral        | suppress | 0.00000E+00     |
| BaZrO3                 | mineral        | suppress | 0.00000E+00     |
| SrZrO3                 | mineral        | suppress | 0.00000E+00     |
| U2S3                   | mineral        | suppress | 0.00000E+00     |
| U3S5                   | mineral        | suppress | 0.00000E+00     |
| US2                    | mineral        | suppress | 0.00000E+00     |
| US3                    | mineral        | suppress | 0.00000E+00     |
| US                     | mineral        | suppress | 0.00000E+00     |
| US1.9                  | mineral        | suppress | 0.00000E+00     |
| U3P4                   | mineral        | suppress | 0.00000E+00     |
| UP                     | mineral        | suppress | 0.00000E+00     |
| UP2                    | mineral        | suppress | 0.00000E+00     |
| HS-                    | aqueous        | suppress | 0.00000E+00     |
| H2S(aq)                | aqueous        | suppress | 0.00000E+00     |
| S--                    | aqueous        | suppress | 0.00000E+00     |
|-------------------------------------------------------------------------|
|OPTIONS                                                                  |
|-------------------------------------------------------------------------|
| - SOLID SOLUTIONS -                                                     |
|     ignore solid solutions                                              |
|   * process hypothetical solid solutions                                |
|     process input and hypothetical solid solutions                      |
| - LOADING OF SPECIES INTO MEMORY -                                      |
|   * does nothing                                                        |
|     lists species loaded into memory                                    |
| - ECHO DATABASE INFORMATION -                                           |
|   * does nothing                                                        |
|     lists all reactions                                                 |
|     lists reactions and log K values                                    |
|     lists reactions, log K values and polynomial coef.                  |
| - LIST OF AQUEOUS SPECIES (ordering) -                                  |
|   * in order of decreasing concentration                                |
|     in same order as input file                                         |
| - LIST OF AQUEOUS SPECIES (concentration limit) -                       |
|     all species                                                         |
|     only species > 10**-20 molal                                        |
|   * only species > 10**-12 molal                                        |
|     not printed                                                         |
| - LIST OF AQUEOUS SPECIES (by element) -                                |
|   * print major species                                                 |
|     print all species                                                   |
|     don't print                                                         |
| - MINERAL SATURATION STATES -                                           |
|   * print if affinity > -10 kcals                                       |
|     print all                                                           |
|     don't print                                                         |
| - pH SCALE CONVENTION -                                                 |
|   * modified NBS                                                        |
|     internal                                                            |
|     rational                                                            |
| - ACTIVITY COEFFICIENT OPTIONS -                                        |
|   * use B-dot equation                                                  |
|     Davies' equation                                                    |
|     Pitzer's equations                                                  |
| - AUTO BASIS SWITCHING -                                                |
|   * off                                                                 |
|     on                                                                  |
| - PITZER DATABASE INFORMATION -                                         |
|   * print only warnings                                                 |
|     print species in model and number of Pitzer coefficients            |
```

```
|     print species in model and names of Pitzer coefficients          |
| - PICKUP FILE -                                                      |
|   * write pickup file                                                |
|     don't write pickup file                                          |
| - LIST MEAN IONIC PROPERTIES -                                       |
|   * don't print                                                      |
|     print                                                            |
| - LIST AQUEOUS SPECIES, ION SIZES, AND HYDRATION NUMBERS -           |
|     print                                                            |
|   * don't print                                                      |
| - CONVERGENCE CRITERIA -                                             |
|   * test both residual functions and correction terms                |
|     test only residual functions                                     |
|----------------------------------------------------------------------|
|DEBUGGING SWITCHES (0 = off, 1,2 = on                                 |
|----------------------------------------------------------------------|
|0  generic debugging information                                      |2
|0  print details of pre-Newton-Raphson iteration                      |2
|0  print details of Newton-Raphson iteration                          |
|0  print details of stoichiometric factors                            |2
|0  print details of stoichiometric factors calculation                |
|0  write reactions on RLIST                                           |
|0  list stoichiometric concentrations of master species               |
|0  request iteration variables to be killed                           |
|----------------------------------------------------------------------|
|DEVELOPMENT OPTIONS  (used for code development)                      |
|----------------------------------------------------------------------|
| none                                                                 |
|----------------------------------------------------------------------|
|TOLERANCES                  (desired values)        (defaults)        |
|----------------------------------------------------------------------|
|      residual functions  |                      |1.0e-10  tolbt     |
|        correction terms  |                      |1.0e-10  toldl     |
|        saturation state  |                      |0.5      tolsat    |
|number of N-R iterations  |                      |30       itermx    |
|----------------------------------------------------------------------|

 --- The input file has been successfully read ---

 --- Reading the data1 file ---

 --- The data1 file has been successfully read ---

 * note - (eqlib/inbdot) The following aqueous species
       have been assigned a default hard core diameter of
         4.000 Angstroms-
         Cu(NO2)2(aq)
         Nd(HPO4)2-

 The species Phlogopite               has been user-suppressed

 The species Annite                   has been user-suppressed

 The species Clinochlore-14A          has been user-suppressed

 The species Daphnite-14A             has been user-suppressed

 The species Clinozoisite             has been user-suppressed

 The species Epidote                  has been user-suppressed

 The species Epidote-ord              has been user-suppressed
```

```
The species Andradite                has been user-suppressed
The species Grossular                has been user-suppressed
The species Enstatite                has been user-suppressed
The species Ferrosilite              has been user-suppressed
The species Pyrite                   has been user-suppressed
The species Pyrrhotite               has been user-suppressed
The species Troilite                 has been user-suppressed
The species Alabandite               has been user-suppressed
The species Brezinaite               has been user-suppressed
The species Chalcocite               has been user-suppressed
The species Covellite                has been user-suppressed
The species Millerite                has been user-suppressed
The species Polydymite               has been user-suppressed
The species Vaesite                  has been user-suppressed
The species Heazlewoodite            has been user-suppressed
The species Galena                   has been user-suppressed
The species Sulfur                   has been user-suppressed
The species CaZrO3                   has been user-suppressed
The species BaZrO3                   has been user-suppressed
The species SrZrO3                   has been user-suppressed
The species U2S3                     has been user-suppressed
The species U3S5                     has been user-suppressed
The species US2                      has been user-suppressed
The species US3                      has been user-suppressed
The species US                       has been user-suppressed
The species US1.9                    has been user-suppressed
The species U3P4                     has been user-suppressed
The species UP                       has been user-suppressed
The species UP2                      has been user-suppressed
The species HS-                      has been user-suppressed
The species H2S(aq)                  has been user-suppressed
The species S--                      has been user-suppressed
```

```
eeee   qqq   33333  n   n  rrrr
e     q   q      3  nn  n  r   r
eeee  q   q    33   n n n  rrrr
e     q q q      3  n  nn  r  r
eeee   qqq   3333   n   n  r   r
          q
```

EQ3NR, version 7.2b (R139   )
 supported by EQLIB, version 7.2b (R168   )

```
|EQ3NR input file name= j13solMn.3i                                      |
|Description= "J-13 well water, manganese solubility                     |
|Version level= 7.2b                                                     |
|Created 01/14/99    Creator= D. H. Lester                               |
|Revised             Revisor=                                            |
|                                                                        |
|  Water from well J-13 at the Nevada Test Site. The composition         |
|is nearly identical to that in the EQ3NR test case input file j13w.3i,|
|which is based on data reported by Harrar et al. (1990) and on p. 3 of|
|Preliminary Scenario Definitions, May 17, 1996, except for fixing of  |
|bicarbonate via fixed fugacity of CO2 and pH.  Al, Fe, Mn, etc. re-   |
|tained, as these are needed to model reaction with tuff, etc.  traces |
|of Pu, U, Gd, Ba, La, Nd, Ce, Sm, Pb, Cr, Ni, Cu, Zr, Sr, Cs,          |
|Zn, & Mo added to enable modeling of waste glass and alloys.  Nb isn't|
|in data base.                                                           |
|                                                                        |
|This run uses revised data base, with essentially no organics.  Also,  |
|several to many other unlikely aqueous species removed.                |
|                                                                        |
|Electrical balancing is on Cl-.  These data do not agree exactly with  |
|those reported in the SCP.  CO2 and O2 fixed at atmospheric values.    |
|                                                                        |
|  This run uses the revised data base, incorporating SKB data.          |
|                                                                        |
|  Purpose: To determine manganese solubility This run represents        |
|  a run with a copper content that just saturates the first Mn          |
|  mineral (pyrolusite MnO2) to precipitate.                             |
|                              References                                |
|                                                                        |
|Harrar, J. E., Carley, J. F., Isherwood, W. F., and Raber, E., 1990,   |
|  Report of the Committee to Review the Use of J-13 Well Water in       |
|  Nevada Nuclear Waste Storage Investigations: UCID-21867, Lawrence     |
|  Livermore National Laboratory, Livermore, California.                 |
```

data0.nuc.dhl
THERMODYNAMIC DATABASE
This data base is a modified version of data0.nuc.R3 as changed by D.H. Lester

The data base datao.nuc.R3is a composite of data0.alt.V8.R5 and data0.b19.skb, by P. L. Cloke on 15-aug-96. It was specially modified for evaluation of nuclear criticality needs on the Yucca Mt. Project. Six EQ3NR runs were made using input data for elements in J13 well water and components of the current design for waste glass packages. Three runs were saturated with air, at pH 4, 7.41, and 10. The other three were for highly reducing conditions, log fO2 =

-80, and carbonated limited to the solubility of atmospheric CO2 in water, 1.0 E-5 m. Solid and solution species appearing on the outputs and which constituted less than 0.1% of dissolved elements, or whose affinities did not exceed 1.0 E-10, on any of the outputs, were deleted from this data base.

The lanthanide data from the .skb data base replaced those in the .alt file in those cases in which there was overlap, except for the lanthanide metals. This includes replacing data for LnO2H, LnO+, and LnO2- by the .skb data for Ln(OH)3 Ln(OH()2+, and Ln(OH)4-, respectively. Ce++++ was added as well as more data for Y. Lanthanide data in the .skb base that aren't in the .alt base were added. LnPO4.xH2O, to which .skb assigned a value of 10 to x, was changed to LnPO4.H2O, in keeping with the formula for rhabdophane (and in keeping with the XRD pattern).

Exceptions: the .skb data for Eu were not entered as replacements for .alt data. The .skb data for Pm were not entered. Divalent lanthanide data were not entered.

```
Output package:  eq3
Data set:        cm2
+-------------------------------------------------------------------
```

The activity coefficients of aqueous solute species and the activity of water are calculated according to the B-dot equation plus others

```
Temperature=  25.00 degrees Celsius
pressure=    1.0132 bars


        79 elements are in the data base
       100 elements can be loaded into memory
        36 elements are active in this problem


      1170 aqueous species are in the data base
       645 aqueous species were loaded into memory
      2000 aqueous species can be loaded into memory
       559 aqueous species are active in this problem

      1090 aqueous reactions are in the data base
       565 aqueous reactions were loaded into memory
      1899 aqueous reactions can be loaded into memory


           1034 minerals are in the data base
            672 minerals were loaded into memory
            850 minerals can be loaded into memory
            634 minerals are active in this problem

             15 solid solutions are in the data base
             50 solid solutions can be loaded into memory

             87 gases are in the data base
             56 gases were loaded into memory
             80 gases can be loaded into memory
             56 gases are active in this problem
```

```
iopt1  =  0 (redox option switch)
iopt2  =  0 (automatic basis switching switch)
iopt3  =  0 (interfacing output control switch)
iopt4  =  1 (turn-on solid solutions switch)
iopt5  =  0 (not used)
iopt6  =  0 (conv. test criteria switch)
iopt7  =  0 (0/1 version 7/post-version 7 pickup file)
iopt8  =  0 (not used)
iopt9  =  0 (not used)
iopt10 =  0 (not used)


     iopg1  =  0 (act. coeff. choice)
     iopg2  =  0 (pH scale convention switch)
     iopg3  =  0 (not used)
     iopg4  =  0 (not used)
     iopg5  =  0 (not used)
     iopg6  =  0 (not used)
     iopg7  =  0 (not used)
     iopg8  =  0 (not used)
     iopg9  =  0 (not used)
     iopg10 =  0 (not used)


          iopr1  =  0 (list loading of species)
          iopr2  =  0 (list reactions and log K values)
          iopr3  =  0 (aqueous species print order control)
          iopr4  = -2 (aqueous species print cut-off control)
          iopr5  =  0 (mass balance percentages print control)
          iopr6  =  0 (mean ionic act coeff print control)
          iopr7  =  0 (mineral affinity print control)
          iopr8  = -1 (ion size and hydr. no. print control)
          iopr9  =  0 (Pitzer coefficients tabulation)
          iopr10 =  0 (print concbs array)
          iopr11 =  0 (not used)
          iopr12 =  0 (not used)
          iopr13 =  0 (not used)
          iopr14 =  0 (not used)
          iopr15 =  0 (not used)
          iopr16 =  0 (not used)
          iopr17 =  0 (not used)
          iopr18 =  0 (not used)
          iopr19 =  0 (not used)
          iopr20 =  0 (not used)


               iodb1  =  0 (print info. messages switch)
               iodb2  =  0 (print pre-Newton-Raphson optimizations switch)
               iodb3  =  0 (request iteration variables to kill)
               iodb4  =  0 (print Newton-Raphson iterations switch)
               iodb5  =  0 (list stoichiometric equivalences)
               iodb6  =  0 (controls iodb5 level of detail)
               iodb7  =  0 (write reactions on file rlist switch)
               iodb8  =  0 (not used)
               iodb9  =  0 (not used)
               iodb10 =  0 (not used)

The default redox state is constrained by log fO2 =   -0.6778 (log bars)


          Solution density =  1.00000 g/mL
```

```
Total dissolved salts =       0.00 mg/kg solution
Total dissolved salts =       0.00 mg/L


Tolbt  =  0.10000E-05 (convergence tolerance on residual functions)
Toldl  =  0.10000E-05 (convergence tolerance on correction terms)
Tolsat =  0.50000E+00 (phase saturation tolerance, does not affect
                       convergence)


                    --- Input Constraints ---

   Species                    Csp      Jflag   Input Type/Co-species

Na+                       1.9922E-03    0    Total conc, molal
SiO2(aq)                  1.0169E-03    0    Total conc, molal
Ca++                      3.2437E-04    0    Total conc, molal
K+                        1.2891E-04    0    Total conc, molal
Mg++                      8.2699E-05    0    Total conc, molal
H+                       -7.4100E+00   16    Log activity
HCO3-                    -3.5000E+00   21    Gas equilibrium
                                                 CO2(g)

                     1.000  CO2(g)
                  +  1.000  H2O
                        ==
                     1.000  H+
                  +  1.000  HCO3-
F-                        1.1475E-04    0    Total conc, molal
Cl-                       2.0140E-04    0    Total conc, molal
NH3(aq)                   1.4200E-04    0    Total conc, molal
    switch with NO3-
SO4--                     1.9154E-04    0    Total conc, molal
B(OH)3(aq)                1.2388E-05    0    Total conc, molal
HPO4--                    1.2711E-06    0    Total conc, molal
Al+++                     1.4825E-06    0    Total conc, molal
Mn++                      2.0000E-15    0    Total conc, molal
Fe++                      1.0000E-18    0    Total conc, molal
CrO4--                    3.4485E-07    0    Total conc, molal
Cu++                      1.0500E-14    0    Total conc, molal
MoO4--                    1.0000E-10    0    Total conc, molal
Cs+                       1.0000E-10    0    Total conc, molal
Li+                       1.0000E-10    0    Total conc, molal
Ni++                      1.0000E-10    0    Total conc, molal
La+++                     1.0000E-14    0    Total conc, molal
Nd+++                     1.0000E-14    0    Total conc, molal
Sm+++                     1.0000E-14    0    Total conc, molal
Ce+++                     1.0000E-24    0    Total conc, molal
Pu++++                    1.0000E-14    0    Total conc, molal
Gd+++                     1.0000E-14    0    Total conc, molal
UO2++                     1.0000E-14    0    Total conc, molal
Sr++                      1.0000E-10    0    Total conc, molal
Ba++                      1.0000E-10    0    Total conc, molal
Ti(OH)4(aq)               1.0000E-10    0    Total conc, molal
Zn++                      1.0000E-10    0    Total conc, molal
Zr(OH)2++                 1.0000E-20    0    Total conc, molal
Pb++                      1.0000E-10    0    Total conc, molal


Electrical balance will be achieved by adjusting
  the concentration of "Cl-                     ". Any other specified
```

```
constraint will be overridden.

    Switching NO3- into the basis set for NH3(aq)


                      1.000  NO3-
                    +  1.000  H2O
                    +  1.000  H+
                           ==
                      1.000  NH3(aq)
                    +  2.000  O2(g)

                      1.000  NH3(aq)
                    +  2.000  O2(g)
                           ==
                      1.000  H2O
                    +  1.000  H+
                    +  1.000  NO3-

          --- Inactive Aqueous Species ---

    HS-                           H2S(aq)
    S--



                        --- Modified Input Constraints ---

   Species                      Csp      Jflag   Input Type/Co-species

Al+++                      1.4825E-06    0    Total conc, molal
B(OH)3(aq)                 1.2388E-05    0    Total conc, molal
Ba++                       1.0000E-10    0    Total conc, molal
Ca++                       3.2437E-04    0    Total conc, molal
Ce+++                      1.0000E-24    0    Total conc, molal
Cl-                        2.0140E-04    0    Total conc, molal
CrO4--                     3.4485E-07    0    Total conc, molal
Cs+                        1.0000E-10    0    Total conc, molal
Cu++                       1.0500E-14    0    Total conc, molal
F-                         1.1475E-04    0    Total conc, molal
Fe++                       1.0000E-18    0    Total conc, molal
Gd+++                      1.0000E-14    0    Total conc, molal
H+                        -7.4100E+00   16    Log activity
HCO3-                     -3.5000E+00   21    Gas equilibrium
                                                  CO2(g)

                      1.000  CO2(g)
                    +  1.000  H2O
                           ==
                      1.000  H+
                    +  1.000  HCO3-
HCO3-                     -3.5000E+00   21    Gas equilibrium
HPO4--                     1.2711E-06    0    Total conc, molal
K+                         1.2891E-04    0    Total conc, molal
La+++                      1.0000E-14    0    Total conc, molal
Li+                        1.0000E-10    0    Total conc, molal
Mg++                       8.2699E-05    0    Total conc, molal
Mn++                       2.0000E-15    0    Total conc, molal
MoO4--                     1.0000E-10    0    Total conc, molal
NO3-                       1.4200E-04    0    Total conc, molal
Na+                        1.9922E-03    0    Total conc, molal
Nd+++                      1.0000E-14    0    Total conc, molal
```

```
Ni++                        1.0000E-10    0    Total conc, molal
Pb++                        1.0000E-10    0    Total conc, molal
Pu++++                      1.0000E-14    0    Total conc, molal
SO4--                       1.9154E-04    0    Total conc, molal
SiO2(aq)                    1.0169E-03    0    Total conc, molal
Sm+++                       1.0000E-14    0    Total conc, molal
Sr++                        1.0000E-10    0    Total conc, molal
Ti(OH)4(aq)                 1.0000E-10    0    Total conc, molal
UO2++                       1.0000E-14    0    Total conc, molal
Zn++                        1.0000E-10    0    Total conc, molal
Zr(OH)2++                   1.0000E-20    0    Total conc, molal
HS-                         0.0000E+00   30    Eliminated species
S2--                        0.0000E+00   30    Eliminated species
S2O3--                      0.0000E+00   30    Eliminated species
CN-                         0.0000E+00   30    Eliminated species
ClO-                        0.0000E+00   30    Eliminated species
ClO2-                       0.0000E+00   30    Eliminated species
ClO3-                       0.0000E+00   30    Eliminated species
ClO4-                       0.0000E+00   30    Eliminated species
Cr++                        0.0000E+00   30    Eliminated species
Cr+++                       0.0000E+00   30    Eliminated species
CrO4---                     0.0000E+00   30    Eliminated species
Cu+                         0.0000E+00   30    Eliminated species
Fe+++                       0.0000E+00   30    Eliminated species
H2(aq)                      0.0000E+00   27    Dependent species
HSO5-                       0.0000E+00   30    Eliminated species
Mn+++                       0.0000E+00   30    Eliminated species
MnO4--                      0.0000E+00   30    Eliminated species
N2(aq)                      0.0000E+00   30    Eliminated species
N3-                         0.0000E+00   30    Eliminated species
NO2-                        0.0000E+00   30    Eliminated species
NH3(aq)                     0.0000E+00   30    Eliminated species
O2(aq)                      0.0000E+00   27    Dependent species
Pb++++                      0.0000E+00   30    Eliminated species
Pu+++                       0.0000E+00   30    Eliminated species
PuO2+                       0.0000E+00   30    Eliminated species
PuO2++                      0.0000E+00   30    Eliminated species
S2O4--                      0.0000E+00   30    Eliminated species
S2O6--                      0.0000E+00   30    Eliminated species
S2O8--                      0.0000E+00   30    Eliminated species
S3--                        0.0000E+00   30    Eliminated species
S3O6--                      0.0000E+00   30    Eliminated species
S4--                        0.0000E+00   30    Eliminated species
S4O6--                      0.0000E+00   30    Eliminated species
S5--                        0.0000E+00   30    Eliminated species
S5O6--                      0.0000E+00   30    Eliminated species
SCN-                        0.0000E+00   30    Eliminated species
SO3--                       0.0000E+00   30    Eliminated species
Sm++                        0.0000E+00   30    Eliminated species
U+++                        0.0000E+00   30    Eliminated species
U++++                       0.0000E+00   30    Eliminated species
UO2+                        0.0000E+00   30    Eliminated species
Zr++++                      0.0000E+00   30    Eliminated species



* note - (eq3nr/arrset) Optimization ended
      outside requested limits.


iter=   0
       del(                 )=  0.00000E+00, delfnc=  0.00000E+00
```

```
      beta(conc    Cl-     )=  5.03328E-01, betfnc=  0.00000E+00
        bbig=  5.03328E-01, ubbig= Cl-
        bneg= -2.44499E-09, ubneg= B(OH)3(aq)
        bgamx=  1.38669E-06, ubgamx= (PuO2)3(CO3)6(6-)
        bsigmm= -1.14105E-06
        bxi= -3.43255E-06
        btfcnr=  0.00000E+00

iter=   1
       del(conc    Cl-     )=  4.20975E+00, delfnc=  0.00000E+00
      Relaxation factor=  0.23754
      Relaxed del(conc    Cl-     )=  1.00000E+00
      beta(conc    Pu++++  )= -1.00547E-01, betfnc=  8.00235E-01
        bbig=  2.78492E-02, ubbig= Pb++
        bneg= -1.00547E-01, ubneg= Pu++++
        bgamx= -1.32606E-01, ubgamx= (PuO2)3(CO3)6(6-)
        bsigmm=  3.93456E-01
        bxi=  3.59316E-01
        btfcnr=  9.41649E-01

iter=   2
       del(conc    Pu++++  )=  5.78221E-02, delfnc=  9.86265E-01
      beta(conc    Gd+++   )= -2.65381E-03, betfnc=  9.73606E-01
        bbig=  3.56298E-04, ubbig= Pb++
        bneg= -2.65381E-03, ubneg= Gd+++
        bgamx= -9.85447E-03, ubgamx= (PuO2)3(CO3)6(6-)
        bsigmm=  2.24915E-02
        bxi=  2.15085E-02
        btfcnr=  9.41642E-01

iter=   3
       del(conc    Al+++   )=  1.69381E-03, delfnc=  9.70706E-01
      beta(conc    Pu++++  )=  2.45817E-04, betfnc=  9.07372E-01
        bbig=  2.45817E-04, ubbig= Pu++++
        bneg= -9.88182E-07, ubneg= Cl-
        bgamx=  3.05230E-04, ubgamx= (PuO2)3(CO3)6(6-)
        bsigmm= -7.38217E-04
        bxi= -6.56045E-04
        btfcnr=  9.98661E-01

iter=   4
       del(conc    Pu++++  )= -1.27808E-04, delfnc=  9.24544E-01
      beta(conc    Pu++++  )=  8.03666E-07, betfnc=  9.96731E-01
        bbig=  8.03666E-07, ubbig= Pu++++
        bneg= -1.70144E-09, ubneg= B(OH)3(aq)
        bgamx=  9.68930E-07, ubgamx= (PuO2)3(CO3)6(6-)
        bsigmm= -1.02737E-06
        bxi= -2.08354E-06
        btfcnr=  9.99876E-01

iter=   5
       del(conc    Pu++++  )= -4.16087E-07, delfnc=  9.96744E-01
      beta(conc    Pu++++  )=  1.49000E-09, betfnc=  9.98146E-01
        bbig=  1.49000E-09, ubbig= Pu++++
        bneg= -3.28297E-12, ubneg= B(OH)3(aq)
        bgamx=  1.86655E-09, ubgamx= (PuO2)3(CO3)6(6-)
        bsigmm= -4.91416E-10
        bxi= -4.01373E-09
        btfcnr=  1.00000E+00


Hybrid Newton-Raphson iteration converged in   5 steps.
```

--- Summary of the Aqueous Solution ---

--- Elemental Composition of the Aqueous Solution ---

Element	mg/L	mg/kg	Moles/kg
O	0.88817E+06	0.88817E+06	0.5551266484E+02
Al	0.40000E-01	0.40000E-01	0.1482500001E-05
B	0.13393	0.13393	0.1238800000E-04
Ba	0.13733E-04	0.13733E-04	0.1000000000E-09
Ca	13.000	13.000	0.3243700000E-03
Ce	0.14012E-18	0.14012E-18	0.1000000000E-23
Cl	76.341	76.341	0.2153314802E-02
Cr	0.17931E-01	0.17931E-01	0.3448500000E-06
Cs	0.13291E-04	0.13291E-04	0.1000000000E-09
Cu	0.66723E-09	0.66723E-09	0.1050000000E-13
F	2.1801	2.1801	0.1147500000E-03
Fe	0.55847E-13	0.55847E-13	0.1000000000E-17
Gd	0.15725E-08	0.15725E-08	0.1000000001E-13
H	0.11190E+06	0.11190E+06	0.1110170459E+03
C	1.7384	1.7384	0.1447360518E-03
P	0.39371E-01	0.39371E-01	0.1271100000E-05
K	5.0402	5.0402	0.1289100000E-03
La	0.13891E-08	0.13891E-08	0.1000000000E-13
Li	0.69410E-06	0.69410E-06	0.1000000000E-09
Mg	2.0100	2.0100	0.8269900000E-04
Mn	0.10988E-09	0.10988E-09	0.2000000000E-14
Mo	0.95940E-05	0.95940E-05	0.1000000000E-09
N	1.9890	1.9890	0.1420000000E-03
Na	45.800	45.800	0.1992200000E-02
Nd	0.14424E-08	0.14424E-08	0.1000000000E-13
Ni	0.58690E-05	0.58690E-05	0.1000000000E-09
Pb	0.20720E-04	0.20720E-04	0.1000000000E-09
Pu	0.24400E-08	0.24400E-08	0.1000000001E-13
S	6.1419	6.1419	0.1915400000E-03
Si	28.560	28.560	0.1016900000E-02
Sm	0.15036E-08	0.15036E-08	0.1000000000E-13
Sr	0.87620E-05	0.87620E-05	0.1000000000E-09
Ti	0.47880E-05	0.47880E-05	0.1000000000E-09
U	0.23803E-08	0.23803E-08	0.1000000000E-13
Zn	0.65390E-05	0.65390E-05	0.1000000000E-09
Zr	0.91224E-15	0.91224E-15	0.1000000000E-19

--- Elemental Composition as Strict Basis Species ---

Species	mg/L	mg/kg	Moles/kg
H2O	0.10001E+07	0.10001E+07	0.5551266484E+02
Al+++	0.40000E-01	0.40000E-01	0.1482500001E-05
B(OH)3(aq)	0.76599	0.76599	0.1238800000E-04
Ba++	0.13733E-04	0.13733E-04	0.1000000000E-09
Ca++	13.000	13.000	0.3243700000E-03
Ce+++	0.14012E-18	0.14012E-18	0.1000000000E-23
Cl-	76.341	76.341	0.2153314802E-02
CrO4--	0.40000E-01	0.40000E-01	0.3448500000E-06
Cs+	0.13291E-04	0.13291E-04	0.1000000000E-09
Cu++	0.66723E-09	0.66723E-09	0.1050000000E-13

F-	2.1801	2.1801	0.1147500000E-03
Fe++	0.55847E-13	0.55847E-13	0.1000000000E-17
Gd+++	0.15725E-08	0.15725E-08	0.1000000001E-13
H+	0.11190E+06	0.11190E+06	0.1110170459E+03
HCO3-	8.8314	8.8314	0.1447360518E-03
HPO4--	0.12200	0.12200	0.1271100000E-05
K+	5.0402	5.0402	0.1289100000E-03
La+++	0.13891E-08	0.13891E-08	0.1000000000E-13
Li+	0.69410E-06	0.69410E-06	0.1000000000E-09
Mg++	2.0100	2.0100	0.8269900000E-04
Mn++	0.10988E-09	0.10988E-09	0.2000000000E-14
MoO4--	0.15994E-04	0.15994E-04	0.1000000000E-09
NH3(aq)	2.4183	2.4183	0.1420000000E-03
Na+	45.800	45.800	0.1992200000E-02
Nd+++	0.14424E-08	0.14424E-08	0.1000000000E-13
Ni++	0.58690E-05	0.58690E-05	0.1000000000E-09
Pb++	0.20720E-04	0.20720E-04	0.1000000000E-09
Pu++++	0.24400E-08	0.24400E-08	0.1000000001E-13
SO4--	18.400	18.400	0.1915400000E-03
SiO2(aq)	61.100	61.100	0.1016900000E-02
Sm+++	0.15036E-08	0.15036E-08	0.1000000000E-13
Sr++	0.87620E-05	0.87620E-05	0.1000000000E-09
Ti(OH)4(aq)	0.11591E-04	0.11591E-04	0.1000000000E-09
UO2++	0.27003E-08	0.27003E-08	0.1000000000E-13
Zn++	0.65390E-05	0.65390E-05	0.1000000000E-09
Zr(OH)2++	0.12524E-14	0.12524E-14	0.1000000000E-19

--- Equivalent Composition of the Aqueous Solution ---

--- Original Basis ---

Species	Moles/kg H2O
H2O	0.5551266484E+02
Al+++	0.1482500001E-05
B(OH)3(aq)	0.1238800000E-04
Ba++	0.1000000000E-09
Ca++	0.3243700000E-03
Ce+++	0.1000000000E-23
Cl-	0.2153314802E-02
CrO4--	0.3448500000E-06
Cs+	0.1000000000E-09
Cu++	0.1050000000E-13
F-	0.1147500000E-03
Fe++	0.1000000000E-17
Gd+++	0.1000000001E-13
H+	0.1110170459E+03
HCO3-	0.1447360518E-03
HPO4--	0.1271100000E-05
K+	0.1289100000E-03
La+++	0.1000000000E-13
Li+	0.1000000000E-09
Mg++	0.8269900000E-04
Mn++	0.2000000000E-14
MoO4--	0.1000000000E-09
NH3(aq)	0.1420000000E-03
Na+	0.1992200000E-02
Nd+++	0.1000000000E-13
Ni++	0.1000000000E-09
Pb++	0.1000000000E-09
Pu++++	0.1000000001E-13
SO4--	0.1915400000E-03

SiO2(aq)	0.1016900000E-02
Sm+++	0.1000000000E-13
Sr++	0.1000000000E-09
Ti(OH)4(aq)	0.1000000000E-09
UO2++	0.1000000000E-13
Zn++	0.1000000000E-09
Zr(OH)2++	0.1000000000E-19

--- Current Basis (cte) ---

Species	Moles/kg H2O
H2O	0.5551266484E+02
Al+++	0.1482500001E-05
B(OH)3(aq)	0.1238800000E-04
Ba++	0.1000000000E-09
Ca++	0.3243700000E-03
Ce+++	0.1000000000E-23
Cl-	0.2153314802E-02
CrO4--	0.3448500000E-06
Cs+	0.1000000000E-09
Cu++	0.1050000000E-13
F-	0.1147500000E-03
Fe++	0.1000000000E-17
Gd+++	0.1000000001E-13
H+	0.1110170459E+03
HCO3-	0.1447360518E-03
HPO4--	0.1271100000E-05
K+	0.1289100000E-03
La+++	0.1000000000E-13
Li+	0.1000000000E-09
Mg++	0.8269900000E-04
Mn++	0.2000000000E-14
MoO4--	0.1000000000E-09
NO3-	0.1420000000E-03
Na+	0.1992200000E-02
Nd+++	0.1000000000E-13
Ni++	0.1000000000E-09
Pb++	0.1000000000E-09
Pu++++	0.1000000001E-13
SO4--	0.1915400000E-03
SiO2(aq)	0.1016900000E-02
Sm+++	0.1000000000E-13
Sr++	0.1000000000E-09
Ti(OH)4(aq)	0.1000000000E-09
UO2++	0.1000000000E-13
Zn++	0.1000000000E-09
Zr(OH)2++	0.1000000000E-19

Single ion activities and activity coefficients are here defined
with respect to the modified NBS pH scale

	pH	Eh	pe
modified NBS pH scale	7.4100	0.7807	1.3197E+01
rational pH scale	7.3837	0.7822	1.3223E+01

pHCl = 10.1049

```
                    Activity of water =  0.99988
                Log activity of water =   -0.00005

          True osmotic coefficient=    0.97805
Stoichiometric osmotic coefficient=    0.97473

          Sum of true molalities=    0.0065609434469
Sum of stoichiometric molalities=    0.0065832948336

          True ionic strength=    0.0034997599636
Stoichiometric ionic strength=    0.0035506787245


 --- Electrical Balance Totals ---


                                      equiv/kg H2O

            Sigma(mz) cations =     0.2916873826E-02
            Sigma(mz) anions  =    -0.2916873826E-02
                 Total charge =     0.5833747653E-02
                  Mean charge =     0.2916873826E-02
             Charge imbalance =    -0.2074118990E-15

  Total charge = sigma(mz) cations + abs ( sigma(mz) anions )
  Mean charge = 1/2 total charge


  The electrical imbalance is

       -0.356E-11 per cent of the total charge
       -0.711E-11 per cent of the mean charge
       -0.711E-11 per cent of sigma(mz) cations
       -0.711E-11 per cent of abs ( sigma(mz) anions )


 --- Electrical Balancing on Cl-                        ---

          mg/L          mg/kg           Moles/kg

input       7.1402        7.1402        0.2014000000E-03
final      76.341        76.341         0.2153314802E-02
adj        69.201        69.201         0.1951914802E-02


            --- Activity Ratios of Ions -----

 Log ( act(Al+++                  ) / act(H+)xx 3 ) =      9.5659
 Log ( act(B(OH)3(aq)             )               ) =     -4.9139
 Log ( act(Ba++                   ) / act(H+)xx 2 ) =      4.7079
 Log ( act(Ca++                   ) / act(H+)xx 2 ) =     11.2141
 Log ( act(Ce+++                  ) / act(H+)xx 3 ) =     -2.9427
 Log ( act(Cl-                    ) x act(H+)xx 1 ) =    -10.1049
 Log ( act(CrO4--                 ) x act(H+)xx 2 ) =    -21.4347
 Log ( act(Cs+                    ) / act(H+)xx 1 ) =     -2.6200
 Log ( act(Cu++                   ) / act(H+)xx 2 ) =      0.2253
 Log ( act(F-                     ) x act(H+)xx 1 ) =    -11.3792
 Log ( act(Fe++                   ) / act(H+)xx 2 ) =    -13.6355
 Log ( act(Gd+++                  ) / act(H+)xx 3 ) =      6.8159
 Log ( act(HCO3-                  ) x act(H+)xx 1 ) =    -11.3137
 Log ( act(HPO4--                 ) x act(H+)xx 2 ) =    -21.0528
 Log ( act(K+                     ) / act(H+)xx 1 ) =      3.4907
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Log ( act(La+++                  ) / act(H+)xx 3 ) =      7.4167
Log ( act(Li+                    ) / act(H+)xx 1 ) =     -2.6180
Log ( act(Mg++                   ) / act(H+)xx 2 ) =     10.6173
Log ( act(Mn++                   ) / act(H+)xx 2 ) =     -0.0056
Log ( act(MoO4--                 ) x act(H+)xx 2 ) =    -24.9298
Log ( act(NH3(aq)                )                 ) =    -66.2340
Log ( act(Na+                    ) / act(H+)xx 1 ) =      4.6801
Log ( act(Nd+++                  ) / act(H+)xx 3 ) =      7.0628
Log ( act(Ni++                   ) / act(H+)xx 2 ) =      4.7039
Log ( act(Pb++                   ) / act(H+)xx 2 ) =      4.6876
Log ( act(Pu++++                 ) / act(H+)xx 4 ) =     -8.9089
Log ( act(SO4--                  ) x act(H+)xx 2 ) =    -18.6690
Log ( act(SiO2(aq)               )                 ) =     -2.9941
Log ( act(Sm+++                  ) / act(H+)xx 3 ) =      6.8672
Log ( act(Sr++                   ) / act(H+)xx 2 ) =      4.6984
Log ( act(Ti(OH)4(aq)            )                 ) =    -10.0000
Log ( act(UO2++                  ) / act(H+)xx 2 ) =     -3.7653
Log ( act(Zn++                   ) / act(H+)xx 2 ) =      4.6970
Log ( act(Zr(OH)2++              ) / act(H+)xx 2 ) =    -18.7718
Log ( act(S2--                   ) x act(H+)xx 2 ) =   *********
Log ( act(S2O3--                 ) x act(H+)xx 2 ) =   -163.7252
Log ( act(CN-                    ) x act(H+)xx 1 ) =   -131.8101
Log ( act(ClO-                   ) x act(H+)xx 1 ) =    -26.9943
Log ( act(ClO2-                  ) x act(H+)xx 1 ) =    -36.7889
Log ( act(ClO3-                  ) x act(H+)xx 1 ) =    -32.7298
Log ( act(ClO4-                  ) x act(H+)xx 1 ) =    -32.9661
Log ( act(Cr++                   ) / act(H+)xx 2 ) =    -39.4958
Log ( act(Cr+++                  ) / act(H+)xx 3 ) =    -10.3683
Log ( act(CrO4---                ) x act(H+)xx 3 ) =    -40.3116
Log ( act(Cu+                    ) / act(H+)xx 1 ) =    -17.6511
Log ( act(Fe+++                  ) / act(H+)xx 3 ) =     -6.0396
Log ( act(H2(aq)                 )                 ) =    -44.3187
Log ( act(HSO5-                  ) x act(H+)xx 1 ) =    -37.7436
Log ( act(Mn+++                  ) / act(H+)xx 3 ) =     -4.9807
Log ( act(MnO4--                 ) x act(H+)xx 2 ) =    -35.9964
Log ( act(N2(aq)                 )                 ) =    -21.3711
Log ( act(N3-                    ) x act(H+)xx 1 ) =   -108.8860
Log ( act(NO2-                   ) x act(H+)xx 1 ) =    -24.7328
Log ( act(NO3-                   ) x act(H+)xx 1 ) =    -11.2860
Log ( act(O2(aq)                 )                 ) =     -3.5761
Log ( act(Pb++++                 ) / act(H+)xx 4 ) =    -11.2806
Log ( act(Pu+++                  ) / act(H+)xx 3 ) =    -12.5220
Log ( act(PuO2+                  ) / act(H+)xx 1 ) =     -6.8661
Log ( act(PuO2++                 ) / act(H+)xx 2 ) =     -2.5697
Log ( act(S2O4--                 ) x act(H+)xx 2 ) =   -150.4302
Log ( act(S2O6--                 ) x act(H+)xx 2 ) =    -86.9699
Log ( act(S2O8--                 ) x act(H+)xx 2 ) =    -61.6260
Log ( act(S3--                   ) x act(H+)xx 2 ) =   *********
Log ( act(S3O6--                 ) x act(H+)xx 2 ) =   -194.9596
Log ( act(S4--                   ) x act(H+)xx 2 ) =   *********
Log ( act(S4O6--                 ) x act(H+)xx 2 ) =   -287.0431
Log ( act(S5--                   ) x act(H+)xx 2 ) =   *********
Log ( act(S5O6--                 ) x act(H+)xx 2 ) =   -408.0071
Log ( act(SCN-                   ) x act(H+)xx 1 ) =   *********
Log ( act(SO3--                  ) x act(H+)xx 2 ) =    -63.5053
Log ( act(Sm++                   ) / act(H+)xx 2 ) =    -40.2012
Log ( act(U+++                   ) / act(H+)xx 3 ) =    -65.8860
Log ( act(U++++                  ) / act(H+)xx 4 ) =    -35.9262
Log ( act(UO2+                   ) / act(H+)xx 1 ) =    -22.8881
Log ( act(Zr++++                 ) / act(H+)xx 4 ) =    -18.5332
```

(Species with concentrations .lt. 1.e-12 are not listed)

Species	Molality	Log molality	Log gamma	Log activity
Cl-	2.1525E-03	-2.6671	-0.0278	-2.6949
Na+	1.9891E-03	-2.7013	-0.0286	-2.7299
SiO2(aq)	1.0136E-03	-2.9941	0.0000	-2.9941
Ca++	3.1888E-04	-3.4964	-0.1095	-3.6059
O2(aq)	2.6519E-04	-3.5764	0.0004	-3.5761
SO4--	1.8273E-04	-3.7382	-0.1108	-3.8490
NO3-	1.4182E-04	-3.8483	-0.0278	-3.8760
HCO3-	1.3293E-04	-3.8764	-0.0273	-3.9037
K+	1.2876E-04	-3.8902	-0.0291	-3.9193
F-	1.1436E-04	-3.9417	-0.0275	-3.9692
Mg++	8.0015E-05	-4.0968	-0.1059	-4.2027
B(OH)3(aq)	1.2193E-05	-4.9139	0.0000	-4.9139
CO2(aq)	1.0733E-05	-4.9693	0.0004	-4.9689
CaSO4(aq)	4.5307E-06	-5.3438	0.0000	-5.3438
HSiO3-	3.0944E-06	-5.5094	-0.0273	-5.5367
MgSO4(aq)	2.2907E-06	-5.6400	0.0000	-5.6400
NaSO4-	1.8549E-06	-5.7317	-0.0273	-5.7589
AlO2-	1.3176E-06	-5.8802	-0.0273	-5.9075
HPO4--	7.5517E-07	-6.1220	-0.1108	-6.2328
NaCl(aq)	6.2839E-07	-6.2018	0.0000	-6.2018
H2PO4-	3.8895E-07	-6.4101	-0.0273	-6.4374
CaHCO3+	3.6790E-07	-6.4343	-0.0286	-6.4629
NaHCO3(aq)	3.3153E-07	-6.4795	0.0000	-6.4795
CrO4--	3.1344E-07	-6.5038	-0.1108	-6.6147
OH-	2.7693E-07	-6.5576	-0.0275	-6.5852
NaHSiO3(aq)	2.4092E-07	-6.6181	0.0000	-6.6181
CO3--	1.9381E-07	-6.7126	-0.1098	-6.8225
BO2-	1.8991E-07	-6.7215	-0.0273	-6.7487
CaNO3+	1.7646E-07	-6.7534	-0.0286	-6.7819
MgF+	1.6182E-07	-6.7910	-0.0286	-6.8196
KSO4-	1.3758E-07	-6.8615	-0.0273	-6.8887
CaF+	1.3650E-07	-6.8649	-0.0286	-6.8934
HAlO2(aq)	1.3580E-07	-6.8671	0.0000	-6.8671
CaCl+	1.0770E-07	-6.9678	-0.0286	-6.9964
MgCl+	9.9110E-08	-7.0039	-0.0286	-7.0325
MgHCO3+	9.0765E-08	-7.0421	-0.0286	-7.0707
CaHPO4(aq)	7.9674E-08	-7.0987	0.0000	-7.0987
CaCO3(aq)	7.9204E-08	-7.1013	0.0000	-7.1013
H+	4.1329E-08	-7.3837	-0.0263	-7.4100
HCrO4-	3.1405E-08	-7.5030	-0.0273	-7.5303
MgHPO4(aq)	2.9820E-08	-7.5255	0.0000	-7.5255
NaF(aq)	2.0102E-08	-7.6968	0.0000	-7.6968
AlF3(aq)	1.3433E-08	-7.8718	0.0000	-7.8718
AlF2+	1.0617E-08	-7.9740	-0.0286	-8.0026
NaHPO4-	9.6510E-09	-8.0154	-0.0273	-8.0427
MgCO3(aq)	8.9895E-09	-8.0463	0.0000	-8.0463
KCl(aq)	7.7848E-09	-8.1088	0.0000	-8.1088
HF(aq)	6.1497E-09	-8.2111	0.0000	-8.2111
CaPO4-	5.4549E-09	-8.2632	-0.0273	-8.2905
Al(OH)2+	3.8894E-09	-8.4101	-0.0286	-8.4387
CaB(OH)4+	3.1373E-09	-8.5034	-0.0286	-8.5320
MgPO4-	1.8577E-09	-8.7310	-0.0273	-8.7583
NaCO3-	9.7566E-10	-9.0107	-0.0273	-9.0380
CaOH+	9.6079E-10	-9.0174	-0.0286	-9.0460
MgB(OH)4+	9.4459E-10	-9.0248	-0.0286	-9.0533
NaB(OH)4(aq)	6.1966E-10	-9.2078	0.0000	-9.2078
HSO4-	5.5891E-10	-9.2527	-0.0273	-9.2799
KHPO4-	4.5205E-10	-9.3448	-0.0273	-9.3721

NaAlO2(aq)	4.1618E-10	-9.3807	0.0000	-9.3807
AlF4-	3.8565E-10	-9.4138	-0.0273	-9.4411
AlF++	3.0137E-10	-9.5209	-0.1124	-9.6333
CaCl2(aq)	2.2951E-10	-9.6392	0.0000	-9.6392
Ti(OH)4(aq)	1.0000E-10	-10.0000	0.0000	-10.0000
MoO4--	1.0000E-10	-10.0000	-0.1098	-10.1098
Li+	9.9911E-11	-10.0004	-0.0276	-10.0280
Cs+	9.9863E-11	-10.0006	-0.0294	-10.0300
Ba++	9.9849E-11	-10.0007	-0.1115	-10.1121
Ni++	9.8508E-11	-10.0065	-0.1095	-10.1161
Sr++	9.7680E-11	-10.0102	-0.1115	-10.1216
Zn++	9.6939E-11	-10.0135	-0.1095	-10.1230
Pb++	9.5506E-11	-10.0200	-0.1124	-10.1324
AlOH++	7.9651E-11	-10.0988	-0.1124	-10.2112
NaOH(aq)	7.6777E-11	-10.1148	0.0000	-10.1148
PO3F--	4.9906E-11	-10.3018	-0.1108	-10.4127
HCl(aq)	1.6794E-11	-10.7749	0.0000	-10.7749
PO4---	1.2763E-11	-10.8941	-0.2505	-11.1446
KOH(aq)	1.0731E-11	-10.9694	0.0000	-10.9694
H2SiO4--	9.4750E-12	-11.0234	-0.1108	-11.1342
PbCl+	4.3523E-12	-11.3613	-0.0286	-11.3899
AlHPO4+	3.4018E-12	-11.4683	-0.0286	-11.4969
ZnOH+	2.2672E-12	-11.6445	-0.0286	-11.6731
SrSO4(aq)	2.1346E-12	-11.6707	0.0000	-11.6707
H3PO4(aq)	2.1005E-12	-11.6777	0.0000	-11.6777
NiSO4(aq)	1.4475E-12	-11.8394	0.0000	-11.8394

--- Major Aqueous Species Contributing to Mass Balances ---

Aqueous species accounting for 99% or more of Al+++

Species	Factor	Molality	Per Cent
AlO2-	1.00	1.3176E-06	88.88
HAlO2(aq)	1.00	1.3580E-07	9.16
AlF3(aq)	1.00	1.3433E-08	9.061E-01
AlF2+	1.00	1.0617E-08	7.161E-01
Total		1.4825E-06	99.66

Aqueous species accounting for 99% or more of B(OH)3(aq)

Species	Factor	Molality	Per Cent
B(OH)3(aq)	1.00	1.2193E-05	98.43
BO2-	1.00	1.8991E-07	1.53
Total		1.2388E-05	99.96

Aqueous species accounting for 99% or more of Ba++

Species	Factor	Molality	Per Cent
Ba++	1.00	9.9849E-11	99.85
Total		1.0000E-10	99.85

Aqueous species accounting for 99% or more of Ca++

```
     Species                   Factor    Molality     Per Cent

  Ca++                          1.00    3.1888E-04     98.31
  CaSO4(aq)                     1.00    4.5307E-06      1.40
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                 3.2437E-04     99.70


Aqueous species accounting for 99% or more of Ce+++

     Species                   Factor    Molality     Per Cent

  Ce(OH)2++                     1.00    3.5482E-25     35.48
  CeCO3+                        1.00    3.4011E-25     34.01
  Ce+++                         1.00    1.1503E-25     11.50
  CePO4(aq)                     1.00    1.0107E-25     10.11
  CeF++                         1.00    3.7194E-26      3.72
  CeSO4+                        1.00    2.5517E-26      2.55
  CeOH++                        1.00    9.7695E-27    9.770E-01
  CeHPO4+                       1.00    6.6540E-27    6.654E-01
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                 1.0000E-24     99.02


Aqueous species accounting for 99% or more of Cl-

     Species                   Factor    Molality     Per Cent

  Cl-                           1.00    2.1525E-03     99.96
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                 2.1533E-03     99.96


Aqueous species accounting for 99% or more of CrO4--

     Species                   Factor    Molality     Per Cent

  CrO4--                        1.00    3.1344E-07     90.89
  HCrO4-                        1.00    3.1405E-08      9.11
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                 3.4485E-07    100.00


Aqueous species accounting for 99% or more of Cs+

     Species                   Factor    Molality     Per Cent

  Cs+                           1.00    9.9863E-11     99.86
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                 1.0000E-10     99.86


Aqueous species accounting for 99% or more of Cu++

     Species                   Factor    Molality     Per Cent

  CuOH+                         1.00    3.6001E-15     34.29
  CuCO3(aq)                     1.00    3.4525E-15     32.88
  Cu++                          1.00    3.2720E-15     31.16
  CuPO4-                        1.00    1.3740E-16      1.31
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                 1.0500E-14     99.64
```

Aqueous species accounting for 99% or more of F-

Species	Factor	Molality	Per Cent
F-	1.00	1.1436E-04	99.66
Total		1.1475E-04	99.66

Aqueous species accounting for 99% or more of Fe++

Species	Factor	Molality	Per Cent
Fe(OH)3(aq)	1.00	9.1263E-19	91.26
Fe(OH)2+	1.00	8.1082E-20	8.11
Total		1.0000E-18	99.37

Aqueous species accounting for 99% or more of Gd+++

Species	Factor	Molality	Per Cent
GdPO4(aq)	1.00	4.1040E-15	41.04
GdCO3+	1.00	3.8924E-15	38.92
Gd+++	1.00	6.8526E-16	6.85
GdF++	1.00	6.7466E-16	6.75
GdSO4+	1.00	1.4637E-16	1.46
GdOH++	1.00	1.2545E-16	1.25
GdHPO4+	1.00	1.2069E-16	1.21
Gd(CO3)2-	1.00	1.1605E-16	1.16
GdF2+	1.00	7.5158E-17	7.516E-01
Total		1.0000E-14	99.40

Aqueous species accounting for 99% or more of HCO3-

Species	Factor	Molality	Per Cent
HCO3-	1.00	1.3293E-04	91.84
CO2(aq)	1.00	1.0733E-05	7.42
Total		1.4474E-04	99.26

Aqueous species accounting for 99% or more of HPO4--

Species	Factor	Molality	Per Cent
HPO4--	1.00	7.5517E-07	59.41
H2PO4-	1.00	3.8895E-07	30.60
CaHPO4(aq)	1.00	7.9674E-08	6.27
MgHPO4(aq)	1.00	2.9820E-08	2.35
NaHPO4-	1.00	9.6510E-09	7.593E-01
Total		1.2711E-06	99.38

Aqueous species accounting for 99% or more of K+

Species	Factor	Molality	Per Cent
K+	1.00	1.2876E-04	99.89
Total		1.2891E-04	99.89

Aqueous species accounting for 99% or more of La+++

Species	Factor	Molality	Per Cent
LaCO3+	1.00	4.9095E-15	49.10
La+++	1.00	2.6318E-15	26.32
LaPO4(aq)	1.00	9.4195E-16	9.42
LaSO4+	1.00	5.8380E-16	5.84
LaF++	1.00	5.3691E-16	5.37
LaOH++	1.00	1.2569E-16	1.26
LaHPO4+	1.00	1.2092E-16	1.21
LaHCO3++	1.00	4.9602E-17	4.960E-01
Total		1.0000E-14	99.00

Aqueous species accounting for 99% or more of Li+

Species	Factor	Molality	Per Cent
Li+	1.00	9.9911E-11	99.91
Total		1.0000E-10	99.91

Aqueous species accounting for 99% or more of Mg++

Species	Factor	Molality	Per Cent
Mg++	1.00	8.0015E-05	96.75
MgSO4(aq)	1.00	2.2907E-06	2.77
Total		8.2699E-05	99.52

Aqueous species accounting for 99% or more of Mn++

Species	Factor	Molality	Per Cent
Mn++	1.00	1.9228E-15	96.14
MnSO4(aq)	1.00	4.7672E-17	2.38
MnCO3(aq)	1.00	7.4464E-18	3.723E-01
MnCl+	1.00	6.4480E-18	3.224E-01
Total		2.0000E-15	99.22

Aqueous species accounting for 99% or more of MoO4--

Species	Factor	Molality	Per Cent
MoO4--	1.00	1.0000E-10	100.00
Total		1.0000E-10	100.00

Aqueous species accounting for 99% or more of NH3(aq)

Species	Factor	Molality	Per Cent
NO3-	1.00	1.4182E-04	99.88
Total		1.4200E-04	99.88

Aqueous species accounting for 99% or more of Na+

Species	Factor	Molality	Per Cent
Na+	1.00	1.9891E-03	99.85
Total		1.9922E-03	99.85

Aqueous species accounting for 99% or more of Nd+++

Species	Factor	Molality	Per Cent
NdCO3+	1.00	4.3367E-15	43.37
NdPO4(aq)	1.00	2.8850E-15	28.85
Nd+++	1.00	1.1651E-15	11.65
NdF++	1.00	5.9707E-16	5.97
NdSO4+	1.00	3.2537E-16	3.25
NdF2+	1.00	3.0727E-16	3.07
NdOH++	1.00	1.7596E-16	1.76
NdHPO4+	1.00	1.0681E-16	1.07
Nd(CO3)2-	1.00	6.4804E-17	6.480E-01
Total		1.0000E-14	99.64

Aqueous species accounting for 99% or more of Ni++

Species	Factor	Molality	Per Cent
Ni++	1.00	9.8508E-11	98.51
NiSO4(aq)	1.00	1.4475E-12	1.45
Total		1.0000E-10	99.96

Aqueous species accounting for 99% or more of Pb++

Species	Factor	Molality	Per Cent
Pb++	1.00	9.5506E-11	95.51
PbCl+	1.00	4.3523E-12	4.35
Total		1.0000E-10	99.86

Aqueous species accounting for 99% or more of Pu++++

Species	Factor	Molality	Per Cent
PuO2+	1.00	5.6556E-15	56.56
PuO2CO3(aq)	1.00	1.2527E-15	12.53
PuO2(OH)2(aq)	1.00	9.5495E-16	9.55
PuO2HPO4(aq)	1.00	8.2699E-16	8.27

PuO2OH+	1.00	4.7175E-16	4.72
PuO2(OH)3-	1.00	4.0013E-16	4.00
Pu(OH)4(aq)	1.00	2.0447E-16	2.04
PuO2CO3-	1.00	9.9706E-17	9.971E-01
PuO2OH(aq)	1.00	3.9696E-17	3.970E-01
Total		1.0000E-14	99.06

Aqueous species accounting for 99% or more of SO4--

Species	Factor	Molality	Per Cent
SO4--	1.00	1.8273E-04	95.40
CaSO4(aq)	1.00	4.5307E-06	2.37
MgSO4(aq)	1.00	2.2907E-06	1.20
NaSO4-	1.00	1.8549E-06	9.684E-01
Total		1.9154E-04	99.93

Aqueous species accounting for 99% or more of SiO2(aq)

Species	Factor	Molality	Per Cent
SiO2(aq)	1.00	1.0136E-03	99.67
Total		1.0169E-03	99.67

Aqueous species accounting for 99% or more of Sm+++

Species	Factor	Molality	Per Cent
SmCO3+	1.00	4.3802E-15	43.80
SmPO4(aq)	1.00	3.6685E-15	36.68
Sm+++	1.00	7.4251E-16	7.43
SmF++	1.00	3.8050E-16	3.81
SmF2+	1.00	2.3182E-16	2.32
SmSO4+	1.00	2.0736E-16	2.07
SmOH++	1.00	1.7773E-16	1.78
SmHPO4+	1.00	1.0789E-16	1.08
Sm(CO3)2-	1.00	6.5454E-17	6.545E-01
Total		1.0000E-14	99.62

Aqueous species accounting for 99% or more of Sr++

Species	Factor	Molality	Per Cent
Sr++	1.00	9.7680E-11	97.68
SrSO4(aq)	1.00	2.1346E-12	2.13
Total		1.0000E-10	99.81

Aqueous species accounting for 99% or more of Ti(OH)4(aq)

Species	Factor	Molality	Per Cent
Ti(OH)4(aq)	1.00	1.0000E-10	100.00

```
  Total                                1.0000E-10    100.00


Aqueous species accounting for 99% or more of UO2++

     Species                   Factor    Molality     Per Cent

  UO2(OH)2(aq)                  1.00    8.3184E-15     83.18
  UO2(CO3)2--                   1.00    6.1882E-16      6.19
  UO2PO4-                       1.00    5.0007E-16      5.00
  UO2(OH)3-                     1.00    2.8188E-16      2.82
  UO2CO3(aq)                    1.00    1.8100E-16      1.81
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                 1.0000E-14     99.00


Aqueous species accounting for 99% or more of Zn++

     Species                   Factor    Molality     Per Cent

  Zn++                          1.00    9.6939E-11     96.94
  ZnOH+                         1.00    2.2672E-12      2.27
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                 1.0000E-10     99.21


Aqueous species accounting for 99% or more of Zr(OH)2++

     Species                   Factor    Molality     Per Cent

  Zr(OH)4(aq)                   1.00    1.0000E-20    100.00
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                 1.0000E-20    100.00


          --- Summary of Aqueous Redox Reactions ---

     Couple                  Eh, volts      pe-       Log fO2     Ah, kcal

  DEFAULT                     0.781    0.1320E+02     -0.678      18.004
  S2O3--      /SO4--          0.781    0.1320E+02     -0.678      18.004
  CN-         /NH3(aq)        0.781    0.1320E+02     -0.678      18.004
  ClO-        /Cl-            0.781    0.1320E+02     -0.678      18.004
  ClO2-       /Cl-            0.781    0.1320E+02     -0.678      18.004
  ClO3-       /Cl-            0.781    0.1320E+02     -0.678      18.004
  ClO4-       /Cl-            0.781    0.1320E+02     -0.678      18.004
  Cr++        /CrO4--         0.781    0.1320E+02     -0.678      18.004
  Cr+++       /CrO4--         0.781    0.1320E+02     -0.678      18.004
  CrO4---     /CrO4--         0.781    0.1320E+02     -0.678      18.004
  Cu+         /Cu++           0.781    0.1320E+02     -0.678      18.004
  Fe+++       /Fe++           0.781    0.1320E+02     -0.678      18.004
  H2(aq)      /H2O            0.781    0.1320E+02     -0.678      18.004
  HSO5-       /SO4--          0.781    0.1320E+02     -0.678      18.004
  Mn+++       /Mn++           0.781    0.1320E+02     -0.678      18.004
  MnO4--      /Mn++           0.781    0.1320E+02     -0.678      18.004
  N2(aq)      /NH3(aq)        0.781    0.1320E+02     -0.678      18.004
  N3-         /NH3(aq)        0.781    0.1320E+02     -0.678      18.004
  NO2-        /NH3(aq)        0.781    0.1320E+02     -0.678      18.004
  NO3-        /NH3(aq)        0.781    0.1320E+02     -0.678      18.004
  O2(aq)      /H2O            0.781    0.1320E+02     -0.678      18.004
  Pb++++      /Pb++           0.781    0.1320E+02     -0.678      18.004
  Pu+++       /Pu++++         0.781    0.1320E+02     -0.678      18.004
```

PuO2+	/Pu++++	0.781	0.1320E+02	-0.678	18.004
PuO2++	/Pu++++	0.781	0.1320E+02	-0.678	18.004
S2O4--	/SO4--	0.781	0.1320E+02	-0.678	18.004
S2O6--	/SO4--	0.781	0.1320E+02	-0.678	18.004
S2O8--	/SO4--	0.781	0.1320E+02	-0.678	18.004
S3O6--	/SO4--	0.781	0.1320E+02	-0.678	18.004
S4O6--	/SO4--	0.781	0.1320E+02	-0.678	18.004
S5O6--	/SO4--	0.781	0.1320E+02	-0.678	18.004
SO3--	/SO4--	0.781	0.1320E+02	-0.678	18.004
Sm++	/Sm+++	0.781	0.1320E+02	-0.678	18.004
U+++	/UO2++	0.781	0.1320E+02	-0.678	18.004
U++++	/UO2++	0.781	0.1320E+02	-0.678	18.004
UO2+	/UO2++	0.781	0.1320E+02	-0.678	18.004

--- Summary of Aqueous Non-equilibrium Non-redox Neactions ---

Reaction	Log Q/K	Aff, kcal	State

None

--- Summary of Pure Mineral Saturation States ---

(Minerals with affinities .lt. -10 kcal are not listed)

Mineral	Log Q/K	Aff, kcal	State
Alamosite	-3.980	-5.430	
Albite	2.499	3.409	ssatd
Albite_high	1.180	1.610	ssatd
Albite_low	2.499	3.409	ssatd
Alunite	-4.802	-6.551	
Amesite-14A	-0.713	-0.973	
Analcime	1.428	1.949	ssatd
Analcime-dehy	-4.934	-6.732	
Andalusite	0.193	0.263	satd
Anglesite	-6.129	-8.361	
Anhydrite	-3.149	-4.295	
Anorthite	-2.221	-3.030	
Aragonite	-2.093	-2.855	
BaCrO4	-6.795	-9.270	
Barite	-3.990	-5.444	
Bassanite	-3.793	-5.175	
Beidellite-Ca	7.559	10.312	ssatd
Beidellite-Cs	5.281	7.205	ssatd
Beidellite-H	6.666	9.095	ssatd
Beidellite-K	7.143	9.745	ssatd
Beidellite-Mg	7.498	10.229	ssatd
Beidellite-Na	7.197	9.819	ssatd
Berlinite	-4.278	-5.837	
Boehmite	2.002	2.731	ssatd
Boric_acid	-4.756	-6.488	
Brucite	-5.681	-7.750	
CaSO4:0.5H2O(beta)	-3.962	-5.405	
Calcite	-1.948	-2.658	
CeO2	-3.592	-4.901	
Celadonite	4.240	5.784	ssatd
Cerussite	-3.417	-4.662	
Chalcedony	0.734	1.001	ssatd
Chrysotile	-5.262	-7.179	
Clinoptilolite	15.843	21.614	ssatd

Clinoptilolite-Ca	15.834	21.602	ssatd
Clinoptilolite-Cs	-6.641	-9.060	
Clinoptilolite-K	12.436	16.966	ssatd
Clinoptilolite-Na	12.747	17.391	ssatd
Clinoptilolite-Sr	4.679	6.383	ssatd
Clinoptilolite-hy-Ca	15.835	21.604	ssatd
Clinoptilolite-hy-Cs	-6.636	-9.054	
Clinoptilolite-hy-K	12.440	16.971	ssatd
Clinoptilolite-hy-Na	12.749	17.393	ssatd
Clinoptilolite-hy-Sr	4.679	6.384	ssatd
Coesite	0.195	0.266	satd
Cordierite_hydr	-5.297	-7.226	
Corundum	0.820	1.118	ssatd
Cristobalite(alpha)	0.455	0.620	ssatd
Cristobalite(beta)	0.011	0.015	satd
Crocoite	-4.029	-5.497	
Dawsonite	-1.414	-1.929	
Diaspore	2.406	3.282	ssatd
Diopside	-5.121	-6.987	
Dolomite	-3.309	-4.515	
Dolomite-dis	-4.854	-6.622	
Dolomite-ord	-3.309	-4.515	
Epsomite	-6.090	-8.308	
Fluorapatite	6.527	8.905	ssatd
Fluorite	-1.507	-2.057	
GdPO4:H2O	-2.287	-3.120	
Gibbsite	1.810	2.469	ssatd
Gismondine	6.997	9.546	ssatd
Goethite	-6.574	-8.969	
Gypsum	-2.973	-4.056	
Haiweeite	-7.240	-9.878	
Halite	-7.010	-9.564	
Heulandite	6.836	9.326	ssatd
Hexahydrite	-6.325	-8.629	
Hydroxylapatite	-4.013	-5.475	
Ice	-0.139	-0.189	satd
Illite	7.245	9.884	ssatd
Jadeite	-0.131	-0.179	satd
K-Feldspar	4.349	5.934	ssatd
Kalsilite	-0.836	-1.141	
Kaolinite	6.333	8.640	ssatd
Kyanite	0.464	0.632	ssatd
LaPO4:H2O	-1.286	-1.755	
Lansfordite	-5.538	-7.555	
Laumontite	4.702	6.415	ssatd
Lawsonite	2.144	2.925	ssatd
Magnesite	-2.990	-4.079	
Manganite	-4.816	-6.571	
Margarite	2.423	3.306	ssatd
Maximum_Microcline	4.349	5.934	ssatd
Mesolite	6.936	9.462	ssatd
MnO2(gamma)	-1.875	-2.558	
Monohydrocalcite	-2.782	-3.795	
Montmor-Ca	6.857	9.355	ssatd
Montmor-Cs	4.646	6.339	ssatd
Montmor-K	6.512	8.884	ssatd
Montmor-Mg	6.866	9.367	ssatd
Montmor-Na	6.562	8.952	ssatd
Mordenite	3.974	5.422	ssatd
Muscovite	9.620	13.124	ssatd
Nahcolite	-6.522	-8.898	
Natrolite	0.989	1.349	ssatd
NdOHCO3	-7.091	-9.675	

NdPO4:H2O	-1.840	-2.510	
Nepheline	-2.549	-3.477	
Nesquehonite	-5.692	-7.766	
Nontronite-Ca	-6.479	-8.839	
Nontronite-K	-6.894	-9.406	
Nontronite-Mg	-6.539	-8.921	
Nontronite-Na	-6.840	-9.332	
Okenite	-5.156	-7.034	
Paragonite	6.873	9.377	ssatd
Paralaurionite	-5.621	-7.668	
PbHPO4	-4.798	-6.546	
Pentahydrite	-6.665	-9.093	
Petalite	-1.213	-1.656	
Plattnerite	-3.320	-4.529	
Plumbogummite	-0.574	-0.783	
Prehnite	-0.353	-0.482	satd
Pseudowollastonite	-5.780	-7.885	
PuO2	-1.544	-2.107	
PuO2(OH)2	-6.120	-8.349	
Pyrolusite	-0.357	-0.487	satd
Pyromorphite	-1.930	-2.633	
Pyrophyllite	6.715	9.162	ssatd
Quartz	1.005	1.371	ssatd
Rutile	-0.355	-0.484	satd
Sanidine_high	3.150	4.298	ssatd
Saponite-Ca	-0.420	-0.573	
Saponite-Cs	-2.698	-3.680	
Saponite-H	-1.312	-1.790	
Saponite-K	-0.836	-1.140	
Saponite-Mg	-0.481	-0.656	
Saponite-Na	-0.782	-1.066	
Scolecite	5.486	7.485	ssatd
Sellaite	-2.757	-3.761	
Sepiolite	-5.940	-8.104	
SiO2(am)	-0.281	-0.383	satd
Sillimanite	-0.170	-0.233	satd
SmPO4:H2O	-2.036	-2.777	
Smectite-low-Fe-Mg	-4.052	-5.528	
Smithsonite	-7.080	-9.659	
Spodumene	-6.038	-8.237	
Starkeyite	-7.052	-9.621	
Stilbite	11.463	15.639	ssatd
Strontianite	-6.302	-8.597	
Talc	-1.263	-1.723	
Tridymite	0.834	1.137	ssatd
Wairakite	0.293	0.399	satd
Whitlockite	-4.238	-5.782	
Witherite	-3.609	-4.924	
Wollastonite	-5.541	-7.559	
Zincite	-6.512	-8.884	
Zircon	-6.347	-8.659	
Zn(OH)2(beta)	-7.237	-9.874	
Zn(OH)2(epsilon)	-6.966	-9.503	
Zn(OH)2(gamma)	-7.186	-9.804	
Zoisite	-1.159	-1.581	

--- Summary of Hypothetical Solid Solutions ---

--- Biotite ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Annite	0.0000E+00			
Phlogopite	0.0000E+00			

Mineral	Log Q/K	Aff, kcal	State
Biotite	0.000	-999.000	

--- Carbonate-Calcite ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Calcite	9.1668E-01	-0.0378	0.0000	-0.0378
Magnesite	8.3274E-02	-1.0795	0.0000	-1.0795
Rhodochrosite	6.0816E-10	-9.2160	0.0000	-9.2160
Siderite	1.4233E-23	-22.8467	0.0000	-22.8467
Smithsonite	6.7684E-06	-5.1695	0.0000	-5.1695
Strontianite	4.0632E-05	-4.3911	0.0000	-4.3911

Mineral	Log Q/K	Aff, kcal	State
Carbonate-Calcite	-1.910	-2.606	
Calcite	-1.910	-2.606	
Magnesite	-1.910	-2.606	
Rhodochrosite	-1.910	-2.606	
Siderite	-1.910	-2.606	
Smithsonite	-1.910	-2.606	
Strontianite	-1.910	-2.606	

--- Chlorite-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinochlore-14A	0.0000E+00			
Daphnite-14A	0.0000E+00			

Mineral	Log Q/K	Aff, kcal	State
Chlorite-ss	0.000	-999.000	

--- Clinoptilolite-hy-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-hy-Ca	9.9878E-01	-0.0005	0.0000	-0.0005
Clinoptilolite-hy-Cs	3.3730E-23	-22.4720	0.0000	-22.4720

Clinoptilolite-hy-K	4.0160E-04	-3.3962	0.0000	-3.3962
Clinoptilolite-hy-Na	8.1904E-04	-3.0867	0.0000	-3.0867
Clinoptilolite-hy-Sr	6.9713E-12	-11.1567	0.0000	-11.1567

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-hy-ss	15.836	21.605	ssatd
Clinoptilolite-hy-Ca	15.836	21.605	ssatd
Clinoptilolite-hy-Cs	15.836	21.605	ssatd
Clinoptilolite-hy-K	15.836	21.605	ssatd
Clinoptilolite-hy-Na	15.836	21.605	ssatd
Clinoptilolite-hy-Sr	15.836	21.605	ssatd

--- Clinoptilolite-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-Ca	8.1106E-01	-0.0909	-0.2237	-0.3147
Clinoptilolite-Cs	2.5910E-07	-6.5865	-16.2029	-22.7894
Clinoptilolite-K	8.4501E-02	-1.0731	-2.6399	-3.7131
Clinoptilolite-NH4	1.4927E-62	-61.8260	-152.0921	-213.9181
Clinoptilolite-Na	1.0396E-01	-0.9831	-2.4185	-3.4017
Clinoptilolite-Sr	4.8410E-04	-3.3151	-8.1551	-11.4701

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-ss	16.149	22.031	ssatd
Clinoptilolite-Ca	16.149	22.031	ssatd
Clinoptilolite-Cs	16.149	22.031	ssatd
Clinoptilolite-K	16.149	22.031	ssatd
Clinoptilolite-NH4	16.149	22.031	ssatd
Clinoptilolite-Na	16.149	22.031	ssatd
Clinoptilolite-Sr	16.149	22.031	ssatd

--- Epidote-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinozoisite	0.0000E+00			
Epidote	0.0000E+00			

Mineral	Log Q/K	Aff, kcal	State
Epidote-ss	0.000	-999.000	

--- Garnet-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity

```
Andradite                   0.0000E+00
Grossular                   0.0000E+00


   Mineral                     Log Q/K     Aff, kcal  State

Garnet-ss                        0.000    -999.000



               --- Orthopyroxene            ---

  Ideal solution

   Component                     x           Log x   Log lambda  Log activity

Enstatite                   0.0000E+00
Ferrosilite                 0.0000E+00


   Mineral                     Log Q/K     Aff, kcal  State

Orthopyroxene                    0.000    -999.000



               --- Saponite-tri             ---

  Ideal solution

   Component                     x           Log x   Log lambda  Log activity

Saponite-Ca                 5.5823E-01     -0.2532      0.1696     -0.0836
Saponite-H                  1.1028E-03     -2.9575      1.9815     -0.9760
Saponite-K                  3.0656E-02     -1.5135      1.0140     -0.4994
Saponite-Mg                 3.6530E-01     -0.4374      0.2930     -0.1443
Saponite-Na                 4.4714E-02     -1.3496      0.9042     -0.4454


   Mineral                     Log Q/K     Aff, kcal  State

Saponite-tri                     -0.336      -0.459   satd
  Saponite-Ca                    -0.336      -0.459   satd
  Saponite-H                     -0.336      -0.459   satd
  Saponite-K                     -0.336      -0.459   satd
  Saponite-Mg                    -0.336      -0.459   satd
  Saponite-Na                    -0.336      -0.459   satd



               --- Smectite-di              ---

  Ideal solution

   Component                     x           Log x   Log lambda  Log activity

Beidellite-Ca               5.5355E-01     -0.2568      0.1721     -0.0848
Beidellite-K                3.0421E-02     -1.5168      1.0163     -0.5006
Beidellite-Mg               3.6224E-01     -0.4410      0.2955     -0.1455
Beidellite-Na               4.4340E-02     -1.3532      0.9066     -0.4466
Montmor-Ca                  4.1402E-03     -2.3830      1.5966     -0.7864
Montmor-K                   3.7159E-04     -3.4299      2.2981     -1.1319
```

Montmor-Mg	4.4032E-03	-2.3562	1.5787	-0.7776
Montmor-Na	5.2817E-04	-3.2772	2.1957	-1.0815
Nontronite-Ca	1.6064E-43	-42.7942	28.6721	-14.1221
Nontronite-K	8.8279E-45	-44.0541	29.5163	-14.5379
Nontronite-Mg	1.0519E-43	-42.9780	28.7953	-14.1827
Nontronite-Na	1.2867E-44	-43.8905	29.4066	-14.4839

Mineral	Log Q/K	Aff, kcal	State
Smectite-di	7.643	10.428	ssatd
Beidellite-Ca	7.643	10.428	ssatd
Beidellite-K	7.643	10.428	ssatd
Beidellite-Mg	7.643	10.428	ssatd
Beidellite-Na	7.643	10.428	ssatd
Montmor-Ca	7.643	10.428	ssatd
Montmor-K	7.643	10.428	ssatd
Montmor-Mg	7.643	10.428	ssatd
Montmor-Na	7.643	10.428	ssatd
Nontronite-Ca	7.643	10.428	ssatd
Nontronite-K	7.643	10.428	ssatd
Nontronite-Mg	7.643	10.428	ssatd
Nontronite-Na	7.643	10.428	ssatd

--- Lanthanide hydroxide ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
La(OH)3	3.5278E-05	-4.4525	0.0000	-4.4525
Ce(OH)3	3.8733E-15	-14.4119	0.0000	-14.4119
Nd(OH)3(c)	4.9388E-01	-0.3064	0.0000	-0.3064
Gd(OH)3	4.4328E-01	-0.3533	0.0000	-0.3533
Sm(OH)3	6.2800E-02	-1.2020	0.0000	-1.2020

Mineral	Log Q/K	Aff, kcal	State
Lanthanide hydroxide	-8.460	-11.542	
La(OH)3	-8.460	-11.542	
Ce(OH)3	-8.460	-11.542	
Nd(OH)3(c)	-8.460	-11.542	
Gd(OH)3	-8.460	-11.542	
Sm(OH)3	-8.460	-11.542	

--- Rhabdophane-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaPO4:H2O	6.4220E-01	-0.1923	0.0000	-0.1923
CePO4:H2O	2.2297E-11	-10.6518	0.0000	-10.6518
NdPO4:H2O	1.7939E-01	-0.7462	0.0000	-0.7462
GdPO4:H2O	6.4098E-02	-1.1932	0.0000	-1.1932
SmPO4:H2O	1.1432E-01	-0.9419	0.0000	-0.9419

Mineral	Log Q/K	Aff, kcal	State
Rhabdophane-ss	-1.094	-1.492	
LaPO4:H2O	-1.094	-1.492	
CePO4:H2O	-1.094	-1.492	
NdPO4:H2O	-1.094	-1.492	
GdPO4:H2O	-1.094	-1.492	
SmPO4:H2O	-1.094	-1.492	

--- Lanthanide fluoride ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
LaF3:0.5H2O	7.2810E-01	-0.1378	0.0000	-0.1378
CeF3:0.5H2O	4.0065E-11	-10.3972	0.0000	-10.3972
NdF3:0.5H2O	2.5604E-01	-0.5917	0.0000	-0.5917
GdF3:0.5H2O	2.8932E-03	-2.5386	0.0000	-2.5386
SmF3:0.5H2O	1.2961E-02	-1.8874	0.0000	-1.8874

Mineral	Log Q/K	Aff, kcal	State
Lanthanide fluoride	-7.883	-10.755	
LaF3:0.5H2O	-7.883	-10.755	
CeF3:0.5H2O	-7.883	-10.755	
NdF3:0.5H2O	-7.883	-10.755	
GdF3:0.5H2O	-7.883	-10.755	
SmF3:0.5H2O	-7.883	-10.755	

11 approx. saturated pure minerals
0 approx. saturated input solid solutions
1 saturated hypothetical solid solutions

53 supersaturated pure minerals
0 supersatd. input solid solutions
3 supersatd. hypothetical solid solutions

--- Summary of Gases ---

Gas	Fugacity	Log fugacity
Al(g)	4.1885-189	-188.3779
B(g)	8.4204-204	-203.0747
BF3(g)	8.2212E-37	-36.0851
C(g)	3.0916-190	-189.5098
CH4(g)	3.5283-146	-145.4524
CO(g)	6.0393E-49	-48.2190
CO2(g)	3.1623E-04	-3.5000
Ca(g)	8.3992-153	-152.0758
Chlorine	1.0043E-25	-24.9981
Cs(g)	9.8506E-84	-83.0065
Cu(g)	2.2466E-82	-81.6485

```
Fluorine                    5.4171E-81    -80.2662
H2(g)                       6.1142E-42    -41.2137
H2O(g)                      2.5975E-02     -1.5855
H2S(g)                      0.0000E+00   -999.0000
HCl(g)                      3.8873E-17    -16.4104
HF(g)                       3.2222E-13    -12.4918
K(g)                        6.3565E-78    -77.1968
Li(g)                       2.1564E-97    -96.6663
Mg(g)                       1.4316-130   -129.8442
Nitrogen                    6.5361E-19    -18.1847
NH3(g)                      9.3190E-69    -68.0306
NO(g)                       2.5458E-25    -24.5942
NO2(g)                      1.7407E-19    -18.7593
Na(g)                       5.1298E-76    -75.2899
O2(g)                       2.1000E-01     -0.6778
Pb(g)                       7.3558E-70    -69.1334
S2(g)                       0.0000E+00   -999.0000
SO2(g)                      2.4565E-55    -54.6097
Si(g)                       4.2759-220   -219.3690
SiF4(g)                     4.8092E-34    -33.3179
Ti(g)                       1.6799-231   -230.7747
TiCl4(g)                    3.3806E-79    -78.4710
U(g)                        1.7979-297   -296.7452
U2Cl10(g)                   2.5901-230   -229.5867
U2Cl8(g)                    7.9957-236   -235.0971
U2F10(g)                    5.2513-148   -147.2797
UCl(g)                      6.2286-252   -251.2056
UCl2(g)                     6.4553-205   -204.1901
UCl3(g)                     1.4654-155   -154.8341
UCl4(g)                     1.8013-123   -122.7444
UCl5(g)                     1.1392-128   -127.9434
UCl6(g)                     1.3386-128   -127.8734
UF(g)                       1.0972-237   -236.9597
UF2(g)                      4.9663-196   -195.3040
UF3(g)                      5.5318-148   -147.2571
UF4(g)                      9.0949E-97    -96.0412
UF5(g)                      6.8491E-87    -86.1644
UF6(g)                      5.0789E-91    -90.2942
UO(g)                       1.4199-212   -211.8477
UO2(g)                      2.6308-128   -127.5799
UO2Cl2(g)                   1.1536E-72    -71.9380
UO2F2(g)                    6.4380E-62    -61.1913
UO3(g)                      1.9350E-75    -74.7133
UOF4(g)                     2.7102E-74    -73.5670
Zn(g)                       1.1776E-79    -78.9290

--- Reading the input file ---

--- No further input found ---

         Start time = 16:40:08  01/14/99
           End time = 16:40:11  01/14/99

          Run time =   3.19     seconds
         User time =   3.19     seconds
          Cpu time =   3.19     seconds

Normal exit
```

```
EQ3/6, Version 7.2b (EQ3/6-V7-REL-V7.2b-PC)
EQ3NR Speciation-Solubility Code (EQ3/6-V7-EQ3NR-EXE-R139-P5)
Supported by the EQLIB library (EQ3/6-V7-EQLIB-LIB-R168-P5)
```

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```
Run  11:39:27  01/15/99



--- Reading the input file ---
|-----------------------------------------------------------------------|
|EQ3NR input file name= j13solZn.3i                                     |
|Description= "J-13 well water, zinc solubility                         |
|Version level= 7.2b                                                    |
|Created 01/15/99    Creator= D. H. Lester                              |
|Revised             Revisor=                                           |
|                                                                       |
|  Water from well J-13 at the Nevada Test Site. The composition        |
|is nearly identical to that in the EQ3NR test case input file j13w.3i,|
|which is based on data reported by Harrar et al. (1990) and on p. 3 of|
|Preliminary Scenario Definitions, May 17, 1996, except for fixing of  |
|bicarbonate via fixed fugacity of CO2 and pH.  Al, Fe, Mn, etc. re-   |
|tained, as these are needed to model reaction with tuff, etc.  traces |
|of Pu, U, Gd, Ba, La, Nd, Ce, Sm, Pb, Cr, Ni, Cu, Zr, Sr, Cs,          |
|Zn, & Mo added to enable modeling of waste glass and alloys.  Nb isn't|
|in data base.                                                          |
|                                                                       |
|This run uses revised data base, with essentially no organics.  Also,  |
|several to many other unlikely aqueous species removed.                |
|                                                                       |
|Electrical balancing is on Cl-.  These data do not agree exactly with  |
|those reported in the SCP.  CO2 and O2 fixed at atmospheric values.    |
|                                                                       |
|  This run uses the revised data base, incorporating SKB data.         |
|                                                                       |
|  Purpose: To determine zinc solubility This run represents            |
|  a run with a zinc content that just saturates the first Zn           |
|  mineral (pyrolusite MnO2) to precipitate.                            |
|                            References                                 |
|                                                                       |
|Harrar, J. E., Carley, J. F., Isherwood, W. F., and Raber, E., 1990,   |
|  Report of the Committee to Review the Use of J-13 Well Water in      |
|  Nevada Nuclear Waste Storage Investigations: UCID-21867, Lawrence    |
|  Livermore National Laboratory, Livermore, California.                |
|-----------------------------------------------------------------------|
|Temperature (C)         | 25.00        |Density(gm/cm3)|  1.00000      |
|-----------------------------------------------------------------------|
|Total Dissolved Salts   |              | mg/kg | mg/l  |*not used      |
|-----------------------------------------------------------------------------|
|Electrical Balancing on |Cl-                     | code selects| not performed|
|-----------------------------------------------------------------------------|
| SPECIES                | BASIS SWITCH/CONSTRAINT| CONC/ETC  | UNITS OR TYPE  |
|-----------------------------------------------------------------------------|
|redox                   |                        |-6.7778E-01|logfo2          |
```

Na+		1.9922E-03	molality
SiO2(aq)		1.0169E-03	molality
Ca++		3.2437E-04	molality
K+		1.2891E-04	molality
Mg++		8.2699E-05	molality
H+		7.4100	pH
HCO3-	CO2(g)	-3.5000	log fugacity
F-		1.1475E-04	molality
Cl-		2.0140E-04	molality
NH3(aq)	NO3-	0.142 E-03	molality
SO4--		1.9154E-04	molality
B(OH)3(aq)		1.2388E-05	molality
HPO4--		1.2711E-06	molality
Al+++		1.4825E-06	molality
Mn++		7.2809E-18	molality
Fe++		1.0000E-18	molality
CrO4--		3.4485E-07	molality
Cu++		1.05000E-14	molality
MoO4--		1.00000E-10	molality
Cs+		1.00000E-10	molality
Li+		1.00000E-10	molality
Ni++		1.00000E-10	molality
La+++		1.00000E-14	molality
Nd+++		1.00000E-14	molality
Sm+++		1.00000E-14	molality
Ce+++		1.00000E-24	molality
Pu++++		1.00000E-14	molality
Gd+++		1.00000E-14	molality
UO2++		1.00000E-14	molality
Sr++		1.00000E-10	molality
Ba++		1.00000E-10	molality
Ti(OH)4(aq)		1.00000E-10	molality
Zn++		1.00000E-03	molality
Zr(OH)2++		1.00000E-20	molality
Pb++		1.00000E-10	molality

Input Solid Solutions

none			

SUPPRESSED SPECIES	(suppress,replace,augmentk,augmentg)		value
Phlogopite	mineral	suppress	0.00000E+00
Annite	mineral	suppress	0.00000E+00
Clinochlore-14A	mineral	suppress	0.00000E+00
Daphnite-14A	mineral	suppress	0.00000E+00
Clinozoisite	mineral	suppress	0.00000E+00
Epidote	mineral	suppress	0.00000E+00
Epidote-ord	mineral	suppress	0.00000E+00
Andradite	mineral	suppress	0.00000E+00
Grossular	mineral	suppress	0.00000E+00
Enstatite	mineral	suppress	0.00000E+00
Ferrosilite	mineral	suppress	0.00000E+00
Pyrite	mineral	suppress	0.00000E+00
Pyrrhotite	mineral	suppress	0.00000E+00
Troilite	mineral	suppress	0.00000E+00
Alabandite	mineral	suppress	0.00000E+00
Brezinaite	mineral	suppress	0.00000E+00
Chalcocite	mineral	suppress	0.00000E+00
Covellite	mineral	suppress	0.00000E+00
Millerite	mineral	suppress	0.00000E+00
Polydymite	mineral	suppress	0.00000E+00
Vaesite	mineral	suppress	0.00000E+00

```
| Heazlewoodite          | mineral        | suppress | 0.00000E+00     |
| Galena                 | mineral        | suppress | 0.00000E+00     |
| Sulfur                 | mineral        | suppress | 0.00000E+00     |
| CaZrO3                 | mineral        | suppress | 0.00000E+00     |
| BaZrO3                 | mineral        | suppress | 0.00000E+00     |
| SrZrO3                 | mineral        | suppress | 0.00000E+00     |
| U2S3                   | mineral        | suppress | 0.00000E+00     |
| U3S5                   | mineral        | suppress | 0.00000E+00     |
| US2                    | mineral        | suppress | 0.00000E+00     |
| US3                    | mineral        | suppress | 0.00000E+00     |
| US                     | mineral        | suppress | 0.00000E+00     |
| US1.9                  | mineral        | suppress | 0.00000E+00     |
| U3P4                   | mineral        | suppress | 0.00000E+00     |
| UP                     | mineral        | suppress | 0.00000E+00     |
| UP2                    | mineral        | suppress | 0.00000E+00     |
| HS-                    | aqueous        | suppress | 0.00000E+00     |
| H2S(aq)                | aqueous        | suppress | 0.00000E+00     |
| S--                    | aqueous        | suppress | 0.00000E+00     |
|-------------------------------------------------------------------------|
|OPTIONS                                                                  |
|-------------------------------------------------------------------------|
| - SOLID SOLUTIONS -                                                     |
|     ignore solid solutions                                              |
|   * process hypothetical solid solutions                                |
|     process input and hypothetical solid solutions                      |
| - LOADING OF SPECIES INTO MEMORY -                                      |
|   * does nothing                                                        |
|     lists species loaded into memory                                    |
| - ECHO DATABASE INFORMATION -                                           |
|   * does nothing                                                        |
|     lists all reactions                                                 |
|     lists reactions and log K values                                    |
|     lists reactions, log K values and polynomial coef.                  |
| - LIST OF AQUEOUS SPECIES (ordering) -                                  |
|   * in order of decreasing concentration                                |
|     in same order as input file                                         |
| - LIST OF AQUEOUS SPECIES (concentration limit) -                       |
|     all species                                                         |
|     only species > 10**-20 molal                                        |
|   * only species > 10**-12 molal                                        |
|     not printed                                                         |
| - LIST OF AQUEOUS SPECIES (by element) -                                |
|   * print major species                                                 |
|     print all species                                                   |
|     don't print                                                         |
| - MINERAL SATURATION STATES -                                           |
|   * print if affinity > -10 kcals                                       |
|     print all                                                           |
|     don't print                                                         |
| - pH SCALE CONVENTION -                                                 |
|   * modified NBS                                                        |
|     internal                                                            |
|     rational                                                            |
| - ACTIVITY COEFFICIENT OPTIONS -                                        |
|   * use B-dot equation                                                  |
|     Davies' equation                                                    |
|     Pitzer's equations                                                  |
| - AUTO BASIS SWITCHING -                                                |
|   * off                                                                 |
|     on                                                                  |
| - PITZER DATABASE INFORMATION -                                         |
|   * print only warnings                                                 |
|     print species in model and number of Pitzer coefficients            |
```

```
|     print species in model and names of Pitzer coefficients          |
| - PICKUP FILE -                                                      |
|   * write pickup file                                                |
|     don't write pickup file                                          |
| - LIST MEAN IONIC PROPERTIES -                                       |
|   * don't print                                                      |
|     print                                                            |
| - LIST AQUEOUS SPECIES, ION SIZES, AND HYDRATION NUMBERS -           |
|     print                                                            |
|   * don't print                                                      |
| - CONVERGENCE CRITERIA -                                             |
|   * test both residual functions and correction terms                |
|     test only residual functions                                     |
|----------------------------------------------------------------------|
|DEBUGGING SWITCHES (0 = off, 1,2 = on                                 |
|----------------------------------------------------------------------|
|0  generic debugging information                                      |2
|0  print details of pre-Newton-Raphson iteration                      |2
|0  print details of Newton-Raphson iteration                          |
|0  print details of stoichiometric factors                            |2
|0  print details of stoichiometric factors calculation                |
|0  write reactions on RLIST                                           |
|0  list stoichiometric concentrations of master species               |
|0  request iteration variables to be killed                           |
|----------------------------------------------------------------------|
|DEVELOPMENT OPTIONS  (used for code development)                      |
|----------------------------------------------------------------------|
| none                                                                 |
|----------------------------------------------------------------------|
|TOLERANCES                  (desired values)        (defaults)        |
|----------------------------------------------------------------------|
|      residual functions  |                      |1.0e-10  tolbt     |
|        correction terms  |                      |1.0e-10  toldl     |
|        saturation state  |                      |0.5      tolsat    |
|number of N-R iterations  |                      |30       itermx    |
|----------------------------------------------------------------------|

 --- The input file has been successfully read ---

 --- Reading the data1 file ---

 --- The data1 file has been successfully read ---

 * note - (eqlib/inbdot) The following aqueous species
       have been assigned a default hard core diameter of
         4.000 Angstroms-
         Cu(NO2)2(aq)
         Nd(HPO4)2-

 The species Phlogopite               has been user-suppressed

 The species Annite                   has been user-suppressed

 The species Clinochlore-14A          has been user-suppressed

 The species Daphnite-14A             has been user-suppressed

 The species Clinozoisite             has been user-suppressed

 The species Epidote                  has been user-suppressed

 The species Epidote-ord              has been user-suppressed
```

```
The species Andradite                has been user-suppressed
The species Grossular                has been user-suppressed
The species Enstatite                has been user-suppressed
The species Ferrosilite              has been user-suppressed
The species Pyrite                   has been user-suppressed
The species Pyrrhotite               has been user-suppressed
The species Troilite                 has been user-suppressed
The species Alabandite               has been user-suppressed
The species Brezinaite               has been user-suppressed
The species Chalcocite               has been user-suppressed
The species Covellite                has been user-suppressed
The species Millerite                has been user-suppressed
The species Polydymite               has been user-suppressed
The species Vaesite                  has been user-suppressed
The species Heazlewoodite            has been user-suppressed
The species Galena                   has been user-suppressed
The species Sulfur                   has been user-suppressed
The species CaZrO3                   has been user-suppressed
The species BaZrO3                   has been user-suppressed
The species SrZrO3                   has been user-suppressed
The species U2S3                     has been user-suppressed
The species U3S5                     has been user-suppressed
The species US2                      has been user-suppressed
The species US3                      has been user-suppressed
The species US                       has been user-suppressed
The species US1.9                    has been user-suppressed
The species U3P4                     has been user-suppressed
The species UP                       has been user-suppressed
The species UP2                      has been user-suppressed
The species HS-                      has been user-suppressed
The species H2S(aq)                  has been user-suppressed
The species S--                      has been user-suppressed
```

```
eeee   qqq   33333  n   n  rrrr
e     q   q      3  nn  n  r   r
eeee  q   q    33   n n n  rrrr
e     q q q      3  n  nn  r  r
eeee   qqq   3333   n   n  r   r
          q
```

EQ3NR, version 7.2b (R139   )
 supported by EQLIB, version 7.2b (R168   )

```
|EQ3NR input file name= j13solZn.3i                                      |
|Description= "J-13 well water, zinc solubility                          |
|Version level= 7.2b                                                     |
|Created 01/15/99    Creator= D. H. Lester                               |
|Revised             Revisor=                                            |
|                                                                        |
|  Water from well J-13 at the Nevada Test Site. The composition         |
|is nearly identical to that in the EQ3NR test case input file j13w.3i,|
|which is based on data reported by Harrar et al. (1990) and on p. 3 of|
|Preliminary Scenario Definitions, May 17, 1996, except for fixing of  |
|bicarbonate via fixed fugacity of CO2 and pH.  Al, Fe, Mn, etc. re-   |
|tained, as these are needed to model reaction with tuff, etc.  traces |
|of Pu, U, Gd, Ba, La, Nd, Ce, Sm, Pb, Cr, Ni, Cu, Zr, Sr, Cs,          |
|Zn, & Mo added to enable modeling of waste glass and alloys.  Nb isn't|
|in data base.                                                           |
|                                                                        |
|This run uses revised data base, with essentially no organics.  Also,  |
|several to many other unlikely aqueous species removed.                |
|                                                                        |
|Electrical balancing is on Cl-.  These data do not agree exactly with  |
|those reported in the SCP.  CO2 and O2 fixed at atmospheric values.    |
|                                                                        |
|  This run uses the revised data base, incorporating SKB data.          |
|                                                                        |
|  Purpose: To determine zinc solubility This run represents             |
|  a run with a zinc content that just saturates the first Zn            |
|  mineral (smithsonite) to precipitate.                                 |
|                              References                                |
|                                                                        |
|Harrar, J. E., Carley, J. F., Isherwood, W. F., and Raber, E., 1990,   |
|  Report of the Committee to Review the Use of J-13 Well Water in       |
|  Nevada Nuclear Waste Storage Investigations: UCID-21867, Lawrence     |
|  Livermore National Laboratory, Livermore, California.                 |
```

data0.nuc.dhl
THERMODYNAMIC DATABASE
This data base is a modified version of data0.nuc.R3 as changed by D.H. Lester

The data base datao.nuc.R3is a composite of data0.alt.V8.R5 and data0.b19.skb, by P. L. Cloke on 15-aug-96. It was specially modified for evaluation of nuclear criticality needs on the Yucca Mt. Project. Six EQ3NR runs were made using input data for elements in J13 well water and components of the current design for waste glass packages. Three runs were saturated with air, at pH 4, 7.41, and 10. The other three were for highly reducing conditions, log fO2 =

-80, and carbonated limited to the solubility of atmospheric CO2 in water, 1.0 E-5 m. Solid and solution species appearing on the outputs and which constituted less than 0.1% of dissolved elements, or whose affinities did not exceed 1.0 E-10, on any of the outputs, were deleted from this data base.

The lanthanide data from the .skb data base replaced those in the .alt file in those cases in which there was overlap, except for the lanthanide metals. This includes replacing data for LnO2H, LnO+, and LnO2- by the .skb data for Ln(OH)3 Ln(OH()2+, and Ln(OH)4-, respectively. Ce++++ was added as well as more data for Y. Lanthanide data in the .skb base that aren't in the .alt base were added. LnPO4.xH2O, to which .skb assigned a value of 10 to x, was changed to LnPO4.H2O, in keeping with the formula for rhabdophane (and in keeping with the XRD pattern).

Exceptions: the .skb data for Eu were not entered as replacements for .alt data. The .skb data for Pm were not entered. Divalent lanthanide data were not entered.

Output package: eq3
Data set: cm2
+----------

The activity coefficients of aqueous solute species and the activity of water are calculated according to the B-dot equation plus others

Temperature= 25.00 degrees Celsius
pressure= 1.0132 bars

```
        79 elements are in the data base
       100 elements can be loaded into memory
        36 elements are active in this problem

      1170 aqueous species are in the data base
       645 aqueous species were loaded into memory
      2000 aqueous species can be loaded into memory
       559 aqueous species are active in this problem

      1090 aqueous reactions are in the data base
       565 aqueous reactions were loaded into memory
      1899 aqueous reactions can be loaded into memory

           1034 minerals are in the data base
            672 minerals were loaded into memory
            850 minerals can be loaded into memory
            634 minerals are active in this problem

             15 solid solutions are in the data base
             50 solid solutions can be loaded into memory

             87 gases are in the data base
             56 gases were loaded into memory
             80 gases can be loaded into memory
             56 gases are active in this problem
```

```
iopt1  =  0 (redox option switch)
iopt2  =  0 (automatic basis switching switch)
iopt3  =  0 (interfacing output control switch)
iopt4  =  1 (turn-on solid solutions switch)
iopt5  =  0 (not used)
iopt6  =  0 (conv. test criteria switch)
iopt7  =  0 (0/1 version 7/post-version 7 pickup file)
iopt8  =  0 (not used)
iopt9  =  0 (not used)
iopt10 =  0 (not used)


     iopg1  =  0 (act. coeff. choice)
     iopg2  =  0 (pH scale convention switch)
     iopg3  =  0 (not used)
     iopg4  =  0 (not used)
     iopg5  =  0 (not used)
     iopg6  =  0 (not used)
     iopg7  =  0 (not used)
     iopg8  =  0 (not used)
     iopg9  =  0 (not used)
     iopg10 =  0 (not used)


          iopr1  =  0 (list loading of species)
          iopr2  =  0 (list reactions and log K values)
          iopr3  =  0 (aqueous species print order control)
          iopr4  = -2 (aqueous species print cut-off control)
          iopr5  =  0 (mass balance percentages print control)
          iopr6  =  0 (mean ionic act coeff print control)
          iopr7  =  0 (mineral affinity print control)
          iopr8  = -1 (ion size and hydr. no. print control)
          iopr9  =  0 (Pitzer coefficients tabulation)
          iopr10 =  0 (print concbs array)
          iopr11 =  0 (not used)
          iopr12 =  0 (not used)
          iopr13 =  0 (not used)
          iopr14 =  0 (not used)
          iopr15 =  0 (not used)
          iopr16 =  0 (not used)
          iopr17 =  0 (not used)
          iopr18 =  0 (not used)
          iopr19 =  0 (not used)
          iopr20 =  0 (not used)


               iodb1  =  0 (print info. messages switch)
               iodb2  =  0 (print pre-Newton-Raphson optimizations switch)
               iodb3  =  0 (request iteration variables to kill)
               iodb4  =  0 (print Newton-Raphson iterations switch)
               iodb5  =  0 (list stoichiometric equivalences)
               iodb6  =  0 (controls iodb5 level of detail)
               iodb7  =  0 (write reactions on file rlist switch)
               iodb8  =  0 (not used)
               iodb9  =  0 (not used)
               iodb10 =  0 (not used)

The default redox state is constrained by log fO2 =   -0.6778 (log bars)


          Solution density =  1.00000 g/mL
```

```
     Total dissolved salts =       0.00 mg/kg solution
     Total dissolved salts =       0.00 mg/L


   Tolbt  =  0.10000E-05 (convergence tolerance on residual functions)
   Toldl  =  0.10000E-05 (convergence tolerance on correction terms)
   Tolsat =  0.50000E+00 (phase saturation tolerance, does not affect
                          convergence)


                  --- Input Constraints ---

   Species                    Csp      Jflag   Input Type/Co-species

Na+                        1.9922E-03    0    Total conc, molal
SiO2(aq)                   1.0169E-03    0    Total conc, molal
Ca++                       3.2437E-04    0    Total conc, molal
K+                         1.2891E-04    0    Total conc, molal
Mg++                       8.2699E-05    0    Total conc, molal
H+                        -7.4100E+00   16    Log activity
HCO3-                     -3.5000E+00   21    Gas equilibrium
                                                  CO2(g)

                     1.000  CO2(g)
                  +  1.000  H2O
                        ==
                     1.000  H+
                  +  1.000  HCO3-
F-                         1.1475E-04    0    Total conc, molal
Cl-                        2.0140E-04    0    Total conc, molal
NH3(aq)                    1.4200E-04    0    Total conc, molal
    switch with NO3-
SO4--                      1.9154E-04    0    Total conc, molal
B(OH)3(aq)                 1.2388E-05    0    Total conc, molal
HPO4--                     1.2711E-06    0    Total conc, molal
Al+++                      1.4825E-06    0    Total conc, molal
Mn++                       7.2809E-18    0    Total conc, molal
Fe++                       1.0000E-18    0    Total conc, molal
CrO4--                     3.4485E-07    0    Total conc, molal
Cu++                       1.0500E-14    0    Total conc, molal
MoO4--                     1.0000E-10    0    Total conc, molal
Cs+                        1.0000E-10    0    Total conc, molal
Li+                        1.0000E-10    0    Total conc, molal
Ni++                       1.0000E-10    0    Total conc, molal
La+++                      1.0000E-14    0    Total conc, molal
Nd+++                      1.0000E-14    0    Total conc, molal
Sm+++                      1.0000E-14    0    Total conc, molal
Ce+++                      1.0000E-24    0    Total conc, molal
Pu++++                     1.0000E-14    0    Total conc, molal
Gd+++                      1.0000E-14    0    Total conc, molal
UO2++                      1.0000E-14    0    Total conc, molal
Sr++                       1.0000E-10    0    Total conc, molal
Ba++                       1.0000E-10    0    Total conc, molal
Ti(OH)4(aq)                1.0000E-10    0    Total conc, molal
Zn++                       1.0000E-03    0    Total conc, molal
Zr(OH)2++                  1.0000E-20    0    Total conc, molal
Pb++                       1.0000E-10    0    Total conc, molal


Electrical balance will be achieved by adjusting
  the concentration of "Cl-                     ". Any other specified
```

constraint will be overridden.

Switching NO3- into the basis set for NH3(aq)

```
   1.000  NO3-
+  1.000  H2O
+  1.000  H+
       ==
   1.000  NH3(aq)
+  2.000  O2(g)

   1.000  NH3(aq)
+  2.000  O2(g)
       ==
   1.000  H2O
+  1.000  H+
+  1.000  NO3-
```

--- Inactive Aqueous Species ---

```
HS-                          H2S(aq)
S--
```

--- Modified Input Constraints ---

Species	Csp	Jflag	Input Type/Co-species
Al+++	1.4825E-06	0	Total conc, molal
B(OH)3(aq)	1.2388E-05	0	Total conc, molal
Ba++	1.0000E-10	0	Total conc, molal
Ca++	3.2437E-04	0	Total conc, molal
Ce+++	1.0000E-24	0	Total conc, molal
Cl-	2.0140E-04	0	Total conc, molal
CrO4--	3.4485E-07	0	Total conc, molal
Cs+	1.0000E-10	0	Total conc, molal
Cu++	1.0500E-14	0	Total conc, molal
F-	1.1475E-04	0	Total conc, molal
Fe++	1.0000E-18	0	Total conc, molal
Gd+++	1.0000E-14	0	Total conc, molal
H+	-7.4100E+00	16	Log activity
HCO3-	-3.5000E+00	21	Gas equilibrium CO2(g)

```
   1.000  CO2(g)
+  1.000  H2O
       ==
   1.000  H+
+  1.000  HCO3-
```

HCO3-	-3.5000E+00	21	Gas equilibrium
HPO4--	1.2711E-06	0	Total conc, molal
K+	1.2891E-04	0	Total conc, molal
La+++	1.0000E-14	0	Total conc, molal
Li+	1.0000E-10	0	Total conc, molal
Mg++	8.2699E-05	0	Total conc, molal
Mn++	7.2809E-18	0	Total conc, molal
MoO4--	1.0000E-10	0	Total conc, molal
NO3-	1.4200E-04	0	Total conc, molal
Na+	1.9922E-03	0	Total conc, molal
Nd+++	1.0000E-14	0	Total conc, molal

```
Ni++                        1.0000E-10    0    Total conc, molal
Pb++                        1.0000E-10    0    Total conc, molal
Pu++++                      1.0000E-14    0    Total conc, molal
SO4--                       1.9154E-04    0    Total conc, molal
SiO2(aq)                    1.0169E-03    0    Total conc, molal
Sm+++                       1.0000E-14    0    Total conc, molal
Sr++                        1.0000E-10    0    Total conc, molal
Ti(OH)4(aq)                 1.0000E-10    0    Total conc, molal
UO2++                       1.0000E-14    0    Total conc, molal
Zn++                        1.0000E-03    0    Total conc, molal
Zr(OH)2++                   1.0000E-20    0    Total conc, molal
HS-                         0.0000E+00   30    Eliminated species
S2--                        0.0000E+00   30    Eliminated species
S2O3--                      0.0000E+00   30    Eliminated species
CN-                         0.0000E+00   30    Eliminated species
ClO-                        0.0000E+00   30    Eliminated species
ClO2-                       0.0000E+00   30    Eliminated species
ClO3-                       0.0000E+00   30    Eliminated species
ClO4-                       0.0000E+00   30    Eliminated species
Cr++                        0.0000E+00   30    Eliminated species
Cr+++                       0.0000E+00   30    Eliminated species
CrO4---                     0.0000E+00   30    Eliminated species
Cu+                         0.0000E+00   30    Eliminated species
Fe+++                       0.0000E+00   30    Eliminated species
H2(aq)                      0.0000E+00   27    Dependent species
HSO5-                       0.0000E+00   30    Eliminated species
Mn+++                       0.0000E+00   30    Eliminated species
MnO4--                      0.0000E+00   30    Eliminated species
N2(aq)                      0.0000E+00   30    Eliminated species
N3-                         0.0000E+00   30    Eliminated species
NO2-                        0.0000E+00   30    Eliminated species
NH3(aq)                     0.0000E+00   30    Eliminated species
O2(aq)                      0.0000E+00   27    Dependent species
Pb++++                      0.0000E+00   30    Eliminated species
Pu+++                       0.0000E+00   30    Eliminated species
PuO2+                       0.0000E+00   30    Eliminated species
PuO2++                      0.0000E+00   30    Eliminated species
S2O4--                      0.0000E+00   30    Eliminated species
S2O6--                      0.0000E+00   30    Eliminated species
S2O8--                      0.0000E+00   30    Eliminated species
S3--                        0.0000E+00   30    Eliminated species
S3O6--                      0.0000E+00   30    Eliminated species
S4--                        0.0000E+00   30    Eliminated species
S4O6--                      0.0000E+00   30    Eliminated species
S5--                        0.0000E+00   30    Eliminated species
S5O6--                      0.0000E+00   30    Eliminated species
SCN-                        0.0000E+00   30    Eliminated species
SO3--                       0.0000E+00   30    Eliminated species
Sm++                        0.0000E+00   30    Eliminated species
U+++                        0.0000E+00   30    Eliminated species
U++++                       0.0000E+00   30    Eliminated species
UO2+                        0.0000E+00   30    Eliminated species
Zr++++                      0.0000E+00   30    Eliminated species



* note - (eq3nr/arrset) Optimization ended
      outside requested limits.


iter=   0
       del(                 )=  0.00000E+00, delfnc=  0.00000E+00
```

```
      beta(conc    Cl-     )=  6.70244E-01, betfnc=  0.00000E+00
        bbig=  6.70244E-01, ubbig= Cl-
        bneg= -2.99829E-09, ubneg= B(OH)3(aq)
        bgamx=  1.70897E-06, ubgamx= (PuO2)3(CO3)6(6-)
        bsigmm= -1.21882E-06
        bxi= -3.31163E-06
        btfcnr=  0.00000E+00

iter=   1
       del(conc    Cl-     )=  8.45151E+00, delfnc=  0.00000E+00
      Relaxation factor=  0.11832
      Relaxed del(conc    Cl-     )=  1.00000E+00
      beta(conc    Cl-     )=  2.75536E-01, betfnc=  5.88902E-01
        bbig=  2.75536E-01, ubbig= Cl-
        bneg= -7.40530E-02, ubneg= Pu++++
        bgamx= -9.86766E-02, ubgamx= (PuO2)3(CO3)6(6-)
        bsigmm=  3.23508E-01
        bxi=  2.02072E-01
        btfcnr=  5.88851E-01

iter=   2
       del(conc    Cl-     )=  4.54227E-01, delfnc=  9.46255E-01
      beta(conc    Cl-     )= -1.41436E-01, betfnc=  4.86686E-01
        bbig=  2.56626E-02, ubbig= Pb++
        bneg= -1.41436E-01, ubneg= Cl-
        bgamx= -1.74814E-01, ubgamx= (PuO2)3(CO3)6(6-)
        bsigmm=  5.00968E-01
        bxi=  3.44060E-01
        btfcnr=  4.87004E-01

iter=   3
       del(conc    Cl-     )= -1.22126E-01, delfnc=  7.31134E-01
      beta(conc    Pu++++  )=  5.94521E-02, betfnc=  5.79655E-01
        bbig=  5.94521E-02, ubbig= Pu++++
        bneg= -2.06619E-02, ubneg= Cl-
        bgamx=  6.23148E-02, ubgamx= (PuO2)3(CO3)6(6-)
        bsigmm= -1.26102E-01
        bxi= -9.64597E-02
        btfcnr=  8.53713E-01

iter=   4
       del(conc    Pu++++  )= -2.84587E-02, delfnc=  7.66973E-01
      beta(conc    Pu++++  )=  9.05897E-03, betfnc=  8.47626E-01
        bbig=  9.05897E-03, ubbig= Pu++++
        bneg= -4.91762E-04, ubneg= Cl-
        bgamx=  9.47659E-03, ubgamx= (PuO2)3(CO3)6(6-)
        bsigmm= -2.08207E-02
        bxi= -1.56668E-02
        btfcnr=  9.72254E-01

iter=   5
       del(conc    Pu++++  )= -4.52437E-03, delfnc=  8.41019E-01
      beta(conc    Pu++++  )=  2.32716E-04, betfnc=  9.74311E-01
        bbig=  2.32716E-04, ubbig= Pu++++
        bneg= -4.28888E-07, ubneg= B(OH)3(aq)
        bgamx=  2.46691E-04, ubgamx= (PuO2)3(CO3)6(6-)
        bsigmm= -5.18108E-04
        bxi= -4.12309E-04
        btfcnr=  9.95493E-01

iter=   6
       del(conc    Pu++++  )= -1.17338E-04, delfnc=  9.74065E-01
      beta(conc    Pu++++  )=  5.57098E-07, betfnc=  9.97606E-01
```

```
        bbig=  5.57098E-07, ubbig= Pu++++
        bneg= -1.18900E-09, ubneg= B(OH)3(aq)
        bgamx=  6.81237E-07, ubgamx= (PuO2)3(CO3)6(6-)
        bsigmm= -5.14827E-07
        bxi= -1.13892E-06
        btfcnr=  9.99883E-01

iter=   7
       del(conc    Pu++++  )= -2.86822E-07, delfnc=  9.97556E-01
      beta(conc    Pu++++  )=  1.17499E-09, betfnc=  9.97891E-01
        bbig=  1.17499E-09, ubbig= Pu++++
        bneg= -2.64011E-12, ubneg= B(OH)3(aq)
        bgamx=  1.51054E-09, ubgamx= (PuO2)3(CO3)6(6-)
        bsigmm= -5.91561E-10
        bxi= -2.52538E-09
        btfcnr=  9.99999E-01


Hybrid Newton-Raphson iteration converged in   7 steps.


                    --- Summary of the Aqueous Solution ---


          --- Elemental Composition of the Aqueous Solution ---
```

Element	mg/L	mg/kg	Moles/kg
O	0.88817E+06	0.88817E+06	0.5551270117E+02
Al	0.40000E-01	0.40000E-01	0.1482500000E-05
B	0.13393	0.13393	0.1238800000E-04
Ba	0.13733E-04	0.13733E-04	0.1000000000E-09
Ca	13.000	13.000	0.3243700000E-03
Ce	0.14012E-18	0.14012E-18	0.1000000000E-23
Cl	146.29	146.29	0.4126261991E-02
Cr	0.17931E-01	0.17931E-01	0.3448500000E-06
Cs	0.13291E-04	0.13291E-04	0.1000000000E-09
Cu	0.66723E-09	0.66723E-09	0.1050000000E-13
F	2.1801	2.1801	0.1147500000E-03
Fe	0.55847E-13	0.55847E-13	0.1000000000E-17
Gd	0.15725E-08	0.15725E-08	0.1000000000E-13
H	0.11190E+06	0.11190E+06	0.1110170720E+03
C	1.7994	1.7994	0.1498088523E-03
P	0.39371E-01	0.39371E-01	0.1271100001E-05
K	5.0402	5.0402	0.1289100000E-03
La	0.13891E-08	0.13891E-08	0.1000000000E-13
Li	0.69410E-06	0.69410E-06	0.1000000000E-09
Mg	2.0100	2.0100	0.8269900000E-04
Mn	0.40000E-12	0.40000E-12	0.7280900000E-17
Mo	0.95940E-05	0.95940E-05	0.1000000000E-09
N	1.9890	1.9890	0.1420000000E-03
Na	45.800	45.800	0.1992200000E-02
Nd	0.14424E-08	0.14424E-08	0.1000000000E-13
Ni	0.58690E-05	0.58690E-05	0.1000000000E-09
Pb	0.20720E-04	0.20720E-04	0.1000000000E-09
Pu	0.24400E-08	0.24400E-08	0.1000000001E-13
S	6.1419	6.1419	0.1915400000E-03
Si	28.560	28.560	0.1016900000E-02
Sm	0.15036E-08	0.15036E-08	0.1000000000E-13
Sr	0.87620E-05	0.87620E-05	0.1000000000E-09
Ti	0.47880E-05	0.47880E-05	0.1000000000E-09

U	0.23803E-08	0.23803E-08	0.1000000000E-13
Zn	65.390	65.390	0.1000000000E-02
Zr	0.91224E-15	0.91224E-15	0.1000000000E-19

--- Elemental Composition as Strict Basis Species ---

Species	mg/L	mg/kg	Moles/kg
H2O	0.10001E+07	0.10001E+07	0.5551270117E+02
Al+++	0.40000E-01	0.40000E-01	0.1482500000E-05
B(OH)3(aq)	0.76599	0.76599	0.1238800000E-04
Ba++	0.13733E-04	0.13733E-04	0.1000000000E-09
Ca++	13.000	13.000	0.3243700000E-03
Ce+++	0.14012E-18	0.14012E-18	0.1000000000E-23
Cl-	146.29	146.29	0.4126261991E-02
CrO4--	0.40000E-01	0.40000E-01	0.3448500000E-06
Cs+	0.13291E-04	0.13291E-04	0.1000000000E-09
Cu++	0.66723E-09	0.66723E-09	0.1050000000E-13
F-	2.1801	2.1801	0.1147500000E-03
Fe++	0.55847E-13	0.55847E-13	0.1000000000E-17
Gd+++	0.15725E-08	0.15725E-08	0.1000000000E-13
H+	0.11190E+06	0.11190E+06	0.1110170720E+03
HCO3-	9.1409	9.1409	0.1498088523E-03
HPO4--	0.12200	0.12200	0.1271100001E-05
K+	5.0402	5.0402	0.1289100000E-03
La+++	0.13891E-08	0.13891E-08	0.1000000000E-13
Li+	0.69410E-06	0.69410E-06	0.1000000000E-09
Mg++	2.0100	2.0100	0.8269900000E-04
Mn++	0.40000E-12	0.40000E-12	0.7280900000E-17
MoO4--	0.15994E-04	0.15994E-04	0.1000000000E-09
NH3(aq)	2.4183	2.4183	0.1420000000E-03
Na+	45.800	45.800	0.1992200000E-02
Nd+++	0.14424E-08	0.14424E-08	0.1000000000E-13
Ni++	0.58690E-05	0.58690E-05	0.1000000000E-09
Pb++	0.20720E-04	0.20720E-04	0.1000000000E-09
Pu++++	0.24400E-08	0.24400E-08	0.1000000001E-13
SO4--	18.400	18.400	0.1915400000E-03
SiO2(aq)	61.100	61.100	0.1016900000E-02
Sm+++	0.15036E-08	0.15036E-08	0.1000000000E-13
Sr++	0.87620E-05	0.87620E-05	0.1000000000E-09
Ti(OH)4(aq)	0.11591E-04	0.11591E-04	0.1000000000E-09
UO2++	0.27003E-08	0.27003E-08	0.1000000000E-13
Zn++	65.390	65.390	0.1000000000E-02
Zr(OH)2++	0.12524E-14	0.12524E-14	0.1000000000E-19

--- Equivalent Composition of the Aqueous Solution ---

--- Original Basis ---

Species	Moles/kg H2O
H2O	0.5551270117E+02
Al+++	0.1482500000E-05
B(OH)3(aq)	0.1238800000E-04
Ba++	0.1000000000E-09
Ca++	0.3243700000E-03
Ce+++	0.1000000000E-23
Cl-	0.4126261991E-02
CrO4--	0.3448500000E-06
Cs+	0.1000000000E-09

Cu++	0.1050000000E-13
F-	0.1147500000E-03
Fe++	0.1000000000E-17
Gd+++	0.1000000000E-13
H+	0.1110170720E+03
HCO3-	0.1498088523E-03
HPO4--	0.1271100001E-05
K+	0.1289100000E-03
La+++	0.1000000000E-13
Li+	0.1000000000E-09
Mg++	0.8269900000E-04
Mn++	0.7280900000E-17
MoO4--	0.1000000000E-09
NH3(aq)	0.1420000000E-03
Na+	0.1992200000E-02
Nd+++	0.1000000000E-13
Ni++	0.1000000000E-09
Pb++	0.1000000000E-09
Pu++++	0.1000000001E-13
SO4--	0.1915400000E-03
SiO2(aq)	0.1016900000E-02
Sm+++	0.1000000000E-13
Sr++	0.1000000000E-09
Ti(OH)4(aq)	0.1000000000E-09
UO2++	0.1000000000E-13
Zn++	0.1000000000E-02
Zr(OH)2++	0.1000000000E-19

--- Current Basis (cte) ---

Species	Moles/kg H2O
H2O	0.5551270117E+02
Al+++	0.1482500000E-05
B(OH)3(aq)	0.1238800000E-04
Ba++	0.1000000000E-09
Ca++	0.3243700000E-03
Ce+++	0.1000000000E-23
Cl-	0.4126261991E-02
CrO4--	0.3448500000E-06
Cs+	0.1000000000E-09
Cu++	0.1050000000E-13
F-	0.1147500000E-03
Fe++	0.1000000000E-17
Gd+++	0.1000000000E-13
H+	0.1110170720E+03
HCO3-	0.1498088523E-03
HPO4--	0.1271100001E-05
K+	0.1289100000E-03
La+++	0.1000000000E-13
Li+	0.1000000000E-09
Mg++	0.8269900000E-04
Mn++	0.7280900000E-17
MoO4--	0.1000000000E-09
NO3-	0.1420000000E-03
Na+	0.1992200000E-02
Nd+++	0.1000000000E-13
Ni++	0.1000000000E-09
Pb++	0.1000000000E-09
Pu++++	0.1000000001E-13
SO4--	0.1915400000E-03
SiO2(aq)	0.1016900000E-02

Sm+++	0.1000000000E-13
Sr++	0.1000000000E-09
Ti(OH)4(aq)	0.1000000000E-09
UO2++	0.1000000000E-13
Zn++	0.1000000000E-02
Zr(OH)2++	0.1000000000E-19

Single ion activities and activity coefficients are here defined
with respect to the modified NBS pH scale

	pH	Eh	pe
modified NBS pH scale	7.4100	0.7807	1.3197E+01
rational pH scale	7.3760	0.7827	1.3231E+01

pHCl = 9.8317

Activity of water = 0.99983
Log activity of water = -0.00007

True osmotic coefficient= 0.96380
Stoichiometric osmotic coefficient= 0.96073

Sum of true molalities= 0.0095304258149
Sum of stoichiometric molalities= 0.0095609182262

True ionic strength= 0.0064415542826
Stoichiometric ionic strength= 0.0065395849805

--- Electrical Balance Totals ---

	equiv/kg H2O
Sigma(mz) cations =	0.4887398190E-02
Sigma(mz) anions =	-0.4887398190E-02
Total charge =	0.9774796380E-02
Mean charge =	0.4887398190E-02
Charge imbalance =	0.6676703325E-14

Total charge = sigma(mz) cations + abs (sigma(mz) anions)
Mean charge = 1/2 total charge

The electrical imbalance is

0.683E-10 per cent of the total charge
0.137E-09 per cent of the mean charge
0.137E-09 per cent of sigma(mz) cations
0.137E-09 per cent of abs (sigma(mz) anions)

--- Electrical Balancing on Cl- ---

	mg/L	mg/kg	Moles/kg
input	7.1402	7.1402	0.2014000000E-03
final	146.29	146.29	0.4126261991E-02

```
adj          139.15         139.15        0.3924861991E-02

                --- Activity Ratios of Ions -----

      Log ( act(Al+++                  ) / act(H+)xx 3 ) =      9.5588
      Log ( act(B(OH)3(aq)             )               ) =     -4.9140
      Log ( act(Ba++                   ) / act(H+)xx 2 ) =      4.6722
      Log ( act(Ca++                   ) / act(H+)xx 2 ) =     11.1808
      Log ( act(Ce+++                  ) / act(H+)xx 3 ) =     -2.9445
      Log ( act(Cl-                    ) x act(H+)xx 1 ) =     -9.8317
      Log ( act(CrO4--                 ) x act(H+)xx 2 ) =    -21.4674
      Log ( act(Cs+                    ) / act(H+)xx 1 ) =     -2.6305
      Log ( act(Cu++                   ) / act(H+)xx 2 ) =      0.2138
      Log ( act(F-                     ) x act(H+)xx 1 ) =    -11.3920
      Log ( act(Fe++                   ) / act(H+)xx 2 ) =    -13.6363
      Log ( act(Gd+++                  ) / act(H+)xx 3 ) =      6.9095
      Log ( act(HCO3-                  ) x act(H+)xx 1 ) =    -11.3137
      Log ( act(HPO4--                 ) x act(H+)xx 2 ) =    -21.3707
      Log ( act(K+                     ) / act(H+)xx 1 ) =      3.4809
      Log ( act(La+++                  ) / act(H+)xx 3 ) =      7.4156
      Log ( act(Li+                    ) / act(H+)xx 1 ) =     -2.6267
      Log ( act(Mg++                   ) / act(H+)xx 2 ) =     10.5870
      Log ( act(Mn++                   ) / act(H+)xx 2 ) =     -2.4775
      Log ( act(MoO4--                 ) x act(H+)xx 2 ) =    -24.9642
      Log ( act(NH3(aq)                )               ) =    -66.2429
      Log ( act(Na+                    ) / act(H+)xx 1 ) =      4.6706
      Log ( act(Nd+++                  ) / act(H+)xx 3 ) =      7.1200
      Log ( act(Ni++                   ) / act(H+)xx 2 ) =      4.6706
      Log ( act(Pb++                   ) / act(H+)xx 2 ) =      4.6370
      Log ( act(Pu++++                 ) / act(H+)xx 4 ) =     -8.8960
      Log ( act(SO4--                  ) x act(H+)xx 2 ) =    -18.7018
      Log ( act(SiO2(aq)               )               ) =     -2.9942
      Log ( act(Sm+++                  ) / act(H+)xx 3 ) =      6.9492
      Log ( act(Sr++                   ) / act(H+)xx 2 ) =      4.6638
      Log ( act(Ti(OH)4(aq)            )               ) =    -10.0000
      Log ( act(UO2++                  ) / act(H+)xx 2 ) =     -3.7558
      Log ( act(Zn++                   ) / act(H+)xx 2 ) =     11.6629
      Log ( act(Zr(OH)2++              ) / act(H+)xx 2 ) =    -18.7718
      Log ( act(S2--                   ) x act(H+)xx 2 ) =   *********
      Log ( act(S2O3--                 ) x act(H+)xx 2 ) =   -163.7907
      Log ( act(CN-                    ) x act(H+)xx 1 ) =   -131.8189
      Log ( act(ClO-                   ) x act(H+)xx 1 ) =    -26.7212
      Log ( act(ClO2-                  ) x act(H+)xx 1 ) =    -36.5158
      Log ( act(ClO3-                  ) x act(H+)xx 1 ) =    -32.4567
      Log ( act(ClO4-                  ) x act(H+)xx 1 ) =    -32.6930
      Log ( act(Cr++                   ) / act(H+)xx 2 ) =    -39.5285
      Log ( act(Cr+++                  ) / act(H+)xx 3 ) =    -10.4010
      Log ( act(CrO4---                ) x act(H+)xx 3 ) =    -40.3444
      Log ( act(Cu+                    ) / act(H+)xx 1 ) =    -17.6626
      Log ( act(Fe+++                  ) / act(H+)xx 3 ) =     -6.0403
      Log ( act(H2(aq)                 )               ) =    -44.3187
      Log ( act(HSO5-                  ) x act(H+)xx 1 ) =    -37.7764
      Log ( act(Mn+++                  ) / act(H+)xx 3 ) =     -7.4526
      Log ( act(MnO4--                 ) x act(H+)xx 2 ) =    -38.4684
      Log ( act(N2(aq)                 )               ) =    -21.3887
      Log ( act(N3-                    ) x act(H+)xx 1 ) =   -108.9124
      Log ( act(NO2-                   ) x act(H+)xx 1 ) =    -24.7417
      Log ( act(NO3-                   ) x act(H+)xx 1 ) =    -11.2948
      Log ( act(O2(aq)                 )               ) =     -3.5761
      Log ( act(Pb++++                 ) / act(H+)xx 4 ) =    -11.3313
      Log ( act(Pu+++                  ) / act(H+)xx 3 ) =    -12.5091
      Log ( act(PuO2+                  ) / act(H+)xx 1 ) =     -6.8533
```

```
Log ( act(PuO2++                  ) / act(H+)xx 2 ) =     -2.5569
Log ( act(S2O4--                  ) x act(H+)xx 2 ) =   -150.4957
Log ( act(S2O6--                  ) x act(H+)xx 2 ) =    -87.0354
Log ( act(S2O8--                  ) x act(H+)xx 2 ) =    -61.6915
Log ( act(S3--                    ) x act(H+)xx 2 ) =   *********
Log ( act(S3O6--                  ) x act(H+)xx 2 ) =   -195.0578
Log ( act(S4--                    ) x act(H+)xx 2 ) =   *********
Log ( act(S4O6--                  ) x act(H+)xx 2 ) =   -287.1740
Log ( act(S5--                    ) x act(H+)xx 2 ) =   *********
Log ( act(S5O6--                  ) x act(H+)xx 2 ) =   -408.1708
Log ( act(SCN-                    ) x act(H+)xx 1 ) =   *********
Log ( act(SO3--                   ) x act(H+)xx 2 ) =    -63.5381
Log ( act(Sm++                    ) / act(H+)xx 2 ) =    -40.1191
Log ( act(U+++                    ) / act(H+)xx 3 ) =    -65.8765
Log ( act(U++++                   ) / act(H+)xx 4 ) =    -35.9167
Log ( act(UO2+                    ) / act(H+)xx 1 ) =    -22.8787
Log ( act(Zr++++                  ) / act(H+)xx 4 ) =    -18.5331
```

--- Distribution of Aqueous Species ---

(Species with concentrations .lt. 1.e-12 are not listed)

Species	Molality	Log molality	Log gamma	Log activity
Cl-	4.1201E-03	-2.3851	-0.0366	-2.4217
Na+	1.9887E-03	-2.7014	-0.0380	-2.7394
SiO2(aq)	1.0135E-03	-2.9942	0.0000	-2.9942
Zn++	9.6968E-04	-3.0134	-0.1437	-3.1571
Ca++	3.1953E-04	-3.4955	-0.1437	-3.6392
O2(aq)	2.6500E-04	-3.5768	0.0007	-3.5761
SO4--	1.8374E-04	-3.7358	-0.1460	-3.8818
NO3-	1.4184E-04	-3.8482	-0.0366	-3.8848
HCO3-	1.3554E-04	-3.8679	-0.0357	-3.9037
K+	1.2877E-04	-3.8902	-0.0389	-3.9291
F-	1.1327E-04	-3.9459	-0.0362	-3.9820
Mg++	8.0281E-05	-4.0954	-0.1376	-4.2330
ZnOH+	2.1420E-05	-4.6692	-0.0380	-4.7072
B(OH)3(aq)	1.2190E-05	-4.9140	0.0000	-4.9140
CO2(aq)	1.0726E-05	-4.9696	0.0007	-4.9689
ZnCl+	4.5474E-06	-5.3422	-0.0380	-5.3802
CaSO4(aq)	3.8914E-06	-5.4099	0.0000	-5.4099
HSiO3-	3.1549E-06	-5.5010	-0.0357	-5.5367
ZnHCO3+	2.4958E-06	-5.6028	-0.0380	-5.6408
MgSO4(aq)	1.9814E-06	-5.7030	0.0000	-5.7030
NaSO4-	1.7161E-06	-5.7655	-0.0357	-5.8012
AlO2-	1.3217E-06	-5.8789	-0.0357	-5.9146
NaCl(aq)	1.1531E-06	-5.9381	0.0000	-5.9381
ZnF+	1.1190E-06	-5.9512	-0.0380	-5.9892
HPO4--	3.9377E-07	-6.4048	-0.1460	-6.5507
ZnHPO4(aq)	3.5658E-07	-6.4478	0.0000	-6.4478
CaHCO3+	3.4818E-07	-6.4582	-0.0380	-6.4962
NaHCO3(aq)	3.2435E-07	-6.4890	0.0000	-6.4890
CrO4--	3.1516E-07	-6.5015	-0.1460	-6.6474
OH-	2.8249E-07	-6.5490	-0.0362	-6.5852
ZnPO4-	2.7295E-07	-6.5639	-0.0357	-6.5996
NaHSiO3(aq)	2.3569E-07	-6.6277	0.0000	-6.6277
CO3--	2.0977E-07	-6.6783	-0.1442	-6.8225
BO2-	1.9360E-07	-6.7131	-0.0357	-6.7488
CaCl+	1.9118E-07	-6.7186	-0.0380	-6.7565
H2PO4-	1.9072E-07	-6.7196	-0.0357	-6.7553
MgCl+	1.7718E-07	-6.7516	-0.0380	-6.7896
CaNO3+	1.6365E-07	-6.7861	-0.0380	-6.8241

MgF+	1.4976E-07	-6.8246	-0.0380	-6.8626
HAlO2(aq)	1.3360E-07	-6.8742	0.0000	-6.8742
KSO4-	1.2719E-07	-6.8955	-0.0357	-6.9313
CaF+	1.2544E-07	-6.9016	-0.0380	-6.9396
MgHCO3+	8.6511E-08	-7.0629	-0.0380	-7.1009
ZnSO4(aq)	8.6202E-08	-7.0645	0.0000	-7.0645
CaCO3(aq)	7.3350E-08	-7.1346	0.0000	-7.1346
H+	4.2076E-08	-7.3760	-0.0340	-7.4100
CaHPO4(aq)	3.5485E-08	-7.4500	0.0000	-7.4500
HCrO4-	2.9695E-08	-7.5273	-0.0357	-7.5630
NaF(aq)	1.9096E-08	-7.7191	0.0000	-7.7191
ZnCl2(aq)	1.7789E-08	-7.7499	0.0000	-7.7499
KCl(aq)	1.4275E-08	-7.8454	0.0000	-7.8454
MgHPO4(aq)	1.3376E-08	-7.8737	0.0000	-7.8737
AlF3(aq)	1.2097E-08	-7.9173	0.0000	-7.9173
AlF2+	1.0063E-08	-7.9973	-0.0380	-8.0353
MgCO3(aq)	8.3844E-09	-8.0765	0.0000	-8.0765
HF(aq)	5.9710E-09	-8.2239	0.0000	-8.2239
NaHPO4-	4.6300E-09	-8.3344	-0.0357	-8.3701
Al(OH)2+	3.9102E-09	-8.4078	-0.0380	-8.4458
CaB(OH)4+	2.9683E-09	-8.5275	-0.0380	-8.5655
CaPO4-	2.4773E-09	-8.6060	-0.0357	-8.6418
NaCO3-	9.7328E-10	-9.0118	-0.0357	-9.0475
CaOH+	9.0928E-10	-9.0413	-0.0380	-9.0793
MgB(OH)4+	9.0006E-10	-9.0457	-0.0380	-9.0837
MgPO4-	8.4966E-10	-9.0708	-0.0357	-9.1065
CaCl2(aq)	7.4771E-10	-9.1263	0.0000	-9.1263
NaB(OH)4(aq)	6.0605E-10	-9.2175	0.0000	-9.2175
HSO4-	5.2851E-10	-9.2769	-0.0357	-9.3127
NaAlO2(aq)	4.0058E-10	-9.3973	0.0000	-9.3973
AlF4-	3.4385E-10	-9.4636	-0.0357	-9.4994
AlF++	3.1301E-10	-9.5044	-0.1488	-9.6532
KHPO4-	2.1672E-10	-9.6641	-0.0357	-9.6998
Zn(OH)3-	1.8685E-10	-9.7285	-0.0357	-9.7642
Ti(OH)4(aq)	1.0000E-10	-10.0000	0.0000	-10.0000
MoO4--	1.0000E-10	-10.0000	-0.1442	-10.1442
Li+	9.9912E-11	-10.0004	-0.0363	-10.0367
Ba++	9.9816E-11	-10.0008	-0.1470	-10.1478
Cs+	9.9749E-11	-10.0011	-0.0394	-10.0405
Ni++	9.8702E-11	-10.0057	-0.1437	-10.1494
Sr++	9.7925E-11	-10.0091	-0.1470	-10.1562
Pb++	9.2408E-11	-10.0343	-0.1488	-10.1830
AlOH++	8.5198E-11	-10.0696	-0.1488	-10.2183
NaOH(aq)	7.5112E-11	-10.1243	0.0000	-10.1243
ZnCl3-	3.9233E-11	-10.4064	-0.0357	-10.4421
HCl(aq)	3.1498E-11	-10.5017	0.0000	-10.5017
PO3F--	2.5268E-11	-10.5974	-0.1460	-10.7434
KOH(aq)	1.0491E-11	-10.9792	0.0000	-10.9792
H2SiO4--	1.0272E-11	-10.9883	-0.1460	-11.1343
PbCl+	7.4238E-12	-11.1294	-0.0380	-11.1674
PO4---	7.3780E-12	-11.1321	-0.3305	-11.4625
SrSO4(aq)	1.8284E-12	-11.7379	0.0000	-11.7379
AlHPO4+	1.6448E-12	-11.7839	-0.0380	-11.8219
ZnCl4--	1.4537E-12	-11.8375	-0.1460	-11.9835
NiSO4(aq)	1.2431E-12	-11.9055	0.0000	-11.9055
H3PO4(aq)	1.0101E-12	-11.9956	0.0000	-11.9956

--- Major Aqueous Species Contributing to Mass Balances ---

Aqueous species accounting for 99% or more of Al+++

Species	Factor	Molality	Per Cent
AlO2-	1.00	1.3217E-06	89.15
HAlO2(aq)	1.00	1.3360E-07	9.01
AlF3(aq)	1.00	1.2097E-08	8.160E-01
AlF2+	1.00	1.0063E-08	6.788E-01
Total		1.4825E-06	99.66

Aqueous species accounting for 99% or more of B(OH)3(aq)

Species	Factor	Molality	Per Cent
B(OH)3(aq)	1.00	1.2190E-05	98.40
BO2-	1.00	1.9360E-07	1.56
Total		1.2388E-05	99.96

Aqueous species accounting for 99% or more of Ba++

Species	Factor	Molality	Per Cent
Ba++	1.00	9.9816E-11	99.82
Total		1.0000E-10	99.82

Aqueous species accounting for 99% or more of Ca++

Species	Factor	Molality	Per Cent
Ca++	1.00	3.1953E-04	98.51
CaSO4(aq)	1.00	3.8914E-06	1.20
Total		3.2437E-04	99.71

Aqueous species accounting for 99% or more of Ce+++

Species	Factor	Molality	Per Cent
Ce(OH)2++	1.00	3.8411E-25	38.41
CeCO3+	1.00	3.4608E-25	34.61
Ce+++	1.00	1.3400E-25	13.40
CePO4(aq)	1.00	4.8398E-26	4.84
CeF++	1.00	3.9099E-26	3.91
CeSO4+	1.00	2.4081E-26	2.41
CeOH++	1.00	1.0576E-26	1.06
Ce(CO3)2-	1.00	5.1599E-27	5.160E-01
Total		1.0000E-24	99.15

Aqueous species accounting for 99% or more of Cl-

Species	Factor	Molality	Per Cent
Cl-	1.00	4.1201E-03	99.85
Total		4.1263E-03	99.85

Aqueous species accounting for 99% or more of CrO4--

Species	Factor	Molality	Per Cent
CrO4--	1.00	3.1516E-07	91.39
HCrO4-	1.00	2.9695E-08	8.61
Total		3.4485E-07	100.00

Aqueous species accounting for 99% or more of Cs+

Species	Factor	Molality	Per Cent
Cs+	1.00	9.9749E-11	99.75
Total		1.0000E-10	99.75

Aqueous species accounting for 99% or more of Cu++

Species	Factor	Molality	Per Cent
CuOH+	1.00	3.5827E-15	34.12
Cu++	1.00	3.4477E-15	32.84
CuCO3(aq)	1.00	3.3622E-15	32.02
CuPO4-	1.00	6.5613E-17	6.249E-01
Total		1.0500E-14	99.60

Aqueous species accounting for 99% or more of F-

Species	Factor	Molality	Per Cent
F-	1.00	1.1327E-04	98.71
ZnF+	1.00	1.1190E-06	9.752E-01
Total		1.1475E-04	99.69

Aqueous species accounting for 99% or more of Fe++

Species	Factor	Molality	Per Cent
Fe(OH)3(aq)	1.00	9.1090E-19	91.09
Fe(OH)2+	1.00	8.2706E-20	8.27
Total		1.0000E-18	99.36

Aqueous species accounting for 99% or more of Gd+++

Species	Factor	Molality	Per Cent
GdCO3+	1.00	4.9340E-15	49.34
GdPO4(aq)	1.00	2.4482E-15	24.48
Gd+++	1.00	1.0208E-15	10.21
GdF++	1.00	8.8344E-16	8.83
GdSO4+	1.00	1.7207E-16	1.72
GdOH++	1.00	1.6918E-16	1.69
Gd(CO3)2-	1.00	1.4678E-16	1.47

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  GdF2+                          1.00    8.9819E-17    8.982E-01
  GdHPO4+                        1.00    7.3577E-17    7.358E-01
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                  1.0000E-14     99.38


Aqueous species accounting for 99% or more of HCO3-

     Species                    Factor    Molality     Per Cent

  HCO3-                          1.00    1.3554E-04     90.47
  CO2(aq)                        1.00    1.0726E-05      7.16
  ZnHCO3+                        1.00    2.4958E-06      1.67
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                  1.4981E-04     99.30


Aqueous species accounting for 99% or more of HPO4--

     Species                    Factor    Molality     Per Cent

  HPO4--                         1.00    3.9377E-07     30.98
  ZnHPO4(aq)                     1.00    3.5658E-07     28.05
  ZnPO4-                         1.00    2.7295E-07     21.47
  H2PO4-                         1.00    1.9072E-07     15.00
  CaHPO4(aq)                     1.00    3.5485E-08      2.79
  MgHPO4(aq)                     1.00    1.3376E-08      1.05
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                  1.2711E-06     99.35


Aqueous species accounting for 99% or more of K+

     Species                    Factor    Molality     Per Cent

  K+                             1.00    1.2877E-04     99.89
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                  1.2891E-04     99.89


Aqueous species accounting for 99% or more of La+++

     Species                    Factor    Molality     Per Cent

  LaCO3+                         1.00    5.0046E-15     50.05
  La+++                          1.00    3.0711E-15     30.71
  LaF++                          1.00    5.6539E-16      5.65
  LaSO4+                         1.00    5.5191E-16      5.52
  LaPO4(aq)                      1.00    4.5187E-16      4.52
  LaOH++                         1.00    1.3631E-16      1.36
  LaHPO4+                        1.00    5.9281E-17    5.928E-01
  LaHCO3++                       1.00    5.3793E-17    5.379E-01
  LaF2+                          1.00    2.8810E-17    2.881E-01
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                  1.0000E-14     99.23


Aqueous species accounting for 99% or more of Li+

     Species                    Factor    Molality     Per Cent

  Li+                            1.00    9.9912E-11     99.91
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
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  Total                                1.0000E-10     99.91


Aqueous species accounting for 99% or more of Mg++

     Species                   Factor    Molality     Per Cent

  Mg++                          1.00    8.0281E-05     97.08
  MgSO4(aq)                     1.00    1.9814E-06      2.40
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                 8.2699E-05     99.47


Aqueous species accounting for 99% or more of Mn++

     Species                   Factor    Molality     Per Cent

  Mn++                          1.00    7.0179E-18     96.39
  MnSO4(aq)                     1.00    1.4914E-19      2.05
  MnCl+                         1.00    4.1691E-20    5.726E-01
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                 7.2809E-18     99.01


Aqueous species accounting for 99% or more of MoO4--

     Species                   Factor    Molality     Per Cent

  MoO4--                        1.00    1.0000E-10    100.00
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                 1.0000E-10    100.00


Aqueous species accounting for 99% or more of NH3(aq)

     Species                   Factor    Molality     Per Cent

  NO3-                          1.00    1.4184E-04     99.88
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                 1.4200E-04     99.88


Aqueous species accounting for 99% or more of Na+

     Species                   Factor    Molality     Per Cent

  Na+                           1.00    1.9887E-03     99.83
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                 1.9922E-03     99.83


Aqueous species accounting for 99% or more of Nd+++

     Species                   Factor    Molality     Per Cent

  NdCO3+                        1.00    5.0556E-15     50.56
  NdPO4(aq)                     1.00    1.5828E-15     15.83
  Nd+++                         1.00    1.5549E-15     15.55
  NdF++                         1.00    7.1904E-16      7.19
  NdSO4+                        1.00    3.5178E-16      3.52
  NdF2+                         1.00    3.3771E-16      3.38
  NdOH++                        1.00    2.1824E-16      2.18
  Nd(CO3)2-                     1.00    7.5375E-17    7.538E-01
```

```
  NdHPO4+                        1.00    5.9885E-17    5.988E-01
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                  1.0000E-14     99.55


Aqueous species accounting for 99% or more of Ni++

     Species                    Factor    Molality     Per Cent

  Ni++                           1.00    9.8702E-11     98.70
  NiSO4(aq)                      1.00    1.2431E-12      1.24
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                  1.0000E-10     99.94


Aqueous species accounting for 99% or more of Pb++

     Species                    Factor    Molality     Per Cent

  Pb++                           1.00    9.2408E-11     92.41
  PbCl+                          1.00    7.4238E-12      7.42
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                  1.0000E-10     99.83


Aqueous species accounting for 99% or more of Pu++++

     Species                    Factor    Molality     Per Cent

  PuO2+                          1.00    5.9528E-15     59.53
  PuO2CO3(aq)                    1.00    1.2902E-15     12.90
  PuO2(OH)2(aq)                  1.00    9.8349E-16      9.83
  PuO2OH+                        1.00    4.9652E-16      4.97
  PuO2(OH)3-                     1.00    4.2017E-16      4.20
  PuO2HPO4(aq)                   1.00    4.0963E-16      4.10
  Pu(OH)4(aq)                    1.00    2.1057E-16      2.11
  PuO2CO3-                       1.00    1.0471E-16      1.05
  PuO2OH(aq)                     1.00    4.0884E-17    4.088E-01
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                  1.0000E-14     99.09


Aqueous species accounting for 99% or more of SO4--

     Species                    Factor    Molality     Per Cent

  SO4--                          1.00    1.8374E-04     95.93
  CaSO4(aq)                      1.00    3.8914E-06      2.03
  MgSO4(aq)                      1.00    1.9814E-06      1.03
  NaSO4-                         1.00    1.7161E-06    8.959E-01
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                  1.9154E-04     99.89


Aqueous species accounting for 99% or more of SiO2(aq)

     Species                    Factor    Molality     Per Cent

  SiO2(aq)                       1.00    1.0135E-03     99.67
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                  1.0169E-03     99.67
```

Aqueous species accounting for 99% or more of Sm+++

Species	Factor	Molality	Per Cent
SmCO3+	1.00	5.4071E-15	54.07
SmPO4(aq)	1.00	2.1312E-15	21.31
Sm+++	1.00	1.0493E-15	10.49
SmF++	1.00	4.8523E-16	4.85
SmF2+	1.00	2.6980E-16	2.70
SmSO4+	1.00	2.3739E-16	2.37
SmOH++	1.00	2.3341E-16	2.33
Sm(CO3)2-	1.00	8.0617E-17	8.062E-01
SmHPO4+	1.00	6.4049E-17	6.405E-01
Total		1.0000E-14	99.58

Aqueous species accounting for 99% or more of Sr++

Species	Factor	Molality	Per Cent
Sr++	1.00	9.7925E-11	97.93
SrSO4(aq)	1.00	1.8284E-12	1.83
Total		1.0000E-10	99.75

Aqueous species accounting for 99% or more of Ti(OH)4(aq)

Species	Factor	Molality	Per Cent
Ti(OH)4(aq)	1.00	1.0000E-10	100.00
Total		1.0000E-10	100.00

Aqueous species accounting for 99% or more of UO2++

Species	Factor	Molality	Per Cent
UO2(OH)2(aq)	1.00	8.5007E-15	85.01
UO2(CO3)2--	1.00	6.8569E-16	6.86
UO2(OH)3-	1.00	2.9370E-16	2.94
UO2PO4-	1.00	2.5061E-16	2.51
UO2CO3(aq)	1.00	1.8498E-16	1.85
Total		1.0000E-14	99.16

Aqueous species accounting for 99% or more of Zn++

Species	Factor	Molality	Per Cent
Zn++	1.00	9.6968E-04	96.97
ZnOH+	1.00	2.1420E-05	2.14
Total		1.0000E-03	99.11

Aqueous species accounting for 99% or more of Zr(OH)2++

Species	Factor	Molality	Per Cent

```
  Zr(OH)4(aq)                    1.00    1.0000E-20    100.00
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  Total                                  1.0000E-20    100.00


          --- Summary of Aqueous Redox Reactions ---

     Couple                  Eh, volts      pe-       Log fO2     Ah, kcal

  DEFAULT                      0.781    0.1320E+02     -0.678      18.004
  S2O3--       /SO4--          0.781    0.1320E+02     -0.678      18.004
  CN-          /NH3(aq)        0.781    0.1320E+02     -0.678      18.004
  ClO-         /Cl-            0.781    0.1320E+02     -0.678      18.004
  ClO2-        /Cl-            0.781    0.1320E+02     -0.678      18.004
  ClO3-        /Cl-            0.781    0.1320E+02     -0.678      18.004
  ClO4-        /Cl-            0.781    0.1320E+02     -0.678      18.004
  Cr++         /CrO4--         0.781    0.1320E+02     -0.678      18.004
  Cr+++        /CrO4--         0.781    0.1320E+02     -0.678      18.004
  CrO4---      /CrO4--         0.781    0.1320E+02     -0.678      18.004
  Cu+          /Cu++           0.781    0.1320E+02     -0.678      18.004
  Fe+++        /Fe++           0.781    0.1320E+02     -0.678      18.004
  H2(aq)       /H2O            0.781    0.1320E+02     -0.678      18.004
  HSO5-        /SO4--          0.781    0.1320E+02     -0.678      18.004
  Mn+++        /Mn++           0.781    0.1320E+02     -0.678      18.004
  MnO4--       /Mn++           0.781    0.1320E+02     -0.678      18.004
  N2(aq)       /NH3(aq)        0.781    0.1320E+02     -0.678      18.004
  N3-          /NH3(aq)        0.781    0.1320E+02     -0.678      18.004
  NO2-         /NH3(aq)        0.781    0.1320E+02     -0.678      18.004
  NO3-         /NH3(aq)        0.781    0.1320E+02     -0.678      18.004
  O2(aq)       /H2O            0.781    0.1320E+02     -0.678      18.004
  Pb++++       /Pb++           0.781    0.1320E+02     -0.678      18.004
  Pu+++        /Pu++++         0.781    0.1320E+02     -0.678      18.004
  PuO2+        /Pu++++         0.781    0.1320E+02     -0.678      18.004
  PuO2++       /Pu++++         0.781    0.1320E+02     -0.678      18.004
  S2O4--       /SO4--          0.781    0.1320E+02     -0.678      18.004
  S2O6--       /SO4--          0.781    0.1320E+02     -0.678      18.004
  S2O8--       /SO4--          0.781    0.1320E+02     -0.678      18.004
  S3O6--       /SO4--          0.781    0.1320E+02     -0.678      18.004
  S4O6--       /SO4--          0.781    0.1320E+02     -0.678      18.004
  S5O6--       /SO4--          0.781    0.1320E+02     -0.678      18.004
  SO3--        /SO4--          0.781    0.1320E+02     -0.678      18.004
  Sm++         /Sm+++          0.781    0.1320E+02     -0.678      18.004
  U+++         /UO2++          0.781    0.1320E+02     -0.678      18.004
  U++++        /UO2++          0.781    0.1320E+02     -0.678      18.004
  UO2+         /UO2++          0.781    0.1320E+02     -0.678      18.004


          --- Summary of Aqueous Non-equilibrium Non-redox Neactions ---

   Reaction                     Log Q/K     Aff, kcal  State

None


          --- Summary of Pure Mineral Saturation States ---

          (Minerals with affinities .lt. -10 kcal are not listed)

   Mineral                      Log Q/K     Aff, kcal  State

Alamosite                        -4.031      -5.499
```

Albite	2.482	3.387	ssatd
Albite_high	1.164	1.587	ssatd
Albite_low	2.482	3.387	ssatd
Alunite	-4.899	-6.683	
Amesite-14A	-0.863	-1.177	
Analcime	1.412	1.927	ssatd
Analcime-dehy	-4.950	-6.754	
Andalusite	0.179	0.244	satd
Anglesite	-6.212	-8.475	
Anhydrite	-3.215	-4.386	
Anorthite	-2.268	-3.094	
Aragonite	-2.126	-2.900	
BaCrO4	-6.863	-9.363	
Barite	-4.059	-5.537	
Bassanite	-3.860	-5.266	
Beidellite-Ca	7.537	10.282	ssatd
Beidellite-Cs	5.261	7.178	ssatd
Beidellite-H	6.650	9.072	ssatd
Beidellite-K	7.123	9.718	ssatd
Beidellite-Mg	7.476	10.200	ssatd
Beidellite-Na	7.177	9.792	ssatd
Berlinite	-4.603	-6.280	
Boehmite	1.995	2.721	ssatd
Boric_acid	-4.756	-6.488	
Brucite	-5.711	-7.792	
CaSO4:0.5H2O(beta)	-4.028	-5.495	
Calcite	-1.982	-2.703	
CeO2	-3.594	-4.903	
Celadonite	4.192	5.720	ssatd
Cerussite	-3.468	-4.731	
Chalcedony	0.734	1.001	ssatd
Chrysotile	-5.353	-7.303	
Clinoptilolite	15.766	21.509	ssatd
Clinoptilolite-Ca	15.751	21.489	ssatd
Clinoptilolite-Cs	-6.702	-9.144	
Clinoptilolite-K	12.377	16.885	ssatd
Clinoptilolite-Na	12.689	17.311	ssatd
Clinoptilolite-Sr	4.594	6.267	ssatd
Clinoptilolite-hy-Ca	15.752	21.491	ssatd
Clinoptilolite-hy-Cs	-6.698	-9.137	
Clinoptilolite-hy-K	12.381	16.891	ssatd
Clinoptilolite-hy-Na	12.691	17.314	ssatd
Clinoptilolite-hy-Sr	4.594	6.268	ssatd
Coesite	0.195	0.266	satd
Cordierite_hydr	-5.386	-7.347	
Corundum	0.805	1.099	ssatd
Cristobalite(alpha)	0.455	0.620	ssatd
Cristobalite(beta)	0.011	0.015	satd
Crocoite	-4.113	-5.611	
Dawsonite	-1.431	-1.952	
Diaspore	2.398	3.272	ssatd
Diopside	-5.185	-7.074	
Dolomite	-3.373	-4.602	
Dolomite-dis	-4.917	-6.709	
Dolomite-ord	-3.373	-4.602	
Epsomite	-6.153	-8.394	
Fluorapatite	5.394	7.358	ssatd
Fluorite	-1.566	-2.137	
GdOHCO3	-7.245	-9.884	
GdPO4:H2O	-2.511	-3.426	
Gibbsite	1.803	2.459	ssatd
Gismondine	6.902	9.416	ssatd
Goethite	-6.575	-8.970	

Gypsum	-3.039	-4.146	
Haiweeite	-7.255	-9.898	
Halite	-6.747	-9.204	
Heulandite	6.787	9.260	ssatd
Hexahydrite	-6.388	-8.716	
Hopeite	2.903	3.961	ssatd
Hydroxylapatite	-5.134	-7.004	
Hydrozincite	5.379	7.339	ssatd
Ice	-0.139	-0.189	satd
Illite	7.215	9.843	ssatd
Jadeite	-0.148	-0.202	satd
K-Feldspar	4.332	5.911	ssatd
Kalsilite	-0.853	-1.164	
Kaolinite	6.319	8.621	ssatd
Kyanite	0.449	0.613	ssatd
LaPO4:H2O	-1.605	-2.190	
Lansfordite	-5.568	-7.596	
Laumontite	4.655	6.350	ssatd
Lawsonite	2.096	2.860	ssatd
Magnesite	-3.020	-4.120	
Manganite	-7.288	-9.943	
Margarite	2.361	3.222	ssatd
Matlockite	-7.157	-9.764	
Maximum_Microcline	4.332	5.911	ssatd
Mesolite	6.893	9.404	ssatd
MnO2(gamma)	-4.347	-5.930	
Monohydrocalcite	-2.815	-3.841	
Montmor-Ca	6.830	9.318	ssatd
Montmor-Cs	4.621	6.304	ssatd
Montmor-K	6.486	8.849	ssatd
Montmor-Mg	6.839	9.330	ssatd
Montmor-Na	6.537	8.918	ssatd
Mordenite	3.954	5.395	ssatd
Muscovite	9.589	13.082	ssatd
Nahcolite	-6.531	-8.911	
Natrolite	0.956	1.304	ssatd
NdOHCO3	-7.034	-9.597	
NdPO4:H2O	-2.101	-2.866	
Nepheline	-2.565	-3.500	
Nesquehonite	-5.722	-7.807	
Nontronite-Ca	-6.488	-8.852	
Nontronite-K	-6.902	-9.416	
Nontronite-Mg	-6.548	-8.934	
Nontronite-Na	-6.848	-9.342	
Okenite	-5.189	-7.080	
Paragonite	6.842	9.335	ssatd
Paralaurionite	-5.398	-7.365	
PbHPO4	-5.167	-7.049	
Pentahydrite	-6.728	-9.179	
Petalite	-1.229	-1.677	
Plattnerite	-3.371	-4.598	
Plumbogummite	-1.282	-1.749	
Prehnite	-0.434	-0.592	
Pseudowollastonite	-5.813	-7.931	
PuO2	-1.532	-2.089	
PuO2(OH)2	-6.107	-8.332	
Pyrolusite	-2.829	-3.860	
Pyromorphite	-2.864	-3.907	
Pyrophyllite	6.701	9.142	ssatd
Quartz	1.005	1.371	ssatd
Rutile	-0.355	-0.484	satd
Sanidine_high	3.133	4.275	ssatd
Saponite-Ca	-0.519	-0.707	

Saponite-Cs	-2.794	-3.812	
Saponite-H	-1.405	-1.917	
Saponite-K	-0.932	-1.272	
Saponite-Mg	-0.579	-0.790	
Saponite-Na	-0.878	-1.198	
Scolecite	5.439	7.420	ssatd
Sellaite	-2.813	-3.837	
Sepiolite	-6.062	-8.270	
SiO2(am)	-0.281	-0.383	satd
Sillimanite	-0.185	-0.252	satd
SmPO4:H2O	-2.271	-3.099	
Smectite-low-Fe-Mg	-4.093	-5.584	
Smithsonite	-0.114	-0.156	satd
Spodumene	-6.054	-8.259	
Starkeyite	-7.115	-9.707	
Stilbite	11.412	15.569	ssatd
Strontianite	-6.336	-8.644	
Sylvite	-7.197	-9.818	
Talc	-1.354	-1.847	
Tridymite	0.834	1.137	ssatd
Wairakite	0.245	0.334	satd
Whitlockite	-4.974	-6.786	
Witherite	-3.645	-4.973	
Wollastonite	-5.574	-7.604	
Zincite	0.454	0.620	ssatd
Zircon	-6.347	-8.659	
Zn(OH)2(beta)	-0.271	-0.370	satd
Zn(OH)2(epsilon)	0.000	0.000	satd
Zn(OH)2(gamma)	-0.220	-0.301	satd
ZnSO4:6H2O	-5.355	-7.305	
ZnSO4:7H2O	-5.171	-7.055	
ZnSO4:H2O	-6.501	-8.869	
Zoisite	-1.247	-1.701	

--- Summary of Hypothetical Solid Solutions ---

--- Biotite ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Annite	0.0000E+00			
Phlogopite	0.0000E+00			

Mineral	Log Q/K	Aff, kcal	State
Biotite	0.000	-999.000	

--- Carbonate-Calcite ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Calcite	1.3369E-02	-1.8739	0.0000	-1.8739
Magnesite	1.2231E-03	-2.9125	0.0000	-2.9125
Rhodochrosite	3.2307E-14	-13.4907	0.0000	-13.4907

Siderite	2.2373E-25	-24.6503	0.0000	-24.6503
Smithsonite	9.8541E-01	-0.0064	0.0000	-0.0064
Strontianite	5.9098E-07	-6.2284	0.0000	-6.2284

Mineral	Log Q/K	Aff, kcal	State
Carbonate-Calcite	-0.108	-0.147	satd
Calcite	-0.108	-0.147	satd
Magnesite	-0.108	-0.147	satd
Rhodochrosite	-0.108	-0.147	satd
Siderite	-0.108	-0.147	satd
Smithsonite	-0.108	-0.147	satd
Strontianite	-0.108	-0.147	satd

--- Chlorite-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinochlore-14A	0.0000E+00			
Daphnite-14A	0.0000E+00			

Mineral	Log Q/K	Aff, kcal	State
Chlorite-ss	0.000	-999.000	

--- Clinoptilolite-hy-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinoptilolite-hy-Ca	9.9871E-01	-0.0006	0.0000	-0.0006
Clinoptilolite-hy-Cs	3.5435E-23	-22.4506	0.0000	-22.4506
Clinoptilolite-hy-K	4.2429E-04	-3.3723	0.0000	-3.3723
Clinoptilolite-hy-Na	8.6722E-04	-3.0619	0.0000	-3.0619
Clinoptilolite-hy-Sr	6.9372E-12	-11.1588	0.0000	-11.1588

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-hy-ss	15.753	21.491	ssatd
Clinoptilolite-hy-Ca	15.753	21.491	ssatd
Clinoptilolite-hy-Cs	15.753	21.491	ssatd
Clinoptilolite-hy-K	15.753	21.491	ssatd
Clinoptilolite-hy-Na	15.753	21.491	ssatd
Clinoptilolite-hy-Sr	15.753	21.491	ssatd

--- Clinoptilolite-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity

Clinoptilolite-Ca	8.0857E-01	-0.0923	-0.2270	-0.3193
Clinoptilolite-Cs	2.6200E-07	-6.5817	-16.1910	-22.7727
Clinoptilolite-K	8.5586E-02	-1.0676	-2.6263	-3.6939
Clinoptilolite-NH4	1.5152E-62	-61.8195	-152.0760	-213.8956
Clinoptilolite-Na	1.0537E-01	-0.9773	-2.4042	-3.3815
Clinoptilolite-Sr	4.8195E-04	-3.3170	-8.1598	-11.4768

Mineral	Log Q/K	Aff, kcal	State
Clinoptilolite-ss	16.070	21.925	ssatd
Clinoptilolite-Ca	16.070	21.925	ssatd
Clinoptilolite-Cs	16.070	21.925	ssatd
Clinoptilolite-K	16.070	21.925	ssatd
Clinoptilolite-NH4	16.070	21.925	ssatd
Clinoptilolite-Na	16.070	21.925	ssatd
Clinoptilolite-Sr	16.070	21.925	ssatd

--- Epidote-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Clinozoisite	0.0000E+00			
Epidote	0.0000E+00			

Mineral	Log Q/K	Aff, kcal	State
Epidote-ss	0.000	-999.000	

--- Garnet-ss ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Andradite	0.0000E+00			
Grossular	0.0000E+00			

Mineral	Log Q/K	Aff, kcal	State
Garnet-ss	0.000	-999.000	

--- Orthopyroxene ---

Ideal solution

Component	x	Log x	Log lambda	Log activity
Enstatite	0.0000E+00			
Ferrosilite	0.0000E+00			

Mineral	Log Q/K	Aff, kcal	State

```
Orthopyroxene                    0.000    -999.000


               --- Saponite-tri             ---

  Ideal solution

   Component                     x           Log x   Log lambda  Log activity

Saponite-Ca                 5.5679E-01     -0.2543      0.1704     -0.0839
Saponite-H                  1.1430E-03     -2.9420      1.9711     -0.9708
Saponite-K                  3.1065E-02     -1.5077      1.0102     -0.4976
Saponite-Mg                 3.6566E-01     -0.4369      0.2927     -0.1442
Saponite-Na                 4.5342E-02     -1.3435      0.9001     -0.4434


   Mineral                      Log Q/K     Aff, kcal  State

Saponite-tri                     -0.435      -0.593
  Saponite-Ca                    -0.435      -0.593
  Saponite-H                     -0.435      -0.593
  Saponite-K                     -0.435      -0.593
  Saponite-Mg                    -0.435      -0.593
  Saponite-Na                    -0.435      -0.593


               --- Smectite-di              ---

  Ideal solution

   Component                     x           Log x   Log lambda  Log activity

Beidellite-Ca               5.5234E-01     -0.2578      0.1727     -0.0851
Beidellite-K                3.0838E-02     -1.5109      1.0123     -0.4986
Beidellite-Mg               3.6273E-01     -0.4404      0.2951     -0.1453
Beidellite-Na               4.4979E-02     -1.3470      0.9025     -0.4445
Montmor-Ca                  3.9807E-03     -2.4000      1.6080     -0.7920
Montmor-K                   3.6297E-04     -3.4401      2.3049     -1.1352
Montmor-Mg                  4.2486E-03     -2.3718      1.5891     -0.7827
Montmor-Na                  5.1627E-04     -3.2871      2.2024     -1.0847
Nontronite-Ca               1.7501E-43    -42.7569     28.6472    -14.1098
Nontronite-K                9.7708E-45    -44.0101     29.4867    -14.5233
Nontronite-Mg               1.1501E-43    -42.9393     28.7693    -14.1700
Nontronite-Na               1.4251E-44    -43.8461     29.3769    -14.4692


   Mineral                      Log Q/K     Aff, kcal  State

Smectite-di                       7.622      10.398   ssatd
  Beidellite-Ca                   7.622      10.398   ssatd
  Beidellite-K                    7.622      10.398   ssatd
  Beidellite-Mg                   7.622      10.398   ssatd
  Beidellite-Na                   7.622      10.398   ssatd
  Montmor-Ca                      7.622      10.398   ssatd
  Montmor-K                       7.622      10.398   ssatd
  Montmor-Mg                      7.622      10.398   ssatd
  Montmor-Na                      7.622      10.398   ssatd
  Nontronite-Ca                   7.622      10.398   ssatd
  Nontronite-K                    7.622      10.398   ssatd
  Nontronite-Mg                   7.622      10.398   ssatd
```

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  Nontronite-Na                  7.622      10.398   ssatd


              --- Lanthanide hydroxide     ---

  Ideal solution

   Component                     x           Log x   Log lambda  Log activity

La(OH)3                     2.9592E-05     -4.5288      0.0000     -4.5288
Ce(OH)3                     3.2433E-15    -14.4890      0.0000    -14.4890
Nd(OH)3(c)                  4.7379E-01     -0.3244      0.0000     -0.3244
Gd(OH)3                     4.6239E-01     -0.3350      0.0000     -0.3350
Sm(OH)3                     6.3794E-02     -1.1952      0.0000     -1.1952


   Mineral                      Log Q/K     Aff, kcal  State

Lanthanide hydroxide             -8.385     -11.440
  La(OH)3                        -8.385     -11.440
  Ce(OH)3                        -8.385     -11.440
  Nd(OH)3(c)                     -8.385     -11.440
  Gd(OH)3                        -8.385     -11.440
  Sm(OH)3                        -8.385     -11.440


              --- Rhabdophane-ss           ---

  Ideal solution

   Component                     x           Log x   Log lambda  Log activity

LaPO4:H2O                   6.0272E-01     -0.2199      0.0000     -0.2199
CePO4:H2O                   2.0890E-11    -10.6801      0.0000    -10.6801
NdPO4:H2O                   1.9254E-01     -0.7155      0.0000     -0.7155
GdPO4:H2O                   7.4807E-02     -1.1261      0.0000     -1.1261
SmPO4:H2O                   1.2993E-01     -0.8863      0.0000     -0.8863


   Mineral                      Log Q/K     Aff, kcal  State

Rhabdophane-ss                   -1.385      -1.890
  LaPO4:H2O                      -1.385      -1.890
  CePO4:H2O                      -1.385      -1.890
  NdPO4:H2O                      -1.385      -1.890
  GdPO4:H2O                      -1.385      -1.890
  SmPO4:H2O                      -1.385      -1.890


              --- Lanthanide fluoride      ---

  Ideal solution

   Component                     x           Log x   Log lambda  Log activity

LaF3:0.5H2O                 6.9996E-01     -0.1549      0.0000     -0.1549
CeF3:0.5H2O                 3.8449E-11    -10.4151      0.0000    -10.4151
NdF3:0.5H2O                 2.8150E-01     -0.5505      0.0000     -0.5505
GdF3:0.5H2O                 3.4586E-03     -2.4611      0.0000     -2.4611
SmF3:0.5H2O                 1.5089E-02     -1.8213      0.0000     -1.8213
```

Mineral	Log Q/K	Aff, kcal	State
Lanthanide fluoride	-7.906	-10.786	
LaF3:0.5H2O	-7.906	-10.786	
CeF3:0.5H2O	-7.906	-10.786	
NdF3:0.5H2O	-7.906	-10.786	
GdF3:0.5H2O	-7.906	-10.786	
SmF3:0.5H2O	-7.906	-10.786	

13 approx. saturated pure minerals
0 approx. saturated input solid solutions
1 saturated hypothetical solid solutions

56 supersaturated pure minerals
0 supersatd. input solid solutions
3 supersatd. hypothetical solid solutions

--- Summary of Gases ---

Gas	Fugacity	Log fugacity
Al(g)	4.1207-189	-188.3850
B(g)	8.4187-204	-203.0748
BF3(g)	7.5243E-37	-36.1235
C(g)	3.0916-190	-189.5098
CH4(g)	3.5279-146	-145.4525
CO(g)	6.0393E-49	-48.2190
CO2(g)	3.1623E-04	-3.5000
Ca(g)	7.7784-153	-152.1091
Chlorine	3.5330E-25	-24.4519
Cs(g)	9.6149E-84	-83.0171
Cu(g)	2.1878E-82	-81.6600
Fluorine	5.1072E-81	-80.2918
H2(g)	6.1139E-42	-41.2137
H2O(g)	2.5973E-02	-1.5855
H2S(g)	0.0000E+00	-999.0000
HCl(g)	7.2908E-17	-16.1372
HF(g)	3.1286E-13	-12.5046
K(g)	6.2146E-78	-77.2066
Li(g)	2.1136E-97	-96.6750
Mg(g)	1.3353-130	-129.8744
Nitrogen	6.2767E-19	-18.2023
NH3(g)	9.1315E-69	-68.0395
NO(g)	2.4947E-25	-24.6030
NO2(g)	1.7058E-19	-18.7681
Na(g)	5.0187E-76	-75.2994
O2(g)	2.1000E-01	-0.6778
Pb(g)	6.5459E-70	-69.1840
S2(g)	0.0000E+00	-999.0000
SO2(g)	2.2782E-55	-54.6424
Si(g)	4.2757-220	-219.3690
SiF4(g)	4.2744E-34	-33.3691
Ti(g)	1.6801-231	-230.7747
TiCl4(g)	4.1841E-78	-77.3784

```
U(g)                          1.8374-297   -296.7358
U2Cl10(g)                     1.4574-227   -226.8364
U2Cl8(g)                      1.2789-233   -232.8932
U2F10(g)                      4.0851-148   -147.3888
UCl(g)                        1.1939-251   -250.9230
UCl2(g)                       2.3208-204   -203.6344
UCl3(g)                       9.8811-155   -154.0052
UCl4(g)                       2.2781-122   -121.6424
UCl5(g)                       2.7024-127   -126.5683
UCl6(g)                       5.9554-127   -126.2251
UF(g)                         1.0888-237   -236.9631
UF2(g)                        4.7850-196   -195.3201
UF3(g)                        5.1751-148   -147.2861
UF4(g)                        8.2616E-97    -96.0829
UF5(g)                        6.0409E-87    -86.2189
UF6(g)                        4.3495E-91    -90.3616
UO(g)                         1.4511-212   -211.8383
UO2(g)                        2.6886-128   -127.5705
UO2Cl2(g)                     4.1472E-72    -71.3822
UO2F2(g)                      6.2030E-62    -61.2074
UO3(g)                        1.9776E-75    -74.7039
UOF4(g)                       2.4619E-74    -73.6087
Zn(g)                         1.0887E-72    -71.9631

--- Reading the input file ---

--- No further input found ---

         Start time = 11:39:27  01/15/99
           End time = 11:39:31  01/15/99

          Run time =   3.35     seconds
         User time =   3.35     seconds
          Cpu time =   3.35     seconds

Normal exit
```